

elobau e

*creating
sustainable
solutions*



Ultrasonic sensors

Precise, versatile

The elobau ultrasonic range

The principle of ultrasonic technology is as simple as it is effective. High-frequency ultrasonic sound waves are emitted by the sensor, which are then reflected by the target object, and detected again by the sensor. The distance is then calculated from the elapsed time. This position can not only be used to measure distances, but also to determine the position of objects. This makes the ultrasonic sensor extremely versatile and can be used to suit the individual needs of the customer.

elobau ultrasonic sensors are the precise, versatile and reliable solution for every application. Both in industrial and challenging off-highway environments, the sensors are the ideal choice, thanks to the robust design of the housing. The contactless technology guarantees the precise detection of liquid, solid, granular or powdery substances - even in extreme environmental conditions. Vibrating sound converters help to prevent media from adhering to the sensor, so even in the event of precipitation, dust, smoke and extreme temperatures, data will be reliably delivered. With a measurement range of up to 8000 mm, the elobau ultrasonic sensors set the standard.

Fits everywhere. Three different cylindrical designs ensure effortless integration into every machine environment. In addition, the various operating modes of the sensors in combination with different analogue and digital outputs offer the right solution for nearly every possible application. Synchronisation and multiplexing serve to prevent crosstalk between the sensors, thereby guaranteeing trouble-free operation even in applications with limited installation space. Compliance with the ATEX guideline expands the already broad range of applications into the field of potentially explosive areas.

Keep it simple. Integrated LEDs help the user quickly detect the echo and switching state. The simple and fast configuration with IO-Link, teach-in button or wire saves time and costs.

IO-Link

elobau ultrasonic sensors are IO-Link compatible and, therefore, "Industry 4.0 ready".

IO-link makes it possible to drive digital networking and communicate from the control down to the lowest level of automation - the sensor level. IO-Link is a standardised and universal interface based on point-to-point connection that can communicate with all common fieldbuses. With simplified wiring, device diagnostics and a reduction in standstill times through simple configuration, automation can be designed even more efficiently with IO-Link. Use IO-Link and make your machines fit for the Internet of Things.



and reliable

U*18S ultrasonic sensor

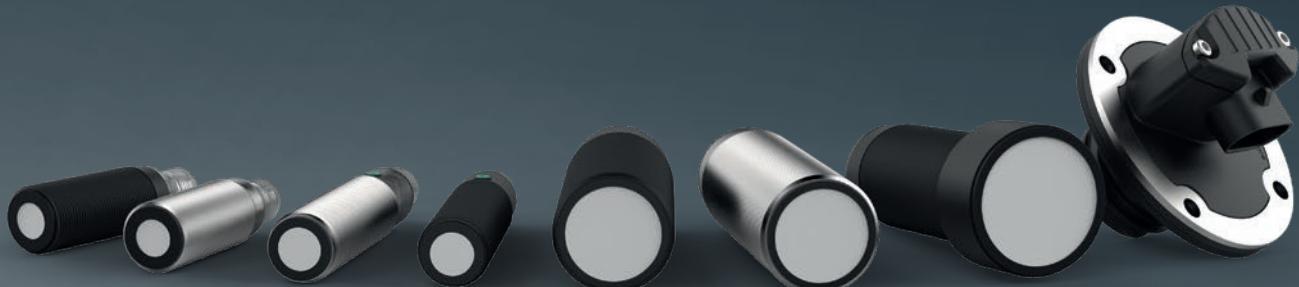
Thanks to the compact and robust design, the U*18S is the optimum solution for difficult application conditions. In combination with various output forms, the space-saving version offers flexibility for measuring and switching applications. In addition, this series can be used either as a diffuse reflection sensor or as a retro-reflective sensor.

U*18 ultrasonic sensor

Ultrasonic sensors of the U*18 series offer maximum functionality and precision, even under demanding conditions, including in potentially explosive environments. Two different housing materials, an operating range of up to 2.2 metres, four operating modes and various output forms leave no application unsolved. Simple configuration, either via teach-in button or IO-Link, also ensures high system availability. Synchronisation as well as multiplex mode ensures high process reliability even when operating multiple sensors simultaneously.

