Standex Electronics

PARTNER | SOLVE | DELIVER®

HALL EFFECT SENSORS

Customer Focused Engineering Solutions

angular position

- Angular position of rotating targets
- Detects radial magnets
- Optional oriented target magnets
- Many housing and connection options
- Full scale analog output over full or limited range of rotation

SENSING TARGETS

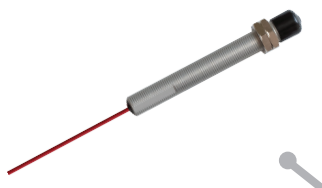
- Gears
- Magnets

count

- Single channel magnetic and steel sensors
- Quadrature gear tooth and magnet sensors
- Ferrous metal proximity sensors
- Calibrated to specific target
- Greater sensing distance from magnet vs. steel
- Magnets can be integrated into bolts, threaded targets, clamping collars

SENSING TARGETS

- Gears
- Rack Gears
- Ferrous Objects
- Multi-pole Magnet Tape
- Die Casting Shot Rods
- Permanent Magnets



proximity, alignment, position

- Single point detection
- Hall switches (single/dual output)
- Ferrous metal (analog/digital)
- Coded alignment sensors
- Magnetic tape tracking sensors
- Analog hall sensors
- Angular position sensors (analog)

SENSING TARGETS

- Gears
- Rack Gears
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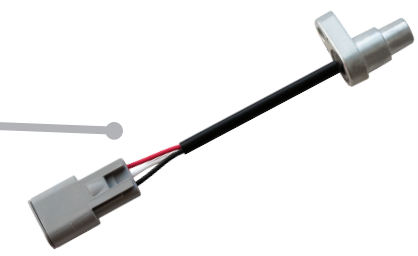
- Permanent Magnets



speed and direction

- Quadrature gear tooth and magnet sensors
- Calibrated to specific target
- Greater sensing distance from magnet vs. steel
- Magnets can be integrated into bolts, threaded targets, clamping collars

SENSING TARGETS

- Gears
- Rack Gears
- Ferrous Objects
- Multi-pole Magnet Tape
- Die Casting Shot Rods
- Permanent Magnets

field strength

- Angular position of rotating targets
- Analog precision proximity/position
- Application specific programming
- Target magnets with marked orientation
- Many housing and connection options
- Full scale analog output over full or limited range of rotation

SENSING TARGETS

- Permanent Magnets
- Electromagnetic Fields
- Multi-pole Magnet Tape

Sensor Solutions

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For more info visit ***sensorso.com***

We **partner, solve, and deliver®** custom engineered solutions using the appropriate advanced sensing technology to meet the demands of our customers. Our versatile engineering expertise in magnetic sensing technologies and custom packaging allows us to be a one-stop-shop for your sensing requirements.

manufacturing

- Molded Sensor Packaging & Component Design
- PCBA with Fast Precision Pick & Place
- Component Laser Fabrication
- Laser Marking (Stainless Steel, Aluminum, Plastic)
- Sensor Functionality Integrated with Custom Sensor Housings & Packages
- Automated Cable & Wire Prep (Cut/Tin)
- Pigtail Assy's Custom Built to EPA Specs
- Magnetic Target Packaging Customized in Threaded Bolts & Shaft Collars
- Full/Vacuum Encapsulation & Thermal Curing
- Custom & Catalog Smart Sensors <1 week
- Prototype, 1 Time, and Low-High Volume OEM Production

engineering

- Electronic Sensor Engineering
- Rapid PCB & PCBA Design and Testing
- Mechanical Design & Packaging
- Rapid Prototyping
- Permanent Magnet Design & Field Calibration
- Six Sigma Design Methodology

testing + tooling

- 100% Critical Characteristics Lot Testing
- Temperature Cycling & Burn-In
- Magnetic Field Calibration
- Product Testing Specific to Customer Requirements & Targets
- On-Board Microprocessor Based Sensor Design & Signal Conditioning
- Precision Programming, Packaging, & Testing (Allegro, Melexis, Micronas, Other Magnetic Sensors/Sensing Elements)

quality/ certifications

- ISO9001:2015 Certified
- RoHS Compliant
- Failure Analysis & Preventative Action Planning
- High Quality Stainless Steel, Aluminum, or Molded Nylon Housings

AEROSPACE // AGRIGULTURAL // AUTOMOTIVE // CONSUMER ELECTRONICS // HEAVY EQUIPMENT // MARINE // MANUFACTURING // MILITARY // MEDICAL // POWER GENERATION // RENEWABLE ENERGY // TRANSPORTATION

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HALL EFFECT SENSORS

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QUADRATURE GEAR TOOTH SENSORS

- **Measure speed and direction or count up/down with direction from a single sensor head**
- **Optimized output based on customer specific target**

- **Available in a wide variety of packages**
  - Low cost flange mount, threaded aluminum, stainless steel, and custom housings for high pressure, etc.

