Differential Hall Effect Speed Sensor
DSD xx10.01 .02 AxV

Product ID

Type #	Product #	Drawing #
DSD 1210.01 ATV	374Z-04059	4-110829d-1
DSD 1210.01 AHV	374Z-04163	4-110829d-1
DSD 1410.01 ATV	374Z-04164	4-111499d-1
DSD 1410.01 AHV	374Z-04165	4-111499d-1
DSD 1610.01 ATV	374Z-04166	4-111500d-1
DSD 1610.01 AHV	374Z-04167	4-111500d-1
DSD 1810.01 ATV	374Z-04168	4-110830d-1
DSD 1810.01 AHV	374Z-04169	4-110830d-1
DSD 2210.01 ATV	374Z-04170	4-110831d-1 Rev.1
DSD 2210.01 A1TV	3742607347	4-110831d-1 Rev.1
DSD 2210.01 AHV	374Z-04171	4-110831d-1 Rev.1
DSD EH10.02 AHV	374Z-05627	114609 Rev.01

General

Function

The sensors DSD xx10.01 .02 AxV sensors 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 monitoring elements consist of an magnetically biased differential hall effect semiconductor. The differential structure requires that the sensor must be oriented.

Technical data

Supply voltage	8 VDC to 30 VDC, protected against transient overvoltages
Current consumption	Max. 18 mA (without load)

Signal output	• Square wave signal
	• Push-pull outputs : I_{max} = ± 20 mA
	  ○ with pull-up resistor (for I= I_{max}): U_{low} < 2.5 V, U_{high} > 0.95 * U_{supply}
	  ○ with pull-down resistor (for I= I_{max}): U_{low} < 0.1 V, U_{high} > U_{supply}-4.0 V
	• The outputs are short circuit proof and protected against reverse polarity.

Frequency range	0 Hz ... 20 kHz
Electromagnetic compatibility (EMC):	With cable shield connected to the supply negative pole. Noise generator between housing and electronics • 1.5 kV/1.5 µs/max.5Hz (Source resistance 500 Ohm) • 2.0 kV/HF-Bursts (Level 4 in accordance with IEC 801-4) • 2.5 kV/1 MHz damped resonance (Class III in accordance with IEC 255-4)
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.
Mounting torque (max.)	**12 Nm** for M12x1 **25 Nm** for M14x1 **35 Nm** for M16x1 **50 Nm** for M18x1 **75 Nm** for M22x1

Connector

Sensor type	Jaquet part number of connector
DSD 1210.01 ATV	820A-35922
DSD 1210.01 AHV	820A-35922
DSD 1410.01 ATV	820A-35731
DSD 1410.01 AHV	820A-35731
DSD 1610.01 ATV	820A-35731
DSD 1610.01 AHV	820A-35731
DSD 1810.01 ATV	820A-35731
DSD 1810.01 AHV	820A-35731
DSD 2210.01 ATV	820A-35731
DSD 2210.01 A1TV	820A-35731
DSD 2210.01 AHV	820A-35731
DSD EH10.02 AHV	820A-36584

Jaquet connector code	Connector
820A-35731	Lemo ERA-2S-304 CLL Operating temperature: -55°C to +250°C Plug-and-socket connection: IP50
820A-35922	Lemo ERA-0S-304 CLL Operating temperature: -55°C to +250°C Plug-and-socket connection: IP50
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

Accessories	According dimensional 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	Air gap between pole wheel (involute gear) and sensor housing: • Module 1: 0.1...0.5 mm • Module 2: 0.1...1.3 mm • ≥ Module 4: 0.1...1.5 mm
Insulation	Housing and electronics galvanically separated (500 V/50 Hz/ 1 min)
Protection class	IP68 (head) and connector according to list
Vibration immunity	5 g in the range of 5 ... 2000 Hz
Shock immunity	50 g for 20 ms, half sine wave
Temperature	Operating temperature of entire sensor: • Version T: -40° ... +85°C • Version H: -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 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.