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 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.

GTN Series.

Features: Choice of barrel lengths • Integrated electronic diagnostics • Enhanced operating speed • EMI resistant • Reverse polarity and transient protection • 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. Integrated electronic diagnostics feature detects open or short circuits in power supply line by monitoring sensor levels output. Circuit senses movement of ferrous metal targets in potential camshaft and crankshaft speed and position, transmission speed, and tachometer applications, as well as anti-skid and traction control applications.

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.

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

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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	1GT Series	GTN Series
Description	single Hall-effect sensor	single Hall-effect sensor
Supply voltage range	4.5 Vdc to 26.5 Vdc (inclusive)	8 Vdc to 32 Vdc (inclusive)
Supply current	20 mA	40 mA
Output type	digital sinking (open collector)	digital sinking (open collector)
Operating frequency range	0 Hz to 25 kHz (inclusive)	2 Hz to 9 kHz
Operating temperature range	-40 °C to 150 °C [-40 °F to 302 °F]	-40 °C to 125 °C [-40 °F to 257 °F]

Speed and Direction Sensors	SNDH-T Series	SNDJ Series
Description	dual differential Hall-effect quadrature speed and direction sensor	zero speed Hall-effect sensor, differential Hall-effect sensor, dual Hall-effect sensor
Supply voltage range	4.5 Vdc to 18 Vdc	8 Vdc to 32 Vdc (inclusive)
Supply current	18 mA max.	10 mA to 20 mA max. (inclusive)
Output type	square wave	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	1 Hz to 15 kHz	0 Hz to 15 kHz (inclusive)
Operating temperature range	-40 °C to 150 °C [-40 °F to 302 °F]	-20 °C to 100 °C [-4 °F to 212 °F]

Speed and Direction Sensors

	LCZ Series	ZH10 Series
Description	single Hall-effect zero speed sensor	single Hall-effect zero speed sensor
Housing	stainless steel	aluminum
Supply voltage range	4.5 Vdc to 26 Vdc	4 Vdc to 24 Vdc
Supply current	20 mA	6 mA
Output type	digital sinking	digital sinking
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]

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)

Speed Sensors Line Guide

Passive Speed Sensors

	VRS High Output Series	VRS High Resolution Series	VRS High Temperature Series
Output voltage range	8 Vp-p to 190 Vp-p (inclusive)	17 Vp-p to 170 Vp-p	4.7 Vp-p to 125 Vp-p (inclusive)
Housing diameter	5/8 in, 3/8 in	5/8 in, 3/8 in	5/8 in, 3/8 in, 1/4 in
Housing material/style	stainless steel threaded or smooth	stainless steel threaded	stainless steel threaded
Termination	MS3106 connector, preleaded	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]	-73 °C to 230 °C [-100 °F to 450 °F] (inclusive)

Passive Speed Sensors

	VRS Power Output Series	VRS Low-Cost Molded Series
Output voltage range	70 Vp-p (inclusive)	10 Vp-p to 190 Vp-p (inclusive)
Housing diameter	5/8 in	0.505 in, 7/16 in, 0.292 in, 1/4 in
Housing material/style	stainless steel threaded	plastic smooth or threaded
Termination	MS3106 connector, preleaded	crimp, pin, preleaded
Operating temperature range	-55 °C to 120 °C [-67 °F to 250 °F]	-55 °C to 230 °C [-67 °F to 450 °F] (inclusive)

Speed Sensor Building Blocks

	1GP Series	1GQ Series	1GM Series
Description	Hall-effect	Hall-effect	magnetoresistive
Target geometry	equal slots, tooth size can vary	slot size can vary, tooth size can vary	complementary target
Package material	metal	metal	plastic
Zero speed sensing	no	no	yes
Power supply range	4.5 Vdc to 24 Vdc	5 Vdc to 26.5 Vdc	4.5 Vdc to 16 Vdc
Output	digital current sinking	digital current sinking	digital current sinking
Operating speed	up to 100 kHz	up to 100 kHz	up to 100 kHz
Operating temperature range	-40 °C to 150 °C [-40 °F to 302 °F]	-40 °C to 150 °C [-40 °F to 302 °F]	-40 °C to 150 °C [-40 °F to 302 °F]

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.

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.

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 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.

PASSIVE SPEED SENSORS

VRS General Purpose Series, VRS Hazardous Location Series, VRS High Output Series, VRS High Resolution Series, VRS High Temperature Series, VRS Low-Cost Molded 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 Low-Cost Molded Series: OEM. 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.

SPEED SENSOR BUILDING BLOCKS

1GP Series.

Features: Environmentally protected building block module • Optional inverted output • Enhanced low-speed performance • Output amplitude not dependent on target speed • Enhanced operating speed • Transient (ISO 7637/1) and reversed polarity protection • EMI resistant • Wide operating temperature range

Benefits: Hall-effect gear-tooth sensor accurately detects absence or presence of moving ferromagnetic target. Integrated circuit, discrete components, and magnet enclosed in environmentally-sealed, stainless steel can. Can potentially be used in camshaft and crankshaft speed and position sensing, transmission speed sensing, and tachometers applications.

1GQ Series.

Features: Environmentally protected building block module • Excellent low-speed performance • Output amplitude not dependent on target speed • Optional inverted output • Enhanced operating speed • Transient (ISO 7637/1) and reversed polarity protection • EMI resistant • Wide operating temperature range • Can sense European 60-2 crank target

Benefits: Hall-effect gear-tooth sensor accurately detects absence or presence of moving ferromagnetic target. Integrated circuit, discrete components and magnet enclosed in environmentally-sealed, cylindrical stainless steel housing. Symmetry not required; can sense irregularly shaped targets as well as small teeth and slots. Can potentially be used in camshaft and crankshaft speed and position sensing, transmission speed sensing, and tachometers applications.

1GM Series.

Features: Building block module • Power-on recognition sensing • Zero speed • Enhanced operating speed • Transient and reversed polarity protection • EMI resistant • Wide operating temperature range

Benefits: Enhanced accuracy, magnetoresistive sensor designed to provide zero-speed sensing when using a complementary target (both tooth and slot are in same sensing face) configuration. Can potentially be used in camshaft speed and position sensing applications.

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.**

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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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- DO NOT USE these products as safety or emergency stop devices or in any other application where failure of the product could result in personal injury.

Failure to comply with these instructions could result in death or serious injury.

⚠ WARNING
MISUSE OF DOCUMENTATION

- The information presented in this catalogue is for reference only. DO NOT USE this document as product installation information.
- Complete installation, operation and maintenance information is provided in the instructions supplied with each product.

Failure to comply with these instructions could result in death or serious injury.

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005893-1-EN IL50 GLO
June 2008