- **Electrical options for all control systems**
  - NPN, PNP, and TTL (0V-5V) outputs
  - Load dump and EMI/ESD protection available

- **Connections to meet the assembly requirements**
  - Deutsch, Packard, Amphenol, other connectors available
  - Free end wires, jacketed and shielded cables

ANGULAR POSITION SENSORS

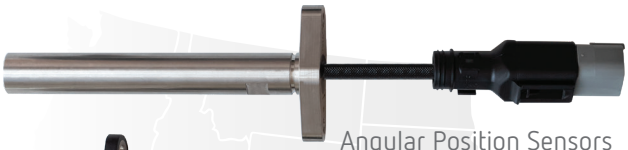
- **Resolve angular position of rotating targets**

- **Full scale analog output over full or limited range of rotation**
  - 0-5V analog output for 45, 90, 180, 270, or 360 degrees
  - Digital PWM or SPI Serial Outputs are also possible
  - 5V powered and protected 8-30V power options

- **Target magnets with marked orientation for installation**
  - Compact raw magnets or magnets in bolt on housings

- **Many housing and connection options**
  - Molded, aluminum, and stainless steel packages
  - Integral connectors, pigtails, and free end wiring

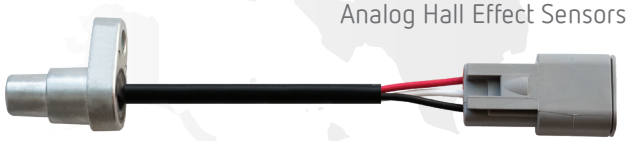
Gear Detection Sensors



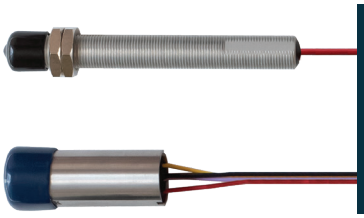
Angular Position Sensors

Speed Switch Sensors

Analog Hall Effect Sensors



Ferrous Metal Proximity Sensors



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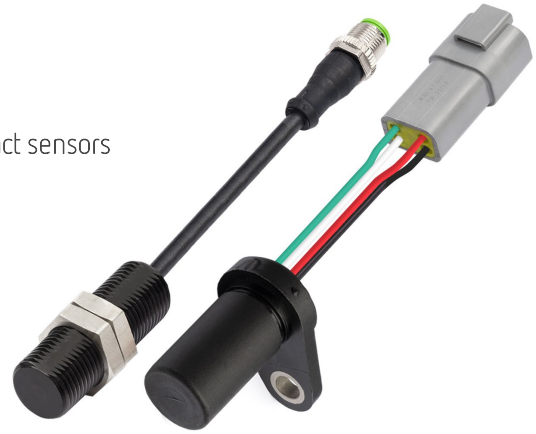
PRIMARY MARKET EXAMPLES (BUT NOT LIMITED TO)	
AUTOMOTIVE / HEAVY EQUIPMENT	Cam & crankshaft position sensors
	Shaft and gear speed conditions
	Diesel valve lift height measurement
AGRICULTURAL	Irrigation & fertigation flow meter sensors
	Winch shaft speed & direction measurement
	Resolve rotational position of shafts & gears
MANUFACTURING	Monitor speed & direction of conveyor travel
	Detect steel in aluminum assemblies
	Inspect for residual magnetization

CAPABILITIES
Hall Sensor Development & PCBA Experts (5 Patents in Magnetic Sensing)
Custom Electrical Sensor & Packaging Design (Housing and Connection)
Quick-turn Prototype of Custom & Catalog Smart Sensors incl. OEM Brand Labeling
Precision Magnetic Field IC Analog & Digital Sensor Programming
Management of Certification Testing to International & Industry Standards

ANALOG OUTPUT ANGLE POSITION SENSORS



Standex Electronics' angle position sensors are a family of high-performance non-contact sensors that deliver long-term, solid-state reliability with exceptional accuracy and repeatability

Standex Electronics' angle position sensors are a family of high-performance non-contact sensors that deliver long-term, solid-state reliability with exceptional accuracy and repeatability. Featuring a high resolution of up to 0.36 degrees, these angle position sensors use Hall Effect Technology coupled with an internal microprocessor to resolve the angular position of rotating targets. The sensors provide a 0-5 V linear analog output that is proportional to the angle of the magnet. Standard programmed detection range options are 45, 90, 180, 270, 360 degrees and other user defined ranges. Depending on the rotational angle of the target magnet, the sensors' analog output increases or decreases.

