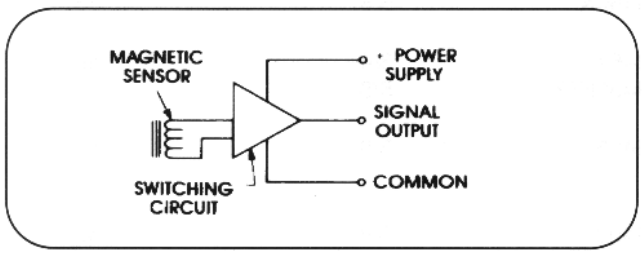
584XX/HV SERIES
DIGITAL MAGNETIC SPEED SENSORS

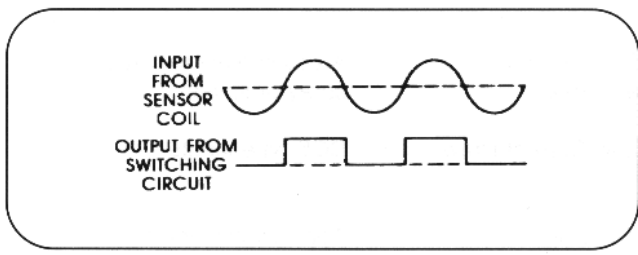
GENERAL DESCRIPTION

Electro's 584XX/HV Series Speed Sensors combine the features of VRS sensors with a self-contained switching circuit. This circuit changes the waveform generated by the sensor coil into a digital square-wave output. The switching circuit is triggered "on" by the positive-going leading edge of the sensor coil output and turned "off" when the sensor coil output approaches zero voltage.

Functional diagrams and general application data are shown below. Specifications unique to each model number are shown on the following three pages. Housing material for all models is Series 400 stainless steel, except HV units, which use Series 300 stainless steel.



Functional Block Diagram



Signal from Coil vs Output Signal

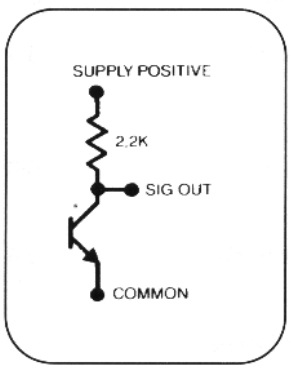
Output Configuration – All Models

Wiring: Pin A/Red = positive supply

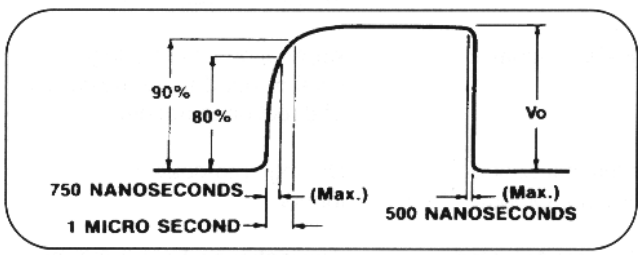
Pin B/Black = common

Pin C/White or Green = output

Note: Shell is connected to common on all models except HV units.



Power supply and output leads are unprotected, and must not be incorrectly connected, except on HV units, which have reverse polarity protection.



Detail of output signal, when a projection, such as a gear tooth or key is used as a target. Note that pulse width will vary due to actuator size, speed and airgap setting.

APPLICATION CONSIDERATIONS

You should consider using a Digital Magnetic 584XX/HV series sensor as opposed to a standard VRS sensor if your application requires the following:

- 5-15 VDC Supply Voltage.
- 10-30 VDC Supply Voltage with reverse polarity protection.
- Square wave logic output signal
- Detection of surface speeds as low as 1 IPS (.03m/sec.)
- Detection of gearpitch up to 64DP (Module .40)
- Orientation of the sensor is not desirable or possible

Note: The 584XX series sensors are not recommended for production use with exposure to hostile liquids. For such situations you should consider Electro VRS sensors and/or Active Sensors with sealed front ends and appropriate temperature ratings.

5/8 M16*
584XXHV SERIES DIGITAL MAGNETIC SPEED SENSORS

FOR APPLICATIONS REQUIRING HIGHER OPERATING VOLTAGES, REVERSE POLARITY PROTECTION AND/OR A SQUARE WAVE OUTPUT SIGNAL. REFERENCE SENSITIVITY CURVES ON PAGE 49 FOR EACH MODEL NUMBER. ALIGNMENT NOT REQUIRED. COMMON IS NOT CONNECTED TO HOUSING.

SUPPLY VOLTAGE: 10 to 30 VDC @ 15mA max.
Reverse polarity protected.

