Honeywell

Low-Cost Molded

Industrial VRS Magnetic Speed Sensors

DESCRIPTION

Low-Cost Molded VRS Sensors are designed for use in OEM (Original Equipment Manufacturer) applications.

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 lines 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 high temperature, as well as hazardous location applications.

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: 0.505 in, 7/16 in, 0.292 in, 1/4 in
- Housing materials/styles: plastic smooth or threaded
- Terminations: Crimp, pin, preleaded
- Output voltages: 10 Vp-p to 190 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

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0.505 INCH SENSORS (All dimensions for reference only. mm/[in])

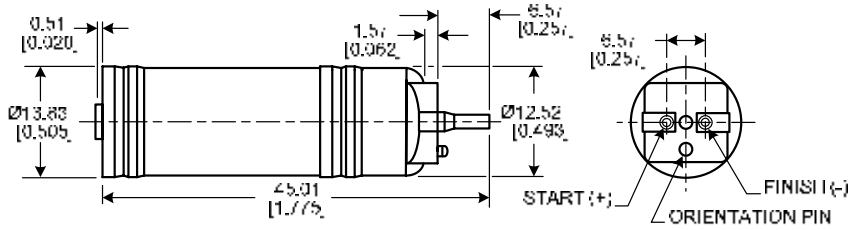
Catalog Listing: 2040C (For 230 ºC [450 ºF] capability, order 2040CHT.)

General Specifications

Parameter	Characteristic	Parameter	Characteristic
Min. output voltage	115 Vp-p	Inductance	85 mH max.
Max. coil resistance	120 Ohm to 162 Ohm	Gear pitch range	12 DP (module 2.11) or coarser
Pole piece diameter	4,75 mm [0.187 in]	Operating temp. range	-55 ºC to 120 ºC [-67 ºF to 250 ºF]
Weight	28 g [1.0 oz]	Termination	Crimp terminals

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



NOTES.

1. Left terminal in this orientation represents positive (+) polarity upon approach of ferrous material.

2. Provided with terminals that allow AWG 20 wire to be soldered or crimped to the sensor. Crimp terminals that allow use of AWG 18 wire are available upon special request.

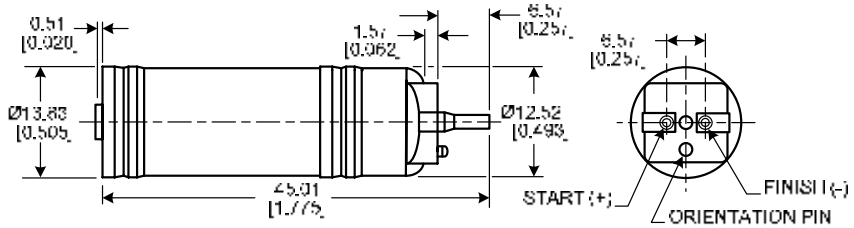
Catalog Listing: 2030C

General Specifications

Parameter	Characteristic	Parameter	Characteristic
Min. output voltage	190 Vp-p	Inductance	400 mH max.
Max. coil resistance	910 Ohm to 1200 Ohm	Gear pitch range	24 DP (module 1.06) or coarser
Pole piece diameter	2.69 mm [0.106 in]	Operating temp. range	-55 ºC to 120 ºC [-67 ºF to 250 ºF]
Weight	28 g [1.0 oz]	Termination	Crimp terminals

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



NOTES.

1. Left terminal in this orientation represents positive (+) polarity upon approach of ferrous material.

2. Provided with terminals that allow AWG 20 wire to be soldered or crimped to the sensor. Crimp terminals that allow use of AWG 18 wire are available upon special request.

0.505 INCH SENSORS CONTINUED (All dimensions for reference only. mm/[in])

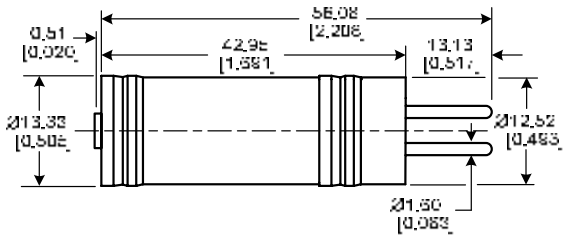
Catalog Listing: 2030P (For 230 ºC [450 ºF] capability, order 2030PHT.)

