

Medical Applications

Honeywell



SENSING AND CONTROL

Sensor and Switch Solutions

Medical Applicatio

Lives can be on the line. So your switch and sensor technology should be exceptional — all down the line.

That's why so many in the medical industry trust Honeywell.

Honeywell Sensing and Control (S&C) has provided outstanding switch and sensor solutions to the industry for a quarter-century. But you expect that from a company offering 150 years of continual technology development and innovation. That's why you can also expect high-end sensor technology designed specifically for demanding medical requirements — from pressure, force and airflow and thermal sensors to customer-specific packaging. That's why we've earned a well-deserved reputation for quality and reliability.

Time for a checkup? Examine your current switch and sensor solutions provider — make sure they pass every test:

Industry-leading engineers.

Check.

The most extensive product line.

Check.

Value-added assemblies and solutions.

Check and check.

Global service, sourcing and manufacturing.

Check. Check. Check.

You'll find that we're all you need for a one-stop, full-service, globally competitive relationship. So trust Honeywell S&C, unparalleled as the gold standard and unquestioned as your best value.



Development of new medical products is held to the most stringent stipulations; it's a lengthy process taking as long as seven years for FDA approvals. So each product, every solution must be made for the long haul — meeting current needs and anticipating future demands. That's why Honeywell S&C continues to offer the most comprehensive line for your medical equipment needs. The right parts and products. Available right away.

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In the medical equipment business, quality and reliability can't be platitudes — they must be top priorities.

That's why Honeywell S&C's Six Sigma Plus manufacturing environment helps provide excellence as well as enhanced performance. What's more, we also offer other insight and innovation:

Comprehensive Portfolio: Want all you need and more? Honeywell S&C brings you one of the broadest switching and sensing portfolios on the planet. No compromises. No concessions. Just an amazing breadth of solutions from Honeywell's array of technology platforms — which eliminates the need for multiple suppliers. It's the convenience of one contact, along with the peace of mind delivered by the industry leader (at no extra charge).

Application Expertise: Sure, for any application there are myriad solutions. But Honeywell S&C delivers expert thinking, from smarter people. Sales reps and engineers with unprecedented knowledge and understanding — always aware of the ideal solution, ready to deliver optimal results. Whether it's determining which existing product best serves your needs or designing a new sensor, you'll get astounding performance from each product and solution. Components calculated to survive the most challenging environments. Each created with Honeywell's switching and sensing integration know-how.

Quality and Reliability: For medical applications, product performance is paramount. Honeywell S&C sensors and switches offer product performance you can trust for enhanced reliability, product life and accuracy.



Honeywell TruStability® silicon pressure sensors offer industry-leading long-term stability that helps prevent drift over time or from temperature and humidity extremes. They are temperature compensated and calibrated to provide an extremely tight accuracy specification. Their modular and flexible design offers a variety of package styles and options.

Potential medical applications include anesthesia machines, blood analyzers, blood glucose monitoring, blood pressure monitors, dialysis machines, gas chromatography, hospital beds, infusion, insulin and syringe pumps, insufflators, oxygen concentrators, sleep apnea machines, surgical fluid management systems and ventilators.

Knowledge and technology resources. Cost-effective products & custom solutions.

Our solutions are engineered for enhanced precision, repeatability and ruggedness — technology designed to meet any customer's customized requirements for a wide array of basic and complex potential applications:

PRODUCTS AND TECHNOLOGIES *Best-in-class engineering ...*

Airflow Sensors: Measuring flow and differential pressure, these sensors contain advanced microstructure technology to provide a sensitive and fast response to flow, amount and direction of air or other gas, even proportional output voltage. Customer benefits: improved patient comfort and breathing, reliable, quiet, accurate, stable and easy to implement. Potential applications include anesthesia delivery machines, hospital diagnostics (spectrometry, gas chromatography), nebulizers, oxygen concentrators, patient monitoring systems (respiratory monitoring), sleep apnea machines, spirometers, ventilators and ventricular assist devices.

Flexible Heaters: Resistive devices are available in flat, molded-to-shape, spiral wrap, transparent, composite and high temperature configurations, and with single, multiple or variable watt densities to customize heat output to unique applications. Can be bonded to other system parts or combined with thermostats, thermistors, thermocouples, temperature sensors and thermal fuses for custom-engineered heating systems. Customer benefits: customizable, flexible, improved patient comfort and safety, stable and easy to implement. Potential applications include dialysis equipment, infusion and insulin pumps, sleep apnea machines and ventilators.

Force Sensors: Measure occlusion detection or backup of force. Various electrical interconnects include pre-wired connectors, printed circuit board mounting and surface mounting for flexibility. Customer benefits: sensitive, stable and reliable. Potential applications include dialysis equipment, infusion and insulin pumps and surgical fluid management systems.

Hall-Effect Magnetic Position Sensor ICs: Designed to provide enhanced output accuracy for smooth motor control that reduces noise and vibration. Customer benefits: cost-effective, quiet, efficient, effective and accurate. Potential applications include anesthesia delivery machines, dental imaging systems, dental chairs, dialysis equipment, infusion and insulin pumps, sleep apnea machines and ventilators.

