# Switches and Sensors Solutions for Industrial Applications

## Heavy-Duty Limit Switches
- HDLS
- HDLS Fully Potted
- HDLS Stainless Steel

## Global Limit Switches
- GLA
- GLC
- GLD
- GLE
- GLL

## Compact Precision Limit Switches
- BZE6/V6
- LS

## Miniature Limit Switches
- NGC
- 14CE/914CE
- S2L-VL-S

## Safety Switches
- 2CCP
- 1CPS

## Hazardous Area Limit Switches
- BX/LX
- BX2 Stainless

## Temperature Sensors
- Honeywell Humidicon™ Humidity/Temperature Sensors
- 500 Series Package Temperature Probes
- 192 Series Thermistors
- 194 Series Thermistors
- 24S5R Series Thermostats
- N670X Series 2D Scan Engines
- VuQuest 3330g
- SwiftDecoder™ Software

## Bar Code Scan Engines, Modules and Software

## Pressure Sensors – Heavy Duty
- SS360/SS460
- SS41K6
- SM Series Nanopower
- 10GSR

## Pressure Transducers – Heavy Duty
- LE
- LP
- ME
- MH
- HE
- HP

## Large Basic Switches
- BZ/BA/BM/BE/DT/6AS
- DM

## Miniature Basic Switches
- V7
- V15
- V19
- V15W/V15W2

## Subminiature Basic Switches
- SM
- SX
- HD/HD1
- ZD
- ZM/ZM1
- ZW
- ZX

## Magnetic Sensors
- SS360/SS460 SS41K6
- SM Series Nanopower

## Load Cells and Force Sensors
- Model 41
- MicroForce FMA
- FSA

## Pressure Sensors – Board Mount
- TruStability™
- ABP/ABP2.0
- MicroPressure MPR

## Toggle Switches
Manufacturing Equipment

Robots
- **Presence:** Limit switches are used to sense presence of welding rods. If the rod is not present or not in the correct position, the switch sends a signal to the computer and the weld process stops.
- **Safety:** Cable pull switches provide long-span emergency stop protection.
- **End-Stop:** Limit switches provide end-stop detection, if the equipment reaches end-of-travel, the switch can turn power off or give the controller a signal.
- **Linear and Angular Position:** Magnetic sensors are used for linear and angular position sensing. Magnetic sensors help maintain a high level of accuracy and precision.
- **Pressure:** Pressure sensors measure the pressure of the air or fluid in the lines that are used to control, lubricate or provide power to robotic equipment.
- **Scanning:** Barcode scan engines and software enable robots to track and trace the manufacturing of subassemblies and goods on manufacturing lines.
- **Temperature:** Thermistors are integrated into temperature chambers for product testing. The temperature sensor provides feedback to the controller to ensure temperature is maintained at the desired levels.
- **Control:** Basic switches are used for operator control assemblies in the form of push buttons and switches. Custom operator interfaces and custom control functions can be accomplished through the input assemblies developed with basic switch components.

Machinery
- **Position:** Limit switches are used to sense the position of the various moving parts of a CNC machine, such as drilling and milling tools.
- **Interlocks:** Limit and basic switches are used as access panel interlocks. If an access panel is open, the switch can prevent the machine from operating.
- **Speed:** Magnetic sensors are used as position and speed sensors.
- **Pressure:** Pressure switches and sensors are used to monitor lubricating oil lines to ensure they are full and at the right pressure.
- **Scanning and Calibration:** Barcode scan engines and software can be used to identify and track the processed parts, and can also be used to support the automatic calibration of the tool.
- **Temperature:** Thermistors provide temperature measurement to ensure operating conditions and temperatures are at adequate levels.
- **Control:** Toggle switches are used for operator control where momentary or maintained switching action is needed for precise control of the system.

Packaging & Pallet Equipment
- **Weight:** Limit switches can be used to detect if packages are filled to their desired weight. When the package reaches the desired weight, the limit switch will activate and signal to the controller that the package is full.
- **Counting:** Basic and limit switches can be used to count packages as they pass on conveyors.
- **Pressure:** Pressure switches and sensors are used to monitor pneumatic pressures to ensure the system is at specified operating levels.
- **Scanning:** Barcode scan engines read labels to ensure that packaging process is operating as desired.

3D Printing
- **End-Stop:** Basic switches provide end-stop detection; if the equipment reaches end-of-travel, the switch can turn power off or give the controller a signal that end-of-travel has been reached.
- **Linear and Angular Position:** Magnetic sensors are used for linear and angular position sensing. Magnetic sensors help maintain a high level of accuracy and precision.
- **Temperature:** Thermistors can be used to monitor extrusion nozzle temperatures to ensure they are within the operating condition and temperature levels.
- **Speed:** Back-biased hall sensors can be used to detect the speed of a ferrous gear-tooth target wheel or a ferrous disk with a hole pattern.
- **Position and Fan Control:** Magnetic position sensors are non-contact sensing products used for motor/fan control, position sensing, linear and angular displacement and speed sensing for moving parts.

Motors and Drives
- **Motor Control:** Basic switches function as motor start switches, indicating when a user wishes to power the motor for the process in which the motor is used. Magnetic sensors are used for commutation control in brushless DC motors.
- **Temperature:** Thermistors provide motor overtemperature indication. When the motor reaches a level that could potentially damage the motor or create an unsafe situation for any operators nearby, the thermistor provides feedback to ensure that the motor ramps down to a safe level.
- **Speed:** Back-biased hall sensors can be used to detect the speed of a ferrous gear-tooth target wheel or a ferrous disk with a hole pattern.
- **Position and Fan Control:** Magnetic position sensors are non-contact sensing products used for motor/fan control, position sensing, linear and angular displacement and speed sensing for moving parts.

