

## Product data

### Features

- Differential inductive sensing principle
- Insensitive to magnetic interference fields
- Robust against oil, water, dust, particles
- Ultra-thin package, 0.9 mm thick
- Pads for surface-mount soldering of cable
- Thin PCB-type target strips/discs

### Applications

- Industrial / laboratory / office automation
- Linear stages and X-Y tables
- Assembly / Pick & Place equipment
- Linear motor, voice coil actuator
- Pneumatic/hydraulic actuator
- Machine tools

### Description

The IS1101 is a single-channel differential inductive position sensor suitable for counting on periodic targets like gears, cogwheels, racks, slotted discs, PCB-targets and for edge detection of metallic objects with larger dimensions. The target material can be either ferromagnetic (steel) or electrically conducting (aluminum, brass, copper).

### General Specifications

Counting frequency.....0 – 40 kHz  
 Airgap .....up to 1.5 mm  
 Supply.....5.0 ± 0.5 V, 15 mA typ  
 Temperature .....0 – 100°C  
 Output format.....digital

### Tooth counting vs edge detection

The IS1101 sensor can be used for tooth counting and for edge detection applications.

For “tooth counting” applications (Figure 1a), the target period is typically 1.5 - 3 mm. For each tooth, one digital output pulse is generated. The rising and falling transition of the digital output signal correspond to the center of the tooth and to the center of the gap between two teeth.

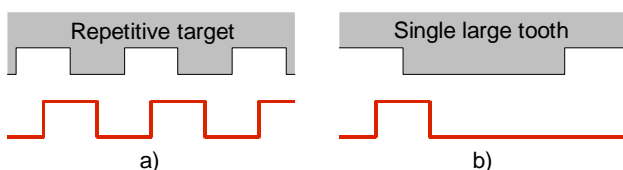
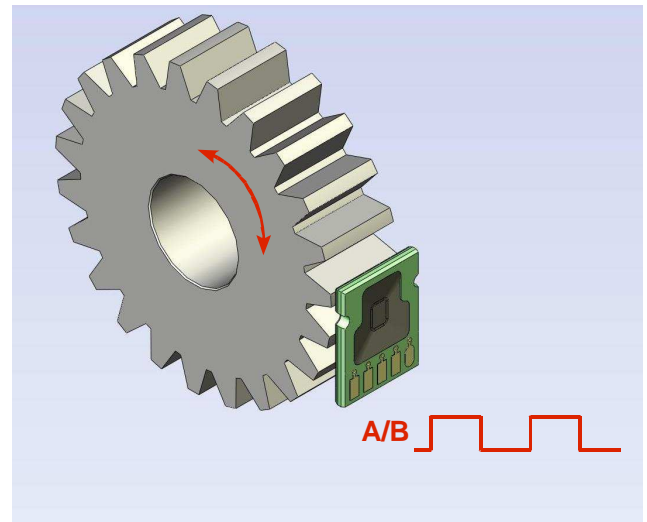


Fig. 1 Digital output signal a) for tooth counting and b) for edge detection.



For “edge detection” applications (Figure 1b), the target is a metallic object with typical dimensions > 5 mm. One of the “edges” of the target generates an output pulse, which edge depends on the orientation of the sensor and on the target material (Figure 2).

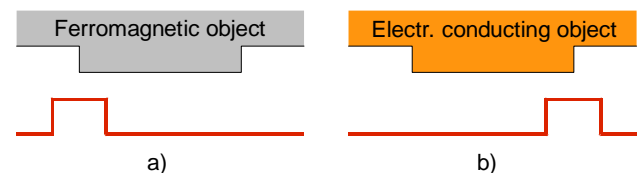


Fig. 2 Edge detection a) for a ferromagnetic material and b) for an electrically conducting material.

### Targets

Examples for “tooth counting” according to Figure 1a:

- Steel gear with module 0.5 – 1.
- Aluminum/brass gear with module 0.7 – 1.
- Linear or rotational PCB-target with copper pattern with period length 1.5 – 3.0 mm.

