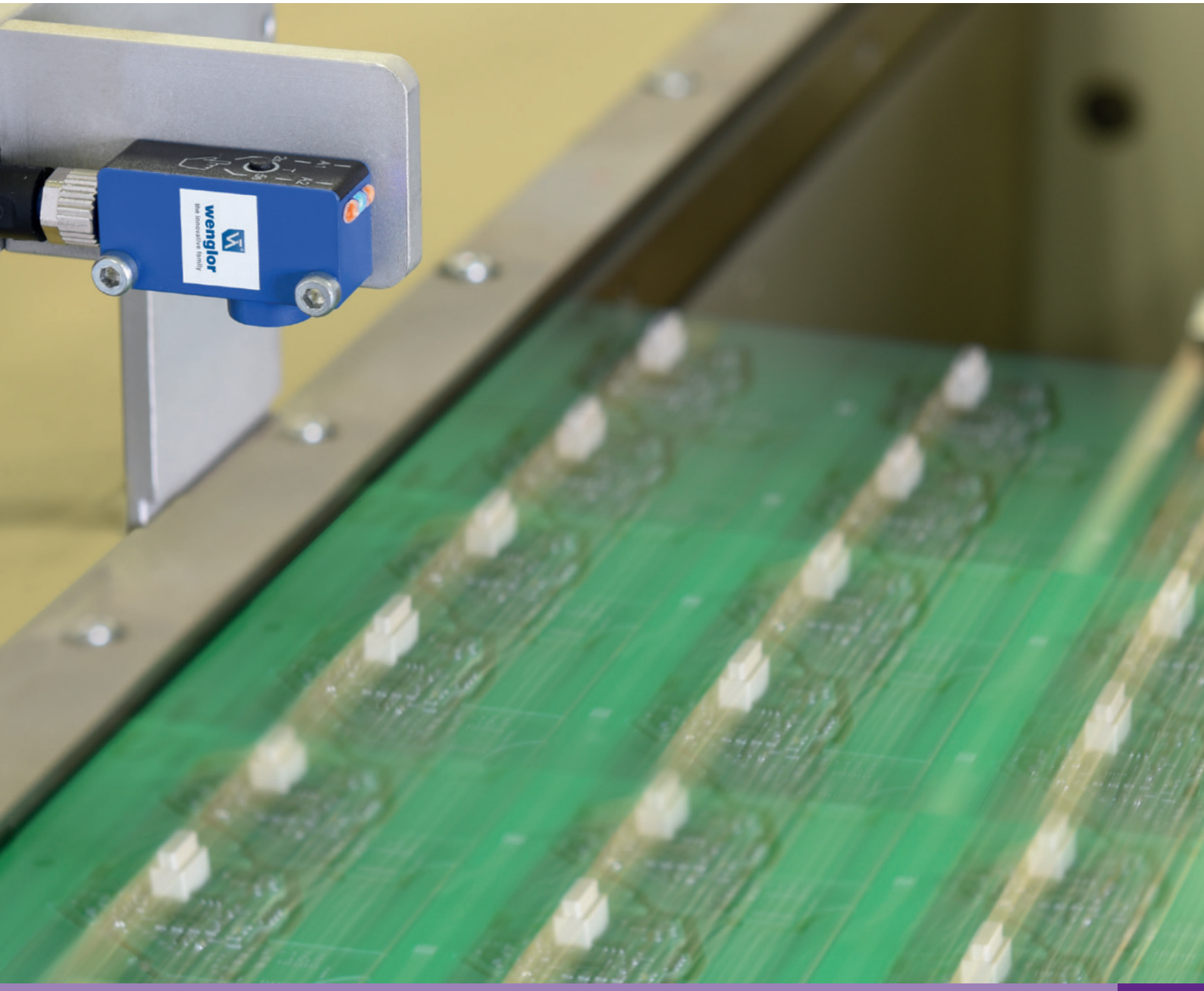
wenglor
the innovative family

Ultra-small. Ultra-smart. Ultrasonic.

Object Detection in any Environment with Ultrasonic Sensors



Ultra-**small**. The **U1KT001** Reflex Sensor.

No larger than the enter key on a PC keyboard, the U1KT001 ultrasonic reflex sensor is distinguished by a range of 400 millimeters. Two independent switching outputs can be taught in via teach-in or IO-Link in order to detect liquids, as well as dark, transparent or reflective objects at any two switching points. These make it possible to precisely monitor minimum and maximum values when measuring fill-levels, distances and stack heights – even where interference factors prevail such as ambient light, fog or dust.

