

Dual Channel Hall Effect Speed Sensor

DSD 1820.19 PxHW



Product ID

Type #	Product #	Drawing #
DSD 1820.19 P6HW	374Z-05181	113173
DSD 1820.19 P7HW	374Z-05187	113194-3
DSD 1820.19 P9HW	374Z-05296	113465
DSD 1820.19 P10HW	374Z-05357	113712
DSD 1820.19 P13HW	374Z-05481	113465
DSD 1820.19 P16HW	374Z-05612	114583
DSD 1820.19 P17HW	374Z-05640	114660
DSD 1820.19 P18HW	374Z-05656	114738
DSD 1820.19 P19HW	374Z-05692	113465
DSD 1820.19 P21HW	374Z-05712	114990
DSD 1820.19 P23HW	374Z-05720	115049
DSD 1820.19 P27HW	374Z-05834	115535
DSD 1820.19 P30HW	374Z-05866	115718
DSD 1820.19 P31HW	374Z-05877	115893
DSD 1820.19 P35HW	3742607140	118261
DSD 1820.19 P36HW	3742607189	118314
DSD 1820.19 P40HW	3742608095	120052
DSD 1820.19 P41HW	3742608096	120062
DSD 1820.19 P44HW	374Z-05143	113070 / 113070A
DSD 1820.19 P45HW	374Z-04817	112300 / 111695A
DSD 1820.19 P46HW	374Z-04770	112168 / 112168A
DSD 1820.19 P48HW	374Z-04852	112385
DSD 1820.19 P49HW	3742609781	122051
DSD 1820.19 P51HW	3742609809	122083
DSD 1820.19 P52HW	3742609962	115893
DSD 1820.19 P53HW	3742610104	122401
DSD 1820.19 P54HW	3742610427	122883
DSD 1820.19 P55HW	3742611092	123927
DSD 1820.19 P57HW	3742611714	124629
DSD 1820.19 P59HW	3742615073	130419

General

Function

The DSD 1820.19 PxHW speed sensors are suitable, in conjunction with a pole wheel, for generating square wave signals proportional to rotary speeds. They have a static behaviour, i.e. the pulse generation is guaranteed down to a speed corresponding to a frequency of 0 Hz. The monitoring elements consist of magnetically biased differential hall effect semiconductors. The internal two channel structure requires that the sensor must be oriented. The sensors have a flange for proper installation.

Technical data

Supply voltage	9 V to 30 V, protected against reverse polarity and transient overvoltages
Current consumption	Max. 35 mA (without load)
Signal output	• 2 phase shifted square wave signals, minimum edge shift with an involute gear wheel: minimal phase shift of 20° for gear of module 2 between output 1 (S1) and output 2 (S2) • Push-pull outputs : $I_{max} = \pm 20$ 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):	Electrostatic discharge according to IEC 61000-4-2 • Up to ± 15 kV air discharge • Up to ± 8 kV contact discharge 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 Electrical fast transients/bursts according to IEC 61000-4-4 coupled to sensor cable with a capacitive coupling clamp • Up to ± 2 kV peak Surges according to IEC 61000-4-5 • ± 2 kV on DC power ports Radio frequency injected current according to IEC 61000-4-6 • Up to 15 V, 80% AM, 1 kHz, 1000 ms in the range of 0.15 MHz ... 80 MHz with 50 Ohm load and 560 Ohm pull up resistance Power frequency magnetic field according to IEC 61000-4-8 • 100 A/m tested with 16 2/3 Hz, 50 Hz, 60 Hz in each axis
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.

