SENSOR SOLUTIONS FOR INDUSTRIAL & COMMERCIAL TRANSPORTATION

TE Connectivity (TE) is a global technology leader, providing connectivity and sensor solutions essential in today’s increasingly connected world. TE is one of the largest sensor companies in the world. Our sensors are vital to the next generation of data-driven technology.

When performance and reliability count, engineers rely on us to help solve tough industry challenges such as emissions reduction, power train improvement and added comfort. We’re a leader in providing sensor technologies and associated software/diagnostic capabilities built on market experience and technical expertise. We work closely with customers to design and provide solutions critical for a wide range of harsh and demanding applications, including exhaust, engines, transmissions, braking, suspension and cabins.
INDUSTRIAL & COMMERCIAL TRANSPORTATION APPLICATION SOLUTIONS

TE’s pressure, level, temperature, urea quality and humidity sensors are recognized and validated solutions for engine and aftertreatment system support and compliance to global on and off road emissions standards. Additionally, TE designs and manufactures a range of linear position, level, humidity, temperature, speed, and pressure sensors for chassis and transmission applications and has developed innovative combination sensors for cost effective and efficient control. Our sensors are designed and manufactured to exacting specifications, often on a custom basis. Together with our customers, we are working to solve today’s biggest application challenges in new and creative ways.

SENSOR SOLUTIONS

• CURRENT
• FLOW
• FLUID PROPERTY
• FORCE
• HUMIDITY
• LIQUID LEVEL
• PIEZO FILM
• POSITION
• PRESSURE
• TEMPERATURE
• TORQUE
• SPEED
• VIBRATION

QUALITY STATEMENTS

• AS/EN 9100
• EN 13980
• ESA 266
• IATF 16949
• IEC 61508
• ISO 14001
• ISO 26262
• ISO 9001
• Measuring Instruments Directive 2004/22/EC Annex D
TE Connectivity offers a broad portfolio of sensors to help Original Equipment Manufacturers (OEM) meet the demands placed on modern engines to provide maximum performance and fuel economy while reducing emissions. TE sensors perform under the extreme temperature, vibration, shock and durability requirements of medium duty and heavy duty on road and off road vehicles.

**ENGINE MANAGEMENT SENSOR SOLUTIONS**

- **Lubricants, Oil and Fuel Pressure**
  - Microfused Pressure Sensor

- **Humidity Air Intake Monitoring**
  - Engine and Emissions Management
  - Combination—Humidity, Temperature and Pressure Sensor

- **Engine Oil Fluid Level**
  - Capacitive, Inductive and Multi-Point Reed Switch Sensor Options

- **Coolant Fluid Level**
  - Solid State Switch and Level Sensors

- **Low Oil Level Switch**
  - Magnetic Reed Switch

- **Engine Oil Condition**
  - Fuel Identification and Quality
  - Fluid Property Sensor

- **Cam/Crank Shaft Speed**
  - Speed Sensor for Cam/Crank Shaft

- **Engine Oil Temperature**
  - Nickel Resistance Temperature Detector (RTD) Sensor

- **Turbo Speed**
  - Variable Reluctance and Active and Passive Eddy Current Sensors
AFERTREATMENT SYSTEM SENSOR SOLUTIONS

TE Connectivity offers a broad portfolio of sensors that help OEMs develop environmentally friendly products that comply with global emission regulations. TE sensors effectively monitor critical components in exhaust gas aftertreatment systems to support their management and reduction of engine emissions.

**Urea Temperature**
- Negative Temperature Coefficient (NTC) Sensor

**In-Tank Urea Quality, Level, Heating and Temperature Assembly**
- Urea Level Reed Switches
- Urea Quality Sensor (Advanced Ultrasonic Sensor Technology)

**Urea Pressure**
- Media Isolated Pressure Sensor

**High Temperature Exhaust Gas**
- PT200 RTD Sensor

**EGR Valve Position**
- MR and PLCD Sensor
TRANSMISSION SENSOR SOLUTIONS

TE Connectivity offers a broad portfolio of transmission sensors that enables OEMs to design and commercialize advanced transmissions that meet the modern demands of vehicle OEMs. TE sensors perform under the extreme temperature, vibration, shock and durability requirements of medium duty and heavy duty on road and off road vehicles.

