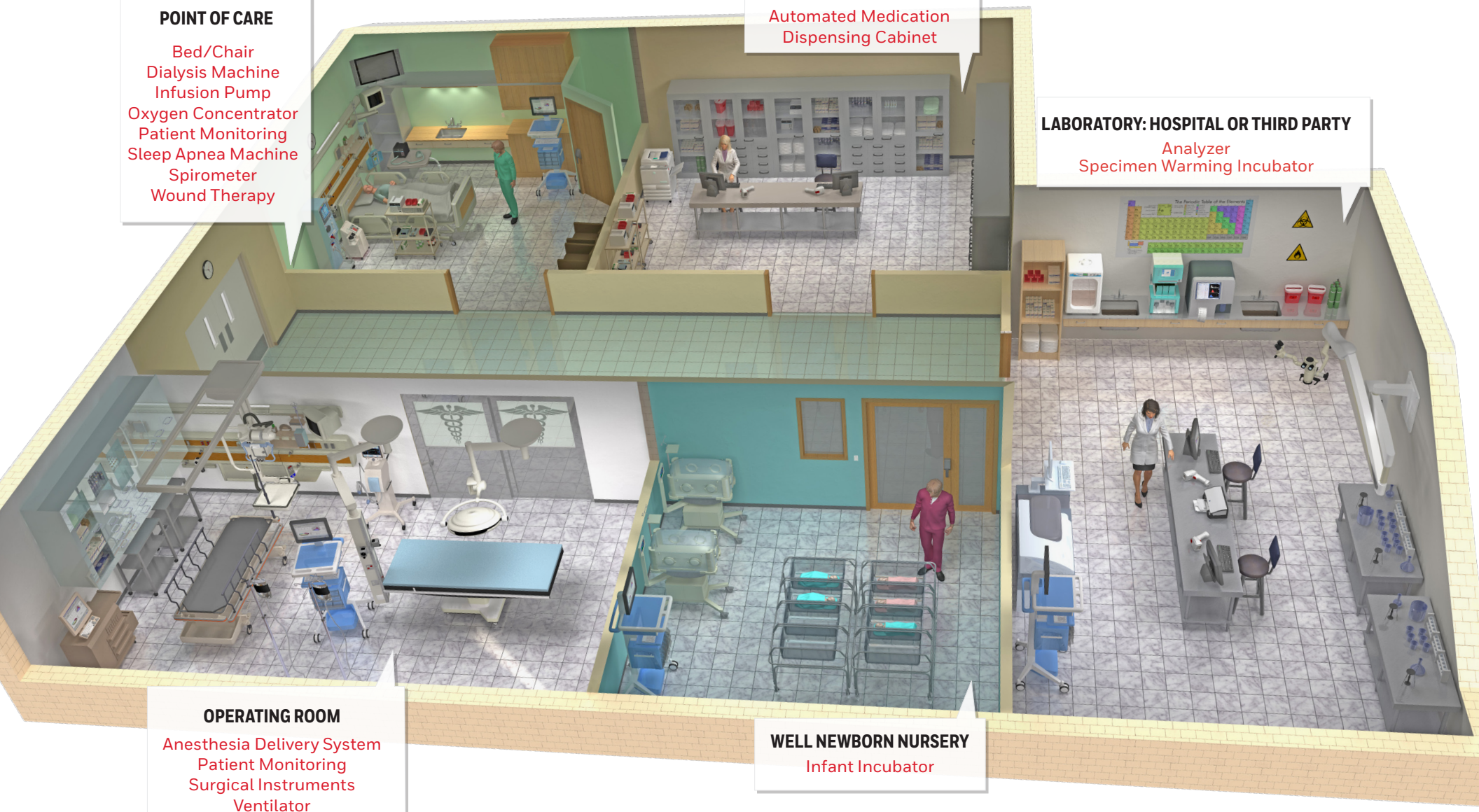
EMBEDDED PRODUCTS FOR HOSPITAL APPLICATIONS

PRODUCT OVERVIEW

Embedded sensors, switches, scan engines and barcode decoding software may potentially be used throughout a hospital to enhance patient care. Honeywell's products are designed to provide enhanced quality and durability for the most stringent hospital requirements.



