MEDICAL RANGE GUIDE

Sensors, Switches, and Solutions for
Medical Applications

Honeywell

The products you need for the solutions you demand. For reliability you can trust, Honeywell is the hands-down choice.

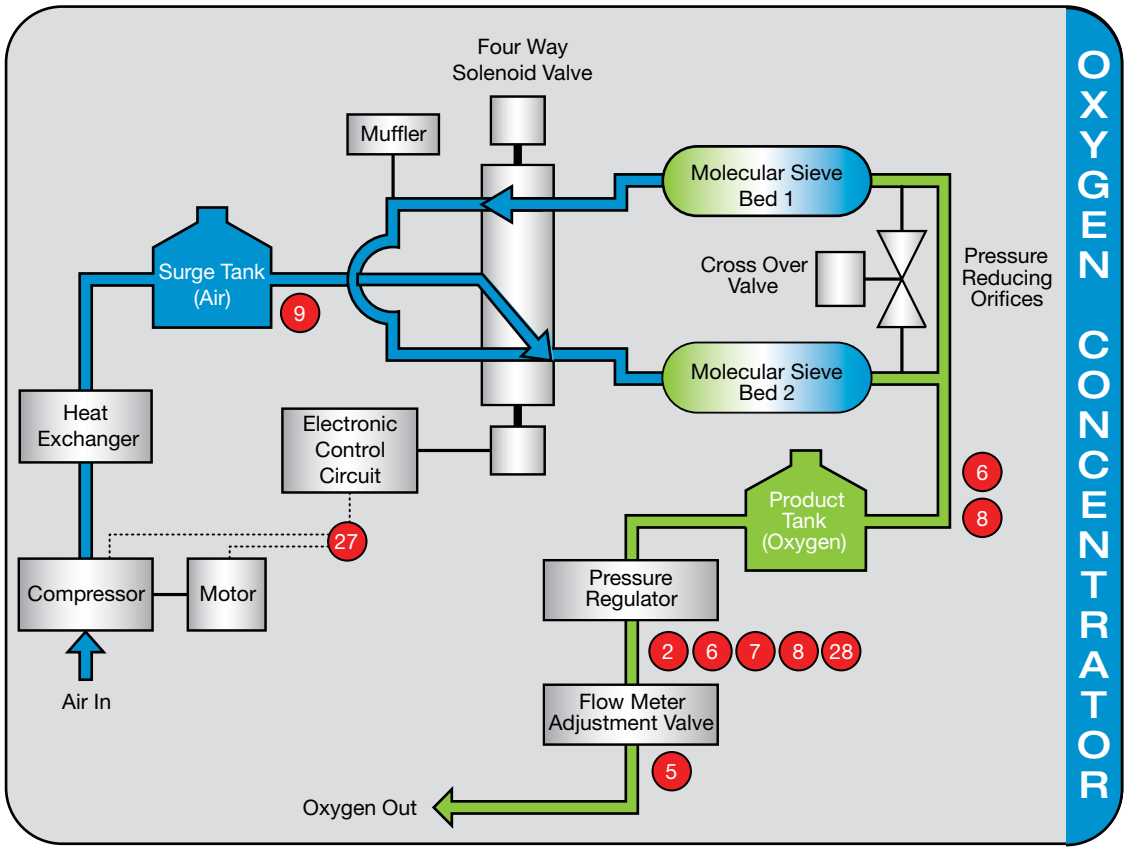
Medical applications typically require sensors and switches that are highly stable and extremely reliable to enhance patient safety and comfort. Stability is often essential to minimize long term drift, reduce the need for recalibration, and improve ease of use for medical equipment operators. Reliability enhances patient safety in life-critical applications, reduces downtime, and improves test throughput in applications such as clinical diagnostics. The product needs to be easy to use and easy to design into a system, so Honeywell's extensive customization and built-in calibration/amplification capabilities are strong benefits. Confidence in Honeywell's product performance, reliability, and availability provide peace of mind for medical equipment manufacturers who choose Honeywell.

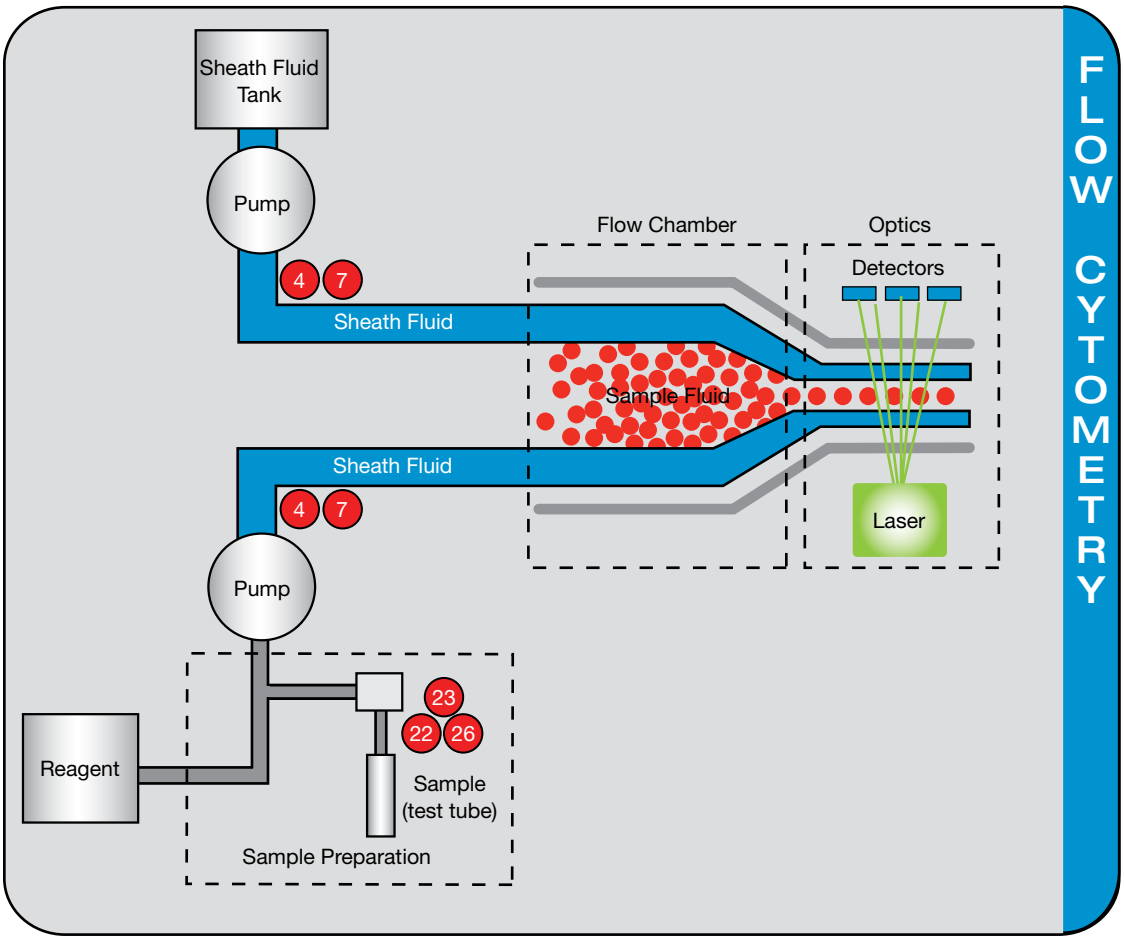
Honeywell offerings for this industry include airflow sensors, board mount and stainless steel media isolated pressure sensors, magnetic position sensors, humidity sensors, flexible heaters, force sensors, thermostats, commercial solid state sensors, infrared sensors, oxygen sensors, pressure and vacuum switches, potentiometers and encoders, MICRO SWITCH™ pushbutton, rocker, and toggle switches, and hour meters.

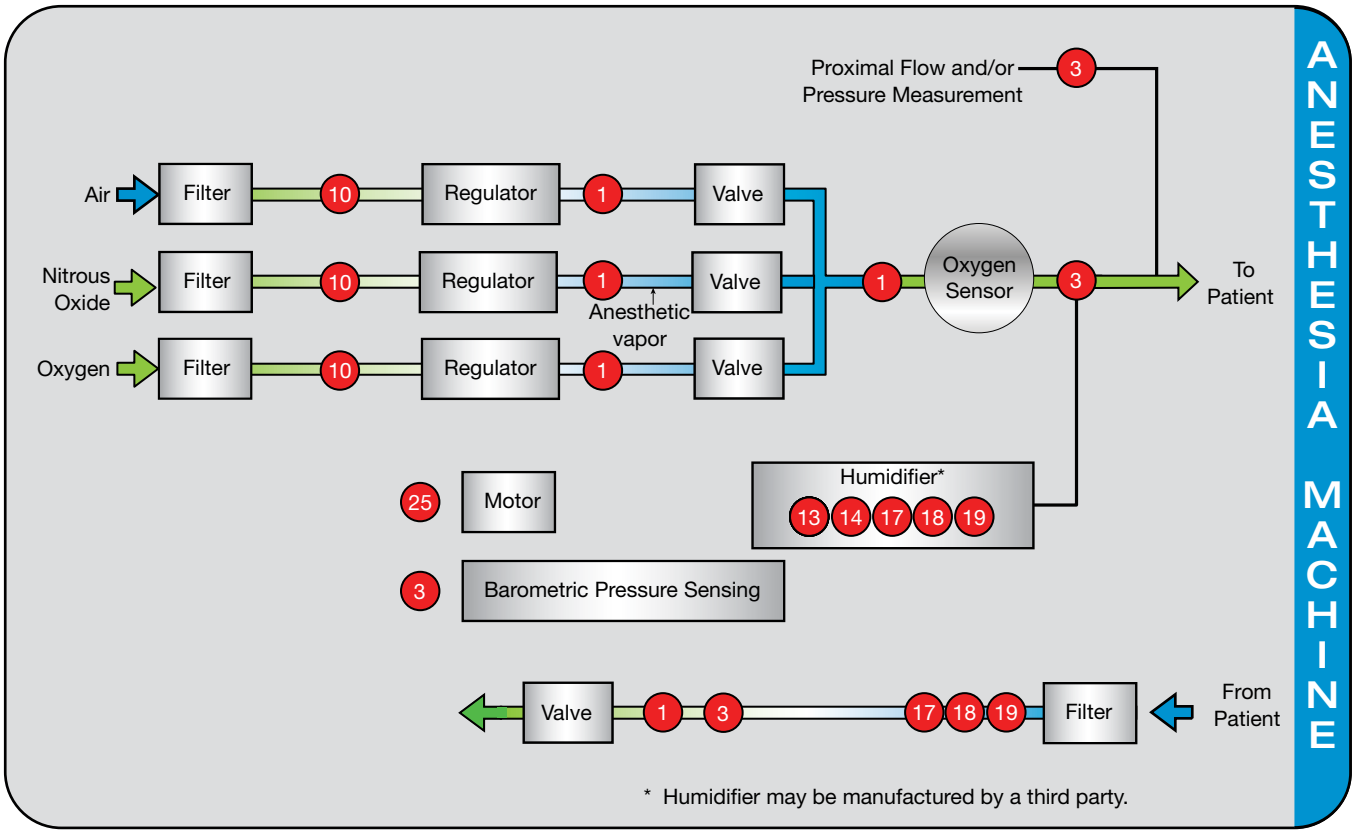
In the medical equipment business, quality and reliability are a **must**.

