

# TE SENSOR SOLUTIONS

TE Connectivity (TE) is one of the largest connectivity and sensor companies in the world, with the acquisition of Measurement Specialties (MEAS) and American Sensor Technologies (AST). Our broad portfolio of sensor technologies is designed for a wide range of applications and serves a number of industries. We collaborate with engineers to help transform their concepts into creations—redefining what's possible using intelligent, efficient and high-performing TE products and solutions proven in harsh environments.

## **INDUSTRIES SERVED**



#### Automotive

The combination of TE Connectivity and Measurement Specialties, a leading designer and manufacturer of sensors and sensor systems, establishes TE as one of the largest sensor companies in the world and provides a broad portfolio of sensor technologies including position, pressure, temperature, humidity, vibration, force and ultrasonic, for a wide range of transportation applications ranging from brake, chassis, clutch, engine and transmission to high pressure sensors for hydrogen fuel tanks. For global support of our customers, TE has TS 16949 certified facilities in Germany, France, Belgium, Czech, Portugal, India, Brazil, Korea and China.



#### Industrial and Commercial Transportation

TE's sensors provide data under harsh conditions with a high degree of accuracy and reliability for commercial trucks, agricultural and construction vehicles, railway, diesel generators and marine equipment. TE's pressure, level, temperature, urea quality, and humidity sensors are recognized and validated solutions in emission/exhaust control systems to comply with Final Tier 4 and Euro6 stage c regulations. Additionally, TE designs and manufactures a range of linear position, level, humidity, temperature and pressure sensors for chassis and transmission applications and has developed innovative combination sensors for cost effective and efficient control.



#### Medical

TE Connectivity designs and manufactures sensors to exacting specifications for the rigors of medical applications, with ISO 13485 certification and FDA registration for various products. Our engineers provide full support of application-specific, standard and custom requirements, from product concept through manufacturing.



#### Industrial

Our engineered sensing solutions meet the unique requirements of a wide variety of applications relating to energy, process control, automation, altitude, depth measurements and beverage control markets.



#### Consumer and Appliance

Many manufacturers have teamed with us to break new ground in the creation of smart applications that can respond to human touch, sense vibration and adjust automatically to different loads to improve operational efficiency.



#### Test and Measurement

The test and measurement group serves the sensing needs of customers who are involved in test programs, product research, development, test and evaluation. Our products are fully configured, shipped with calibration certificates and are ready to use "out of the box."



#### Aerospace and Defense

Long development cycles and high qualification costs require aerospace firms to identify stable, reliable, team players. TE has AS9100 certified facilities in the USA, France and China which support Tier 1, 2 and 3 providers.



#### **HVACR / Building Equipment**

TE sensors play a major role in regulating heating, ventilation and air conditioning systems. While temperature, humidity and pressure sensors are the most common sensors used, we also see increasing use of sensors for vibration, liquid level and fluid property.



#### Oil & Gas and Marine

TE designs and manufactures sensors/switches for hazardous locations. These products are offered with explosion-proof, non-incendive and intrinsically safe certifications.

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Vibration

| 1   | Flow           | Our mass air flow (MAF) sensors are designed for a variety of automotive, medical and industrial gas applications while our flow switches are used for such applications as water control, power showers and circulation pump protection.   |
|-----|----------------|---|
| -   | Fluid Property | The fluid property sensor is based on tuning fork technology. It is specifically designed to provide fluid quality and condition monitoring capability to a wide range of dedicated applications including oils (engine, hydraulic, transmission), fuels and DEF (i.e., urea) monitoring.   |
| 0   | Force / Torque | TE is a pioneer in the design and manufacture of precision sensors for electro-mechanical flight control applications, test and measurement applications and ultra-low cost OEM load cells for high volume applications. We are experts in developing sensors that require high performance or unique packaging.  |
|     | Humidity       | Accurate dew point and absolute humidity measurements are made possible through the combination of relative humidity and temperature measurements. Our products are qualified for the most demanding applications including automotive, heavy truck, aerospace and home appliance.  |
| The | Liquid Level   | Liquid level products address the sensing requirements of the construction, off-road and automotive industries. Our solutions include level sensors for power steering, coolant, windscreen wash, fuel and oil.   |
|     | Photo Optic    | Optic-based sensors include both photo optic components and complete sensor solutions. Our component series features dual LED, bi-wavelength emitters and spectrally paired photo detectors.  |
|     | Piezo Film     | Piezoelectric fluoropolymer film produces voltage or charge proportional to strain. A highly versatile, enabling sensor technology, Piezo Film has thin cross-section, is flexible, very robust, chemically inert and can withstand temperatures up to 85°C.  |
| de  | Position       | TE is one of the world's largest manufacturers of industrial and automotive sensors for linear displacement, rotary position and speed sensing. Therefore, TE owns a wide range of sensing technologies like MR, PLCD, LVDT and Resolver, and offers the complete spectrum from sensing element up to system packaging for harsh environments. On the strength of our customized design and packaging, based on TE application know-how, we can provide an essential value for our customers. |
| ATT | Pressure       | TE leads the industry with a wide array of standard and custom pressure products. These range from board level components to fully amplified and packaged transducers. Using MEMS and silicon strain gauge (Microfused) technologies, our products measure pressure, ranging from inches of water (<5 mbar) to 100K psi (7K bar).   |
|     | Scanners       | Primarily used for wind tunnel, flight test and turbomachinery testing, the scanning systems provide high accuracy measurement solutions due to multi-channel test installations. Wind tunnel and flight testing use ESP pressure scanners for their compact size and high accuracy.  |
|     | Temperature    | We manufacture NTC thermistors, RTDs, thermocouples, thermopiles, digital output and customized sensor assemblies. Building on more than 100 years of experience, our know-how allows us to cover one of the largest ranges of temperature measurement, control and compensation applications in the industry.  |
|     | Ultrasonic     | Ultrasonic sensors provide accurate air bubble detection, contact and non-contact container fill, pump protection and pipeline fluid/type detection. Standard products are offered for level applications that require no moving parts, no adjustments and no maintenance.  |

