

Single Channel Hall Effect Speed Sensor DSS Series



Product ID

Type #	Product #	Drawing #
378Z-05380	DSS 1210.00 STV (5m)	113.807
374Z-04996	DSS 1210.02 PHV	3-112.705
374Z-05052	DSS 1210.02 SHV (2m)	3-112.865
378Z-05864	DSS 1210.12 AHV	115.675
378Z-05910	DSS 1210.13 PHV	115.903
3742606920	DSS 1210.14 AHV	117504
3742609304	DSS 1210.16 SHV	121449
3742612758	DSS 1210.17 AHV	126095
3742612759	DSS 1210.18 AHV	126095
378Z-05107	DSS 1410.06 PHV	3-112.987
374Z-05178	DSS 1610.05 AHV	4-113.171
374Z-05161	DSS 1610.05 SHV (5m)	4-113.111
374Z-05224	DSS 1610.06 AHV	3-113.171
374Z-05179	DSS 1610.07 AHV	4-113.171
374Z-05180	DSS 1610.08 AHV	4-113.171
374Z-05625	DSS 1610.09 AHV	114.614
3742607432	DSS 1610.10 AHV	114.614
374Z-05310	DSS 1810.09 PTV	4-113.532
374Z-05082	DSS 2210.01 SHV (5m)	4-110.777F2
374Z-05083	DSS 2210.01 SHV (L=..m)	4-110.777F2
3742607119	DSS AB10.00 AHV	118284
374Z-05661	DSS AB10.00 PHV	114709
374Z-05037	DSS EH10.01 PHV	3-112.803
374Z-05051	DSS EH10.01 S1HV (2m)	4-112.773

General

Function	The speed sensors DSS are suitable, in conjunction with a pole wheel, for generating square wave signals proportional to rotary speeds. They have a static behaviour, so that pulse generation is guaranteed down to a speed corresponding to a frequency of 0 Hz. The sensing element is a magnetically biased Hall device followed by a short-circuit proof push-pull output stage. The sensor function is independent of the rotational orientation of the sensor axis.
Certification	These sensors are approved by Germanischer Lloyd (GL) Certificate n° 45 500 – 07 HH

Technical data

Supply voltage	8 V to 30 V, protected against reverse polarity
Current consumption	Max. 15 mA (without load)
Signal output	Square wave signals from push-pull stage, DC-coupled to the supply (negative pole = reference voltage) Push-pull outputs : $I_{max} = \pm 20 \text{ mA}$, $U_{low} < 2.5 \text{ V}$, $U_{high} > U_{supply} - 3.5 \text{ V}$ The outputs are short circuit proof and protected against reverse polarity.
Frequency range	0 Hz ... 15 kHz

Electromagnetic compatibility (EMC):	According to 2004/108/EC, IEC 61000-6-2, IEC 61000-6-4: Electrostatic discharge into housing, cable shield and wires: up to ± 4 kV peak according to IEC 61000-4-2, severity level 2 Radiated electromagnetic field according to IEC 61000-4-3 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 Radiated electromagnetic field: up to 30 V/m, 80% AM, 1 kHz in the range of 1 MHz to 1000 MHz according to IEC 61000-4-3, severity level 3 Fast electrical transients/bursts, coupled to sensor cable with a capacitive coupling clamp: up to ± 4 kV peak according to IEC 61000-4-4, severity level 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. Max. allowable pressure on sensor head: 10 bar Dimensions according to drawing.
Pole wheel	Toothed wheel of a magnetically permeable material (e.g. Steel 1.0036) Minimum tooth width 6 mm Side offset < 0.2 mm Eccentricity < 0.2mm
Air gap sensor / pole wheel	Air gap between pole wheel (involute gear) and sensor housing: Module 1: 0.2...0.6 mm Module 2: 0.2...1.5 mm
Insulation	Housing and electronics galvanically separated (500 V/50 Hz/ 1 min)
Vibration immunity	5 g in the range 5...2000 Hz
Shock immunity	50 g during 20 ms, half-sine wave
Temperature	Operating temperature of sensor head: -40°C ... +125°C For sensors with cables the temperature range may be limited, see tables below.

