



Distance Measurement

From micron to mile – SICK covers the distance

SICK

Different operating principles – adapted to your application

Our distance sensors measure distances in difficult conditions with high precision – at distances that range from more than a mile down to a micron.

OPTIC SENSORS

Send light, gain information.

Optic sensors measure distances using time-of-flight measurement or geometric triangulation with lasers or LEDs that use red or infrared light. These non-contact sensors are incredibly versatile, measuring the widest range of distances and any shape using a highly controlled light spot.

ULTRASONIC SENSORS

Measure distances to objects – independent of their color.

Ultrasonic sensors offer non-contact distance measurement by comparing an emitted ultrasonic wave to the wave returned after hitting the target. The measurement is independent of the material color; even transparent foils, bottles and glass can be precisely measured.

Ultrasonic sensors have been used with great success in detecting transparent targets. Their large detection area is also perfect for measuring the distance of targets with non-uniform surfaces such as perforated materials, or wire mesh.

WIRE DRAW ENCODERS

This combination of rotary encoder and wiredraw mechanism converts linear movement to a measurable encoder signal. This mechanical measurement technology is perfect for use in hostile environments and applications that do not have a linear movement.

LINEAR ENCODERS

A non-contact read head travels over a magnetic measuring element and provides a readable output of the linear distance traveled. This technology offers the longest sensing range, incredible resolution, and is nearly impervious to any environmental conditions.



Not a matter of distance, but of better technology

Products from SICK offer the highest degree of measurement accuracy at short and long distances, ensuring precise and reliable production processes. To accomplish this, our distance measurement sensors draw from the many advantages gained by measuring objects with light, sound waves or encoders. You can easily and precisely detect product presence, distance, size, fill level, or other dimensions using distance sensors from SICK.

From micron to mile

SICK offers the most distance measurement sensors in the industry. From micron to mile – SICK has a solution. Determining which sensor best fits your application depends on the distance that needs to be measured, how precisely it needs to be measured, and the application environment.

A global player in sensor technology

SICK has 60 years of expertise in sensor technology and employs more than 4,000 people in more than 20 countries. SICK is one of the leading sensor manufacturers in the world today. We are not only a component supplier, but also an experienced system partner for large projects in almost all branches of industry. In collaboration with customers, SICK works continually on innovative product ideas and new, future-oriented equipment technologies.



Laser Distance Family Product Selection

Proximity Sensors

						
	OD	ODMAX	DT2	DT10	DT20	WTA24
Sensing Range	20...400 mm	25...450 mm	50...300 mm	50...500 mm	90...1000 mm	100...1200 mm
Light Source	Red Laser or Red LED	Red Laser	IR LED	Red LED	IR LED	IR
Output						
Switching ²⁾ (quantity)	1	5	—	1	1	2
Serial	—	RS232	—	—	—	—
Analog	Yes	Yes ⁶⁾	Yes	Yes	Yes	Yes
SSI No	—	—	—	—	—	—
Profibus	—	—	—	—	—	—
DeviceNet	—	—	—	—	—	—
HTL/TTL	—	—	—	—	—	—
HIPERFACE	—	—	—	—	—	—
Resolution	1 µm	1 µm	1 mm	<1.5 mm	1 mm	5 mm
Accuracy	±1%	±1%	±8%	±3 mm	±4 mm	5 mm
Repeatability	—	3 µm	3%	3 mm	±1.5 mm	0.5 mm
Operating Temperature⁴⁾	14...104 °F (-10...40 °C)	14...113 °F (-10...45 °C)	14...113 °F (-10...45 °C)	-13...122 °F (-25...50 °C)	-13...131 °F (-25...55 °C)	-13...131 °F (-25...55 °C)

1) Values of product series; refer to data sheet for specific models
2) Without heating/cooling accessories

3) NPN and/or PNP
4) Sk-20 is an optional SSI to analog converter
5) Linearity









6) 4...20 mA and 10 V options
7) TTL only
8) 12 bit



OD measuring product displacement during production.



DT500 measuring the position of a foam pad for precise assembly.

