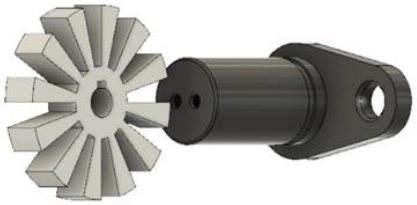
ChenYang
Technologies GmbH & Co. KG

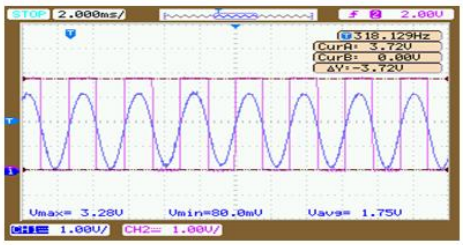
Optical Reflective Gear Tooth Sensor CYGTS102OR

CYGTS102OR optical reflective gear tooth sensor is designed by using a high brightness red LED and a high output linearity phototransistor to detect the speed signal of a white target gear through the reflected light. It is sealed in resin environmentally friendly and has low installation cost. This specially designed optical gear tooth sensor has a wide measurement range and high stability. The sensor works by detecting the intensity of the light reflected from the target wheel.
This Unit functions under power supply from 4.5VDC to 24VDC. Two signals (one sinusoid wave and one square wave) are output directly through the output terminal of the operational amplifier. The sensor will not be damaged if power is inadvertently wired inversely.

Features

- Sensing reflective target wheels
- Operational amplifier directly output signal
- Good signal-to-noise ratio
- Excellent low speed performance
- Output amplitude not dependent on RPM
- Fast operating speed, over 15kHz
- EMI resistant
- Large sensing distance range 1.5mm ~14mm
- Reverse polarity protection and transient protection
- Wide operating temperature -40°C ~ +85°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 and low cost proximity
- Tachometers, counters.

Absolute Maximum Ratings

Supply Voltage	+4.5V~+30V
Reverse Protection Voltage(max)	-30V
Output voltage (sinusoid wave)	0V~+3.3V
Output voltage (square wave)	0V~+22V
Load resistance (sinusoid wave and square wave)	100Ω, min
Operating Temperature Range	-40°C~+85°C

Order Guide

Part number	CYGTS102OR
Supply Voltage	+4.5V ~ +24V
Load resistance (sinusoid wave and square wave)	100 Ω, min
Best sense distance (gap)	3.0mm ~ 7mm (use target gear 3)
Sense Distance (gap)	2.5mm ~ 14mm (use target gear 3)
Rotational Speed (RPM)	10-8000
Switching time (frequency 1kHz)	Rise time: 8,4μs, fall time: 12.8μs

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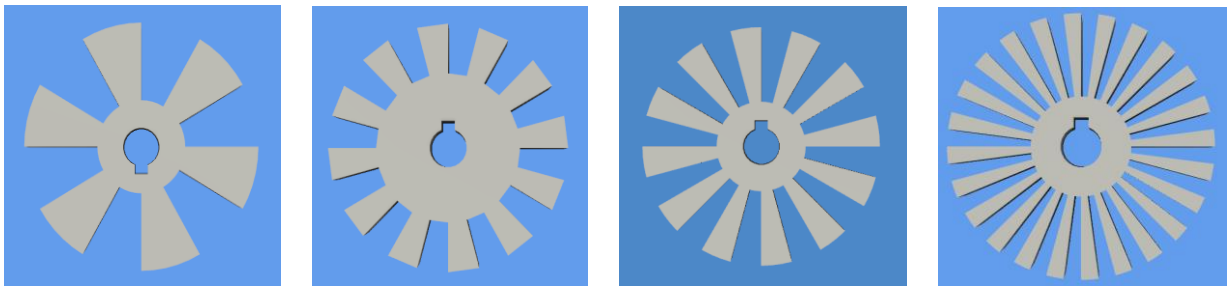
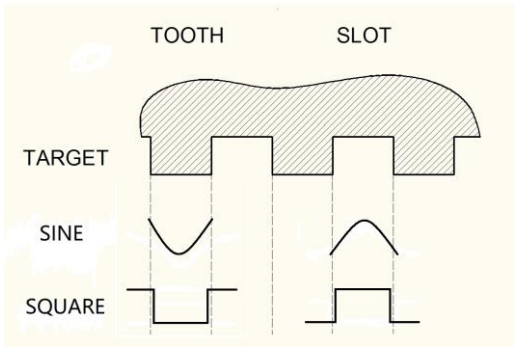
Reference Target Wheels and Sensing Gap (unit: mm)

