GEARTOOTH SPEED AND DIRECTION SENSOR

# SD100203

Circuit protected, Hall-effect speed and direction sensor

## Description

The SD100203 is a speed and direction sensor designed to detect the speed and direction of moving gear teeth. The speed and direction outputs are open collector transistors. One Hall Effect sensor is used to detect the speed of the gear tooth and the other is used to detect the direction of movement.

## Features and Benefits

- Immune to target run out
- Separate digital outputs for speed and direction
- Wire leads standard, 12” 20awg PVC
- Operating temperature range -40°C to +85°C
- Near zero speed sensing capability

## Applications

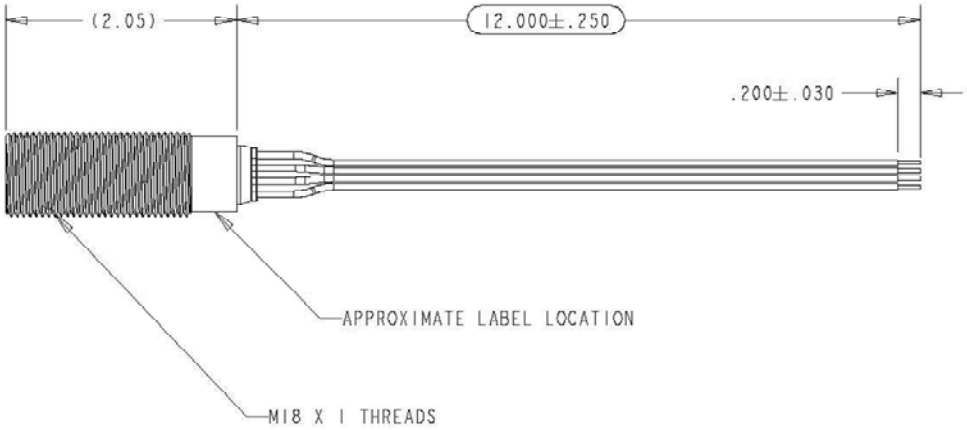
- Wheel speed and direction
- Hoist speed and direction

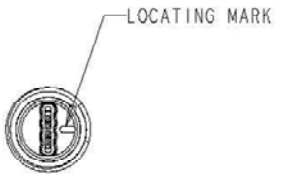
## Specifications

| Part Number | Operating Voltage Range (VDC) | Supply Current (mA max) | Output | Output Saturation Voltage (mV max) @ 12V/20ma | Output current (mA max) | Operating Temp Range (°C) | Storage Temp Range (°C) | Houing Material |
|---|---|---|---|---|---|---|---|---|
| SD100203 | 5.0 - 24 | 20 | Sink | 600 | 20 | -40 to 85 | -40 to 85 | Anodized Aluminum |

Note: A pull up resistor is required between power and each output. Resistor value is dependant upon input voltages.

## Dimensions (mm)




Sensor is orientation sensitive. Correct positioning of sensor when locating mark is parallel to the axis of rotation of target and pointing up.

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## Mechanical Specifications

| | |
|---|---|
| **Airgrap** | Airgap is application dependent |
| | |

## Electrical Specifications

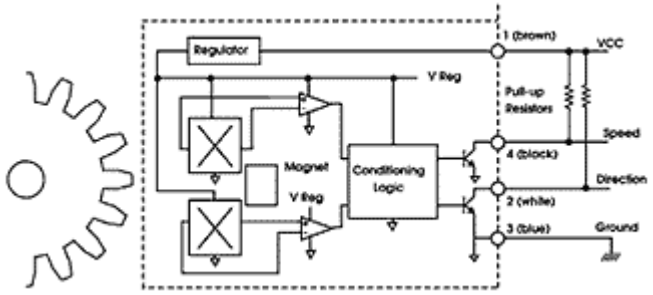
| | |
|---|---|
| **Operating Voltage Range** | 5.0 – 24 VDC |
| **Reverse Voltage** | -24V |
| **Supply Current** | 20 mA max |
| **Output Saturation Voltage** | 600 mV max @ 12V/20mA |
| **Output Current** | 20 mA max |
| **Operating Temperature** | -40° to + 85°C |
| **Storage Temperature Range** | -40° to + 85°C |

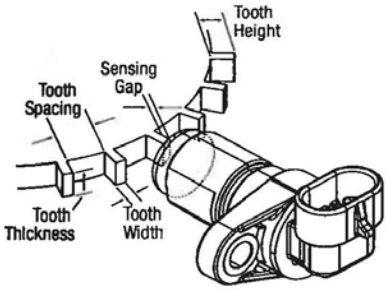
Operation: When sensing the leading edge of a tooth the Speed Output goes high (ON), and goes low (OFF) on the lagging edge of the tooth when run against the standard ZF product gear tooth sensor target. The direction of movement is latched on the leading edge of the speed sensor. The Direction output goes high (ON) for clockwise rotation and low (OFF) for counterclockwise rotation. The state of the Direction output always leads the rising edge of the Speed output.

## Recommended external pull-up resistor:

| Volts DC | 5 | 9 | 12 | 15 | 24 |
|---|---|---|---|---|---|
| Ohms | 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" |

Specifications subject to change without notice.


Contact

Call, fax or visit our website

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