

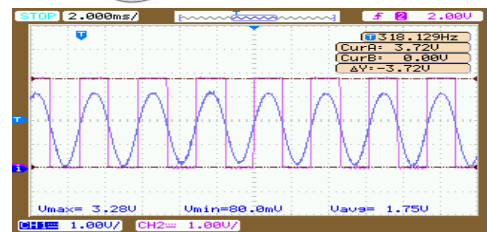
## Rotational Speed sensor based on optical transmission circular grating CYRSS102OG

The rotational speed sensor CYRSS102OG is a light transmission sensor that consists of an optically transmitted circular grating and signal processing electronics. The sensor outputs both sinusoid and square wave signals with identical frequency, from which rotational speed measurement of the target object can be realized. The sensor is sealed in resin for using in harsh environments with low installation costs.

This Unit functions under power supply from 4.5VDC to 24VDC. The sinusoid and square waves are output directly through the output terminals of operational amplifiers. The sensor has advantages of reverse polarity protection and transient protection.

### Features

- High resolution based on optical transmission circular grating
- Output signals directly from operational amplifiers
- Good signal-to-noise ratio
- Excellent low speed performance
- Output amplitude not dependent on RPM
- Fast operating speed, up to 18kHz
- EMI resistant
- Reverse polarity protection and transient protection



### Applications

#### Automotive and Heavy-Duty Vehicles:

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

#### Industrial Areas:

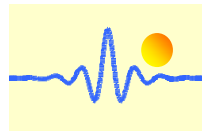
- Sprocket speed
- Chain link conveyor speed/distance
- Stop motion detector
- Rotational speed measurement
- Tachometers, counters.

### Absolute Maximum Ratings

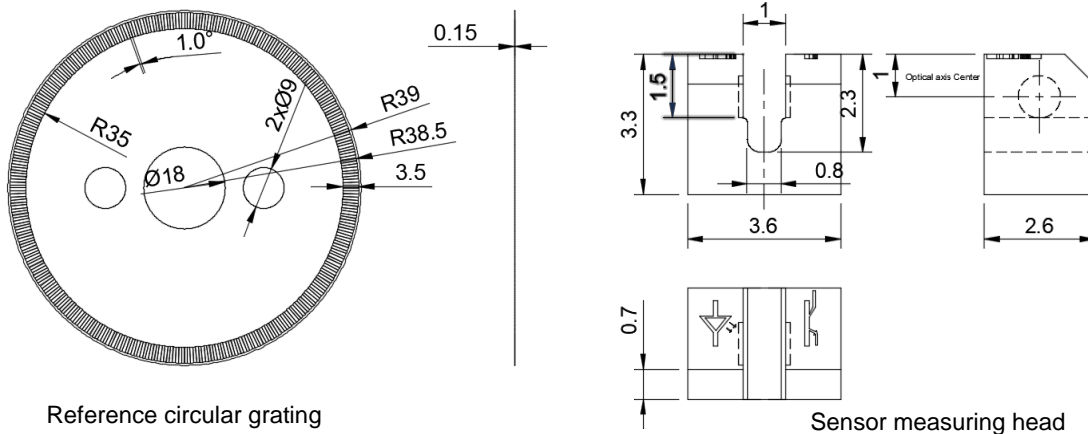
Supply Voltage	4,5V ~ +30V
Reverse protection voltage	-30VDC
Output voltage (sinusoid wave)	0V~+3.3V (custom made: 0 ~ 5V)
Output voltage (square wave)	0V~+24V
Load resistance (sinusoid and square waves)	100Ω, min
Operating Temperature Range	-40°C~+85°C

### Order Guide

Part number	CYRSS102OG
Supply Voltage	4,5V ~ 24V
Load resistance (sinusoid and square waves)	100Ω, min
Gaps and depths in detection	1.0mm x 2.3mm
Rotational Speed	2-3000 RPM
Switching time (frequency 1kHz)	Rise time: 5,5μs max, fall time: 10μs max