Other options include digital PWM or SPI serial outputs. We offer 5 V powered and load dump protected 8-30 V powered. Custom ranges also available. Target magnets with marked orientation are available for installation. Choose from raw compact magnets or magnets in bolt on housings. Housings and connections options are available including but not limited to molded, aluminum, and stainless-steel packages. Additional connection types include integral connectors, pigtails, and free-end wiring. Typical applications include angular positioning of shafts and gears in automotive and heavy equipment, agricultural equipment, and other rotating objects in manufacturing and industrial applications.

Features

- Shock and vibration resistant
- Non-contact
- Linear voltage output
- Full scale analog output over full or limited range of rotation
- Electrical and form factor options to meet customer needs
- Durable for use in harsh environments
- Customization available
- Easy to install

Applications

- Shaft and gear rotation in agricultural equipment
- Gear rotation in conveyor systems
- Tracking of pedals and lever positions
- Position resolution in automation equipment
- Providing angular feedback of components in production and testing
- Resolving orientation of industrial and agricultural attachments
- Monitoring shaft torque
- Angular feedback for robotic arms

Part Numbers in Distribution	Housing	Connection
A63-APS360-LACB1E	Barrel	Wire Leads with Connector
MFM7-APS090-LACD4	Flange Mount	Wire Leads with Connector
MFM7-APS180-LACD4	Flange Mount	Wire Leads with Connector
MFM7-APS360-LACD4	Flange Mount	Wire Leads with Connector

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CONTACTLESS DIGITAL HALL SWITCH

Standex Electronics' digital Hall switch sensors yield reliable, non-contact high-precision magnetic sensing while enduring the harsh demands of industrial applications.

Standex Electronics' digital Hall switch sensors yield reliable, high-precision magnetic sensing over greater detection gaps, while enduring the harsh demands of industrial applications. Our Hall switch sensors use solid-state Hall Effect Technology with proven long-term reliability providing bounce-free operations over a broad temperature span. Another key element ensuring the sensors longevity is that we manufacture our sensors in a fully sealed and environmentally durable housing.

Both our HS1 and DHS1 Hall switch sensors measure speed, position, proximity, or count at a 55 Gauss switch operate point. The HS1 Hall Switch Sensors use a single digital square wave output pulse that is south pole sensitive. This unipolar sensor does not respond to north pole magnetic fields but only switches ON/OFF in the presence or absence of a south pole magnetic field. When the south pole magnetic field is present, an HS1 sensor with NPN output will switch ON and signal a low output. However, a PNP output will go high when the sensor switches on.

Our DHS1 Hall Switch Sensors are omni polar and function as a directional limit switch using dual digital pulsing outputs, one south pole and one north pole. In this case, one can mount magnets at either end of the range of motion. When the south pole field is detected, the sensors' channel A output switches ON and goes low while channel B output is OFF and goes high. Conversely, when the south pole field retracts, the sensors' channel A output switches OFF and goes high while channel B output is ON and goes low. Please note that the south pole element is located closer to the sensor face and will be detected at a slightly larger operating gap.

Hall switch sensors work in any orientation. Our sensors sealed in threaded housings are supplied with lock nuts which are used to set the air gap. Whereas our easy-install flange mount housings create a fixed air gap between the target and sensor face. The target detection gap depends on the shape, size, and ferrous content of the target.

Moreover, we customize Hall Switch Sensors to your specific application, including selective unipolar or omni polar detection. Modify, update, or enhance any sensor with our vast selection of housings and connections. Sensor housings include but not limited to molded, aluminum, stainless steel, threaded, flange mount and customer specific packages. Connection types include integral connectors, Deutsch, Amphenol, man other brands, pigtails, and free-end wires, any length. Typical applications include speed, position, proximity, or count detection rare earth magnets or magnetic fields in automotive and heavy equipment, agricultural equipment, manufacturing, and industrial systems.