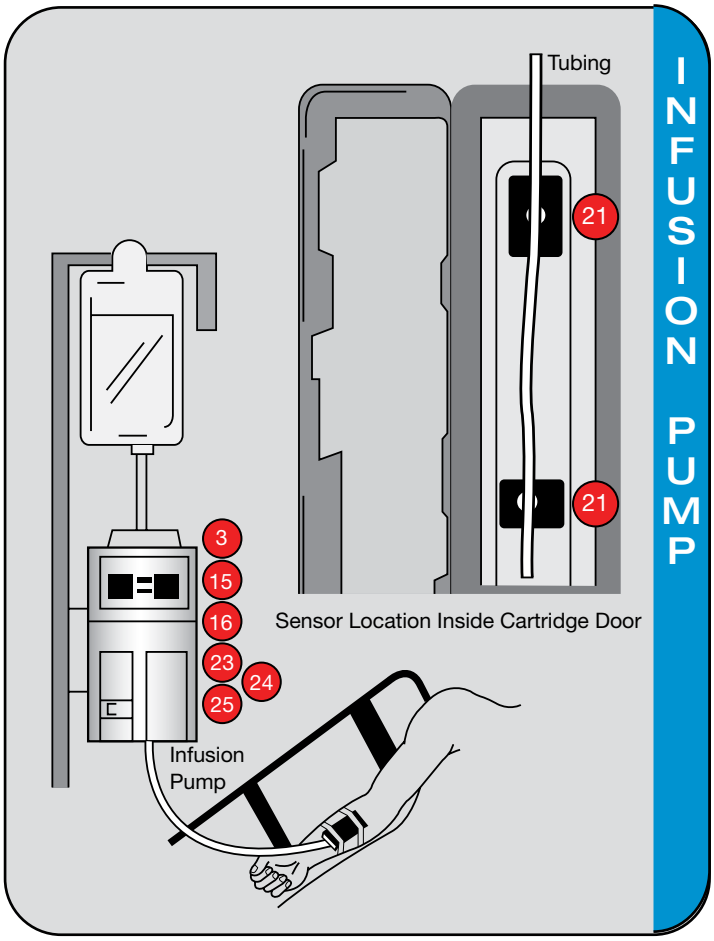
WHAT'S INSIDE

A WIDE RANGE OF SENSORS, SWITCHES, AND VALUE-ADDED ASSEMBLY SOLUTIONS FOR A WIDE RANGE OF MEDICAL APPLICATIONS, INCLUDING:	Anesthesia Delivery Systems	Oxygen Concentrators	Sleep Apnea Machines	Ventilators	Kidney Dialysis Machines	Infusion, Insulin, and Syringe Pumps	Flow Cytometry	Diagnostic/ Analytical Equipment	Patient Monitoring Systems	Hospital Hardware	Surgical Instruments	Dental Equipment
Board mount pressure sensors	●	●	●	●	●	●	●	●	●	●	●	●
Force sensors					●	●					●	
Airflow sensors	●	●	●	●				●	●			
Optical sensors					●	●		●		●	●	●
Heaters / Flex heater assemblies	●		●	●	●	●		●		●		●
Thermistors	●		●	●	●			●	●	●		
RTDs	●		●	●	●			●	●	●		
Thermostats			●									
Temperature probes	●		●	●				●		●		●
Magnetic position sensor ICs	●		●	●	●	●	●	●		●	●	●
Infrared sensors					●	●	●	●		●	●	●
Heavy-duty pressure sensors	●	●		●	●			●		●	●	●
Humidity sensors	●		●	●				●	●	●		
Basic switches										●		●
Pressure switches		●										
Hour meters		●										

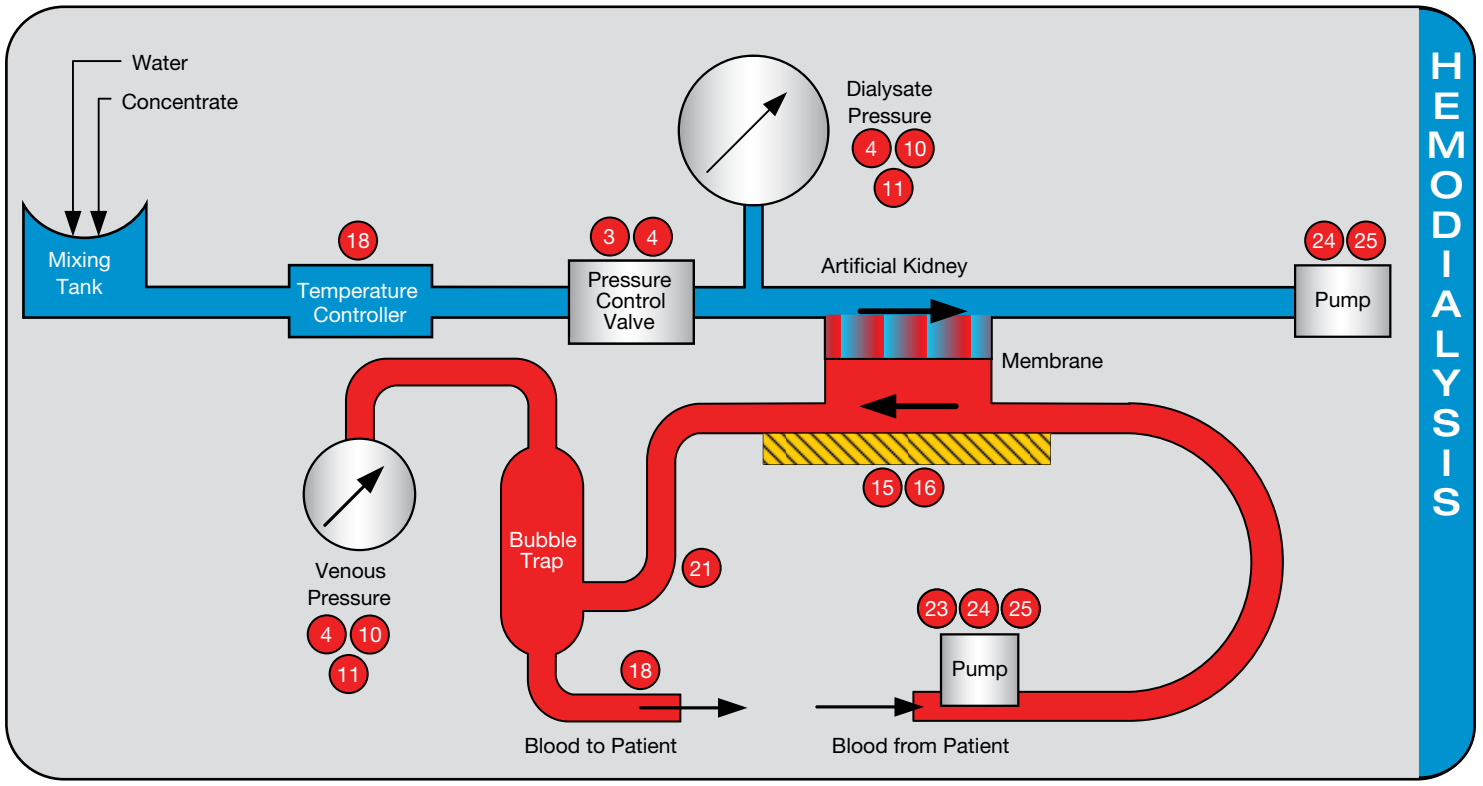

OXYGEN CONCENTRATOR
Four Way
Solenoid Valve
Muffler
Molecular Sieve
Bed 1
Surge Tank
(Air)
9
Cross Over
Valve
Pressure
Reducing
Orifices
Molecular Sieve
Bed 2
Heat
Exchanger
Electronic
Control
Circuit
6
8
Product
Tank
(Oxygen)
27
Compressor
Motor
Pressure
Regulator
2
6
7
8
28
Air In
Flow Meter
Adjustment Valve
5
Oxygen Out

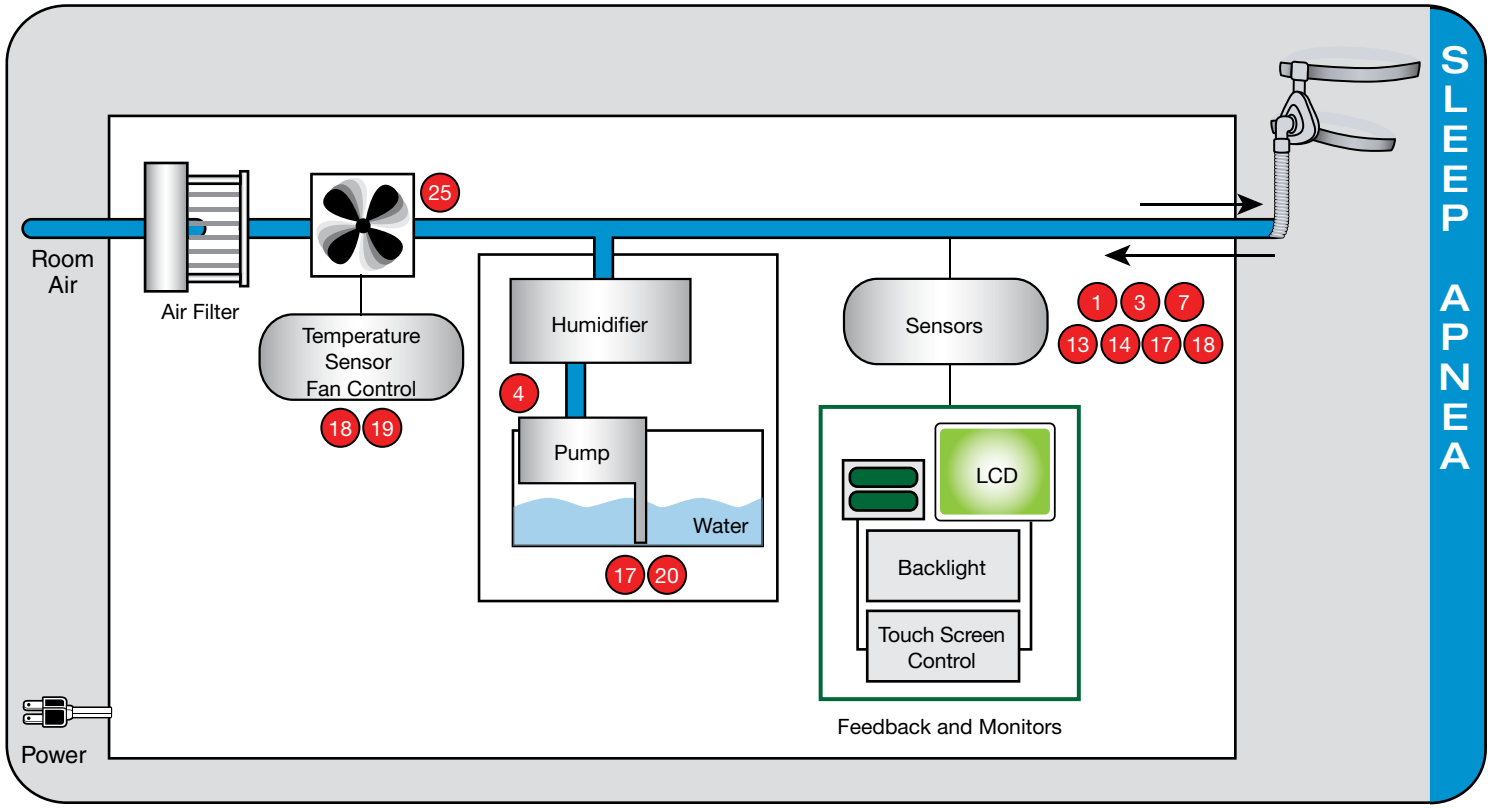

FLOW CYTOMETRY
Sheath Fluid
Tank
Pump
Flow Chamber
Optics
Detectors
4
7
Sheath Fluid
Sample Fluid
Sheath Fluid
4
7
Laser
Pump
23
22
26
Reagent
Sample
(test tube)
Sample Preparation