POINT OF CARE

	CUSTOMER BENEFITS	HONEYWELL PRODUCTS
Bed/Chair	Electronically adjust bed and chair position and monitor therapeutic mattress air columns.	**Magnetoresistive Sensor IC:** provides reliable, accurate output for smooth motor control that reduces noise and vibration **MICRO SWITCH Position Switch:** determines minimum and maximum position **Pressure Sensor - Board Mount:** measures air pressure and controls mattress air column inflation/deflation to prevent bedridden patients from developing bedsores
Dialysis Machine	Enhance patient treatment efficiency.	**Force Sensor:** detects the presence/absence of a fresh dialysate cartridge before machine can be used; monitors dialysate flexible tubing pressure so the pressure doesn't exceed a specified level; monitors dialysate weight to detect whether there is a specified amount in the fresh cartridge **Hall-Effect Magnetic Position Sensor IC:** provides reliable, accurate output for smooth motor control that reduces noise and vibration in the motor assembly **Pressure Sensor – Board Mount:** obtains a direct, in-line continuous dialysate and venous pressure measurement in the dialysis membrane without interrupting flow **Pressure Transducer – Heavy Duty:** helps to monitor fresh dialysate cartridge pressure in the flexible tubing that carries blood or dialysate to provide continuous feedback of line pressures and pump control **Thermistor:** provides temperature measurement for enhanced control of the permeation rate across the dialysis membrane
Infusion Pump	More accurately control fluid flow and minimize overheating.	**Device with an Embedded Honeywell Barcode Reader:** tethered barcode readers support identification and delivery process **Force Sensor:** provides an occlusion detector to detect blockage in the pump's tube that delivers medication to the patient **Hall-Effect Magnetic Position or Magnetoresistive Sensor IC:** provides reliable, accurate output for smooth motor control that reduces noise and vibration in the pump's motor assembly and improves efficiency **Pressure Sensor – Board Mount:** monitors and controls fluid flow
Oxygen Concentrator	Enhance response time, minimize oxygen waste, reduce power consumption and improve portability.	**Airflow Sensor:** detects ultra-low levels at 0.1 cm3 to detect when the patient exhales and when the system should reduce airflow **Pressure Sensor – Board Mount:** detects when the patient begins to inhale so that oxygen can be delivered more efficiently and effectively **Pressure Switch:** acts as a high-pressure warning, alerting the user by activating an indicator light if the pressure exceeds a specified limit **Pressure Transducer – Heavy Duty:** senses pressure from the surge tank, providing feedback to the compressor that allows it to maintain the desired pressure level
Patient Monitoring	More accurately control blood glucose and temperature monitoring.	**Barcode Decoding Software:** enables tracking of the patient via a mobile device **Pressure Sensor – Board Mount:** controls the pumps used to draw the blood in continuous glucose monitors and returns it to the patient **Thermistor:** monitors patient temperature

POINT OF CARE, CONTINUED

	CUSTOMER BENEFITS	HONEYWELL PRODUCTS
Sleep Apnea Machine	Help sleep apnea sufferers achieve quiet, uninterrupted sleep.	**Airflow Sensor:** monitors the patient's breathing and sends an output that reduces the flow of the machine's internal blower fan when the patient starts to exhale **Hall-Effect Magnetic Position Sensor IC:** provides enhanced output accuracy for smooth motor control that reduces noise and vibration in motor assembly fan systems **Humidity Sensor:** monitors the amount of humidified air to provide adequate air moisture to the patient **Pressure Sensor – Board Mount:** monitors the pressure of air that is delivered to the patient **Thermistor/Pre-Packaged Temperature Probe:** provides warm, moist air
Spirometer	Enhance treatment efficiency.	**Airflow Sensor:** measures the airflow from the patient upon exhalation **Pressure Sensor–Board Mount:** measures the pressure drop in a flow tube as the patient is inhaling and exhaling, which is used to calculate the volume of air in the lung
Workflow Solutions	Verify patient identification.	**Devices with an Embedded Honeywell Barcode Reader:** enables scanning of the label for positive confirmation of patient and clinical information
Wound Therapy	Optimize therapy and safety with sensors that provide the desired therapy.	**Pressure Sensor – Board Mount:** monitors the pressure applied to the wound via the suction system, as set by the physician

