



# Honeywell

THE POWER OF **CONNECTED**

## Speed Sensors

Product Range Guide

# For innovation that's well apart, there's only Honeywell

With more than 50,000 products ranging from snap-action, limit, toggle, and pressure switches to position, speed, pressure, and airflow sensors, Honeywell has one of the broadest sensing and switching portfolios.

Honeywell sensor, switch, and control components are tailored to exact specifications for stronger performance, longer productivity, and increased safety. Enhanced accuracy and durability are built into every part, improving output and endurance. For our customers, this can reduce expenditures and operational costs. Our global footprint and channels help to competitively price such components for your chosen application and provide immediate technical support.

While Honeywell's switch and sensor solutions are suitable for a wide array of basic and complex applications, our custom-engineered solutions offer enhanced precision, repeatability, and ruggedness. We offer domain knowledge and technology resources, along with a close working relationship, to develop and deliver cost-effective, individually tailored solutions. Whether clean-slate development or simple modifications to an existing design are needed, our expertly engineered solutions help to meet the most stringent requirements with world-class product designs, technology integration, and customer-specific manufacturing.

Global service, sourcing, and manufacturing. Industry-leading engineers. Value-added assemblies and solutions. A one-stop, full-service, globally competitive supplier.





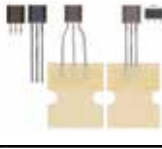


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# Magnetic Sensors | Magnetoresistive Sensor ICs

With a built-in magnetoresistive bridge integrated on silicon and encapsulated in a plastic package, magnetoresistive sensor ICs feature an integrated circuit that responds to low fields at large distances. Potential applications include laptops, material handling equipment, pneumatic cylinders, and battery-powered equipment including hand-held scanners, computers, and water/gas/electricity meters.