Features

- Greater detection gap vs standard Hall sensors
- Lower gauss operation vs standard Hall sensors
- Detection of rare earth magnets or magnetic fields
- Compact stainless-steel housings with integral connector
- Temperature stability over wide range
- Non-contacting, solid state (wear-free)
- Durable for use in harsh environments
- No orientation required
- Short circuit protection
- True zero speed
- Internal hysteresis
- Custom switch point programming
- High shock and vibration resistant
- Fully sealed, rugged housing

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CONTACTLESS DIGITAL HALL SWITCH

Applications

- Confirm alignment or proximity of bins/carts/trays in manufacturing lines
- Provide count feedback of components in production and testing
- Resolve speed of industrial and agricultural attachments
- Shaft and gear speed in agricultural equipment
- Monitors speed in conveyor systems and assembly lines
- Speed resolution in automation equipment
- Measure feed rate of cranes and winches
- Resolving engine RPMs
- Measuring vehicle/wheel speed
- Pulley systems in manufacturing
- Monitoring gears in transmissions
- Cam and Crank shaft timing

Part Numbers in Distribution	Housing	Connection
M12-HS1-5KCB2	Cylinder, Threaded, M12	Connector
M12-HS1-5KP21	Cylinder, Threaded M12	Wire Leads
MFM7-AH5-5VP21	Flange Mount	Wire Leads
MFM7-DHS1-5KCD4	Flange Mount	Wire Leads with Connector
S12-AH5-5VP21	Cylinder, Threaded, M12	Wire Leads
S12-DHS1-5KSA5	Cylinder, Threaded, M12	Cable
S38-HS1-5KP21	Cylinder, Threaded, 3/8-24	Wire Leads
S63B-DHS1-5KCB2A	Cylinder, 5/8-18 Stainless	Connector

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FERROUS METAL HALL PROXIMITY SENSORS

Standex Electronics' ferrous metal hall sensors are a family of non-contacting proximity sensors that deliver repeatable large gap detection of ferrous metal targets reliably through aluminum with longevity.

Standex Electronics' ferrous metal hall sensors are a family of non-contacting proximity sensors that deliver repeatable large gap detection of ferrous metal targets reliably through air, aluminum, and any other non-ferrous material with longevity. Hall Effect Technology sensors are wear-free solid-state designs packaged in a compact and robust housing. Stable operation over a wide temperature range, internal hysteresis, and bounce-free operations are just a few features you can expect with our Ferro-magnetic metal detection sensors. Moreover, these ferrous proximity sensors come in a variety of electrical options, including analog or digital 0-5 V output with regulated input, 5 V input, PNP output, as well as many other configurations.

Our digital output metal detector sensors detect steel targets at 0.375" and turn ON when nearby ferrous metal is detected, producing a low output signal. Or in the case of PNP output, the signal would go high when the sensor turns ON. Analog Ferrous Metal Position Sensors detect a 0.4" gap and signal an increase in output of 4.5 V as the ferrous metal approaches. As the target moves away from the sensor, the output decreases to 0.5 V. In other words, the analog output is proportional to the ferrous metal proximity.

For precise and repeatable target detection, we offer custom programming. Our threaded versions are supplied with lock nuts which are used to set the air gap. Our easy-install flange mount housings create a fixed air gap between the target and sensor face. The target detection gap depends on the shape, size, and ferrous content of the target.

Other ferrous metal detecting proximity sensors are available and can be customized in various electrical options. Many housings and connections options are available including but not limited to molded, aluminum, stainless steel, threaded, flange mount and customer specific packages. Additional connection types include integral connectors, Deutsch, Amphenol, man other brands, pigtails, and free-end wires, any length. Typical applications include monitoring the position, proximity, or alignment of steel components in automotive and heavy equipment, agricultural equipment, as well as inspecting for ferrous targets below the surface of assemblies in manufacturing and industrial applications.

