





# Temperature Sensors — Packaged Temperature Probes

Compact, lightweight. Operate with enhanced sensitivity, reliability, and stability under diverse conditions of shock, vibration, humidity, and corrosion. Variety of custom packages available for air, liquid, and solid temperature sensing applications.

SERIES	R300	500	ES110	ES120
				
Temp. sensing type	immersion	air/gas, immersion, surface, and liquid level	air/gas	immersion
Thermistor type	RTD	NTC	NTC	NTC or KTY
Nominal resistance at 25 °C [77 °F]	100 Ohm	200 Ohm to 1,000,000 Ohm (inclusive)	2000 Ohm	2000 Ohm
Operating temperature range	-40 °C to 275 °C [-40 °F to 572 °F] continuous, excursion to 300 °C [572 °F] for 10 minutes max.	-40 °C to 300 °C [-40 °F to 572 °F] (inclusive)	-40 °C to 150 °C [-40 °F to 302 °F]	-40 °C to 150 °C [-40 °F to 302 °F]
Housing material	stainless steel	plastic, aluminum, stainless steel, epoxy filled, tin- or nickel-plated copper, ceramic or kynar-filled tubing	brass	brass
Electrical and mechanical interface	overmolded connector with M14 x 1.50 thread	wide variety of connectors, lead types, materials, and insulation	overmolded connector with M10 x 1.25 or M12 x 1.50 thread	overmolded connector with M10 x 1.25, M10 x 1.0, M12 x 1.5, M14 x 1.50 thread, or 1/8 PTF
Features	enhanced response, reliability, and accuracy; stainless steel construction	wide selection of housing, resistance, and termination options	exposed thermistor; rugged design; brass encapsulation	enclosed thermistor; rugged design; brass encapsulation







# Temperature Sensors — Thermostats

Bi-metallic, snap-action, SPST devices. Automatic or manual-reset options.

Phenolic or ceramic housings. Wide variety of mounting brackets and terminals. Operating temperature range up to 204 °C. Constructed with tight tolerances ( $\pm 3$  °F) and possess excellent resistance to shock and vibration.






SERIES	512	526	534	590
				
Temp. sensing type	surface	surface	surface	surface
Thermistor type	NTC	NTC	NTC	NTC
Nominal resistance at 25 °C [77 °F]	various	various	various	various
Operating temp. range	-60 °C to 204 °C [-76 °F to 399 °F]	-60 °C to 160 °C [-76 °F to 320 °F]	-30 °C to 50 °C [-22 °F to 122 °C]	-60 °C to 125 °C [-76 °F to 257 °F]
Housing material	aluminum	aluminum or stainless steel	various	aluminum or stainless steel
Electrical and mechanical interface	ring tongue #5 with two flying leads	adhesion with two flying leads; bullet housing with two flying leads	three tinned copper alloy leads; network configuration: two thermistors in a thermoplastic housing with two flying leads	adhesion with two flying leads; ring tongue (#5, #6, #10) with two flying leads; ring tongue with Molex connector; threaded body with flying leads
Features	wide variety of probe assembly styles; choice of custom or existing designs; enhanced sensitivity, accuracy, stability/low drift; RTD linear output available	wide variety of probe assembly styles; choice of custom or existing designs; enhanced sensitivity, accuracy, stability/low drift; RTD linear output available	simplifies circuitry in digital readout systems; delivers relatively linear resistance output and offers the enhanced sensitivity and accuracy of a thermistor; can be used in a resistance or voltage mode	wide variety of probe assembly styles; choice of custom or existing designs; enhanced sensitivity, accuracy, stability/low drift; RTD linear output available



# Controls —

## Key and Rotary Switches, Shifters

Often used on control panels or machinery in harsh environments, Honeywell key and rotary switches use o-rings to help keep dirt and moisture out of the contact chamber and prolong the switch's life. Custom switches and controls are "standard" for Honeywell S&C.



