

Hazardous Location Industrial VRS Magnetic Speed Sensors



DESCRIPTION

Hazardous Location VRS sensors are designed for use in locations where explosion-proof or intrinsically safe sensors are required.

Passive VRS (Variable Reluctance Speed) Magnetic Speed sensors are simple, rugged devices that do not require an external voltage source for operation.

A permanent magnet in the sensor establishes a fixed magnetic field. The approach and passing of a ferrous metal target near the sensor's pole piece (sensing area) changes the flux of the magnetic field, dynamically changing its strength. This change in magnetic field strength induces a current into a coil winding which is attached to the output terminals.

FEATURES

- Self-powered operation
- Direct conversion of actuator speed to output frequency
- Simple installation
- No moving parts
- Designed for use over a wide range of speeds
- Adaptable to a wide variety of configurations
- Customized VRS products for unique speed sensing applications
- Housing diameters: 3/4 in, 5/8 in
- Housing material/style: stainless steel threaded
- Terminations: MS3106 connector, preleaded
- Output voltages: 30 Vp-p to 60 Vp-p

The output signal of a VRS sensor is an ac voltage that varies in amplitude and wave frequency as the speed of the monitored device changes, and is usually expressed in peak to peak voltage (Vp-p).

One complete waveform (cycle) occurs as each target passes the sensor's pole piece. If a standard gear were used as a target, this output signal would resemble a sine wave if viewed on an oscilloscope.

Honeywell also offers VRS sensors for general purpose, high output, power output, high resolution and high temperature, as well as low-cost molded versions.

POTENTIAL APPLICATIONS

- Engine RPM (revolutions per minute) measurement on aircraft, automobiles, boats, buses, trucks and rail vehicles
- Motor RPM on oil and gas drilling equipment and machinery
- Motor RPM measurement on drills, grinders, lathes and automatic screw machines
- Process speed measurement on food, textile, paper, woodworking, printing, tobacco and pharmaceutical industry machinery
- Motor speed measurement of electrical generating equipment in grain elevators, sawmills and other potentially explosive environments
- Speed measurement of pumps, blowers, mixers, exhaust
- Gear speed measurement

Hazardous Location

3/4 INCH EXPLOSION-PROOF SENSORS (All dimensions for reference only. mm/[in])

When properly installed using the explosion containment method, all 3070X and catalog listings on this page are certified for use in hazardous locations as follows: Class I, Groups A, B, C, D; Class II Groups E, F, G; Class III.

These catalog listings have been tested to and meet the requirements of applicable U.S. and Canadian specifications for the locations described above.

General Specifications

Parameter	Characteristic	Parameter	Characteristic
Min. output voltage	60 Vp-p	Inductance	115 mH max.
Coil resistance	191 Ohm to 280 Ohm	Gear pitch range	12 DP (module 2.11) or coarser
Pole piece diameter	4,75 mm [0.187 in]	Optimum actuator	8 DP (module 3.17) ferrous metal gear
Min. surface speed	0,38 m/s [15 in/s] typ.	Max. operating frequency	40 kHz typ.
Operating temp. range	-73 °C to 93 °C [-100 °F to 200 °F]	Vibration	Mil-Std 202F Method 204D
Mounting thread	3/4-20 UNEF-2A	Termination	18 AWG PVC-Insulated Leads

Test Condition Specifications

Parameter	Characteristic
Surface speed	25 m/s [1000 in/s]
Gear	8 DP (module 3.17)
Air gap	0,127 mm [0.005 in]
Load resistance	100 kOhm

Catalog Listing	Thread Length (A)	Weight	
3070A	45 mm [1.8 in]	294 g [10.5 oz]	<p>The technical drawing shows a side view of the sensor with the following dimensions: a hexagonal base with a diameter of 24.05 mm [1.00 in]; a threaded section of length A; a section with a diameter of 31.75 mm [1.250 in]; and a total length of 3000 mm MIN [120.00 in] including the 1/2-14 NPT mounting thread. A label 'BLIND END SHELL POLE PIECE' points to the internal component.</p>
3070A35	88 mm [3.5 in]	322 g [11.5 oz]	