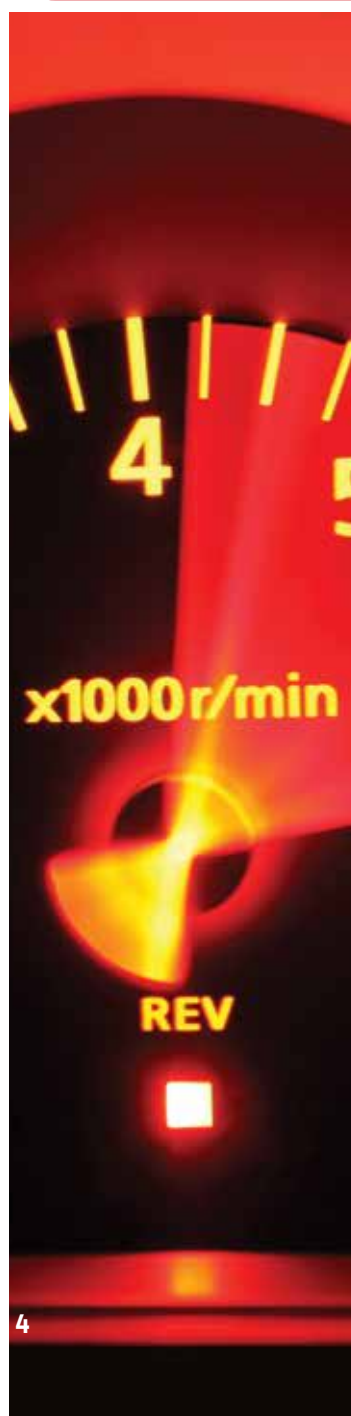
					
	<b>Nanopower Series</b>	<b>Standard Power Series</b>	<b>2SS52M Series</b>	<b>VF401</b>	<b>APS00B</b>
<b>Description</b>	omnipolar MR sensor IC	omnipolar MR sensor IC	omnipolar MR digital sensor IC	2-wire MR fine pitch ring magnet sensor IC	high resolution magnetic displacement sensor IC
<b>Magnetic actuation type</b>	omnipolar	omnipolar	omnipolar	differential bridge	analog, saturated mode
<b>Package style<sup>1</sup></b>	SOT-23	<b>SM351RT, SM353RT:</b> SOT-23 <b>SM451RT, SM453RT:</b> flat TO-92-style	<b>SS552MT:</b> SOT-89B <b>all others:</b> leaded U-Pack in bulk or ammpack	VF-401 flat TO-92-style	SOIC-8
<b>Supply voltage range</b>	1.65 Vdc to 5.5 Vdc	3 Vdc to 24 Vdc	3.8 Vdc to 30 Vdc	4.5 Vdc to 16 Vdc	1 Vdc to 12 Vdc
<b>Supply current</b>	<b>SM351LT:</b> 360 nA typ. <b>SM353LT:</b> 310 nA typ.	8 mA max.	11 mA max.	<b>operate:</b> 16.8 mA max. <b>release:</b> 8.4 mA max.	7 mA max.
<b>Output type</b>	<b>low:</b> 0.03 V typ. <b>high:</b> Vs -0.03 V typ.	digital sinking	digital sinking	digital sourcing	sin(2Θ), cos(2Θ)
<b>Operating temperature range</b>	-40°C to 85°C [-40°F to 185°F]	-40°C to 85°C [-40°F to 185°F]	-40°C to 150°C [-40°F to 302°F]	-40°C to 150°C [-40°F to 302°F]	-40°C to 150°C [-40°F to 302°F]
<b>Features</b>	high sensitivity: 7 Gauss typ., 11 Gauss max. (SM351LT), 14 Gauss typ., 20 Gauss max. (SM353LT); designed to accommodate applications with large air gaps, small magnetic fields and low power requirements	ultra-high sensitivity: 7 Gauss typ., 11 G Gauss max. (SM351RT, SM451R); very high sensitivity: 14 Gauss typ., 20 Gauss max. (SM353RT, SM453R)	omnipolar magnetics, sinking output, low Gauss operation (25 G max.), operating speed of 0 kHz to over 100 kHz	wide speed capability, output pattern independent of gap between target and sensor, improved insensitivity to run-out, tilt, and twist, reverse polarity protection	dual analog voltages respond to changes in magnetic field angle; sine and cosine output; accurate to 0.102 mm [0.004 in]

#### <sup>1</sup>Dimensions:

- **SOT-23:** 2,8 mm x 2,9 mm [0.11 in x 0.11 in]
- **Flat TO-92-style:** 3,0 mm x 4,0 mm [0.12 in x 0.16 in] (not including leads)
- **VF-401 flat TO-92-style:** 3,0 mm x 4,06 mm [0.12 in x 0.16 in] (not including leads)
- **SOT-89B:** 4,2 mm x 4,5 mm [0.16 in x 0.18 in]
- **U-Pack:** 4,5 mm x 4,5 mm [0.18 in x 0.18 in] (not including leads)
- **SOIC-8:** 4,9 mm x 6,0 mm [0.19 in x 0.24 in]

# Magnetic Sensors | Hall-effect Digital Sensor ICs

Constructed from a thin sheet of conductive material with output connections perpendicular to the direction of current flow. Include bipolar, latching, omnipolar, or unipolar magnetics in a variety of package styles. Energy-efficient micropower version for potential applications with low power requirements and/or battery operation.



	<b>SL353</b>	<b>SS30AT, SS40A, SS50AT</b>	<b>SS311PT, SS411P</b>	<b>SS340RT, SS440R Series</b>
<b>Description</b>	micropower omnipolar Hall-effect digital sensor IC	low-cost bipolar Hall-effect digital sensor IC	low-cost bipolar Hall-effect digital sensor IC with built-in pull-up resistor	low-cost unipolar Hall-effect digital sensor IC
<b>Magnetic actuation type</b>	omnipolar	bipolar	bipolar	unipolar
<b>Package style<sup>1</sup></b>	SOT-23 (pocket tape and reel)	<b>SS30AT:</b> SOT-23 (pocket tape and reel) <b>SS40A:</b> flat TO-92-style (bulk) <b>SS50AT:</b> SOT-89B (pocket tape and reel)	<b>SS311PT:</b> SOT-23 (pocket tape and reel) <b>SS411P:</b> flat TO-92-style (bulk)	<b>SS340RT:</b> SOT-23 (pocket tape and reel) <b>SS440R:</b> flat TO-92-style
<b>Supply voltage</b>	2.2 Vdc to 5.5 Vdc	4.5 Vdc to 24 Vdc	2.7 Vdc to 7 Vdc	<b>SS340RT &gt;125°C [247°F]:</b> 3 Vdc to 12 Vdc <b>all others:</b> 3 Vdc to 18 Vdc
<b>Supply current</b>	<b>SL353LT:</b> 1.8 m typ. at 2.8 Vdc <b>SL353HT:</b> 0.33 mA typ. at 2.8 Vdc	10 mA max.	14 mA max.	8 mA
<b>Operating temperature range</b>	-40°C to 85°C [-40°F to 185°F]	<b>SS40A:</b> -40°C to 125°C [-40°F to 257°F] <b>SS30AT, SS50AT:</b> -40°C to 125°C [-40°F to 257°F]	-40°C to 150°C [-40°F to 302°F]	<b>SS340RT (3 Vdc to 24 Vdc):</b> -40°C to 125°C [-40°F to 257°F] <b>SS340RT (3 Vdc to 12 Vdc), SS440R (3 Vdc to 24 Vdc):</b> -40°C to 150°C [-40°C to 302°F]
<b>Features</b>	low supply voltage combined with very low average current reduces power consumption	high output current and speed capability, reverse polarity protection	built-in pull-up resistor, low voltage, enhanced sensitivity	simple activation from a North pole (SS340RT) or South pole (SS440R), multiple magnetic sensitivities (high, medium, and low)

