



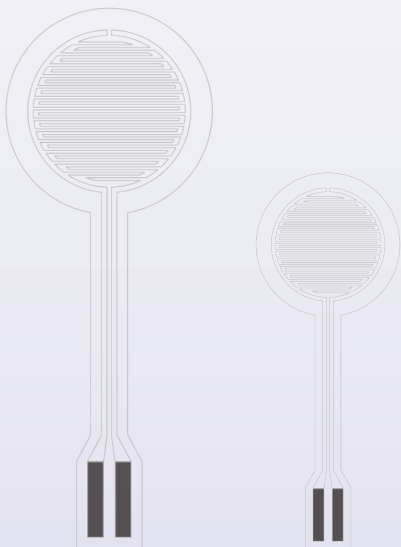
Tactile Sensing Solution Product Guide

THE WORLD'S MOST SENSITIVE SINGLE, ARRAY & MULTI-POINT
TACTILE SENSING SOLUTIONS

About Us

TacSense is a high-tech startup company spun off from the University of California. The company strives to address global demands in tactile sensing in various industries like Health & Wellness, Medical, and Consumer Electronics. To address the issues that still remain within the market demand for high-precision and ultra-flexible mechanical sensing modalities, TacSense has pioneered to fill that innovation gap by providing ultra-sensitive tactile sensors, flexible human-sensing interfaces, and wearable health monitors, in addition to consulting services with these emerging directions. TacSense has multiple granted US and international patents on innovative tactile sensing solutions and is a recipient of many prestigious Startup Awards including the Sacramento Innovation Award and CES Innovation Award Honoree for its technological innovations.

Pioneers in world's most sensitive tactile sensors



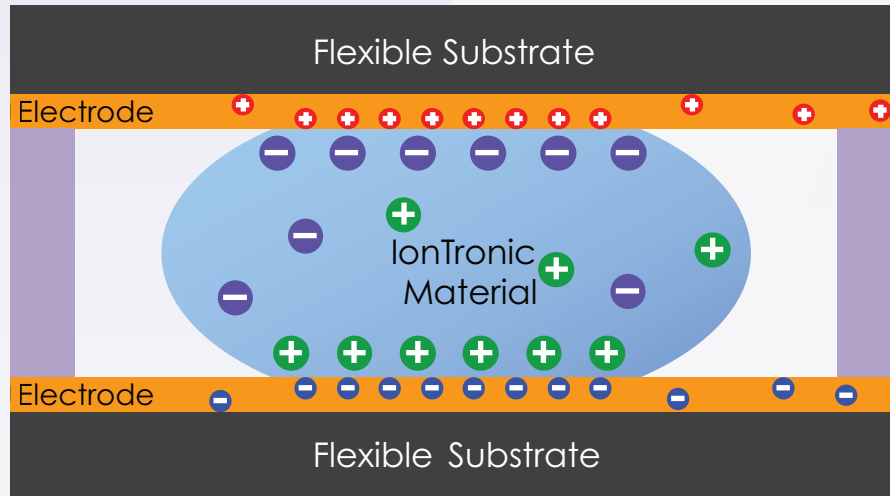
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Flexible Iontronic Sensing Technology

TacSense has developed the world's most sensitive and flexible tactile sensing technology, known as the Flexible IonTronic Sensing technology (FITS). It utilizes proprietary ionic materials to establish an ionic-electronic interface in response to mechanical stimuli. It provides real-time high-quality noise-immune pressure/force signals in a mechanically flexible, optically transparent, and ultrathin package.