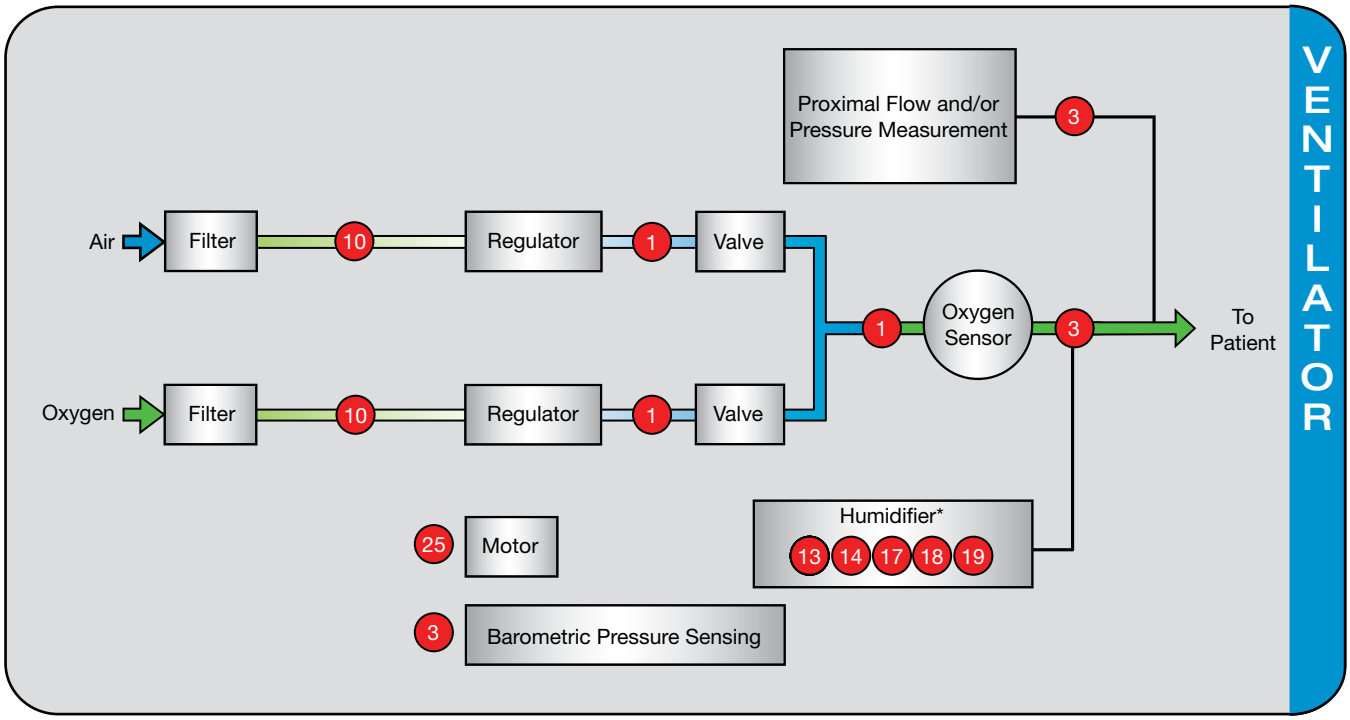




	Description
1	**Airflow sensor** - Honeywell Zephyr™ HAF Series
2	**Airflow sensor** - AWM90000 Series
3	**Board mount pressure sensor** - TruStability® HSC, SSC Series
4	**Board mount pressure sensor** - 26PC Flowthrough or 20PC Series
5	**Board mount pressure sensor** - TruStability® NSC Series
6	**Board mount pressure sensor** - TruStability® TSC Series
7	**Board mount pressure sensor** - ABP Series
8	**Board mount pressure sensor** - NBP, TBP Series
9	**Heavy duty pressure sensor** - MLH Series
10	**Heavy duty pressure sensor** - 13mm/19mm Series
11	**Heavy duty pressure sensor** - SPT Series
12	**Heavy duty pressure sensor** - PX2 Series
13	**Honeywell HumidIcon™ Temperature/Humidity Sensors** - HIH6000, HIH6100, HIH7000, HIH8000, and HIH9000 Series
14	**Humidity Sensors** - HIH-4000 and HIH-5000 Series
15	**Flexible heater** - A3400, A3100, A3200 Series
16	**Flexible heater** - C3400, C3100, C3200 Series
17	**Flexible heater** - Custom Assembly
18	**Discrete thermistor or RTD** - 192, 194 Series or HEL-, 700, HRTS Series
19	**Packaged temperature probe** - 500 Series
20	**Commercial thermostat** - 2450RC Series
21	**Force sensor** - FSS, FSG, FS01/FS03, 1865 Series
22	**Infrared reflective sensor** - HOA1405 or HOA1406 Series
23	**Infrared reflective sensor** - HOA1180 Series
24	**Transmissive infrared sensor** - HOA088X or HOA698X Series
25	**Hall-effect sensor ICs** - SS300 or SS400 Series
26	**Magnetic position sensors** - Packaged, Magnetoresistive or Hall-effect series
27	**ac hour meters** - 20000 Series
28	**Pressure switch** - 5000 Series


HEMODIALYSIS
Water
Concentrate
Mixing Tank
18
Temperature Controller
3
4
Pressure Control Valve
Dialysate Pressure
4
10
11
Artificial Kidney
24
25
Pump
Membrane
15
16
Bubble Trap
21
Venous Pressure
4
10
11
18
23
24
25
Pump
Blood to Patient
Blood from Patient


SLEEP APNEA
Room Air
Air Filter
25
Temperature Sensor Fan Control
18
19
Humidifier
4
Pump
Water
17
20
Sensors
1
3
7
13
14
17
18
LCD
Backlight
Touch Screen Control
Feedback and Monitors
Power



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11	**Heavy duty pressure sensor** - SPT Series
12	**Heavy duty pressure sensor** - PX2 Series
13	**Honeywell HumidIcon™ Temperature/Humidity Sensors** - HIH6000, HIH6100, HIH7000, HIH8000, and HIH9000 Series
14	**Humidity Sensors** - HIH-4000 and HIH-5000 Series

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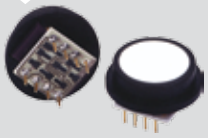
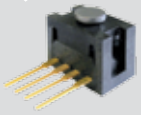
28	**Pressure switch** - 5000 Series

Force Sensors

Measures the addition or backup of force, meaning the resistance of silicon-implanted piezoresistors will increase when flexed under applied force. Potential applications include infusion pumps, anesthesia monitors, blood pressure equipment, and more.

SERIES	1865	FS01/FS03
		
Signal conditioning	calibrated	amplified
Technology	silicon die (piezoresistive)	silicon die (piezoresistive)
Force range	0 psi to 5 psi, 0 psi to 10 psi, 0 psi to 15 psi, 0 psi to 25 psi, 0 psi to 30 psi	0 lb to 1.5 lb, 0 lb to 3.0 lb
Overforce	10 psi, 30 psi, 45 psi, 60 psi	7 lb
Linearity	0.10 % FSS typ., BFSL; 0.25 % FSS max., BFSL	1.0 % FSS typ., BFSL; 3.0 % FSS max., BFSL
Operating temp. range	-28 °C to 54 °C [-18 °F to 129 °F]	0 °C to 70 °C [32 °F to 158 °F]
Compensated temp. range	-1 °C to 54 °C [30 °F to 129 °F]	5 °C to 50 °C [41 °F to 122 °F]
Measurements (H x W x D)	7,62 mm x 17,145 mm x 17,145 mm [0.30 in x 0.675 in x 0.675 in]	8,26 mm x 17,27 mm x 25,1 mm [0.325 in x 0.68 in x 0.988 in]
Features	pressure measurement for liquid media; 8-pin DIP electrical connection; laser trimmed	high-level output range; calibrated zero and span

SERIES	FSG	FSS	FSS-SMT
			
Signal conditioning	unamplified	unamplified	unamplified
Technology	silicon die (piezoresistive)	silicon die (piezoresistive)	silicon die (piezoresistive)
Force range	0 N to 5 N, 0 N to 10 N 0 N to 15 N, 0 N to 20 N	0 N to 5 N, 0 N to 10 N 0 N to 15 N, 0 N to 20 N	0 N to 5 N, 0 N to 10 N 0 N to 15 N, 0 N to 20 N
Overforce	60 N max. (range dependent)	60 N max. (range dependent)	60 N max. (range dependent)
Linearity	±0.5 % span typ., BFSL	±0.5 % span typ., BFSL	±0.5 % span typ., BFSL
Operating temperature range	-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]
Measurements (H x W x D)	9,04 mm x 12,70 mm x 7,98 mm [0.36 in x 0.50 in x 0.31 in]	3,18 mm x 14,22 mm x 5,59 mm [0.13 in x 0.56 in x 0.22 in]	3,18 mm x 13,70 mm x 5,59 mm [0.13 in x 0.54 in x 0.22 in]
Features	extremely low deflection; low repeatability and linearity error	low deflection; low voltage; direct mechanical coupling of actuator ball; small size	low deflection; direct mechanical coupling of actuator ball; small size; low voltage

Sensing element design consists of four piezoresistors galvanized with a thin, chemically etched silicon diaphragm that produces a proportional electrical output. Potential applications include dialysis equipment, ventilators, sleep apnea, and anesthesia machines.

TRUSTABILITY® SERIES

	HSC	SSC	NSC
			
Signal conditioning	amplified	amplified	unamplified
Pressure range	±1,6 mbar to ±40 mbar [±0.5 inH_2O to ±30 inH_2O]	±1,6 mbar to ±40 mbar [±0.5 inH_2O to ±30 inH_2O]	±2,5 mbar to ±40 mbar [±1 inH_2O to ±30 inH_2O]
Device type	differential, gage	differential, gage	differential, gage
Output	analog (Vdc), digital (I^2C or SPI)	analog (Vdc), digital (I^2C or SPI)	analog (mV)
Calibrated	yes	yes	no
Temperature comp.	yes	yes	no
Total error band	±1 %FSS to ±3 %FSS depending on pressure range	±2 %FSS to ±4 %FSS depending on pressure range	–
Accuracy	±0.25 %FSS BFSL	±0.25 %FSS BFSL	±0.25 %FSS BFSL
Mounting options	DIP, SIP, SMT	DIP, SIP, SMT	DIP, SIP, SMT
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] (uncompensated)
Compensated temperature range	0 °C to 50 °C [32 °F to 122 °F]	-20 °C to 85 °C [-4 °F to 185 °F]	–
Measurements (H x W x D)	varies by package style	varies by package style	varies by package style
Approvals	RoHS, WEEE	RoHS, WEEE	RoHS, WEEE
Features	long-term stability, total error band, accuracy and flexibility; high burst pressures and working pressure ranges; excellent repeatability	long-term stability, total error band, accuracy and flexibility; high burst pressures and working pressure ranges; excellent repeatability	numerous package styles and mounting options; infinite resolution on pressure signal

Board Mount Pressure Sensors | Low (1 psi to 15 psi) to Mid (15 psi to 250 psi)

Utilizes a specialized piezoresistive micro-machined sensing element that allows part interchangeability, and enhanced performance, reliability, and accuracy. Potential applications include hemodialysis equipment, sterilizers, and flow cytometry machines.

SERIES	24PC	26PC
		
Signal conditioning	unamplified	unamplified
Pressure range	0.5 psi to 250 psi (SIP, DIP) 1 psi to 15 psi (SMT)	1 psi to 250 psi (SIP, DIP) 1 psi to 15 psi (SMT)
Device type	absolute, differential, wet-wet differential, gage	differential, wet-wet differential, gage
Output	mV	mV
Calibrated	no	yes
Temperature comp.	no	yes
Accuracy	linearity & hysteresis: 0.5 % typ.	linearity & hysteresis: 0.5 % typ.
Mounting options	DIP, SIP, SMT	DIP, SIP, SMT
Operating temperature range	-40 °C to 85 °C [-40 °F to 185 °F]	-40 °C to 85 °C [-40 °F to 185 °F]
Compensated temperature range	–	0 °C to 50 °C [32 °F to 122 °F]
Measurements (H x W x D)	SIP, DIP: varies by configuration SMT: 7,87 mm x 10,41 mm x 10,92 mm [0.31 in x 0.41 in x 0.43 in]	SIP, DIP: varies by configuration SMT: 7,87 mm x 10,41 mm x 10,92 mm [0.31 in x 0.41 in x 0.43 in]
Approvals	RoHS, WEEE	RoHS, WEEE
Features	SIP, DIP: true wet/wet differential sensing; miniature package; operable after exposure to frozen conditions; choice of termination for gage sensors	SIP, DIP: true wet/wet differential sensing; miniature package; operable after exposure to frozen conditions; choice of termination for gage sensors
	SMT: true wet/wet differential sensing; pick-up feature; maximum peak reflow temperature of 260 °C [500 °F]; end-point calibration; elastomeric construction	SMT: true wet/wet differential sensing; pick-up feature; maximum reflow temperature of 260 °C [500 °F]; end-point calibration; elastomeric construction

Board Mount Pressure Sensors | Low Pressure Flow-Through (1 psi to 100 psi)

Features a sensing technology that utilizes a specialized piezoresistive micro-machined sensing element. Potential uses include measuring vacuum or positive pressure in medical and environmental applications.

SERIES	24PC Flowthrough	26PC Flowthrough
		
Signal conditioning	unamplified	unamplified
Pressure range	1 psi to 100 psi	1 psi to 100 psi
Device type	flow-through gage	flow-through gage
Output	mV	mV
Calibrated	no	yes
Temperature comp.	no	yes
Accuracy	linearity & hysteresis: 0.75 % typ.	linearity & hysteresis: 0.35 % typ.
Mounting options	SIP	SIP
Operating temperature range	-40 °C to 85 °C [-40 °F to 185 °F]	-40 °C to 85 °C [-40 °F to 185 °F]
Compensated temperature range	–	0 °C to 50 °C [32 °F to 122 °F]
Measurements (H x W x D)	8,89 mm x 25,65 mm x 12,7 mm [0.35 in x 1.01 in x 0.50 in]	8,89 mm x 25,65 mm x 12,7 mm [0.35 in x 1.01 in x 0.50 in]
Approvals	RoHS, WEEE	RoHS, WEEE
Features	miniature package; media flow-through port; operable after exposure to frozen conditions; choice of termination for gage sensors	

Board Mount Pressure Sensors | Low (1 psi to 15 psi) to Mid (15 psi to 250 psi)

Utilizes a specialized piezoresistive micro-machined sensing element that allows part interchangeability, and enhanced performance, reliability, and accuracy. Potential applications include ventilators, respirators, CPAP, infusion pumps, and oxygen concentrators.

