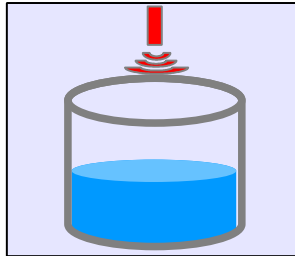


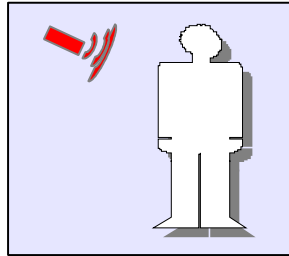
# ultrasonic sensor

## analog and switching

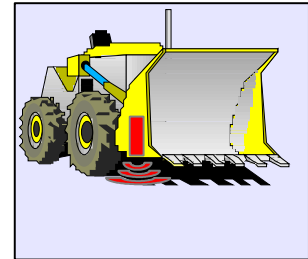
### selection of application fields



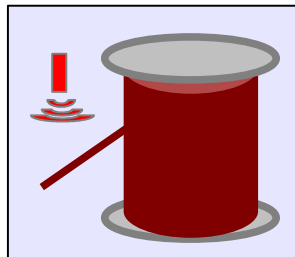
level detection



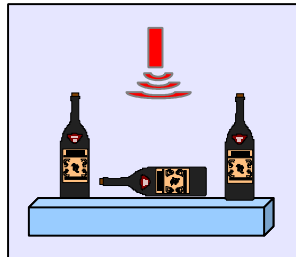
people detection



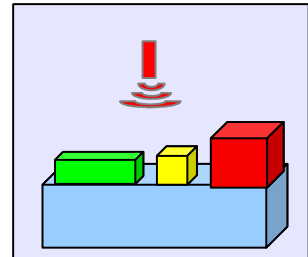
distance measurement



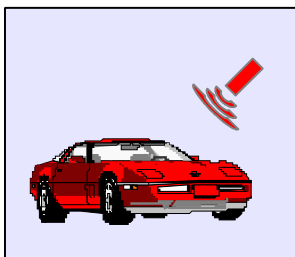
existence control



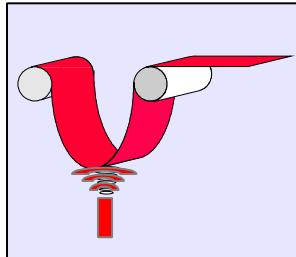
quality control



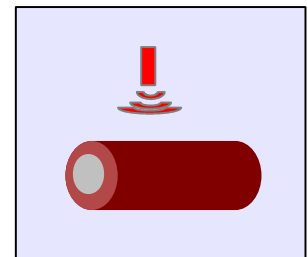
height measurement



parts detection



slope control



diameter measurement

#### Unique benefits

Ultrasonic sensors have unique advantages over conventional sensors:

- independent to target materials, surface and color,
- measures and detects distances to moving objects,
- detects small objects over long operating distances,
- works very well by dust, dirt or high-moisture environments,
- solid-state units have virtually unlimited, maintenance-free lifespan,
- resistant to external disturbances such as vibration, light, EMI radiation, ambient noise ...

**Method of operation**

“Measuring like a bat”. Bats use the ultrasonic principle for finding their way. They emit high frequency sounds and use the echoes reflected by the objects to reorganise their position and distance.

Our ultrasonic sensors use also ultrasonic principle of bats to send and receive sound waves. After being reflected from the object to be measured, the signals are received by sensors and decoded. The recorded time of flight is temperature compen-sated and converted to distance data.

**Characteristics:**

- sealing IP67
- easy handling
- big detection range
- short minimum distance
- independent to target material

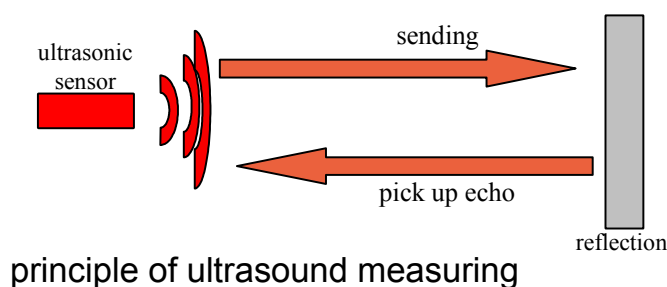
**Areas of use:**

The following list present some examples.

