



## Speed Sensor HSS 210

2 channel

Screw-in thread M12

Direct detection of direction of rotation

### Description:

The contact-free speed sensors of the HSS 210 series detect the movement of ferromagnetic structures, such as gear wheels, gear rims or perforated discs, using the changes in magnetic flux.

So each sensor has two Hall elements and the differential between the two signals is detected, evaluated and then converted into an output signal suitable for processing.

For integration into standard controls, standard output signals are available.

Due to their extremely compact design, the robust housing and protection class IP 67, the instruments can be used in almost any application and any mounting position.

The main fields of application are detection of speed and rotation direction on gear wheels with a small module and high resolution, especially in vehicles and mobile machines with hydraulic drives.

### Technical data:

| Input data                                 |   |
|--|---|
| Frequency range                            | 0.1 .. 20,000 Hz  |
| Installation depth                         | 0 .. 50 mm adjustable   |
| Max. pressure on sensing surface           | 10 bar (dynamic and static)   |
| Mechanical connection                      | Screw-in thread M12x1   |
| Tightening torque, recommended             | Max. 13 Nm  |
| Type of installation                       | Dependent on direction  |
| Housing material                           | Brass   |
| Output data                                |   |
| Output signal                              | 2 NPN frequency outputs<br>Signal level: HIGH: $\geq +U_B$ / LOW: 0.5 V<br>Max. switching current: $\leq 50$ mA<br>1 push-pull frequency output +<br>1 push-pull dir. of rotation output<br>Signal level: HIGH: $\geq +U_B - 2$ V / LOW: $\leq 2$ V<br>Max. switching current: $\leq 50$ mA |
| Environmental conditions                   |   |
| Operating temperature range                | -40 .. +125 °C  |
| Media resistance of housing                | Oils: HETG; HEES, HFD; HVLP; HLP  |
| CE mark                                    | EN 61000-4-2/3/4/6/8  |
| Vibration resistance acc. to EN 60068-2-64 | 0.05 g <sup>2</sup> /Hz, 20 .. 2.000 Hz   |
| Shock resistance acc. to EN 60068-2-27     | 30 g, 11 ms   |
| Protection class acc. to IEC 60529         | IP 67<br>(when an IP 67 mating connector is used)   |
| Other data                                 |   |
| Electrical connection                      | Male M12x1, 4 pole  |
| Supply voltage                             | 8 .. 30 V DC  |
| Residual ripple of supply voltage          | $\leq 5$ %  |
| Current consumption                        | < 30 mA at 30 V DC  |
| Life expectancy                            | 200,000 h (MTTF) / 400,000 h (MTTF <sub>0</sub> )   |
| Weight                                     | ~ 40 g  |

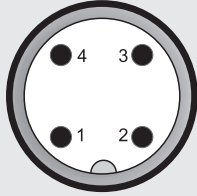
Note: Reverse polarity protection of the supply voltage and load short circuit protection are provided.

## Switching/installation distance:

|             |               |
|-------------|---------------|
| Module 1    | 0.2 .. 1.0 mm |
| Module 1.25 | 0.2 .. 1.5 mm |
| Module 1.5  | 0.2 .. 1.7 mm |
| Module 2    | 0.2 .. 2.2 mm |
| Module 2.5  | 0.2 .. 3.2 mm |

## Pin connections:

M12x1, 4 pole



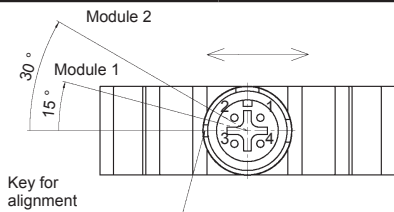
| Pin | HSS 210-2       | HSS 210-3             |
|-----|-----------------|-----------------------|
| 1   | +U <sub>B</sub> | +U <sub>B</sub>       |
| 2   | Frequency 1 (A) | Frequency             |
| 3   | 0 V             | 0 V                   |
| 4   | Frequency 2 (B) | Direction of rotation |

## Direction of rotation:

Marking on housing in direction of rotation, gear rotation clockwise: channel A leading; channel B following or direction of rotation signal (right HIGH / left LOW)

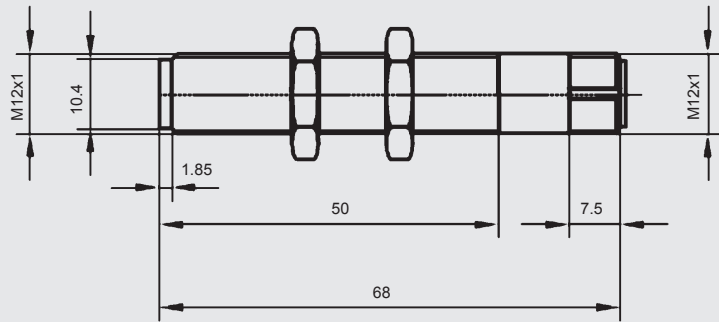
## Adjustment angle for other modules:

It is possible to achieve a 90° phase shift of the two frequency signals by turning the sensor accordingly.



|             |      |
|-------------|------|
| Module 1    | +15° |
| Module 1.25 | +18° |
| Module 1.5  | +23° |
| Module 2    | +30° |
| Module 2.5  | +38° |

## Dimensions:



## Model code:

**HSS 2 1 0 - X - 050 - 000**

### Signal technology

- 2 = outputs 1 and 2: frequency (90° / 270° phase shift)
- 3 = output 1: frequency  
output 2: direction of rotation

### Installation depth

050 = 50 mm max.

### Modification number

000 = standard

## Note:

The information in this brochure relates to the operating conditions and applications described. For applications or operating conditions not described, please contact the relevant technical department.

Subject to technical modifications.

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