



## DSY 1205.xx AHx

### Dual Channel Hall Effect Speed Sensor

#### Description

The DSY 1205.xx AHx Hall sensors are suitable, in conjunction with a pole wheel, for generating square wave signals proportional to rotary speeds. They have a static behavior, so that pulse generation is guaranteed down to a speed corresponding to a frequency of 0Hz. The monitoring element consists of a magnetically biased hall effect semiconductor. Several amplifier variants are offered for covering a wide application range. The internal two channel structure means that the sensor must be oriented. The sensors have a special orientation sleeve with pin for ease of installation.

## DUAL CHANNEL HALL EFFECT SPEED SENSOR DSY 1205.XX AHX

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### Product ID

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Type #	Product #	Drawing #
DSY 1205.00 AHD	374Z-05123	113447
DSY 1205.01 AHW	374Z-05124	113449
DSY 1205.01 AHD	374Z-05125	113447
DSY 1205.02 AHW	374Z-05126	113449
DSY 1205.02 AHD	374Z-05127	113447

### Technical data

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Supply voltage	4.5V to 16V or 8V to 32V depending on the amplifier variant protected against reverse polarity
Current consumption	Max. 20 mA (without load)
Signal output	Depending on the amplifier: 2 phase shifted square wave signals: Minimum edge shift S1 to S2 : 20° with an involute gear wheel. (consult TE Connectivity for other pole wheels) 1 square wave signal and one direction signal Depending on the amplifier: Open Collector outputs with 10K pull-up, I <sub>max</sub> = -20mA Push-pull outputs: I <sub>max</sub> = +/- 20mA, U <sub>low</sub> < 2.5V, U <sub>high</sub> > +V-4.0 V The outputs are short circuit proof and protected against reverse polarity.

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Amplifier variant

Type #	Output 1	Output 2	Output type	Power supply	Part number
.00 xHD	Direction	Speed	Push-pull	4.5 - 16V	374Z-05123
.01 xHW	Speed	Speed	Push-pull	8 - 32 V	374Z-05124
.01 xHD	Direction	Speed	Push-pull	8 - 32 V	374Z-05125
.02 xHW	Speed	Speed	Open Col.	11 - 32 V	374Z-05126
.02 xHD	Direction	Speed	Open Col.	11 - 32 V	374Z-05127

The .02 variant is able to drive the coil of a relay by using a simple current limiting resistor. No additional protection devices against voltage peaks are needed. This is mainly used when the sensor acts as a proximity detection device.

Limit values: Isink < 70mA, L < 800mH.

