Differential Hall Effect Speed Sensor

DSD 1820.40 AHW



Product ID

Type #	Product #
DSD 1820.40AHW	4004000406

General

Function

The sensors DSD 1820.40 AHW are suitable, in conjunction with a pole wheel, for generating square wave signals proportional to rotary speed. They have a static behavior, i.e. the pulse generation is guaranteed down to a speed corresponding to a frequency of 0 Hz. The monitoring elements consist of magnetically biased differential Hall effect semiconductors. The differential structure requires that the sensor must be oriented. The sensors have a flange for proper installation.

Technical data

Supply voltage	8~30VDC, protected against reverse polarity and transient overvoltage
Current consumption	I_{high}=14mA, I_{low}=7mA(Typical)
Signal output	Two separated square wave current outputs $S_1(I_1)$ and $S_2(I_2)$ with 40%~60% duty cycle, no phase shift requirement, frequency range 0~10kHz. • High current output: I_{1high}/I_{2high}=14(12~16) mA Low current output: I_{1low}/I_{2low}=7(5~8) mA • Static output: high or low • Pulse Time_rise≤10us, Time_fall≤10us • Load resistance: RL_min=100Ω, RL_max=(Uv-8)/16
Electromagnetic compatibility (EMC):	Electrostatic discharge according to EN 50121-3-2/EN 61000-4-2 • Up to ± 8 kV air discharge • Up to ± 6 kV contact discharge Radiated susceptibility according to EN 50121-3-2/EN 61000-4-3 • Up to 20V/m, 80% AM, 1kHZ in the range of 80MHz ~ 1000MHz Electrical fast transients according to EN 50121-3-2/EN 61000-4-4 • supply line, CDN, ±2kV/5/50ns/5kHz • signal and control lines, capacitive linking clamp, ±2kV/5/50ns/5kHz Surge according to EN 50121-3-2/EN 61000-4-5 • ±2 kV on power ports Conducted susceptibility according to EN 50121-3-2/EN 61000-4-6 • 10Vrms, 80% AM, 1kHz in the range of 150kHz ~ 80MHz Conductedemission according to EN 50121-3-2/EN 55011 • 150kHz~ 500kHz, limit: 99dBuV • 500kHz~ 30MHz, limit: 93dBuV Radiated emission test according to EN 50121-3-2/EN 55011 • 30-230MHz: 40dBuV/m • 230M-1GHz: 47dBuV/m
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 drawing
Cable	Sensor itself has no cable, uses connector only. The cable for the counter connector has to be a shielded cable, connect the shield to GND of sensor power supply.

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Connector	ODU MINI-SNAP series F G42F3C-P06LJG0-0000, pin5 connect to housing
Pole wheel	Toothed wheel of a magnetically permeable material (e.g. Steel 1.0036) • Tooth width>10 mm • Side offset < 0.2 mm • Eccentricity< 0.2mm Sensor is optimized to operate with an involute gear of module 2
Air gap between sensor and pole wheel	Air gap between pole wheel (involute gear, module 1~3) and sensor housing: M=1: 0.2 ~1 mm M≥2: 0.2 ~1.5 mm
Insulation	Housing and electronics galvanically separated 500VDC, >100MΩ
Protection class	IP68
Vibration immunity	EN 61373 Class 3
Shock immunity	EN 61373 Class 3
Operating Temperature	-40~ +125°C

Further information

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. The sensor cable may be lengthened via a terminal box located in anIP20 connection area in accordance with EN 60529.
Installation	The sensor has to be aligned to the pole wheel according to the sensor drawing. Deviations in positioning may affect the performance and decrease the noise immunity of the sensor. During installation, the smallest possible pole wheel to sensor gap should be set. The gap should however be set to prevent the face of the sensor ever touching the pole wheel.A sensor should be mounted with the middle of the face side over the middle of the pole wheel. Dependent upon the wheel width, a certain degree of axial movement is permissible. However, the middle of the sensor must be at minimum in a distance of 3mm from the edge of the pole wheel under all operating conditions.A solid and vibration free mounting of the sensor is important. Eventual sensor vibration relative to the pole wheel can induce additional output pulses.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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