



**BOURNS®**

### Features

- Non-contacting combination sensor
- Provides a differential angle for calculating the steering torque within the ECU
- Operating temperature: -40 °C to +125 °C

### Applications

- Electric power steering systems
- Electronic stability control, advanced front lighting, park assist, navigation and lane departure warning

## Torque and Angle Combo Sensor

### General Function

This non-contacting combination sensor is used in vehicles featuring electrically-controlled power-assisted steering which requires steering angle information. The torque sensor measures the rotational deflection of a torsion bar that interconnects the input and output shafts of the steering column. The torsion bar deflects in proportion to the amount of steering effort from the driver. The output signal from the torque sensor is fed into the steering ECU which controls the amount of steering assistance provided by an electrical motor. A higher torque corresponds to a higher level of assistance. The steering angle portion measures the direction, speed and angular position of the steering wheel. This information can be used by other various vehicle systems such as electronic stability control, advanced front lighting, park assist, navigation and lane departure warning. Traditional combination sensors used a clockspring to deliver power and transfer the signal; this new sensor eliminates the requirement for a clockspring.

*Please note that this document refers to general product specifications which are subject to change.*

### General Specifications

Output..... Analog, PWM, SENT, SPC\*  
 Supply Voltage..... 5 ± 0.5 V\*  
 Protection Degree..... TBD\*  
 Operating Current..... 40 mA typ.  
 Dark Current..... 0 mA  
 Temperature Range..... -40 °C to +125 °C

### Steering Position Specifications

Measurement Range..... ±720 ° typ.\*  
 Non-Linearity..... ±0.5 ° max.  
 Hysteresis..... 0.5 ° typ.  
 Angular Resolution..... 0.2 °  
 Angular Velocity..... ±3000 °/s max.

### Torque Specifications

Total Travel - Mechanical..... No mechanical limit  
 Angular Measurement Range..... ±4 ° typ.\*  
 Resolution..... 0.005 °  
 Ripple..... ±0.065 ° max.  
 Hysteresis..... 0.04 ° max.  
 Total Error..... ±0.15 ° max.  
 Sensitivity Error..... ±3 % max.  
 Channel to Channel Error..... 0.02 ° max.  
 Signal Noise..... 0.015 ° max.

\* Application Specific

For improved or different specifications, contact Bourns engineering.

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Specifications are subject to change without notice.  
 Customers should verify actual device performance in their specific applications.