Honeywell

Speed Sensors Line Guide

Speed and reliability. Honeywell S&C offers electronic speed and position sensors designed for enhanced reliability and an extended life. Honeywell uses multiple technologies to detect a change in magnetic field and create an electronic signal for control system interface. These technologies offer the ability to detect speed, direction, or position of a moving ferrous metal or magnetic target. Sensing is accomplished without contacting the target, and there are no moving parts. This eliminates mechanical wear of the sensor or target. Honeywell offers a comprehensive line-up of Hall-effect, magnetoresistive, and variable reluctance sensors which provide electrical compatibility to most control system interfaces. We also offer a variety of sensor package types designed to enable mounting flexibility and wire harness interface compatibility. The Honeywell Speed and Position portfolio has been developed to support potential transportation and industrial customer application requirements.

FEATURES

SPEED AND DIRECTION SENSORS

SNG-Q Series.

Features: Wide operating temperature range: -40 ºC to 150 ºC [-40 °F to 302 °F] • Environmental sealing: Moisture ingress protection rated to IP69k • Robust electrical noise immunity: Electrical noise radiated immunity (EMC) rated to 100 V/m • Enhanced frequency switching capability: 3 Hz to 20 kHz • Direction information from phase-shifted dual output signals • O-ring seal: Enables environmental sealing to mounting surface • Supply voltage range: 4.5 V to 26 V

Benefits: Design and manufacturing use platform-based approach that enables cost-competitiveness and mechanical and electrical configurability. Provides both speed and direction information: speed from digital square wave outputs; direction using a quadrature output with signals 90° phase shifted from each other, target direction determined by output lead/lag phase shifting. Designed for applications where enhanced accuracy is required to detect small target features. Enhanced accuracy enabled by dual differential Hall-effect sensor IC technology. Designed for wide operating temperature range, robust electrical noise immunity and industry leading environmental sealing capability. Potential industrial applications include power control in heavy duty vehicle ac induction motors and hydraulic pumps, speed and position control in esclators and elevators. Potential transportation applications include power regulation control of hybrid electric transmissions and engines in heavy duty vehicles, wheel speed detection in material handling, agriculture and contruction machines

1GT Series.

Features: Fast operating speed • Reverse polarity and transient protection • EMI resistant • Wide continuous operating temperature range • Probe-style package • Enhanced low speed performance • Output amplitude not dependent on RPM

Benefits: Sealed in probe-style package for physical protection and cost-effective installation. Sensor electronically self-adjusts to slight variations in runout and temperature, often simplifying installation and maintenance. Circuit senses movement of targets in camshaft and crankshaft speed and position, transmission speed, and tachometer applications, as well as anti-skid and traction control applications.

LCZ Series.

Features: Stainless steel package • Low cost • Omni-directional sensor to target orientation • Low power consumption • Small size • Zero speed • Digital output • Durable, cost-effective sensing solution • Screw-in-style package

Benefits: Available in several diameters and lengths for application flexibility. Stainless steel package simple to install/adjust and does not require rotational orientation. Potential applications include harsh environment rotary applications such as pumps, rollers, mixers, fan speed measurement, transmission, spindles, gear reducer RPM, synchronization, compressor speed, and dyno testing, plus industrial process control and factory automation.

ZH10 Series.

Features: Aluminum package • Low cost • Omni-directional sensor to target orientation • Low power consumption • Small size • Zero speed • Digital output • Durable, cost-effective sensing solution • Screw-in-style package

Benefits: Aluminum package simple to install/adjust and does not require rotational orientation. Potential

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Speed. And customization.
From speedometer input, engine timing, and transmission input and output, to traction and chassis control, wheel speed systems, and RPM indication, plus industrial process control, Honeywell S&C offers unmatched engineering expertise. Which also makes us the leader in speed and direction sensor customization. Our internal design capabilities can incorporate magnetic modeling and mold flow-modeling services into unique and tailored product development — for solutions other companies simply can't match. It's another benefit you expect from Honeywell S&C, the parts and performance leader: true solid state; extended life (30 billion operations in key-board module test programs); high-speed operation (over 100 kHz possible); operates with stationary input (zero speed); logic-compatible input and output; broad temperature range (-40 °C to 150 °C, [-40 °F to 302 °F]); highly repeatable operation.