PHARMACY

	CUSTOMER BENEFITS	HONEYWELL PRODUCTS
Automated Medication Dispensing Cabinets	More accurate dispensing of medication to the patient.	**Devices with an Embedded Honeywell Barcode Reader or Barcode Decoding Software:** enables scanning of the labels for positive confirmation of patient and clinical information **Hall-Effect Magnetic Position or Magnetoresistive Sensor IC:** enables remote locking and unlocking of medication-dispensing cabinet drawers

WELL NEWBORN NURSERY

	CUSTOMER BENEFITS	HONEYWELL PRODUCTS
Infant Incubator	Help maintain comfortable conditions and a condensation-free chamber for newborn babies who require controlled environments for observation and care.	**Humidity Sensor:** monitors the system to maintain a desired level of humidification with accurate dew-point and absolute humidity/moisture measurement **Thermistor:** monitors temperature

LABORATORY: HOSPITAL OR THIRD PARTY

	CUSTOMER BENEFITS	HONEYWELL PRODUCTS
Analyzer Equipment	Achieve enhanced equipment performance and consistent results.	**Airflow Sensor:** provides sensing for sample injector and mobile/stationary phase (chromatography) **Hall-Effect Magnetic Position Sensor IC:** provides open/closed cover, trap or door detection (chemistry analyzer); provides pump unit position detection (chromatography) **Humidity Sensor:** provides system leakage detection and measurement of temperature and humidity versus ambient (chemistry analyzer) **MICRO SWITCH Basic Switch:** provides detection of covers, doors and drawers (blood/chemistry analyzers, chromatography, cytometry/cellular analysis, molecular diagnostics/PCR) **Optical Sensor:** provides sample identification through barcode (blood analyzer, cytometry/cellular analysis, molecular diagnostics/PCR); measures robotic element/vial position (chemistry analyzer); detects sample loading home/autoloading carousel position (chromatography) **Pressure Sensor – Board Mount:** regulates pump pressure to draw and transport samples (blood analyzer); measures pipette pressure for air/obstruction detection and pump/flushing systems (chemistry analyzer) **Pressure Sensor – Board Mount or Pressure Transducer – Heavy Duty:** measures fluid volume and detection of air and occlusion in pipetting system (blood analyzer, cytometry/cellular analysis, molecular diagnostics/PCR); provides sensing for sample injector and mobile/stationary phase (chromatography) **Pressure Transducer – Heavy Duty:** provides an alternative to board mount sensing for pump monitoring and flushing systems (chemistry analyzer) **Barcode Scan Engine or Barcode Decoding Software:** obtains positive patient confirmation, and often a brief code of the physician's order, before sampling (blood/chemistry analyzer, chromatography, cytometry/cellular analysis, molecular diagnostics/PCR) **Thermistor or Temperature Sensor:** monitors chamber temperature, diffusion lamps and oil-cooled motors to help prevent overheating (blood analyzer); monitors reagent and sample temperature (chemistry analyzer); cools sample and flow cell; provides temperature sensing (cytometry/cellular analysis)
Specimen Warming Incubators	Protect specimens with sensors that help maintain optimal environmental conditions.	**Humidity Sensor:** monitors the system to maintain an accurate dew-point and absolute humidity/moisture measurement in the chamber **Thermistor:** measures air stream temperature

