

# DSH 16

Dual Channel Eddy Current Speed Sensor  
for Railway Applications, compliant with EN 50155

## Technical information

Version: 07.16

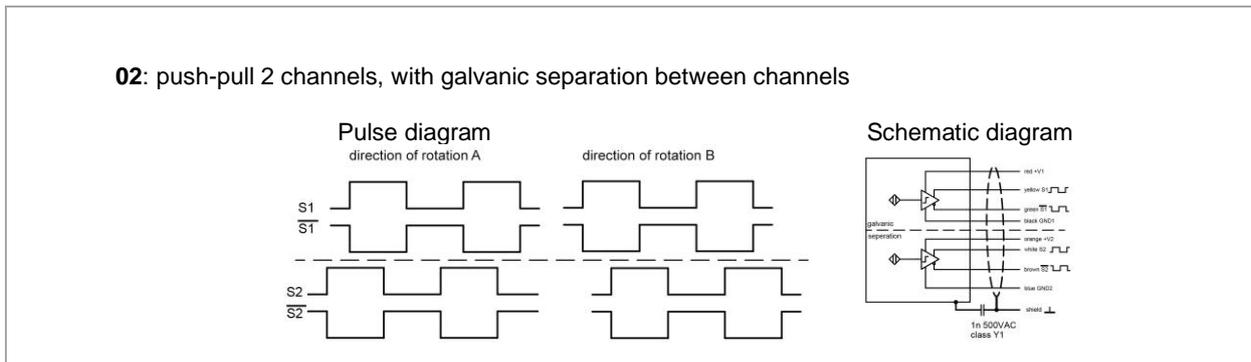
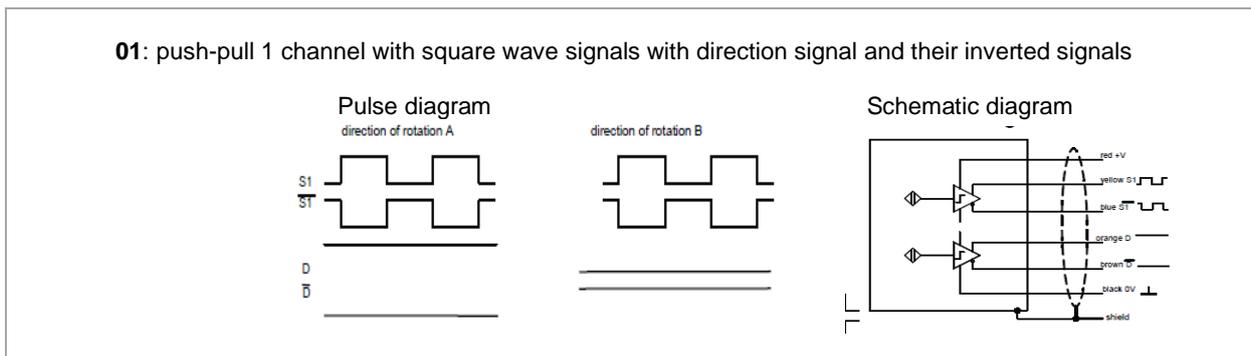
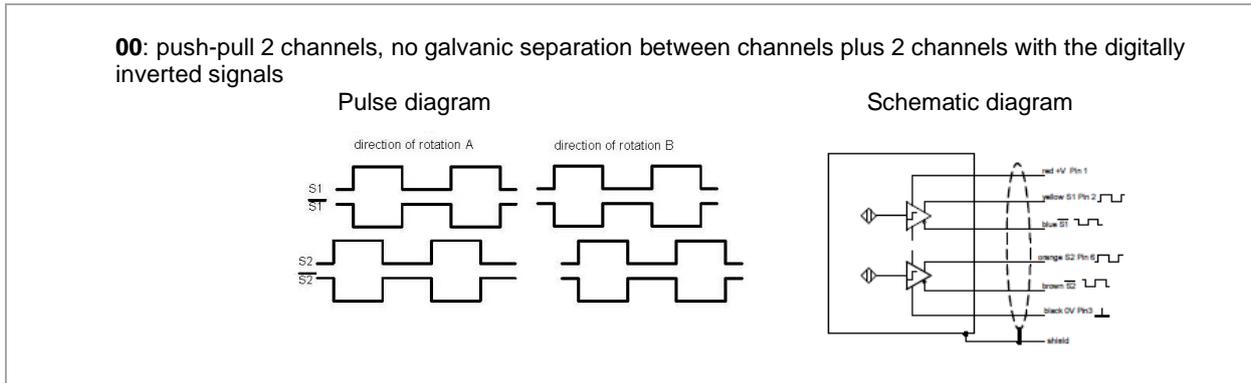