Speed and Direction Sensors

	SNG-Q Series	1GT Series
Description	quadrature speed and direction sensor with 4-wire quadrature sensing	single Hall-effect sensor
Supply voltage range	4.5 V to 26 V	4.5 Vdc to 26.5 Vdc (inclusive)
Supply current	2 mA normal, 18 mA max.	20 mA
Output type	square wave	digital sinking (open collector)
Operating frequency range	3 Hz to 20 kHz	0 Hz to 25 kHz (inclusive)
Operating temperature range	-40 °C to 150 °C [-40 °F to 302 °F]	-40 °C to 150 °C [-40 °F to 302 °F]

Speed and Direction Sensors

	LCZ Series	ZH10 Series	584XX Series
Description	single Hall-effect zero speed sensor	single Hall-effect zero speed sensor	digital magnetic speed sensor
Housing	stainless steel	aluminum	stainless steel
Supply voltage range	4.5 Vdc to 26 Vdc	4 Vdc to 24 Vdc	5 Vdc to 30 Vdc
Supply current	20 mA	6 mA	15 mA
Output type	digital sinking	digital sinking	square wave
Operating frequency range	0 Hz to 15 kHz	0 Hz to 15 kHz	-
Operating temperature range	-40 °C to 125 °C [-40 °F to 257 °F]	-40 °C to 125 °C [-40 °F to 257 °F]	-40 °C to 107 °C [-40 °F to 225 °F]

Speed and Direction Sensors

	SNDH-T Series	SNDH-H Series
Description	dual differential Hall-effect quadrature speed and direction sensor	Hall-effect speed sensor
Housing	n/a	stainless steel or plastic
Supply voltage range	4.5 Vdc to 18 Vdc	4 Vdc to 24 Vdc (inclusive)
Supply current	18 mA max.	20 mA max.
Output type	square wave	digital sinking
Operating frequency range	1 Hz to 15 kHz	0 Hz to 15 kHz, 2 Hz to 15 Hz
Operating temperature range	-40 °C to 150 °C [-40 °F to 302 °F]	-40 °C to 150 °C [-40 °F to 302 °F]

Speed and Direction Sensors

	SNDJ Series
Description	zero speed Hall-effect sensor differential Hall-effect sensor dual Hall-effect sensor
Supply voltage range	8 Vdc to 32 Vdc (inclusive)
Supply current	10 mA to 20 mA max. (inclusive)
Output type	square wave and one direction signal square wave signal from NPN output transistor with 2.7 kOhm pull-up, dc-coupled to supply square wave signal from push-pull stage, dc-coupled to supply
Operating frequency range	0 Hz to 15 kHz (inclusive)
Operating temperature range	-20 °C to 100 °C [-4 °F to 212 °F]

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Passive Speed Sensors

	VRS General Purpose Series	VRS Hazardous Location Series
Output voltage range	8 Vp-p to 40 Vp-p (inclusive)	30 Vp-p to 60 Vp-p (inclusive)
Housing diameter	5/8 in, 3/8 in, 1/4 in, 10/32 in	3/4 in, 5/8 in
Housing material/style	stainless steel threaded or smooth	stainless steel threaded
Termination	MS3106 connector, preleaded	MS3106 connector, preleaded
Operating temperature range	-55 °C to 120 °C [-67 °F to 250 °F] (inclusive)	-73 °C to 120 °C [-100 °F to 250 °F] (inclusive)

Passive Speed Sensors

	VRS High Output Series	VRS High Resolution Series
Output voltage range	8 Vp-p to 190 Vp-p (inclusive)	17 Vp-p to 170 Vp-p
Housing diameter	5/8 in, 3/8 in	5/8 in, 3/8 in
Housing material/style	stainless steel threaded or smooth	stainless steel threaded
Termination	MS3106 connector, preleaded	MS3106 connector, preleaded
Operating temperature range	-55 °C to 150 °C [-67 °F to 300 °F] (inclusive)	-55 °C to 120 °C [-67 °F to 250 °F]

Passive Speed Sensors

	VRS High Temperature Series	VRS Power Output Series
Output voltage range	4.7 Vp-p to 125 Vp-p (inclusive)	70 Vp-p (inclusive)
Housing diameter	5/8 in, 3/8 in, 1/4 in	5/8 in
Housing material and style	stainless steel threaded	stainless steel threaded
Termination	MS3106 connector, preleaded	MS3106 connector, preleaded
Operating temperature range	-73 °C to 230 °C [-100 °F to 450 °F] (inclusive)	-55 °C to 120 °C [-67 °F to 250 °F]

applications include harsh environment rotary applications such as pumps, rollers, mixers, fan speed measurement, transmission, spindles, gear reducer RPM, synchronization, compressor speed, and dyno testing, plus industrial process control and factory automation.

584XX Series.

Features: Senses moving ferrous metal • Output signal of integrated circuit allows for direct use in digital equipment • Eliminates the need for interface circuitry, reducing installation and maintenance costs • Enhanced stability due to precisely-matched components • Extremely precise relationship between the physical position of any sensed object and the electrical signal produced provides improved accuracy to timing and positioning applications • Enhanced sensitivity

Benefits: Excellent resistance to water, oil, shock and vibration damage extends the product life and operating reliability. A wide variety of supply voltages allow for application flexibility. Allows for the reduction in noise, often vital in potential positioning and synchronization applications. Pre-leaded or connector versions allow application flexibility. Standard thread sizes improve compatibility and interchangeability with other standard types of speed sensors. Potential applications include computing, high-speed counting, positioning, tachometry, synchronization, routing, flow metering, machine control, engine, motor, or pump RPM sensing, over/under speed sensing, and wheel speed detection.

SNDH-T Series.