Conveyor Belts
- **Position:** Limit switches/hazardous location switches reliably indicate position for system controls. These signals can be used to control the belt on/off status. They can also be used for counting of items passing by on the conveyor.
- **Safety:** Cable pull switches are used to provide emergency stop signaling along the conveyor line for personal safety protection. They can provide end-stop functionality for long spans of equipment.
- **Scanning:** Barcode scan engines and software automatically identify, read and transmit the barcode information of goods on the conveyor.

Control Valves and Actuators
- **Position and Control:** Hazardous location switches are used to monitor the mechanical position of valves by sending an electrical signal to the control system to indicate valve open or closed position.
- **Pressure:** Pressure switches and sensors monitor and indicate pressure in pipes and boilers, detecting failures such as open circuits, cut wires, etc. and shutting down the system due to overpressure.
- **End-Of-Travel:** Basic switches indicate end-of-travel for the hydraulic and pneumatic actuators. The switches send a signal to the actuator control system when the actuator reaches the end of its usable stroke to prevent damage due to the actuator reaching its mechanical stop. As an alternative, magnetic sensors can be used to indicate end of travel for actuation cylinders.

Refrigeration
- **Interlocks:** Basic switches are installed for door indication, indicating the position of the ice maker’s bin, in ice dispensing processes.
- **Temperature:** Thermistors provide system temperature control in refrigeration use cases. The thermistor provides feedback such that precise control of the temperature can be maintained throughout the refrigeration cycle.
- **Position:** Magnetic sensors provide non-contact door closure indication, indicating the door is open or closed.
- **Pressure:** Pressure sensors and switches can sense and monitor environmental conditions and ensure the equipment is working properly.
- **Humidity:** Humidity sensors monitor the amount of moisture in the air so that the system controllers can adjust as necessary to ensure the equipment is running optimally.

HVAC
- **Airflow:** Basic switches are useful for air-proving switching assemblies or as a float switch for applications where light switches fail due to the high demand of moisture.
- **Pressure:** Pressure switches are used for system overpressure indication and system low-pressure indication. The pressure switch will either cut power to the system in the case of overpressure or allow power to a pump or compressor to increase pressure in the case of a low-pressure indication.
- **Temperature:** Thermistors provide system temperature control such that the desired temperature for the heating or cooling cycle is achieved and precisely maintained.
- **Gas Sensing:** Gas sensors can be used for occupancy detection to reduce energy cost. CO2 gas is released by humans during breathing. Once occupancy is detected, a feedback is provided to the HVAC system for room cooling. This is called demand controlled ventilation.
- **Position:** Magnetic sensors are used to enable efficient control of electric motors that drive fans, blowers and pumps in HVAC systems.
- **Fan Control and Monitoring:** Magnetic sensors are rugged non-contact sensing products used for motor/fan control, position sensing, linear and angular displacement and speed sensing for moving parts.

High End Consumer Electronics

Coffee Machine
- **Temperature:** Thermistors provide temperature control of automated heating cycle, ensuring precise temperature is maintained throughout the cycle.
- **Position:** Magnetic sensors are used to enable efficient control of electric motors that drive fans, blowers and pumps in HVAC systems.
- **Force:** Force sensors provide feedback and pressure detection for fluids, coffee beans and grounds.
- **Scanning:** Barcode scan engines and software read the watermark or barcodes onto the coffee dose to identify and calibrate the coffee machine correctly (e.g. water pressure level and quantity).

Beverage Dispenser
- **Position and Control:** Basic switches are used for dispenser switch assemblies. The user engages the switch by pressing a cup or container against a dispensing lever and the switch indicates to the controller to initiate the dispensing process.
- **Flow Rate:** Magnetic sensors are used for liquid flow rate sensing when paired with a magnetic meter.
- **Temperature:** Thermistors provide temperature control of automated cooling cycle, ensuring precise temperature is maintained throughout the cycle.
- **Pressure:** Pressure sensors monitor and sense the level of pressure in fluid lines and dispensing nozzles. Both packaged and board-mount versions of pressure sensors can be used depending on packaging requirements.
- **Force:** Force sensors can provide non-contact presence and pressure detection by detecting the small changes in the diameter of tubing and piping as a result of increase in pressure from pressure switches.
- **Scanning:** Barcode scan engines and software read and transmit customer coupons and loyalty cards for beverage dispensers, either on smart phone screens or paper.

Large and Small Appliances
- **Position and Control:** Basic switches provide lock indication in door interlock assemblies. When the lock is engaged, the switch indicates to the appliance controller that the wash cycle can begin. Magnetic sensors provide non-contact door or lid closure detection.
- **Position and Control:** Basic switches are magnetic sensors that are also integrated in float switch assemblies for liquid indication in dish washer/washer, off-balance switch for washer and belt-fail switch for dryer.
- **Temperature:** Thermistors ensure that system temperature is precisely controlled for the drying cycle of a dryer or dishwasher.
- **Scanning:** Appliances can be equipped with barcode scan engines and software either for calibration purposes or for service and repair management.

For more information
Honeywell Sensing and Internet of Things services its customers through a worldwide network of sales offices and distributors. For application assistance, current specifications, pricing or the nearest Authorized Distributor, visit sensing.honeywell.com or call:

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MANUFACTURING EQUIPMENT

Machinery

Packaging & Pallet Equipment

Motors and Drives

Conveyor Belts

Control Valves and Actuators

Refrigeration

HVAC

High End Consumer Electronics

Coffee Machine

Beverage Dispenser

Large and Small Appliances

For more information

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