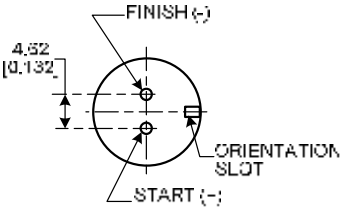
General Specifications

Parameter	Characteristic	Parameter	Characteristic
Min. output voltage	190 Vp-p	Inductance	400 mH max.
Max. coil resistance	910 Ohm to 1200 Ohm	Gear pitch range	24 DP (module 1.06) or coarser
Pole piece diameter	2.69 mm [0.106 in]	Operating temp. range	-55 ºC to 120 ºC [-67 ºF to 250 ºF]
Weight	28 g [1.0 oz]	Termination	Pin terminals

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





NOTES.

1. Bottom terminal in this orientation represents positive (+) polarity upon approach of ferrous material.

2. Provided with No. 20 terminal pins (male) suitable for crimping or soldering to female contacts.

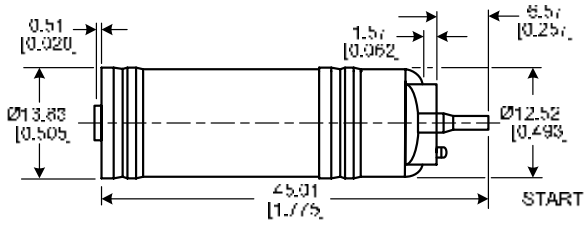
Catalog Listing: 2010C (For 230 ºC [450 ºF] capability, order 2010CHT.)

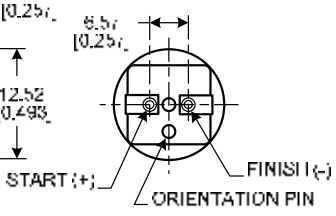
General Specifications

Parameter	Characteristic	Parameter	Characteristic
Min. output voltage	40 Vp-p	Inductance	25 mH max.
Max. coil resistance	45 Ohm to 85 Ohm	Gear pitch range	24 DP (module 1.06) or coarser
Pole piece diameter	2.69 mm [0.106 in]	Operating temp. range	-55 ºC to 120 ºC [-67 ºF to 250 ºF]
Weight	28 g [1.0 oz]	Termination	Crimp terminals

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





NOTES.

1. Left terminal in this orientation represents positive (+) polarity upon approach of ferrous material.

2. Provided with terminals that allow AWG 20 wire to be soldered or crimped to the sensor. Crimp terminals that allow use of AWG 18 wire are available upon special request.

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0.292 INCH SENSORS (All dimensions for reference only. mm/[in])

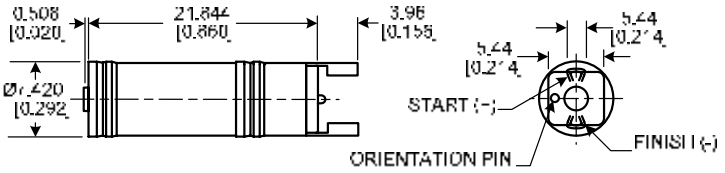
Catalog Listing: 2025C

General Specifications

Parameter	Characteristic	Parameter	Characteristic
Min. output voltage	55 Vp-p	Inductance	75 mH max.
Max. coil resistance	390 Ohm	Gear pitch range	26 DP (module 0.98) or coarser
Pole piece diameter	2.36 mm [0.093] in	Operating temp. range	-40 ºC to 225 ºC [-40 ºF to 107 ºF]
Weight	28 g [1.0 oz]	Termination	Crimp terminals

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



NOTES.

