SENSORS AND SWITCHES FOR FORKLIFT APPLICATIONS

Application Brief

Honeywell

Honeywell has a extensive range of switches and sensors available for forklift applications. Whether your forklift is operates on gas, electric or hydrogen power, or even autonomous capabilities Honeywell sensors and switches are available to help you with your needs, or safety requirements.

As forklifts evolve, adapting to technological advancements and tackling the challenges of modern logistics, Honeywell's solutions are tailored to support these evolving application requirements. One notable evolution in forklift technology is the integration of Autonomous Mobile Robots (AMRs). These smaller autonomous vehicles are employed to transport materials throughout the warehouse, with some facilities even being designed around their use. Honeywell offers a variety of sensors tailored for these applications as well.

We have a number of sensors unique to certain types of forklifts.

ELECTRIC POWERED FORKLIFTS

Most forklifts today are electric powered, Honeywell has developed several sensors designed specifically for electric vehicles. These include current sensors for monitoring battery charging, battery usage, and individual electric motor current monitoring for overall battery health. Additionally, we have designed Battery Safety sensors, like our Battery Safety Electrolyte Detector (BES LITE) vital for detecting initial venting events before thermal runaway and selectively responds to electrolyte vapor. Therefore, the sensor allows for proactive responses that can prevent loss of assets and protection of lives.

HYDROGEN POWERED FORKLIFTS

Hydrogen is an emerging power source for forklifts, and Honeywell has developed a Hydrogen Leak Detector tailored for hydrogen-powered vehicles. Since hydrogen is colorless and odorless, the small molecules enable the hydrogens to be very good at escaping to create leaks, making our Hydrogen Leak Detector a crucial tool for safety.

AUTONOMOUS FORKLIFTS OR AUTONOMOUS MOBILE ROBOT (AMR) FORKLIFTS

The recent trend has been towards automating material movement within warehouses . This can manifest in various forms, from custom-built small AMRs transporting individual products to large, purpose-built autonomous forklifts handling pallets or modifying existing vehicles to having autonomous capabilities. Autonomous forklifts necessitate additional sensors and switches to operate independently, primarily for navigation and guidance. Our TARS-B Inertial Measurement Unit (IMU) is instrumental in enabling autonomous functionalities and improving efficiency by providing critical data needed for automating and monitoring vehicle system movements. Further, limit switches or position sensors can be incorporated at charging or docking stations to confirm the vehicle's presence.

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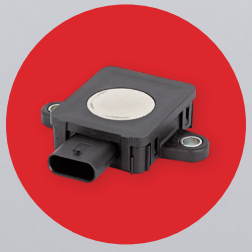
BATTERY SAFETY SENSOR

Honeywell BES LITE Series Battery Safety Electrolyte Sensor detects electrolyte during early stages of thermal runaway and responsive to H_2 and CO released during thermal runaway, ensuring reliable early detection for safety and preservation of property. ASIL-B rated.

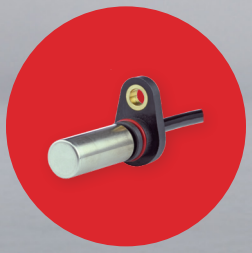


HYDROGEN LEAK DETECTOR

The HLD Series uses Honeywell advanced compensation algorithm to detect hydrogen leaks for safe operation of the vehicle and those surrounding it.

ROTARY HALL-EFFECT POSITION SENSOR

The RTY and RTP Series can be used as an axle angle position sensor of the stack, and for the accelerator pedal. This series of sensors provides non-contact sensing in harsh transportation and industrial applications at a competitive cost.



SPEED SENSOR

Honeywell speed sensors (LCZ, SNDH, and SNG-Q Series) are used to measure speed. They provide zero speed capacity, direction sensing, and precise switch-point measurement. Speed sensor diagnostics provide information on air gap and sensor failure for increased reliability and functionality.

TARS -B

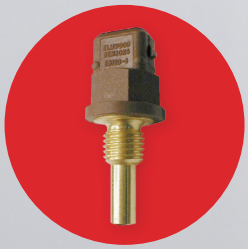
The TARS-B IMU Tilt Sensor is deployed for vehicle stability and gauging overload/detect load. It has autonomous capabilities. Designed to report vehicle angular rate, acceleration, and attitude data.

CURRENT SENSOR

Forklift applications can use current sensors to monitor battery usage and charging, as well as individual electric motor current measurement.

SMART POSITION SENSOR

SMART Position Sensors are used to measure linear displacement and angle position sensing. Simple, non-contact design eliminates mechanical failure mechanisms, reduces wear and tear, improves reliability and durability, and enhances operator efficiency and safety.



TEMPERATURE SENSOR

ES120, R300, and 500 Series sensors for fuel/coolant/hydraulic oils. Compact and lightweight. Operate with enhanced sensitivity, reliability and stability under diverse conditions of shock, vibration, humidity, and corrosion.

PRESSURE SENSOR

Honeywell pressure sensors are used on combustion engine models to monitor engine oil pressure.

PUSH/PULL SWITCH

Push/Pull Switches are engineered for emergency stops. Honeywell switches are robust and environmentally sealed, along with featuring sliding contacts incorporating two circuits with multiple combinations.

KEY & ROTARY SWITCHES

Used for ignition on/off position. And may also be designed into control panels or machinery. Honeywell key/rotary switches use o-rings to help keep dirt and moisture out of the contact chamber to prolong switch life.

PRESSURE SWITCH

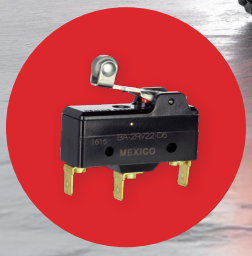
Series 1000 Pressure Switches are designed for brake pressure detection. With their IP67 environmental sealing and high proof & burst pressure ratings, they can be used in many rugged applications.

STALK CONTROLS

FNR shifters, wipers, lights, turn signals with IP67 rating. Turn signals are built to complement the shifter or mounted as a stand alone device.

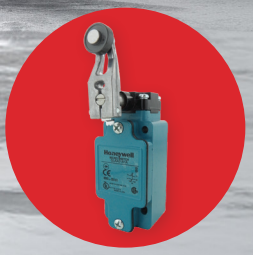
TOGGLES & ROCKER SWITCHES

An environmentally sealed switch for use on panels and offer enhanced reliability. Can be used in a variety of applications where a sealed, panel-mount switch is required.



BASIC SWITCH

MICRO SWITCH BZ Large Basic Switches can be used to control the illumination of the tail-lights and the back-up audio safety feature. Honeywell basic switches employ a specially formulated alloy to reliably control the dc electrical loads used within this type of application to provide a long-life solution.



LIMIT SWITCH

MICRO SWITCH GLS and HDLS Series are designed for position detection. Can define the height of the stacker. These switches meet IEC standards for world-wide acceptance. Can also be used for presence sensing for docking.

⚠WARNING IMPROPER INSTALLATION

- Consult with local safety agencies and their requirements when designing a machine control link, interface and all control elements that affect safety.
- Strictly adhere to all installation instructions.

Failure to comply with these instructions could result in death or serious injury.

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 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 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.**

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