

## Ultrasonic sensors

New standards from Mayser.

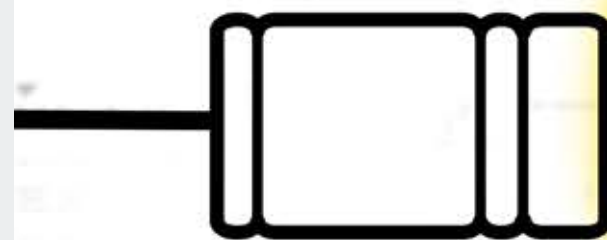
## The ultrasonic sensor family for every application

Environment, access and area monitoring via ultrasound is an ideal solution for non-touch detection of persons and objects, and for distance measurement. If a person or object is detected in the monitored field, an automatic movement (robot, AGVS, machine) can be slowed or stopped. Even the smallest objects are reliably detected across the entire distance, regardless of material, form, transparency and colour.

The ultrasound product family from Mayser offers different sensor variants depending on the application. With the ultrasonic safety, Mayser also offers the only sensor in the world that is certified for passenger safety.

First and foremost, the ultrasonic sensors are characterised by their flexibility and wide range of applications. Up to two freely positionable transducers can be attached spatially separated from the evaluation unit with minimal installation space. This ensures a high degree of flexibility for installation, and in defining the field to be detected.

The complex measurement methods of the ultrasonic sensors, consisting of echo running time measurement and echo amplitude measurement, enables non-touch measure of distances to objects, as well as non-touch object detection.



### Your benefits

- ✓ Non-touch monitoring of three-dimensional spaces
- ✓ Two very small ultrasonic transducers that can be positioned freely and separately from the electronics, and they will fit anywhere
- ✓ Reliably detects people but also objects made of various materials regardless of shape, transparency and colour
- ✓ Insensitive to contamination, extraneous sound, air flows and moisture, and thus suitable for ambient surveillance, collision protection or access control
- ✓ Detects virtually without blind zone in an elliptical sound field ( $\pm 17^\circ$ ,  $\pm 5^\circ$ ) up to a distance of 2.50 meters
- ✓ A teach-in function allows the system to learn the complete measuring environment

#### **Additional advantages of ultrasonic safety!**

- ✓ Dual-channel system for passenger safety
- ✓ Certified according to ISO 13849-1, Category 3 PL d
- ✓ Unique development in the ultrasonic field



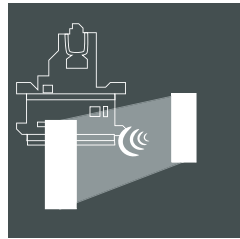
## Application areas

From production, to logistics,  
to the ramp...

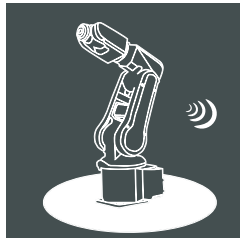
...ultrasonic sensors offer advantages for many application areas and are used in different industry environments as sensor or assistance systems, extending to passenger safety.



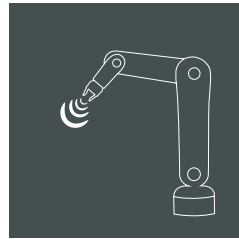
Currently ultrasonic safety is the only ultrasonic sensor system that is certified in accordance with EN ISO 13849-1, Category 3 PL d.



