BRIEF INFORMATION

Wheel Speed Sensor

- Detects the wheel speed to stabilize the vehicle in critical driving situations
- Uses advanced Hall-effect for precise, contactless wheel speed detection
- Operates reliably in extreme temperatures, moisture and vibration
- Supports LIN and CAN communication for seamless ECU integration
- Enhances braking safety by preventing wheel lock-up and improving stability

PRODUCT FEATURES

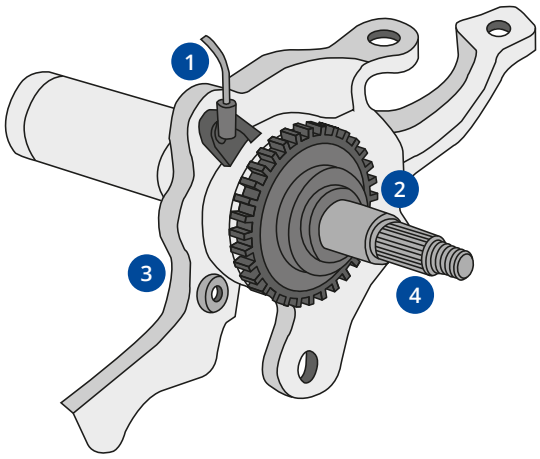
Application
The Wheel Speed Sensor is a key component of the Anti-lock Braking System (ABS) that enables controllable braking even on slippery surfaces. In addition, they enable traction control systems (TCS), which regulate the drive force as soon as a wheel spins during acceleration. The Electronic Stability Control (ESC/ESP) also uses wheel speed data to detect rear swerving or understeer at an early stage, for example when cornering, and to brake individual wheels in a targeted manner. These systems make the vehicle much safer and more stable to control overall. In addition to electric cars and hybrid vehicles, these sensors are now also increasingly used in trucks, buses and motorcycles.

Design and function
The sensor is usually mounted directly above the pulse wheel, which is connected to the wheel hub or drive shaft, and it measures the rotation speed of the wheel.

It continuously monitors the rotational speed of each wheel and sends this data to the ABS, TCS or ESP control unit. By analyzing these electrical signals, the system can adjust brake pressure to prevent wheel lock-up during braking, ensuring better control and safety. Modern ABS sensors typically use active sensors with Hall-effect or magnetic technology for accurate, contactless measurement.

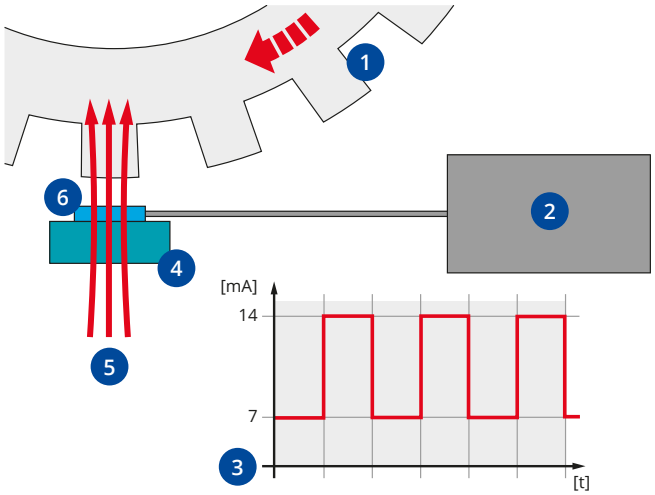
They are compact, durable, and designed to operate reliably under harsh automotive conditions such as high temperature, moisture, vibration and chemical exposure. It plays a vital role in improving vehicle safety, braking performance and stability.

FUNCTIONAL DIAGRAM



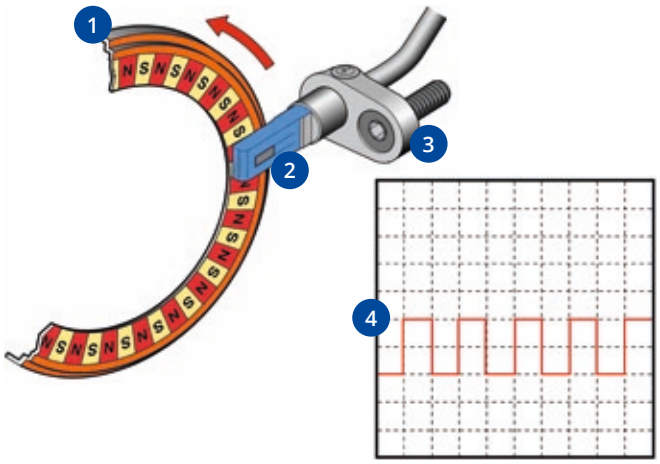
1. ABS Wheel Speed Sensor
2. Mounting Bracket
3. Tone Wheel
4. Axle

SCHEMATIC PRESENTATION MAGNETIC TECHNOLOGY



1. Increment wheel
2. ECU
3. Digital Signal
4. Permanent Magnet
5. Magnetic Field Line
6. Sensor Element

SCHEMATIC PRESENTATION HALL TECHNOLOGY



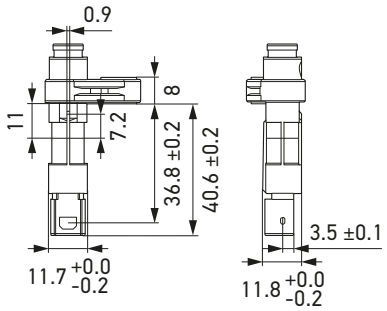
Hall sensors allow larger air gaps to respond to the smallest changes in the magnetic field.

1. Transmitter ring (Magnets with alternating pole directions)
2. Sensor
3. Sensor housing
4. Digital Signal

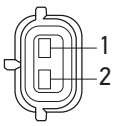
TECHNICAL DETAILS

Technical data	
Operating voltage range	4.5–24 V
Rated voltage	12 V
Polarity reversal voltage	12 V, 60 seconds
Supply voltage	12 V
Maximum Power consumption	< 20 mA
Operating temperature	-40 °C to +150 °C
Storage temperature	-40 °C to +150 °C
Output signal	High/low level, frequency, duty cycle
Communication interface	LIN 2.0/CAN
Protection class	IP 6K9K

Dimensional sketch



Pin assignment/electrical connection



Pin 1: VCC
Pin 2:GND

PROGRAM OVERVIEW

Product picture	Description	Part number
	Wheel Speed Sensor	**On request**