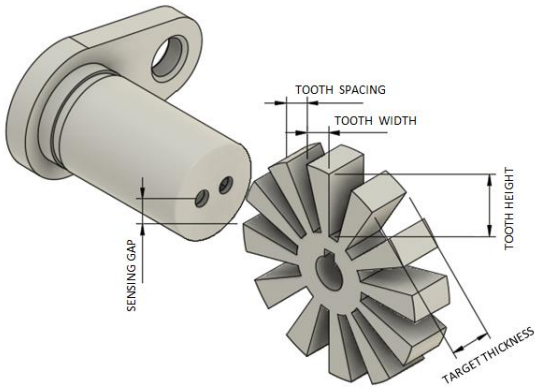
Target wheel	Gear Module	Outer diameter	Tooth Height	Tooth Width	Tooth Spacing	Target Thickness	Teeth Number	Sensing distance
TW 1	4.583	40	12.5	10.47	10.47	8.0	6	3.5-12.5
TW 2	2.667	40	8	3.66	5.23	5.23	12	1.5-7.5
TW 3	2.292	40	12.5	2.0	5.23	5.23	12	2.5-14
TW 4	1.146	40	12.5	2.0	2.62	2.62	24	2.5-6.5



Characteristics will vary due to geometry, location, material and Surface properties. Optimum sensor performance is dependent on the following variables which must be considered in combination:

- Target material, geometry, surface properties and speed
- Gap between sensor and target
- Ambient temperature
- Interference from nearby light sources





Application Notes

This sensor outputs the signal directly from the operational amplifier. Connect 4 wires as shown in the figure.

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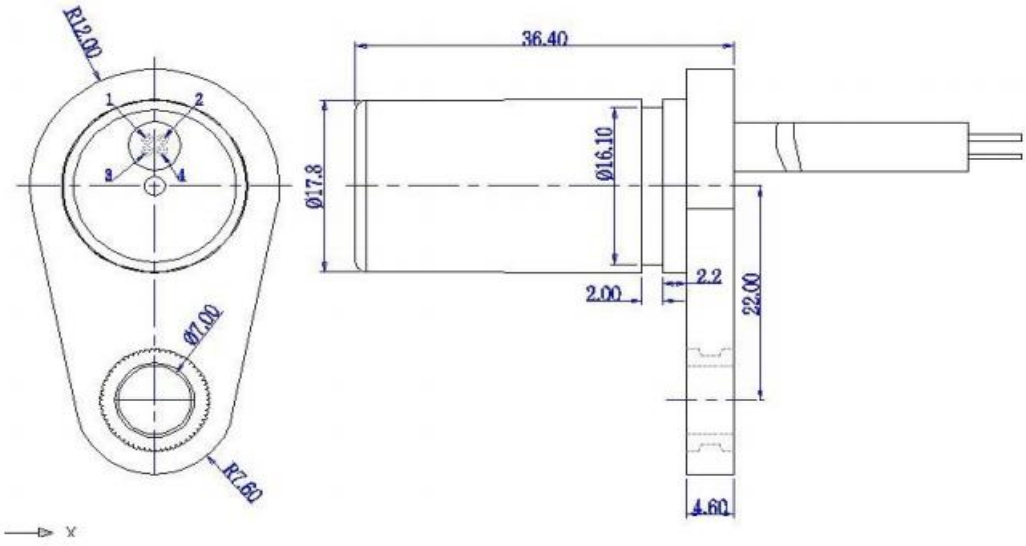
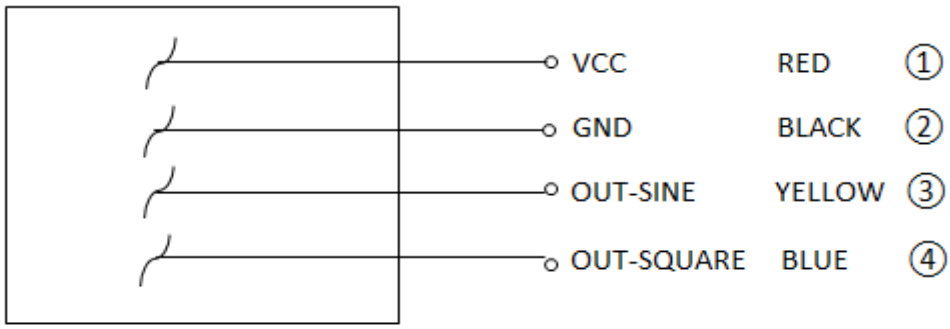
Mounting Dimensions (for reference only)

The standard length of the lead is 500mm; the cross-sectional diameter is 4mm.





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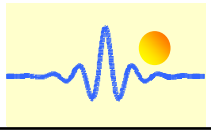

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