WEARABLE SENSORS

TE Connectivity (TE) is a global technology leader, providing connectivity and sensor technologies essential in today's increasingly connected world. With the growing expectation of being connected anytime and anywhere, wearable technology has evolved to be one of the largest growing industries. New opportunities in the market, such as the Internet of Things (IoT) and smart mobile devices, have accelerated the development of wearables since they provide many benefits to users. From consumer wearables that aid in a healthier lifestyle to medical wearables that help determine a patient's vital signs, sensing components help bring these wearable technologies to life offering users a sense of safety, productivity and health incentives. As the wearable industry continues to advance, the need for more accurate, compact and reliable sensing technologies becomes necessary for proper long-term functionality in wearables.

SENSOR TECHNOLOGIES

Force **Humidity** **Photo Optic** **Piezo Film** **Position** **Pressure** **Temperature**
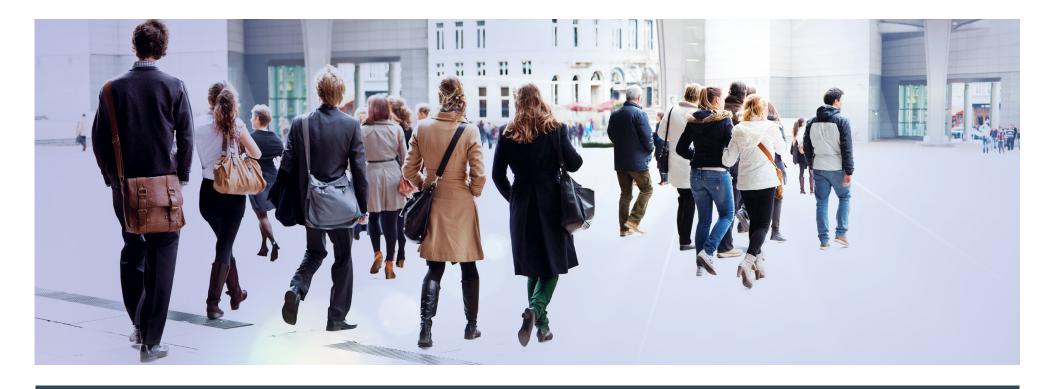
CONSUMER WEARABLE SOLUTIONS

- Altimeter Watch
- Diving Watch / Computer
- Fitness Band
- Martial Arts Vest
- Multi-Mode Watch
- Ski Goggles
- Sleep Monitoring

MEDICAL WEARABLE SOLUTIONS

- Fall Detection
- Heart Pacemaker
- Prosthetics
- Protective Vest
- Sleep Apnea Treatment
- Vital Signs

DEFENSE WEARABLE SOLUTIONS

- Helmet Impact
- Soldier Activity

FORCE SENSORS

FX19

The FX19 is a 1% load cell device with full scale ranges of 10, 25, 50, 100 and 200lbf compression. This low-cost technology enables force sensing in smart consumer and medical products.

FX29

The FX29 is a compact compression load cell that offers exceptional price-to-performance in a robust sensor package with a millivolt, analog or digital output signal.

FS19

The FS19 load cell, with ranges from 500g to 3000g, uses proven MEMS sensor technology.

FS20

The FS20 series low compression force sensor offers normalized zero and span for interchangeability and is thermally compensated for changes in zero and span with respect to temperature.

FC22

The FC22 incorporates our proprietary sensor technology which employs micromachined silicon piezoresistive strain gauges fused with high temperature glass to a high performance stainless steel substrate.

FC23

The FC23 measures direct force and is therefore not subject to lead-die fatigue failure. Operating at very low strains, microfused technology provides an essentially unlimited cycle life expectancy, superior resolution, and high over-range capabilities.

HUMIDITY SENSORS

HTU21D

HTU21D relative humidity sensors provide digital outputs for humidity and temperature in I2C formats.

HTU31

The HTU31 humidity & temperature sensor is one of the smallest and most accurate humidity sensors on the market. Available in digital and analog versions, the HTU31 provides fast response time, precision measurement, low hysteresis and sustained performance, even in the harshest environments.

PIEZO FILM SENSORS

Piezo Cable

The piezo cable is another form of piezo polymer sensor. Designed as a coaxial cable, the piezo polymer is the dielectric between the center core and the outer braid.

LDTC

The LDTC family is a low-cost piezo film cantilever type vibration sensors offering moderate sensitivity over a useful frequency band up to 200 Hz. Pins are designed for easy installation and are solderable.

PHOTO OPTIC SENSORS

ELM-4000

The ELM-4000 series emitter assembly has dual drive, lead frame construction, a pulse oximetry component and a clear epoxy lens. This sensor component provides leading accuracy in blood oxygen level.

EPM-4001

The EPM-4001 photo optic detector assembly uses a silicon planar diffused photodiode specially designed for medical applications.

EPM5000

The Surface Mounted Technology (SMT) optical components provide leading accuracy in blood oxygen level detection. The EPM-5000 detector assembly uses a silicon planar diffused photodiode and features high efficiency and fast response.

POSITION SENSORS

KMT32B

The KMT series magnetic AMR angle sensor is based on the anisotropic magneto resistance effect, i.e. it is sensing the magnetic field direction independently on the magnetic field strength for applied field strengths H>25 kA/m.

KMA36

The universal contactless magnetic encoder for precise and reliable measurements. The KMA36 offers a sleep reduced power mode over I2C. In addition, programmable parameters give users access to a wide range of configuration options to provide maximum freedom and functionality.

POSITION SENSORS

KMXP

The KMXP series sensor provides greater precision than commonly used hall sensors and is designed to provide reliable and accurate measurements in wearable device applications.

PRESSURE SENSORS

MS5837

The MS5837-02BA is a gel-filled, ultra-compact, water resistant pressure and temperature sensor module optimized for consumer devices such as fitness trackers, drones and wearables.

MS5839

The MS5839-02BA is an ultra-compact pressure and temperature sensor that is optimized for applications where chlorine and saline are present.

MS5805

The MS5805 miniature digital sensor module includes a high-linearity pressure sensor and an ultra low power 24 bit ΔΣ ADC with internal factory-calibrated coefficients. It provides a precise digital 24-bit pressure and temperature value and different operation modes that allow the user to optimize for conversion speed and current consumption.
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MS4515DO

The MS4515DO is a small, ceramic based, PCB mounted pressure transducer. The transducer is built using CMOS sensor conditioning circuitry to create a low cost, high performance digital output pressure 14-bit and temperature 11-bit transducer designed to meet the strictest requirements from OEM customers.

MS5525DSO

The MS5525DSO is a rugged thermoplastic transducer is available in single and dual port configurations and can measure absolute, gauge, compound and differential pressure from 1 to 30psi.

MS8607

The MS8607 is a digital combination sensor providing environmental physical measurements all-in-one: pressure, humidity and temperature.

1620

The 1620 series disposable pressure sensor is a fully piezoresistive silicon pressure sensor for use in invasive blood pressure monitoring.

TEMPERATURE SENSORS

TSYS Series

The TSYS digital temperature sensors provide industry-leading 0.1°C accuracy. The optimized microcircuit design allows fast conversion times along with very low power consumption.

Ni1000SOT

The Ni1000SOT is a thin-film nickel RTD element a small SMD SOT 23 package that provides a very fast time response along with accurate sensing over a broad operating temperature range.