Sensors and Switches for Potential Medical Applications

Pressure Sensors - Board Mount
- TruStability™ RSC, HSC, SSC, TSC, NSC Series
- 24PC, 26PC Series
- Basic ABP, TBP, NBP Series

Pressure Transducers - Heavy Duty
- 13 mm Series
- 19 mm Series
- MLH Series
- SPT Series

Force Sensors
- FSA Series
- FSG Series
- FSS Series
- FSS-SMT Series
- Basic TBF Series
- 1865 Series

Airflow Sensors
- Honeywell Zephyr™ HAF Series
- AWM40000 Series
- AWM700 Series
- AWM90000 Series

Humidity Sensors
- HIH-5030/5031 Series (3 V)
- HIH-4000 Series (5 V)
- HIH-4602 Series

Temperature Sensors
- Honeywell HumidIcon™ Humidity/Temperature Sensors; HIH6000, 6100, 7000, 8000, 9000 Series
- 500 Series Packaged Temperature Probes
- 192 Series Thermistors
- 194 Series Thermistors
- 2455R Series Thermostats

Position Sensors - SMART
- SPS Series Linear and Arc

Subminiature Basic Switches
- SM Series
- Watertight V15W Series
- ZD Series
- ZM Series
- ZW Series
- ZX Series

Pressure Switches
- 5000 Series

Pressure, Airflow, and Force Sensor Ranges

PRESSURE SENSORS - BOARD MOUNT (LOW)
- TruStability™ RSC, HSC, SSC, TSC, NSC Series
- ±60 mbar to ±10 bar | ±6 kPa to ±1 MPa | ±1 psi to ±150 psi
- Basic ABP, TBP, NBP Series
- ±60 mbar to ±10 bar | ±6 kPa to ±1 MPa | ±1 psi to ±150 psi
- 24PC Series
- ±60 mbar to ±250 psi (SIP, DIP), 1 psi to ±15 psi (SMT)
- ±60 mbar to ±1 MPa (SMT)

PRESSURE SENSORS - BOARD MOUNT (ULTRA-LOW)
- TruStability™ RSC, HSC, SSC, TSC, NSC Series
- ±1.6 mbar to ±40 bar | ±160 Pa to ±4 kPa | ±0.5 inH2O to ±30 inH2O

PRESSURE TRANSDUCERS - HEAVY DUTY
- 13 mm Series
- 0 psi to 500 psi through 0 psi to 5000 psi
- 19 mm Series
- 0 psi to 3 psi through 0 psi to 500 psi
- MLH Series
- 0 psi to 50 psi through 0 psi to 8000 psi
- SPT Series
- 0 psi to 3 psi through 0 psi to 5000 psi

AIRFLOW SENSORS
- HAF Series-High Accuracy
- ±50 SCCM to ±750 SCCM, 10 SLPM to 300 SLPM
- AWMH0000 Series
- ±250.0 SCCM, 1.0 SLPM, 6.0 SLPM
- AWM7000 Series
- 300 SLPM
- AWM90000 Series
- ±200 SCCM, ±5.0 mbar SCCM (2.0 inH2O)

FORCE SENSORS
- FSA Series
- N: 5, 7.5, 10, 15, 20, 25; lb: 1, 1.5, 2, 3, 5; g: 500, 750, 1500
- FSG Series, FSS Series, FSS-SMT Series
- 0 N to 5 N, 0 N to 10 N, 0 N to 15 N, 0 N to 20 N
- Basic TBF Series
- 1 bar to 10 bar | 100 kPa to 1 MPa | 15 psi to 150 psi
- 1865 Series
- 0 psi to 5 psi, 0 psi to 10 psi, 0 psi to 15 psi, 0 psi to 25 psi, 0 psi 30 psi

Value-Added Solutions
- Custom 1865 Series Force Sensor Assembly

Barcode Scan Engines
- CM Series Compact 2D Imager Module
- N6600 Series Ultra-Slim Area Imaging Engine

Barcode Decoding and Character Recognition Software
- SwiftDecoder™ SDK for iOS, Android™ and Windows® Operating System
Anesthesia Delivery Machines
• Airflow sensors measure air, oxygen, and nitrous oxide flow
• Magnetic sensor ICs enable smooth motor control that reduces noise/vibration
• Pressure sensors may be used to meter and measure the anesthesia gas so that pressure doesn’t exceed the desired level
• Thermistors enable accurate air temperature control
• Value-added TruStability™ board mount pressure sensor assembly transforms anesthesia liquid into a gas

Dental Equipment
• Magnetic sensor ICs enable accurate motion control and positioning of the dental imaging system and promote energy efficiency in hand-held, battery-operated dental equipment
• Pressure sensors (board mount) keep water flow constant in dental instruments, allowing smooth operation

Hospital Diagnostics
• Airflow sensors in gas chromatography equipment regulate the flow rate to eliminate outgassing
• Barcode scan engine or barcode decoding software obtain 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)
• Pressure sensors (board mount) in blood analyzer pump systems regulate pressure to draw/transport samples
• Pressure sensors (board mount) in gas chromatography equipment sense and control gas stream pressure to maintain a constant, precise flow
• Thermistors in blood analyzers monitor chamber, diffusion lamp, and motor temperature to prevent overheating

