

Automotive Hall Sensors

**Non-Contact
Analog Rotary Position
Sensor**



This new electronic analog sensor is capable of continuous operation from -40°C to 150°C and features complete encapsulation of its electronic circuitry. These sensors are designed to replace conventional wiper-contact, resistor-based rotary position sensors where water, vibration and contact wear cause premature failures and contact noise problems.

These ratiometric linear sensors are well suited for throttle position sensing, pedal position, ride height and similar applications.

OPERATING TEMPERATURE	40°C to +150°C
SUPPLY VOLTAGE	4.5 to 5.5 VDC
OUTPUT VOLTAGE RANGE	14% to 93% of Supply Voltage (Ratiometric to supply; Vo clipped at 4.65 Volts for diagnostic dead band.)
SUPPLY CURRENT	20 mA maximum
OUTPUT CURRENT RANGE	1 mA maximum
ANGULAR RANGE	0 to 85.2 degrees plus over-travel (Angle range can be varied up to 110 degrees plus over-travel, depending upon customer requirements.)
RESOLUTION	Infinite (i.e., continuous)
ERROR BAND OF TRANSFER FUNCTION	±3% of Supply Voltage over operating temperature range
INDEPENDENT LINEARITY	±1 % of Supply Voltage (at constant temperature)
REPEATABILITY	±0.2% of Supply Voltage (in same direction of rotation, at constant temperature.)
HYSTERESIS	<0.5% of Supply Voltage (at constant temperature with a resistive load.)
OPERATIONAL LIFE	>10 million full cycles
PACKAGE SIZE	45 mm x 56 mm x 27 mm high (maximum)

Please call us to discuss electrical and packaging requirements for this technology

Inertia Switch



Custom AEC sensors offer a low cost, high reliability alternative to micromachined sensors and mechanical switches for low G-force applications, such as automotive ride control, anti-lock brakes, and passenger safety restraint systems. They are based upon our proven hermetic switch technology, fully encapsulated within custom housings. They respond to G-force in the horizontal plane, from 0.2 to 0.8G per design, and provide normally open, or normally closed contacts per customer requirements.

Specifications	Min	Norm	Max	Units
Temperature:				
Design	-37		100	0
Storage	-40		120	
Load Voltage		13.5		Volt
Switch Point	nom -.05		nom +.05	G
Hysteresis			0.05	G
Contact Resistance				
Closed Contacts			500	milliOhms
Open Contacts	1			Mega Ohm
Load Current				
Design	5		100	mA
Survival (for 2m Sec)			2	A
Contact Life (5mA@9VDC)	>500,000			Operations

Note: Switching features and package size are interrelated; the more directions to be sensed, the larger the package. Sensors for one axis, one direction, may be packaged smaller than 10x10x20mm while one axis, bidirectional, would double this volume. Sensors for x and y axis, bidirectional, and even omni directional activation, can be developed.

This is just a glimpse of our full product range - Call for more info

In the interest of product improvement all specifications in this catalogue are subject to change without notice.

Zero-Speed Sensor with Power-up Recognition



Features

- Custom designed Hall effect sensors for timing, speed, and position sensing.
- Wide operating temperatures (-40°C to +150°C).
- Wide air gap.
- Fixed-reach mounting.
- True zero speed.
- Power-up recognition.
- True proximity sensor.

Applications include engine cam and crankshaft speed and position. Proximity or limit switching. Custom designed housings and connectors.

General	Min	Nom	Max	Unit
Supply Voltage				
design specification performance range	6.00		12.00	VDC
functional range	4.80		18.00	VDC
survival range	0.00		24.00	VDC
Supply Current			20.00	mA
Temperature (design specification performance)	-40.00		150.00	Deg C
Target Speed (teeth per second)	0		>6000	Hz
Target Form:				
Steel Tooth (vane or web)	5.00	10.00		mm
Window (notch)	10.00	10.50		mm
Air Gap to Target*	0.00		2.00	mm
Timing (@ -40°C to +150°C; 0-7000 RPM 290 mm wheel with nominal tooth/window). Pulse 'high' during window.	0.20	1.15	1.80	Deg (angular)
Repeatability	<0.05			Deg (angular)
Pulse Width (ref. 290 mm diameter wheel):				
Design Spec (ref. 10.5 mm window)	1.00		5.00	Deg (angular)
Pulse Fall Time		1.50		µS
Pulse Rise Time		12.00		µS
Voltage Collector Emitter (on)			0.45	V
Leakage Current			10.00	µA
Output Sink Current			20.00	mA

Package Size**1 8.5 mm diameter x 42 mm Lg. (over body without connector)

General: Sensor has an NPN transistor open collector output. An external, current limiting pull-up resistor must be provided. The output signal is taken between the external pull-up resistor and the sensor's output terminal. The standard design is not intended for direct battery supply and is not protected from reverse voltage hook-up, load dump, nor negative field decay. Such protection can be provided in special custom designed versions. The sensor contains capacitive filters which provide immunity to the typical automotive REI/EMI environment. These capacitors are responsible for the pulse rise time stated above. Without such capacitors, the rise and fall times are typically 1.6 micro seconds and 800 nanoseconds respectively, or less. The target wheel must be made of a magnetic iron or steel. The sensor is a true proximity sensor and provides the correct logic output immediately upon energizing its supply and output terminals. Correct orientation of the sensor for proper function is when the nose end is disposed at the periphery of the target wheel and the mounting tongue is pointing in the opposite direction of rotation of the wheel. Other orientations and forms are feasible by custom designs.

*Maximum air gap is interrelated to target tooth/window dimensions; smaller teeth/windows result in smaller maximum air gap capability.

**Other package sizes and shapes are feasible, per customers requirements.

*If you can't see the Sensor for you-
Please Call Us*

*Visit our Website
www.willow.co.uk*