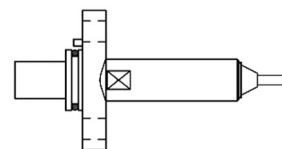


Dual Channel Hall Effect Speed Sensor

SD1820.19-H22



Product ID

Sensor Type	Part Nr. (order code)	Drawing Nr.
SD1820.19-H22	90218	90218-01

General

Function The speed sensor SD1820.19-H22 is suitable, in conjunction with a pole wheel, for generating two phase shifted square wave signals with a pulse frequency proportional to the rotary speed. It has a static behaviour, so that pulse generation is guaranteed down to a speed corresponding to a frequency of 0 Hz. The monitoring elements consist of two magnetically biased differential Hall effect semiconductors. The internal dual channel structure requires that the sensor must be oriented. The sensor has a flange for proper installation.

Technical data

Supply voltage	9 VDC to 30 VDC, protected against transient overvoltages and reverse polarity	
Current consumption	Max. 30mA (without load)	
Signal output	<ul style="list-style-type: none"> 2 phase shifted square wave signals, minimum edge shift with an involute gear wheel: minimal phase shift of 20° between output 1(S1) and output 2(S2) for module 2 gear wheel. Push-pull outputs : $I_{max} = \pm 20 \text{ mA}$ <ul style="list-style-type: none"> with pull-up resistor (for $I = I_{max}$): $U_{low} < 2.5V$, $U_{high} > 0.95 * U_{supply}$ with pull-down resistor (for $I = I_{max}$): $U_{low} < 0.1V$, $U_{high} > U_{supply} - 4.0V$ The outputs are short-circuit proof and protected against reverse polarity 	
Frequency range	0Hz ~ 20kHz	
Housing	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. Dimensions according to the drawing.	
Cable	Armoured cable: 4-wire, 0.5 mm ² (AWG 20), PEIC insulated, fire retardant, low smoke, PVC and halogen free, oil-proof, waterproof, outer-Ø max. 5.2 mm, min. bending radius = 90 mm, screened (metal net), green casing (TEFLON) Operating temperature: -40°C to +150 °C	
Requirements for pole wheel	Toothed wheel of a magnetically permeable material (e.g. Steel 1.0036) Optimal performance with involute gear <ul style="list-style-type: none"> Tooth width $\geq 10 \text{ mm}$ Side offset $< 1.0 \text{ mm}$ Eccentricity $< 0.2 \text{ mm}$ 	
Air gap between sensor housing and pole wheel	Module 2.0	0.1 ... 1.5mm

Last change by: SL, 26.10.2022	Checked by: SZ, 26.10.2022	Document status: Approved	Document Nr.: 90218-02	Document Revision: 001
www.halmert.cn		info@halmert.cn	Tel.: +86 137 7619 5334	
				Page 1 / 3

OPERATING INSTRUCTIONS

Electromagnetic compatibility (EMC)	<p>With the cable shield connected to GND:</p> <p>Electrostatic discharge according to IEC 61000-4-2</p> <ul style="list-style-type: none"> • Up to ± 15 kV air discharge • Up to ± 8 kV contact discharge <p>Radiated electromagnetic field according to IEC 61000-4-3</p> <ul style="list-style-type: none"> • Up to 30 V/m, 80% AM, 1 kHz in the range of 80 MHz ... 1000 MHz • Up to 20 V/m, 80% AM, 1 kHz in the range of 900 MHz ... 2700 MHz <p>Electrical fast transients/bursts according to IEC 61000-4-4 coupled to sensor cable with a capacitive coupling clamp</p> <ul style="list-style-type: none"> • Up to ± 2 kV peak <p>Surges according to IEC 61000-4-5</p> <ul style="list-style-type: none"> • ± 2 kV on DC power ports <p>Radio frequency injected current according to IEC 61000-4-6</p> <ul style="list-style-type: none"> • Up to 15V, 80% AM, 1 kHz, 1000 ms in the range of 0.15 MHz ... 80 MHz with 50Ω load and 560Ω pull up resistance <p>Power frequency magnetic field according to IEC 61000-4-8</p> <ul style="list-style-type: none"> • 100 A/m tested with 16 2/3 Hz, 50 Hz, 60 Hz in each axis
Insulation	Housing and electronics galvanically separated: 500V/50Hz/1min
Protection class	IP68(head) and IP67(cable outlet)
Vibration immunity	300gn (peak) 5Hz...500Hz random noise for 5 hours per axis according to EN 61373 category 3
Shock immunity	100g for 6ms according to EN 61373 category 3
Climatic resistance	Sensor function for 21 days damp heat, according to IEC 60068-2-3, test Ca and storage for 1000 hours at +125°C, according to IEC 60068-2-2, test Ba
Operating temperature	<ul style="list-style-type: none"> • Sensor head: -40°C ... +125°C • Cable: -40°C... +150°C

Additional Information

Safety	All mechanical installations must be carried out by an expert. General safety requirements have to be met.
Connection	<p>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:</p> <ul style="list-style-type: none"> • 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. • 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 in accordance with EN 60529.

OPERATING INSTRUCTIONS

Installation	<p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p>
Operation	<p>The sensor is designed for normal use in its dedicated environment. The manufacturer cannot take responsibility for any abnormal use that might lead to a reduced lifetime of the sensor.</p>
Maintenance	<p>Product cannot be repaired.</p>
Transport	<p>Product must be handled with care to prevent damage of the front face.</p>
Storage	<p>Product must be stored in dry conditions. The storage temperature corresponds to the operation temperature.</p>
Disposal	<p>Product must be disposed of properly, it must not be disposed as domestic waste.</p>



ООО Евросенсор
+7 495 260-78-07

eurosensor@eurosensor.ru
www.eurosensor.ru

Last change by: SL, 26.10.2022	Checked by: SZ, 26.10.2022	Document status: Approved	Document Nr.: 90218-02	Document Revision: 001
www.halmert.cn		info@halmert.cn	Tel.: +86 137 7619 5334	Page 3 / 3