U*30 ultrasonic sensor

Thanks to high-performance electronics, the U*30 series is the ideal partner for wide-range detection of objects and filling heights of distances of up to 8 metres. Like all cylindrical designs from elobau, the sensors are temperature compensated to achieve high accuracy even in the case of temperature fluctuations. Available in stainless steel and plastic versions, the versatility of this sensor allows it to be used for a wide range of application requirements.



UDA18 ATEX ultrasonic sensor

UDA18 ATEX ultrasonic sensors have the same functions and features as the sensors of the U*18 series. They were, however, developed especially for use in areas potentially subject to gas or dust explosion. Their ATEX approval makes them suitable for use in the chemical and pharmaceutical industries as well as in systems that process oil and gas.

2UF ultrasonic sensor

This special version of the ultrasonic sensor is specially suited for reliably detecting the fill level of mobile machines. The extreme temperature range as well as the high protection class are essential for use in these applications. With the use of an optional focus tube, precise measurement of agitated media, or while on an incline, is also possible. In addition to mobile applications, stationary applications are also possible. The fill level is output via either a voltage or current output.

Flexible in function

DISTANCE MEASUREMENT

1 Detection of fill levels

Ultrasonic sensors are the ideal solution for reliably and precisely detecting the fill level of liquid and solid media in a container. Nearly every material can be detected with ultrasound, regardless of whether it has a glossy, matt or even transparent surface. The range of sensors available means they can be used in countless applications - with precise measurement of distances up to 8000 mm. The height of the fill level in a container can be detected through continuous measurement and output via either an analogue signal and/or via two switching signals.

2 Use on agricultural machinery

When cultivating farmland, ultrasonic sensors are used to conserve resources and protect machines. Mounted to the booms of sprayers, they detect unevenness in the ground and the different heights of plants that are in the growing phase. The boom can then maintain a constant distance, avoiding collisions with the ground and damage to the plants. This also ensures the optimum distribution of expensive plant protection products, allowing the operator to concentrate fully on controlling the machine.

Lateral attachment of the ultrasonic sensor to sprayer's reservoir container allows gaps to be detected between fruit trees on fruit farms. This ensures that plant protection products are applied only to trees and not sprayed in the gaps between them. Ultrasonic sensors thereby improve the efficiency of farmland cultivation, reduce stress on the environment and lower costs for the farmers.

With their high protection classes and operating range, ultrasonic sensors are ideally suited for outdoor use and in agricultural areas.



Suitable for every application



OBJECT DETECTION

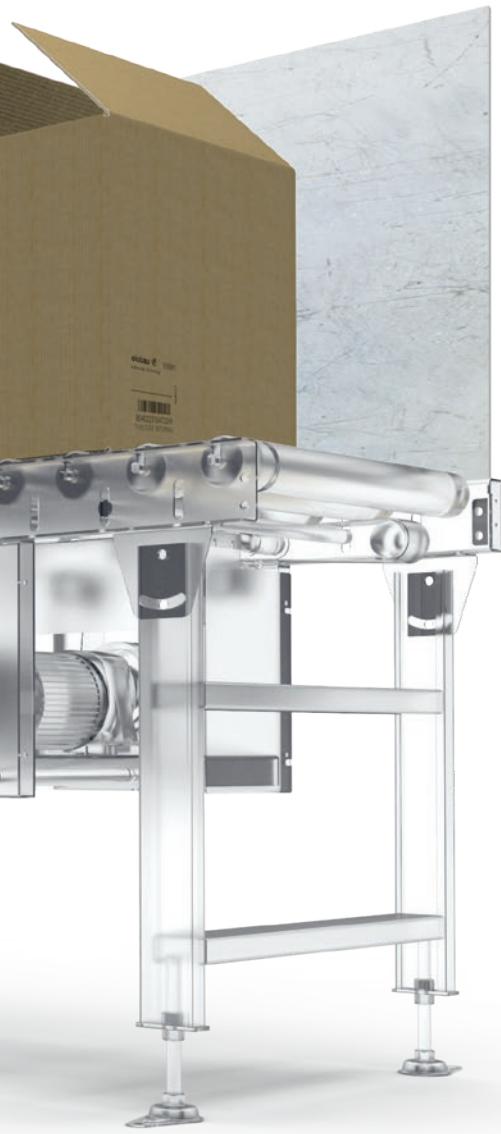
③ Counting objects

In the packaging industry, ultrasonic sensors are the perfect solution for reliably counting objects. With the use of a reference reflector, the retro-reflective mode of the ultrasonic sensor allows many types of objects to be reliably and quickly detected, whether they are sound absorbing or sound avoiding.