SERIES			
	Integral Conn. (Key)	Screw Terminal (Key)	Rotary/Keyless Switch
			
Connector	MetriPak 280 and Sumitomo	screw	MetriPak 280, Sumitomo, screw
Electrical ratings (res.)	12 Vdc, 20 A; 24 Vdc, 8 A	12 Vdc, 20 A; 24 Vdc, 10 A; 48 Vdc, 4 A	12 Vdc, 20 A; 24 Vdc, 8 A
Operating temperature	-40 °C to 85 °C [-40 °F to 185 °F]	-40 °C to 85 °C [-40 °F to 185 °F]	-40 °C to 85 °C [-40 °F to 185 °F]
Cycle life at electrical load	25000 cycles	25000 cycles	25000 cycles
Position	2 position (off-on); 3 position (off-on-start), (off-on-start), magnetoground; 4 position (off-on-preheat-start)	2 position (off-on); 3 position (off-on-start); 3 position (on-off-on)	3 position (on-off-on), (off-on-start), (off-on-on); 4 position (off-on-acc-start), (off-ignition-ignition heat-start)
Measurements	Ø 1.62 in x 2.95 in L	Ø 1.62 in x 2.85 in L	Ø 1.62 in x 2.95 in L
Features	can be designed to match existing keys; options for up to 300 unique key codes per part number; environmentally sealed; recoil spring allows momentary positions		environmentally sealed; recoil spring allows momentary positions

SERIES		
	Heavy-Duty Shifter	Heavy-Duty Turn Signal
		
Column size	38 mm, 45 mm, 55 mm	38 mm, 45 mm, 55 mm
Neutral lock	none, drop-down	—
Speeds	2, 3, 4, and 6	—
Lights	—	turn signal, head lamp switch/dimmer, flash to pass, hazard warning
Wiper speeds	—	1 speed, hi/lo, intermittent
Buttons	horn, wash, drop-down	wash, horn
Connectors	integral Packard, integral Deutsch, wire harness	
Expected life cycle	1 million (rotary); 500000 (shifter handle)	50000 cycles
Oper. temp. range	-40 °C to 85 °C [-40 °F to 185 °F] (0 % to 95 % relative humidity)	
Operating volt. range	3 V to 32 V	
Solenoid load	2 A @ 12.8 V with arc suppression	
Measurements	Ø 65,02 mm x 220,47 mm L [Ø 2.56 in x 8.68 in L]	Ø 65,02 mm x 232,16 mm L [Ø 2.56 in x 9.14 in L]
Features	IP67; turn signals are built to complement the shifter, or can be mounted as stand alone	



# Controls —

## Push-Pull/eStop Switches • Hour Meters

Robust, environmentally sealed, sliding contact switch incorporating two circuits with multiple combinations. eStops are available with five different circuitry options.

Hour meters feature accuracy to  $\pm 0.02\%$  with various mounting configurations. Excellent vibration and shock resistance.



### SERIES

#### Push-Pull/eStop



Connector	screw terminal, pigtail harness with connector (Deutsch)
Position	2NO circuits in push; 2NC circuits in push; 1NO/1NC circuit
Cycle life	25000 cycles (rotary)
Chamber sealing	o-ring (IP67 sealing)
Measurements	Ø 45,21 mm [Ø 1.78 in]
Temperature	-40 °C to 100 °C [-40 °F to 212 °F]
Electrical rating	12 Vdc to 14 Vdc, 20 A; 24 Vdc, 10 A
Features	UV resistant button for outdoor use; moisture, contamination, and vibration resistant; sliding contacts; momentary switch option; knob available in a variety of colors

