Honeywell

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 ºC [450 ºF]. 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.

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.

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

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

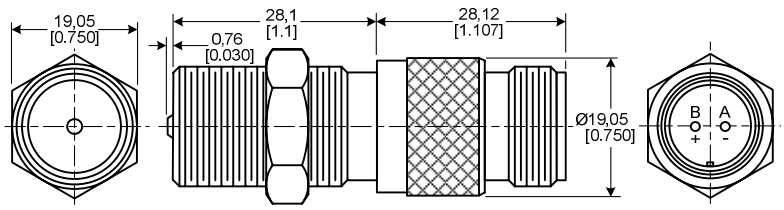
General Specifications

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 ºC to 230 ºC [-67 ºF to 450 ºF]	Vibration	N/A
Mounting thread	5/8-18 UNF-2A	Termination	MS3106 connector

Test Condition Specifications

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

Catalog Listing	Weight
3010HTB	70 g [2.5 oz]



HIGH RESISTANCE COILS FOR MAXIMUM OUTPUT VOLTAGE APPLICATIONS

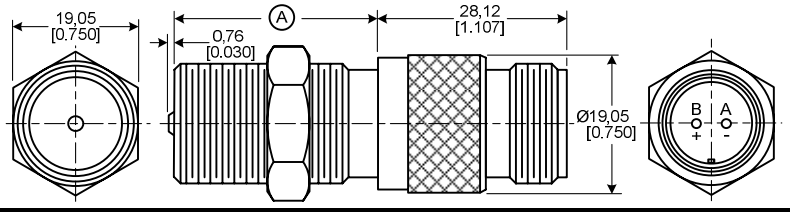
General Specifications

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 ºC to 230 ºC [-67 ºF to 450 ºF]	Vibration	N/A
Mounting thread	5/8-18 UNF-2A	Termination	MS3106 connector

Test Condition Specifications

Parameter	Characteristic
Surface speed	25 m/s [1000 in/s]
Gear	20 DP (module 1.27)
Air gap	0,127 mm [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]



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

*Contact Honeywell for availability of metric mounting thread versions.

NOMINAL RESISTANCE COILS FOR LOW IMPEDANCE LOAD APPLICATIONS

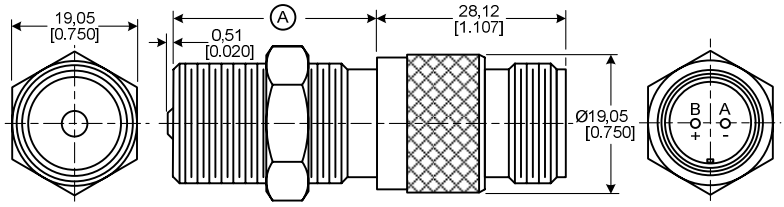
General Specifications

Parameter	Characteristic	Parameter	Characteristic
Min. output voltage	45 Vp-p	Inductance	85 mH max.
Coil resistance	141 Ohm typ.	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)
Min. surface speed	0,38 m/s [15 in/s] typ.	Max. operating frequency	40 kHz typ.
Operating temp. range	-55 ºC to 230 ºC [-67 ºF to 450 ºF]	Vibration	N/A
Mounting Thread	5/8-18 UNF-2A	Termination	MS3106 Connector

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	1.25 kOhm

Catalog Listing	Thread Length (A)	Weight
3040HTB	28 mm [1.1 in]	70 g [2.5 oz]
3040HTB25	63 mm [2.5 in]	84 g [3.0 oz]



High Temperature

5/8 INCH SEALED FRONT-END SENSORS (All dimensions for reference only. mm/[in])
(No metric available.)

NOMINAL RESISTANCE COILS FOR LOW IMPEDANCE LOADS APPLICATIONS

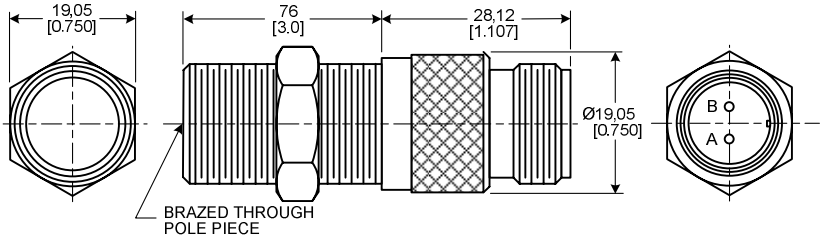
General Specifications

Parameter	Characteristic	Parameter	Characteristic
Min. output voltage	60 Vp-p	Inductance	85 mH max.
Coil resistance	120 Ohm to 162 Ohm	Gear pitch range	12 DP (module 2.11) or coarser
Pole piece diameter	4,39 mm [0.173 in]	Optimum actuator	8 DP (module 3.17)
Min. surface speed	0,38 m/s [15 in/s] typ.	Max. operating frequency	40 kHz typ.
Operating temp. range	-54 ºC to 220 ºC [-65 ºF to 428 ºF]	Vibration	N/A
Mounting Thread	5/8-18 UNF-2A	Termination	MS3106 connector

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	1.25 kOhm

Catalog Listing	Weight
MA243HT	98 g [3.5 oz]



Industrial VRS Magnetic Speed Sensors

3/8 INCH (M12*) SENSORS (All dimensions for reference only. mm/[in])

*Contact Honeywell for availability of metric mounting thread versions.

