

## High Temperature Industrial VRS Magnetic Speed Sensors



### DESCRIPTION

High Temperature VRS sensors are designed for use in applications where the sensor is exposed to temperatures up to 260 °C [450 °F]. Sealed Front-End versions are available for applications where the sensor is exposed to fluids, lubricants or adverse environmental conditions.

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: 5/8 in (M16), 3/8 in (M12), 1/4 in (8M)
- Housing material/style: stainless steel threaded
- Terminations: MS3106 connector, preleaded
- Output voltages: 4.7 Vp-p to 125 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 hazardous location applications, as well as low-cost molded OEM versions.

### POTENTIAL APPLICATIONS

- Engine RPM (revolutions per minute) measurement on aircraft, automobiles, boats, buses, trucks and rail vehicles
- Motor RPM measurement on drills, grinders, lathes and automatic screw machines
- Motor RPM measurement on precision camera, tape recording and motion picture equipment
- Process speed measurement on food, textile, paper, woodworking, printing, tobacco and pharmaceutical industry machinery
- Motor speed measurement of electrical generating equipment
- Speed measurement of pumps, blowers, mixers, exhaust and ventilating fans
- Flow measurement on turbine meters
- Wheel-slip measurement on autos and locomotives
- Gear speed measurement

# High Temperature

## 5/8 INCH (M16\*) SENSORS (All dimensions for reference only. mm/[in])

\*Contact Honeywell for availability of metric mounting thread versions.

### LOW RESISTANCE COILS FOR HIGH FREQUENCY APPLICATIONS

#### General Specifications

| Parameter             | Characteristic                         | Parameter                | Characteristic                 |
|-----------------------|----------------------------------------|--------------------------|--------------------------------|
| Min. output voltage   | 25 Vp-p                                | Inductance               | 30 mH max.                     |
| Coil resistance       | 65 Ohm typ.                            | Gear pitch range         | 24 DP (module 1.06) or coarser |
| Pole piece diameter   | 2,69 mm [0.106 in]                     | Optimum actuator         | 20 DP (module 1.27)            |
| Min. surface speed    | 0,50 m/s [20 in/s] typ.                | Max. operating frequency | 50 kHz typ.                    |
| Operating temp. range | -55 °C to 230 °C<br>[-67 °F to 450 °F] | Vibration                | N/A                            |
| Mounting thread       | 5/8-18 UNF-2A                          | Termination              | MS3106 connector               |

#### Test Condition Specifications

| Parameter       | Characteristic         |
|-----------------|------------------------|
| Surface speed   | 25 m/s<br>[1000 in/s]  |
| Gear            | 20 DP<br>(module 1.27) |
| Air gap         | 0,127 mm<br>[0.005 in] |
| Load resistance | 100 kOhm               |

| Catalog Listing | Weight        |  |
|-----------------|---------------|--|
| 3010HTB         | 70 g [2.5 oz] |  |

### HIGH RESISTANCE COILS FOR MAXIMUM OUTPUT VOLTAGE APPLICATIONS

#### General Specifications

| Parameter             | Characteristic                         | Parameter                | Characteristic                 |
|-----------------------|----------------------------------------|--------------------------|--------------------------------|
| Min. output voltage   | 125 Vp-p                               | Inductance               | 450 mH max.                    |
| Coil resistance       | 1055 Ohm typ.                          | Gear pitch range         | 24 DP (module 1.06) or coarser |
| Pole piece diameter   | 2,69 mm [0.106 in]                     | Optimum actuator         | 20 DP (module 1.27)            |
| Min. surface speed    | 0,25 m/s [10 in/s] typ.                | Max. operating frequency | 15 kHz typ.                    |
| Operating temp. range | -55 °C to 230 °C<br>[-67 °F to 450 °F] | Vibration                | N/A                            |
| Mounting thread       | 5/8-18 UNF-2A                          | Termination              | MS3106 connector               |

#### Test Condition Specifications

| Parameter       | Characteristic         |
|-----------------|------------------------|
| Surface speed   | 25 m/s<br>[1000 in/s]  |
| Gear            | 20 DP<br>(module 1.27) |
| Air gap         | 0,127 mm<br>[0.005 in] |
| Load resistance | 100 kOhm               |

| Catalog Listing | Thread Length (A) | Weight        |  |
|-----------------|-------------------|---------------|--|
| 3030HTB         | 28 mm [1.1 in]    | 70 g [2.5 oz] |  |
| 3030HTB25       | 63 mm [2.5 in]    | 84 g [3.0 oz] |  |