

SENPUM

Let the value of automation serve the world
Committed to building a first-class global industrial brand

Company Introduction

Company Profile

SENPU M Proprietary Information - Do Not Disclose



National High-tech Enterprise and Shenzhen High-tech Enterprise.



A technology-driven enterprise focusing on the R&D and production of factory automation sensor products.



SENPU M has introduced overseas high-level talents under the "Peacock Plan", and its R&D team consists of **70+** members with a bachelor's degree or above (as of March 2026).



Technical Cooperation Institutions: The Hong Kong Polytechnic University, Harbin Institute of Technology, Northeastern University, Shenzhen University.



Continuously making inventions and innovations in the fields of hardware, software, structure, algorithm, and optics.



80 high-quality technical patents and software copyrights.



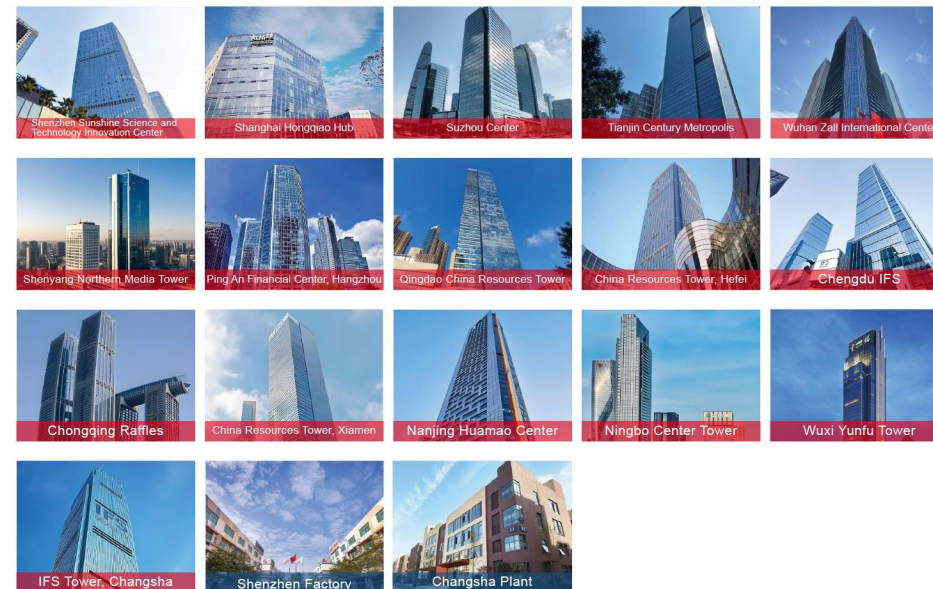
There are **30** series of products directly benchmarked against international brands.



There are **27** series and more than **400** types of products that have passed the CE certification.

Date of Establishment: September 18, 2016

Total Number of Employees: **400+**



**We hope that through perseverance,
the value of automation can serve the world!**

SENPU M is committed to the development and service of automation sensors and other products, and hopes that through persistence, the value of automation can better serve the world!

SENPU M insists on providing customers with high-quality, high-performance, high-value-added sensor solutions to change the future for the betterment of mankind!

SENPUM's Business Locations (Domestic)

Service coverage of Shenzhen headquarters: Guangdong, Guangxi, Sichuan, Chongqing, Guizhou, Yunnan, Tibet, Hainan and other provinces.

Scope of Services for Suzhou Office: Zhejiang, Jiangsu, Anhui and other provinces

Scope of Services for Shanghai Office: Shanghai and other provinces

Tianjin Office: Shanxi, Shandong, Tianjin, Hebei, Beijing, Inner Mongolia and other provinces

Wuhan Office: Hubei, Hunan, Jiangxi, Shaanxi, Xinjiang, Gansu, Qinghai, Ningxia and other provinces

Shenyang Office: Heilongjiang, Jilin, Liaoning and other provinces

Wuxi Office: Henan, Hebei and other provinces

Hangzhou Office: Jiangxi, Fujian and other provinces

Qingdao Office: Shandong, Liaoning and other provinces

Hefei Office: Jiangxi, Jiangsu and other provinces

Chengdu Office: Tibet and other provinces

Chongqing Office: Guizhou and other provinces

Ningbo Office: Fujian and other provinces

Xiamen Office: Taiwan, Fujian and other provinces

Changsha Office: Jiangxi, Hubei and other provinces

Nanjing Office: Guizhou and other provinces

Regional Offices in Major Provincial Capitals (2025–2026)



As an advanced technology company, we support our customers in a wide range of industries.

Number of clients transacted
in the last three years

40+%

advance

Sales have been maintained
for the last three years

high speed

advance



AUTHORITATIVE CERTIFICATION

All our products are certified by authoritative organizations,
and the quality is guaranteed



Total customers **28000+**

Lithium-ion battery, automobile, 3C, liquid crystal, machine tool, etc.