### SERIES

#### LM

#### 28100

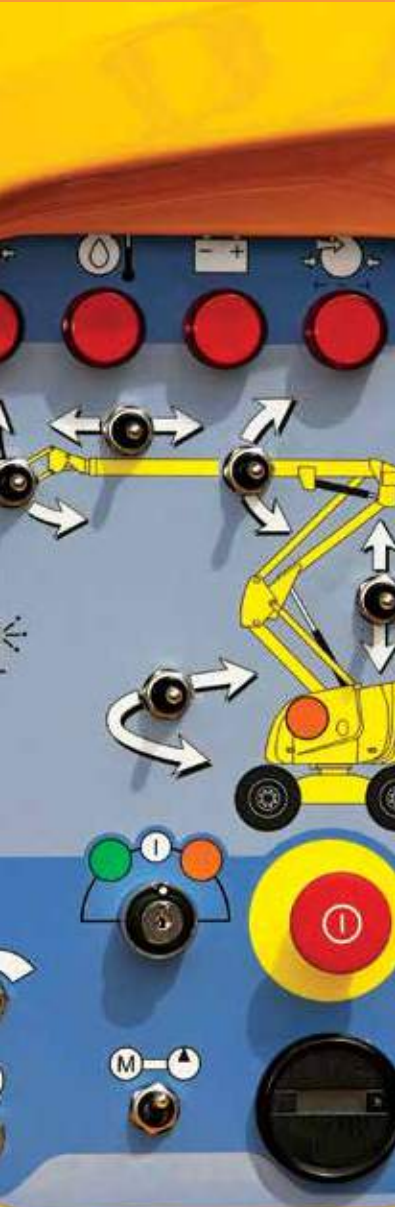
#### 82400






Type	ac or dc	ac	dc
Counting range	0 to 99,999.9 hours	0 to 99,999.9 hours with automatic roll over to zero	0 to 9999.9; 0 to 99,999.9 (optional)
Sealing	IP67 (front); IP66 (rear)	IP66 front (IP40 rear)	IP66
Voltage range	9 V to 64 V	90 Vac to 264 Vac/ 50 Hz, 60 Hz	10 Vdc to 80 Vdc (polarity insensitive)
Accuracy	$\pm 200$ ppm/hour	$\pm 0.02\%$	$\pm 0.02\%$
Termination	1/4 in blades; 3/16 in blades	1/4 in spade	1/4 in spade
Approvals	UL, CE	UL, CSA, CE	—
Mount/panel cutout opening	2-screw & standard: 36,8 mm x 24,1 mm [1.45 in x 0.95 in] round: 50,8 mm [2.0 in] dia. rectangular: 45,0 mm x 22,4 mm [1.77 in x 0.88 in]	2-screw and rectangular: 36,8 mm x 24,1 mm [1.45 in x 0.95 in]; round: 50,8 mm [2.0 in] dia.	2-screw and rectangular: 36,8 mm x 24,1 mm [1.45 in x 0.95 in]; 3-screw and round: 50,8 mm [2.0 in] dia.
Oper. temp.	-40 °C to 85 °C [-40 °F to 185 °F]	-40 °C to 85 °C [-40 °F to 185 °F]	40 °C to 85 °C [-40 °F to 185 °F]
Number size	7 mm [0.28 in]	3 mm [0.12 in]	3 mm [0.12 in]
Features	backlight and large 7 mm display ease readability; digital, microcontrol unit LCD; durable design of mounting assembly	operates over a range of voltages & frequencies; sealed from dirt & moisture; custom lens and terminal orientation options	non-polarity sensitive design; sealed terms

# MICRO SWITCH™ Toggle Switches — Sealed and Standard Toggles

Hermetic and environmentally sealed toggle switches offer enhanced reliability with MICRO SWITCH™ technology. Can be used in a variety of applications where a panel-mount switch with an environment-proof rating is needed, including industrial equipment, military and commercial aviation, and agriculture.