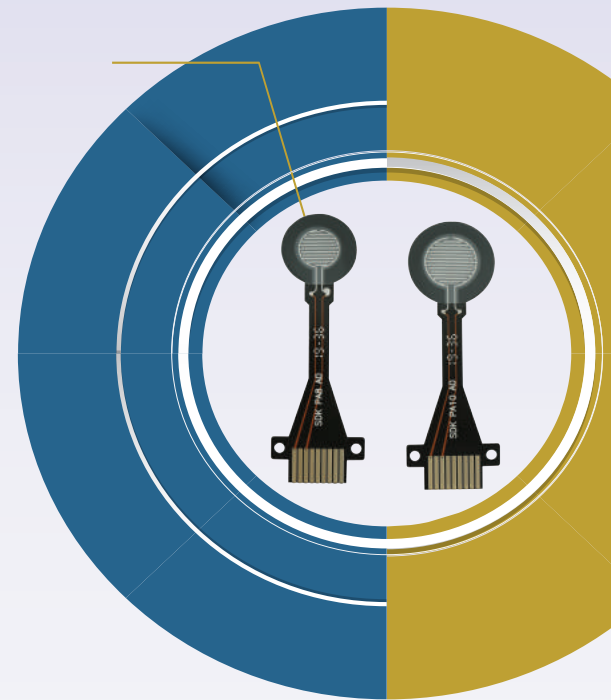
Tactile Sensing Advantages

TacSense's FITS innovation enhances the overall tactile sensing industry by providing the best performance qualities over the competing resistive, piezoelectric, or conventional capacitive tactile sensors with its high signal-to-noise ratio, high sensitivity, static and dynamic responses, high flexibility, high transparency, and low manufacturing cost. FITS can also provide a sense of touch and be integrated into a wide range of conventional surfaces or interfaces, such as wood, leathers, metals, or plastics, enabling materials or products to become more intelligent.

	Resistive	Capacitive	Piezoelectric	IonTronic
Sensitivity		●	●	●
Signal to Noise Ratio				●
Static Response	●	●		●
Dynamic Response		●	●	●
Flexibility	●		●	●
Transparency		●		●
Production Cost	●			●
Generations	1 st	2 nd	3 rd	4 th