More than **88,000** total customers

Clients **5000+**

20+ Industry Applications

Lithium-ion battery, automobile, 3C, liquid crystal, machine tool, etc.

More than **70+** R&D staff

More than **80** patents and software works, **15** invention authorizations.

Pre-A / A / A+ Series Financing

Received RMB 100 million in Pre-A / A / A+ round financing from Shenzhen Gaoxin Investment and Zhongding Investment.

Clients' industries 1

SENPUM Proprietary Information - Do Not Disclose

E-mobility

CATL
宁德时代

BYD

吉阳智能
GEESUN INTELLIGENCE

速博达
SUPERSTAR

NAKHO
纳科信尔

雅康
ARECONN

LEAD
先导

大族激光
HAN'S LASER

赢合科技
YINGHE TECHNOLOGY

SUNWODA
欣旺达

CPEV

SVOLT
蜂巢能源

SK 先惠

Hymson

CONTROLWAY

SANY

浩能
HAONENG

Lytic
Robot

KATOP
嘉拓智能

DESAY 德赛

超音速

EHOLLY
易鸿智能

UW 联赢激光
UNITED WINNERS

EVE 亿纬锂能

Clients' industries 2

SENPUM Proprietary Information - Do Not Disclose

Electronics



Clients' industries 3

SENPUM Proprietary Information - Do Not Disclose

Semiconductor

SCC
深南电路

FOXCONN

TEXAS
INSTRUMENTS

AVO

御微
YUWEITEK

中科飞测
SKYVERSE

KINGSEMI 芯源

Litecore

SMIC

ST
life.augmented

Cmsemicon

SAMSUNG

ID 理想晶延

Ninestar

JSMC

IMECAS

SME
上海微电子

圣邦微电子

TIANMA

PD

GigaDevice

TOREX

Clients' industries 4

SENPUM Proprietary Information - Do Not Disclose

Office equipment

EPSON
EXCEED YOUR VISION



KYOCERA 京瓷

brother

Canon
佳能

Home automation

达实智能

SIEMENS

GREE 格力

TCL

Tencent 腾讯

Automotive



BRIDGESTONE

LCD Industry



SAMSUNG

TCL



Machine tool manufacturing



HACT 汉狮精密自控



中冶宝钢技术



惠康集团

Harhong 汉虹

LKIMM
—力劲塑机—

HISON



大族数控
HAN'S LASER

Clients' industries 5

SENPUM Proprietary Information - Do Not Disclose

Robot manufacturing

博智林机器人
Bright Dream Robotics

dji
大疆创新

ESTUN
AUTOMATION

Infrastructure manufacture

中国中车
CRRC

SANY

中国电建
POWERCHINA

中联重科

SG
南玻集团

CSSC

Photovoltaic solar power

通威太阳能
TW SOLAR

航天机电

exact
S·C 捷佳伟创
SHENZHEN S.C

University institution

清华大学
Tsinghua University

HIT

华南理工大学
SOUTH CHINA UNIVERSITY OF TECHNOLOGY

同济大学
TONGJI UNIVERSITY

Medical

mindray 迈瑞

pepsi

汤臣倍健

Steel

BAOSTEEL

首钢股份

What is a sensor?

Sensor Basics

Understanding fundamental principles and features

1 Fiber Optic Sensors

2 Photoelectric Sensors

3 Color Sensors

4 Laser Sensors

5 Inductive Proximity Sensors

6 Contact Displacement Sensors

7 Laser Displacement Sensors

8 Ultrasonic Sensors

9 Area, Safety Light Curtain

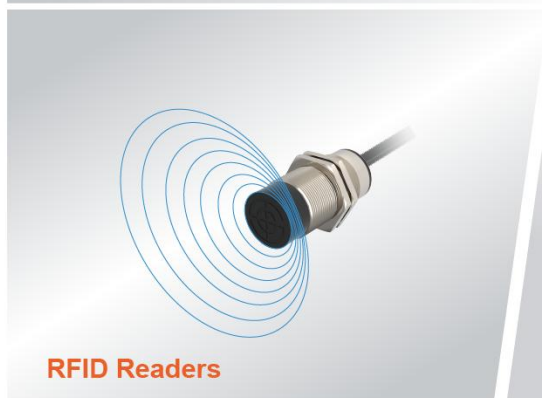
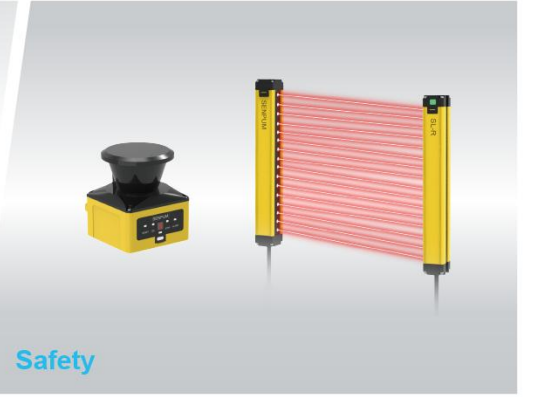
10 Barcode Scanners

11 Static Eliminators

12 Infrared Temperature Sensors

13 Flow Sensors

Product Lineup



Digital Fiber Optic Sensors



Cascade function with sub-machine

Effective reduction of total costs

Reduces maintenance time

Simplified wiring

Over 500 fiber optic components

We provide suitable types of fiber optic components according to each customer's application and usage environment.