## Reference target measuring circular grating and detection range (Unit: mm)

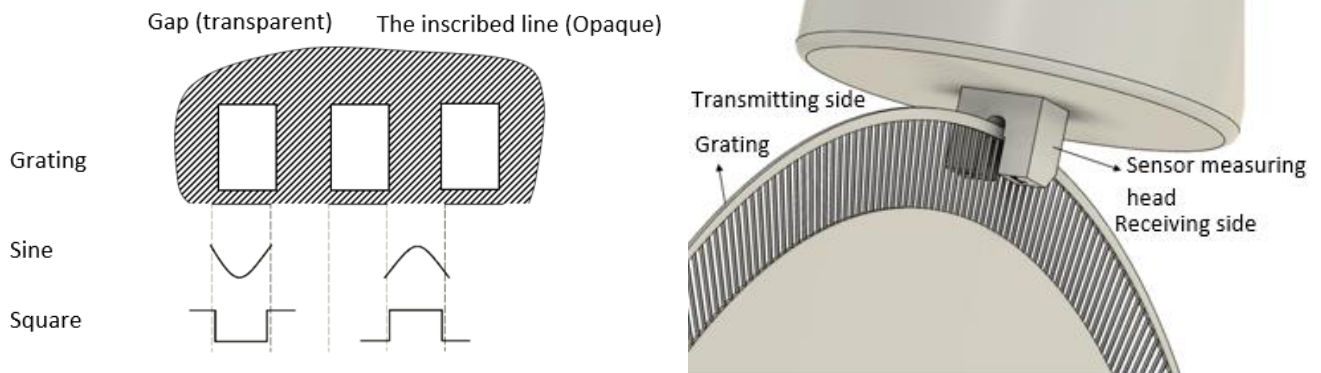


Reference circular grating

Sensor measuring head

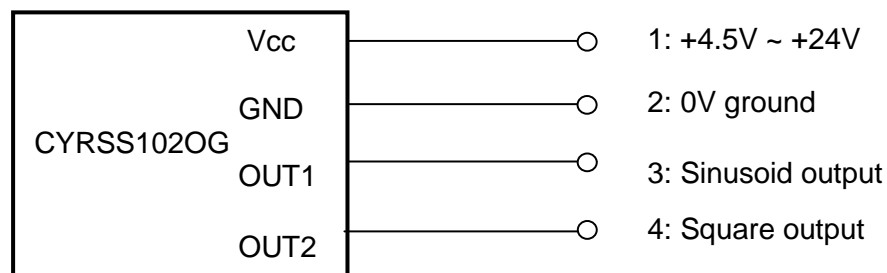
The resolution of the square-wave speed signal depends on the number of circular gratings (grating number of 360 for the circular grating above). In addition, the mounting positions of the grating and sensor remain unchanged during the measurement, which enables non-contact measurement. Optimum sensor performance is dependent on the following variables which must be considered in combination:

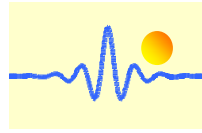
- Manufacturing accuracy of the round grating
- Positioning of circular grating and measuring head
- Non-eccentric rotary movements
- Ambient temperature



