Differential Hall Effect Speed Sensor DSD 1205.2x ATV



Product ID

Type #	Product #	Drawing #
DSD 1205.20 ATV	378Z-04792	4-112260b
DSD 1205.21 ATV	378Z-04760	4-112172b

General

Function

The speed sensors DSD 1205.2x ATV are suitable, in conjunction with a pole wheel, for generating square wave signals proportional to rotary speeds. They have a dynamic behaviour, so that the pulse generation is guaranteed down to a speed corresponding to a frequency of 5 Hz. The sensing element is a magnetically biased differential Hall effect semiconductor. The sensors have a flange for proper installation.

Technical data

Supply voltage	8 VDC to 35 VDC, protected against transient overvoltages
Current consumption	Max. 14 mA (without load)
Signal output	• Push-pull outputs : I_{max} = ± 30 mA o Output voltage Hi: > U_{supply} – 3.3 V (for I= 25mA) > U_{supply} – 2.5 V (for I= 10mA) o Output voltage Lo: < 2.2 V (for I= 20mA) < 1.4 V (for I= 10mA) • The outputs are short circuit proof and protected against reverse polarity.
Frequency range	5 Hz ... 25 kHz
Electromagnetic compatibility (EMC):	According to 2004/108EC, EN61000-6-2, EN61000-6-4 Electrostatic discharge according to IEC 61000-4-2 • Up to ± 4 kV air discharge • Up to ± 4 kV contact discharge Radiated electromagnetic field according to IEC 61000-4-3 • Up to 30 V/m, 50% AM, 1 kHz in the range of 1 MHz ... 1000 MHz Electrical fast transients/bursts according to IEC 61000-4-4 coupled to sensor cable with a capacitive coupling clamp • Up to ± 4 kV peak
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.
Connector	

Type #	Connector [Jaquet part no.]
DSD 1205.20 ATV	820A-36702
DSD 1205.21 ATV	820A-36702

Jaquet connector type	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

Requirements for pole wheel	Toothed wheel of a magnetically permeable material (e.g. Steel 1.0036) Optimal performance with • Involute gear • Tooth width > 6 mm • Side offset < 0.2 mm • Eccentricity < 0.2 mm • Sensor is optimized to operate with an involute gear of module 1. • DSD 1205.21 ATV: 4 or 12 tooth pole wheel according to customer specification SW4S SW4S-5-2825 or SW4S-5-2701
Air gap between sensor and pole wheel	Air gap between pole wheel (involute gear, module 1) and sensor housing: 0.7 ...**1.0** … 1.3 mm
Insulation	Housing and electronics galvanically separated (500 V/50 Hz/ 1 min)
Protection class	IP68 (head) and IP67 (connector, cable outlet)
Vibration immunity	5 g in the range of 5 ... 2000 Hz
Shock immunity	50 g for 20 ms, half sine wave
Operating temperature	• Sensor head: -40° ... +85°C • Connector: according to connector specification
Sensor weight	35 g

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 shielded • 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.