Fiber Optic Sensors-Classification

SENPUM Proprietary Information - Do Not Disclose

Fiber units have many variations. Because the fiber does not house any of the electronic components, there are very few limitations on size and shape.

The following is a classification example of SENPUM's fiber units (SP Series).

Standard/Simple Mounting

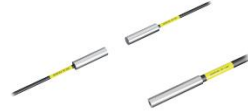
Threaded and Hex-shaped Fibers

Threaded for easy mounting onto brackets and machine equipment.



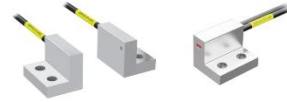
Cylindrical (Set Screw Installation)

Suitable for installation in locations where space is limited. Installed by drilling a hole and using a set screw.



Integrated bracket

The sensor is integrated into an L-shaped bracket, which simplifies installation.



Small space

Flat Bracket Fibers

This thin profile sensor comes with mounting holes for installation where space is limited.



Sleeve

The thin sleeve design eliminates problems caused by limited mounting space and allows the sensor to be placed closer to the target. Lineup includes side-view and bendable sleeve types.



Small Spot/Focused Beam

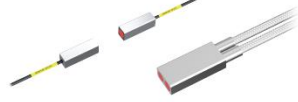
Small Spot Reflective

Great for small object detection. Spot size and focal distance are adjustable, so there is no need to change the distance between the sensor and the target.



Focused Beam/High power

Use of a lens reduces the field of view based on the aperture angle. This narrow beam helps avoid deflection and is suitable for detecting objects at longer distances.



Environment-proof

Oil/Chemical Resistant

The fluorocarbon resin coating allows these fibers to be used in almost any environment, including oil or chemical-splash conditions.



High-flex

Provides higher flexibility than an electric wire. Resistant to 30 million bends!



Heat Resistant

Ideal for use in high temperature applications. Withstands temperatures up to 350°C 662°F.



Transparent object detection

Definite-reflective

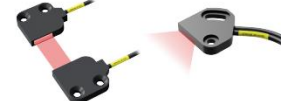
Detects within a fixed range. Reduces background effects and features a space-saving, thin profile design.



Dedicated application

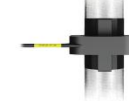
Area

The wide-area beam is ideal for applications where there is variance in target position and for detecting multiple shapes or moving targets.



Liquid-level

Accurate liquid level detection sensors are available in transparent tube-mount or immersion type models.



Fiber Optic Sensors-Principle

■ Outline

The fiber optic sensor has an optical fiber connected to a light source to allow for detection in tight spaces or where a small profile is beneficial.

■ Principle and major types

The optical fiber consists of the core and the cladding, which have different refractive indexes.

The light beam travels through the core by repeatedly bouncing off the wall of the cladding.

The light beam, having passed through the fiber without any loss in light quantity, is dispersed at an angle of approximately 60° and emitted to the target.

The cores are divided into the following types:

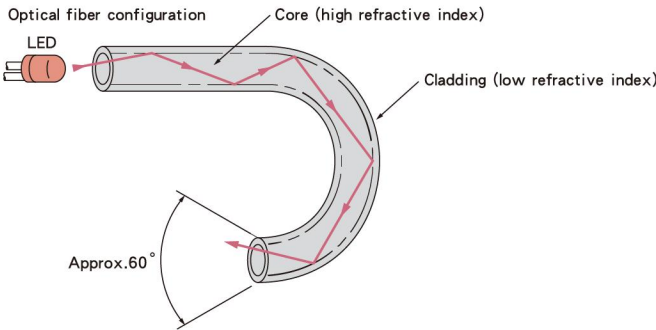
Plastic type

The core of the plastic-fiber consists of one or more acrylic-resin fibers 0.25 to 1 mm 0.01" to 0.04" in diameter, encased in a polyethylene sheath. Plastic fibers are light, cost-effective, and flexible which is why they are the most common type of fiber sensor.

Glass type

The glass-fiber consists of 10 to 100 μm 0.39 to 3.94 Mil diameter glass fibers encased in stainless steel tubing. This allows it to be used at high operating temperatures (350° C 662° F max.).