OPER. TEMP. RANGE: -40 to 225F (-40 to 107C)

HOUSING MATERIAL: 300 Stainless Steel

OUTPUT SIGNAL: Square Wave
Low: 350 mV max. @ 20mA maximum current sink
High: $= \frac{R_L \times V_S}{R_L + 2.2K}$ R_L = load resistance in K ohms
V_S = supply voltage in VDC

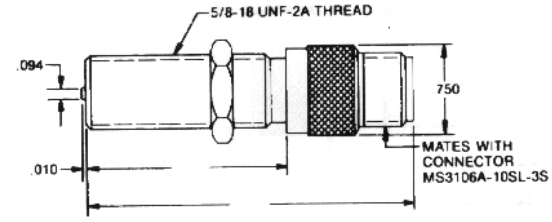
VIBRATION: Meets Mil-Std 202F Method 204D

58426HV

SENSORS WITH 5/8-18 UNF-2A MOUNTING THREAD*, MS3106 CONNECTOR, 10 KHz TYPICAL FREQUENCY RESPONSE.

MODEL	THREAD LENGTH	OVERALL LENGTH	WEIGHT
58426HV	1.8" (45 mm)	3.0" (76 mm)	3.0 oz. (85 gr.)
58426HVA30	3.0" (76 mm)	4.1" (104 mm)	5.0 oz. (142 gr.)

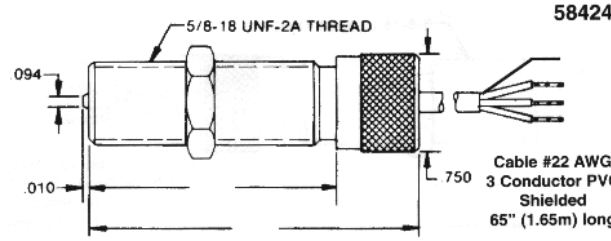
Mates with 41009(VR) Connector or CA310 Cable Assembly



58424HV

SENSORS WITH 5/8-18 UNF-2A MOUNTING THREAD*, AWG 22 PVC SHIELDED CABLE 65" (1.65 m) LONG, 10 KHz TYPICAL FREQUENCY RESPONSE.

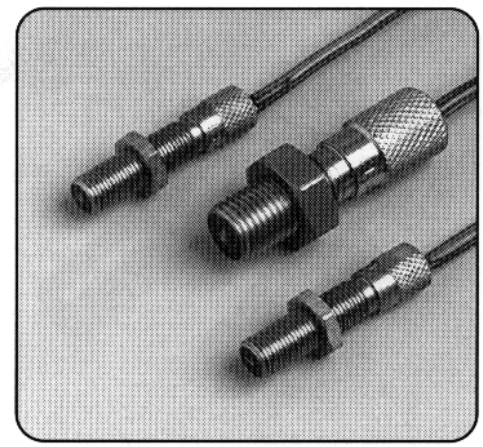
MODEL	THREAD LENGTH	OVERALL LENGTH	WEIGHT
58424HV	1.8" (45 mm)	2.5" (63 mm)	3.0 oz. (85 gr.)
58424HVA30	3.0" (76 mm)	3.7" (94 mm)	5.0 oz. (142 gr.)



ISO 9001
Certificate Number FM37434

For Metric Mounting Thread Versions, add "M" as the first character of the model number. Contact your local distributor for availability and pricing.

1/4 3/8 5/8 M16*
584XX SERIES DIGITAL MAGNETIC SPEED SENSORS

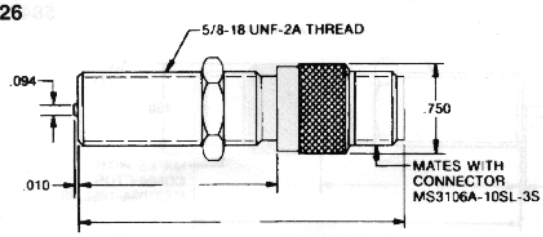


FOR APPLICATIONS REQUIRING LOW SPEED RESPONSE (1 IPS (.03M/SEC.) MINIMUM), FINE PITCH GEARS (TO 64DP (MODULE .40)) AND/OR A SQUARE WAVE OUTPUT SIGNAL. REFERENCE SENSITIVITY CURVES FOR EACH MODEL NUMBER ON PAGE 51. ALIGNMENT NOT REQUIRED. COMMON IS CONNECTED TO HOUSING.

