

GEARTOOTH SPEED SENSOR

# GS1005 – GS1007



**Description**

The GS1005-1007 series gear tooth sensors are Hall Effect devices designed for use in applications where ferrous edge detection or near zero speed sensing (without power up recognition) is needed. Current sinking output requires the use of a pull up resistor.

**Features and Benefits**

- Immune to rotational alignment
- ESD resistant to 4kV (contact discharge)
- Mating connector: Delphi 12162280
- Discrete wire version: 20awg, tin plated polyolefin insulation.

**Applications**

- Exercise equipment
- Food processing equipment
- Speedometer

GS1005-GS1007 Specifications

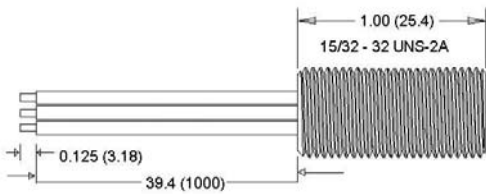
Part Number	Operating Voltage Range (VDC)	Supply Current (mA max)	Output	Output Saturation Voltage (mV max)	Output Current (mA max)	Operating Temperature Range (°C)	Storage Temperature Range (°C)	Thread	Housing Length	Leads
GS100501	5 - 24	6	3-wire sink	400	20	-40 to 125	-40 to 125	M12-1	65mm	12mm circular
GS100502	5 - 24	6	3-wire sink	400	20	-40 to 125	-40 to 125	M12-1	65mm	20 awg x 1 m BBB
GS100701	5 - 24	6	3-wire sink	400	20	-40 to 125	-40 to 125	15/32 - 32	1"	20 awg x 1 m BBB

Notes: These sensors require the use of an external pull-up resistor, the value of which is dependent on the supply voltage  
Pull-up resistor should be connected between output (Green) and Vcc (Red).

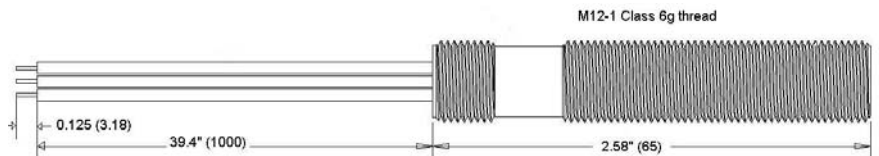
**Note:** These sensors require the use of an external pull-up resistor, the value is dependent upon the supply voltage. Pull-up resistor should be connected between output (Black) and Vcc (Brown). See chart on next page for recommendations.

Dimensions mm

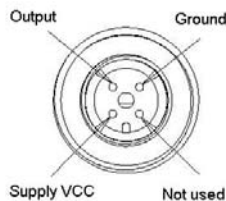
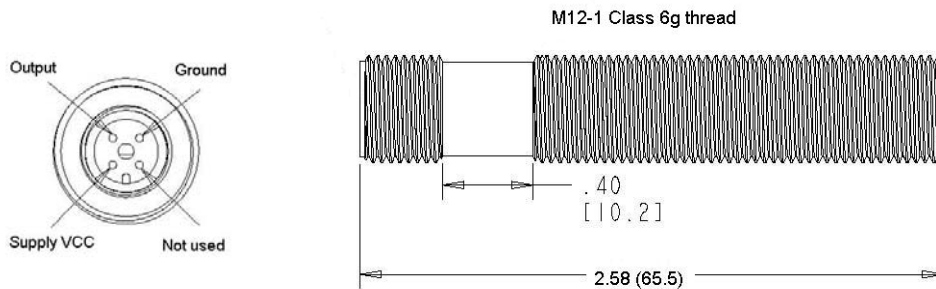
**GS100701**



**GS100502**



**GS100501**



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## Mechanical Specifications

<b>Airgap</b>	Application dependent
<b>Maximum Installation Torque</b>	50 in-lbs (for a ¼ - 20 Hex Cap screw)