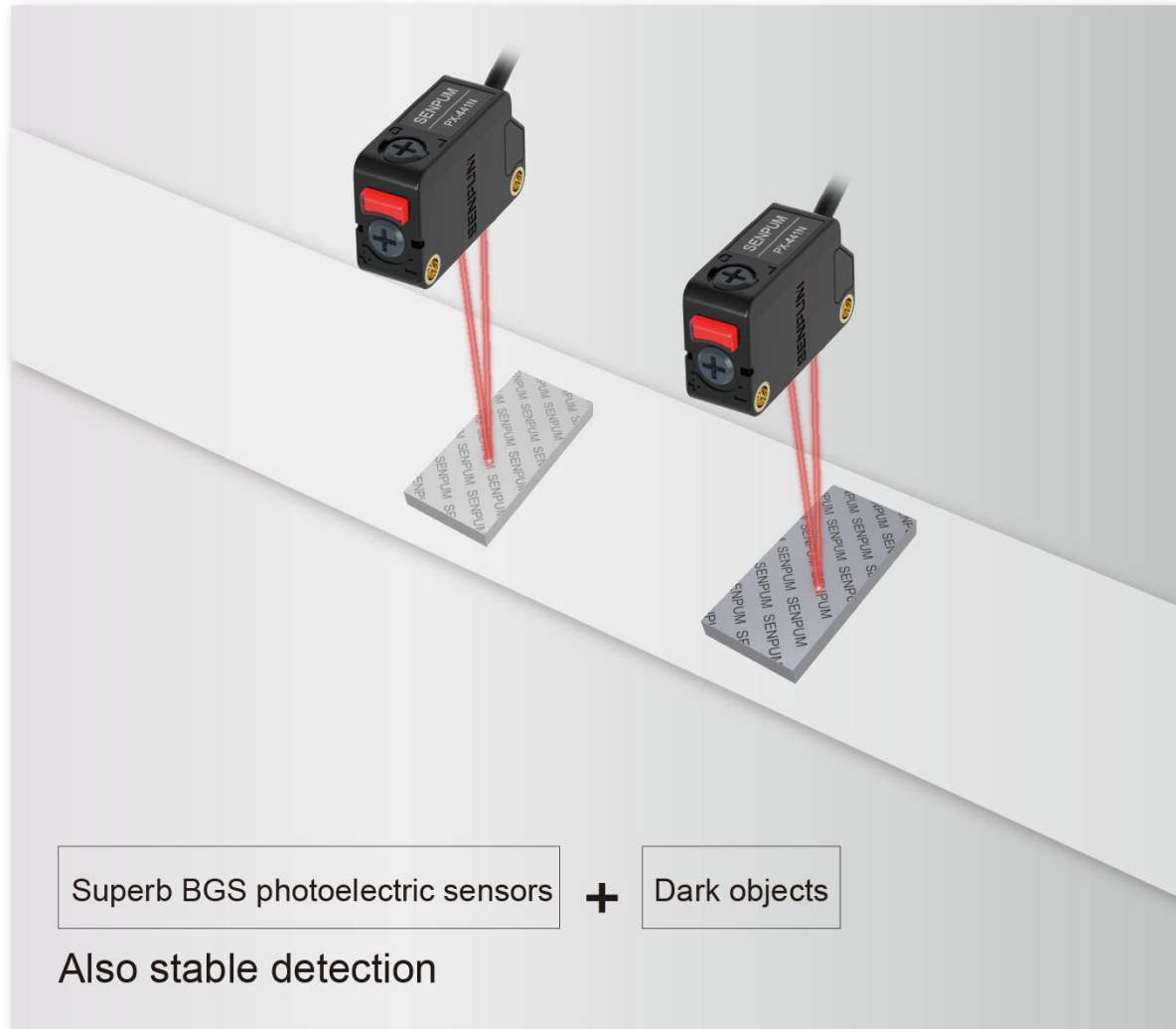
The optical fiber sensors are divided into two categories: thru-beam and reflective. The thru-beam type comprises a transmitter and a receiver. The reflective type, which is a single unit, is available in 3 types: parallel, coaxial, and separate. The 3 are based on the shape of the crosssection of the optical fiber.



Type	Description
Parallel 	Generally used for plastic fibers.
Coaxial 	High-precision type, consisting of a core (transmitter) and surrounding area (receiver). The operating position can remain the same regardless of the direction from which the target enters the detecting area.
Separate 	This type, containing several 10 μm 0.39 Mil glass fibers in diameter, has separate areas for the transmitter and receiver.