Access protection for machines



Environment detection for robots



Tool safety for cobot applications



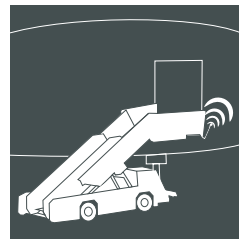
Route control, e.g. of AGVs/forklifts



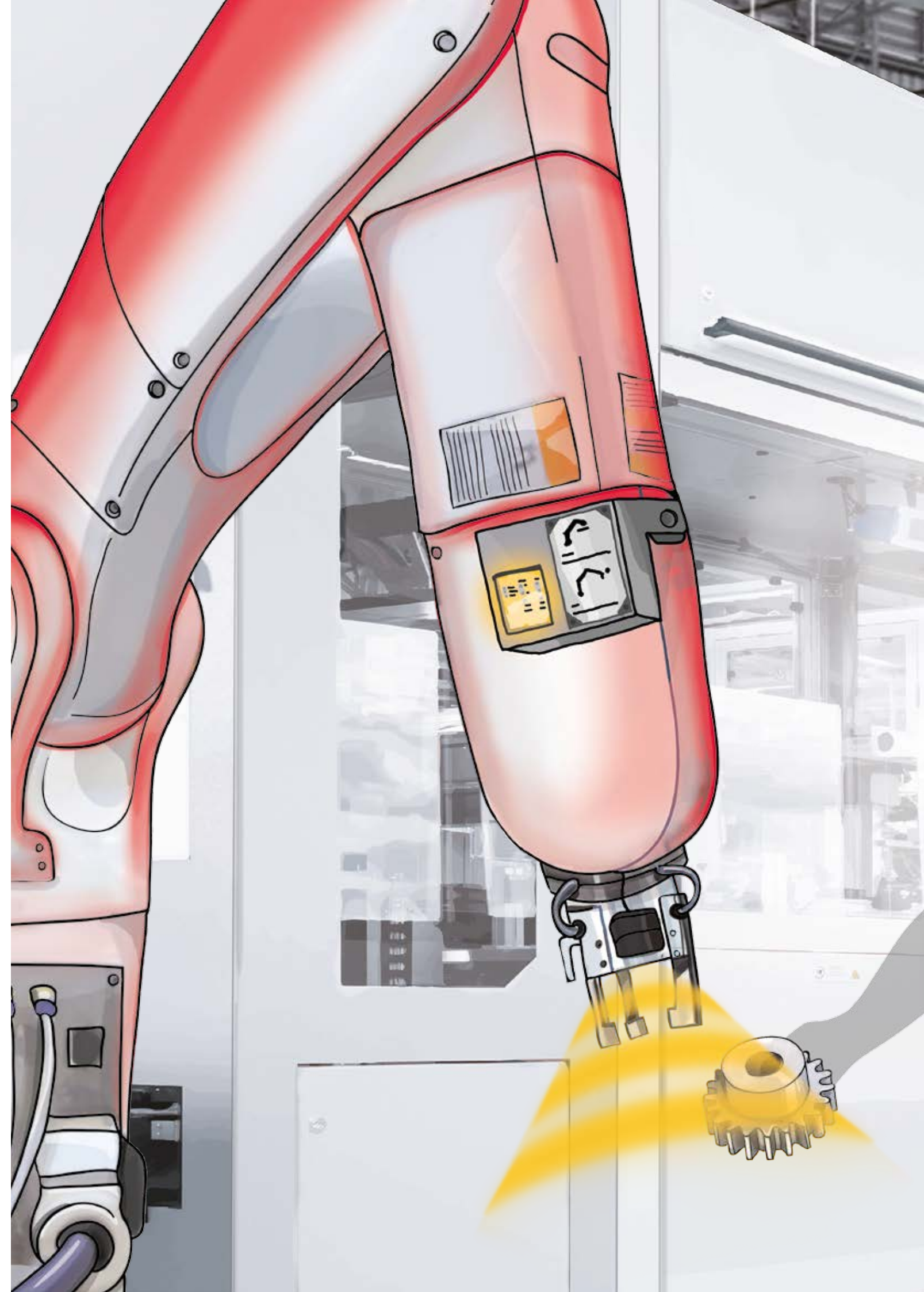
Heel protection for lift vehicles



Storage location monitoring in logistics applications



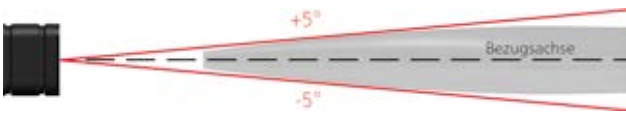
Distance check and collision protection for ground handling vehicles



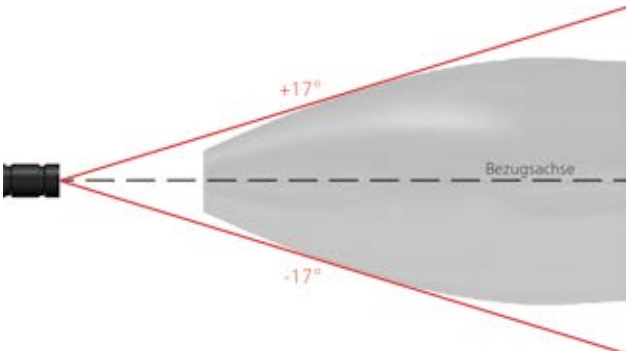
Technical Highlights

The ultrasonic transducer

- Extremely small with a high range
- Highly elliptical sound field
- Up to two ultrasonic transducers can be connected on one electronic circuit. Parameters can be assigned independently for each ultrasonic transducer.



Opening angle (-6 dB) broad side



Opening angle (-6 dB) narrow side


The USi parameter assignment software

- Intuitive operation
- Multilingual software
- Teach-in of the environment
- Real time presentation of the detection area for parameter assignment or diagnosis
- Expert mode available
- Multiple zone protection in visual representation



Interface of the ultrasonic safety software

Technical data

	Ultrasonic safety	Ultrasonic industrial sensor USi
		
Measuring principle	Ultrasonic pulse-echo method	Ultrasonic pulse-echo method
Applied standards	IEC 60947-5-2, IEC 60204-1	IEC 60947-5-2, IEC 60204-1
Safety category	EN ISO 13849 Category 3 PL d	
Operating temperature	-10 °C to +50 °C	-25 °C to +80 °C
IEC 60529: Degree of protection		
Evaluation unit	IP65	IP65
Sensor	IP69K	IP69K
Ultrasonic frequency	typ. 103 kHz	103 kHz
Sound field geometry	±17° / ±5°	±17° / ±5
Measurement frequency	33 Hz	typ. 20 Hz (2 – 250 Hz)
Response time	typ. 100 ms (for multiple scan 3)	typ. 150 ms (3 – 500 ms)
Measurement distance	typ. 200 cm	typ. 2000 mm (100 – 2500 mm)
Resolution	1 cm	1 mm
Connection type	M12 plug-in connector	M12 plug-in connector
Connecting voltage U <sub>s</sub>	DC 21 to 28 V	DC 15 to 30 V, reverse polarity protection
Input current	150 mA (evaluation unit with two ultrasonic transducers, with no output circuit)	typ. 80 mA (40 to 150 mA)
Power consumption	max. 3.6 W	max. 2.5 W (without load)
OSSD outputs as <b>safe outputs</b>	2 OSSDs per connected ultrasonic transducer results in 2 x 2 safe PNP semiconductor outputs, each with 150 mA, short-circuit-proof, cross-circuit monitored	
Outputs OUT as message outputs	1 output for each connected ultrasonic transducer, results in 2 x 1 PNP semiconductor outputs, each with 150 mA	USi-PP: 4x Power FET PNP USi-IP: 1x 4 to 20 mA 3x Power FET PNP USi-UP: 1x 0 to 10 V 3x Power FET PNP
Interface / software	USB 2.0	USB 2.0



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