SERIES	TruStability® HSC	TruStability® SSC	Basic ABP
			
Signal conditioning	amplified	amplified	amplified
Pressure range	±60 mbar to ±10 bar [±1 psi to ±150 psi]	±60 mbar to ±10 bar [±1 psi to ±150 psi]	±60 mbar to ±10 bar [±1 psi to ±150 psi]
Device type	absolute, differential, gage	absolute, differential, gage	differential, gage
Output	analog (Vdc); digital (I^2C or SPI)	analog (Vdc); digital (I^2C or SPI)	analog (Vdc); digital (I^2C or SPI)
Calibrated	yes	yes	yes
Temperature comp.	yes	yes	yes
Total error band	±1 %FSS	±2 %FSS	±1.5 %FSS
Accuracy	±0.25 %FSS BFSL	±0.25 %FSS BFSL	±0.25 %FSS BFSL
Mounting options	DIP, SIP, SMT	DIP, SIP, SMT	DIP, Leadless SMT, SMT
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]
Compensated temperature range	0 °C to 50 °C [32 °F to 122 °F]	-20 °C to 85 °C [-4 °F to 185 °F]	0 °C to 50 °C [32 °F to 122 °F]
Measurements (H x W x D)	varies by package style	varies by package style	varies by package style
Approvals	RoHS, WEEE	RoHS, WEEE	RoHS, WEEE, REACH
Features	long-term stability; liquid media option extends performance to non-corrosive, non-ionic liquids	long-term stability; liquid media option extends performance to non-corrosive, non-ionic liquids	energy efficient; meets IPC/ JEDEC J-STD-020D.1 Moisture Sensitivity Level 1 requirements

TruStability® TSC	TruStability® NSC	Basic TBP	Basic NBP
			
unamplified	unamplified	unamplified	unamplified
±60 mbar to ±10 bar [±1 psi to ±150 psi]	±60 mbar to ±10 bar [±1 psi to ±150 psi]	±60 mbar to ±10 bar [±1 psi to ±150 psi]	±60 mbar to ±10 bar [±1 psi to ±150 psi]
differential, gage	absolute, differential, gage	gage	absolute, gage
analog (mV)	analog (mV)	analog (mV)	analog (mV)
yes	no	yes	no
yes	no	yes	no
–	–	–	–
±0.25 %FSS BFSL	±0.25 %FSS BFSL	±0.25 %FSS BFSL	±0.25 %FSS BFSL
DIP, SIP, SMT	DIP, SIP, SMT	DIP, leadless SMT, SMT	DIP, leadless SMT, SMT
-40 °C to 85 °C [-40 °F to 185 °F]	-40 °C to 85 °C [-40 °F to 185 °F] (uncompensated)	-40 °C to 125 °C [-40 °F to 257 °F]	-40 °C to 125 °C [-40 °F to 257 °F]
0 °C to 85 °C [32 °F to 185 °F]	–	0 °C to 85 °C [32 °F to 185 °F]	–
varies by package style	varies by package style	as small as 7 mm x 7 mm x 3,84 mm [0.276 in x 0.276 in x 0.151 in]	as small as 7 mm x 7 mm x 3,84 mm [0.276 in x 0.276 in x 0.151 in]
RoHS, WEEE	RoHS, WEEE	RoHS, WEEE	RoHS, WEEE
compensation makes it easier to integrate the sensor into system as it eliminates the need to calibrate the system over temperature; reduced part-to-part variation	provides the flexibility for customers to perform their own calibration while still benefitting from industry-leading stability, accuracy, and repeatability	silicon gel coating in media path option for use in applications where condensation can occur	cost-effective; Honeywell brand; for use in applications where condensation can occur; small size, durable, flexible, durable

Contains advanced microstructure technology to provide a sensitive and fast response to flow, amount/direction of air or other gases. Potential applications include ventilators, respirators, and CPAP.

AIRFLOW SERIES

	Honeywell Zephyr™ HAF Series	Honeywell Zephyr™ HAF Series-High Flow
		
Type	high accuracy ±50 SCCM to ±750 SCCM	high accuracy 10 SLPM to 300 SLPM
Signal conditioning	amplified, compensated	amplified, compensated
Technology	silicon die with thermally isolated heater	silicon die with thermally isolated heater
Flow/press. range	±50 SCCM to ±750 SCCM	10, 15, 20, 50, 100, 200, 300 SLPM
Output	analog (Vdc), digital (I^2C)	digital (I^2C)
Power consumption	3.3 Vdc: 40 mW typ. (no load) (analog); 23 mW typ. (no load) (digital) 5.0 Vdc: 55 mW typ. (no load) (analog); 38 mW typ. (no load) (digital)	3 Vdc: 60 mW max. 10 Vdc: 200 mW max.
Port style	long port, short port	manifold mount, 22 mm OD tapered male fitting, G 3/8 female threaded fitting
Media compat.	dry non-corrosive gases	dry non-corrosive gases
Temperature range	-20 °C to 70 °C [-4 °F to 158 °F] (operating) 0 °C to 50 °C [32 °F to 122 °F] (compensated)	-20 °C to 70 °C [-4 °F to 158 °F] (operating) 0 °C to 50 °C [32 °F to 122 °F] (compensated)
Measurements (H x W x D)	long port: 20 mm x 36 mm x 19,9 mm [0.79 in x 1.42 in x 0.78 in]; short port: 17,6 mm x 28,8 mm x 19,9 mm [0.69 in x 1.13 in x 0.78 in]	110 mm x 54,4 mm x 54 mm [4.3 in x 2.14 in x 2.1 in] (22 mm OD, tapered male fitting - largest)
Features	enhanced sensitivity at very low flows; enhanced stability; low pressure; linear output; customizable; full calibration and temperature compensation	built-in bypass provides enhanced performance, easy integration and custom calibration

	AWM5000	AWM700
		
Type	amplified (analog output)	amplified (analog output)
Signal conditioning	silicon die	silicon die
Flow/press. range	0 SLPM to 5.0 SLPM; 0 SLPM to 10.0 SLPM; 0 SLPM to 15.0 SLPM; 0 SLPM to 20.0 SLPM	200 SLPM, ±300 SLPM
Output	analog	analog
Power consumption	100 mW max.	60 mW max.
Port style	1/4 in-18 NPT	22 mm tapered
Media compat.	dry gas only	dry gas only
Temperature range	-20 °C to 70 °C [-4 °F to 158 °F] (operating) 0 °C to 50 °C [32 °F to 122 °F] (compensated)	-25 °C to 85 °C [-13 °F to 185 °F] (operating) 10 °C to 40 °C [50 °F to 104 °F] (compensated)
Measurements (H x W x D)	35,6 mm x 162,8 mm x 32,3 mm [1.40 in x 6.41 in x 1.27 in]	32,5 mm x 82,5 mm x 46,5 mm [1.28 in x 3.25 in 1.83 in]
Features	sensitivity to low flows; enhanced response time; low power consumption; laser trimmed	sensitivity to low flows; enhanced response time; low power consumption; highly stable

AWM2000	AWM3000
	
–	–
unamplified, compensated	amplified
silicon die	silicon die
±30 SCCM; ±200 SCCM; ±1000 SCCM; ±5,0 mbar [2.0 in $H_2$0]	30 SCCM; 200 SCCM; 1000 SCCM; ±1000 SCCM; 0 mbar to 1,25 mbar [0 in $H_2$0 to 0.5 in $H_2$0]; 0 mbar to 5,0 mbar [0 in $H_2$0 to 2 in $H_2$0]; 5,0 mbar [2.0 in $H_2$0]
analog	analog
30 mW typ.	50 mW or 100 mW typ.
straight	straight
dry gas only	dry gas only
-25 °C to 85 °C [-13 °F to 185 °F]	-25 °C to 85 °C [-13 °F to 185 °F]
15,5 mm x 54,4 mm x 31,5 mm [0.61 in x 2.14 in x 1.24 in]	15,5 mm x 54,4 mm x 31,5 mm [0.61 in x 2.14 in x 1.24 in]
sensitivity to low flows; enhanced response time; low power consumption; analog output; bidirectional sensing capability	sensitivity to low flows; fast response time; low power consumption; analog output; amplified

AWM40000	AWM90000
	
unamplified (compensated) or amplified	uncompensated
silicon die	silicon die
±25.0 SCCM; 1.0 SLPM; 6.0 SLPM	±200 SCCM; ±5,0 mbar [2.0 in $H_2$0]
analog	analog
60 mW max. or 75 mW max.	50 mW max.
manifold	parallel
dry gas only	dry gas only
-40 °C to 125 °C [-40 °F to 251 °F] (operating) (inclusive) -25 °C to 85 °C [-13 °F to 185 °F] (compensated)	-25 °C to 85 °C [-13 °F to 185 °F]
12,7 mm x 30,5 mm x 30,2 mm [0.50 in x 1.2 in x 1.19 in]	13,08 mm x 30,48 mm x 27,94 mm [0.52 in x 1.2 in x 1.1 in]
sensitivity to low flows; enhanced response time; low power consumption, analog output; laser trimmed	sensitivity to low flows; fast response time; low power consumption; analog output; bidirectional sensing capability

Honeywell offers decades of experience in the heavy duty pressure products industry. That's why, industry-wide, our heavy duty pressure sensors and transducers are known for enhanced quality, reliability, and service – which adds up to outstanding value for your applications.

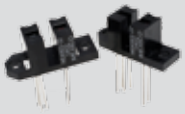
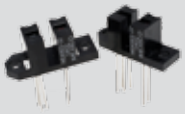
PRESSURE SERIES

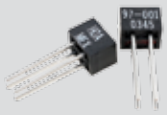
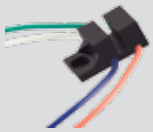
	13mm	19mm
		
Pressure connection	weld ring with back support, 1/8-27 NPT, 1/4-18 NPT, 7/16 UNF	weld ring with body O-ring, flush mount, flush mount with flange, 1/8-27 NPT, 1/4-18 NPT, 7/16 UNF, 1/4 BSPP, Euro O-ring, 1/4 VCR (female nut)
Measurement type	absolute, sealed gage	absolute, gage, vacuum gage
Construction	wetted parts stainless 316L	wetted parts stainless 316L
Pressure range	0 psi to 500 psi through 0 psi to 5000 psi	0 psi to 3 psi through 0 psi to 500 psi
Output	0 mV to 100 mV (nominal)	0 mV to 100 mV (nominal)
Accuracy	±0.25 %BFSL max.	±0.25 %BFSL max.
Total Error Band	–	–
Amplified	no	no
Operating temperature range	-40 °C to 125 °C [-40 °F to 257 °F]	-40 °C to 125 °C [-40 °F to 257 °F]
Compensated temperature range	0 °C to 82 °C [32 °F to 180 °F]	0 °C to 82 °C [32 °F to 180 °F]
Termination	ribbon cable	ribbon cable
Measurements (H x W x D)	varies by body type	varies by body type
Certifications/Approvals	RoHS	RoHS
Features	isolated stainless steel package; voltage or current supply options; accommodates media that will not adversely affect stainless 316L	isolated stainless steel package; vacuum compatible; accommodates media that will not adversely affect stainless 316L

