SICK.COM





PRODUCT OVERVIEW

UC4

Ultrasonic distance sensors

SICK Sensor Intelligence



ULTRASONIC DISTANCE SENSORS

UC4

Ultrasonic sensors for tight installation situations in cubic housings up to 250 mm

The UC4 ultrasonic sensor family combines state-of-the-art ultrasonic technology in a miniature housing. With reliable functionality in even difficult operating conditions, the UC4 is a real miniature all-rounder when it comes to demanding, specialized tasks such as detecting transparent objects or measuring the levels of fluids and bulk materials. Even in situations with high requirements for background suppression or contamination tolerance, the UC4 with switching, analog, or push-pull output with IO-Link has proven itself as the ideal choice. And to top it all off, the portfolio even includes variants with increased switching frequency for extremely fast applications.

UC4 AT A GLANCE

BENEFITS

- Mini housing allows for quick and easy integration, even in the most confined spaces
- Teach-in button for fast and easy commissioning
- Integrated temperature compensation ensures high measurement accuracy at all times for optimum process quality
- Various operating modes provide optimal application flexibility and solutions, which increase reliability and productivity
- Full mechanical compatibility to photoelectric sensors allows for the use of the suitable technology for every application without machine modification
- The sensor's immunity to optically difficult environment enables it to take accurate measurements even in dirty, dusty, humid, and foggy conditions

FEATURES

- Reliable measurement, regardless of material color, transparency, gloss, or ambient light
- Ultrasonic technology in a small housing
- Detection, measurement, and positioning with ultrasonic technology
- Variants with PNP/NPN digital output, analog output or push-pull output with IO-Link
- Teach-in button
- Precise background suppression
- Immune to dirt, dust, humidity, and fog

TECHNICAL DATA OVERVIEW

Measuring range	150 mm ... 13 mm
Repeatability	± 0.15 %
Resolution	≤ 0.1 mm
Response time	10 ms ... 24 ms
Output time	5 ms ... 8 ms
Switching frequency	30 Hz 100 Hz
Analog output	4 mA 20 mA 0 V 10 V
Digital Output	Push-pull: PNP/NPN PNP/NPN
Enclosure rating	IP65 IP67
Sending axis	Straight
Ambient temperature, operation	–25 °C ... +70 °C

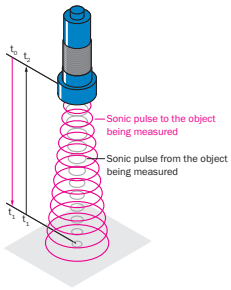
ADVANTAGES

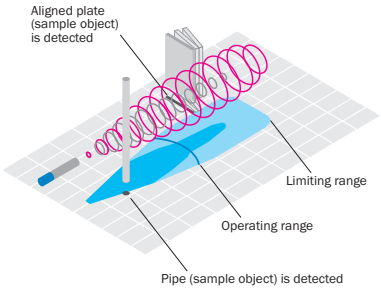


Virtually unlimited use – regardless of color, gloss, and transparency

SICK ultrasonic sensors perform measurement and detection tasks in a wide variety of application areas on colored, shiny, or transparent surfaces, which are particularly challenging for optical sensors. Even adverse ambient conditions such as dust, dirt, or fog hardly affect the measurement result. The broad detection range also allows for a large field to be monitored with just one sensor – with a measuring range of 13 mm to 8 m. No matter where they are: the ultrasonic sensors from SICK are at your side in any industry. The extensive product portfolio offers you a wide range of solutions for your application. See for yourself.

Find out more about the principle of operation of the ultrasonic sensors.





(Acoustic) time-of-flight measurement

The sensor emits an acoustic pulse that is reflected by the object being detected. The time required for the pulse to go from the sensor to the object and come back again is measured, evaluated and converted into the distance as follows.

Distance = speed of sound x total acoustic time of flight (t2) / 2

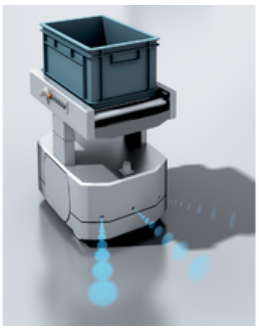
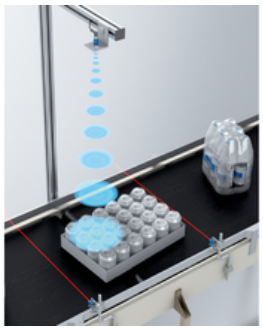
Scanning range of ultrasonic sensors

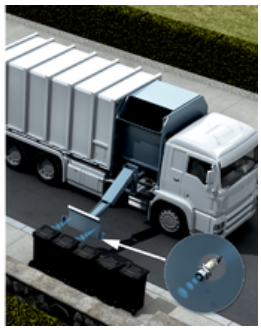
In general on ultrasonic sensors, the less sound the object being measured absorbs, the greater the possible scanning range. The operating range specifies the distance up to which measurement on common objects with sufficient operating reserves is possible. Under ideal conditions, the sensor can even be used up to its limiting range. Switch panels are used for ideal assessment of application capability. The dark blue area shown in these switch panels shows an example of the sensor's working range if a round rod is detected. The light blue area shows the maximum detection range (limiting range) which can be achieved under ideal conditions for easily detectable objects, such as the aligned plate given here. This area between the sensor and the measuring object should be kept free of other objects to prevent them from being detected accidentally. The detectability and detection range of an object depend on its reflective properties, size, and alignment. Depending on the application, the sensor may also be able to detect very small objects, e.g. metal wire.