- level measurement of bulk storage and liquids in vessels;  
e.g.: water tanks, corn silos, oil container
- distance measurement of objects and parts in motion;  
e.g.: stop of machinery, crane action, collision control of lift track
- detection of moving objects made of all types of material;  
e.g.: metal, plastic, glass on conveyer band
- presence detection of objects and people;  
e.g.: occupied parking place in parking garage, door opener
- safety control of objects and people;  
e.g.: danger area of machinery, door control, alarm system
- completeness check of objects;  
e.g.: products in packaging box, level of oil in oil barrel
- winding and unwinding control;  
e.g.: coils in the paper and textile industries, steel-plate coils



**safety instructions**  
 arteos ultrasonic sensors may not be used in applications, with which persons can be endangered or injured.  
 It may not be used as emergency stop switches at plants and machines or within other safety-relevant ranges.



Our current product overview. For further details please see our website [www.arteos.com](http://www.arteos.com). We are constantly expanding our product offerings.

version	economic	customized		supreme
model	UL10-Pxx-Exx	UL20-Cxxx-xx	UL21-Cxxx-xx	UL30-Pxx
type of measurement	analog distance measuring	analog distance measuring	analog edge measuring	analog distance measuring or switching
Sensing distance / Reichweite 1)	300 ... 4.000 mm	150 ... 4.000 mm	from ±3 mm up to ±50 mm	150 ... 4.000 mm
Blind zone / Blindzone	300 mm	150 ... 300 mm	150 ... 300 mm	150 ... 300 mm
max. Resolution / max. Auflösung	< 1 mm	0,1 mm	0,1 mm	0,1 mm
Repeatability / Wiederholgenauigkeit	0,5%	0,4 % / 2mm	0,4 % / 2mm	0,4 % / 2mm
linearity / Linearität	0,1 mm	0,5 % / 3 mm	0,1 mm	0,5 % / 3 mm
adjustment / Einstellung	distance range with teach in	by arteos after laboratory tests	by arteos after laboratory tests	programmable with external PC
Temparture compensation / Temperaturkompensation	yes	yes	yes	yes
housing material / Gehäusematerial 2)	P01	P01	P01	P01
		P02	P02	P03
		P03	P03	
Output / Ausgang	E01: 0 ... 10 V	0 ... 5 V	0 ... 5 V	0 ... 5 V
	E02: 4 ... 20 mA	0 ... 10 V	0 ... 10 V	0 ... 10 V
		0 ... 20 mA	0 ... 20 mA	0 ... 20 mA
		4 ... 20 mA	4 ... 20 mA	4 ... 20 mA
				1x pnp, 20 mA
specific feature / Besonderheit	our low-cost sensor for various applications	storage at arteos; short delivery time	storage at arteos; short delivery time	programmable with different settings

reasonable modifications due to technical changes / zumutbare Änderungen aufgrund technischer Veränderungen vorbehalten

1) The minimum and maximum ranges are highly dependent on the reflection properties of each material dependent. Sound-absorbing materials can reduce the maximum range of the ultrasonic signal significantly. / Die minimalen und maximalen Reichweiten sind stark von den Reflexionseigenschaften der jeweiligen Materialien abhängig. Schallabsorbierende Materialien können die maximale Reichweite des Ultraschallsignal erheblich vermindern.

2) the dimension of housing see the detail flyers on arteos homepage / Die Abmessungen der Gehäuse sind den Detail-Flyer auf der arteos homepage zu entnehmen.

P01: plastic, 30 mm Ø

P02: Aluminum die casting, square

P03: stainless steel, 30 mm Ø



P01



P02



P03

Ultrasonic sensors are a cost effective sensing method with unique properties not possessed by other sensing technologies. By using a wide variety of ultrasonic transducers and several different frequency ranges, an ultrasonic sensor can be designed to solve many application problems that are cost prohibitive or simply cannot be solved by other sensors.

Long range detection: In industrial sensing, more and more applications require detection over distance. Ultrasonic sensors detect over long ranges, while limit switches and inductive sensors do not.

Broad area detection: While some photo electric sensors can detect over long distances they lack the ability to detect over a wide area without using a large number of sensors. The advantage of ultrasonic sensors is that both wide and narrow areas can be covered. All it takes is the proper ultrasonic transducer selection.

Widest range of target materials: Only ultrasonic sensors are impervious to target material composition. The target material can be clear, solid, liquid, porous, soft, wood and any color because all can be detected.

Non contact distance measuring: Because sound can be timed from when it leaves the transducer to when it returns, distance measuring is easy and accurate up to 0,1 mm.