Cable

Sensor	Cable [Jaquet part no.]	Cable length [mm]
DSD 1820.19 P6HW	824L-36595	581
DSD 1820.19 P7HW	824L-36595	810
DSD 1820.19 P9HW	824L-36808	540
DSD 1820.19 P10HW	824L-36808	850
DSD 1820.19 P13HW	824L-36808	655
DSD 1820.19 P16HW	824L-36808	1280
DSD 1820.19 P17HW	824L-36622	760
DSD 1820.19 P18HW	824L-36808	1000
DSD 1820.19 P19HW	824L-36808	820
DSD 1820.19 P21HW	824L-36808	1300
DSD 1820.19 P23HW	824L-36622	1524
DSD 1820.19 P27HW	824L-36808	535
DSD 1820.19 P30HW	824L-36622	950
DSD 1820.19 P31HW	824L-36622	1000
DSD 1820.19 P35HW	824L-36808	1300
DSD 1820.19 P36HW	824L-36808	1250
DSD 1820.19 P40HW	824L-36808	1372
DSD 1820.19 P41HW	824L-36622	483
DSD 1820.19 P44HW	824L-36622	1500
DSD 1820.19 P45HW	824L-36595	1400
DSD 1820.19 P46HW	824L-36595	550
DSD 1820.19 P48HW	824L-36595	1593
DSD 1820.19 P49HW	824L-36622	1950
DSD 1820.19 P51HW	824L-36622	500
DSD 1820.19 P52HW	824L-36622	1000
DSD 1820.19 P53HW	824L-36622	3000
DSD 1820.19 P54HW	824L-36622	733
DSD 1820.19 P55HW	824L-36622	2500
DSD 1820.19 P57HW	824L-36622	1000
DSD 1820.19 P59HW	824L-36622	2500

Cable type:

- 824L-36595:
Armoured cable: 4-wire, 4 x 0.5mm² (AWG20), stranded wires, PEIC insulated and shielded (metal net insulated from the housing), black casing (HFFR), fire retardant, low smoke, non PVC and halogen free, oil-proof, waterproof, max. outer Ø = 13 mm, min. bending radius = 30mm (static) and 70 mm (dynamic), weight 210 g/m, cable length according to dimensional drawing
- 824L-36622:
Armoured cable: 6-wire, 0.6 mm² (AWG 20), PEIC insulated, fire retardant, low smoke, PVC and halogen free, oil-proof, waterproof, outer-Ø max. 13.0 mm, min. bending radius = 30 mm (static) and 65 mm (dynamic), screened (metal net), black casing (silicone)
Operating temperature: -40°C to +150 °C
- 824L-36808:
Armoured cable: 8-wire, 0.6 mm² (AWG 20), PEIC insulated, fire retardant, low smoke, PVC and halogen free, oil-proof, waterproof, outer-Ø max. 13.0 mm, min. bending radius = 30 mm (static) and 65 mm (dynamic), screened (metal net), black casing (silicone)
Operating temperature: -40°C to +150 °C

Connector

Sensor	Connector
DSD 1820.19 P6HW	Gimota CVBS06G2 16S-1P L/C AW20, bayonet lock, 7-pole
DSD 1820.19 P7HW	Veam VBN8AM20-7PNZ39-VO-M20F AW20, bayonet lock, 8-pole, pin contacts
DSD 1820.19 P9HW	AB connector 3EER400003-9597 ABCIRPSE06T1819SV0Y Adaptor type : ABBP180MSAM32 bayonet lock, 10-pole, insert orientation Y, fixed at the end of the cable
DSD 1820.19 P10HW	Litton Veam FRCIR 06AG-20-7PW-F80-T39-V0 bayonet lock, 8-pole, insert orientation W, fixed at the end of the cable, male contacts
DSD 1820.19 P13HW	AB connector 3EER400003-9597 ABCIRPSE06T1819SV0Y Adaptor type : ABBP180MSAM32 bayonet lock, 10-pole, insert orientation Y, fixed at the end of the cable
DSD 1820.19 P16HW	Gimota RFCVBS08R20-7SCRL/CF7 bayonet lock, 8-pole
DSD 1820.19 P17HW	ITT Cannon FRCIR06AG-16S-8P-F80-T108-V0 pin contact 27911-13-T12
DSD 1820.19 P18HW	Gimota RFCVBFO8R20-7P WLC F4 Bayonet lock, 8-pole
DSD 1820.19 P19HW	AB connector 3EER400003-9597 ABCIRPSE06T1819SV0Y Adaptor type : ABBP180MSAM32 bayonet lock, 10-pole, insert orientation Y, fixed at the end of the cable
DSD 1820.19 P21HW	ITT Cannon (bayonet lock) FRCIR08AG20-7P-F80T108-G-12 Operating temperature: -55°C to +125°C
DSD 1820.19 P23HW	ITT Cannon FRCIR06AG-16S-8P-F80-T108-V0 pin contact: 27911-13-T12
DSD 1820.19 P27HW	ITT Cannon FRCIR06AG20-7S-F80T39-12-V0 Gr. 20, 1"3/16 – 18UNEF
DSD 1820.19 P30HW	ITT Cannon (bayonet lock) FRCIR08AG20-7S-F80T39-13-V0 Operating temperature: -55°C to +125°C
DSD 1820.19 P31HW	ITT Cannon FRCIR06AG20-7PW-F80T39-V0 (8x)with pins 27913-12T12 (8x)
DSD 1820.19 P35HW	ITT Cannon (bayonet lock) FRCIR08AG20-7P-F80T108-G-12 Operating temperature: -55°C to +125°C
DSD 1820.19 P36HW	ITT Cannon, 8 - pole bayonet lock, straight FRCIR06AG20-7S-F80T39-12-V0 Gr.20, 1"3/16 - 18UNEF
DSD 1820.19 P40HW	VEAM Connector FRCIR 06AG-16S-8P-F80-T108-V0 with contacts 27911-13-T12 (5x)
DSD 1820.19 P41HW	VEAM Connector FRCIR 06AG-16S-8P-F80-T108-V0 with contacts 27911-13-T12 (5x)
DSD 1820.19 P44HW	ABCIRHSE06T18-12PCWF80V0 6-pole
DSD 1820.19 P45HW	Litton FRCIR06RGG20-15P-F80T54-0 7-pole, circular pin connector