Frequency range	0 Hz ... 15 kHz
Electromagnetic compatibility (EMC):	<p>According to 89/336/EWG, EN 50081-2, EN 50082-2:</p> <ul style="list-style-type: none"> <li>• Electrostatic discharge into housing, cable shield and wires: Up to 4 kV peak according to IEC 61000-4-2, severity level 2</li> <li>• 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</li> <li>• Electrical fast transients/bursts, coupled to sensor cable with a capacitive coupling clamp: up to 4 kV peak accord. to IEC 61000-4-4, severity level 4</li> <li>• For the .02 amplifier: Load dump accord. to DIN 40839, 24V, severity level 1</li> </ul>
Housing	<p>Stainless steel 1.4305, front side sealed hermetically Max. allowable pressure on sensor head: <b>100 bar</b>.</p> <p>Dimensions according to drawing.</p>
Cable/Connector	<p>4 pole connector, type PA66-GF35 , Female plug connector straight/right angled with cable (grey, <math>\phi</math>=ca.5.5mm, 4x0.34mm/2) length:                  2.0 m = 820A-37314 / 2.0 m = 820A-37317                  5.0 m = 820A-37315 / 5.0 m = 820A-37318                  xxx m = 820A-37316 / xxx m = 820A-37319  <u>Minimum bending radius for PUR cable:</u>                  10 x diameter in operation <math>-5^{\circ}/+85^{\circ}\text{C}</math> and 6 x diameter for fixed installation <math>+105^{\circ}\text{C}</math>.  <u>Minimum bending radius for polyolefin-copolymer cable:</u>                  12 x diameter in operation <math>-30^{\circ}\text{C}</math> , 8 x diameter in operation <math>+60^{\circ}\text{C}</math> and 4 x diameter for fixed installation.                  High temperature range for plug connector and cable: <math>-30^{\circ}/+125^{\circ}\text{C}</math>  <b>Shield to be connected to 0 Volt of power supply.</b></p>
Requirements for Pole Wheel	<p>Ferromagnetic toothed wheel (e.g. USt 37-2), preferred involute gear wheel module 1, minimum tooth width 10 mm, side offset &lt; 0,2mm, eccentricity &lt; 0.2mm.</p>
Air gap between sensor and Pole hole	<ul style="list-style-type: none"> <li>• Pole wheel – sensor airgap with Module 1 (involute): 0.1 ... 0.5 mm                      Module 2 (involute): 0.1 ... 1.5 mm                      Module 3 and higher: 0.1 ... 2.0 mm</li> <li>• Pole wheel – sensor airgap with Ring gear F12-3 : 0.1 ... 2.0 mm</li> <li>• Pole wheel – sensor airgap with Shaft wheel target Nr.1: 0.1 ... 2.0 mm</li> <li>• Used as proximity switch, detection of ferromagnetic steel parts covering the housing head in a distance of 3.50 mm.</li> </ul>
Insulation	Housing and electronics galvanically separated (500 V/50 Hz/ 1 min)
Protection class	IP68 head and connection side (cable inlet)

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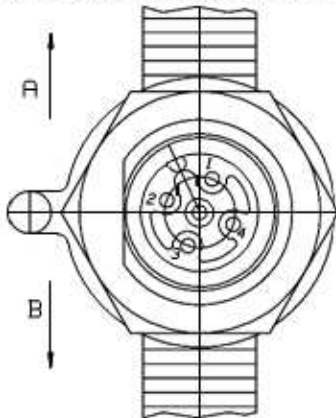
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Vibration immunity	20 g in the range of 5 ... 750 Hz Shock
Shock immunity	100 g for 11 ms, half sine wave
Weight	Ca. 100 grams
Operating temperature	Operating temperature: -40.... +125°C.

### Further Information

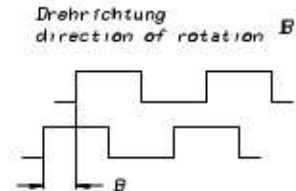
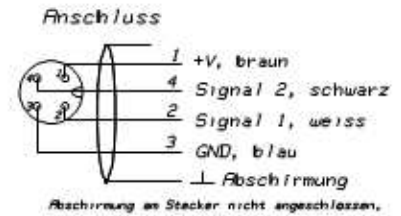
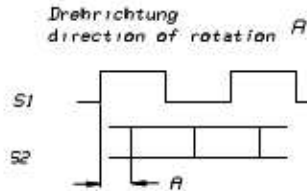
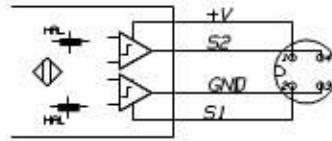
Safety	All mechanical installations must be carried out by an expert. General safety requirements have to be met.
Connection	The sensors must be connected according to the sensor drawing. Sensor wires are susceptible to radiated noise. Therefore, the following points have to be considered when connecting a sensor: <ul style="list-style-type: none"><li>• The sensor wires must be positioned as far as possible from large electrical machines.</li><li>• They must not run in the vicinity of power cables.</li><li>• 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.</li></ul>
Installation	These sensors use a Hall device. Therefore the housing has to be aligned to the pole wheel according to the drawing below: <b>note the guiding nose on the connector!</b> Deviations in positioning may affect the functioning and decrease the noise immunity of the sensor. The sensor should be mounted with the middle of the face side over the middle of the pole wheel. Where the pole wheel has teeth or slots and with radial sensor location, the sensor would normally be mounted over the center. Dependent upon the wheel width, a certain degree of axial movement is permissible. The middle of the sensor must however be a minimum of 3mm from the edge of the pole wheel under all operating conditions. <b><u>A solid and vibration free mounting of the sensor is important.</u></b> 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. Should the cable be subjected to aggressive materials then PUR or polyolefin-copolymer cable should be specified. 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. The overall system calibration is not influenced by the sensor / pole wheel air-gap.
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.