PX2	MLH	SPT
		
NPT 1/4-18, NPT 1/8-27, 9/16-18 UNF SAE J1926-3, 7/16-20 UNF SAE J1926-3, 1/4 45° Flare Female Schrader, M12 X 1.5 ISO 6149-3, G1/4 ISO 1179-3, G1/8 ISO 1179-3	1/4-18 NPT; M12 x 1.5 (ISO 6149); M14 x 1.5 (ISO 6149); 3/8-24 UNF (SAE-3 O-ring boss); M18 x 1.5 (ISO 6149); 1/8 in-27 NPT; 1/2 in-20 UNF (SAE-5 O-ring boss); M10 x 1 (ISO 6149); 1/4 in SAE female Schrader (7/16-20 UNF-2B internal thread); 7/16-20 UNF (SAE-4 O-ring boss); 1/2 in NPT; 9/16-18 UNF (SAE-6 O-ring boss); R 1/4-19 BSPT (ISO 7-1 tapered thread); G 1/4-19 (DIN 3852-2); G 1/8 with O-ring groove; M16 x 1.5 (ISO 6149); G 1/4 with O-ring groove; G 1/8 (DIN 3852-2); R 1/8-28 BSPT (ISO 7-1 tapered thread); M20 x 1.5 (ISO 6149); 1/2-20 (SAE J514)	1/8-27 NPT, 1/4-18 NPT, 7/16-20 UNF, 1/4-19 BSPP, 1/4 VCR gland
absolute, sealed gage	gage, sealed gage	absolute, gage, sealed gage, vacuum gage pressures
port and housing: 304 stainless steel; connector: PBT 30% GF	port: 304L stainless steel; diaphragm: Haynes 214 alloy	wetted parts 316L SS
15 psi to 667 psi [1 bar to 46 bar]	0 psi to 50 psi through 0 psi to 8000 psi	0 psi to 3 psi through 0 psi to 5000 psi
ratiometric: 5.0 V, 10 %Vs to 90 %Vs; 5.0 V, 5 %Vs to 95 %Vs; 3.3 V, 10 %Vs to 90 %Vs; 3.3 V, 5 %Vs to 95 %Vs regulated: 1 Vdc to 6 Vdc, 0.25 Vdc to 10.25 Vdc, 0.5 Vdc to 4.5 Vdc, 1 Vdc to 5 Vdc; current: 4 mA to 20 mA	ratiometric (from 5 Vdc excitation): 0.5 Vdc to 4.5 Vdc; regulated: 1 Vdc to 6 Vdc, 0.25 Vdc to 10.25 Vdc, 0.5 Vdc to 4.5 Vdc, 1 Vdc to 5 Vdc; current: 4 mA to 20 mA	4 mA to 20 mA, 0 mV to 100 mV, 1 Vdc to 5 Vdc
±0.25 %FSS	±0.25 %FSS (±0.5 %FSS on ranges < 100 psi)	±0.25 %BFSL max.
±2 %FSS at -40 °C to 125 °C [-40 °F to 257 °F]	±2 %FSS to ±15 %FSS, depending on temp range and termination type	–
yes	yes	yes, amplified and unamplified
-40 °C to 125 °C [-40 °F to 257 °F]	-40 °C to 125 °C [-40 °F to 257 °F]	-40 °C to 85 °C [-40 °F to 185 °F]
-40 °C to 125 °C [-40 °F to 257 °F]	ratiometric output: -40 °C to 125 °C [-40 °F to 257 °F] regulated and 4 mA to 20 mA outputs: -40 °C to 125 °C [-40 °F to 257 °F] (See literature for operating and temperature compensated area graphics.)	-10 °C to 85 °C [14 °F to 185 °F]
Packard Metripak 150, Micro M12 IEC 61076-2, DIN EN 175301-803C, Deutsch DTM04-3P, cable harness (1, 2, 3, 5 meter)	Delphi Metripak 150; Hirschmann (mates with G4W1F); M12 x 1 (Brad Harrison micro); DIN 43650-C, 8 mm-male; Amp Superseal 1.5; cable (1 m); cable (3 m); flying leads (20 AWG – 6 in); Deutsch DTM04-3P (integral)	bayonet connector, cable
66 mm x 21,5 mm dia. [2.60 in x 0.84 in dia.]	27,0 mm x 27,0 mm x 55 mm [1.06 in x 1.06 in x 2.18 in]	22,2 mm x 22,2 mm x length varies [0.875 in x 0.875 in x length varies]
RoHS; CE	RoHS; CE; UL873 component recognition for USA/Canada	–
designed for configurability; cost-effective; application expertise; global support; narrow Total Error Band; durable; designed to Six Sigma standards; broad compensated temperature range; good EMC protection	all-metal wetted parts; no internal elastomeric seals; stable and creep-free; input reverse voltage protection; less than 2 ms response time; easy customization; exceeds CE heavy industrial EMC for use in areas of enhanced RFI/EMI	calibrated and temperature compensated; NEMA 4 design; rugged 316L stainless steel wetted parts

Non-contact, solid-state devices operated by utilizing light emitting and detecting elements, often combined with lenses and secondary packaging. Capable of sensing position, speed, direction and presense or absence of objects.

OPTICAL SERIES

	HOA0901	HOA0902	SEP8736	SME2470
				
Type	transmissive encoder	transmissive encoder	AlGaAs (880 nm) LED	AlGaAs (880 nm) LED
Output option	speed/direction (A-B output)	speed/direction (tach output)	–	–
Resolution	0,03 mm [0.009 in]	0,46 mm [0.018 in]	–	–
Tach pulse width	–	3 ms to 20 ms	–	–
Output rise/fall time	100 ns	–	–	–
Sensor aperture	–	–	–	–
Slot width	3,18 mm [0.125 in]	3,18 mm [0.125 in]	–	–
Beam angle	–	–	10°	24°
Power output	–	–	1.2 mW/cm^2 to 3 mW/cm^2	0.6 mW/cm^2 min.
Supply voltage	4.5 V to 5.5 V	4.5 V to 5.5 V	–	–
Forward voltage	–	–	1.7 V	1.7 V
Coupled current (Ic) min.	–	–	–	–
Mounting configuration	dual mounting tabs (-012 or no tab PCB mount) (-011)	dual mounting tabs (-012 or no tab PCB mount) (-011)	through-hole	ceramic SMT, glass lens
Coupled current (Ic)	–	–	–	–
Forward current	15 mA	15 mA	–	–
Optimum point of response	–	–	–	–
Termination style	0,51 mm [0.020 in] sq leads; min. lead length 12,7 mm [0.5 in]	0,51 mm [0.020 in] sq leads; min. lead length 12,7 mm [0.5 in]	0,51 mm [0.020 in] sq leads; min. lead length 12,7 mm [0.5 in]	SMT
Target distance	–	–	–	–
Measurements	10,64 mm H x 24,38 mm W x 23,34 mm L [0.419 in H x 0.96 in W x 0.919 in L]	10,64 mm H x 24,38 mm W x 23,34 mm L [0.419 in H x 0.96 in W x 0.919 in L]	2,28 mm H x 4,45 mm W x 18,43 mm L [0.09 in H x 0.175 in W x 0.725 in L]	2,54 mm H x 2,1 mm W x 3,81 mm L [0.10 in H x 0.083 in W x 0.15 in L]
Features	direct TTL interface; inverting logic option; internal temperature compensation	direct TTL interface; internal temperature compensation	enhanced coupling distance; mechanically and spectrally matched to SDP8436	durable ceramic package with glass lensed optics; mechanically and spectrally matched to SMD2420 and SMD2440; upright or inverted mounting

HLC1395	HOA1180	HOA1397	HOA088X	HOA1870
				
reflective	reflective	reflective	transmissive sensor	transmissive sensor
–	–	–	–	–
–	–	–	–	–
–	–	–	–	–
15 µs	15 µs	15 µs	15 µs	15 µs
–	–	–	1,52 mm x 0,25 mm [0.06 in x 0.01 in]	1,02 mm x 0,15 mm [0.04 in x 0.006 in]
–	–	–	3,18 mm [0.125 in]	0,78 mm [0.07 in]
–	–	–	–	–
–	–	–	–	–
–	–			
1.6 V	1.6 V	1.6 V	1.6 V	1.6 V
0.6 mA	0.16 mA	0.7 mA	0.5 mA	0.3 mA
miniature through-hole	mounting tab	PCB mount	N, L, T, P mounting options	mounting tab
0.6 mA min.	0.16 mA min.	0.7 mA min.	–	–
10 mA	30 mA	20 mA	10 mA/20 mA	15 mA
1,02 mm [0.04 in]	12,7 mm [0.5 in]	1,27 mm [0.05 in]	–	–
0,51 mm [0.020 in] sq leads min. lead length 12,7 mm [0.5 in]	28 AWG PVC insulated wire leads; min. wire length 305 mm [12 in]	0,51 mm [0.020 in] sq leads min. lead length 2,98 mm [0.275 in]	26 AWG UL 1429 wire leads min. wire length 610 mm [24 in]	22 AWG UL 1007 wire leads min. wire length 457 mm [18 in]
1,02 mm [0.040 in]	12,7 mm [0.500 in]	1,27 mm [0.050 in]	–	–
2,20 mm H x 4,45 mm W x 4,45 mm L [0.087 in H x 0.175 in W x 0.175 in L]	6,35 mm H x 6,35 mm W x 15,88 mm L [0.25 in H x 0.25 in W x 0.625 in L]	4,95 mm H x 6,35 mm W x 4,95 mm L [0.195 in H x 0.25 in W x 0.195 in L]	11,05 mm x 24,89 mm x 10,18 mm [0.44 in x 0.98 in x 0.40 in]	9,02 mm x 12,7 mm x 13,46 mm [0.355 in x 0.5 in x 0.53 in]
diffused (unfocused) reflective sensor; side-looking plastic package; phototransistor output; infrared emitter and phototransistor detector in a single package; low profile	glass lensed, focused for maximum response; choice of phototransistor or photodarlington output; enhanced sensitivity; wide operating range	diffused (unfocused) reflective sensors; choice of phototransistor or photodarlington output; low profile; unfocused	phototransistor output; four mounting configurations; opaque or IR transmissive housings	phototransistor or photodarlington output; plastic-molded components; narrow dual 0,15 mm [0.006 in] wide apertures over emitter and detector

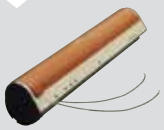
Provide reliable presence/absence detection of fluids. These electrically robust sensors incorporate reverse-polarity, over-voltage, transient and short-circuit protection. LED drive current is set internally, no external resistor is required. Ambient light immunity is up to 20X better than first generation LL sensors. Polysulfone housing is compatible with a wide-range of fluids.

LIQUID LEVEL SERIES

LLE

Description	miniature sensors offering a variety of housing types (both plastic & metal); available in standard and high temperature
Sensing tip	polysulfone
Housing	polysulfone
Supply voltage range	5 Vdc to 12 Vdc
Supply current	5 mA or 15 mA max.
Output	normally open in air 10 mA or 40 mA max. (sink)
Termination	lead wires; UL1429-26 AWG, min. wire length 250 mm [9.84 in]
Seal washer	nitrile rubber, vamac rubber
Operating temperature range	-25 °C to 80 °C [-13 °F to 176 °F] or -40 °C to 125 °C [-40 °F to 257 °F]
Measurements	19,0 mm H x 19,0 mm W x 12,4 mm L [0.75 in H x 0.75 in W x 0.49 in L]
Operating pressure	plastic: 5 bar [70 psi]; metal: 25 bar [350 psi]
Mounting thread	plastic: M12 x 1 or push-in; metal: 1/2 in BTSP
Features	variety of housing types; no moving parts; sinking output; microprocessor compatible; fast response

Flat or custom geometry configurations with single, multiple or variable watt densities to provide stable, uniform and customized heat output for unique application needs. Heaters may be bonded to other system components or combined with thermostats, thermistors, thermocouples, temperature sensors and thermal fuses to form custom-engineered plug-and-play heating systems.

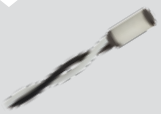
SERIES	3400	3100	3200	78000
				
Description	Kapton®	silicon wire-wound	silicon chemically etched	transparent
Maximum power	6.2 W/cm² [40 W/in²]	6.2 W/cm² [40 W/in²]	6.2 W/cm² [40 W/in²]	0.8 W/cm² [5 W/in²]
Operating/storage temperature range	Kapton® insulated: 105 °C [221 °F] max.	250 °C [482 °F] max. 200 °C [392 °F] max. (UL)	250 °C [482 °F] max. 200 °C [392 °F] max. (UL)	-40 °C to 85 °C [-40 °F to 185 °F]
Size constraints	0,61 m x 0,61 m [24 in x 24 in]	none, virtually any size and shape	0,61 m x 0,61 m [24 in x 24 in]	0,60 m x 0,43 m [22 in x 17 in]
Geometry	specific to customer requirements within size constraints	specific to customer requirements	specific to customer requirements within size constraints	specific to customer requirements within size constraints
Heater trace pattern	specific to customer requirements	specific to customer requirements	specific to customer requirements	continuous layer of ITO (Indium Tin Oxide) across entire surface
Construction	contains etched, resistive foil encased between two layers of Kapton®; Kapton® insulation uses acrylic, thermoset bonding adhesive	contains resistive wire encased between two layers of fiberglass-supported silicone rubber; all bonding adhesives are uncured silicone rubber; cured under pressure and temperature during manufacturing	contains resistive foil traces encased between two layers of fiberglass-supported silicone rubber bonded together using temperature and pressure; heater trace patterns generated similar to processes used in pc-board design and manufacture	very thin layer of ITO electrically sputtered on PET polyester film; electrical connection made via silver ink or carbon bus bars laid on top of the ITO; wire connections are made via ring terminals eyeleted to the silver or carbon bus bars or flexible tail/connector
Standard wire	• UL 1180 Teflon® • gauge per customer request • otherwise selected for max. heater current draw	• UL 1180 Teflon® • gauge per customer request • otherwise selected for max. heater current draw	• UL 1180 Teflon® • gauge per customer request • otherwise selected for max. heater current draw	• UL 1180 Teflon® • gauge per customer request • otherwise selected for max. heater current draw
PSA	yes	yes	yes	yes
Approvals	UL, CSA	UL, CSA, TUV	UL, CSA, TUV	–
Features	low out gassing; variety of geometries; enhanced dielectric strength with minimal thickness	virtually any size or shape; multi-strand resistance wires	multiple watt densities or varying trace geometries; flat, molded-to-shape, spiral wrap	no wires in clear view area; optical grade, thin film polyester; low power consumption

Change resistance with change in temperature. Available in wide range of resistance values and temperature ranges. Variety of packages and sizes from leaded devices to surface mount versions. Potential applications include dialysis machines, medical diagnostic equipment, hand held thermometers and autoclaves.