Superb BGS Photoelectric Sensors

ALL-NEW Photoelectric Sensors



Support small workpiece inspection

Small dimension

+

Small spot



Minimum spot size

Φ2mm

Detection distance **5~100mm**

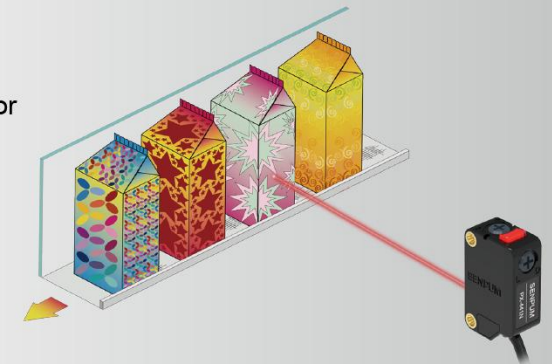
Unaffected by the color of objects

Same distance

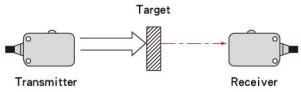
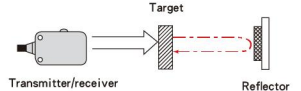
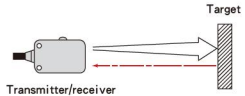
+

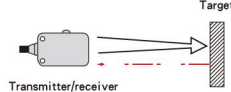
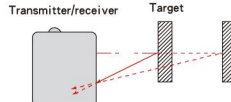
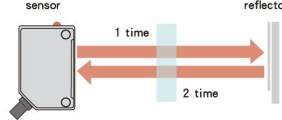
Any color

- Easily identifies objects of any color at the same distance with superior performance.



Photoelectric Sensors-Classification

Type	Detection Methods	Specificities
Thrubeam		Detection occurs when the target crosses the optical axis between the photoelectric sensor's transmitter and receiver. • Long-detecting distance • Stable detecting position • Opaque objects detectable regardless of shape, color or material • Powerful beam
Retro reflective		Detection occurs when the target crosses the optical axis between sensor head and reflector. • Reflector allows installation in a limited space • Simple wiring • Longer detecting distance than the diffuse-reflective sensor type • Easily-adjustable optical axis • Opaque objects detectable regardless of shape, color, or material
Diffuse reflective		Detection occurs when the light beam, emitted to the target, is reflected by the target and received. • Space-saving (requires installation of sensor unit only) • Adjustment of optical axis not required • Reflective transparent objects detectable • Color differentiation possible

Type	Detection Methods	Specificities
Focused beam reflective		Detection occurs when the beam spot, emitted to the target, is reflected by the target and received. • Minute objects detectable • Target markings detectable • Detection possible through narrow openings between machines • Visible beam spot
Fixed distance		Detects the target at a specific distance according to the angle of the reflected light beam. • Unaffected by highly reflective targets or backgrounds • Stable detection of materials with varying reflectance and color • Highly accurate detection of minute objects • Visible beam spot
Transparent detection type		A spot of light is shone onto the test object, and the difference between a transparent object is detected by the difference between specular and diffuse reflections. • High quality LED light source. • Not affected by the shape of the detected object. • Even deformable objects can be detected easily.

Photoelectric Sensors-Principle

■ Outline

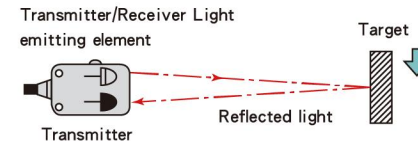
A photoelectric sensor emits a light beam (visible or infrared) from its light-emitting element. A reflective-type photoelectric sensor is used to detect the light beam reflected from the target. A thru-beam type sensor is used to measure the change in light quantity caused by the target crossing the optical axis.

■ Principle and major types

A beam of light is emitted from the light emitting element and is received by the light receiving element.

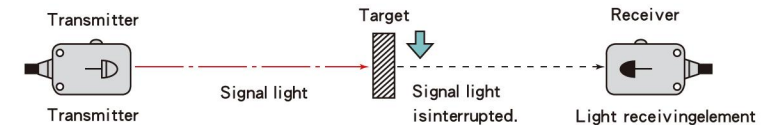
Reflective model

Both the light emitting and light receiving elements are contained in a single housing. The sensor receives the light reflected from the target.



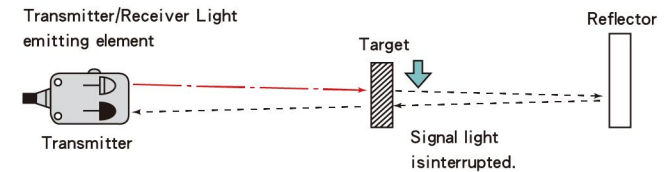
Thru-beam model

The transmitter and receiver are separated. When the target is between the transmitter and receiver, the light is interrupted.



Retroreflective model

Both the light emitting and light receiving elements are contained in same housing. The light from the emitting element hits the reflector and returns to the light receiving element. When a target is present, the light is interrupted.



Intelligent White Color Sensors

Detection of appearance (color) differences, self-contained full-spectrum sensor

"white light spot"

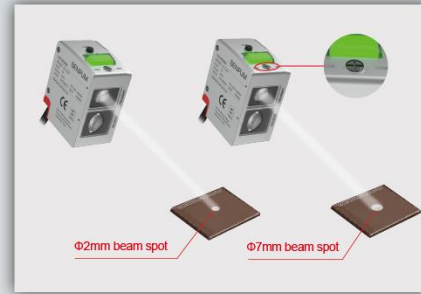
Detecting ultra-reflective workpieces

Stable detection of ultra-reflective workpieces, various shapes and sizes can be detected.