**Connections / Signals AHW variant:**

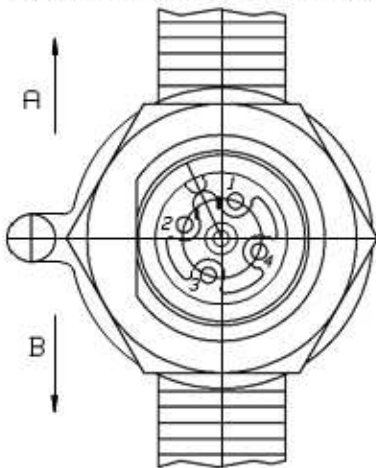


Die Phasenverschiebung beider Signale kann durch die Ausrichtung der Nase des Steckers beeinflusst werden.

The phase shift between both signals can be influenced by the position of the orientation nose of the connector.

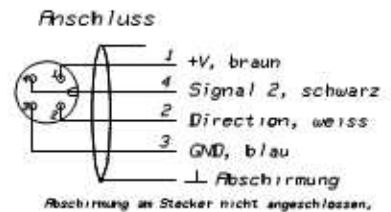
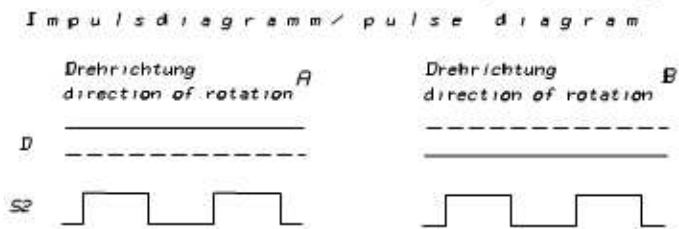
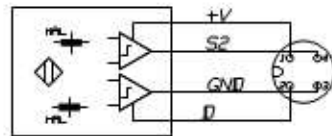


**Connections / Signals AHD variant :**



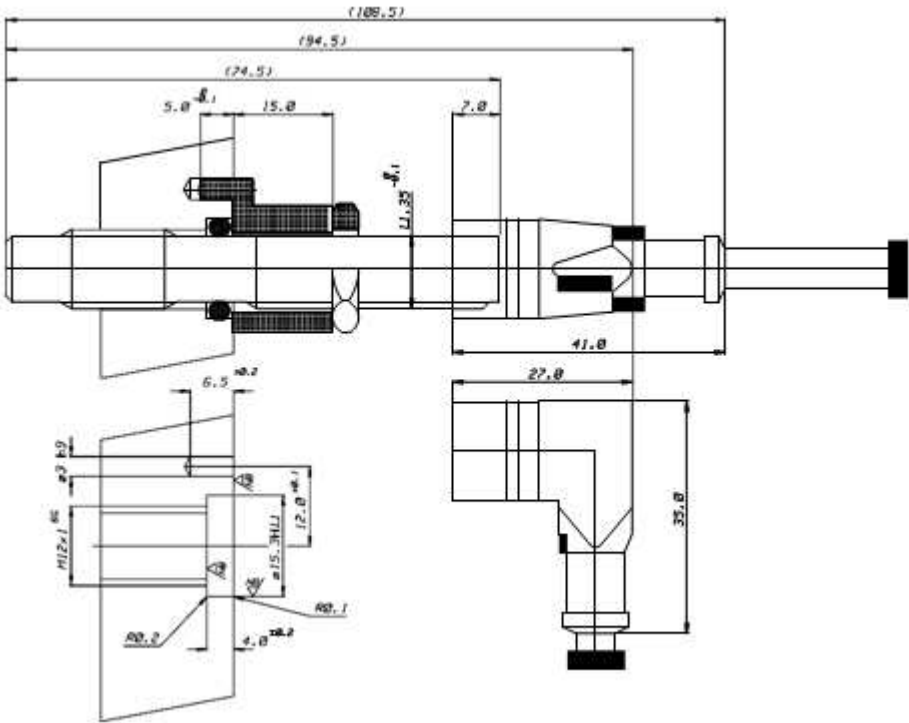
Bei D-Typen keine Phasenverschiebung!  
Das Drehrichtungssignal D wird durch die Ausrichtung der Nase des Steckers beeinflusst.

