Hall Effect Single Channel Speed Sensor DSL xx10.0x xxV

Product ID

Type #	Product #	Drawing #
DSL 1010.00 SHV	378Z-05366	4-113.729A Rev.000
DSL 1010.01 SHV	378Z-05367	4-113.731A Rev.000
DSL 1010.02 SHV	378Z-05371	4-113.741A Rev.000
DSL 1010.03 KHV	378Z-05497	4-114236 Rev. 001
DSL 1210.02 A1HV / EEG 56A	3782608661	120605 Rev.000
DSL 1210.03 SHV	385Z-05721	115044 Rev.000
DSL 1810.01 SHV	378Z-05517	114330 Rev.003
DSL EH10.00 AHV	378Z-05806	115446 Rev.004
DSL EH10.00 A1HV	378Z-05919	115940 Rev.000
DSL EH10.00 A2HV	3742608112	120356 Rev.000
DSL EH10.01 AHV	3742606646	117358 Rev.000
DSL EH10.02 AHV	3742607887	119351 Rev.001

General

Function

The speed sensors DSL 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 effect semiconductor. The sensor function is independent of the rotational orientation of the sensor axis.
The sensor types differ in housing size, connection options (connector, cable type, pin assignment) and electronics.

Technical data

Electronics

Type #	Electronics
DSL 1010.00 SHV	A
DSL 1010.01 SHV	B
DSL 1010.02 SHV	B
DSL 1010.03 KHV	A
DSL 1210.02 A1HV	D
DSL 1210.03 SHV	A
DSL 1810.01 SHV	B
DSL EH10.00 AHV	B
DSL EH10.00 A1HV	B
DSL EH10.00 A2HV	B
DSL EH10.01 AHV	B
DSL EH10.02 AHV	C

Supply voltage	8...25 VDC
Current consumption	Max. 12 mA (without load)

Signal output	Electronics A:
	Square wave signal from NPN output transistor with internal 2.7 kΩ pull-up resistor, DC-coupled to supply (negative pole = reference voltage).
	• Sink current: max. 25 mA
	• Output voltage:
	  • U_{high} ≈ supply voltage
	  • U_{low} < 1.0 V at I = 25 mA
	
	Electronics B:
	Square wave signal from NPN output transistor with internal 2.7 kΩ pull-up resistor, DC-coupled to supply (negative pole = reference voltage).
	• Sink current: max. 25 mA
	• Output voltage:
	  • U_{high} ≈ supply voltage
	  • U_{low} < 1.0 V at I = 25 mA
	• Protected against reverse polarity and overvoltage
	
	Electronics C:
	Square wave signal from NPN output transistor with internal 2.7 kΩ pull-up resistor and internal 1.0 kΩ pull-down resistor, DC-coupled to supply (negative pole = reference voltage).
	• Sink current: max. 25 mA
	• Output voltage:
	  • Pull-up (560Ω): U_{high} ≈ 7.8 V, U_{low} ≈ 0.25 V at U_{in} = 12V, I = 19 mA
	  • Pull-down (560Ω): U_{high} ≈ 1.0 V, U_{low} ≈ 0 V at U_{in} = 12V, I = 5.5 mA
	• Protected against reverse polarity and overvoltage
	
	Electronics D:
	Square wave signal from PNP output transistor with internal series diode and series resistor of 330Ω, DC-coupled to supply (negative pole = reference voltage).
	• Source current: max. 25 mA
	• Output voltage:
	  • U_{high} > (supply voltage) -2.8V-I*330Ω
	  • U_{low} ≈ 0V (supply voltage reference) Protected against reverse polarity and overvoltage
	• Protected against reverse polarity and overvoltage

Frequency range	0 Hz ... 15 kHz
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.
Requirements for pole wheel	Toothed wheel of a magnetically permeable material (e.g. Steel 1.0036) Optimal performance with • Involute gear • Tooth width > 10 mm • Side offset < 0.2 mm • Eccentricity < 0.2 mm
Air gap between sensor and pole wheel	• Module 1.0 (DP 25.4): 0.3…0.5 mm • Module 2.0 (DP 12.7): 0.3…1.5 mm

Cable versions

Type #	Cable [Jaquet part no.]	Cable length [mm]
DSL 1010.00 SHV	824L-35053	1000
DSL 1010.01 SHV	824L-35053	1000
DSL 1010.02 SHV	824L-35053	1000
DSL 1010.03 KHV	Twisted litz wires: 823T-32487 (red) 823T-32489 (yellow) 823T-37526 (black)	 100 100 100
DSL 1210.03 SHV	824L-37645	1000
DSL 1810.01 SHV	824L-33024	400

Cable type:

- 824L-33024:
  0.21 mm² PTFE isolated wires, stranded screen (metal net), PTFE sheating (green), temperature rating: -60℃ ... +250℃, min. bending radius 60 mm
- 824L-35053:
  0.24 mm² ETFE isolated wires, stranded screen (metal net), FEP sheating (white), temperature rating: -100℃ ... +150℃, min bending radius. 60 mm
- 824L-37645:
  Elastomer cable, 3-wire, 0.34 mm² (AWG 22), outer-Ø max. 4.8 mm, bending radius min. 50 mm, unscreened, green
  Operating temperature:
  Cable is not in motion: -40℃ to +180℃
  Cable is in motion: -25℃ to +180℃
- Twisted litz wires (823T-32487, 823T-32489, 823T-37526):
  0.22 mm² (AWG 24) Teflon insulated, outer diameter=1.5 mm

Connector versions

Type #	Connector
DSL EH10.00 AHV	Connector mates with MS3106A-10SL-3S, 3 pins
DSL EH10.00 A1HV	Connector mates with MS3106A-10SL-3S, 3 pins
DSL EH10.00 A2HV	Connector mates with MS3106A-10SL-3S, 3 pins
DSL EH10.01 AHV	Connector mates with MS3106A-10SL-3S, 3 pins
DSL EH10.02 AHV	Connector mates with MS3106A-10SL-3S, 3 pins
DSL 1210.02 A1HV	Connector mates with straight plug M12x1, 4 pins

Insulation	Housing and electronics galvanically separated (500 V/50 Hz/ 1 min)
Vibration immunity	30 g in the range 5...2000 Hz.
Shock immunity	50 g during 20 ms, half-sine wave
Temperature	Operating temperature of entire sensor: -40°... +125℃

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. • They must not run 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 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.
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	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.