The reflector is ideally a plate with a smooth surface, made from a metal or plastic material. However, existing backgrounds such as walls, floors or conveyor belts can also be used as reflectors.

When counting objects, the presence of an object results in a slight deviation of the ultrasonic signal to the reference reflector. Each signal is then counted and a reliable count of the objects is reached.





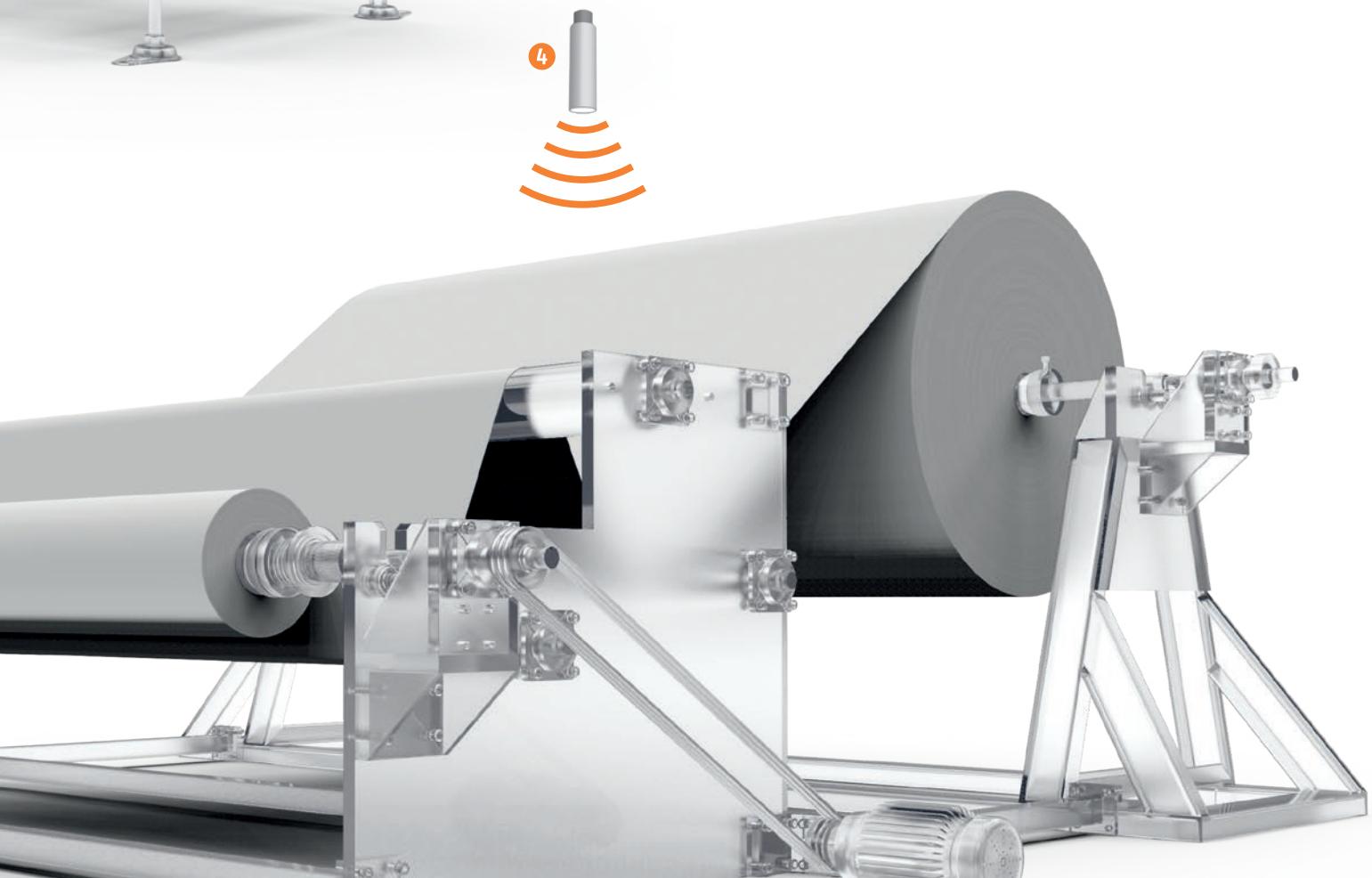
POSITION DETECTION

4 Monitoring of roll thickness

The smallest changes in the diameter of rolled materials can be detected with ultrasonic sensors. Even reflective and highly transparent media can be reliably detected. The advantages of using ultrasonic sensors over optical sensors are demonstrated here. Particularly with foils, metals and similar materials, optical sensors are pushed to their limits. Ultrasonic sensors however will effortlessly supply reliable measurement values, minimising system downtimes. Diameter detection with ultrasonic sensor is frequently used in the metalworking industry as well as in the textile, paper and plastics industries and in packaging machines.

5 Sag and tear monitoring

Ultrasonic sensors can not only be used to detect roll thickness, but are also ideal for monitoring the sag and identifying tears in the roll. The potential for serious damage to the material and the device is then avoided.



TECHNICAL DATA

	U*18S	U*18	U*30	UDA18 ATEX	2UF
Measurement range	40...300 mm 80...1200 mm	100...900 mm 200...2200 mm	250...3500 mm 350...6000 mm* 600...8000 mm*	100...900 mm 200...2200 mm	85 mm...1800 mm**
Operating modes	Retro-reflective sensor Diffuse reflection sensor	Retro-reflective sensor Diffuse reflection sensor	Retro-reflective sensor Diffuse reflection sensor	Diffuse reflection sensor	Diffuse reflection sensor
Outputs	Push-Pull/IO-Link NPN/PNP 4...20 mA 0...10 V	Push-Pull/IO-Link NPN/PNP 4...20 mA 0...10 V	Push-Pull/IO-Link NPN/PNP 4...20 mA 0...10 V	NPN / PNP 4...20 mA 0...10 V	4...20 mA 0,5...4,5 V
