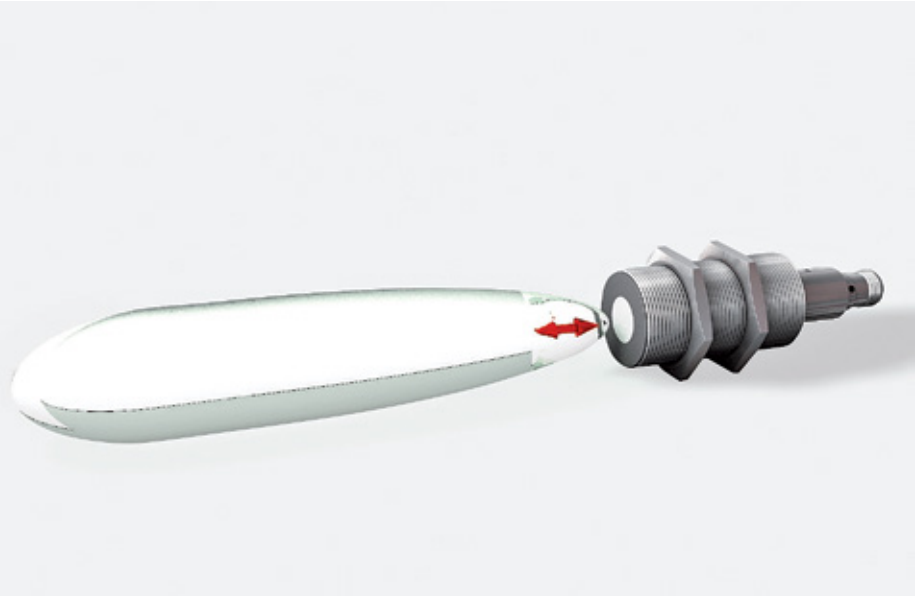
Good to Hear

Turck's ultrasonic sensor portfolio, with its additional 22 new types, offers customers a solution for every application



Large range – short blind zone: The Turck ultrasonic sensors can also be used effectively in restricted mounting spaces

Bigger, higher, further – these were the aims of the 20th century. However, with the onset of Industry 4.0, there is an increasing demand for small devices that can offer the same measuring accuracy over long distances as over short ones. After all, applications are becoming smaller whilst installation space is becoming more restricted and at a considerable premium. There is a continuous change between sending and receiving; blind zones that are too large are a problem for many applications involving short distances. Turck's miniature sensor system provides a solution since the small devices keep the blind zones to a minimum while still guaranteeing accurate measuring results. Turck has expanded its ultrasonic sensor portfolio with 22 new compact sensors.

Multiple benefits from ultrasonic sensors

Ultrasonic sensors are the optimum solution for many applications where space is restricted and in which sensors are used for distance measurement or similar metrics, as they offer here several benefits compared to other solutions. An optical sensor is subject to dirt so that the user has to regularly clean it. Ultrasonic sensors on the other hand are insensitive to dirt, dust and even water. They always offer reliable operation. Ultrasonic sensors also detect every object, irrespective of the structure and color of its surface – another critical benefit compared to optical sensors.

However, ultrasonic sensors are not only superior in many respects to optical sensors. Unlike inductive sensors, which only detect metals, ultrasonic sensors can detect any medium. This also applies to plastic, which makes them also one step ahead of capacitive sensors. Capacitive sensors are also several times more susceptible to dirt than ultrasonic sensors.

Robust, compact, self-cleaning

Turck's ultrasonic sensors have all these features – and more. Their highly robust housing with a continuous threaded barrel entirely made of metal is particularly short and stands out on account of a metal connector which is manufactured as one piece with the threaded sleeve. This eliminates any potential weak points that could cause damage in harsh environments and at low temperatures. The thread runs over the entire length of the sensor so that the mounting position can be varied as required within the mounting bracket. The connector can also not break off since it is made entirely of metal.

Turck ultrasonic sensors also have a smooth sonic transducer front, which reliably prevents contamination and the formation of particle deposits. The mechanical movement of the membrane even shakes off deposits and is thus virtually self-cleaning. Particle deposits that can occur when the air humidity is high can likewise be simply wiped off completely, without any residue remaining in the transition area between the transducer layer and the transducer ring. Damage arising from sharp and pointed cleaning objects therefore becomes a thing of the past.

Turck's ultrasonic sensors are developed so that typical industrial noise has no effect on sensor operation. Neither whistling noises from compressed nor the noise of metal objects hitting each other prevent the RU ultrasonic sensors in their work.