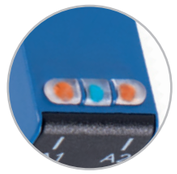
Mode of Operation of Ultrasonic Sensors
The mode of operation of ultrasonic sensors is based on high-frequency ultrasonic pulses which are reflected by the respective objects. The distance to the object is precisely measured by ascertaining the transit time of the received ultrasonic waves. Sonic cone, switching points and switching window can all be flexibly adjusted.

- 2 independent, digital switching outputs
- Measuring range: 30 to 400 mm
- Miniature housing format: 32 × 16 × 12 mm
- Latest IO-Link version: 1.1
- Outstanding protection: IP68
- Temperature range: −30 to +60° C
- Synchronous and through-beam modes

Intelligent Interface
The sensor's parameters can be conveniently configured and diagnostics data can be read out via the **IO-Link** interface. Thanks to the data storage function, saved settings can be easily duplicated at other sensors.

Intuitive Teach-In
The **two switching outputs** can be set up in just a few seconds – even without any product knowledge – with the help of the intuitive teach-in instructions on the back of the sensor. A lock function for the teach-in key prevents inadvertent changes to the settings.

Precision Measuring
The U1KT001 ultrasonic reflex sensor is equipped with integrated temperature compensation which offsets fluctuating ambient temperatures in order to assure **constant measured values**.



Visible LEDs
LEDs, visible all the way around, indicate the **status** of voltage supply and the two digital **switching outputs**. The second sensor output can be used alternatively as an error output.

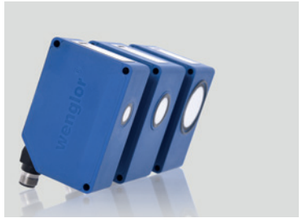
Ultra-**rugged**. Ultra-**accurate**.

Distance Sensors and Reflex Sensors with Analog Output

Ultrasonic sensors with analog output, or for distance measurements, round out wenglor's product range. Reflex sensors with analog output are equipped with a high quality stainless steel housing (IP67) which protects them against mechanical influences and even the harshest conditions, for example in the woodworking industry. High-performance distance sensors are distinguished by precise measured values and a large range of up to six meters for fill-level and distance measurements.

Reflex sensors with analog output:

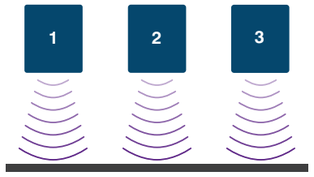
- Measuring ranges: 50 to 3000 mm
- Digital and analog output (0…10 V/4…20 mA)
- Stainless steel housing with IP67 protection
- Synchronous and multiplex modes
- Integrated temperature compensation
- IO-Link 1.0



High-performance distance sensors:

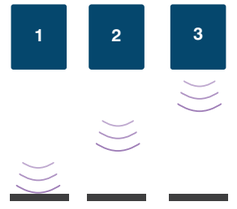
- Large range with measuring ranges from 100 to 6000 mm
- 2 digital outputs and 1 analog output, (0…10 V/4…20 mA)
- Graphic display
- Synchronous and multiplex modes
- Integrated temperature compensation
- IO-Link 1.0

Selectable **Operating Modes** for Ultrasonic Sensors



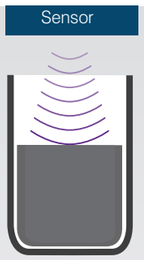
Ultrasonic sensors operated in the **synchronous mode** emit their ultrasonic pulses simultaneously. This makes it possible to detect one or more objects on a large surface. Up to **40 sensors** can be used at the same time in the synchronous mode in a single application.

In the **multiplex mode**, ultrasonic sensors emit their pulses alternately. This operating mode prevents sensors located in direct proximity to each other from interfering with one another. Up to **16 sensors** can be operated in the multiplex mode in a single application.

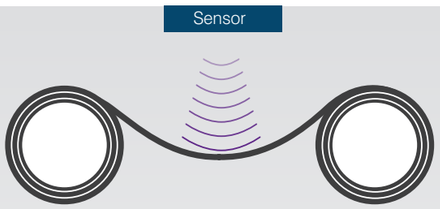


In the **through-beam mode**, two U1KT001 sensors, set up as emitter (1) and receiver (2), are located directly opposite one another or arranged at an angle to each other. The sensors cover a larger working range and reach a higher switching frequency in this operating mode.

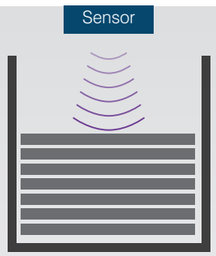
Ultrasonic Sensors in **Action**



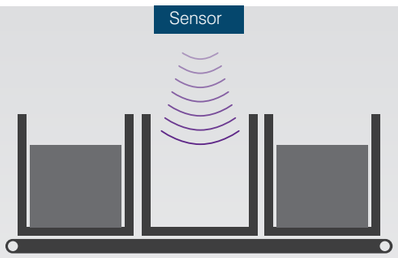
Fill-Level Measurement
Ultrasonic sensors are ideally suited for fill-level measurements involving liquids and bulk materials.