<b>General</b>					
Function	The speed sensors DSH 16xx.xx SHx are suitable, in conjunction with an aluminium pole wheel (or other conducting, non-magnetic metal) for generating two nominally 90° phase shifted square wave signals indicating the rotary speeds and the direction of rotation.				
<b>Technical data</b>					
Supply voltage	Nominal 15VDC (8 VDC to 30 VDC), protected against reverse polarity and transient overvoltages				
Signal output	<ul style="list-style-type: none"> <li>• 2 phase shifted square wave signals, output 1 (S1) and output 2 (S2) and direction output.</li> <li>• Duty cycle 50% ± 25%</li> <li>• Phase shift 90° ± 40° (on request ± 25°; target specification needed)</li> <li>• Push-pull outputs : <math>I_{max} = \pm 30</math> mA <ul style="list-style-type: none"> <li>○ Output voltage HI (for <math>I = I_{max}</math>): <math>U_{HI} &gt; U_{supply} - 1.5</math> V</li> <li>○ Output voltage LO (for <math>I = I_{max}</math>): <math>U_{LO} &lt; 1.5</math> V</li> </ul> </li> <li>• The outputs are short circuit proof and protected against reverse polarity.</li> </ul>				
Current consumption	Max. 30 mA (without load)				
Frequency range	Up to 20 kHz				
Electromagnetic compatibility (EMC)	compliant with EN 50155				
Protection class	<ul style="list-style-type: none"> <li>• Sensor head: IP68</li> </ul>				
Shock & Vibration	compliant with EN 61373 Cat.3				
Operating temperature	<ul style="list-style-type: none"> <li>• Sensor head: -40° ... +120°C</li> <li>• Cable: -40°C to +150 °C for the standard cable type 824L-36622</li> </ul>				
Requirements for pole wheel	Aluminum toothed wheel (other non-magnetic material on request) Optimal performance with <ul style="list-style-type: none"> <li>• Rectangular gear tooth Module 3</li> <li>• Tooth width ≥ 15 mm</li> <li>• Valley deep ≥ 3 mm</li> <li>• Side offset &lt; 1 mm</li> <li>• Eccentricity &lt; 0.1 mm</li> </ul>				
Air gap between sensor housing and pole wheel (depends on the pole wheel shape)	<table style="border: none;"> <tr> <td style="padding-right: 20px;">Module 2</td> <td>0.2 ... 1 mm</td> </tr> <tr> <td>Module ≥ 3</td> <td>0.2 ... 1.5 mm</td> </tr> </table>	Module 2	0.2 ... 1 mm	Module ≥ 3	0.2 ... 1.5 mm
Module 2	0.2 ... 1 mm				
Module ≥ 3	0.2 ... 1.5 mm				
Insulation	<ul style="list-style-type: none"> <li>• Housing and electronics galvanically separated (500 V/50 Hz/ 1 min)</li> </ul>				

