

The Common Business Uses of Ultrasonic Sensors

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In brief

Around the world, industries use specialised ultrasonic sensors to streamline and safely complete essential tasks. Whether they're sensing distances between objects, monitoring and regulating liquid levels, or detecting irregularities, ultrasonic sensors play an essential role in today's business world.

Around the world, industries use specialised ultrasonic sensors to streamline and safely complete essential tasks. Whether they're sensing distances between objects, monitoring and regulating liquid levels, or detecting irregularities, ultrasonic sensors play an essential role in today's business world. Three common types of ultrasonic sensors are proximity switches, through-beam sensors, and retroreflective sensors. Each of these types of sensors can be found at reputable electronics distributors like RS Components.

What are ultrasonic sensors and how do they work?

Ultrasonic sensors work by emitting and receiving ultrasonic sound waves. Via a transducer, these specialised sensors send and receive ultrasonic pulses to relay information about an object's position in relation to another object. When high-frequency soundwaves reflect off a surface, distinct echo patterns are produced, which are picked up by the sensor.

In several industries, including manufacturing, health, and automotive, ultrasonic sensors play a critical role in maintaining safety and productivity in the workplace.

Manufacturing

Ultrasonic sensors are commonly used in manufacturing to monitor and control production lines. Tasks can include counting at high speeds, controlling liquid levels, sorting boxes, and detecting irregularities. Ultrasonic sensor use is paramount in the growing automation of factories around the world.

Retroreflective ultrasonic sensors are useful for detecting irregularly shaped objects or manufacturing inconsistencies. Via sound propagation, sensors measure distances from the reflector to the sensor, or to any object within the sensor's range.

With their large ranges and short response times, ultrasonic through-beam sensors are useful for counting and detecting objects in quick succession. They are also useful for monitoring and counting transparent materials such as glass bottles or containers.

Automotive

In automotive assembly, parking garages, and car washes, ultrasonic sensors are often used for range measurement. They play a role in "smart parking", a modern parking strategy intended to reduce harmful emissions and traffic congestion.

In automated car washes, proximity sensors or switches are used to position and locate vehicles of all makes and models, profiling the vehicle's contour and optimising the cleaning process. The simplest type of ultrasonic sensor, proximity switches combine the receiver and transmitter into one housing. Soundwaves reflect directly from the object and are measured by the receiver.

Proximity sensors are also commonly used for spray control in automotive assembly and on agricultural vehicles.

Health and medicine

Ultrasonic sensors are fundamental in modern medical applications. By creating a real-time visual image of the inner functions of the human body, sensors can be used as an alternative to radiography for prenatal examinations, breast cancer check-ups, tissue biopsy sampling, and other medical inspections.

In cardiology, for example, ultrasonic scanners are used to measure the size of a patient's heart, detect shape or movement abnormalities, and determine the condition of blood flow.

In single-use applications, level sensors are also used to monitor fluid levels in drips, measure automatic fluid intake flow rates, and detect air bubbles in measuring chambers or tubes.

Conclusion

With the growing automation of many industries, ultrasonic sensors have become an essential tool in business applications around the world. In manufacturing, automotive assembly, medicine, agriculture, and more, these important devices help to reduce processing times, improve accuracy, lower costs, and generally streamline many industrial processes.

References

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