Version 2
Released in May 2016
Dr.-Ing. habil. Jigou Liu

*ChenYang*

Technologies GmbH & Co. KG

Hall Effect Gear Tooth Sensors CYGTS101RC

CYGTS101RC Hall Effect Gear Tooth Sensor uses a magnetically biased Hall Effect integrated circuit to accurately sense movement of ferrous metal targets. This specially designed gear tooth sensor IC with bias magnet and discrete capacitor is sealed in plastic for physical protection and cost effective installation. The GTS IC works according to peak magnetic field detection.

This unit functions under power supply from 4.5 to 24VDC. Output is digital, current sinking (NPN) or current sourcing (PNP) and RC. Reverse polarity protection is standard. The sensor will not be damaged if power is inadvertently wired backwards.

Features

- Sensing ferrous metal targets
- Digital current sinking or sourcing output
- Good signal-to-noise ratio
- Excellent low speed performance
- Output amplitude not dependent on RPM
- Fast operating speed, over 15kHz
- EMI resistant
- Reverse polarity protection and transient protection
- Wide operating temperature -40°C ~ +135°C.
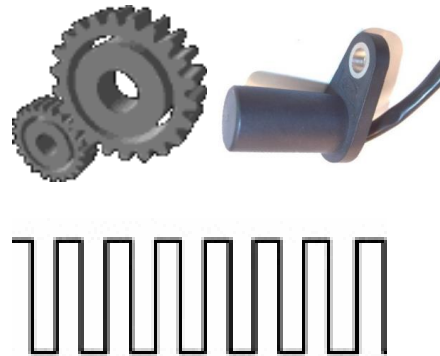
Applications

Automotive and Heavy Duty Vehicles:

- Camshaft and crankshaft speed and position
- Transmission speed
- Tachometers
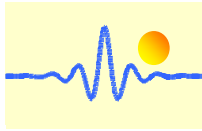- Anti-skid/traction control

Industrial Areas:

- Sprocket speed
- Chain link conveyor speed/distance
- Stop motion detector
- High speed low cost proximity
- Tachometers, counters.

Absolute Maximum Ratings

Supply Voltage	-30V~+30V
Output Voltage	-0.5V~+30V
Output Current	Sinking or sourcing 40mA
Operating Temperature Range	-40°C~+135°C

Order Guide

Part number	CYGTS101RC-N: RC & NPN output, CYGTS101RC-P: RC & PNP output,
Supply Voltage	4.5V ~ 24V
Output Saturation Voltage	0.4V (Sinking or sourcing 20mA)
Sense Distance (gap)	0.2mm ~ 4.0mm (using reference target wheels)
RPM	10-8000
Switching time	Rise time: 10μsec. max, fall time: 2μsec. max.
Cross Reference	1GT101DC, 1GT103DC, 1GT105DC

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Reference Target Wheels and Sensing Gap (unit: mm)