Examples for “edge detection” according to Figure 1b:

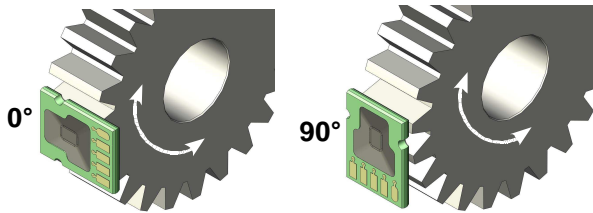
- Index wheel made of steel, aluminium or brass with one tooth or groove.
- Cam-wheel with tooth length longer than 5 mm.
- Slotted metal disk with period length longer than 5 mm.
- Linear or rotational PCB-target with one copper stripe or one opening in a copper surface.
- Metallic object moving laterally in front of the sensor (piston, rod, valve ...).

## Ordering information

### Sensor element

Ordering code: IS1101-ABBC

A	Orientation
0	0°
1	90°



### Evaluation kit

The evaluation kit for the IS1101 sensor contains a Sensor Interface Board, a linear or rotational target and two IS1101-1101 sensors.

Detailed information on the Evaluation Kit for incremental applications can be downloaded from POSIC's website [www.posic.com](http://www.posic.com).

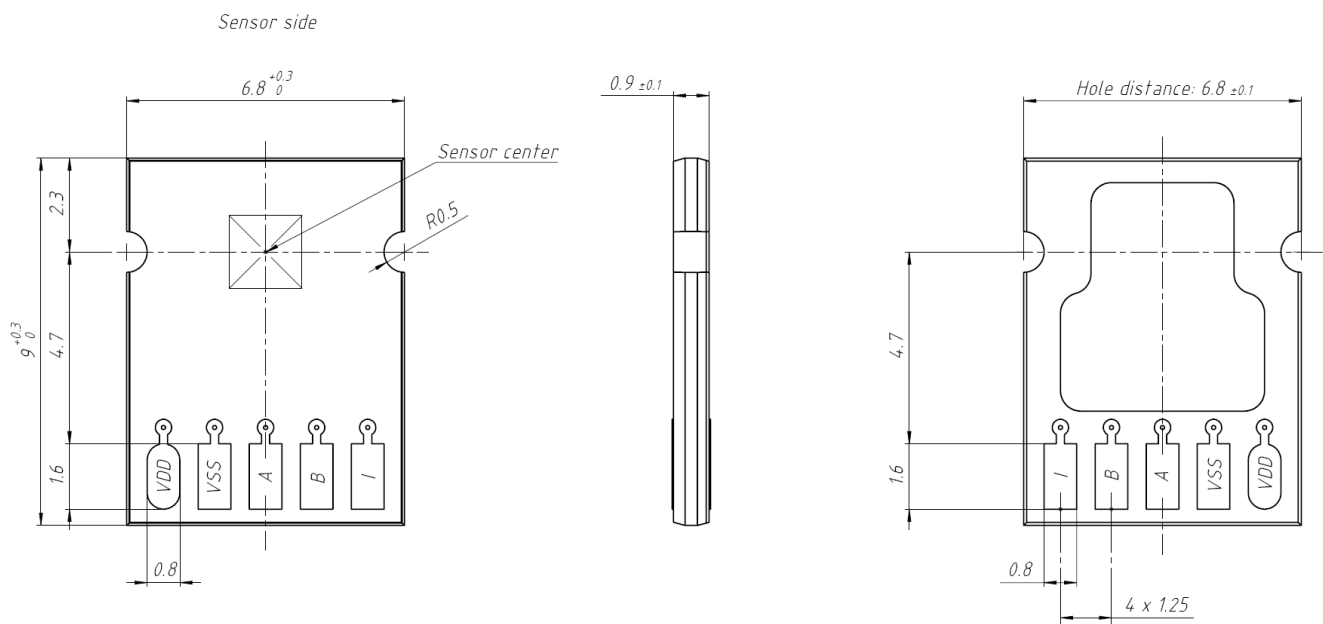
### Sensor and target customization.

Customization of sensors and/or targets for a specific application is offered as an engineering service by POSIC.

BB Speed (target periods/second)			
00	10 Hz	07	1.25 kHz
01	20 Hz	08	2.5 kHz
02	39 Hz	09	5 kHz
03	78 Hz	10	10 kHz
04	156 Hz	11	20 kHz
05	313 Hz	12	40 kHz
06	625 Hz		

C Output signal	
0	Connection A
1	Connection B

## Technical drawing



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