Connection type

Sensor type	Connection type	Jaquet part number
DSS 1210.00 STV (5m)	Cable	824L-37338
DSS 1210.02 PHV	Cable with integrated connector	824L-33024 (cable) 820P-36527 (connector)
DSS 1210.02 SHV (2m)	Cable	824L-33024
DSS 1210.12 AHV	Connector	820A-36702
DSS 1210.13 PHV	Cable with integrated connector	824L-33024 (cable) 820P-36546 (connector)
DSS 1210.14 AHV	Connector	820A-36702
DSS 1210.16 SHV	Cable	824L-35053
DSS 1210.17 AHV	Connector	820A-36584
DSS 1210.18 AHV	Connector	820A-36584
DSS 1410.06 PHV	Cable with integrated connector	824L-36222 (cable) 820P-36964 (connector)
DSS 1610.05 AHV	Connector	820E-31142
DSS 1610.05 SHV (5m)	Cable	824L-35053 (cable)
DSS 1610.06 AHV	Connector	820E-31142
DSS 1610.07 AHV	Connector	820E-31142
DSS 1610.08 AHV	Connector	820E-31142
DSS 1610.09 AHV	Connector	820E-31142
DSS 1610.10 AHV	Connector	820E-31142
DSS 1810.09 PTV	Cable with integrated connector	824L-35053 (cable) 820A-36859 (connector)
DSS 2210.01 SHV (5m)	Cable	824L-35053
DSS 2210.01 SHV (L=..m)	Cable	824L-35053
DSS AB10.00 AHV	Connector	
DSS AB10.00 PHV	Cable with integrated connector	824L-36622 (cable) 820E-37696 (connector)
DSS EH10.01 PHV	Cable with integrated connector	824L-33024 (cable) 820P-36527 (connector)
DSS EH10.01 S1HV (2m)	Cable	824L-35053
DSS EH10.01 SHV (5m)	Cable	824L-35053
DSS EH10.02 SHV	Cable	824L-33024

Cables

Jaquet cable type	Properties
824L-33024	PTFE Teflon cable, 3-wire, 0.6 mm ² (AWG 20), outer-Ø max. 4.7 mm, bending radius min. 70 mm, strand shielded screen (metal net), white Operating temperature: -90°C to +260°C
824L-35053	FEP Teflon cable, 4-wire (brown wire is not connected), 0.2 mm ² (AWG 24), outer-Ø max. 4.2 mm, bending radius min. 60 mm, strand shielded screen (metal net), white Operating temperature: -100°C to +150 °C
824L-36222	FEP Teflon cable, 4-wire (white wire is not connected), 0.6 mm ² (AWG 20), outer-Ø max. 4.7 mm, bending radius min. 24 mm, strand shielded screen (metal net), white Operating temperature: -60°C to +150 °C
824L-36622	Silicone cable, 6-wire, 0.6mm ² (AWG 20), outer-Ø max. 13.0 mm, bending radius min. 65 mm, strand shielded screen (metal net), black Operating temperature: -40°C to +150 °C
824L-37166	PUR cable, 3-wire, 0.6 mm ² (AWG 20), outer-Ø max. 6.2 mm, bending radius min. 75 mm, strand shielded screen (metal net), black Operating temperature: -40°C to +85 °C
824L-37338	PUR cable, 4-wire, 0.34 mm ² (AWG 22), outer-Ø max. 5.1 mm, bending radius min. 50 mm, green Operating temperature: -40°C to +85°C

Connectors

Jaquet connector code	Manufacturer code
820A-36702	Escha EWAS3P, 3 pole connector, M12x1, material PA66-GF25, male plug, gold plated pins Operating temperature: -55°C to +125°C Plug-and-socket connection: IP67
820A-36859	Escha WASS4 Operating temperature: -30°C to +90°C Plug-and-socket connection: IP67
820E-31141	MS3106A-10SL-3P Operating temperature: -55°C to +125°C Plug-and-socket connection: IP67
820E-31142	MS3102A-10SL-3P/H 097 Operating temperature: -55°C to +125°C Plug-and-socket connection: IP67
820E-37696	ITT Cannon KPT06A12-3P Operating temperature: -55°C to +125°C Plug-and-socket connection: IP67
820P-36527	AMP 282105-1 Operating temperature: -40°C to +125°C Plug-and-socket connection: IP67
820P-36546	AMP 282087-1 (Superseal 1.5 Series) Female connector, 3 pins, black Operating temperature: -40°C to +125°C Plug-and-socket connection: IP67
820P-36964	Deutsch DT 04-3P Operating temperature: -40°C to +125°C Plug-and-socket connection: IP67
820A-36584	Escha EWAS4, 4 pole connector, M12x1, material PA66-G25, male plug, gold plated pins Operating temperature: -55°C to +125°C Plug-and-socket connection: IP67

Degree of protection	Sensor head: IP69 If applicable: Cable outlet: IP67 Connector (plug-and-socket connection): IP67
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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 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. 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 3 mm 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.