Contactless Pedal Position Sensor Example
www.ams.com

Typical Applications: Acceleration pedal for electronic throttle control systems
- Best-in class stray field immunity
- High-performance, superior durability
- Adherence to the most stringent safety requirements (ISO26262)

We provide innovative analog solutions to the most challenging applications in sensor and sensor interfaces, power management, and wireless.

For more information, please visit: www.ams.com/Magnetic-Position-Sensors
**General Description**

The AS5262 sensor IC solution inside the pedal module is a contactless Hall-based magnetic position sensor that delivers highly accurate angular measurements over a full turn of 360°. The AS5262 (with analog voltage output) offers best-in-class automotive safety features, enabling vehicle manufacturers to qualify for ISO26262 safety compliance. The solution is highly integrated and can be used with a low-cost ferrite magnet.

Also, the AS5262 is tolerant of magnet misalignment and variances in the air gap from one unit to another. As with all of ams' position sensors, the AS5262 comes with proprietary differential-input technology that ensures immunity to magnetic stray fields and makes expensive external shielding unnecessary. Overall, AS5262 sensor solution is ideal for vehicle manufacturers seeking to lower their bill-of-materials and assembly costs.

### Typical Specifications

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linearity (absolute)</td>
<td>1%</td>
</tr>
<tr>
<td>On-axis Rotation Range</td>
<td>programmable</td>
</tr>
<tr>
<td>Typical Supply Voltage</td>
<td>5 VDC</td>
</tr>
<tr>
<td>Failure diagnostics</td>
<td>Broken Wire (GND and VDD)</td>
</tr>
<tr>
<td></td>
<td>Overvoltage Protection</td>
</tr>
<tr>
<td></td>
<td>Short circuit Protection</td>
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</table>

<table>
<thead>
<tr>
<th>Environment</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Automotive qualification</td>
<td>AEC-Q100 grade 0</td>
</tr>
<tr>
<td>Operating temperature range</td>
<td>-40° to 150°C (sensor IC)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sensor Details</th>
<th></th>
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<tbody>
<tr>
<td>Name</td>
<td>AS5262 (ams AG)</td>
</tr>
<tr>
<td>Type</td>
<td>On-axis redundant magnetic position sensor based on Hall-effect technology</td>
</tr>
</tbody>
</table>

### Features/Benefits

- Fully redundant, dual output Hall-effect sensor
- Programmable output signals
- Digital or analog output signals available
- Contactless position sensing
- Failure diagnostics
- Absolute magnetic strayfield immunity

### Recommended Magnet

**Specification:** Diametric magnetization direction, surface magnetization

### Circuitry

![Circuit Diagram](image)

### Two examples for electrical output programming

**Graph 1:**
- **Legend:**
  - Pedal Idle
  - Clamping High
  - Clamping Low
- **Graph:**
  - Pedal angle vs. sensor output voltage (% VDD)

**Graph 2:**
- **Legend:**
  - Pedal Idle
  - Clamping High, T1
  - Clamping Low, T1
  - Clamping High, T2
  - Clamping Low, T2
- **Graph:**
  - Pedal angle vs. sensor output voltage (% VDD)