THERMISTOR SERIES

	192	194
		
Description	uni-curve with bare leads and epoxy	uni-curve with insulated leads and epoxy
Operating temperature range	-60 °C to 150 °C [-76 °F to 302 °F]	-60 °C to 150 °C [-76 °F to 302 °F]
Dissipation constant in still air	0.75 mW/°C	0.75 mW/°C
Time constant in air	15.0 s	15.0 s
Nominal resistance at 25 °C [77 °F]	500 Ohm, 1,000 Ohm, 2,252 Ohm, 3,000 Ohm, 5,000 Ohm, 10,000 Ohm, 30,000 Ohm, 50,000 Ohm, 100,000 Ohm	2,252 Ohm, 3,000 Ohm, 5,000 Ohm, 10,000 Ohm, 30,000 Ohm, 50,000 Ohm, 100,000 Ohm
Maximum diameter	2,413 mm [0.095 in]	2,413 mm [0.095 in]
Termination material	tinned copper, alloy 180	solid nickel, Teflon® insulated
Lead length	38,1 mm [1.50 in]	38,1 mm [1.50 in]
Features	resistance temperature curve interchangeability; enhanced stability and life; epoxy coated	resistance temperature curve interchangeability; enhanced stability and life; epoxy coated

RTD SERIES

	HEL-705, -707, -711, -712, -716, -717	HRTS
		
Sensor type	100 Ohm, 1000 Ohm platinum RTD	100 Ohm, 1000 Ohm platinum RTD
Temperature coefficient	0.00385 Ohm/Ohm/°C; 0.00375 Ohm/Ohm/°C	0.00385 Ohm/Ohm/°C; 0.00375 Ohm/Ohm/°C
Temperature sensing range	TFE Teflon®: -70 °C to 260 °C [-94 °F to 500 °F] fiberglass: -75 °C to 500 °C [-100 °F to 932 °F]	-70 °C to 260 °C [-94 °F to 500 °F]
Packaging type	alumina tube	ceramic case
Termination	28 ga. or 24 ga. lead wire	lead wires
Base resistance & interchangeability	100 Ohm: ±0.1 % @ 0 °C; 100 Ohm: ±0.2 % @ 0 °C; 1000 Ohm: ±0.1 % @ 0 °C; 1000 Ohm: ±0.2 % @ 0 °C	100 Ohm: ±0.1 % @ 0 °C; 100 Ohm: ±0.2 % @ 0 °C; 1000 Ohm: ±0.1 % @ 0 °C; 1000 Ohm: ±0.2 % @ 0 °C
Self-heating	< 15 mW/°C for 0.85 O.D. typ.	< 0.3 mW/°C typ.
Termination material	24 ga. nickel-coated, stranded copper; 28 ga. nickel-coated, stranded copper	28 ga. nickel-coated, stranded copper, teflon insulated
Features	Teflon® or fiberglass lead wires; wide temperature range; ceramic case material; multiple sizes	resistance interchangeable; accurate; fast; laser-trimmed; wide temperature range

Provides either temperature monitoring or over-temperature protection over a wide temperature range. Temperature probes come with a variety of packaging styles and passive output types. Thermostats are phenolic or ceramic based with automatic reset, manual reset or one-shot types available, along with a wide variety of packaging and termination options.

THERMOSTAT SERIES

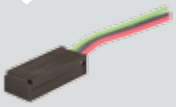
	2450R	2450RC
		
Use	high current	high current
Reset type	automatic	automatic
Housing material	phenolic	ceramic
Functional property	open or close on rise	open or close on rise
Amperage	15 A/10 A	15 A/10 A
Operating temperature range	0 °C to 150 °C [32 °F to 302 °F]	0 °C to 260 °C [32 °F to 500 °F]
Environmental exposure range	-18 °C to 177 °C [0 °F to 350 °F]	-20 °C to 287 °C [0 °F to 550 °F]
Contacts	silver/nickel alloy	silver/nickel alloy
Approvals	UL, CSA	UL, CSA, VDE
Features	rivet sleeve construction; low profile	rivet sleeve construction; low profile

TEMPERATURE PROBE SERIES

	500
	
Temperature sensing type	air/gas, immersion, surface, and liquid level
Thermistor type	NTC
Nominal resistance at 25 °C [77 °F]	200 Ohm to 1,000,000 Ohm (resistive)
Operating temperature range	-40 °C to 300 °C [-40 °F to 572 °F] (inclusive)
Housing material	plastic, aluminum, stainless steel, epoxy filled, tin- or nickel-plated copper, ceramic or kynar-filled tubing
Electrical and mechanical interface	wide variety of connectors, lead types, materials, and insulation
Features	wide selection of housing, resistance, and termination options

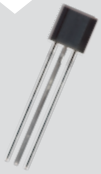
Vane, digital position, and linear position sensors are packaged in a variety of housings for ease of application. Non-contact operation by a magnetic field offers improved solid state reliability that often reduces repair and maintenance costs compared with mechanical operation.

PACKAGED SERIES

	SR15	SR16 SR17	SR3	103SR (DIGITAL)	103SR (LINEAR)
					
Description	Hall-effect digital position sensor	low-cost Hall-effect vane sensor	Hall-effect digital position sensor	Hall-effect digital position sensor	Hall-effect linear position sensor
Package material and style	plastic housing	SR16: plastic dual tower with variety of terminations SR17: plastic side-mount wire exit	plastic threaded barrel	aluminum threaded barrel	aluminum threaded barrel
Magnetic actuation type	unipolar	–	unipolar, bipolar	unipolar, bipolar, latching	linear
Operation	proximity to external magnet	ferrous metal actuator	proximity to external magnet	proximity to external magnet	proximity to external magnet
Supply voltage range	3.8 Vdc to 30 Vdc	3.8 Vdc to 30 Vdc	4.5 Vdc to 24 Vdc	4.5 Vdc to 24 Vdc	4.5 Vdc to 10.5 Vdc
Supply current	13 mA max.	10 mA max.	10 mA	4 mA to 10 mA (inclusive)	7 mA
Output type	digital sinking	digital sinking	digital sinking	digital sinking	ratiometric sinking/sourcing
Operating temperature range	-40 °C to 150 °C [-40 °F to 302 °F]	-20 °C to 85 °C [-4 °F to 185 °F]	-40 °C to 85 °C [-40 °F to 185 °F]	-40 °C to 100 °C [-40 °F to 212 °F]	-40 °C to 100 °C [-40 °F to 212 °F]
Measure-ments	20,3 mm H x 7,6 mm L [0.80 in H x 0.30 in L]	24,6 mm H x 12,4 mm W [0.97 in H x 0.49 in W]	Ø 12,4 mm x 25,4 mm L [Ø 0.49 in x 1.0 in L]	Ø 11,9 mm x 25,4 mm L [15/32-2 x 1.0 in L]	Ø 11,9 x 25,4 mm L [15/32-2 x 1.0 in L]
Features	temperature compensated magnetics	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	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

Ultra-sensitive devices designed to accommodate a wide range of postition sensing applications. The Nanopower Series use a very low average current consumption and can operate from a supply voltage as low as 1.65 Vdc for battery-powered applications.

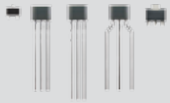
MAGNETORESISTIVE SERIES

	NANOPOWER	2SS52M
		
Description	omnipolar MR sensor IC	omnipolar MR digital sensor IC
Magnetic actuation type	omnipolar	omnipolar
Package style	SOT-23	U-Pack
Supply voltage range	1.65 Vdc to 5.5 Vdc	3.8 Vdc to 30 Vdc
Supply current	SM351LT: 360 nA typ. SM353LT: 310 nA typ.	11 mA max.
Output type	low: 0.03 V typ. high: Vs -0.03 V typ.	digital sinking
Operating temperature range	-40 °C to 85 °C [-40 °F to 185 °F]	-40 °C to 150 °C [-40 °F to 302 °F]
Measurements (H x W)	2,80 mm x 2,90 mm [0.110 in x 0.114 in]	4,5 mm x 4,5 mm [0.18 in x 0.18 in]
Features	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	omnipolar magnetics; sinking output, low gauss operation (25 G max.); operating speed of 0 kHz to over 100 kHz; tape and reel available

Designed to provide reliable, accurate output for position sensing; or smooth motor control that reduces noise and vibration in a motor assembly to improve its efficiency. Solid state reliability often reduces repair and maintenance costs. The sensors small size and thermal balance over temperature allows for design into many compact, lower-cost assemblies.

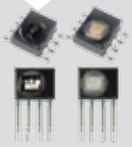
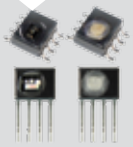
HALL-EFFECT SERIES

	SL353	SS340RT SS440R
		
Description	micropower omnipolar Hall-effect digital sensor IC	low-cost unipolar Hall-effect digital sensor IC
Magnetic actuation	omnipolar	unipolar
Package material and style	plastic surface mount (SOT-23)	SS340RT: plastic surface mount (SOT-23) SS440R: plastic radial lead
Supply voltage	2.2 Vdc to 5.5 Vdc	3 Vdc to 18 Vdc, except SS340RT >125 °C [247 °F]: 3 Vdc to 12 Vdc
Supply current	SL353LT: 1.8 m typ. @ 2.8 Vdc; SL353HT: 0.33 mA typ. @ 2.8 Vdc	8 mA
Operating temperature range	-40 °C to 85 °C [-40 °F to 185 °F]	SS340RT (24 Vdc): -40 °C to 125 °C [-40 °F to 257 °F] SS340RT (12 Vdc) & S440R (24 Vdc): -40 °C to 150 °C [-40 °C to 302 °F]
Measure-ments (H x W)	2,8 mm x 2,9 mm [0.11 in x 0.11 in]	SS340RT: 2,8 mm x 2,9 mm [0.11 in x 0.11 in] SS440R: 3,0 mm x 4,1 mm [0.12 in x 0.16 in]
Features	low supply voltage combined with very low average current reduces power consumption	simple activation from a South pole and multiple magnetic sensitivities (high, medium, and low)

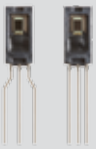
SS351AT / SS451A / SS551AT	SS360NT / SS360ST / SS460S	SS39ET / SS49E / SS59ET
		
low-cost omnipolar Hall-effect digital sensor IC	high sensitivity, latching Hall-effect digital sensor IC	Hall-effect linear sensor IC
omnipolar	latching	linear
SS351AT: plastic surface mount (SOT-23); SS451A: plastic radial lead; SS551AT: plastic surface mount (SOT-89B)	SS360NT/SS360ST: plastic surface mount (SOT-23); SS460: plastic radial lead	SS39ET: plastic surface mount (SOT-23) SS49E: plastic radial lead (SOT-92-style) SS59ET: plastic surface mount (SOT-89)
SS351AT/SS551AT (125 °C [257 °F]): 3 Vdc to 24 Vdc SS351AT (150 °C [302 °F]): 3 Vdc to 12 Vdc SS451A: 3 Vdc to 24 Vdc	3 Vdc to 24 Vdc	2.7 Vdc to 6.5 Vdc
5 mA max. at 25 °C [77 °F] (3 V); 6 mA max. at 25 °C [77 °F] (5 V)	8 mA max.	10 mA max.
-40 °C to 150 °C [-40 °F to 302 °F]	-40 °C to 125 °C [-40 °F to 257 °F]	-40 °C to 100 °C [-40 °F to 212 °F]
SS351AT: 2,8 mm x 2,9 mm [0.11 in x 0.11 in]; SS451A: 3,0 mm x 4,1 mm [0.12 in x 0.16 in]; SS551AT: 4,2 mm x 4,5 mm [0.16 in x 0.18 in]	SS360NT/SS360ST: 2,8 mm x 2,9 mm [0.11 in x 0.11 in]; SS460S: 3,0 mm x 4,1 mm [0.12 in x 0.16 in]	SS39ET: 2,8 mm x 2,9 mm [0.110 in x 0.114 in] SS49E: 3,0 mm x 4,1 mm [0.12 in x 0.16 in] SS59ET: 4,2 mm x 4,5 mm [0.16 in x 0.18 in]
built-in reverse polarity protection; typical operating point of 85 G at 25 °C [77 °F]	fastest response time in class; no chopper stabilization	linear magnetics; ratiometric sourcing output; low voltage operation; tape and reel available

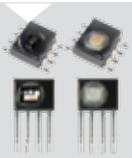
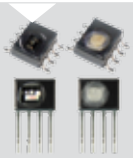
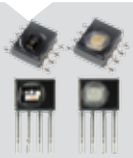
Offers a range of accuracies from ±1.7 %RH typ. to ±4.5 %RH typ., wide operating temperature ranges, and low hysteresis. Potential applications include respiratory therapy, and incubators/ microenvironments.

