Automotive Sensors
Commercial Vehicle Sensors
Circuit Protection Solutions

www.bourns.com
bourns.electronics@bourns.com
The Bourns Automotive Division has played a leading role in the design, development and manufacture of potentiometer sensors for over 75 years. At our engineering centers in Riverside/California, Taufkirchen/Germany, Veszprém/Hungary and Auburn Hills/Michigan we develop and design a range of customized automotive position, speed and torque sensors. These products are manufactured in Ajka/Hungary, Chihuahua & Tijuana/Mexico and Xiamen/China.

Bourns, Inc. is a privately held company with headquarters in Riverside, California. Currently, there are about 9,200 employees located in 14 different Bourns-owned design and manufacturing locations worldwide.

Our research and development work combined with close collaboration with customers helps to ensure that our products meet the highest standards set for the automotive industry. Using state-of-the-art development software and world-class production methods, Bourns can provide innovative and cost-effective solutions for your applications.
Our phenolic paper, high aluminum oxide ceramics, thermosetting plastics and specially developed Bourns® resistor inks are designed to withstand the harshest operating conditions within rated limits, with many of our sensors used in rigorous on and off highway applications. Our non-contacting sensors are developed with a wide range of magneto resistance-based angular sensor solutions supplemented by competitive Hall Effect and 2 Axis Hall Effect technology. Bourns can assist in the selection of the most appropriate technology for your specific applications.

Bourns TS16949 certified quality system and the Bourns Production System (BPS) help ensure uncompromised quality and maximum reliability. Lean production methods are also used during the design and manufacturing phases of a project. Control can be adequately exercised because Bourns offers its own in-house design, tool making, screen-printing, cermet firing and injection molding capabilities, in addition to the development of our own proprietary resistance inks.

The Bourns Automotive Division operates worldwide with its own Automotive sales team to ensure experienced support is always available at the customer’s location. Further specialized technical support is offered by each product line to assist with the design process.

| 1  | Headlight Range Sensor          | 8  | Transmission Speed Sensor          |
| 2  | Exhaust Gas Recirculation       | 9  | Throttle Position Sensor           |
| 3  | ABS Wheel Speed Sensor          | 9  | Pedal Angle Sensor                 |
| 4  | Accelerator Pedal Sensor        | 10 | Dashboard Dimming                 |
| 5  | Motor Position Sensor for EPAS  | 11 | Air Flap Position Sensor           |
| 6  | Steering Angle Sensor           | 12 | Sunroof Control                    |
| 7  | Brake Pedal Position Sensor     | 13 | Chassis Level Sensor               |
| 14 | Fuel Card for Fuel Level Sensing|      |
### Types Available:
- Powertrain speed & position
- Wheel speed
- Chassis level
- Fuel level
- Brake wear
- Pedal position
- Steering torque & angle
- Throttle position
- Motor position & phase current sensors

### Features:
- Contacting: resistive
- Non-contacting: VR, hall effect, xMR, inductive
- Interfaces: analog, PWM, SENT, SPI, CAN, PSI5
- Extensive simulation tools
- Global engineering, testing, manufacturing, and sales support
- All sites are IATF 16949 and ISO 26262 compliant
- Innovative & cost-effective solutions

### Applications
- ABS wheel speed
- Accelerator pedal
- Electric Power Steering
- Brake pedal module
- Brake wear
- Chassis Level
- Electric park brake
- Fuel tank level
- Steer by wire
- Throttle position
- Transmission position
- Transmission speed
- Transfer case position
- Motor position
- Disconnect unit position
### Vehicle Dynamics Sensors