Adjustable beam spot, support small workpiece

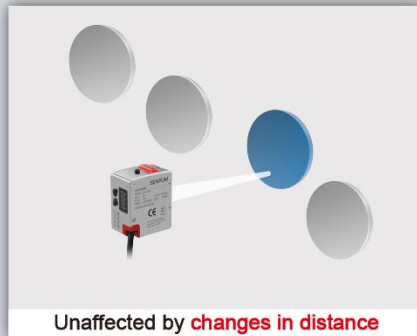
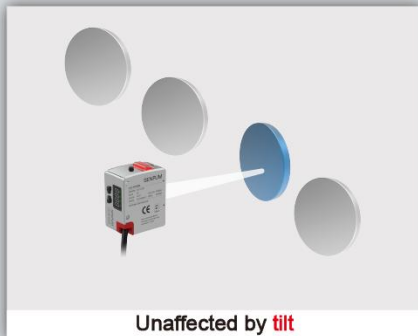
Adjust the desired small spot size by rotating the knob, supports small workpiece inspection.



Stable detection even at a distance

With a high brightness "white light spot".
Stable detection even at long distances.

Unaffected by changes in state or distance



Detection range

30-500mm

Color Sensors-Classification

SENPUM Proprietary Information - Do Not Disclose

Self-contained

Adjustable white light

LA2-W Series

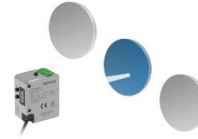
detection even at a distance;
Adjustable beam spot, support
small workpiece;
Detecting ultra-reflective
workpieces.



2 output

LA-W Series

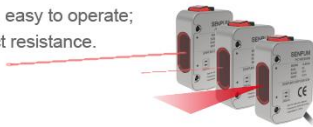
Stable detection of differences
in appearance (color);
Unaffected by changes in
state or distance



Small beam spot

PC-W Series

HD digital display, easy to operate;
Metal shell, impact resistance.



MINI type

PC-N Series

Detection range:
30–2000 mm
Button-operated,
ultra-compact design.



Separate Amplifier

LED white light source

LA-F10 Series

High color discrimination can be
achieved; one-button
setting, operation at the
touch of a button.



Multifunctional Color Sensor

Multifunctional Color Sensor

LA3-W Series

Supports multiple network
communication protocols;
Multiple sets of color output
signals and numerical data
storage; Master-slave cascading;
simple wiring; convenient communication.



Color Sensors-Principle

SENPUM Proprietary Information - Do Not Disclose

■ Outline

A color sensor is a type of "photoelectric sensor" which emits light from a transmitter, and then detects the light reflected back from the detection object with a receiver.

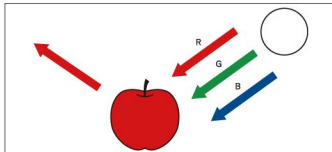
A color sensor can detect the received light intensity for red, blue and green respectively, making it possible to determine the color of the target object.

■ Principle and major types

There are two types of color sensors. One illuminates the object with broad wavelength light and differentiates the three types of colors in the receiver. The other type illuminates the object with the three types of light (red, blue, and green) independently. In both scenarios, the received light intensity of red, blue and green are detected, and the ratio of light received is calculated.

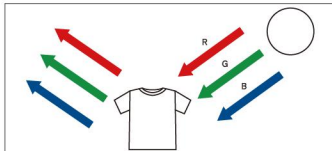
If light containing the red, blue, and green wavelengths is shown on a red object, only red light will be reflected.

* The white circle in the diagram represents a white light source.



For a white object, all three colors of red, blue, and green are reflected.

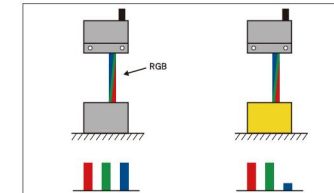
* The white circle in the diagram represents a white light source.



The ratio of the red, green, and blue reflections vary according to the color of the object.