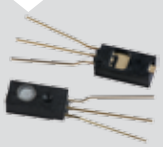
HONEYWELL HUMIDICON™ SERIES

	HIH6000	HIH6100
		
Description	digital output-type relative humidity (RH) and temperature sensor combined in the same package	digital output-type relative humidity (RH) and temperature sensor combined in the same package
Humidity accuracy	±4.5 %RH typ.	±4.0 %RH typ.
Temperature accuracy	±1.0 °C typ.	±1.0 °C max.
Operating temperature range	-40 °C to 100 °C [-40 °F to 212 °F]	-25 °C to 85 °C [-13 °F to 185 °F]
Hysteresis	–	–
Output	I^2C or SPI	I^2C or SPI
Package type	SIP 4-pin or SOIC-8 SMD	SIP 4-pin or SOIC-8 SMD
Response time	6 s typ. in 20 l/min minimum airflow	6 s typ. in 20 l/min minimum airflow
Long-term stability	±1.2 %RH for five years	±1.2 %RH for five years
Operating humidity range	0 %RH to 100 %RH	0 %RH to 100 %RH
Compensated humidity range	20 %RH to 80 %RH	10 %RH to 90 %RH
Moisture/dust filter	yes (some listings)	yes (some listings)
Voltage supply	3.3 Vdc typ.	3.3 Vdc typ.
Features	industry-leading long term stability, reliability, and relative humidity accuracy; lowest total cost solution; energy efficient; available with or without hydrophobic filter and condensation-resistance; optional one or two %RH level alarm outputs	

ANALOG SERIES

	HIH-5030/5031	HIH-4000
		
Description	covered, filtered or unfiltered integrated circuit	integrated circuit
Package type	surface mount	SIP (2,54 mm [0.100 in] or 1,27 mm [0.050 in] lead pitch)
Response time	5 s typ. 1/e in slow moving air	5 s typ. 1/e in slow moving air
Long-term stability	±1.2 %RH for five years ±0.25 %RH each year	±1.2 %RH for five years ±0.25 %RH each year
Operating temp. range	-40 °C to 85 °C [-40 °F to 185 °F]	-40 °C to 85 °C [-40 °F to 185 °F]
Oper. humidity range	0 %RH to 100 %RH	0 %RH to 100 %RH
Moisture/dust filter	yes (some listings)	no
Accuracy	±3 %RH	±3.5 %RH
Voltage supply	2.7 Vdc to 5.5 Vdc	4 Vdc to 5.8 Vdc
Features	surface mount package; voltage output; near linear voltage output vs. %RH; laser trimmed; molded thermoset plastic housing; chemically resistant; tape and reel	voltage output; near linear voltage output vs. %RH; laser trimmed; molded thermoset plastic housing; chemically resistant

HIH7000	HIH8000	HIH9000
		
digital output-type relative humidity (RH) and temperature sensor combined in the same package	digital output-type relative humidity (RH) and temperature sensor combined in the same package	digital output-type relative humidity (RH) and temperature sensor combined in the same package
±3.0 %RH typ.	±2.0 %RH typ.	±1.7 %RH typ.
±1.0 °C typ.	±0.8 °C typ.	±0.6 °C typ.
-40 °C to 100 °C [-40 °F to 212 °F]	-40 °C to 125 °C [-40 °F to 257 °F]	-40 °C to 125 °C [-40 °F to 257 °F]
–	–	±1.0 %RH
I^2C or SPI	I^2C or SPI	I^2C or SPI
SIP 4-pin or SOIC-8 SMD	SIP 4-pin or SOIC-8 SMD	SIP 4-pin or SOIC-8 SMD
6 s typ. in 20 l/min minimum airflow	6 s typ. in 20 l/min minimum airflow	8 s max., 1/e slow moving air
±1.2 %RH for five years	±1.2 %RH for five years	±1.2 %RH for five years
0 %RH to 100 %RH	0 %RH to 100 %RH	0 %RH to 100 %RH
20 %RH to 80 %RH	10 %RH to 90 %RH	10 %RH to 90 %RH
yes (some listings)	yes (some listings)	yes (some listings)
3.3 Vdc typ.	3.3 Vdc typ.	3.3 Vdc typ.
industry-leading long term stability, reliability, and relative humidity accuracy; lowest total cost solution; energy efficient; available with or without hydrophobic filter and condensation-resistance; optional one or two %RH level alarm outputs		

HIH-4010/4020/4021	HIH-4030/4031	HIH-4602-A, C	HIH-4602-L, L-CP
			
covered or uncovered, filtered or unfiltered integrated circuit	covered, filtered or unfiltered integrated circuit	monolithic IC with integral thermistor or precision RTD	integrated circuit
SIP (2,54 mm [0.100 in] or 1,27 mm [0.050 in] lead pitch)	surface mount	TO-5 can	slotted TO-5 can
5 s typ. 1/e in slow moving air	5 s typ. 1/e in slow moving air	50 s typ. 1/e in slow moving air	30 s typ. 1/e in slow moving air
±1.2 %RH for five years ±0.25 %RH each year	±1.2 %RH for five years	±1.2 %RH for five years	±1.2 %RH for five years
-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]
0 %RH to 100 %RH	0 %RH to 100 %RH	0 %RH to 100 %RH	0 %RH to 100 %RH
yes (some listings)	yes (some listings)	yes	no
±3.5 %RH	±3.5 %RH	±3.5 %RH	±3.5 %RH
4 Vdc to 5.8 Vdc	4 Vdc to 5.8 Vdc	4 Vdc to 5.8 Vdc	4 Vdc to 5.8 Vdc
voltage output; near linear voltage output vs. %RH; laser trimmed; molded thermoset plastic housing; chemically resistant	voltage output; near linear voltage output vs. %RH; laser trimmed; molded thermoset plastic housing; chemically resistant; tape and reel	humidity and temperature sensing in one package; near linear voltage output vs. %RH; laser trimmed; built-in static protection	near linear voltage output vs %RH; laser-trimmed; chemically resistant; enhanced accuracy, fast response

Broad range of reliable electromechanical switches. Potential applications include hospital beds and other medical equipment.

BASIC SWITCH SERIES

	BZ	DM	V7
			
Type	large premium basic switch	special application	standard premium switch
Amp rating	15 A (BZ), 22 A (BM), 20 A (BA), 25 A (BE)	10 A, 16 A	0.1 A to 25 A
Circuitry	SPDT	SPDT, DPDT	SPDT, SPNO, SPNC
Operating force	1.0 oz to 28 oz	4,17 N [15 oz] max.	0.7 oz max. to 14.6 oz max.
Terminations	quick connect, solder, screw	quick connect	quick connect, pc board, PCB straight angle left
Actuators/levers	pin plunger, overtravel plunger, straight, roller, flexible roller leaf, flexible leaf	bullet nose, concave, pull-to-cheat plungers	pin plunger, straight, roller, simulated roller
Voltage	115 Vac, 125 Vac, 250 Vac	125 Vac, 250 Vac, 277 Vac	125 Vac, 250 Vac, 277 Vac
Approvals	UL, CSA, ENEC, CE (varies by model)	UL, CSA	UL, CSA, ENEC
Operating temp. range	-55 °C to 85 °C [-67 °F to 185 °F] 121 °C [250 °F] and 204 °C [400 °F] options	-37 °C to 82 °C [-35 °F to 180 °F]	-40 °C to 150 °C [-40 °F to 302 °F]
Contacts	silver, silver cadmium oxide	silver	silver, silver cadmium oxide, gold
Measurements (H x W x D)	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]	48,8 mm H x 31,8 mm W x 14,0 mm D] [1.93 in H x 1.25 in W x 0.55 in D]	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	worldwide standard “large basic” switch; low operating force and travel; extended mechanical life; momentary or maintained actions	easy installation; momentary, alternate push-pull, or pull-to-cheat operation; expected mechanical life: 1 million operations, 95 % survival	extended mechanical and electrical life; wide temperature range; custom engineered solutions

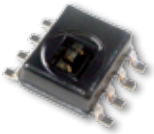
PRESSURE SWITCH SERIES

	5000
	
Type	direct action blade contact
Contacts	silver alloy, gold plated
Set point	Factory set from 0.5 psi to 150 psi
Operating pressure	150 psi for 0.5 psi to 24 psi set point range, 250 psi for 25 psi to 150 psi set point range
Connector/terminals	1/8 -27 NPT male thread/ #8-32 screws,1/4 in blade, 280 Series Metri-Pack
Temperature range	-40 °C to 121 °C [-40 °F to 250 °F]
Features	flexibility to modify switches to meet customer requirements; wide media capability; excellent repeatability of set points at temperature extremes

V15W	V15	ZM	ZM1	ZX
				
watertight switch	standard switch	standard (coil internal spring)	standard (flat internal spring)	standard miniature
0.1 A, 5 A, 10 A	5 A to 26 A	0.1 A, 5 A, 10.1 A	0.1 A, 3 A, 6 A, 10.1 A, 16 A	0.1 A, 3 A
SPDT, SPNO, SPNC	SPDT, SPNO, SPNC	SPST, SPDT, SPNO	SPDT, SPNO, SPNC	SPDT
15 g, 25 g, 50 g, 100 g, 200 g	US: ≥ 100 g (16 A to 26 A) AP: 15 to 400 g (5 A to 26 A)	0.18 oz to 8.78 oz	12 gf to 355 gf	0.53 oz to 5.3 oz
preleaded; terminals: 4,8 mm x 0,8 mm or x 0,5 mm	quick connect, screw, solder, RAST 5 & 7	quick connect, solder, PCB	quick connect, solder, PCB	solder, PCB snap-in, PCB left angle, PCB right angle
pin plunger, straight, roller, simulated roller	pin plunger, straight, roller, simulated roller	pin plunger, straight, roller, simulated roller, L-shaped	pin plunger, straight, roller, simulated roller, L-shaped	pin plunger, straight, simulated roller, special
125 Vac, 250 Vac, 30 Vdc, 48 Vdc	125 Vac, 250 Vac	125 Vac, 250 Vac, 30 Vdc	125 Vac, 250 Vac	125 Vac, 48 Vdc
UL, cUL, ENEC, CQC	UL, cUL, ENEC, CQC	UL, CSA, CE	UL, cUL, ENEC	UL, CSA
-40 °C to 85 °C [-40 °F to 185 °F]	-25 °C to 150 °C [-13 °F to 300 °F]	-40 °C to 120 °C [-40 °F to 248 °F]	-40 °C to 125 °C [-40 °F to 257 °F]	-40 °C to 65 °C [-40 °F to 149 °F]
silver nickel, gold-plated option	silver, silver cadmium oxide, gold-plated silver	silver, gold-plated silver, silver-tin-indium oxide	silver, gold-plated silver, gold-plated brass, silver-tin-indium oxide	silver, gold-plated silver
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]	15,9 mm H x 10,3 mm W x 27,8 mm L [0.63 in H x 0.41 in W x 1.09 in L]	10,6 mm H x 6,4 mm W x 19,8 mm L [0.42 in H x 0.25 in W x 0.78 in L]	10,6 mm H x 6,4 mm W x 19,8 mm L [0.42 in H x 0.25 in W x 0.78 in L]	6,5 mm H x 5,7 mm W x 12,7 mm L [0.26 in H x 0.22 in W x 0.50 in L]
designed for harsh-duty, wash down areas; high sealing capability with an IP67 rating (pre-leaded only)	broad range of electrical loads; wide temperature range; limited configuration options available	low energy or power-duty electrical ratings; gold-plated or silver contacts	low energy or power-duty electrical ratings; gold-plated or silver contacts	low energy or power-duty electrical ratings; gold-plated or silver contacts; polybutylene terephthalate housing

Value-Added Sensing Solutions

Improve your time to market and lower your total system cost with value-added sensing and thermal management solutions. We customize integrated assemblies, combined sensors, thermal management, packaging and termination so you don't have to. Get exactly what you need to deliver your high reliability products to market faster, saving labor and design time too.



Value-added product: Honeywell HumidIcon™ Combined Humidity/Temperature Sensors
Wearable wristbands similar to the one pictured can be designed for diabetics to measure and display perspiration (%RH) and skin temperature (°C) to help detect cold sweat – the predominant symptom of hypoglycemic (low blood sugar) attacks. It is equipped with a smartphone device and Bluetooth interface. The wristband can trigger a call for help in the event the limit threshold is met or the panic button is activated.

Value-added product: Force Sensor
Monitors a force reading allowing our customer to provide occlusion detection and ensure there isn't a blockage in the tube that delivers the medication to the patient. If the tube becomes blocked, the patient, nurse or doctor is alerted via an audible alarm that the therapy isn't being delivered. Honeywell delivered a value-added sensor package for use in an infusion pump with a custom actuator.

Value-added product: Heater assembly
Honeywell's total thermal management assemblies provide controlled heating for dialysate warming to body temperature prior to re-entry into the body. These flexible heater assemblies are custom-designed and integrate mounting components, temperature sensors, and thermostats, among other types of components. Let Honeywell be your trusted advisor for total thermal management assemblies that provide rapid, uniform and stable heating – designed to comply with the latest medical industry standards.