Our microelectromechanical systems (MEMS), bonded gage and piezoelectric ceramic/film technologies provide OEM and Test and Measurement customers with the broadest range of sensor solutions in the

industry. All products are EAR99, RoHS compliant and meet CE standards.

#### MARKET VERTICAL (SALES ORG)

|              | PRODUCT AND<br>APPLICATION<br>MATRIX | Industrial | Medical | Automotive | Aerospace and<br>Defense | HVACR /<br>Building Equipment | Consumer and<br>Appliance | Test & Measurement | Environmental<br>Monitoring | Industrial & Commercial<br>Transportation | Oil & Gas and Marine |
|--------------|--------------------------------------|------------|---------|------------|--------------------------|-------------------------------|---------------------------|--------------------|-----------------------------|---|----------------------|
| PRODUCT LINE | Pressure                             | •          | •       | •          | •                        | •                             | •                         | •                  | •                           | •   | •                    |
|              | Force                                | •          | •       |            | •                        |                               | •                         | •                  |                             |   | •                    |
|              | Temperature                          | •          | •       | •          | •                        | •                             | •                         | •                  | •                           | •   | •                    |
|              | Humidity / Optical                   | •          | •       | •          |                          | •                             | •                         |                    | •                           | •   |                      |
|              | Fluid Property                       |            |         | •          | •                        |                               |                           |                    |                             | •   |                      |
|              | Position                             | •          | •       | •          | •                        | •                             | •                         | •                  |                             | •   | •                    |
|              | Vibration                            |            |         |            | •                        |                               |                           | •                  |                             |   |                      |
| PRC          | Piezoelectric                        | •          | •       |            | •                        |                               | •                         |                    |                             |   |                      |

#### MEAS Quality Certificates:

- AS/EN 9100
- ATEX
- ATEX 949EC
- CE-MDD
- CMDR-Health Canada
- EN 13980
- ESA 266
- ESCC266EESCC 400C
- FDA

- ISO 13485
- ISO 14001
- ISO 9001
- Measuring Instruments Directive 2004/22/EC annex D
- NASA Qualified
- NSF-61 Water Quality
- PART21G
- TS 16949

### AST Approvals/Certifications:

- ABS
- CE
- ATEX
- EC 79
- CCOE
- IEC 61508
- CNEXCRN B31.3
- IECExISO 9001
- CSA
- UL

Visit our website to review our Global Quality Policy and certified manufacturing locations. meas-spec.com/quality.aspx

#### www.te.com/sensorsolutions

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#### About TTI, Inc.

TTI, Inc., a Berkshire Hathaway company, is one of the world's leading specialist distributors of passive, connector, electromechanical, discrete, power and sensor components. TTI's philosophy is "Lead by Design", and the company differentiates itself by focusing on people, parts and process. TTI in Europe strives to be the distributor of choice for customers and suppliers alike by introducing new product technologies and by stocking broad and deep inventory across its franchise base. TTI's sophisticated inventory management system ensures the ability to service changes in demand due to fluctuating markets and supply chains. For more information about TTI, please visit www.ttieurope.com.



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