							
DT60	DS60 PROX	DME2000	DT200	DME 3000 PROX	DT500	DMT	DS60 REFLEX
200...5300 mm	100...6000 mm	100...2000 mm	100...2000 mm	100...8000 mm	0.2...30+ m	0.5...155 m	0.1...20 m
Red Laser	Red and IR Laser	Red Laser	Red Laser	Red Laser	Red Laser	IR Laser	IR Laser
1	2	2	0	2	2	2	2
–	–	RS 232	–	RS422	RS422	RS232, RS422	–
Yes	–	Yes	Yes	SK-20 ³⁾	Yes	Yes	–
–	–	–	–	Yes	–	–	–
–	–	–	–	Yes	–	Yes	–
–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–
1.5 mm typ ⁸⁾	–	1 mm	1 mm	0.125 mm	1 mm	1 mm	–
±10 mm	–	±5 mm	±5 mm	±5 mm	±3 mm	±10 mm	–
±8 mm	–	1 mm	1 mm	0.5 mm	1 mm	7 mm	–
-13...122 °F (-25...50 °C)	-13...122 °F (-25...50 °C)	14...113 °F (-10...45 °C)	14...113 °F (-10...45 °C)	14...113 °F (-10...45 °C)	-40...122 °F (-40...50 °C)	32...104 °F (0...40 °C)	-13...122 °F (-25...50 °C)



DME, DS60, ISD and other photoelectric sensors in an AS/RS application.



DME measuring the distance of a rail car in a steel mill.

Reflex Sensors

Encoders



DL60	DME2000 REFLEX	DME3000 REFLEX	DME5000	DML	BTF/PRF	BKS/PKS	KH53
0.3...24 m	0.1...130 m	0.1...500 m	0.15...150 m	0.5...600 m	0...50 m	0...5 m	0...1.7 km
Red Laser	Red Laser	Red Laser	Red Laser	IR Laser	Wire Draw	Wire Draw	Magnetic
1	2	2	2	2	—	—	—
—	RS232	RS422	RS422	RS232, RS422	—	—	RS485
—	Yes	SK-20 ³⁾	SK-20 ³⁾	Yes	—	—	—
—	—	Yes	Yes	No	Yes	Yes	Yes
—	—	Yes	Yes	Yes	Yes	—	Yes
—	—	—	Yes	No	Yes	—	—
—	—	—	—	—	Yes	Yes	—
—	—	—	—	—	—	—	—
1.5 mm typ ⁵⁾	1 mm	0.125 mm	0.05 mm	1 mm	0.025 mm	0.05 mm	0.1 mm
±15 mm	+5/-20 mm	±5 mm	±2 mm	±10 mm	0.05 mm ⁵⁾	0.7 mm	
±7 mm	2 mm	0.5 mm	0.5 mm	6 mm	±0.025 mm	±2.1 mm	±0.3 mm
-13...122 °F (-25...55 °C)	14...113 °F (-10...45 °C)	14...113 °F (-10...45 °C)	-40...122 °F (-40...50 °C)	32...104 °F (0...40 °C)	4...158 °F (-20...70 °C)	14...158 °F (-10...70 °C)	4...140 °F (32...158 °C)



BTF Wire-Draw Encoders for fork height detection. DS60 for load detection on AGVs.



KH53 Linear Encoders used for precise measurement in long range outdoor applications.

Ultrasonic Sensors



UM 30	UM 18	UC 12
30...6000 mm	30...250 mm	20...250 mm
Ultrasonic	Ultrasonic	Ultrasonic
2	2	1
–	–	–
Yes	Yes	No
–	–	–
–	–	–
–	–	–
–	–	–
0.36 mm	0.36 mm	0.18 mm
2%	2%	2%
0.15%	0.15%	0.15%
4...158 °F (-20...70 °C)	4...158 °F (-20...70 °C)	4...158 °F (-20...70 °C)



UM18/30 Ultrasonic Sensor measuring clear perforated web.

RANGE OF EXPERTISE

INDUSTRIAL SENSORS

SICK is one of the world's leading manufacturers of sensors, safety systems, and automatic identification products for industrial applications. SICK holds more than 450 patents for its innovative products. Through its Industrial Sensors, Safety Systems, Automatic Identification, and Environmental and Process Analysis divisions, the company has operations in 65 countries. SICK North America is headquartered in Minneapolis, MN.



SAFETY SYSTEMS

Products from SICK provide comprehensive safeguarding of both workers and machinery. As experts in sensor technology, SICK develops and manufactures pioneering products that provide protection in hazardous zones, dangerous locations and for safeguarding access points. By providing services, which encompass all aspects of machine safety and security, SICK is setting new standards in safety technology.



AUTOMATIC IDENTIFICATION

Our wide range of sensors provides solutions to suit any application in the field of automation. Even under rugged ambient conditions, objects are reliably detected, counted and positioned regardless of their form, location and surface finish.



ANALYZERS AND PROCESS INSTRUMENTATION

Whether the tasks involve identification, handling, classification or volume measurement, innovative automatic identification systems and laser measurement systems from SICK function reliably, even under rapid cycle times. Products from SICK conform to the latest standards and can be easily integrated in all industrial environments and external applications.



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