

PR 9376 Speed Sensor

Rugged construction

Frequency range up to 12kHz

Pulse rise/-fall time 1µs

Temperature rang -30...+100 °C

Applications:

The **PR 9376** speed sensor is ideally suitable for contact less speed measurements at ferromagnetic machine components. Rugged construction, simple installation and excellent switching characteristics permit the use within a wide application field in industry und laboratory.

Together with speed measuring amplifiers of the MMS 6000 program of epro, various measuring tasks such as speed measurement, detection of rotational direction, measuring and supervision of slip, stand still detection etc. can be realized.

With its high resolution, fast electro-

nics and steep pulse slopes, the sensor PR 9376 is suitable for measuring very high as well as very low speeds.

Another application area is the use as proximity switch e.g. for switching, counting or generating alarms at passing components or at machine parts coming sideways closer.

Function principle and design:

The head of the **PR 9376** is a differential sensor consisting of a half bridge with two hall-effect sensor elements. By means of integrated operational amplifiers, the Hall-voltage is amplified many times over. Processing of the Hall-voltage is carried out digitally in a DSP. In this DSP the difference of the Hallvoltage is determined and compared with a reference value. The result of this comparison is available at a push-pull output which is short-circuiting proof for a short time (max. 20 s).

If a magnetically soft or steel trigger mark moves to the sensor in a square angle (i.e. in lateral direction), the magnetic field of the sensor will be distorted which effects the de-adjustment of the Hall-level and switching of the output signal.

The output signal remains high or low until the leading edge of the trigger mark causes an inverted detuning of the half bridge. The output signal is a steep sloped voltage pulse.

For this reason the capacitive coupling of electronic devices is possible,

even at low trigger frequencies.

High sophisticated electronic, hermetically closed encapsulated in a housing of rugged, stainless steel and a connection cable with Teflon isolation – if required with metal protection tube – ensure the safe and proper operation even under harsh, industrial environments.

Technical Data:

Measuring principle

Hall-effect sensor

Triggering

Contact less by means of mechanical trigger marks

Material of trigger marks:

magnetically soft iron or steel

Trigger frequency range:

0...12 kHz

Permissible gap:

0,5.....2 mm
ad type tooth

Limitation of trigger marks:

Spur wheel, Involute gearing
Module 1, Material ST 37

Special trigger wheel:

see fig. 2

Output

Short-circuit proof push-pull output buffer. The burden may get connected to ground or to supply voltage.

Output pulse level:

at 100 (2.2) k load and 12 V supply voltage

HIGH: >10 (7) V*

LOW < 1 (1) V*

Pulse rise and fall times:

<1 μ s; without load and over the entire frequency range

Dynamic output resistance:

<1 k Ω *

Permissible load:

Resistive load 400 Ohm

Capacitive load 30 nF

Note: Output is in a high impedance level, (there is no current) in a level L in a case, when the load is connected to the ground, or in a level H in a case, when the load is connected to the supply voltage.

Power supply

Supply voltage: 10...30V

Permissible ripple:

10 %

Current consumption::

max. 25 mA at 25°C and 24 V supply voltage and without load

Mechanics

Sensor housing of stainless steel; Electronic circuits completely sealed; Sensor head made of synthetic resin, reinforced by a brass tube, Teflon isolated connection cable.

Dimensions

Diameter: 14 mm

Sensor length: 124 mm

Cable length:

depending on type 3m

Weight without packing:

PR 9376/000-001 210 g

PR 9376/010-001 410 g

mounting kit included

Environmental conditions

Temperatures:

Reference temperature:: 25°C

Operating range:: -30...+100°C

Limit temperature for max. 30 s without damage: 120°C

Storage temperature: -40..+100°C

Protection class: IP 66

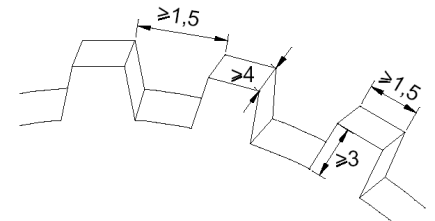


Fig. 2. Minimal dimensions of a tooth wheel (all distances in millimeters)

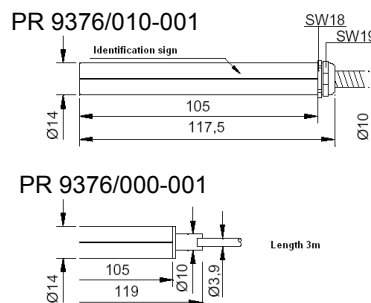
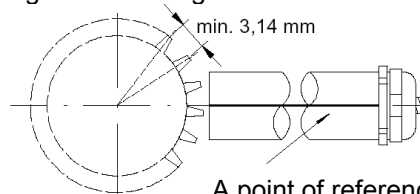


Fig.1. Positioning of the transducer



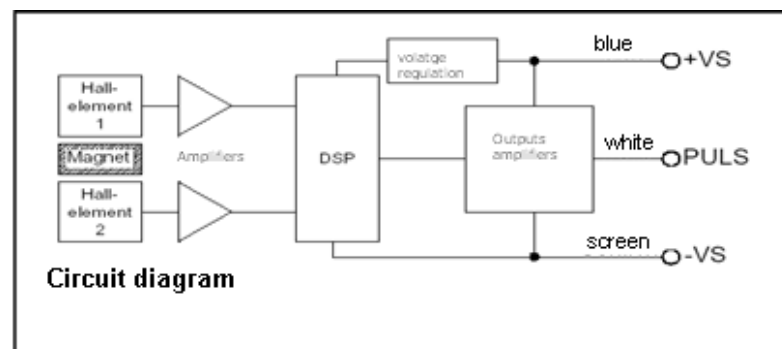
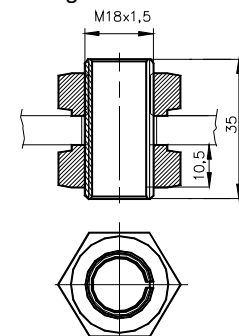
A point of reference must be in this position

Optional accessories

(Must be ordered separately)

- 1.) Mounting set SHS 1 9376
- 2.) Protection tube MPT 13
- 3.) Connector, female HDC 3

Mounting set SHS 1 9376



Instructions for the sensors installation :

The sensor is placed to the specified distance from the teeth wheel by using a shim, meanwhile **the supply must be off**. Placing alive can cause wrong trigger levels setting. In this case the supply must be set off and after the supplies recovering the sensor sets trigger levels automatically.

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