SERIES	TS	NT	TL
			
Type	stainless steel, phenolic toggle	industrial-grade toggle	military-grade toggle
Sealing	–	IP67/68; NEMA 3, 3R, 4 and 13	qualified to MIL-DTL-3950
Operating temp.	-54 °C to 71 °C [-65 °F to 160 °F]	-40 °C to 71 °C [-40 °F to 160 °F]	-65 °C to 71 °C [-85 °F to 160 °F]
Actuator/lever	standard	standard, locking, special design, tab	standard, special design, tab, paddle, none
Action	2- or 3-position, momentary & maintained	2- or 3-position, momentary & maintained	2- or 3-position, momentary & maintained
Mounting	15/32 in bushing	15/32 in bushing	15/32 in bushing
Termination	solder, screw, quick connect	solder, screw, quick connect	IWTS, solder, screw, quick connect, leadwire
Circuitry	SPST, SPDT, DPST, DPDT	SPST, SPDT, DPST, DPDT, 4PST, 4PDT	SPST, SPDT, DPST, DPDT, 3PST, 3PDT, 4PST, 4PDT
Contacts	silver cadmium oxide	silver alloy	silver alloy, gold-plated
Amp rating	up to 15 A	up to 20 A (resistive)	up to 20 A (resistive)
Measurements	various	26,7 mm H x 33,5 mm W x 22,6 mm D [1.05 in H x 1.32 in W x 0.89 in D]	26,7 mm H x 33,5 mm W x 22,6 mm D [1.05 in H x 1.32 in W x 0.89 in D]
Approvals	UL, CSA	UL, CSA, CE	UL, CSA, CE, qualified to MIL-DTL-3950
Features	lever-to-bushing seal	completely sealed switching chamber; enhanced tactile feedback	environment-proof sealing; qualified to MIL-DTL-3950

# MICRO SWITCH™ Basic Switches — Water-tight and Premium Basics

Simple or precision on/off, end of limit, presence/absence, pressure, temperature, and manual operator interface application needs. Water-tight/dust-tight series provide IP67 protection to operate under difficult environmental conditions. Premium series delivers a broad range of ratings, operating actions, and terminations.






SERIES	V15W	ZW	ZD	BZ/BA/ BM/BE	V7
Type	water-tight	water-tight	water-tight	premium	premium
Amp rating	0.1 A, 5 A, 10 A	0.1 A, 5 A	0.1 A, 3 A	15 A (BZ), 22 A (BM), 20 A (BA), 25 A (BE)	0.1 A to 25 A
Circuitry	SPDT, SPNO, SPNC	SPDT, SPNO, SPNC	SPDT	SPDT	SPDT, SPNO, SPNC
Operating force	15 g, 25 g, 50 g, 100 g, 200 g	1.94 oz to 7.16 oz	130 gf to 195 gf	1.0 oz to 28 oz	0.7 oz max. to 14.6 oz max.
Terminations	preleaded; terminals: 4,8 mm x 0.8 mm or 4,8 mm x 0.5 mm	quick connect, solder, cable bottom/end, cable side exit	solder, pcb straight, pcb left angle, pcb right angle, pre-wired	quick connect, solder, screw	quick connect, pc board, pcb straight angle left
Actuators/levers	pin plunger, straight, roller, sim. roller, special	pin plunger, straight, roller, sim. roller	pin plunger, straight, sim. roller	pin plunger, overtravel plunger, straight, roller, flexible roller leaf, flexible leaf	pin plunger, straight, short flag, roller, sim. roller, curved tip, loop, paddle
Voltage	125 Vac, 250 Vac, 30 Vdc, 48 Vdc	125 Vac, 250 Vac	125 Vac, 12 Vdc	115 Vac, 125 Vac, 250 Vac	125 Vac, 250 Vac, 277 Vac
Approvals	UL, cUL, ENEC, CQC	UL, cUL, CE, ENEC	UL, cUL, CE, ENEC	UL, CSA, ENEC, CE (varies by model)	UL, CSA, ENEC
Operating temp. range	-40 °C to 85 °C [-40 °F to 185 °F]	-25 °C to 80 °C [-13 °F to 176 °F]	-40 °C to 85 °C [-40 °F to 185 °F]	-55 °C to 85 °C [-67 °F to 185 °F]	-40 °C to 150 °C [-40 °F to 302 °F]
Contacts	silver nickel, gold-plated option	silver, gold-plated silver	silver, gold-plated silver	silver, silver cadmium oxide	silver, silver cadmium oxide, gold
Housing material	PBT polyester thermoplastic	PBT (polyester)	PBT polyester	general purpose phenolic	PCT polyester thermoplastic
Measurements	15,9 mm H x 10,3 mm W x 33 mm L [0.63 in H x 0.41 in W x 1.3 in L]	9,0 mm H x 6,4 mm W x 19,8 mm L [0.36 in H x 0.25 in W x 0.78 in L]	10,6 mm H x 6,35 mm W x 19,8 mm L [0.42 in H x 0.25 in W x 0.78 in L]	25,4 mm H x 17,8 mm W x 50,8 mm L [1.0 in H x 0.7 in W x 2.0 in L]	15,9 mm H x 10,2 mm W x 28,8 mm L [0.63 in H x 0.4 in W x 1.14 in L]
Features	designed for harsh-duty, wash down areas; high sealing capability with an IP67 rating (pre-leaded only)	IP67 available; low energy or power-duty electrical ratings; gold-plated or silver contacts; PBT polyester housing material	low energy or power-duty electrical ratings; gold-plated or silver contacts; PBT polyester housing material	worldwide standard "large basic" switch; low operating force and travel; extended mechanical life; momentary or maintained actions	extended mechanical and electrical life; custom engineered solutions