Hour Meters: You'll find Honeywell hour meters where quality, performance and rugged construction are needed. Track machine usage in hours and tenths of an hour via a readily visible readout. Customer benefits: accurate, reliable, readable and rugged. Potential application includes oxygen concentrators.

Humidity Sensors: Configured with integrated circuitry, these provide on-chip signal conditioning with interchangeability of $\pm 3\%$ accuracy and out-of-the-box reliability. Customer

benefits: accurate, flexible, cost-effective and durable. Potential applications for these standardized, platform-based sensors include medical incubators, sleep apnea machines and ventilators.

Infrared Sensors: Used for object presence, limit and motion sensing, position encoding and movement counting. In dialysis machines, designed to be used with an encoder wheel on the pump shaft to count shaft rotation. In dental equipment applications, designed to obtain dental images. Customer benefits: reliable, work in contaminated environments and enable maximum position resolution. Potential applications include dental imaging systems and dialysis machines.

MICRO SWITCH™ Snap-Action Switches and Limit Switches: The industry-defining name, and the broadest and deepest limit and snap-action switch portfolios — with rugged, dependable position detection solutions for medical equipment applications. MICRO SWITCH™ Global Limit Switches. Hermetically and environmentally sealed switches. MICRO SWITCH™ Premium and Standard Snap-Action Switches. Customer benefits: accurate, repeatable, durable, small and lightweight. Potential applications include beds (hospital and medical), chair lifts and foot pedal controls.

Pressure Sensors: Silicon pressure sensors: Microstructure pressure sensors; absolute, differential, gage or vacuum gage; unamplified or amplified; pressure ranges of 0 psi to 250 psi; variety of mounting and package styles. Customer benefits: stable, cost-effective, efficient, accurate, easy to design in, small, extended life and compatible. Potential applications include anesthesia delivery machines, blood analyzers, blood glucose monitoring, blood pressure monitors, dialysis machines, infusion, insulin and syringe pumps, oxygen concentrators, pressure-operated dental instruments, sleep apnea machines, surgical fluid management systems and ventilators. **Stainless steel media isolated pressure sensors:** Durable steel construction with no internal elastometric seals for applications in which cleaning or body fluids would attack plastic. Customer benefits: accurate, easy to design in, stable, compatible, sensitive and cost-effective. Potential applications include anesthesia delivery machines, dialysis machines, oxygen concentrators and ventilators.

Pressure Switch: Acts as a high pressure warning, alerting the user by activating an indicator light if the pressure exceeds a specified limit. Customer benefits: accurate, reliable and extended life. Potential application is oxygen concentrators.

Temperature Sensors: Platinum RTDs and NTC thermistors detect changes in temperature and provide a resistance output. Customer benefits: flexible, cost-effective, small and accurate. Potential applications include anesthesia delivery machines, blood analyzers, dialysis machines, sleep apnea machines, temperature monitoring systems and ventilators.

POTENTIAL MEDICAL APPLICATIONS

Honeywell S&C is ready to work with you to deliver cost-effective, custom solutions:

- **Blood Pressure and Analysis**

- Blood analysis, measuring pressure of reagents used in blood reaction
- Blood cell separators
- Blood pressure cuffs

- **Dialysis Equipment**

- Hemodialysis
- Peritoneal dialysis

- **Gas Chromatography**

- Charting gases in blood samples
- Instrumentation products

- **Hospital Hardware**

- Door interlocks
- Hospital beds
- Medication dispensing cabinets
- Medical incubators

- **Infusion Pumps**

- Heart/lung pumps
- IV pumps
- Insulin pumps
- Syringe pumps

- **Patient Monitoring Systems**

- Blood glucose
- Blood pressure and flow
- Body fluid (blood, urine, spinal fluid)
- Respiratory
- Temperature

- **Respiratory Equipment**

- Anesthesia delivery
- Nebulizers
- Oxygen concentrators and conservers
- Pulse oximeters
- Respirators
- Sleep apnea (CPAP) equipment
- Spirometers
- Ventilators



The line of products you need. The lineup of solutions you demand. For reliability down the line, Honeywell is the choice.

Whether it's ventilation solutions, diagnostics and dialysis equipment, portable infusion pumps, or even anesthesia and apnea monitors, an innovative solution from Honeywell S&C can provide enhanced product life and accuracy.

Honeywell offers the medical industry the strongest major medical and equipment connections, leading technology platforms, the smartest solutions and the savviest engineers ready to solve your problem with expert technical support — all on demand. For a healthy relationship, team with Honeywell S&C.

Part Innovation. Part Engineering. Total Solutions.

Products:

- Airflow sensors
- Flexible heaters
- Force sensors
- Hall-effect magnetic position sensor ICs
- Hour meters
- Humidity sensors
- Infrared sensors
- Pressure sensors
- Sealed switches
- Snap-action switches
- Thermal sensors

Potential Applications:

- Anesthesia delivery machines
- Dental equipment
- Dialysis machines
- Hospital diagnostics
- Hospital hardware
- Infusion pumps
- Operator panels
- Oxygen concentrators
- Patient monitoring systems
- Sleep apnea machines
- Surgical instruments
- Ventilators

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 **www.honeywell.com/sensing**

Honeywell Sensing and Control

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Warranty. 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 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.

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