<table>
<thead>
<tr>
<th>Part #</th>
<th>Product</th>
<th>Contacting</th>
<th>Non-Contacting</th>
<th>N.C. Technology</th>
<th>Rotary</th>
<th>Linear</th>
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<td>AMR</td>
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<td>R---</td>
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<td>R---</td>
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<td>AMR/HE</td>
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<td>Clockspring-free Non-Contacting Torque Sensor</td>
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<tr>
<td>R---</td>
<td>Clockspring-free Non-Contacting Torque and Index Sensor</td>
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<td>BLDC Motor Position Sensor</td>
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<td></td>
<td>Non-Contacting Chassis Level Sensor</td>
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<td></td>
<td>Brake Pedal Sensor</td>
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<tr>
<td>R---</td>
<td>Passive ABS Wheel Speed Sensors</td>
<td>VR</td>
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<tr>
<td>R---</td>
<td>Active ABS Wheel Speed Sensors</td>
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### Engine & Powertrain Sensors

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<td>Manifold Intake Sensor</td>
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<td>2010</td>
<td>ETC Pedal Sensor</td>
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<td>Non-Contacting ETC Pedal Sensor</td>
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<td>1099</td>
<td>Diesel Injection Pump Sensor</td>
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<td>R---</td>
<td>Non-Contacting PRNDL Sensor</td>
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<td>R---</td>
<td>Neutral-Reverse Gear Position Sensor</td>
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<td>R---</td>
<td>Gear Fork Lever Position Sensor (1D &amp; 2D)</td>
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<td>Non-Contact Linear DCT Sensor (to 25 mm)</td>
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<td>R112</td>
<td>Small Engine TPS Sensor (10 - 130 HP)</td>
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<td>R153</td>
<td>Motorbike Gear-by-Wire Sensor</td>
<td>VR</td>
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<td>Fuel Level Sensor</td>
<td>VR</td>
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<td>R---</td>
<td>Transmission Speed Sensors</td>
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### Comfort Sensors

<table>
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<th>Part #</th>
<th>Product</th>
<th>Contacting</th>
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<th>N.C. Technology</th>
<th>Rotary</th>
<th>Linear</th>
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<tbody>
<tr>
<td>R205</td>
<td>Hollow Shaft Encoder for Powered Closure Systems - Tailgate and Side Door Applications</td>
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<td>0478</td>
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<td>HVAC Temperature Control</td>
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<td>3716X</td>
<td>Steering Reach and Rake Position Sensor</td>
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<td>0479</td>
<td>External Mirror Position Sensor</td>
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<td>1017</td>
<td>External Mirror Position with Memory</td>
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<td>0362</td>
<td>4 Position Sensor - Door/Sunroof Control</td>
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<tr>
<td>3048</td>
<td>Linear Motion Seat Position Sensor</td>
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<tr>
<td>1012</td>
<td>Linear Position Sensor - Headlamp Levelling</td>
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<tr>
<td>1015</td>
<td>Linear Position Sensor - Headlamp Levelling</td>
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</table>
Active steering, electronically controlled suspension, anti-lock disc braking and exhaust gas recirculation are some examples of the increased presence of electronics in commercial vehicles. You probably know OEMs which supply these modules, but did you know that Bourns supplies the heart?

Bourns has provided custom position sensing solutions for nearly 20 years, beginning with the delivery of our custom linear brake wear sensor for commercial vehicle applications. This sensor operates each time the brake pedal is depressed to determine disc pad wear; the sensor sends a signal to the brake ECU, which evenly distributes brake application to ensure even wear takes place. For fleet users this increases the interval between pad changes and enhances the safety of the vehicle by identifying the level of pad wear.
Bourns was one of the first companies to supply high temperature contacting EGR sensors and we are currently developing high temperature, non-contacting solutions, for EGR and turbo applications.

As advancements in the reliability of commercial vehicles increase, Bourns invests in a continuous process of technical innovation. As existing technologies mature, it is fundamental to maintain our position as a dependable sensor supplier. As an example of our commitment to the progression of commercial vehicle design, we offer four different types of non-contacting sensors. We are focused on finding the most suitable technology for our customers’ specific application requirements. Our non-contacting sensors are intended for applications with dither profiles extending above 200 million cycles and a duration measured in excess of 50 million full strokes. Solutions employing these technologies include the R117 2 Axis HE chassis level sensor, the J1843 R078 rotary sensor and the SAS6000 AMR based active steering sensor. Bourns automotive portfolio also includes sensors for wheel and transmission speed sensing and one of the few market proven non-contacting torque sensors.
Custom Commercial Vehicle Sensors