## <sup>1</sup>Dimensions:

- **SOT-23:** 2,8 mm x 2,9 mm [0.11 in x 0.11 in]
- **Flat TO-92-style:** 3,0 mm x 4,0 mm [0.12 in x 0.16 in] (not including leads)
- **SOT-89B:** 4,2 mm x 4,5 mm [0.16 in x 0.18 in]

**SS345PT,  
SS445P****SS351AT,  
SS451A,  
SS551AT****SS360NT, SS360ST,  
SS360ST-10K,  
SS460S, SS460S-T2****VF360NT,  
VF360ST,  
VF460S****SS360PT,  
SS460P,  
SS460P-T2**unipolar Hall-effect digital  
sensor IC with built-in pull-up  
resistorlow-cost omnipolar  
Hall-effect digital sensor IChigh sensitivity, latching  
Hall-effect digital sensor IChigh sensitivity, latching  
Hall-effect digital sensor IChigh sensitivity latching digital  
Hall-effect sensor IC with built-  
in pull-up resistor

unipolar

omnipolar

latching

latching

latching

**SS345PT:** SOT-23  
(pocket tape and reel)  
**SS445P:** flat TO-92-style (bulk)**SS351AT:** SOT-23  
(pocket tape and reel)  
**SS451A:** flat TO-92-style (bulk)  
**SS551AT:** SOT-89B (pocket tape  
and reel)**SS360NT, SS360ST,  
SS360ST-10K:** SOT-23  
(pocket tape and reel)  
**SS460S:** flat TO-92-style (bulk)  
**SS460S-T2:** flat TO-92-style,  
formed leads (ammopack)**VF360NT, VF360ST:** SOT-23  
(pocket tape and reel)  
**VF460S:** flat TO-92-style (bulk)**SS360PT:** SOT-23  
(pocket tape and reel)  
**SS460P:** flat TO-92-style (bulk)  
**SS460P-T2:** flat TO-92-style,  
formed leads (ammopack)

2.7 Vdc to 7.0 Vdc

**SS351AT, SS551AT (-40°C to  
125°C [-40°F to 257°F]):** 3 Vdc  
to 24 Vdc  
**SS351AT (150°C [302°F]):**  
3 Vdc to 12 Vdc  
**SS451A (-40°C to 150°C [-40°F  
to 302°F]):** 3 Vdc to 24 Vdc

3 Vdc to 24 Vdc

3 Vdc to 24 Vdc

3 Vdc to 24 Vdc

14 mA

**3 V:** 5 mA max. at 25°C [77°F]  
**5 V:** 6 mA max. at 25°C [77°F]

8 mA max.

8 mA

10 mA

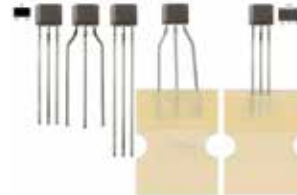
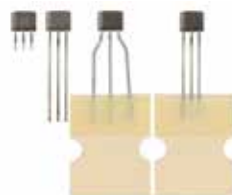
-40°C to 150°C  
[-40°F to 302°F]-40°C to 150°C  
[-40°F to 302°F]-40°C to 125°C  
[-40°F to 257°F]-40°C to 150°C  
[-40°F to 302°F]-40°C to 125°C  
[-40°F to 257°F]simple activation from a North  
pole (SS345PT) or a South pole  
(SS445P)built-in reverse polarity  
protection, typical operating  
point of 85 G at 25°C [77°F]fastest response time in its class,  
no chopper stabilizationqualified to the AEC-Q100  
standard for potential use in  
automotive applications, fastest  
response time in its classfastest response time in its  
class, no chopper stabilization,  
operates from only 30 Gauss  
typical, at 25°C [77°F]

