

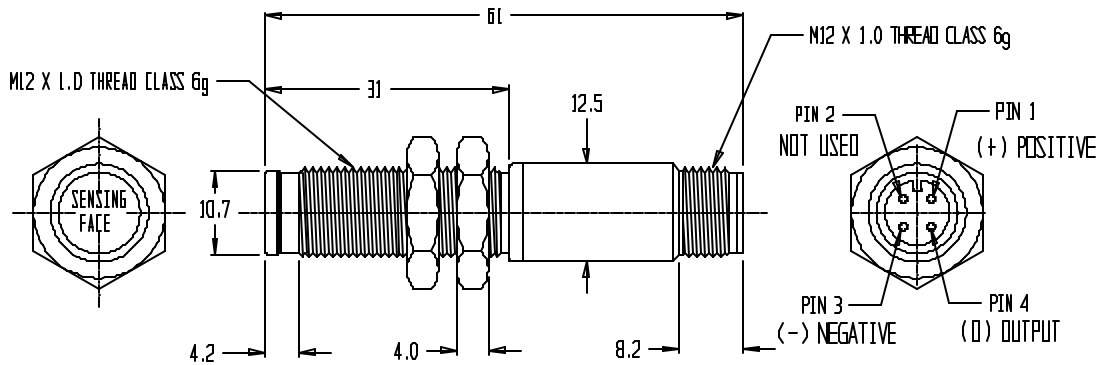


**PHOENIX AMERICA INC.**

4717 CLUBVIEW DRIVE  
FORT WAYNE, IN 46804

# P5800

## AUTO COMPENSATING GEAR TOOTH SPEED SENSOR



**FEATURES:**

- Digital Output Signal
- Gear Tooth Sensing Capability
- No Rotary Orientation Concerns
- Operation from -40°C to 125°C
- Short Circuit Protection
- Zero Speed Operation
- High Speed (15kHz) Operation
- 6.3-24 VDC Operation
- Nickel plated, Brass housing
- Integral M12 Connector

**SENSOR DESCRIPTION:**

The Series 5000 speed sensor is a non-contact, solid state ferrous detecting device with a switched output. Its unique design provides a low cost solution for a wide range of speed sensing applications, especially those requiring true zero speed performance. This device utilizes a Hall Effect sensor that is internally biased with a Rare Earth permanent magnet and detects the interaction from an external ferrous target. Unlike earlier Hall based products, this device automatically detects changes in target position or symmetry and “self adjusts” to compensates for these changes. This specialized feature eliminates the need to externally calibrate or mechanically adjust each sensor for optimum performance. In addition, electronic hysteresis built into the device eliminates false triggering due to mechanical backlash and vibration. Installation of this sensor is also easier than “dual element” versions as this device operates correctly regardless of its rotational position or alignment relative to the motion of the target.

**PART  
NUMBER  
P5800**

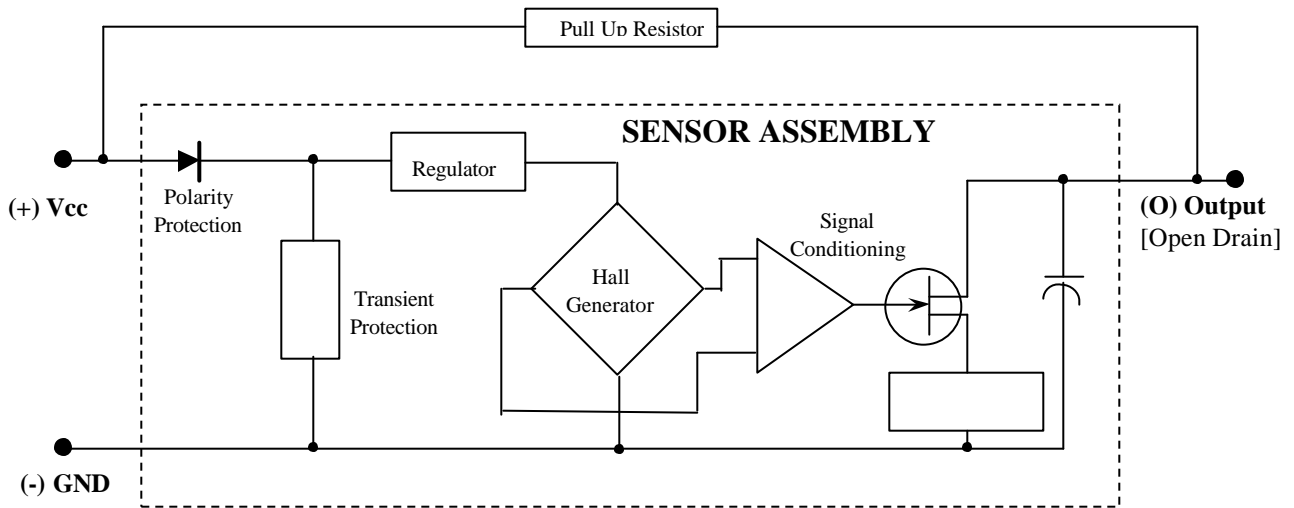
**DESCRIPTION**  
Nickel Plated, Brass housing with Industry  
Standard 4 Pin M12 Integral Connector



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**Functional Block Diagram**



Specifications <i>T = -40 to 125°C</i>	Symbol	Test Condition	Limits			
			Min.	Typ.	Max.	Units
Supply Voltage	$V_{cc}$	Operating	6.3		24	VDC
Supply Current	$I_{cc}$	Over $V_{cc}$ and Temp. Range	1		6	ma
Reverse Supply Protection	$V_{rev}$	Operating			-24	VDC
Output Pull-up Voltage	$V_{out}$	Over $V_{cc}$ and Temp. Range			24	VDC
Output Current	$I_{out}$	Operating			25	ma
Output Capacitance	$C_{out}$	Operating		Output Protection		nf
Bandwidth	BW	Operating			15	kHz
Magnetic Hysteresis	$B_{hys}$	Over $V_{cc}$ and Temp. Range	40	55	100	G

**SENSOR OPERATION:**

Upon power up, the output of this CMOS device is reset to a high state. The open drain output only changes after a minimum bias level is detected. In the presence of a ferrous target such as the tooth of a gear, the magnetic bias field to the Hall element is at a maximum. When the ferrous target is moved away to its farthest position the bias field is at a minimum. The output will turn off when a maximum bias is detected and the bias reduces by a level equal to the device's hysteresis value. The output will turn on when a minimum bias field is detected and the bias increases by this same hysteresis level. The "self adjust" logic acts as a digital sample and hold circuit and is continuously operational. This feature helps to compensate for irregular magnetic signals due to worn gear teeth, non-concentric alignments or general air gap variation. This device does not require rotary alignment with the motion of the target.