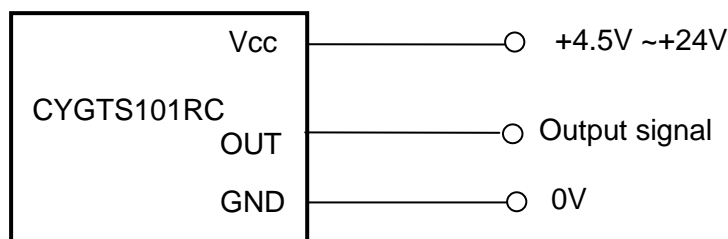| Target wheel	Outer diameter	Tooth Height	Tooth Width	Tooth Spacing	Target Thickness	Teeth Number	Sensing Gap/distance
Target wheel 1	28	5.0	7.34	7.34	8.0	6	0.2-4.0
Target wheel 2	28	5.0	3.66	3.67	8.0	12	0.2-2.5
Target wheel 3	28	3.0	2.0	2.0	8.0	22	0.2-1.0
Target wheel 4	81.5	3.0	2.0	2.0	8.0	64	0.2-1.0
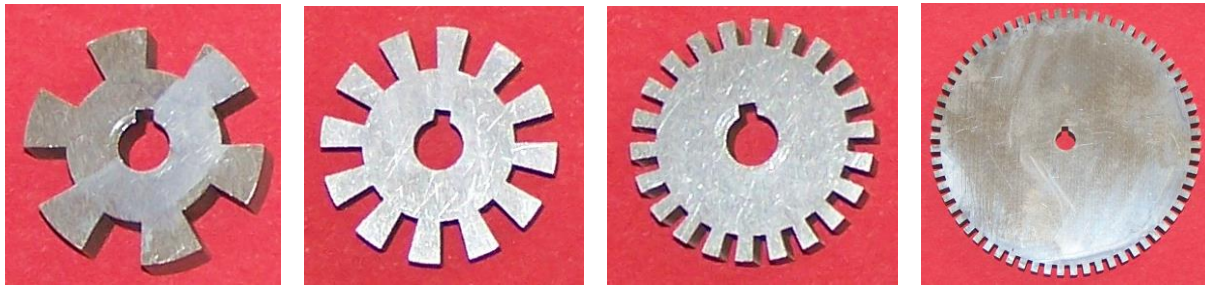
Characteristics will vary due to target size, geometry, location, and material. Optimum sensor performance is dependent on the following variables which must be considered in combination:
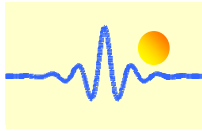
- Target material, geometry, and speed
- Gap between sensor and target
- Ambient temperature
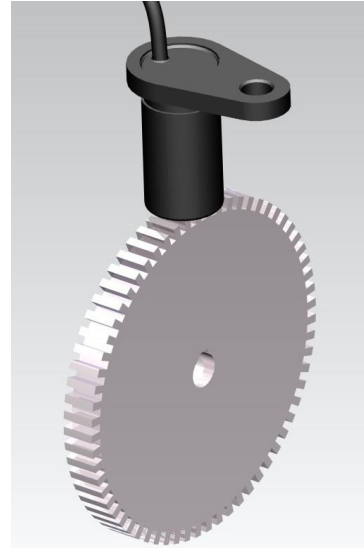- Magnetic material in close proximity.
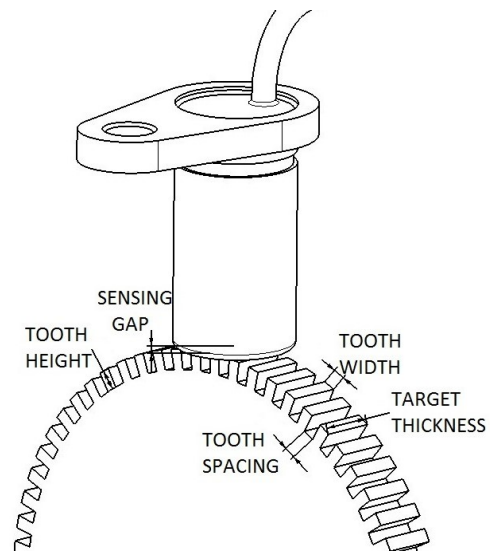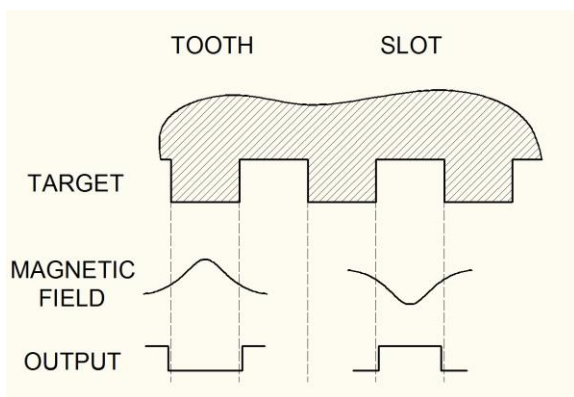
Application Notes

This sensor has a RC (NPN or PNP) output voltage. A pull-up or pull-down resistor is built in the sensor. In order to optimize the value of the resistor in advance one should firstly use the sensor CYGTS101DC or CYGTS101PC for test. After optimized the pull-up or pull-down resistor you can use the sensor CYGTS101RC for your application.

CYGTS101RC

Vcc — +4.5V ~+24V
OUT — Output signal
GND — 0V

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Mounting Dimensions (for reference only)

The standard length of the leads is 150mm; section: 4.7x2.3mm

+   Black   ①

Vout   Black+   ③
white

−   Black   ②