



- ▶ **Digital output signal**
- ▶ **Gear Tooth sensing capability**
- ▶ **No rotary orientation concerns**
- ▶ **Working temperature from -40° C to +125° C**
- ▶ **Environmental temperature up to 105° C**
- ▶ **IP67**
- ▶ **Short circuit protection**
- ▶ **Zero speed operation**
- ▶ **High speed (15 kHz) operation**
- ▶ **5-24 VDC operation**
- ▶ **Nickel-plated brass housing**
- ▶ **PVC jacketed cable**

This K Series 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 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 compensate for these changes.

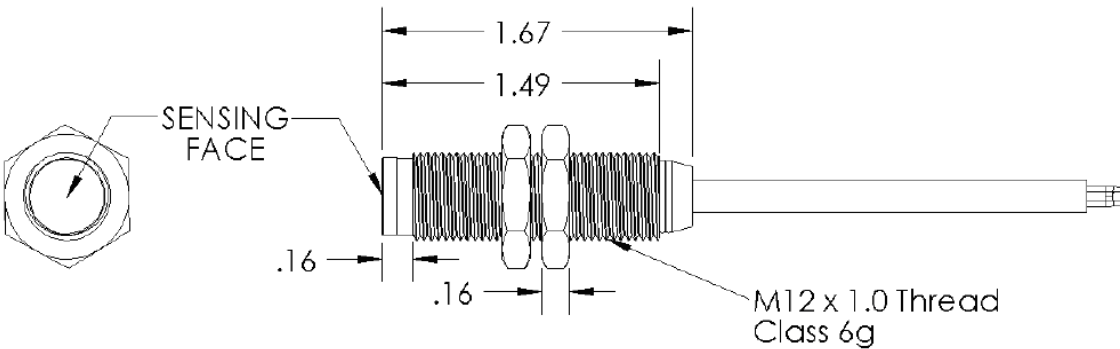
This specialized feature eliminates the need to externally calibrate or mechanically adjust each sensor for optimum performance. In addition, electronic hysteresis built into the device eliminates false triggering due to mechanical backlash and vibration. Installation of this sensor is also easier than “dual element” versions as this device operates correctly regardless of its rotational position or alignment relative to the motion of the target.

Electrical Characteristics (T= -40 to +125° C)						
Characteristics	Symbol	Test Condition	Limits			
			Min.	Typ.	Max.	Units
Supply Voltage	V _{CC}	Operating	5		24	VDC
Supply Current	I _S	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		2.2		nf
Bandwidth	BW	Operating			15	kHz
Magnetic Hysteresis	B _{hys}	Over V _{CC} and Temp. Range	40	55	100	G

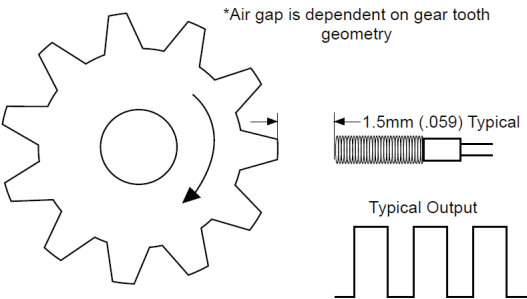
K9 SERIES GEARTOOTH SENSOR
Auto Compensating Geartooth Sensor



