Hall Effect Single Channel Speed Sensor DSD 10xx.00 xTV and FTG 108x.xx

Product ID

Type #	Product #	Drawing #
DSD 1005.00 KTV (old type: FTG 1088.00)	343Z-03828	4-106.026B
DSD 1005.00 PTV (old type: FTG 1088.01)	343Z-03835	4-106.026B
DSD 1010.00 KTV (old type: FTG 1089.00)	343Z-03831	4-106.026B
DSD 1010.00 PTV (old type: FTG 1089.01)	343Z-03990	4-106.026B
FTG 1088.00 S4 (5m)	343Z-03838	4-109.287B
FTG 1089.00 S4 (3m)	343Z-03836	4-109.287B
FTG 1089.00 S4 (5m)	343Z-03830	4-109.287B

General

Function

The sensors DSD 1005.00 xTV (FTG 1088.xx) and DSD 1010.00 xTV (FTG 1089.xx) are suitable, in conjunction with a pole wheel, for generating square wave signals proportional to rotary speeds. The sensing element consists of a magnetically biased differential hall effect semiconductor in a bridge-circuit, followed by a Schmitt-trigger. The latter has an open collector output connected to the positive pole of the power supply through a 1.8k resistor.
The DSD 1005.00 xTV (FTG 1088.xx) have a dynamic behaviour, so that pulse generation is guaranteed down to a speed corresponding to a frequency of 5 Hz.
The DSD 1010.00 xTV (FTG 1089.xx) have a static behaviour, so that pulse generation is guaranteed down to a speed corresponding to a frequency of 0Hz

Technical data

Supply voltage	4.5 -24 VDC
Current consumption	Max. 16 mA (without load)
Signal output	• Square wave signal • Signal levels without load $U_{High} \sim U_{power\ supply}$, $U_{Low} < 0.4$ V • Max. allowed sink current = 25mA (at a saturation voltage < 0.4V) • The output is connected through a pull-up resistor of 1.8 kOhm to the positive pole of the power supply.
Frequency range	DSD 1005.00 xTV (FTG 1088.xx): 5Hz...20 kHz DSD 1010.00 xTV (FTG 1089.xx): 0Hz...20 kHz
Electromagnetic compatibility (EMC):	According to 89/336/EWG, EN 50081-2, EN 50082-2: • 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: up to 30 V/m, 50% AM, 1 kHz in the range of 1 MHz to 1000 MHz according to IEC 61000-4-3, severity level 3 • Electrical fast 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	Argentan (German silver) CuNi10Zn42Pb DIN 2.0770, front side sealed hermetically, sensor components potted in chemical and age proof synthetic resin. Dimensions according to drawing.
Pole wheel	Toothed wheel made of a magnetically permeable material (e.g. Steel 1.0036) • Minimum tooth width 10 mm • Side offset < 0.2 mm • Eccentricity < 0.2mm • Involute gear wheel preferred (module ≥0.5)

Air gap sensor / pole wheel	Air gap between pole wheel (involute gear) and sensor housing: DSD 1005.00 xTV (FTG 1088.xx): • Module 0.5 mm: 0.1...0.4 mm • Module 1.0 mm: 0.1...1.0 mm • Module 2.0 mm (and larger): 0.1...1.3 mm DSD 1010.00 xTV (FTG 1089.xx): • Module 1 mm: 0.1...0.5 mm • Module 2 mm: 0.1...1.3 mm • Module 4 mm (and larger): 0.1...1.5 mm
Insulation	Housing and electronics galvanically separated (500 V/50 Hz/ 1 min)
Protection class	IP68 (head) and IP67 (cable or litz wire outlet)
Vibration immunity	3 g in the range 4...100 Hz
Shock immunity	20 g during 11 ms, half-sine wave
Temperature	-40°C...+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.