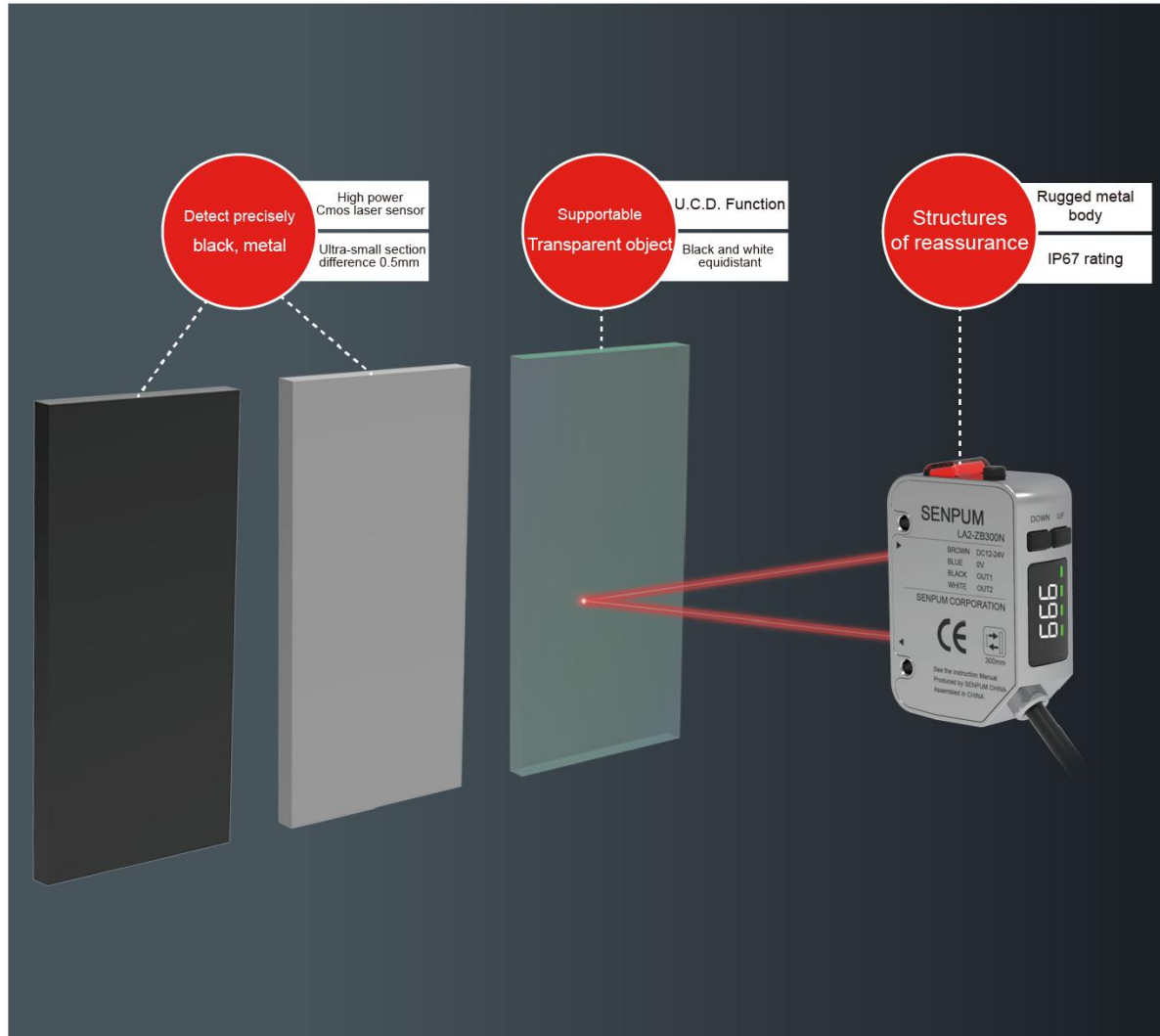
Object color	Reflected light		
	Red	Green	Blue
Red	●		
Yellow	●	●	
Green		●	
Blue			●
White	●	●	●
Black			

By calculating the ratio of the intensity of the red, green, and blue light received, it is possible to distinguish differences in the color or appearance of the object.

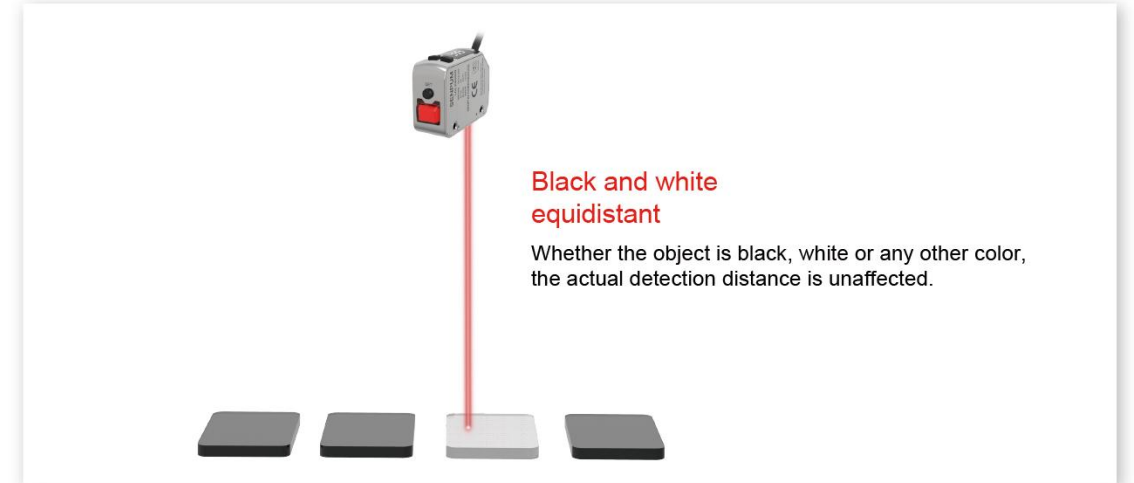


Differences can be detected
Left: Received light ratio 1:1:1
Right: Received light ratio 4:4:1