## Electrical Specifications

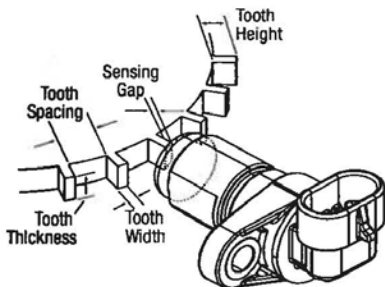
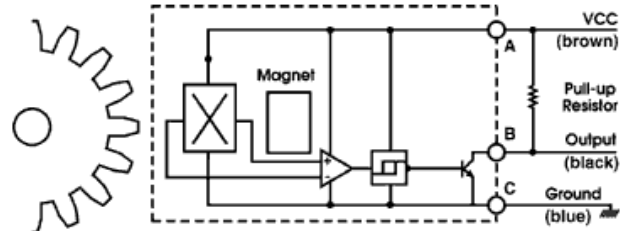
<b>Operating Voltage Range</b>	5 - 24 VDC
<b>Supply Voltage</b>	24 - 30 VDC
<b>Supply Current</b>	6 mA max
<b>Output Saturation Voltage</b>	400 mV max
<b>Output Current</b>	20 mA max
<b>Operating Temperature</b>	-40° to +125°C (GS100502 & GS100701) -40° to +105°C (GS100501)
<b>Storage Temperature Range</b>	-40° to +125°C (GS100502 & GS100701) -40° to +105°C (GS100501)
<b>Output Rise time</b>	5µS
<b>Output Fall time</b>	5µS
<b>Electrostatic Discharge Immunity</b>	+ 3kV indirect contact, + 4kV direct contact
<b>Electric Field Radiated Immunity</b>	At 10V/m (using 30% amplitude modulation @ 1kHz) from 26Mz to 1000 MHz
<b>Electrical Fast Transient Test</b>	+ 2kV on DC power supply
<b>Immunity to Magnetic Fields</b>	SAE J1113-22 (600 microT AC field; 5Hz to 2kHz; .2mT & 1mT DC field)
<b>Conducted Immunity Test</b>	Injected with 10Vrms from 150kHz to 80 MHz
<b>Dielectric Withstand Voltage</b>	MIL-STD-202F, Method 301 1000V applied for a minimum of one minute.
<b>Insulation Resistance</b>	MIL-STD-202F, Method 302, Test Condition B 500V applied for one minute.

<b>Water Immersion</b>	MIL-STD 202F, Method 104, Test Condition A
<b>Salt Spray</b>	MIL-STD-202F, Method 101, Test Condition B
<b>Sinusoidal Vibration</b>	MIL-STD-202F Method 204, Test Condition C from 55-2000 Hz
<b>Random Vibration</b>	MIL-STD-20F Method 214, Test Condition IC
<b>Mechanical Shock</b>	18 shocks at 50g's 11ms per Mil Std 202F

Recommended external pull-up resistor:

<b>Volts DC</b>	5	9	12	15	24
<b>Ohms</b>	1k	1.8k	2.4k	3k	3k

Open Collector Sinking Block Diagram



For best results, we recommend targets made from low carbon cold rolled steel. Other factors that influence sensor performance include geartooth height and width, space between teeth, shape of the teeth and thickness of the target. As a general guideline, consider a target with the following minimum parameters:

Tooth Height	Tooth Width	Distance Between Teeth	Target Thickness
.200"	.100"	.400"	.250"

### Contact

Call, fax or visit our website  
For more information.

ZF Electronics Corporation  
11200 88th Avenue  
Pleasant Prairie, WI 53158

Phone: 262.942.6500  
Web: [www.cherrycorp.com](http://www.cherrycorp.com)  
E-Mail: [cep\\_sales@zf.com](mailto:cep_sales@zf.com)  
Fax: 262.942.6566

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