1. Top terminal pin in this orientation represents positive (+) polarity upon approach of ferrous material.

2. Provided with crimp terminals that allow AWG 24 wire to be soldered or crimped to the sensor.

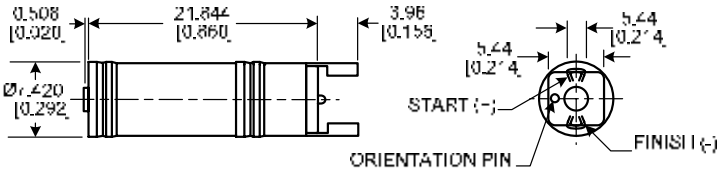
Catalog Listing: 2015C

General Specifications

Parameter	Characteristic	Parameter	Characteristic
Min. output voltage	20 Vp-p	Inductance	15 mH max.
Max. coil resistance	80 Ohm	Gear pitch range	26 DP (module 0.98) or coarser
Pole piece diameter	2.36 mm [0.093] in	Operating temp. range	-40 ºC to 225 ºC [-40 ºF to 107 ºF]
Weight	28 g [1.0 oz]	Termination	Crimp terminals

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



NOTES.

1. Top terminal pin in this orientation represents positive (+) polarity upon approach of ferrous material.

2. Provided with crimp terminals that allow AWG 24 wire to be soldered or crimped to the sensor.

Industrial VRS Magnetic Speed Sensors

7/16 INCH SENSORS

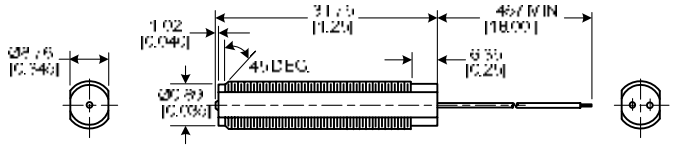
Catalog Listing: 3022

General Specifications

Parameter	Characteristic	Parameter	Characteristic
Min. output voltage	17.5 Vp-p	Inductance	9 mH max.
Max. coil resistance	54 Ohm	Gear pitch range	26 DP (module 0.98) or coarser
Pole piece diameter	2.36 mm [0.093] in	Operating temp. range	-18 ºC to 93 ºC [0 ºF to 200 ºF]
Weight	11 g [0.4 oz]	Termination	22 AWG PVC-insulated leads
Mounting thread	7/16-20 UNF-2A		

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



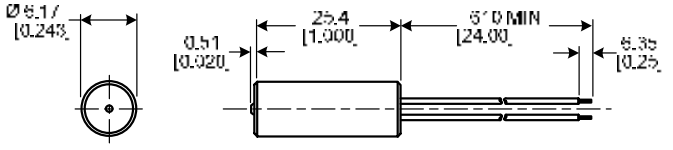
Catalog Listing: 302662

General Specifications

Parameter	Characteristic	Parameter	Characteristic
Min. output voltage	10 Vp-p	Inductance	11 mH max.
Max. coil resistance	130 Ohm	Gear pitch range	32 DP (module 0.80) or coarser
Pole piece diameter	1,83 mm [0.072 in]	Operating temp. range	-40 ºC to 107 ºC [-40 ºF to 225 ºF]
Weight	4.2 g [15 oz]	Termination	26 AWG PVC-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



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1/4 INCH SENSOR

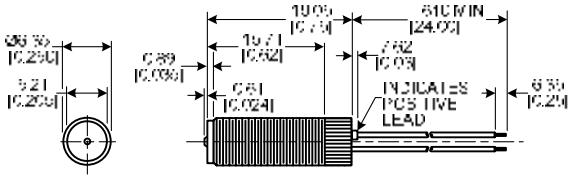
Catalog Listing: 302362

General Specifications

Parameter	Characteristic	Parameter	Characteristic
Min. output voltage	10 Vp-p	Inductance	11 mH max.
Max. coil resistance	130 Ohm	Gear pitch range	32 DP (module 0.80) or coarser
Pole piece diameter	1,83 mm [0.072 in]	Operating temp. range	-18 ºC to 60 ºC [0 ºF to 140 ºF]
Weight	4.2 g [15 oz]	Termination	26 AWG PVC-insulated leads
Mounting thread	1/4 -28 UNF-1A		

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



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⚠ 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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005881-1-EN IL50 GLO Printed in USA
March 2007