Connector (continued)

Sensor	Connector
DSD 1820.19 P46HW	Gimota RFCVBS08R20-7S CRL/DF7 Bayonet lock, 8-pole
DSD 1820.19 P48HW	ITT Cannon FRCIR06AG20-7PW-F80T39-V0 (8x) with pins 27913-12T12 (5x), blind plug 46808-16 (3x)
DSD 1820.19 P49HW	Litton Veam FRCIR 06AG-20-7PW-F80-T39-V0 bayonet lock, 8-pole, insert orientation W, fixed at the end of the cable, male contacts
DSD 1820.19 P51HW	Harting HAN 3HPR-gg-SV-M25/schwarz, HAN 3 Quintax-M-c, HAN 4 Quintax sti, 4-pole Operating temperature: -40°C to +125°C
DSD 1820.19 P52HW	ITT Cannon FRCIR06AG20-7PW-F80T39-V0 (8x) with pins 27913-12T12 (5x), blind plug 46808-16 (3x)
DSD 1820.19 P53HW	ITT Cannon 8 - pole bayonet lock, straight FRCIR06AG20-7S-F80T39-12-V0 Gr.20, 1"3/16 - 18UNEF
DSD 1820.19 P54HW	Harting HAN 3HPR-gg-SV-M25/schwarz, HAN 3 Quintax-M-c, HAN 4 Quintax sti, 4-pole Operating temperature: -40°C to +125°C
DSD 1820.19 P55HW	ITT Cannon 8 - pole bayonet lock, straight FRCIR06AG20-7S-F80T39-12-V0 Gr.20, 1"3/16 - 18UNEF
DSD 1820.19 P57HW	Gimota GR062XH20-7PW-EAC-M4B Operating temperature: -55°C to +125°C Plug-and-socket connection: IP69K
DSD 1820.19 P59HW	ITT Cannon FRCIR06R20-7PW-F80T39-VO-M25-1.5F-ZM Operating temperature: -40°C to +125°C

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 • Sensor is optimized to operate with an involute gear of module 2.
Air gap sensor / pole wheel	Air gap between pole wheel (involute gear, module 2) and sensor housing: 0.5 ... 1.5 mm
Insulation	Housing and electronics galvanically separated (500 V / 50 Hz / 1 min)
Protection class	IP68 (head) and IP6x (referring to the appropriate connector)
Vibration immunity	300 gn (peak) 10 Hz ... 2000 Hz random noise for 5 hours per axis based on IEC 60068-2-27
Shock immunity	100 g for 6 ms according to IEC 60068-2-27
Climatic resistance	1000h in temperature cycle from -40°C to +125°C (6h hold time, respectively)
Temperature	Operating temperature of entire sensor: -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 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.