Cold Sweat Wristband

Infusion Pump

Dialysis Machine

Features and Benefits

- Up-front and ongoing technical support throughout the process
- Adding value by tailoring solutions to specific application needs
- Building value-added solutions on highly reliable, proven and accurate sensing platforms you can trust
- Responsive quoting and rapid prototyping processes to meet demanding deadlines
- Velocity product development enabling built-in quality, reliability, and repeatability

Value to Customers

- Improved time to market
- Reduced production cycle time
- Reduced design time
- Lower total system costs
- Single source supplier
- Improved reliability
- Honeywell tested and warranted sub-assemblies
- Simplified qualification and manufacturing

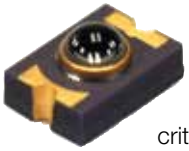
Potential Applications

- Respiratory
- Dialysis machines
- Medical diagnostics
- Patient monitoring
- Hospital hardware (lab equipment to incubators)
- Infusion pumps

Non-standard Terminations

shown:
26PC wet media pressure sensor with custom PCB and flying lead wire termination

Blood Analyzer



Value-added product: SME2470 IR Emitter / SMD2440 Phototransistor

Accuracy, repeatability and reliability are critical when sensing the presence and position of samples within diagnostic medical instruments. Honeywell's ceramic surface mount emitters and detectors utilized in this type of application offers an adaptable space-efficient, non-contact solution. Their small size facilitates the use of rigid or flexible circuits, while the ceramic package and glass lens afford a solid package, capable of withstanding higher temperatures.

Honeywell's expertise in optical analysis and modeling, in conjunction with the ability to work directly with customers 3D designs are a powerful combination. The ability to combine sensing technologies such as optical, humidity, pressure or thermal into custom packages allows Honeywell to develop custom sensors to meet the application needs. Numerous facets are considered to produce and deliver the appropriate solution.

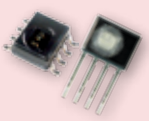
With more than 50,000 sensing, switching, and control products ranging from snap-action, limit, toggle and pressure switches to position, sp

SENSORS

Thermostats: Commercial and precision snap-action. Automatic or manual reset options, phenolic or ceramic housings.
May be used in: Telecommunications • Battery Heater Controls • Computers • Copy Machines • Fax Machines • Food Service • Food Carts • Small and Major Appliances • Heat and Smoke Detectors • HVAC Equipment

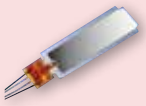
Pressure transducers – heavy duty: Provide a complete amplified and compensated pressure measurement solution. Choice of ports, connectors, outputs and pressure ranges, engineered to be resistant to a wide variety of media for use in most harsh environments.
May be used in: Industrial HVAC/R and Air Compressors • General System and Factory Automation Pump, Valve and Fluid Pressure • Transportation (Heavy Equipment and Alternative Fuel Vehicles) System • Pneumatics • Hydraulics

Pressure sensors – heavy duty: Small, allowing use on their own in tight packages or as the building block for a complete transducer. Developed for potential use in pressure applications that involve measurement of hostile media in harsh environments compatible with 316 stainless steel.
May be used in: Industrial Controls • Process Control Systems • Industrial Automation



Humidity sensors: Digital, analog, and combined humidity/temperature sensing versions. Provide on-chip signal conditioning with accuracy capability to ±1.7 %RH. Stable, reliable, low-drift performance. Standardized, platform-based sensors.
May be used in: Medical • HVAC/R • Weather Stations • Air Compressors • Telecommunications • Grain Storage • Incubators

Current sensors: Accurate and fast response. Almost no thermal drift or offset with temperature. Adjustable linear, null balance, digital and linear current sensors.
May be used in: Variable Speed Drives • Overcurrent Protection • Power Supplies • Ground Fault Detectors • Robotics • Industrial Process Control • Wattmeters



Flexible heaters: Flat or custom geometry configurations with single, multiple and variable watt densities. Stable, uniform heating. Can be bonded parts or combined in value-added assemblies.
May be used in: Medical • HVAC/R • LCD Displays • Power Generation • Telecommunication

Pressure sensors – board mount: Full line of industrial-grade sensors: media-isolating design, multiple ports and outlets, and electrical configurations.
May be used in: Pneumatic Controls • Air Compressors • Process Monitoring • Hydraulic Controls • VAV Controls • Clogged Filter Detection • Presence/Absence of Flow • Transmissions

Temperature sensors: Customized probes, thermistors and RTD sensors. Plastic/ceramic, miniaturized, surface-mount housings and printed circuit board terminations.
May be used in: Semi-Conductor Protection • Vending Machines • Power Generation • Hydraulic Systems • Medical • Thermal Management • Temperature Compensation

Magnetic sensors: Digital and analog Hall-effect position ICs, magnetoresistive position ICs, Hall-effect vane, gear-tooth and magnetic sensors.
May be used in: Speed and RPM Sensing • Motor/Fan Control • Magnetic Encoding • Disc Speed • Tape • Flow-Rate Sensing • Conveyors • Ignitions • Motion Control/Detection • Power/Position • Magnetic Code Reading • Vibration • Weight Sensing

ELECTROMECHANICAL SWITCHES

MICRO SWITCH™ basic switches: Snap-action precision switches. Compact. Lightweight. Designed for repeatability and enhanced life. Basic switches: large, standard, miniature, subminiature, hermetically sealed, water-tight and high-temperature versions.
May be used in: Vending Machines • Communication Equipment • HVAC • Appliances • Automotive • Electronic Gaming Machinery • Valve Controls • Irrigation Systems • Foot Switches • Pressure • Temperature Controls

MICRO SWITCH™ sealed and high accuracy switches: Precision "snap action" mechanisms. Wide variety of actuators, terminations, circuitry configurations, electrical ratings, contact materials and operating characteristics.
May be used in: Landing Gear • Flap/Stabilizer Controls • Thrust Reversers • Space Vehicles • Armored Personnel Carriers • De-Icer Controls • Wingfold Actuators • Industrial Environments • Valves • Underwater

MICRO SWITCH™ hazardous area switches: Flame path designed to contain and cool escaping hot gases that could cause an explosion. MICRO SWITCH™ EX, BX, CX and LSX Series.
May be used in: Grain Elevators and Conveyors • Off-Shore Drilling • Petrochemical • Waste-Treatment Plants • Control Valves • Paint Booths • Hazardous Waste Handling Facilities

Key and rotary switches: Environmentally sealed, 2-3-4 position switches. O-rings help keep dirt and moisture out and prolong life.
May be used in: All-Terrain Vehicles • Golf Carts • Snowmobiles • Scissor Lifts • Telehandlers • Construction and Marine Equipment • Skid Loaders • Agricultural Equipment • Material Handlers

Pressure and vacuum switches: Feature setpoints from 3 psi to 4500 psi. Rugged components have enhanced repeatability, flexibility and wide media capability. Uses diaphragm or quad seal/piston.
May be used in: Transmissions • Hydraulics • Brakes • Steering • Generators/Compressors • Dental Air • Embalming Equipment • Oxygen Concentrators • Air Cleaners • Fuel Filters • Pool Water Pressure

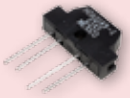
MICRO SWITCH™ toggle switches: Hermetic and environmentally sealed options. Enhanced reliability. Center pin for ultimate stabilization. Available in many shapes, sizes and configurations.
May be used in: Aerial Lifts • Construction Equipment • Agriculture and Material-Handling Equipment • Factory-Floor Controls • Process Control • Medical Instrumentation • Test Instruments • Military/Commercial Aviation

LIMITLESS™ WIRELESS SOLUTIONS

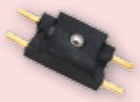
Limitless™ switches and receivers: Combines the best of MICRO SWITCH™ limit switches with commercial wireless technology. Beneficial for remote monitoring where wiring/maintenance is not physically possible or economically feasible. Used for position sensing and presence/absence detection.
Limitless™ Operator Interface: Adds a human interface device to the product-driven interfaces of Limitless™ switches and receivers. Choose and install a desired operator or utilize one of Honeywell's pushbuttons.
May be used in: Valve Position • Crane Boom/Jib/Skew Position • Lifts • Material Handling • Presses • Construction/Ag Machines • Conveyors • Industrial Environments • Remote/Temporary Equipment • Grain Diverters or Flaps • Door Position

peed, pressure and airflow sensors, Honeywell has a broad portfolio of solutions to meet your needs.

Position sensors: The **SMART position sensor** measures linear, angular or rotary position of a magnet attached to a moving object so that the object's position can be determined or controlled. Its simple, non-contact design eliminates mechanical failure mechanisms, reduces wear and tear, and improves reliability and durability.
May be used in: Valve Position • Material Handling • Plastic Molding • Passenger Bus Level Position • Truck-Mounted Crane Outrigger Position • Aerial Work Lift Platform • Front Loader and Digger/Excavation Boom Position
Potentiometer sensors: Measure linear, rotary position or displacement. Honeywell's proprietary conductive plastic delivers extensive temperature range and infinite resolution, and provides precision position measurement.
May be used in: Robotic Motion Control • Marine Steering • In-Tank Level Sensing
Ultrasonic sensors: Measure time delays between emitted and echo pulses, often accurately determining the sensor-to-target distance.
May be used in: Level Measurement • Height and Thickness Sensing • Diameter Control



Infrared sensors: IREDs, sensors and assemblies for object presence, limit and motion sensing, position encoding and movement encoding. Variety of package styles, materials and terminations.
May be used in: Printers/Copiers • Motion Control Systems • Metering • Data Storage Systems • Scanning • Automated Transaction • Drop Sensors • Non-Invasive Medical Equipment



Force sensors: Variety of package styles and various electrical interconnects including pre-wired connectors, printed circuit board mounting and surface mounting for flexibility.
May be used in: Infusion and Syringe Pumps • Blood Pressure Equipment • Pump Pressure • Drug Delivery Systems • Occlusion Detection • Kidney Dialysis Machines

Proximity sensors: Designed to meet demanding temperature, vibration, shock and EMI/EMP interference requirements. Number of housing materials and termination styles.
May be used in: Aircraft Landing Gear • Gun Turret Position Control • Door/Hatch Monitoring

Speed sensors: Measure speed, position and presence detection utilizing magnetoresistive, variable reluctance, and Hall-effect technologies.
May be used in: Cam and Crankshafts • Transmissions • Fans • Pumps • Mixers • Rollers • Motors

Airflow sensors: Advanced microstructure technology. Sensitive and fast response to flow, amount/direction of air or other gas. Analog or digital output. Thin-film, thermally isolated bridge structure consists of a heater and temperature sensing elements.
May be used in: HVAC • Respirators • Process Control • Oxygen Concentrators • Gas Metering • Chromatography • Leak Detection Equipment • Medical/Analytical Instrumentation • Ventilation Equipment

Rotary position sensors: Digital and analog Hall-effect, magnetoresistive and potentiometric devices and resolvers for sensing presence of a magnetic field or rotary position. Directly compatible with electronic circuits for application flexibility.
May be used in: Audio and Lighting • Frequency • Temperature • Position • Medical/Instrumentation • Computer Peripherals • Manual Controls • Joysticks • Telecom • Welding • Heating • Aerospace

MICRO SWITCH™ aerospace-grade pressure switches: Lightweight, compact pressure switches. Meets military and DO-160 standards. Lower operating force provides application versatility with enhanced precision. Design modularity allows for configuration of the switch, facilitating rapid customization.
May be used in: Aerospace Systems • Engines, Fuel Pressure and Hydraulic Systems • Military Ground Vehicles • Ordnance and Munitions Release Systems • Military Maritime Systems

MICRO SWITCH™ limit switches: Broadest and deepest limit switch portfolio. Rugged, dependable position detection solutions. MICRO SWITCH™ heavy-duty limit switches (HDLS), medium-duty and global limit switches. Hermetically and environmentally sealed switches.
May be used in: Machine Tools • Woodworking • Textile • Printing Machinery • Metal Fabrication • Balers/Compactors • Forklifts • Bridges • Robotics • Wind Turbines • Elevators • Moving Stairs • Doors • Dock Locks/Levelers • Aerial Lifts • Cranes • Conveyors • Rail • Shipboards • Dock Side

MICRO SWITCH™ pushbutton switches: Lit or unlit. Wide range of electrical and display design, pushbuttons and manual switches. Many shapes, sizes and configurations. Easy to apply, operate and maintain.
May be used in: Control Boards and Panels • Industrial and Test Equipment • Flight Decks • Medical Instrumentation • Process Control

MICRO SWITCH™ sealed and standard rocker switches: Wide range of electrical and display design. Many shapes, sizes, buttons and configurations to enhance manual operation.
May be used in: Transportation • Agricultural and Construction Equipment • Test Equipment • Heavy-Duty Machinery • Marine Equipment • Small Appliances • Telecom • Medical Instrumentation • Commercial Aviation

SAFETY PRODUCTS

MICRO SWITCH™ safety switches: For operator point-of-operation protection, access detection, presence sensing, gate monitoring and electrical interfacing. High-quality, dependable, cost-effective solutions.
May be used in: Packaging and Semi-Conductor Equipment • Plastic-Molding Machinery • Machine Tools • Textile Machines • Lifts • Industrial Doors • Balers • Compactors • Aircraft Bridges • Telescopic Handlers • Refuse Vehicles

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.

Find out more

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

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