## Product identification

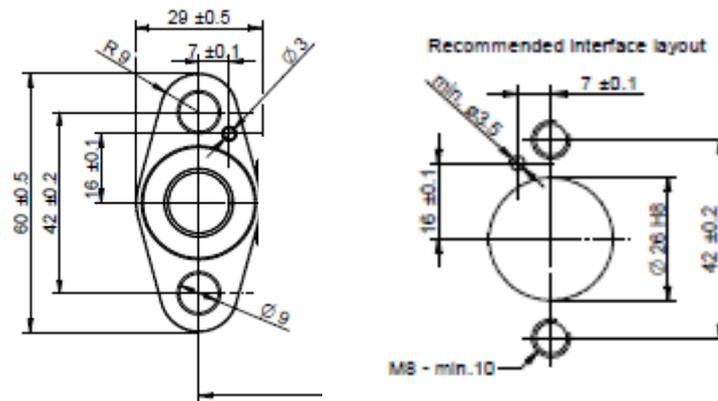
DS	H	16	-	.	-	-	-	-	H	-	-	-	-	
DS	H	16	30	.	0	1	P	1	H	W	-	C	300	G
Example of identification														
<b>Sensor housing</b>														
F: standard straight														
G: 90° angle housing														
S: customized housing design														
<b>Cable length in cm</b>														
<b>Cable Screen</b>														
K: connected to the sensor housing via condenser (under request)														
C: connected to the sensor housing (standard)														
<b>Output signal characteristics</b>														
W: 2 channels with 90° phase shift, push-pull output, no galvanic separation														
V: 1 channel push-pull output														
R2V: 2 channels push-pull output, galvanically separated														
<b>Temperature Class</b>														
Push-pull with galvanic insulation														
H: High temperature -40°C ... +120°C														
<b>Customer specific version number</b>														
<b>Connection Method</b>														
S: integral cable with open ends														
A: connector integrated in housing														
P: integral cable terminated with a connector														
Q: cable protected with cable sleeve and connector														
M: open end cable protected with cable sleeve														
<b>Electronic Type</b>														
00: push-pull 2 channels, no galvanic separation between channels plus 2 channels with the digitally inverted signals														
01: push-pull 1 channel with square wave signals with direction signal and their inverted signals														
02: push-pull 2 channels, with galvanic separation between channels														
<b>Target module</b>														
xy: module multiplied by 10														
p. ex. 30: module 3.0														
<b>Size of the sensor housing (diameter in mm)</b>														
16: sensor head diameter 16mm														
<b>Sensor Technology</b>														
H: Eddy current speed sensor														

