Powertrain sensors

Speed sensor for turbocharger RS-T1

**PRODUCT BENEFITS**

- Expands application boundaries for the turbocharger’s compressor map
- Improved power output, even in high-altitude operation
- Optimal control of multistage or multiflow turbocharging layouts
- Prevents exhaust-gas turbocharger overspeed (component protection)
- Detection of leakage and air filter load

1. Sensor housing with integrated electronics
2. Mounting flange
3. O-ring
4. Sensor head
5. Electrical interface (connector)
**TECHNICAL CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed range</td>
<td>up to 400,000 rpm</td>
</tr>
<tr>
<td>Mounting angle</td>
<td>$45^\circ \pm 10^\circ$</td>
</tr>
<tr>
<td>Operating voltage</td>
<td>5 V</td>
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</tbody>
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**TASK**

The RS-T1 speed sensor detects the rotational speed of exhaust-gas turbochargers. By doing so, it provides a key input parameter for the efficient management of the turbocharging system.

**FUNCTION**

The RS-T1 speed sensor is an inductive measurement sensor with integrated electronics. It measures compressor wheel speed without the need for a through bore (blind hole) in the turbocharger’s compressor housing. This avoids leakages and air turbulence while allowing the housing to be compact in size. A specifically developed ASIC amplifies the analog signal within the sensor and converts it into a frequency signal suitable for control units. A protection circuit integrated within the sensor enables optimum electromagnetic compatibility.

**Graphic**

1. Sensor housing with integrated electronics
2. Mounting flange
3. Sensor head
4. O-ring
5. Electrical interface (connector)

**Diagram**

- up to **5 %**
- up to **400,000 rpm**

**greater engine power output through the use of the speed sensor for turbocharger**

**the speed sensor can still reliably detect each compressor blade.**