Features

- High shock and vibration resistant
- Resistant to oils and coolants
- Detection of ferrous metals
- Compact stainless-steel housings with integral connector
- Temperature stability over wide range
- Non-contacting, solid state (wear-free)
- True zero speed operation
- Internal hysteresis
- Easy to install
- Large detection gap (custom greater air gap ranges available)
- Durable for use in harsh environments
- Detect non-standard steel targets
- Detects through aluminum
- Digital or analog (lower cost OEM designs)
- Precise and repeatable custom programming

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FERROUS METAL HALL PROXIMITY SENSORS

Applications

- Inspect for steel components below the surface of aluminum extrusions
- Proximity feedback of components in automation equipment
- Monitor position of steel components in engines and transmissions
- Determine alignment between assemblies moving parallel to each other
- Indication of component alignment in agricultural and heavy equipment
- Measuring steel shaft runout
- Counting steel components on conveyor systems
- Position feedback in robotic systems
- Inspecting to verify materials are ferrous
- Detect approaching assemblies before impact

Part Numbers in Distribution	Housing	Connection
MFM7-275VPD-RGCD4	Flange Mount	Wire Leads with Connector
S12-275VPD-5VCB2	Cylinder Threaded M12	Connector
S12-275VPD-RGP21	Cylinder Threaded M12	Wire Leads
S12H-275VPA-RGCB2	Cylinder Threaded M12	Connector
S18-275VPD-RICB1E	Threaded M18	Cable with Connector

GEAR TOOTH SPEED SENSORS

Standex Electronics' single channel target tracker gear tooth sensors are a family of dynamic non-contact speed sensors that deliver remarkable near zero speed operation with accuracy and repeatability over a long lifetime.

Standex Electronics' single channel target tracker gear tooth sensors are a family of dynamic non-contact speed sensors that deliver remarkable near 0 speed operation with accuracy and repeatability over a long-lifetime. These sensors use Hall Effect Technology which features a solid-state design that has no wearing components. Solid-state gear/ferrous target tracking sensors also feature an internal hysteresis, bounce free operations, and stable operation over a wide temperature range. Gear tooth sensors output a single digital square wave pulse used to determine speed or count. They detect 0-32 pitch gears, bolt heads, holes in plates, and other magnetic targets. Electrical options include but are not limited to load dump and EMI protect input, NPN or PNP with 5 k pull-up resistor, TTL, etc.

The sensor turns ON when it detects that the ferrous metal is present such that an NPN output would signal low whereas a PNP output would go high, in the presence of a magnetic field. These sensors power up with the output transistor OFF. This transistor turns ON for the first time on the approach of a tooth. After the first tooth, they will not miss a target. These gear tooth sensors work in any orientation and feature a self-calibrating output that reacts to both the leading and falling edge of any ferrous metal target. Our various standard and custom housing options include easy to install flange mount designs that set the air gap relative to the target face. As well as threaded housings allowing you to set the air gap with the provided lock nuts.

Ask us about our quadrature gear tooth sensors capable of measuring speed and direction or counting up/down with direction from a single sensor head. Other gear tooth sensors are available and can be customized in various electrical options. Many housings and connections options are available including but not limited to molded, aluminum, stainless steel, threaded, flange mount and customer specific packages. Additional connection types include integral connectors, Deutsch, Amphenol, man other brands, pigtails, and free-end wires, any length. Typical applications include speed or count of gears in automotive and heavy equipment, agricultural equipment, and other ferrous targets in manufacturing and industrial applications.

Features

- Shock and vibration resistant
- Temperature stable
- Non-contact
- Solid-state (No wearing parts)
- Near zero speed operation
- Large detection gap (custom greater air gap ranges available)
- Dynamic, self-calibrating
- Durable for use in harsh environments
- Customization available (including greater air gap ranges)
- Easy to install
- Detect non-standard steel targets

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GEAR TOOTH SPEED SENSORS

Applications

- Shaft and gear speed in agricultural equipment
- Measure speed in conveyor systems
- Speed resolution in automation equipment
- Resolve speed of industrial and agricultural attachments
- Provide count feedback of components in production and testing
- Cam and Crank shaft timing
- Measure feed rate of cranes and winches
- Resolving engine RPMs
- Measuring vehicle/wheel speed
- Monitoring gears in transmissions

Part Numbers in Distribution	Housing	Connection
A12F-18ADSO-ODP23	Cylindrical, Threaded aluminum M12	Wire Leads
A47-18ADSO-ODP21	Cylindrical, Threaded aluminum 15/32-32	Wire Leads
A63-37ADSO-5KJA5	Barrel, Threaded aluminum 5/8-18	Wire Leads
MFM610-18ADSO-L5CP13	Flange Mount	Connector
MFM7-37ADSO-L5CD3	Flange Mount	Wire Leads with Connector
MFM7-37ADSO-L5CP13	Flange Mount	Connector
MFM7-37ADSO-LNCP13	Flange Mount	Connector
MFM7-37ADSO-ODX0B	Flange Mount	Wire Leads
MFM7-37ADSO-P5P21	Flange Mount	Wire Leads
S12-18ADSO-5KCB2	Cylinder, Threaded, M12	Connector
S38J-22ADSO-5KJA5	Cylinder, Threaded, 3/8-24	Wire Leads