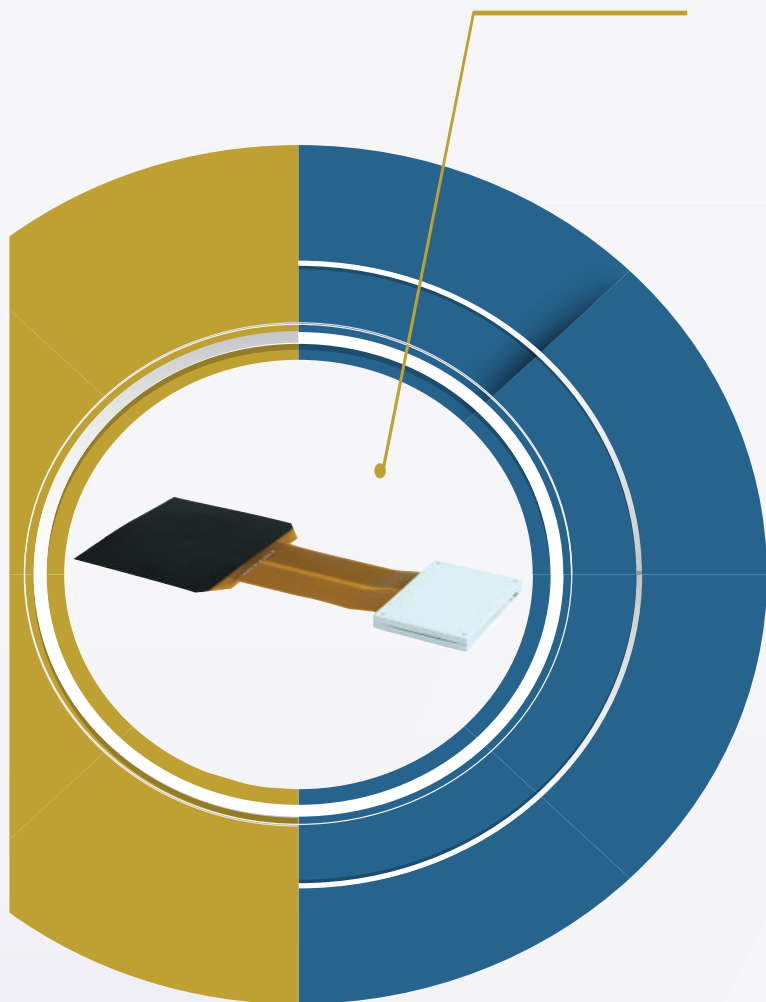
Single & Multi-Point Performance

	PA10	PB6
Pressure Range	0-250 mmHg	0-500 mmHg
Sensing Area	10 mm	6 mm
SNR	4000:1	
Linearity	>99.6%	
Repeatability	>95%	
Sampling Rate	1000 Hz	
Response Time	<1 ms	
Interface	I ² C, SPI, or UART	
Current Consumption	60 mA/ch	
Temperature	≤60°C	
Mechanical Stability	>1,000,000 cycles	















Array Performance

	TSA
Pressure Range	0-4 Mpa
Sensing Area	12.8x12.8 cm ²
Linearity	>95%
Repeatability	>95%
Sampling Rate	50 Hz
Sensing Pitch	2 mm
Thickness	0.3 mm
Interface	I ² C, SPI, or UART
Temperature	≤85°C
Mechanical Stability	>1,000,000 cycles



Characteristics

-  Ultra-sensitive
-  Various Materials
-  Noise-resistant
-  Moisture-proof
-  Fast Response
-  Integrability
-  Ultra-flexible, Thin
-  High Stability
-  Wide Range
-  High Linearity
-  Transparency
-  Low Cost

Applications

We have configured the innovative tactile sensing architecture for flexible and rapid response detection. This configuration has allowed FITS to be easily integratable in various market applications. Its flexibility and conformability makes it perfect for wearable sensor applications, as the FITS devices can take the form of most curved surfaces and configure to the shape of the body. For example, when attached to a footwear, headwear, or undergarment, our flexible tactile sensors allow the wearer to measure arterial pulse waveforms in real time and at all times with blood pressure and respiratory rate tracked simultaneously.



Health & Wellness

Implementing functional platforms to connect all life activities for a better tomorrow.



Medical



Wearable



Internet of Things

Advancing life and modern technology with environmentally friendly smart interface.



Consumer Electronics



Mobility



Smart Infrastructure



Industrial Application

Enhancing the machine-to-machine interface.



Manufacturing



Logistics and Packaging



Robotics



Machine-to-machine

Wearable Application

FootWARE is the world's first ever health-tracking smart shoe that is able to monitor biometrics, emotions, stress levels, and daily activities. With seamless integration of TacSense's FITS solution, FootWARE aims to offer a complete wearable solution to closely monitor people's health conditions as well as their daily activities in a simple, sleek, and secured way. The shoe is intended for ambulatory use in daily life, both indoor and outdoor, and these metrics are intended as input for behavioral change programs to manage lifestyle of individuals with physical evaluation and planning purposes.

As a result, FootWARE will be able to detect peripheral artery diseases and track diabetic foot care through pedal pulse monitoring which will be extremely helpful for patients in rehabilitation and training. The smart shoes come with a rechargeable, low-power Bluetooth module that connects to the latest FootWARE software where users can gain access to track and store their wellbeing anywhere at any time.


FootWARE





Performance


Functions	Heart Rate Range	45 – 220 BPM
	Heart Rate Accuracy	< 2 BPM
	Respiratory Rate Range	10 – 30 RPM
	Respiratory Accuracy	< 2 RPM
	HRV Analysis	6 indexes
Sensor	Resolution	1 mmHg
	Response Time	< 1ms
	Working Pressure Range	0 -250 mmHg
	Mechanical Stability	>1,000,000 cycles
Hardware	Rechargeable Battery	Last 7 days
	Case Weight	< 11g
	Dimension	1.5" x 1.4" x 0.4"


 Pulse Waveform Analysis

 Track Blood Pressure Trending

 Monitoring of Heart Rate

 Evaluation of Emotion and Stress Level

 Monitoring of Respiratory

 Track Daily Activities