Transmission Oil Pressure
• Microfused Pressure Sensor

Transmission Oil Level
• Hall Effect Sensor

Transmission Oil Level
• Microfused Pressure Sensor

Clutch Position
• Magnetic Travel Sensor

Hall Sensor T40MC2
• Hall Sensor with Moving Magnet

Dual Clutch Transmission Module
• Multiple Sensors Packaged in a Single Module (Shown: 2 Travel and 2 Pressure Sensors)

Transmission Oil Quality
• Fluid Property Sensor

Transmission Input and Output Speed
• Hall Sensor

Rotary Sensor (TRS)
• Hall 3D with Integrated Magnet
MECHATRONICS TRANSMISSION SENSOR CLUSTER

TE Connectivity has a unique sensor portfolio and capability to develop custom mechatronic sensor solutions for monitoring transmission operation and performance. TE’s in-house expertise enables optimized packaged solutions that integrate terminals, connectors, harnessing and sensors to an OEMs exact needs and requirements.

PRODUCTS AND CONNECTIVITY - OPTIMIZED SENSOR ARCHITECTURE AND TRANSMISSION NERVE SYSTEMS

- Sensors system
- Wiring & protection
- Connectors
- Interconnections
- Customized sensor architecture layout and packaging

OPTIMIZE FUNCTIONALITY AND QUALITY

- Robust connectivity between sensor elements
- Design freedom
- Opportunity to harmonize / standardize solutions and products
- Future utilization of solutions / repeatability
- Creation of competitive advantage

SAVE TIME & EFFORT

- Turn key engineering and sourcing solution
- Expedite program launches
- Consolidated and streamlined purchasing, engineering and service

LOWER TOTAL COST

- Cost-optimized solutions
- Program size and volume based pricing
TE Connectivity offers a broad portfolio of sensors that helps vehicles operate safely, increase productivity and maximize vehicle uptime.

**Tilt and Ride Stability**
- Single and Dual Axis Tilt Sensor
- Gyro Compensated

**Hydraulic Fluid Condition**
- Fluid Property Sensor

**High Pressure Hydraulics and Hydrostatic Transmission Pressure**
- Microfused Pressure Sensor

**Fuel Level**
- Magnetic Reed Switch Sensor
- Reed Switch Based Level Sensor

**Short to Long Stroke Boom Position**
- String Pot Sensor

**Hydraulic Oil Level**
- Hall Effect Sensor

**Wheel Speed**
- Hall Sensor with and without Integrated Magnet

**Load Pin**
- Multi-channel Force Sensor

**Power Steering Fluid Level Single or Multi-Point**
- Magnetic Reed Sensor

**Steering Control Hydraulic Spool Valve**
- Linear Variable Differential Transformer Position Sensor
- Magnetoresistive Linear Sensor Array

**Air Brakes**
- Media Isolated Pressure Sensor

**Health and Condition Monitoring**
- Embedded PE Vibration Sensors
- Pumps, Motors and Gear Boxes

**Engine and Transmission Shafts**
- Microfused Static Torque Sensor
- Dynamic Torque Sensor
- Inductive Technology
- Multi-axis Force and Torque Load Cells
CABIN AND OCCUPIANT SAFETY SENSOR SOLUTIONS

On and off road vehicle operators encounter extreme weather and terrain, intense duty cycles and complex vehicle operation. Whether the vehicle application is short haul, long haul, construction, agriculture, forestry or mining, TE Connectivity sensors enable OEMs to build safer and more efficient vehicles that operators demand.

- Anti-Fogging and HVAC
  - Humidity and Dewpoint Sensor

- Rotary Position
  - Rotary Encoder

- Seat Occupancy
  - Microfused Load Cell
  - Piezo Film Sensor

- Cab and Seat Level
  - Tilt Sensor or Switch

- Seat, Handbrake and Footbrake Position Safety Interlock Switches
  - Proximity, Hall and Vane Sensor

- HVAC System Control
  - Pressure Sensor

- Fluid and Material Temperature
  - NTC, Platinum, Thermocouple and Thermopile Sensors

- Brake Light Switch
  - Hall Sensor
TE Connectivity offers a diverse portfolio of sensor technology for on and off road vehicle OEMs which enables their development of hybrid electric and fully electric vehicles, including vehicles powered by hydrogen fuel cells. Engineered for reliability under harsh conditions, TE sensors provide OEMs the capability to build breakthrough e-mobility solutions to reduce pollutants and increase vehicle efficiency.

**Current Sensing**
- Coreless and Integrated Current Sensors
- Shunt Sensor

**Temperature Sensing**
- Stator Winding Temperature Sensor

**Resolver: Angular and Speed Sensor**
- Accurate and Robust
- Including Cable and Optional Temperature Sensor

**Tilt and Ride Stability**
- Single and Dual Axis Tilt Sensor
- Gyro Compensated

**Fuel Cell Humidity Management**
- TRICAN Relative Humidity, Temperature and Pressure Digital Combination Sensor

**Fuel Cell Hydrogen Pressure**
- Hazardous Area Rated Pressure Sensor

**Start and Stop City Buses**
- Hydraulic Starter Pressure Sensor
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