There is no phase shift to expect for D-type!  
It is influenced by the position of the orientation nose of the connector.



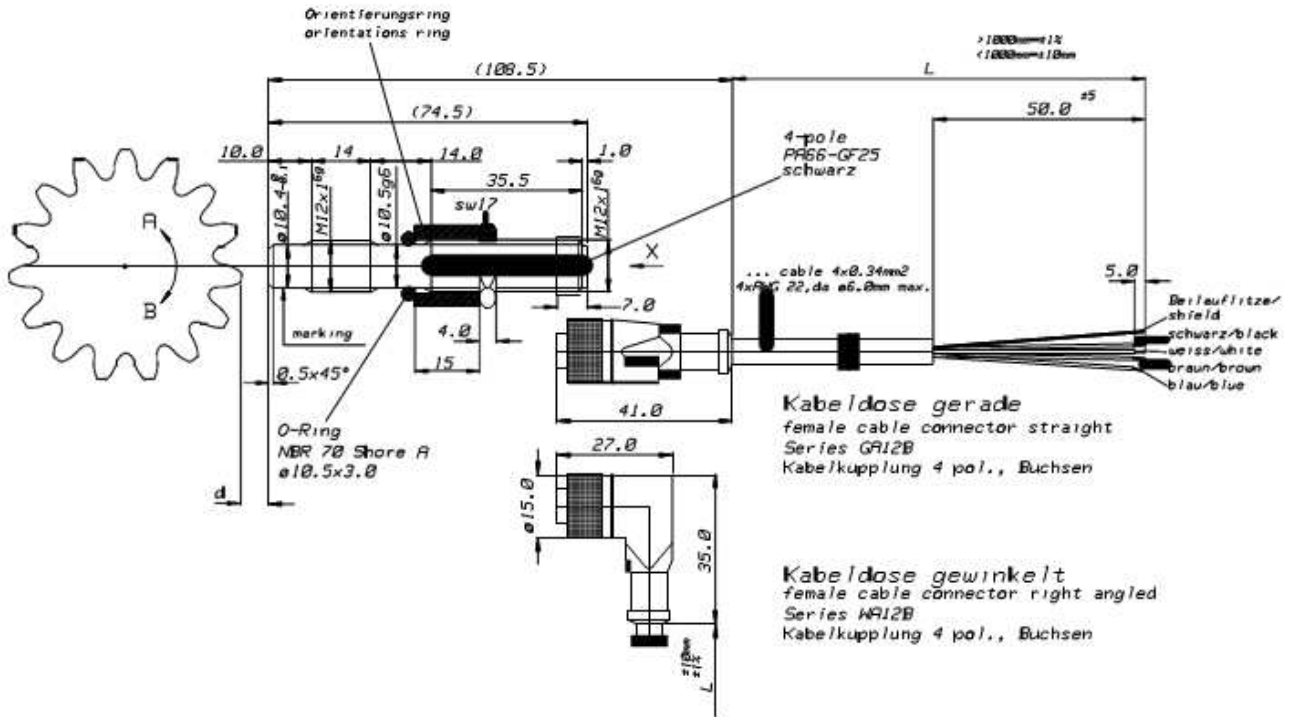
# DUAL CHANNEL HALL EFFECT SPEED SENSOR DSY 1205.XX AHX

Mounting situation by DSY speed probe:



# DUAL CHANNEL HALL EFFECT SPEED SENSOR DSY 1205.XX AHX

## Dimensions and Sensor Alignment:



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