Applications in focus

Ultrasonic sensors are true all-rounders. SICK ultrasonic sensors demonstrate their reliability and precision in virtually any application, from measuring distances or detecting solid, powdered, or liquid media. No matter the industry, no matter the application.

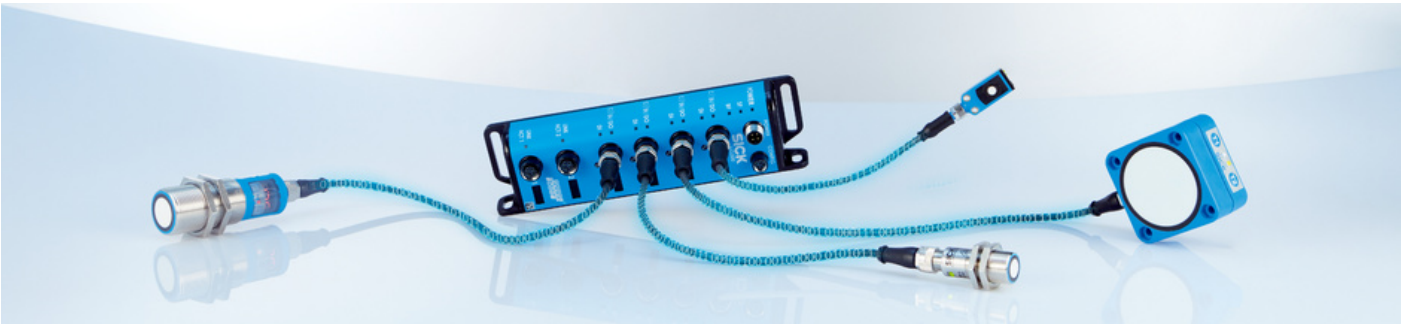






→ SICK ultrasonic sensors show their strengths in the contact-free detection of objects in all imaginable applications. These all-rounders reliably and precisely master all automation requirements on your processes.

IO-Link

As a co-founder of IO-Link, SICK offers one of the broadest IO-Link portfolios on the market. Smart Sensors with IO-Link generate and receive data and information which goes beyond conventional switching signals or measured process parameters.



Your advantages at a glance

- Sensor integration at fieldbus level offers integrated communication to increase system productivity
- Easy device replacement with automatic parameterization increases machine availability
- Interference-proof signal transmission increases system reliability
- Automatic sensor configuration according to the manufacturing process increases flexibility within the application
- Minimal cabling and use of unshielded cables reduces the cost of projects
- Visualization on a PC provides a clear overview of the sensor functionality, making it the optimal solution for your application
- Several diagnostic options, e.g. when signal strength decreases, to avoid downtime and to enable planning
- Automated electronic parts lists using device IDs simplify the documentation process, reducing associated costs

Speak to your contact person at SICK or click here.

→ IO-Link solves the problem of clearing those final hurdles in the communication chain by seamlessly integrating sensors into an automation network. This brings about new ways of increasing flexibility, reliability, and efficiency and can reduce the costs associated with your system.

SICK LifeTime Services

SICK's services increase machine and plant productivity, enhance the safety of people all over the world, provide a solid foundation for a sustainable business operation, and protect investment goods. In addition to its usual consulting services, SICK provides direct on-site support during the conceptual design and commissioning phases as well as during operation.
The range of services not only covers aspects like maintenance and inspection, but also includes performance checks as well as upgrades and retrofits. Modular or customized service contracts extend the service life of plants and therefore increase their availability. If faults occur or limit values are exceeded, these are detected at all times by the corresponding sensors and systems.



Consulting and design
Application-specific advice on the product, its integration and the application itself.



Commissioning and maintenance
Application-optimized and sustainable – thanks to professional commissioning and maintenance by a trained SICK service technician.



Service contracts
Extended warranty, SICK Remote Service, 24-hour helpdesk, maintenance, availability guarantees and other modular components can be individually combined on request.

Select the right product variant and accessories directly online. There you will also find example applications as well as downloads such as CAD dimensional models, operating instructions and software.
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SICK AT A GLANCE

SICK is a leading global technology company for intelligent sensors and integrated solutions in industrial automation. Our technologies set benchmarks, making your industrial processes more efficient, safer and more sustainable – both in logistics and manufacturing operations.

SICK combines sensor intelligence with industry expertise and certified consulting services. We provide the ideal foundation for scalable as well as tailor-made automation solutions and create added value along the entire value chain. Our close partnership with our customers is more than just a promise: Together, we optimize productivity, elevate quality, protect health and safety, and sustain the future. All with empathy and trust.

Since 1946, we have been developing innovative technologies with passion and a pioneering spirit. With a global network in around 40 countries, SICK has a global presence and is always close by. The company's headquarters are located in Waldkirch near Freiburg, Germany. Our customers benefit from our understanding of both local and global requirements, which enables us to deliver tailor-made solutions.

SICK

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