# Magnetic Sensors | Hall-effect Digital and Linear Sensor ICs

Potential applications are many, including closure detection; presence-absence, metering, and displacement sensing in laptops, drug carts and and battery-powered equipment such as hand-held scanners, computers, and water/gas/electricity meters; and speed and RPM sensing in brushless dc motors.



Digital	VF526DT
Description	latching dual Hall-effect digital sensor IC with speed and direction outputs
Magnetic actuation type	latching
Package style <sup>1</sup>	SOT-89B (pocket tape and reel)
Supply voltage	3.4 Vdc to 24 Vdc
Supply current	14 mA max.
Output type	digital sinking
Operating temperature range	-40°C to 125°C [-40°F to 257°F]
Features	latching magnetics, sinking output, tape and reel available



Linear	SS490 Series	SS39ET, SS49E, SS49E-F, SS49E-L, SS49E-T2, SS49E-T3, SS59ET
Description	Hall-effect linear sensor IC	Hall-effect linear sensor IC
Magnetic actuation type	linear	linear
Package style <sup>1</sup>	flat TO-92-style, surface mount (pocket tape and reel) flat TO-92-style, standard straight leads (bulk) flat TO-92-style, formed leads (ammopack) flat TO-92-style, standard straight leads (ammopack)	SS39ET: SOT-23 (pocket tape and reel) SS49E: flat TO-92-style, standard straight leads (bulk) SS49E-F: flat TO-92-style, formed leads (bulk) SS49E-L: flat TO-92-style, long straight leads (bulk) SS49E-T2: flat TO-92-style, formed leads (ammopack) SS49E-T3: flat TO-92-style, standard straight leads (ammopack) SS59ET: SOT-89B (pocket tape and reel)
Supply voltage	4.5 Vdc to 10.5 Vdc	2.7 Vdc to 6.5 Vdc
Supply current	10 mA	10 mA max.
Output type	ratiometric sinking or sourcing	ratiometric sourcing
Operating temp. range	-40°C to 150°C [-40°F to 302°F]	-40°C to 100°C [-40°F to 212°F]
Features	linear magnetics, ratiometric sourcing output, positive temperature coefficient, different package styles	linear magnetics, ratiometric sourcing output, low voltage operation, different package styles

## <sup>1</sup>Dimensions:

- 4-Pin SIP: 3,6 mm x 5,1 mm [0.14 in x 0.20 in]
- SOT-89B: 4,2 mm x 4,5 mm [0.16 in x 0.18 in]
- Flat TO-92-style: 3,0 mm x 4,0 mm [0.12 in x 0.16 in] (not including leads)

Consist of Hall-effect or magnetoresistive sensor ICs packaged in plastic housings for use in corrosive environments, or aluminum housings for non-corrosive use. Include digital or linear position sensors (activated by an external magnet) and vane sensors (activated by a ferrous metal actuator). Choice of cable materials provides application flexibility.



Series	103SR (digital)	103SR (linear)
Description	Hall-effect digital position sensor	Hall-effect linear position sensor
Package material and style	aluminum threaded barrel	aluminum threaded barrel
Magnetic actuation type	unipolar, bipolar, latching	linear
Operation	proximity to external magnet	proximity to external magnet
Supply voltage range	4.5 Vdc to 24 Vdc	4.5 Vdc to 10.5 Vdc
Supply current	4 mA to 10 mA (inclusive)	7 mA
Output type	digital sinking	ratiometric sinking/sourcing
Operating temperature range	-40°C to 100°C [-40°F to 212°F]	-40°C to 100°C [-40°F to 212°F]
Dimensions	Ø11,9 mm x 25,4 mm [15/32-2 x 1.0 in]	Ø11,9 x 25,4 mm [15/32-2 x 1.0 in]
Features	unipolar, bipolar, and latching magnetics; sinking or sourcing output, aluminum housing, color-coded jacketed cable, adjustable mounting	linear magnetics, ratiometric sinking/sourcing output, aluminum housing, color-coded jacketed cable, adjustable mounting



Potential applications include position and RPM sensing, cam and crankshaft speed and position, transmissions, tachometers, traction control, and sprocket speed in fitness and information technology, food and beverage environments, chemical plants, and refineries.