# MICRO SWITCH™ Limit Switches — Medium-Duty, Global, and Heavy-Duty Switches





Meet IEC standards for world-wide acceptance – often used in lifts and elevators, electronic assembly, construction and agriculture equipment, material handling, and rail. EN50041 and EN50047 mounting pattern options. Global approvals, support, and sourcing.



SERIES	14CE/914CE	91MCE	E6/V6
			
Housing type	–	–	split housing, side mount; split housing, flange mount
Sealing	IP65, IP66, IP67; NEMA 1, 3, 4, 6, 6P, 12, 13	IP67; NEMA 1, 4, 12, 13	E6/V6-RQ: IP40; NEMA 1 E6/V6-RN: IP66; NEMA 1, 3, 4
Temperature range	0 °C to 70 °C [35 °F to 160 °F] -40 °C [-40 °F] low temp (optional)	-25 °C to 85 °C [-13 °F to 185 °F]	-32 °C to 71 °C [-25 °F to 160 °F] -40 °C [-40 °F] low temp (optional)
Housing material	zinc die-cast	zinc die-cast	zinc die-cast
Actuators/levers	side rotary, top plunger, roller plunger, pushbutton, wobble	side rotary, top plunger, roller plunger, bushing-mount actuators	top plunger, maint. with reset plunger, wobble, lever actuated
Termination	cable, micro-connector	4-pin M12 connector, side exit cable, bottom exit cable	0.5 in - 14NPT (or NPSM) conduit, mini-connector, cable
Approvals	14CE: CE, IEC947-5-1, EN60947-5-1 914CE: UL, CE, CSA, IEC947-5-1, EN60947-5-1	cULus, CE, CCC	UL, CSA
Circuitry	SPDT	1NO 1NC DO snap action, 1NC 1NO slow action: BBM	SPDT, DPDT
Contacts	silver, gold	silver	silver
Amp rating	5 A (thermal)	10 A (thermal)	10 A, 15 A, 22 A
Measurements (H x W x D)	49 mm x 40 mm x 16 mm [1.93 in x 1.58 in x 0.63 in]	59,8 mm x 30 mm x 16 mm [2.35 in x 1.18 in x 0.63 in]	63,5 mm x 25,4 mm x 77,2 mm [2.50 in x 1.00 in x 3.04 in]
Features	rugged housing; miniature size; pre-leaded or various quick-connect terminations; low-temperature available	positive-opening NC contacts; side and bottom exit connection options	rugged electrostatic, epoxy-coated housing; side or flange mount; low temperature options; hermetic seal optional; models in service for more than 60 years