Features: Advanced performance dynamic offset self calibration • Short circuit and reverse voltage protection • Air gap up to 2 mm [0.08 in] • Low jitter output • Near zero speed • EMI hardened • High frequency switching capability • Multiple connector options including wire harness and integral connector versions using AMP super seal or AMP Jr. • Probe-style package • Integrated circuit packaging provides output phase shift tolerancing with enhanced accuracy

Benefits: Provides speed and direction information using quadrature output with signals 90 degree phase shifted from each other. BiCMOS Hall-effect technology, using advanced digital signal processing for dynamic off-set cancellation, designed to provide enhanced air gap performance and phase shift accuracy over most conditions. Package design includes O-ring seal for pressure applications and a fixed mounting flange. Robust, automotive under-the-hood grade packaging for most environmental conditions as well as EMI hardened. Designed for potential applications where extremely high resolution is required at wide frequency ranges, and large air gaps.

SNDH-H Series.

Features: Hall-effect magnetic sensing technology • Digital current sinking output (open collector) • Advanced performance dynamic offset self-calibration • Air gap up to 2,5 mm [0.098 in] • Zero speed versions • High frequency switching capability (0 Hz to 15 kHz) • -40 ºC to 150 ºC [-40 °F to 302 °F] operating temperature capability • Multiple connector options • O-ring seal

Benefits: Use a magnetically biased Hall-effect integrated circuit to accurately sense movement of ferrous metal targets. The specially designed IC (integrated circuit) and a permanent magnet are sealed in rugged, probe-type packages. The flux density of the permanent magnet alters when approached by ferrous metal and is detected by the Hall ICs. If the sensor is positioned at the circumference of a revolving gear wheel, for example, it detects the teeth and tooth spaces, supplying a digital pulse output with frequency proportional to gear wheel speed. Potential applications include tachometers/counters, speed of gears and shafts in transmissions, hydraulic motors, pumps, and gear boxes flow meters/ turbines, and engine RPM.

SNDJ Series.

Features: Three housing styles • Three different outputs • Backbiased Hall-effect sensor • Direct sensing of ferrous metal target • Zero speed sensing capabilities (some listings) • Stainless steel housing • Probe- and screw-in-style packages • Rotational orientation independent of sensor function

Benefits: Used with ferromagnetic gears or pole wheel to generate impulse frequencies proportional to target speed. Rugged stainless steel housing for potential applications found in high speed gear tooth sensing, over-speed detection, and rotary gear or shaft position detection applications.

PASSIVE SPEED SENSORS

VRS General Purpose Series, VRS Hazardous Location Series, VRS High Output Series, VRS High Resolution Series, VRS High Temperature Series, VRS Power Output Series.

Features: Self-powered operation • Simple installation • No moving parts • Operates over wide speed range • Often adaptable to wide variety of configurations • Customized versions for unique speed sensing applications

Benefits: All: Direct conversion of actuator speed to output frequency. VRS General Purpose Series, VRS Hazardous Location Series: Simple, rugged devices do not require external voltage source for operation. VRS High Output Series: Performs best at low to medium speeds with medium to high impedance loads. Sealed front-end versions available for use where sensor is exposed to fluids, lubricants, or adverse environmental conditions. VRS High Resolution Series: Proper sensor alignment is required. VRS High Temperature Series: Sealed front-end versions for potential applications where sensor is exposed to fluids, lubricants, or adverse environmental conditions.

Potential applications: VRS General Purpose Series: Engine and motor RPM, process, flow, wheel-slip, and gear speed measurement with medium to high speeds or in electrically noisy environments with relatively small air gaps. VRS Hazardous Location Series: Engine and motor RPM, process, flow, wheel-slip, and gear speed measurement where explosion-proof or intrinsically safe sensors are required. VRS High Output Series: Engine and motor RPM, process, flow, wheel-slip,

and gear speed measurement where higher output voltages are needed. VRS High Resolution Series: Engine and motor RPM, process, flow, wheel-slip, and gear speed measurement where precise timing pulse is required, and/or fine pitch gears are used. VRS High Temperature Series: Engine and motor RPM, process, flow, wheel-slip, and gear speed measurement where sensor is exposed to temperatures up to 260 °C [450 °F]. VRS Power Output Series: Driving low resistance loads at large air gaps in engine and motor RPM, process, flow, wheel-slip, and gear speed measurement where larger actuators may be used.

Warranty. Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship. Honeywell's standard product warranty applies unless agreed to otherwise by Honeywell in writing; please refer to your order acknowledgement or consult your local sales office for specific warranty details. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace, at its option, without charge those items it finds defective. **The foregoing is buyer's sole remedy and is in lieu of all warranties, expressed or implied, including those of merchantability and fitness for a particular purpose. In no event shall Honeywell be liable for consequential, special, or indirect damages.**

While we provide application assistance personally, through our literature and the Honeywell web site, it is up to the customer to determine the suitability of the product in the application.

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For more information about Sensing and Control products, visit www.honeywell.com/sensing or call +1-815-235-6847
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