SUPPLY VOLTAGE: 5.0 to 15 VDC @ 15mA max.
OPER. TEMP. RANGE: -40 to 225F (-40 to 107C)
HOUSING MATERIAL: 400 Stainless Steel
VIBRATION: Meets Mil-Std 202F Method 204D

OUTPUT SIGNAL: Square Wave
Low: 350 mV max. @ 20mA maximum current sink
High: $= \frac{R_L \times V_S}{R_L + 2.2K}$ R_L = load resistance in K ohms, V_S = supply voltage in VDC

58426

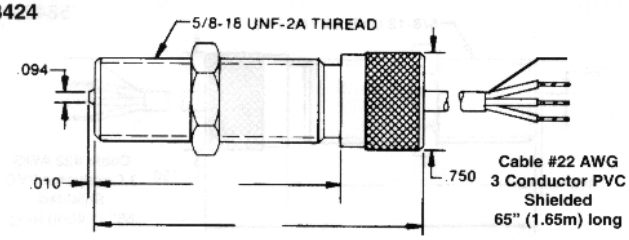


SENSORS WITH 5/8-18 UNF-2A MOUNTING THREAD*, MS3106 CONNECTOR, 10 KHz TYPICAL FREQUENCY RESPONSE.

MODEL	THREAD LENGTH	OVERALL LENGTH	WEIGHT
58426	1.8" (45 mm)	3.0" (76 mm)	3.0 oz. (85 gr.)
58426A30	3.0" (76 mm)	4.1" (104 mm)	5.0 oz. (142 gr.)

Mates with 41009(VR) Connector or CA310 Cable Assembly

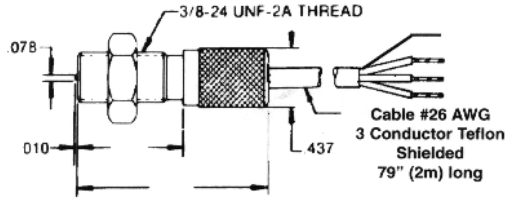
58424



SENSORS WITH 5/8-18 UNF-2A MOUNTING THREAD*, AWG 22 PVC SHIELDED CABLE 65" (1.65 m) LONG, 10 KHz TYPICAL FREQUENCY RESPONSE.

MODEL	THREAD LENGTH	OVERALL LENGTH	WEIGHT
58424	1.8" (45 mm)	2.5" (63 mm)	3.0 oz. (85 gr.)
58424A30	3.0" (76 mm)	3.7" (94 mm)	5.0 oz. (142 gr.)

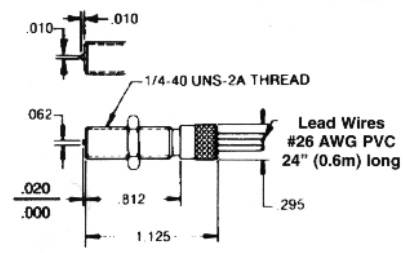
58423



SENSORS WITH 3/8-24 UNF-2A MOUNTING THREAD, AWG 26 TEFLON LEADS 79" (2 m) LONG, 50 KHz TYPICAL FREQUENCY RESPONSE.

MODEL	THREAD LENGTH	OVERALL LENGTH	WEIGHT
58423	1.0" (25 mm)	1.7" (38 mm)	3.0 oz. (85 gr.)

58413 (Chisel Tip)
58428



SENSORS WITH 1/4-40 UNS-2A MOUNTING THREAD, AWG 26 PVC LEADS 24" (600 mm) LONG, 380 KHz TYPICAL FREQUENCY RESPONSE.

MODEL	THREAD LENGTH	OVERALL LENGTH	WEIGHT
58428	.8" (20 mm)	1.1" (28 mm)	.5 oz. (14 gr.)
58413	.8" (20 mm)	1.1" (28 mm)	.5 oz. (14 gr.)

Model 58413 has .010" (.25 mm) wide chisel pole piece.

For Metric Mounting Thread Versions, add "M" as the first character of the model number. Contact your local distributor for availability and pricing.

ISO 9001
Certificate Number FM37434

Electro Corporation, U.S.A. 941-355-8411

584XX/HV SERIES SENSITIVITY CURVES

The sensitivity curves shown on this page represent the minimum required surface speeds and maximum allowable air gaps for various gear pitches.

To determine which sensor is appropriate for a particular application:

1. Plot the required air gap along the X axis in thousandths of an inch.
2. Plot the minimum surface speed of interest along the Y axis in inches per second.

The intersection of these two points must fall above the gear pitch curve being referenced for proper sensor operation.

For example, for an air gap of .020" and a surface speed of 10 IPS:

…For models 58424/HV and 58426/HV, all gear pitches are acceptable.
…For model 58423, you must use a 16 DP or coarser gear.
…Models 58428 and 58413 are not acceptable.