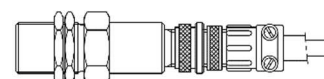


# Single Channel Hall Effect Speed Sensor

SS2210.00-HA



## Product ID

Sensor Type	Part Nr. (order code)	Drawing Nr.
SS2210.00-HA	90255	90255-01

## General

### Function

The SS2210.00-HA Hall speed sensors are suitable, in conjunction with a pole wheel, for generating a square wave signal proportional to rotary speed. They have a static behaviour, so that pulse generation is guaranteed down to a speed corresponding to a frequency of 0Hz. The sensing element is a magnetically biased Hall effect semiconductor followed by a short-circuit proof push-pull output stage. The sensor function is independent of the rotational orientation of the sensor axis.

### Technical data

Supply voltage	8...30V DC, protected against transient overvoltage and reverse polarity
Current consumption	$\leq 15\text{mA}$ (without load)
Signal output	<ul style="list-style-type: none"> <li>• Square wave</li> <li>• Push-pull output: <math>I_{\text{max}} = \pm 20\text{mA}</math> <ul style="list-style-type: none"> <li>with pull up resistor (for <math>I = I_{\text{max}}</math>): <math>U_{\text{low}} &lt; 2.5\text{V}</math>, <math>U_{\text{high}} &gt; 0.8 \cdot U_{\text{supply}}</math></li> <li>with pull down resistor (for <math>I = I_{\text{max}}</math>): <math>U_{\text{low}} &lt; 0.1\text{V}</math>, <math>U_{\text{high}} &gt; U_{\text{supply}} - 4.0\text{V}</math></li> </ul> </li> <li>• The output is short circuit proof and protected against reverse polarity</li> </ul>
Frequency range	0Hz ... 15kHz
EMC	<p>According to Directive 2004/108/EC, EN 61000-6-2 and 61000-6-4:</p> <ul style="list-style-type: none"> <li>• Electrostatic discharge into housing, cable shield and wires: up to <math>\pm 4\text{kV}</math> peak according to IEC 61000-4-2, severity level 2</li> <li>• Radiated electromagnetic field: up to <math>30\text{V/m}</math>, 50% AM, 1kHz in the range of 1MHz to 1000MHz according to IEC 61000-4-3, severity level 3</li> <li>• Fast electrical transients/bursts, coupled to sensor cable with a capacitive coupling clamp: up to <math>\pm 4\text{kV}</math> peak according to IEC 61000-4-4, severity level 4</li> </ul>
Housing	<p>Stainless steel 1.4305, front side sealed hermetically and resistant against splashing water, oil, conducting carbon- or ferrous dust and salt mist. Electronic components potted in chemical and age proof synthetic resin. Max. allowable pressure on sensor head: 10 bar. Dimensions according to drawing.</p> <p>Max. tightening torque: 75 Nm</p>
Requirement of pole wheel	<p>Toothed wheel of a magnetically permeable material (e.g. Steel 1.0036) Optimal performance with involute gear</p> <ul style="list-style-type: none"> <li>• Tooth width <math>&gt; 10\text{mm}</math></li> <li>• Side offset <math>&lt; 0.2\text{mm}</math></li> <li>• Eccentricity <math>&lt; 0.2\text{mm}</math></li> </ul>

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**OPERATING INSTRUCTIONS**

Air gap	Air gap between pole wheel (involute gear) and sensor housing: Module 1: 0.2...1.0mm Module 2: 0.2...1.5mm Module 3: 0.2...2.5mm
Insulation	Housing and channel galvanically separated, 500V/AC/1min
IP class	IP68 (sensor head), IP67 (connector)
Vibration immunity	5g in range of 5...2000Hz
Shock immunity	50g, 20ms, half sine wave
Operating temp. range	-40°C...+125°C
Connector	MS 3102A-10SL-3P (with female connector MS 3106A-10SL-3S)
Safety	All mechanical installations must be carried out by an expert. General safety requirements have to be met.
Connection	The sensors must be connected according to sensor drawing. Sensor wires are susceptible to radiated noise. Therefore, the following points have to be considered when connecting a sensor: The sensor wires must be laid as far as possible from large electrical machines. They must not run parallel in the vicinity of power cables. The maximum permissible cable length is dependent upon the sensor voltage, the cable routing, along with cable capacitance and inductance. However, it is advantageous to keep the distance between sensor and instrument as short as possible. If the signal requirements are met, the sensor cable may be lengthened via a terminal box located in an IP20 connection area in accordance with EN 60529.
Installation	The sensor has to be aligned to the pole wheel according to the sensor drawing. A deviation in positioning may affect the performance and decrease the noise immunity of the sensor. Within the air gap specified the amplitude of the output signals is not influenced by the air gap. The smallest possible pole wheel to sensor gap should be set, however, the gap should be set to prevent the face of the sensor from touching the pole wheel. The sensor should be positioned such that the center of the sensor face corresponds to the middle of a pole wheel tooth. For larger teeth a misalignment of the sensor center to the middle of a tooth is permissible, however, the center of the sensor must be at a minimum of 3 mm from either edge of the pole wheel under all operating conditions. A solid and vibration free mounting of the sensor is important. Sensor vibration relative to the pole wheel may add spurious noise to the signal. The sensors are insensitive to oil, grease etc. and can be installed in arduous conditions. Within the air gap specified the amplitude of the output signals is not influenced by the air gap.
Maintenance	Product cannot be repaired.
Transport	Product must be handled with care to prevent damage of the front face.
Storage	Product must be stored in dry conditions. The storage temperature corresponds to the operation temperature.
Disposal	Product must be disposed of properly, it must not be disposed as domestic waste.

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