Series	SR16/SR17	SR3	SR4
Description	low-cost Hall-effect vane sensor	Hall-effect digital position sensor	magneto resistive digital position sensor
Package material and style	SR16: plastic dual tower with variety of terminations SR17: plastic side-mount wire exit	plastic threaded barrel	plastic threaded barrel
Magnetic actuation type	–	unipolar, bipolar	omnipolar
Operation	ferrous metal actuator	proximity to external magnet	proximity to external magnet
Supply voltage range	3.8 Vdc to 30 Vdc	4.5 Vdc to 24 Vdc	3.8 Vdc to 30 Vdc
Supply current	10 mA max.	10 mA	11 mA
Output type	digital sinking	digital sinking	digital sinking
Operating temperature range	-20°C to 85°C [-4°F to 185°F]	-40°C to 85°C [-40°F to 185°F]	-40°C to 85°C [-40°F to 185°F]
Dimensions	24,6 mm x 12,4 mm [0.97 in x 0.49 in]	Ø12,4 mm x 25,4 mm [0.49 in x 1.0 in]	19,0 mm H x 25,4 mm [0.75 in H x 1.0 in]
Features	sinking output, non-contact position sensing, environmentally sealed, three terminations	NEMA 3, 3R, 3S, 4, 4X, 12 and 13; unipolar and bipolar magnetics, sinking output; frequencies exceeding 100 Hz	NEMA 3, 3R, 3S, 4, 4X, 12 and 13; omnipolar magnetics, sinking output



Use multiple technologies to detect a change in a rotating, ferrous metal target such as a gear, shaft or similar mechanism to create an electronic signal for control system interface. No moving parts - speed and direction sensing, or speed sensing only, is accomplished without contacting the target. Dual or single digital output versions available.



Series	SNG-Q	SNDH-T	SNDH-H
Description	quadrature speed and direction sensor with 4-wire output	quadrature speed and direction sensor with 4-wire output	single Hall-effect speed sensor
Housing	PBT	stainless steel, plastic	stainless steel, plastic
Supply voltage range	4.5 V to 26 V	4.5 Vdc to 18 Vdc	4 Vdc to 24 Vdc, 4.5 Vdc to 24 Vdc, 6.5 Vdc to 24 Vdc
Supply current	2 mA normal, 18 mA max.	18 mA max.	6 mA max., 14 mA max., 20 mA max.
Output type	square wave	square wave	digital sinking
Operating frequency range	3 Hz to 20 kHz	1 Hz to 15 kHz	0 Hz to 12 kHz, 0 Hz to 15 kHz, 2 Hz to 15 kHz
Operating temperature range	-40°C to 150°C [-40°F to 302°F]	-40°C to 150°C [-40°F to 302°F]	-40°C to 150°C [-40°F to 302°F] inclusive
Dimensions	Ø15 mm x 35 mm L [0.6 in x 1.38 in L] Ø15 mm x 45 mm L [0.6 in x 1.77 in L]	Ø15 mm x 45 mm L [0.6 in x 1.77 in L]	various, depends upon individual catalog listing
Features	design and manufacturing platform-based approach enables cost-competitiveness and mechanical and electrical configurability; designed for potential applications where enhanced accuracy is required to detect small target features	advanced performance dynamic offset self calibration, short circuit and reverse voltage protection, low jitter output, near zero speed	rotationally insensitive versions available, zero speed sensing versions available, range of connector options



Provide true zero speed capability and precise switch point measurement. Speed sensor diagnostics provide information on air gap and sensor failure for increased reliability and functionality. Potential applications include cam/crank shafts, transmissions, tachometers, traction control, dynamometers, process control, and factory automation.