Operating voltage	10...30 V DC	10...30 V DC	10...30 V DC	10...30V DC	8...36 V DC
Adjustment option	Programming cable IO-Link	Teach-in button IO-Link	Teach-in button IO-Link	Teach-in button	-
Operating temperature	-20...+70 °C	-20...+70 °C	-20...+70 °C	-20...+50 °C	-40°C...+105°C
Housing material	DIN 1.4404 or PBT	DIN 1.4404 or PBT	DIN 1.4404 or PBT	DIN 1.4404 or PBT	PA12
Dimensions	M18x1 l = 60,3 mm	M18x1 L = 91,6 mm	M30x1,5 L = 98,9 mm	M18x1 L = 91,6 mm	4-hole flange Division: 4 x 90° Bolt circle: 65 mm Head height: 33,4 mm
Connection type	M12 4-pin connector	M12 4-pin connector	M12 4-pin connector	M12 4-pin connector	1.5 3-pole AMP Superseal
Protection class	IP67	IP67	IP67	IP67	IP 67
Approvals	CE cULus	CE cULus	CE cULus	CE cULus ATEX	CE
ATEX	-	-	-	Gas (EX) version: II 3G Ex nA IIC T6 Gc (zone 2) Dust (EX) version: II 3D Ex tc IIIB T60 °C Dc (Zone 22)	-
IO-Link	yes	yes	yes	-	-
Synchronisation	-	yes	yes	yes	-
Multiplex operation	-	yes	yes	yes	-
Temperature compensation	yes	yes	yes	yes	yes
Optional	Sound deflection	Sound deflection		Sound deflection	Focus tube

* only with the plastic version / ** dependent on temperature range, installation position and focus tube



elobau

The company

As an expanding, globally active, family-run foundation company with more than 800 employees, we develop and manufacture sensor technology and operator interface controls for the industrial machine and off highway vehicle sectors. Our high-quality products are characterised by a high vertical range of manufacture and are manufactured in a carbon-neutral manner in Germany. With our innovative, non-contact sensor products, we support our customers worldwide in manufacturing industrial machines and vehicles that set standards in terms of performance, operator comfort, safety and quality.

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