QUICK READ

The more compact the machine and plants, the greater the demand for small sensors. If these devices also involve short blind zones, they soon become the universal tool for restricted spaces. Turck has therefore added ten more miniature sensors to its RU ultrasonic sensor series. Twelve new types were added to the RU-Eco series with devices made from highly resistant liquid crystal polymer. This comprehensive portfolio enables the automation specialist to offer the right ultrasonic solution for virtually every application.

Easy Teach function
In order for the user to set the sensors simply and intuitively without a PC, all ultrasonic sensors of the RU series can be set with a simple teach-in function. The start of switch and measuring ranges can thus be set easily without the use of any external software. The teach operation is carried out via the teach adapter or via sensor variants with integrated push-buttons. The pushbuttons are fitted inside the metal housing and are thus protected from accidental actuation. The setting is carried out inside a fixed time window after a preceding voltage reset. The subsequent automatic lock reliably excludes the possibility of the sensor settings from being accidentally changed.

Miniature ultrasonic sensors of the RU series
The new RU10U-M08, RU20U-M12 and RU40U-M12 miniature ultrasonic sensors are not only all-round talents, but are also optimally suited for requirements in Industry 4.0 applications, thanks to their compact 8 and 12 millimeter design. The ultra compact RU10U-M08 sensors are the smallest ultrasonic sensors available on the market. They are available as diffuse mode or opposed mode sensors, each with PNP or NPN interfaces and IO-Link functions. They have a range of 100 mm and a blind zone of just 20 millimeters.

The small ultrasonic sensors in the M12 threaded barrel are available in six new versions: Four types come with an analog output and two variants with a switching output. The ultrasonic sensors with a switching output also come with integrated IO-Link functionality. The customer has the choice between sensors with a 200 or 400 mm range; in both cases the blind zones are small and are just 20 or 40 millimeters.

Miniature sensors for fill level applications
Turck's RU10U-M08 miniature ultrasonic sensors are particularly suitable for applications such as the fill level control of vessels with small openings, including bottles, test tubes or other tube-shaped containers. Immediately after filling there is a small stop in filling plants. This moment is used by the RU10U-M08 in order to "listen" into the particular vessel and check its fill level. For this it either outputs a specific measured value or a switching window. The switch window indicates whether the fill level is correct or not. Thanks to its small design, the sensor can optimally look into the vessel from above without a focusing device. Only

Complete program: Turck's extended portfolio now provides customers with ultrasonic sensors for virtually every application

The miniature sensors in M8 and M12 housings are made from a single unit and offer impressive performance with short blind zones

The Eco series in robust plastic housings is optimally suited for the price sensitive OEM business

if this check is positive, is the bottle or tube provided with a stopper. The M8 miniature ultrasonic sensor is therefore optimally suited for applications in the pharmaceutical or cosmetic sector.

Tool control with miniature ultrasonic sensors
Turck's RU20U-M12 and RU40U-M12 miniature ultrasonic sensors are suitable for near field applications. The sensors are also suitable for controlling tools, such as for checking drills in a machining center. The M12 ultrasonic sensors can monitor whether the drill is still present. This makes it possible to determine defects early on in order to prevent rejects.

Ultrasonic sensors for the OEM business: RU50-Eco
Turck's RU50U Eco series consists of a plastic threaded barrel and is therefore ideal for price sensitive OEM projects. The sensors are made of highly resistant liquid crystal polymer (LCP), and the translucent end caps with an M12 connector output from Ultem. Both plastics have already proved their strength over long periods of use in other Turck products. The sensors of the RU50U Eco series are available with a switch output as well as with an analog voltage and current output signal. The customer can choose here between a variant with a connector output and one with a cable output. Turck is adding a total of 12 new types to its Eco series.

Benefits of RU50-Eco in conveyor belt applications
Retroreflective sensors are available for conveyor belt applications. These can be taught by the user to keep a fixed distance in relation to a reference object. The devices reliably detect all objects between the sensor and the reference point. The translucent end cap also offers the advantage of being able to detect the switching distance of the sensor from virtually any viewing angle. The RU50-Eco sensors are particularly suitable for intralogistics applications, since the Eco enables the drive rollers of the conveyor belts to be selectively controlled. This makes it possible to only operate the roller that is currently required. In this way, running the entire plant is unnecessary, thus saving energy and keeping roller wear to a minimum.

Author | Markus Bregulla is director product management for optical and ultrasonic sensors
Info | www.turck.com/ru
Webcode | more21871e

Operating principle

Ultrasonic sensors primarily operate using the time of flight measuring principle. The sensor emits a sonic pulse and receives the sound reflected back by objects. The time of flight between the emitted pulse and the received pulse enables ultrasonic sensors to be used not only for the discrete detection of objects, but also for measuring distances and for the output of an analog signal if required.

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