Hospital Hardware
• Embedded barcode reader or barcode scanning software enables the ability to scan labels for positive patient confirmation and clinician information
• Humidity sensors maintain temperature and humidity levels in incubators and microenvironments
• Magnetic sensor ICs enable locking/unlocking of medication dispensing cabinets
• Magnetic sensor ICs in exercise equipment may be used as an emergency stop switch, to count RPM, and to determine incline position
• Magnetic sensor ICs in hospital beds determine bed adjustment end and beginning positions
• MICROSWITCH subminiature basic switches determine min/max position of electrically adjustable hospital beds
• Position sensors (SMART Arc) in hospital beds monitor backrest elevation which helps ensure the proper angle is maintained
• Pressure sensors (board mount) control a hospital bed’s air columns to help prevent patients from developing bedsores
• Pressure sensors (board mount) measure pressure in blood pressure monitors
• Pressure switches in hospital gas distribution systems indicate to a control panel that the main pressure tank is empty and needs to be replaced
• Thermistors monitor the incubator system’s temperature
• Thermostats in patient warmers control or limit temperature

Hospital Rooms
• Pressure sensors (board mount) monitor airflow rates to provide continuous positive or negative air pressure to prevent contamination

Infusion, Insulin, Syringe Pumps
• Force sensors detect blockage in the pump’s tube that delivers medication
• Infrared sensors are used with an encoder wheel on the pump shaft to count shaft rotation
• Magnetic sensor ICs enable smooth motor control that reduces noise and vibration (infusion, insulin pumps only)
• Pressure sensors (board mount) monitor and control the flow of fluid

For more information
To learn more about Honeywell’s sensing and switching products, call 1.800.537.6945, visit sensing.honeywell.com, or e-mail inquiries to info.sc@honeywell.com
To learn more about Honeywell’s scan engines and barcode software, visit honeywellaidc.com.

Honeywell Sensing and Internet of Things
9680 Old Bailey Road
Fort Mill, SC 29707
www.honeywell.com

Kidney Dialysis Machines
• Embedded barcode reader that is tethered to the equipment supports the identification and delivery process
• Force sensors detect the presence/absence/weight of a dialysate cartridge and monitor flexible tubing pressure
• Magnetic sensor ICs enable smooth motor control that reduces noise/vibration
• Pressure sensors (board mount) obtain dialysate and venous pressure measurements without interrupting flow
• Pressure transducers (heavy duty) monitor pressure in the cartridge’s flexible tubing
• Thermistors provide enhanced temperature control of the permeation rate across the dialysis membrane
• Thermostats control or limit temperature
• Thermistats in peritoneal dialysis machines may be used for heater tray control

Oxygen Concentrators
• Airflow sensors detect ultra-low air flow levels that sense when the patient exhales for efficient oxygen delivery
• Pressure sensors (board mount) detect when the patient begins to inhale for efficient oxygen delivery
• Pressure sensors (heavy duty) sense surge tank pressure for accurate compressor pressure levels
• Pressure switches alert the user when the pressure exceeds a specified limit

Patient Monitoring Systems
• Barcode scanner software enables the ability to track the patient via a mobile device
• Pressure sensors (board mount) in blood glucose monitoring equipment control the pumps used to extract and return blood so that the pressure doesn’t rupture the veins
• Pressure sensors (board mount) in nebulizers carefully monitor airflow rates so that the specified amount of medicine, amid a humid environment, is delivered to the patient
• Pressure sensors (board mount) in spirometers measure in/out patient airflow
• Pressure sensors (board mount) monitor blood pressure
• Thermistors in temperature monitoring equipment monitor temperature

Pneumatic Circuit Control
• Pressure sensors (board mount) control pneumatic flow and system pressure for efficient performance in respiratory breathing circuits (nebulizers, spirometers, patient monitoring), flow/pressure control (therapeutic hospital beds), gas collection/delivery (hospital gas supply, oxygen concentrators) and sampling/gas flow (blood analysis, gas chromatography, analytical instrument sampling systems)

Sleep Apnea Machines
• Airflow sensors monitor breathing and send an output to reduce airflow when the patient exhales
• Bimetallic commercial thermostats on-board (stand-alone) devices on flexible heaters control temperature without adding associated software or electronics
• Humidity sensors monitor the air to provide adequate moisture
• Magnetic sensor ICs enable smooth motor control that reduces noise/vibration
• Pressure sensors (board mount) monitor the delivered air pressure
• Thermistors and pre-packaged temperature probes provide warm, moist air

Spirometers
• Airflow sensors measure the airflow from the patient upon exhalation
• Pressure sensors (board mount) measure in/out patient airflow

Surgical Equipment
• Force sensors regulate a fluid management system’s pump head pressure
• Position sensors (SMART Arc) in robotically assisted surgery equipment control robotic arms that hold the articulated instrument tips
• Pressure sensors (board mount) in surgical fluid management systems sense joint site pressure during arthroscopic surgery

Ventilators
• Airflow sensors measure air and oxygen flow so the correct amount is delivered to the patient
• Humidity sensors deliver warm, moist air to the patient
• Magnetic sensor ICs enable smooth motor control, reducing noise/vibration
• Pressure sensors (board mount) detect when the breath changes from inhalation to exhalation to measure in/out patient airflow
• Pressure transducers (heavy duty) allow use in corrosive media
• Thermistors monitor and control air temperature

© 2017 Honeywell International Inc.