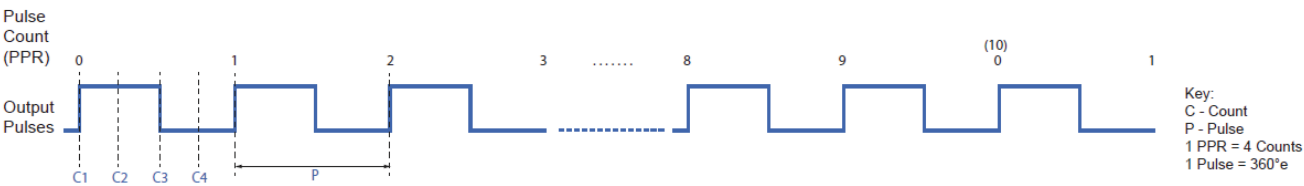
Dimensions in inch



Application Example

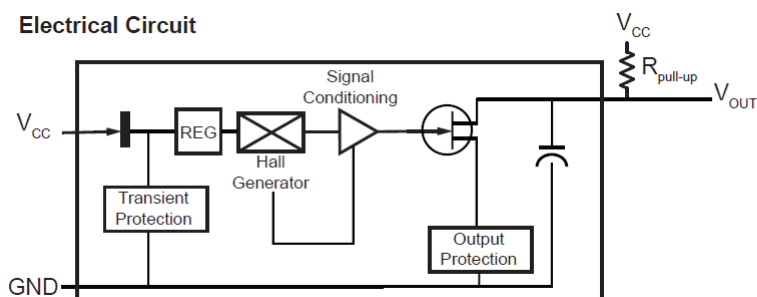


Output Waveforms



Electrical Characteristics

Electrical Circuit



Output channels require customer supplied pull-up resistors unless internal pull-up option is selected. See Table 1.1 for recommended resistor values.

Note: A pull-up resistor is required on the open collector output to establish a quiescent voltage level. The pull-up resistor also provides faster rise times and improves noise immunity.

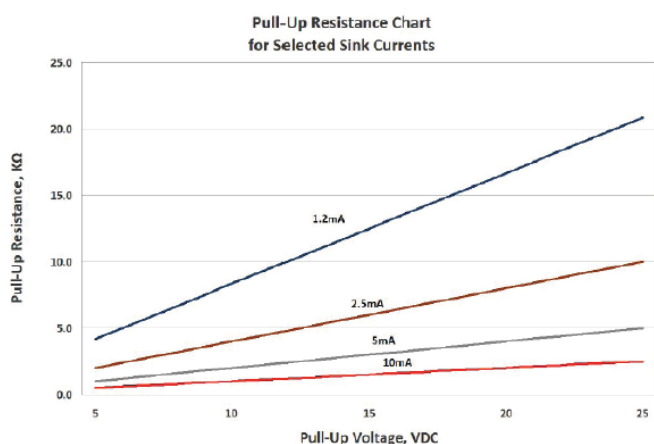


Table 1.1

Recommended Pull-Up Resistor Values			
Current, I_{sink}	Supply Voltage		
	5	12	24
1.2 mA	4.3K	10.0K	20.0K
2.5 mA	2.0K	4.7K	10.0K
5 mA	1.0K	2.4K	4.7K
10 mA	510Ω	1.2K	2.4K

I_{sink} is application dependent. It is recommended to use the lowest possible sink current when selecting a pull-up resistor.

Theoretical Pull-Up Resistor Calculation: $R_{pullup} = \frac{V_{supply}}{I_{sink}}$

Resistance values based on closest standard 5% resistor values

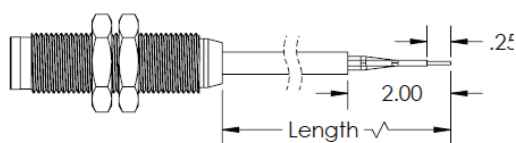
Absolute Maximum $I_{sink} = 20mA$

4.7 K pull-up is available as a standard option. If an alternative pull-up value is preferred, contact sales@phoenixamerica.com.

Wiring (measurements in inch)

Wiring

CABLE



NOT TO SCALE

- 22 AWG
- PVC Insulation

Flying Leads Not Available

Table 3.2

Standard Wiring Color Code	
	Cable
Vcc	Brown
Gnd	Blue
Output	Black



Ordering information

(Please use the characters in the chart below to create your product code)

Sample Code	K9	-	C	-	C	-	B	-	X
Series	K9								
Output Type			C	Open Collector					
Wiring					C	Cable			
Length (meters)							B 0.914 (36 inch)		
Connector								X	None