**GLA                      GLC                      GLD                      GLE                      HDLS**




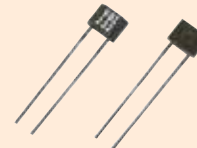

EN 50041	EN 50047 (metal)	EN 50047 (plastic)	EN 50047 compatible	HDLS plug-in and non-plug-in
IP67; NEMA 1, 3, 4, 12, 13	IP66/IP67; NEMA 1, 4, 12, 13	IP66/IP67; NEMA 1, 12, 13	IP66; NEMA 1, 4, 12, 13	IP65/66/67; NEMA 1, 3, 4, 4X, 6, 6P, 12, 13
-25 °C to 85 °C [-13 °F to 185 °F] side rotary: -40 °C to 85 °C [-40 °F to 185 °F]	-40 °C to 85 °C [-40 °F to 185 °F]	-40 °C to 85 °C [-40 °F to 185 °F]	-40 °C to 85 °C [-40 °F to 185 °F]	-12 °C to 93 °C [10 °F to 200 °F] (standard) -40 °C to 121 °C [-40 °F to 250 °F] (low-temp optional)
zinc die-cast	zinc die-cast	high-strength thermoplastic	zinc die-cast	zinc die-cast
side rotary, top plunger, top roller lever, roller plunger, wobble	side rotary, top plunger, top roller lever, roller plunger, wobble	side rotary, top plunger, top roller, wobble	side rotary, top plunger, top roller, wobble	top plunger, top roller, top rotary, side rotary, side plunger, side rotary, wobble
0.5 in - 14NPT conduit, 20 mm, PG13.5	0.5 in - 14NPT conduit, 20 mm, PG13.5	0.5 in - 14NPT conduit, 20 mm, PG13.5	0.5 in - 14NPT conduit, 20 mm, PG13.5	0.5 in/0.75 in - 14NPT conduit; 20 mm conduit; PG13.5; 12 ft cable; 4, 5, and 9-pin mini-connector
UL, CE, CSA, CCC, IEC 947-5-1, EN60947-5-1, UL508	UL, CE, CSA, CCC, IEC 947-5-1, EN60947-5-1, UL508	UL, CE, CSA, CCC, IEC 947-5-1, EN60947-5-1, UL508, UL746-C	UL, CE, CSA, CCC, IEC 947-5-1, EN60947-5-1, UL508	UL, CE, CSA, CCC, EN60947-1, EN60947-5-1
SPDT snap action DB, SPDT slow action BBM/MBB, DPDT snap action DB, DPDT sequential, DPDT center neutral, 2NO and 2NC	SPDT snap action DB, SPDT slow action BBM/MBB, 1NC/1NO, 2NC/2NO	SPDT snap action DB, SPDT slow action BBM/MBB, 1NC/1NO, 2NC/2NO	SPDT snap action DB, SPDT slow action BBM/MBB, DPDT snap action DB, 2NO and 2NC	1NC 1NO SPDT, 1NC direct acting, 2NC 2NO DPDT, 2NC 2NO DPDT sequential, 2NC 2NO DPDT center neutral
silver, gold	silver, gold	silver, gold	silver, gold	silver, gold
10 A (thermal)	10 A (thermal)	10 A (thermal)	10 A (thermal)	10 A (thermal)
82,0 mm x 42,0 mm x 42,0 mm [3.23 in x 1.65 in x 1.65 in]	55 mm x 30,5 mm x 30 mm [2.16 in x 1.20 in x 1.18 in]	55 mm x 30,5 mm x 30 mm [2.16 in x 1.20 in x 1.18 in]	50 mm x 65 mm x 30 mm [2.37 in x 2.56 in x 1.18 in]	106,7 mm x 29,4 mm x 44,4 mm [4.20 in x 1.16 in x 1.75 in]
positive-opening NC contacts 	positive-opening NC contacts 	positive-opening NC contacts 	positive-opening NC contacts 	wide variety of actuators, circuitry options, and connectivity; rugged and dependable, models in service for over 40 years



# Magnetic Sensors — Magnetoresistive Sensor ICs

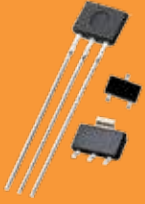
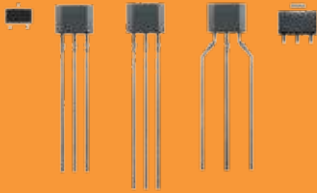
With a built-in magnetoresistive bridge integrated on silicon and encapsulated in a plastic package, magnetoresistive sensor ICs feature an integrated circuit that responds to low fields at large distances. Low gauss operation extends sensing distance to one-inch or more, depending on strength of magnetic field.