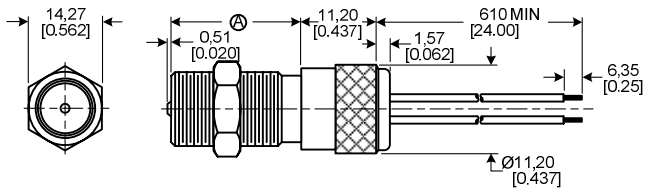
General Specifications

Parameter	Characteristic	Parameter	Characteristic
Min. output voltage	15 Vp-p	Inductance	31 mH max.
Coil resistance	110 Ohm max.	Gear pitch range	26 DP (module 0.98) or coarser
Pole piece diameter	2,36 mm [0.093 in]	Optimum actuator	24 DP (module 1.06) ferrous metal gear
Min. surface speed	0,75 m/s [20 in/s] typ.	Max. operating frequency	50 kHz typ.
Operating temp. range	-40 ºC to 205 ºC [-40 ºF to 400 ºF]	Vibration	N/A
Mounting thread	3/8-24 UNF-2A	Termination	24 AWG Teflon-insulated leads

Test Condition Specifications

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

Catalog Listing	Thread Length (A)	Weight
3015HTB	20 mm [0.8 in]	28 g [1.0 oz]
3015HTB15	38 mm [1.5 in]	42 g [1.5 oz]



High Temperature

1/4 INCH (M8*) MINIATURE SENSORS (All dimensions for reference only. mm/[in])
*Contact Honeywell for availability of metric mounting thread versions.

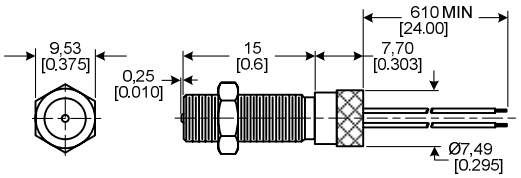
General Specifications

Parameter	Characteristic	Parameter	Characteristic
Min. output voltage	4.7 Vp-p	Inductance	13 mH max.
Coil resistance	137 Ohm max.	Gear pitch range	36 DP (module 0.70) or coarser
Pole piece diameter	1 mm [0.040 in]	Optimum actuator	28 DP (Module 0.90) ferrous metal gear
Min. surface speed	0,89 m/s [35 in/s] typ.	Max. operating frequency	70 kHz typ.
Operating temp. range	-40 ºC to 230 ºC [-40 ºF to 450 ºF]	Vibration	Mil-Std 202F Method 204D
Mounting thread	1/4-40 UNS-2A	Termination	30 AWG Teflon-Insulated Leads

Test Condition Specifications

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

Catalog Listing	Weight
3055A	14 g [0.5 oz]



Industrial VRS Magnetic Speed Sensors

1/4 INCH SEALED FRONT-END SENSORS (All dimensions for reference only. mm/[in])
(No metric available.)

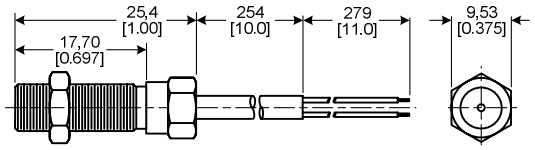
General Specifications

Parameter	Characteristic	Parameter	Characteristic
Min. output voltage	5.2 Vp-p	Inductance	85 mH max.
Coil resistance	20 Ohm to 45 Ohm	Gear pitch range	36 DP (module 0.70) or coarser
Pole piece diameter	1 mm [0.040 in]	Optimum actuator	28 DP (module 0.90) ferrous metal gear
Min. surface speed	0,89 m/s [35 in/s] typ.	Max. operating frequency	70 kHz typ.
Operating temp. range	-73 ºC to 230 ºC [-100 ºF to 450 ºF]	Vibration	Mil-Std 202F Method 204D
Mounting Thread	1/4-40 UNS-2A	Termination	28 AWG Teflon-insulated leads

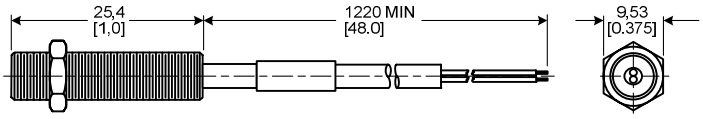
Test Condition Specifications

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

Catalog Listing	Weight
MA3055	28 g [1 oz]



Catalog Listing	Weight
MA3055S10	28 g [1 oz]



⚠ WARNING

PERSONAL INJURY

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.

WARRANTY/REMEDY

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 other 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.

Specifications may change without notice. The information we supply is believed to be accurate and reliable as of this printing. However, we assume no responsibility for its use.

⚠ WARNING

MISUSE OF DOCUMENTATION

- The information presented in this product sheet is for reference only. Do not use this document as a product installation guide.
- 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.

SALES AND SERVICE

Honeywell serves its customers through a worldwide network of sales offices, representatives and distributors. For application assistance, current specifications, pricing or name of the nearest Authorized Distributor, contact your local sales office or:

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