Types Available:
- Powertrain speed & position
- Brake wear
- Chassis level
- Ride height
- Steering torque & angle
- Fuel level
- Pedal position

Features:
- Contacting: resistive
- Non-contacting: VR, hall effect, xMR, inductive
- Interfaces: analog, PWM, SENT, SPI, CAN, PSI5
- Extensive simulation tools
- Global engineering, testing, manufacturing, and sales support
- All sites are IATF 16949 and ISO 26262 compliant
- Innovative & cost-effective solutions

Applications
- ABS wheel speed
- Accelerator pedal
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- Brake pedal module
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<th>Rotary</th>
<th>Linear</th>
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<tbody>
<tr>
<td>6001</td>
<td>Absolute Steering Angle Sensor in Brackets (8 Turn Range)</td>
<td>•</td>
<td>AMR</td>
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<tr>
<td>R-----</td>
<td>Incremental Steering Angle Sensor</td>
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<td>AMR</td>
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<tr>
<td>R-----</td>
<td>Combination Torque and SAS sensor</td>
<td>•</td>
<td>•</td>
<td>HE/AMR</td>
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</table>

**Chassis**

| 2007   | Chassis Level Sensor | • | • | • | |
| R----- | Non-Contacting Chassis Level Sensor | • | HE | • | |

**Braking**

| 3713   | Brake Wear Sensor | • | • | • | |
| R----- | Non-Contacting Brake Wear Sensor | • | • | HE | • |
| 2003   | Air Brake Master Cylinder Position Sensor | • | • | • | |
| R----- | Brake Pedal Sensor | • | • | HE | • |
| R842   | Brake Pedal Module Sensor | • | • | AMR | • |
| R----- | Passive ABS Wheel Speed Sensor | • | • | VR | • |
| R----- | Active ABS Wheel Speed Sensor | • | • | HE/AMR | • |

### Engine & Powertrain Sensors

<table>
<thead>
<tr>
<th>Part #</th>
<th>Product</th>
<th>Contacting</th>
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Automotive Grade Passive Components

**Types Available:**
- Inductors
- Transformers
- Power resistors
- Chip Resistor
- Power Resistors
- Current Sense Resistors
- EB-Welded Shunts
- Current sense resistors
- Trimpot® trimming potentiometers

**Features:**
- AEC-Q200 compliant
- TS 16949 factory produced
- Automotive temperature capable
- High quality and reputation

**Applications**
- Battery management
- Cameras
- DC/DC & AC/DC power supplies
- Diagnostic tools
- Electronic Control Modules (ECU)
- Infotainment, telematics, navigation, connected cars
- Instrument clusters
- Lighting
- Networking
- OBCs (On Board Chargers)
- Start-stop
Automotive Grade Circuit Protection

Types Available:
- Multifuse® PPTC resettable fuses
- SinglFuse™ SMD fuses
- POWrFuse™ high-power fuses
- TBU® high-speed protectors
- Metal Oxide Varistors (MOVs)
- ChipGuard® MLVs
- Diodes
- LED shunt protectors

Features:
- Overcurrent protection for automotive and other applications
- IATF 16949 quality system
- Resettable PTCs suitable for application temperatures up to 125 °C
- SinglFuse™ SMD fuses suitable for application temperatures up to 150 °C
- AEC-Q101 compliant diodes
- AEC-Q200 compliant fuses
- Wide range of current ratings
- Dedicated automotive CP team
- Transient protection

Applications
- BMS (Battery Management Systems)
- Car alarm systems
- Cooling & HVAC systems
- Electronic Control Unit (ECU) input/output protection
- GPS shark fin antennas
- Infotainment, telematics and navigation input/output protection
- Load dump and other transient voltage protection
- Other DC motor applications
- Powerbus (mode protection) applications
- Power steering motors
- Seat adjustment motors
- Sunroof activation motors
- Window regulators