SERIES	2SS52M/SS-552MT	VF401	APSO0B
			
Description	omnipolar magnetoresistive digital sensor IC	2-wire MR fine pitch ring magnet sensor IC	high resolution magnetic displacement sensor IC
Magnetic actuation type	omnipolar	differential bridge	analog, saturated mode
Package material and style	2SS52M: plastic radial leads SS552MT: plastic surface mount (SOT-89)	plastic flat, TO-92-style	plastic surface mount (SO-8)
Supply voltage range	3.8 Vdc to 30 Vdc	4.5 Vdc to 16 Vdc	1 Vdc to 12 Vdc
Supply current	11 mA max.	Icc operate: 16.8 mA max. Icc release: 8.4 mA max.	7 mA max.
Output type	digital sinking	digital current source	sin(2Q), cos(2Q)
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]
Measurements (H x W)	2SS52M: 4,5 mm x 4,5 mm [0.18 in x 0.18 in] SS552MT: 4,2 mm x 4,5 mm [0.16 in x 0.18 in]	2,8 mm x 2,9 mm [0.11 in x 0.11 in]	4,9 mm x 6,0 mm [0.19 in x 0.24 in]
Features	omnipolar magnetics; sinking output, low gauss operation (25 G max.); operating speed of 0 kHz to over 100 kHz; tape and reel available	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 responding to changes in magnetic field angle; sine and cosine output; accurate to 0,102 mm [0.004 in]; tape and reel available

# Magnetic Sensors —

## Hall-Effect Digital and Linear Sensor ICs



**H**oneywell's digital and linear magnetic sensor ICs are constructed from a thin sheet of conductive material. Digital magnetic sensor ICs generate a high or low voltage output in response to a magnetic flux perpendicular to the surface of the sheet. Linear magnetic sensor ICs generate an analog voltage output proportional to the magnetic flux, perpendicular to the surface of the sheet.

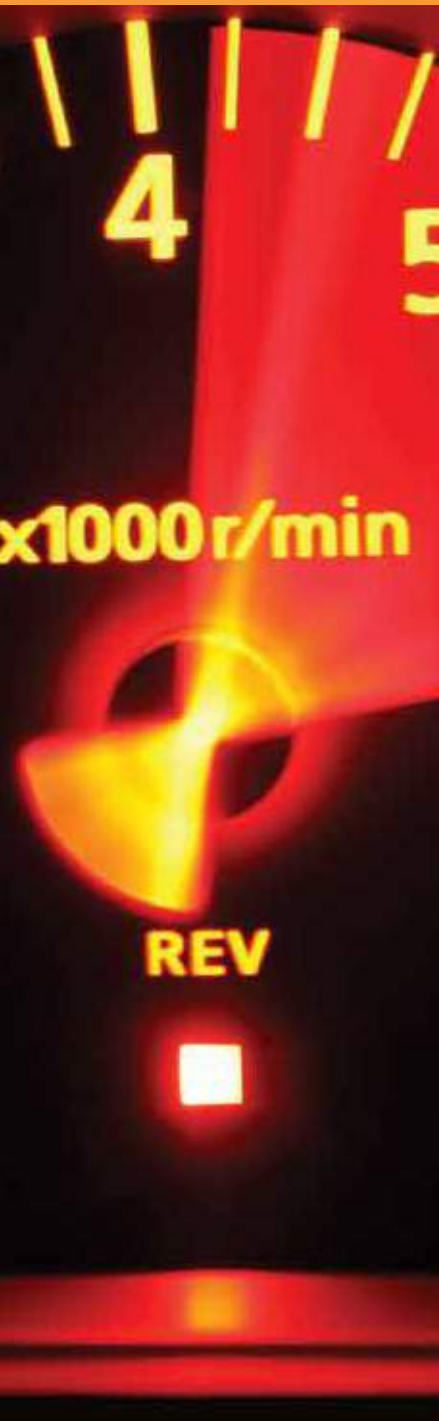
Quad Hall-elements design minimizes effects of mechanical or thermal stress on output and provide a stable output.

