Single Channel Hall Effect Speed Sensor

DSF 1810.07 PxHV

Product ID

Type #	Product #	Drawing #
DSF 1810.07 PHV	374Z-05540	114494
DSF 1810.07 P2HV	3742613785	114494

General

Function

The speed sensors DSF are suitable, in conjunction with a pole wheel, for generating square wave signals proportional to rotary speeds. They have a static behaviour, so that the pulse generation is guaranteed down to a speed corresponding to a frequency of 0Hz.
The sensor features a time out function over 50ms to avoid erroneous pulses induced by torsion of the camshaft. This characteristic leads to the sensor specific frequency range of 0Hz to 16Hz.
The sensor function is independent of the rotational orientation of the sensor axis.

Certification

The DSF sensors are certified by Germanischer Lloyd (GL):

Certificate **n° 17332-00HH**

Technical data

Supply voltage	8....35 VDC, maximum allowed ripple voltage 25 mVpp **The sensor is protected against reverse polarity of the supply voltage**
Current consumption	max. 25mA (without load)
Signal output	• Square wave signal on a push-pull output stage, DC coupled to the power supply • Reference potential is the negative input of the power supply • Maximum load current I_{max} = 40 mA, sink/source • Pulse width = 250 µs, independent of the frequency measured • Output voltage $U_{high} > U_{supply}$-4.0V at I_{max} • Output voltage $U_{low} < 2.0V$ at I_{max} **The sensor is protected against short cirquit.**
Frequency range	0 Hz...16 Hz

Electromagnetic compatibility (EMC):	Complies with 2004/108 EC Immunity with the cable shield connected to 0V: • Electrostatic discharge to the sensor housing, cable shield and cable: up to ±4kV according to IEC/EN 61000-4-2 • Radiated electromagnetic field: up to 30V/m, 80% AM, 1kHz in the range of 1MHz to 1000MHz according to IEC/EN61000-4-3 • Fast transients (HF-Burst), capacitively coupled to the sensor cable: up to ±4kV according to IEC/EN 61000-4-4
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. Maximum fastening torque: **50 Nm** with M18x1

Cable

Type #	**Cable [Jaquet part #]**	**Cable length [mm]**
DSF 1810.07 PHV	824L-36499	1800
DSF 1810.07 P2HV	824L-36499	2100

Jaquet cable type	**Properties**
824L-36499	PTFE cable, 3-wire, 0.75 mm² (~AWG 18), outer-Ø max. 5.5 mm, bending radius min. 90 mm, screened (metal net), green Operating temperature: -90°C to +260°C

Connector

Type #	**Connector [Jaquet part no.]**
DSF 1810.07 PHV	820E-37112
DSF 1810.07 P2HV	820E-37112

Jaquet connector type	**Manufacturer code**
820E-37112	ITT-Cannon CA08COM-E14S-2P-B-44-F0-CS201

Requirements for pole wheel	Toothed wheel of a magnetically permeable material (e.g. Steel 1.0036) Optimal performance with • Involute gear module ≥ 1 • Tooth width > 6mm • Side offset < 0.2mm • Eccentricity < 0.2mm • Airgap Modul 1: 0,1...1,5 mm Modul 2: 0,1...2,0 mm ≥ Modul 4: 0,1...2.0 mm
Isolation	Housing, cable shield and electronics are galvanically separated (500V / 50Hz / 1 min)

Protection class	IP68 (head) and IP67 (connector, cable outlet)
Vibration immunity	5g in the range of 5Hz ... 2000Hz
Operating temperature	• Sensor head: -40°C ... +125°C • Cable: according to cable specifications (see above) • Connector: according to connector specification

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 the 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 positioned as far as possible from large electrical machines. • The applied cable has to be a shielded three-conductor cable. Its shield has to be connected to the designated terminal • They must not run close to power cables. • The sensor cable should be placed as far as possible from large electrical machinery • It is advantageous to keep the distance between sensor and instrument as short as possible. • If the signal and standards requirements are met, the sensor cable may be lengthened via a terminal box located in an IP20 connection area in accordance with EN 60529. As an extension cable we are recommending the JAQUET cable Art. No. 824L-31081
Installation	The sensor has to be aligned to the center of 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 in a way to prevent the front 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 or additional pulses. The sensors are insensitive to oil, grease etc. and can be installed in arduous conditions. The airgap does not influence the calibration of the entire installation.
Operation	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.
Maintenance	The product cannot be repaired.
Transport	The 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.