Series	LCZ	ZH10
Description	single Hall-effect zero speed sensor	single Hall-effect zero speed sensor
Housing	stainless steel	aluminum
Supply voltage range	4.5 Vdc to 26 Vdc	4 Vdc to 24 Vdc
Supply current	20 mA	6 mA
Output type	digital sinking	digital sinking
Operating frequency range	0 Hz to 15 kHz	0 Hz to 15 kHz
Operating temperature range	-40°C to 125°C [-40°F to 257°F]	-40°C to 125°C [-40°F to 257°F]
Dimensions	Ø9,5 mm [3/8 in/0.375 in] and Ø15,9 mm [5/8 in/0.625 in], 50,8 mm [2.00 in] and 76,2 mm [3.00 in] lengths	Ø11,9 mm [15/32 in/0.46875 in] x 25,4 mm [1.00 in] L
Features	omni-directional sensor to target, low power consumption, zero speed, digital output	omni-directional sensor to target, low power consumption, zero speed, digital output



Series	584XX
Description	digital magnetic speed sensor
Housing diameter	3/8, in 5/8 in; various lengths
Supply voltage	5 Vdc to 30 Vdc
Output signal	digital square wave
Output voltage range	low: 350 mV max. at 20 mA max. current sink high: $(R_L \times V_s) / (R_L + 2.2 \text{ k}\Omega)$
Operating frequency (max.)	10 kHz, 50 kHz
Housing material/style	stainless steel/threaded
Termination	MS3106A-10SL-3S (5/8 only) or preleaded
Vibration	meets MIL-STD 202F, method 204D
Operating temperature range	-40°C to 107°C [-40°F to 225°F]
Features	produces constant amplitude output signals suitable for direct use in many digital and logic control applications, internal digital signal conditioning

Passive Variable Reluctance Sensors (VRS) deliver direct conversion of actuator speed to an analog frequency. Transportation applications include engine, transmission, and wheel speed sensing. Industrial applications include electric motor speed, plant floor machinery, and pump RPM.



Series	VRS General Purpose	VRS Hazardous Location	VRS High Output
Description/ potential applications	used where medium to high speeds or in electrically noisy environments with relatively small air gaps exist	used where explosion-proof or intrinsically safe sensors are required	used where higher output voltages are needed, perform best at low to medium speeds with medium to high impedance loads (sealed front-end versions for use where the sensor is exposed to fluids, lubricants or adverse environmental conditions)
Output voltage range	8 Vp-p to 40 Vp-p (inclusive)	30 Vp-p to 60 Vp-p (inclusive)	8 Vp-p to 190 Vp-p (inclusive)
Housing diameter	5/8 in, 3/8 in, 1/4 in, 10/32 in; various lengths	3/4 in, 5/8 in; various lengths	5/8 in, 3/8 in; various lengths
Housing material/style	stainless steel/threaded or smooth	stainless steel/ threaded	stainless steel threaded or smooth
Termination	MS3106 connector, preleaded	MS3106 connector, preleaded	MS3106 connector, preleaded
Operating temperature range	-55°C to 120°C [-67°F to 250°F] (inclusive)	-73°C to 120°C [-100°F to 250°F] (inclusive)	-55°C to 150°C [-67°F to 300°F] (inclusive)



Series	VRS High Resolution	VRS High Temperature	VRS Power Output
Description/ potential applications	used where precise timing pulse is required, and/or fine pitch gears are used	used where the sensor is exposed to temperatures up to 260°C (450°F) (sealed front-end versions for use where the sensor is exposed to fluids, lubricants or adverse environmental conditions)	used where driving low resistance loads at large air gaps is required, and larger actuators are used
Output voltage range	8 Vp-p to 190 Vp-p (inclusive)	4.7 Vp-p to 125 Vp-p (inclusive)	70 Vp-p (inclusive)
Housing diameter	5/8 in, 3/8 in; various lengths	5/8 in, 3/8 in, 1/4 in; various lengths	5/8 in; various lengths
Housing material/style	stainless steel/threaded or smooth	stainless steel threaded	stainless steel, threaded
Termination	MS3106 connector, preleaded	MS3106 connector, preleaded	MS3106 connector, preleaded
Operating temperature range	-55°C to 150°C [-67°F to 300°F] (inclusive)	-73°C to 230°C [-100°F to 450°F] (inclusive)	-55°C to 120°C [-67°F to 250°F]

## Warranty/Remedy

Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship during the applicable warranty period. 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 that Honeywell, in its sole discretion, 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 Honeywell may provide application assistance personally, through our literature and the Honeywell web site, it is buyer's sole responsibility 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 writing. However, Honeywell assumes no responsibility for its use.

## Find out more

To learn more about Honeywell's sensing and switching products, call **+1-815-235-6847**, email inquiries to **info.sc@honeywell.com**, or visit **sensing.honeywell.com**

## Honeywell Sensing and Internet of Things

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