Slack Monitoring
In the case of slack monitoring, ultrasonic sensors regulate the feeding of material to the machine by measuring loop depth. In the through-beam mode, ultrasonic sensors can inspect the material for tearing.



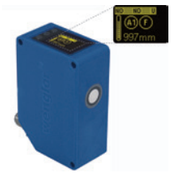
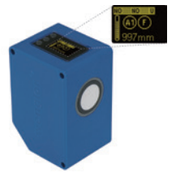
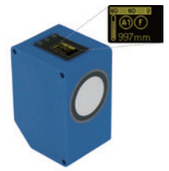
Measuring Stack Height
Ultrasonic sensors check stack heights of stock materials, in order to assure that minimum and maximum heights are not exceeded or fallen short of. In the multiplex mode, several stacks can be monitored by sensors located directly next to each other.



Checking for Presence
When checking for presence, ultrasonic sensors detect objects regardless of material, color and surface characteristics. In the synchronous mode it's possible to detect the presence of large objects such as stone slabs and wooden boards over the entire surface area.

Product Overview

wenglor Ultrasonic Sensors

	Cylindrical Housing				Cubic Housing			
	UMD402U035	UMD123U035	UMF402U035	UMF303U035	U1KT001	UMS123U035	UMS303U035	UMS603U035
								
Working range	50…400 mm	100…1 200 mm	50…400 mm	200…3 000 mm	30…400 mm (reflex mode) 1…800 mm (through-beam mode)	100…1 200 mm	200…3 000 mm	300…6 000 mm
Resolution	0.1 mm	0.2 mm	0.1 mm	0.3 mm	0.5 mm	0.2 mm	0.3 mm	1 mm
Switching hysteresis	2 mm	10 mm	2 mm	30 mm	1% *	5 mm	15 mm	30 mm
Switching frequency	20 Hz	7 Hz	20 Hz	3 Hz	30 Hz (reflex mode) 70 Hz (through-beam mode)	7 Hz	3 Hz	1.5 Hz
Outputs	1 switching output and 1 analog output (0…10 V)	1 switching output and 1 analog output (0…10 V)	1 switching output and 1 analog output (0…10 V/4…20 mA)	1 switching output and 1 analog output (0…10 V/4…20 mA)	2 independent switching outputs	2 switching outputs and 1 analog output (0…10 V/4…20 mA)	2 switching outputs and 1 analog output (0…10 V/4…20 mA)	2 switching outputs and 1 analog output (0…10 V/4…20 mA)
Interface	IO-Link V1.0	IO-Link V1.0	IO-Link V1.0	IO-Link V1.0	IO-Link V1.1	IO-Link V1.0	IO-Link V1.0	IO-Link V1.0
Setting method	Teach-in	Teach-in	7-segment display	7-segment display	Teach-in	OLED display	OLED display	OLED display
Format	M18 thread	M18 thread	M30 thread	M30 thread	32 × 16 × 12 mm	55 × 81 × 30 mm	55 × 81 × 47 mm	55 × 81 × 47 mm
Connection	M12 × 1, 4/5-pin	M12 × 1, 4/5-pin	M12 × 1, 4/5-pin	M12 × 1, 4/5-pin	M8 × 1, 4-pin	M12 × 1, 4/5-pin	M12 × 1, 4/5-pin	M12 × 1, 4/5-pin
Temperature range	−25…60° C	−25…60° C	−25…60° C	−25…60° C	−30…60° C	−25…60° C	−25…60° C	−25…60° C
Degree of protection	IP67	IP67	IP67	IP67	IP68	IP67	IP67	IP67
Synchronous mode	Up to 40 sensors	Up to 40 sensors	Up to 40 sensors	Up to 40 sensors	Up to 40 sensors	Up to 40 sensors	Up to 40 sensors	Up to 40 sensors
Multiplex mode	No	No	Up to 16 sensors	Up to 16 sensors	No	Up to 16 sensors	Up to 16 sensors	Up to 16 sensors
Through-beam mode	No	No	No	No	Yes	No	No	No

Baffle Plates

Without focusing of the sonic cone	Z0021	Z0021	Z0023	Z0023
With focusing of the sonic cone	Z0022	Z0022	Z0024	Z0024

* Referring to the switching distance, at least 2 mm.

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More information concerning our products is available at:
www.wenglor.com