OPERATING ROOM

	CUSTOMER BENEFITS	HONEYWELL PRODUCTS
Anesthesia Delivery System	Achieve a more accurate, constant supply of gases and vapor with sensors that enhance patient treatment.	**Airflow Sensor:** measures air, oxygen and nitrous oxide flow so specified mixture, as set by the doctor, is delivered **Hall-Effect Magnetic Position Sensor IC:** provides enhanced output accuracy for smooth motor control that reduces noise and vibration in motor assembly fan systems **Pressure Sensor – Board Mount or Pressure Transducer – Heavy Duty:** measures air and oxygen pressure so that they do not exceed a desired level **Thermistor:** monitors and controls air temperature
Patient Monitoring	Obtain more accurate blood pressure/ respiratory monitoring.	**Airflow Sensor:** monitors patient's respiratory function **Pressure Sensor – Board Mount:** measures blood pressure
Surgical Instruments	Enhance patient treatment with more accurate and reliable sensors.	**Force Sensor:** regulates fluid management system pump head pressure **Pressure Sensor – Board Mount:** senses joint pressure during arthroscopic surgery; monitors insufflator pressure during endoscopy
Ventilator	Rely on sensors that enhance patient comfort and therapy effectiveness.	**Airflow Sensor:** measures air and oxygen flow so specified mixture, as set by the doctor, is delivered **Hall-Effect Magnetic Position Sensor IC:** provides enhanced output accuracy for smooth motor control that reduces noise and vibration in motor assembly fan systems **Humidity Sensor:** provides warm, moist air when coupled to a microcontroller that measures the air stream humidity and then signals the controller that the desired level of moisture is present **Pressure Sensor – Board Mount:** measures air and oxygen pressure so that the pressure doesn't exceed a desired level **Pressure Transducer – Heavy Duty:** provides a sensing solution when high pressure, steel pressure port interface and/or corrosive media are used **Thermistor:** monitors and controls the air temperature

EMBEDDED PRODUCTS SELECTION GUIDE – HOSPITAL

	SENSORS											BARCODE SCAN ENGINES AND DECODING SOFTWARE		SWITCHES		
	Airflow Sensor	Force Sensor	Humidity Sensor	Optical Sensor	Pressure Sensor – Board Mount	Pressure Transducer – Heavy Duty	Sensor IC – Hall-Effect Magnetic Position	Sensor IC – Magnetoresistive	Temperature Probe (Pre-Packaged)	Thermistor or Temperature Sensor	Thermostat	Barcode Scan Engines	Barcode Decoding Software	Basic Switch	Position Switch	Pressure Switch
LABORATORY: HOSPITAL OR THIRD PARTY																
Blood Analyzer				●	●	●				●		●		●		
Chemistry Analyzer			●	●	●	●	●			●		●		●		
Chromatography Equipment	●			●	●	●	●					●		●		
Cytometry/Cellular Analysis Equipment				●	●	●				●		●		●		
Molecular Diagnostics/Polymerase Chain Reaction (PCR) Equipment				●	●	●						●		●		
Specimen Warming Incubators			●							●						
OPERATING ROOM																
Anesthesia Delivery System	●				●	●	●			●		●				
Blood Pressure Monitoring					●											
Respiratory Monitoring	●															
Surgical Instruments		●			●											
Ventilator	●		●		●	●	●			●						
PHARMACY																
Automated Medication Dispensing Cabinets							●	●				●	●			
POINT OF CARE																
Bed/Chair					●			●							●	
Dialysis Machine		●			●	●	●			●						
Infusion Pump		●			●		●	●				●				
Oxygen Concentrator	●				●	●										●
Patient Monitoring					●					●			●			
Sleep Apnea Machine	●		●		●		●		●	●						
Spirometer	●				●											
Workflow Solutions												●				
Wound Therapy					●											
WELL NEWBORN NURSERY																
Infant Incubator			●							●						

WARRANTY/REMEDY

Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship during the applicable warranty period. Honeywell's standard product warranty applies unless agreed to otherwise by Honeywell in writing; please refer to your order acknowledgment or consult your local sales office for specific warranty details. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace, at its option, without charge those items that Honeywell, in its sole discretion, finds defective. **The foregoing is buyer's sole remedy and is in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose. In no event shall Honeywell be liable for consequential, special or indirect damages.**

While Honeywell may provide application assistance personally, through our literature and the Honeywell website, it is buyer's sole responsibility to determine the suitability of the product in the application.

Specifications may change without notice. The information we supply is believed to be accurate and reliable as of this writing. However, Honeywell assumes no responsibility for its use.

For more information
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000847-3-EN | Rev 3 | 04/21
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