

**Medical Applications**

**Honeywell**



SENSING AND CONTROL

**Part Innovation.  
Part Engineering.  
Total 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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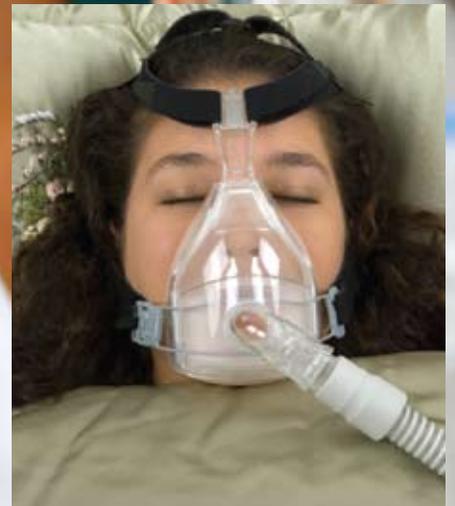
## In the medical equipment business, quality and reliability can't be platitudes — they must be top priorities.

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.



The ASDX is an amplified, fully calibrated and temperature compensated product using ASIC technology (application specific integrated circuitry). It is intended for uses with such medias as non-corrosive, non-ionic working fluids such as dry air and gases that are typically part of the medical marketplace.

The ASDX is offered with a standard analog version voltage output or an I2C digital output. The digital output is of great benefit as it is immune to electro-magnetic interference (EMI) which is a common concern in hospitals and the medical marketplace.

Potential applications include sleep apnea and therapy equipment, ventilation and airflow monitors, and gas flow instrumentation.

# Knowledge and technology resources. Cost-effective products and 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, this sensor contains advanced microstructure technology to provide a sensitive and fast response to flow, amount and direction of air or other gas, even proportional output voltage • Potential applications include respirators, spirometers, anesthesia delivery, sleep apnea equipment and oxygen delivery and conservers

**Flexible Heaters:** Resistive devices available in flat, molded-to-shape, spiral wrap, transparent, composite and high temperature configurations, also 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 • Potential applications include fluid warming for dialysis equipment, blood warmers and respiratory applications, such as generating sleep apnea equipment vapor

**Force Sensors:** Measures occlusion detection or backup of force in infusion pumps and portable insulin pumps • Various electrical interconnects include pre-wired connectors, printed circuit board mounting and surface mounting for flexibility • Potential applications are infusion and dialysis equipment

**Hall-Effect Sensors:** Responds to the presence of a magnetic field applied perpendicular to the sensor by producing a digital or analog output (proportional to the magnetic field strength) • Potential applications include sleep apnea equipment, automated medicine dispensing equipment and medical testing

**Humidity Sensors:** Configured with integrated circuitry, these provide on-chip signal conditioning with interchangeability of +/- 3% accuracy and out-of-the-box reliability • Potential applications for these standardized, platform-based sensors include sleep apnea, anesthesia delivery and other respiratory equipment

### **MICRO SWITCH™ Basic Switches and Limit Switches:**

The industry-defining name, and the broadest and deepest limit and basic 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 Basic Switches • MICRO SWITCH™ Standard Basic Switches

**Optoelectronic Sensors:** Used for object presence, limit and motion sensing, position encoding and movement counting • Optical principles and semiconductor electronics are integrated to emit and detect radiant energy in wavelengths over 70nm (where light is not visible)

**Pressure Sensors:** Offering microstructure, plastic pressure sensors for dialysis equipment, blood analysis, centrifusion, and oxygen and nitrogen gas distribution, as well as media-isolated pressure sensors (with robust steel construction) for potential applications in which cleaning fluids or bodily fluids would attack plastic — including biohazardous waste and dental sterilizers • Additional potential applications include equipment such as respirators, spirometers, anesthesia delivery, sleep apnea equipment, oxygen delivery, conservers and hospital beds

**Temperature Sensors:** Platinum RTDs and NTC thermistors detect changes in temperature and provide a resistance output • Potential applications include monitoring fluid temperature for dialysis and blood glucose machines • NTC thermistors can be used in handheld digital thermometers

**POTENTIAL MEDICAL APPLICATIONS**

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

**• Infusion Pumps**

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

**• Dialysis**

- Hemodialysis
- Kidney dialysis
- Peritoneal dialysis

**• Respiratory Equipment**

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

**• Blood Pressure and Analysis**

- Blood pressure cuffs
  - Blood analysis, measuring pressure of reagents used in blood reaction
  - Blood cell separators
- Gas Chromatography**
- Charting gases in blood samples
  - Instrumentation products

**• Diagnostics and Analytical Equipment**

- Pressure and flow monitoring and control
- Body fluid (blood, urine, spinal fluid)
- Warming and temperature monitoring
- Switches for hospital beds
- Switches for equipment door interlocks



**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.

**Products and Technologies:**

Gas sensing • Pressure sensing • Liquid flow sensing • Airflow sensing • Snap-action switches • Sealed switches • Thermal sensing • Humidity sensing • Hall-Effect sensors

**Potential Applications:**

Respiratory • Fusion • Dialysis • Ventilators • Oxygen therapy • Anesthesia monitoring • Bed positioning • Operator panels • Infusion

For more information about Sensing and Control products, visit  
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