MAGNETIC SPEED SWITCH AND RELAY SENSORS

Standex Electronics' speed sensors deliver contactless magnetic sensing for precise measurement of zero-speed, under-speed and over-speed conditions of steel gears, ferrous targets, and magnets in a wide range of applications.

Standex Electronics' speed sensors deliver contactless magnetic sensing for precise measurement of zero-speed, under-speed and over-speed conditions of steel gears, ferrous targets, and magnets in a wide range of transportation and industrial applications. Through Hall Effect solid state technology, you can expect precise, bounce-free operations over a wide temperature range for a long lifetime. Our Hall Effect speed sensors resolve linear and rotational speed using a programmed frequency output that converts to rotations per minute. Steel gear, ferrous target and south-pole sensitive magnet actuated speed switches turn on or off at the factory programmed frequency signaling a transistor or relay output.

In addition to 0-32 pitch gear, our speed switch sensors can also detect non-standard steel targets such as bolt heads, holes in steel plates, and other ferrous objects. Gear tooth and ferrous target actuated speed sensors work in any orientation and the air gap can be easily set within the target range using the supplied lock nuts for threaded housings. South pole sensitive magnet actuated speed switches detect presence and absence of south pole fields of 55 Gauss or more. And the operating gap range is dependent upon the magnet size and type.
Hall switch sensors work in any orientation. Our sensors sealed in threaded housings are supplied with lock nuts which are used to set the air gap. Whereas our easy-install flange mount housings create a fixed air gap between the target and sensor face. The target detection gap depends on the shape, size, and ferrous content of the target.

Moreover, we can configure our speed switch sensors for normally closed or normally open relay outputs, NPN outputs, and TTL outputs. We also offer custom programmed switch points to your desired application. Modify, update, or enhance any sensor with our large selection of housings and connections. Sensor housings include but not limited to molded, aluminum, stainless steel, threaded, flange mount and customer specific packages. Connection types include integral connectors, Deutsch, Amphenol, man other brands, pigtails, and free-end wires, any length. Typical applications include true zero speed, under-speed, and over-speed conditions of gears and shafts in automotive and heavy equipment, agricultural equipment, and other ferrous targets such as pulleys in manufacturing and industrial systems.

Features

- High shock and vibration resistant
- Resistant to oils and coolants
- Detection of steel gears, ferrous target, or magnets
- Compact stainless-steel housings with integral connector
- Temperature stability over wide range
- Non-contacting, solid state (wear-free)
- True zero speed operation
- Internal hysteresis
- Durable for use in harsh environments
- No orientation required
- Detect non-standard steel targets
- Custom switch point programming

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MAGNETIC SPEED SWITCH AND RELAY SENSORS

Applications

- Shaft and gear speed in agricultural equipment
- Monitors speed in conveyor systems and assembly lines
- Provide count feedback of components in production and testing
- Resolve speed of industrial and agricultural attachments
- Detect slipping Pulleys/gears in manufacturing equipment and conveyors
- Verify speed conditions before engaging power take offs
- Alarm notification of exhaust/intake fans that are not working
- Measure feed rate of cranes and winches
- Resolving engine RPMs
- Measuring vehicle/wheel speed
- Cam and Crank shaft timing
- Speed resolution in automation equipment
- Monitors zero-speed over-/under-speed

Part Numbers in Distribution	Housing	Connection
S12H-SSTDSO-R5CB2-001	Cylinder, Threaded M12	Connector
S12H-SSTDSO-R5CB2-500	Cylinder, Threaded M12	Connector
S12R-SSRDSO-NCSL5-001	Cylinder, Threaded M12	Cable
S12R-SSRDSO-NOSL5-500	Cylinder, Threaded M12	Cable
S12R-SSRDSO-NOSL5-001	Cylinder, Threaded, M12	Wire Leads
S12R-SSRHS1-NOSL5-001	Cylinder, Threaded, M12	Wire Leads