### Linear Sensor IC Features

- Package materials and styles include ceramic SIP, ceramic with solder bumps, plastic radial lead, plastic surface pack, ammpack styles T2 and T3, and plastic surface mount (SOT-23, SOT89B, flat TO-92 style)
- Ratiometric sinking or sourcing output
- Standard mounting centers
- Low-voltage operation
- Tape-and-reel available

### Digital Sensor IC Features

- Bipolar, latching, unipolar, and omnipolar magnetics
- Non-chopper stabilized design, eliminating noise generated by products using this technique
- Package materials and styles include plastic radial lead, plastic surface pack (SOT-23 and SOT-89)
- High output current and speed capability
- Reverse polarity protection available
- Digital sinking output
- Built-in pull-up resistor option
- Multiple operate/release points available
- Tape and reel available



# Wireless Solutions — Limitless™ Switches

Honeywell Sensing and Control's wireless technology is a cutting-edge, cost-saving solution. That innovation starts whether you're retrofitting into an existing transportation application, or starting a new design. Now you have the freedom to push your designs and applications further and expand your vision.



**T**he Limitless™ Series is especially beneficial for remote monitoring applications where wiring or wire maintenance is not physically possible or economically feasible. Combining this greater flexibility with proven harsh-duty packaging can result in increased efficiencies for machines, equipment, OEMs, and operators.

## Limitless™ Wireless Solutions

- Global and heavy-duty limit switches
- Cable-pull switches
- Non-contact reed switches
- Operator interface (pushbuttons/keyswitches)
- Single-switch adapters
- Monitors and receivers

## Limitless™ Wireless Benefits

- Integration of existing wireless technology with the superior reliability of Honeywell's MICRO SWITCH™ limit switch series
- Ability to reconfigure and network multiple switches, easily allowing addition, subtraction or relocation of Limitless™ switches in the application
- Reduces installation/maintenance costs with no wires, conduit, strain relief, clips, connectors, or connection boxes
- Radio (license-free and global): WPAN 802.15.4, 2.4 GHz, point-to-point
- Approvals: FCC 15, IC, ACMA, COFETEL, IDA, ETSI, WPC, SRRRC, KCC, and ANATEL (see specific product series)
- In excess of 305 m [1000 ft] line-of-sight communication
- Reliable, flexible, and secure wireless transmission





# Test & Measurement for Transportation

## Load Cells

- Pedal effort testing
- Seat belt testing
- Tire uniformity machine sensors
- Latch and lock testing
- Manual and automatic shift forces
- Cable testing
- Crimp forces
- Friction/resistance weld quality
- Body mount forces
- Seat tests

## Pressure Sensors

- Engine oil pressure
- Coolant pressure
- Fuel pressure
- Cylinder compression
- Pressure decay
- Manifold vacuum
- Fluid flow
- Dry airflow

## LVDTs

- Body panel gauging
- Shaft alignment monitoring
- Valve guide and seat insertion control
- Dimensional gauging/verification
- Press-fitted parts verification
- Electrode dimensional inspection

## Torque

- Engine and transmission dynamometers
- Power-train testing
- Wheel torque
- Steering torque
- Brake testing
- Pump testing
- Axle testing
- Fastener testing
- Fatigue component testing

## Wireless Telemetry

- Automotive test stands
- Motor and transmission dynamometers
- Automotive brake testing
- Friction testing

## Accelerometers

- NVH (noise, vehicle, harshness) testing
- Vehicle road testing
- Conditioning monitoring
- Vibration monitoring
- Crash tests
- Preventative maintenance monitoring

**W**hen you are designing, testing, and building the latest products for the automotive industry, you need sensors that can stand up to the job... able to perform under harsh and demanding conditions, or in extremely tight spaces, rugged enough to withstand multiple testing runs and provide precise, accurate results over time, every time.

See why more people turn to Honeywell whenever they need sensors for their automotive test and measurement applications.



**Load Cells**



**Pressure Sensors**



**Torque**



**Wireless Telemetry**



**Accelerometers**



**Displacement Transducers**

## **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 acknowledgment 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.

## **Find out more**

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

## **Honeywell Sensing and Control**

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The Honeywell logo is displayed in a bold, red, sans-serif font.