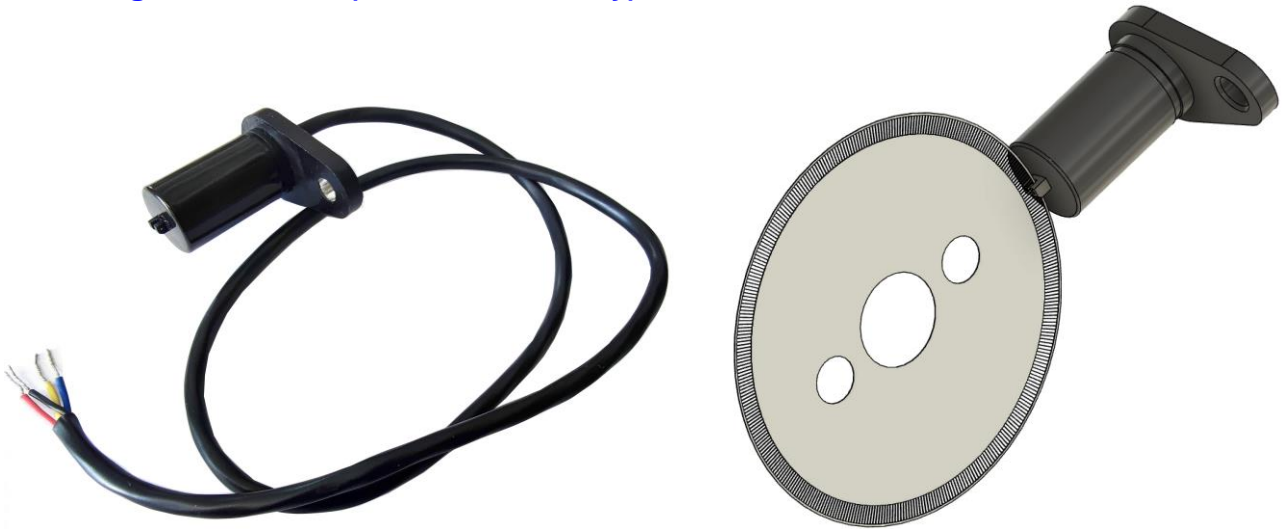
## Application Notes

The output signals of the sensor come directly from the operational amplifiers. The sensor connection is shown in the following figure.

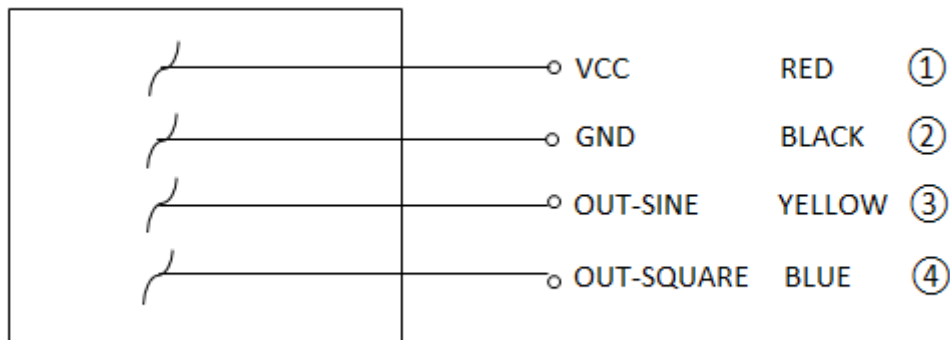
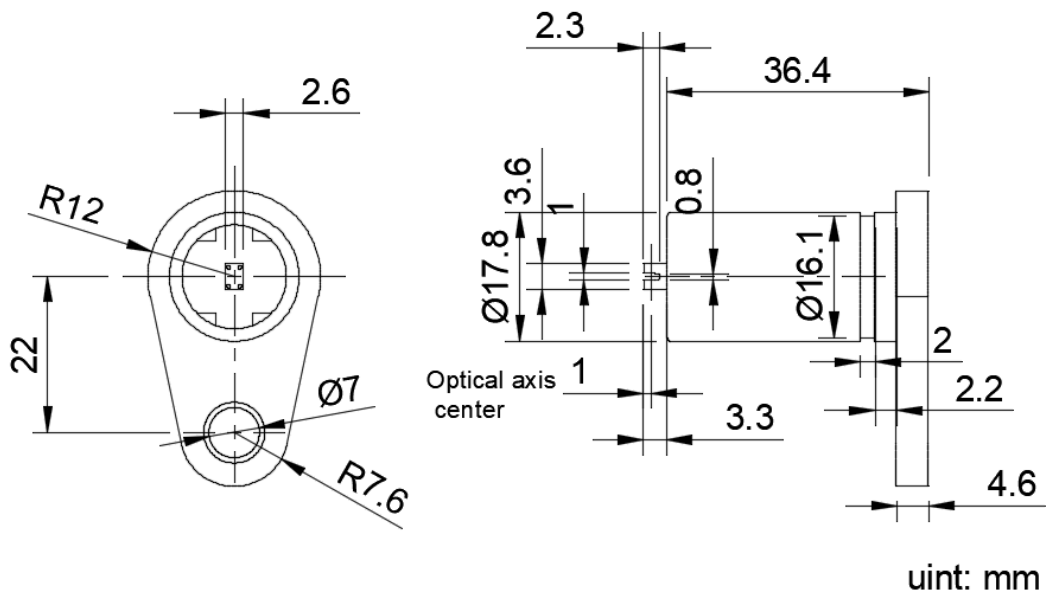


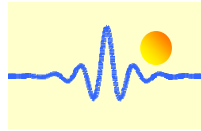


**Mounting Dimensions (for reference only)**



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





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