## Signal patterns, electronic type



## Dimensions

### Sensor housing basic dimension



Recommended interface layout

### 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 the drawing.

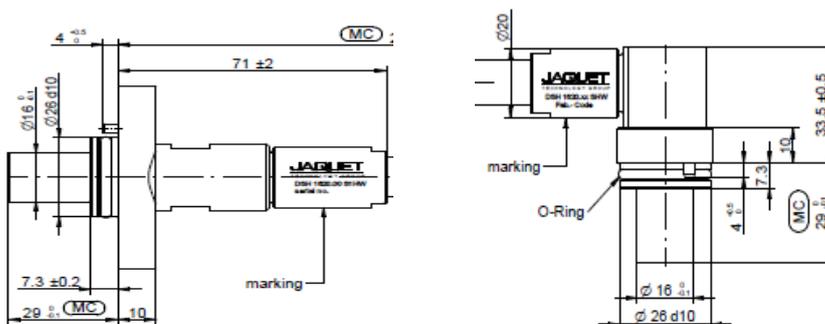
F: straight

G: 90° angle

S: special housing design

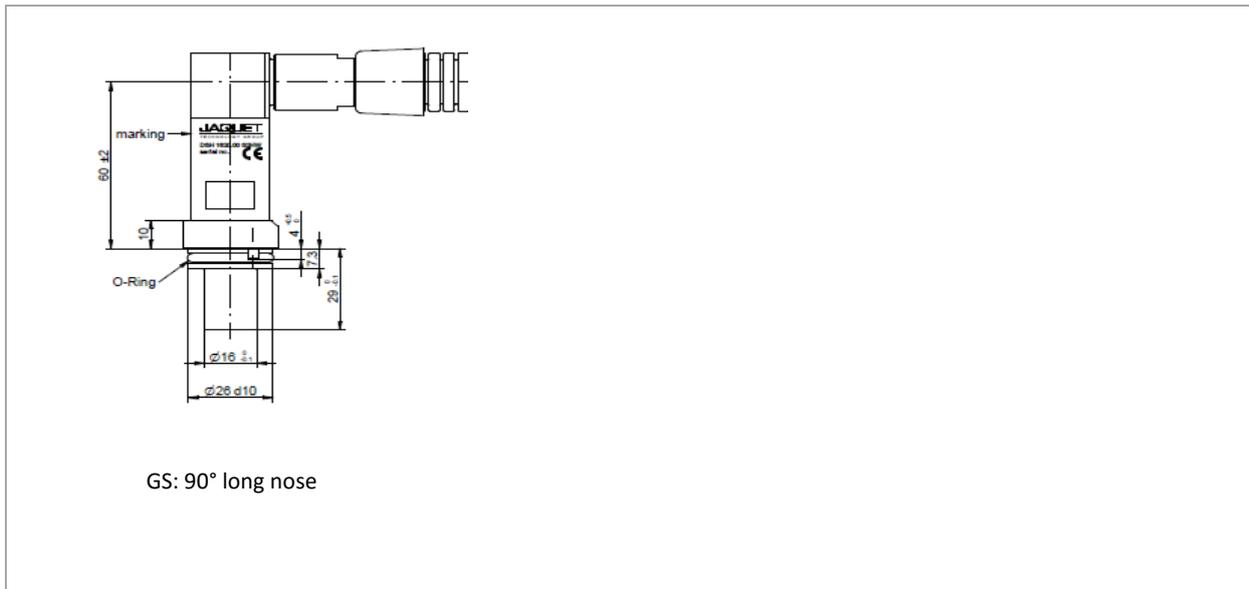
## Examples of sensor heads

### Examples of sensor heads



F: straight

G: 90° (standard)



## Cable & connection method

**Jaquet cable type:** 824L-36622

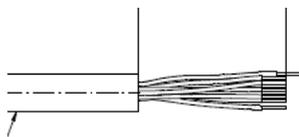
### Properties

Armoured cable: 6-wire, 0.6 mm<sup>2</sup> (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)

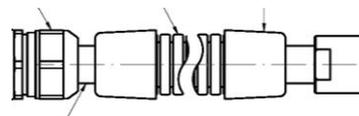
Operating temperature: -40°C to +150 °C

other cable types on request

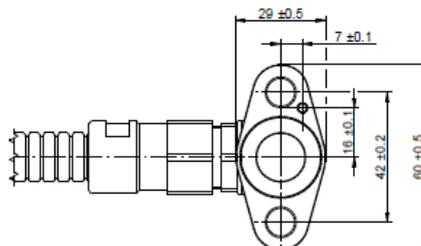
### Examples of connection method



S: open wire ends

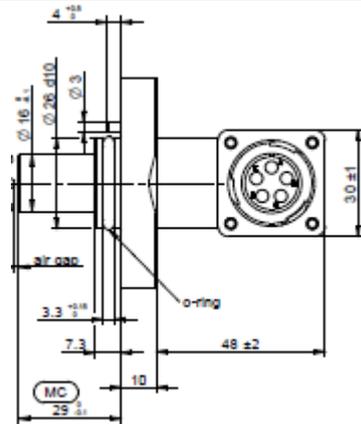


Q: straight with flexible cable sleeve

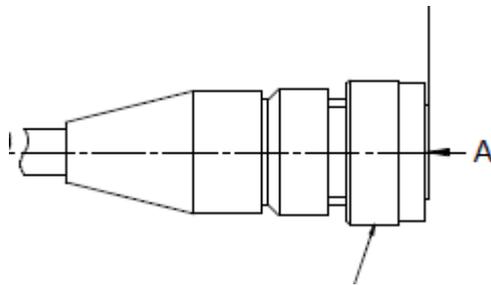


Q: fix cable sleeve and 90°

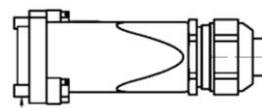
## Connection method



A: connector integrated in housing



P: round connector



P: rectangular connector

P: other connectors on request

## JAQUET - world leader in speed measurement

Customized and standard speed sensors for automotive, aerospace, railway, power and industrial applications. Over 125 years of Swiss quality & advanced technology with competitive pricing.

JAQUET Technology Group reserves the right to change any technical feature in this family description without any announcement. For each project a dedicated outline drawing and data sheet of the speed sensor must be established for the purchasing process.