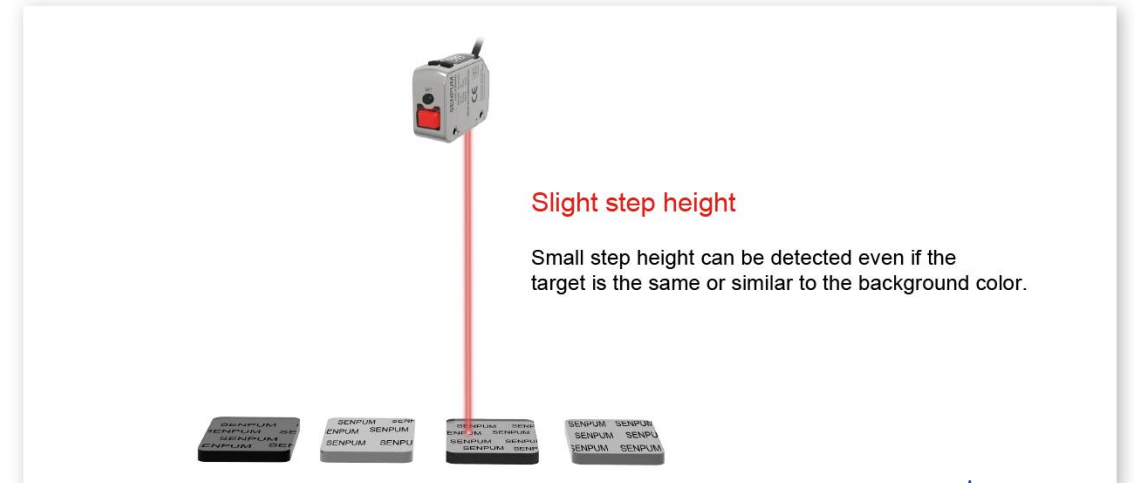
Cmos Laser Sensors



True black and white isometric, completely unaffected by color



Stable detection in complex environments



Laser Sensors-Classification

Background suppression

CMOS

LA2-ZB Series

Ultra-small blind spot of 25mm or less.
True black and white isometric.



Standard model

LA-ZB Series

The industry's smallest 0.5mm laser spot.



Small

LA-SH Series

Compact size, perfect for tight spaces; Button settings with ultra-high repeatability.



MINI

LA-X Series

Small size, great saving of installation space; small spot, stable detection.



Digital type

Multi-purpose digital laser

LA-N Series

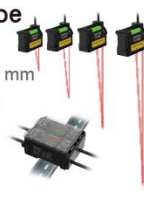
Detected through small gaps;
Enables long range detection.



Digital Laser Type

LA-H Series

Detection range: 20–1000 mm
600,000:1 dynamic range;
Reliable detection with strong anti-interference capabilities.



Ultra-compact type

Small

LA3-S Series

Ultra-long detection distance up to 10m.



Small type

Precision-targeted

LA3-P Series

Detection range: 0.03–50 m
The detection range for through-beam detection is up to 30 m, and the detection range for retro-reflective detection is up to 50 m.



Long-range type

Ultra long range digital display

LA-MR Series

Maximum detection distance of up to 100m for retro-reflective.



Laser Sensors: "Received light" recognition type-Principle

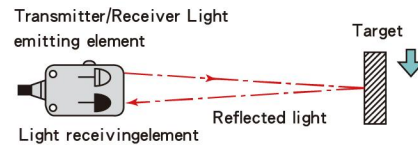
■ Outline

A laser sensor uses a "laser" to emit light in a straight line. Its visible beam spot makes alignment and positioning very easy. Since the light beam is focused, the sensor can be installed without worries about stray light.

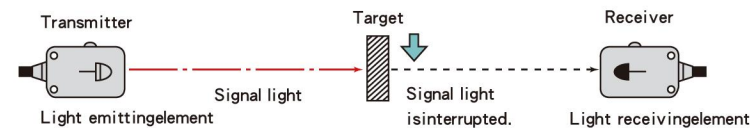
■ Principle and major types

A light beam is emitted from the light emitting element (laser) in the transmitter and is received with the light receiving element in the receiver.

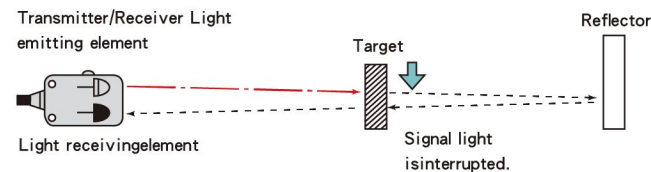
Reflective model



Throughbeam model



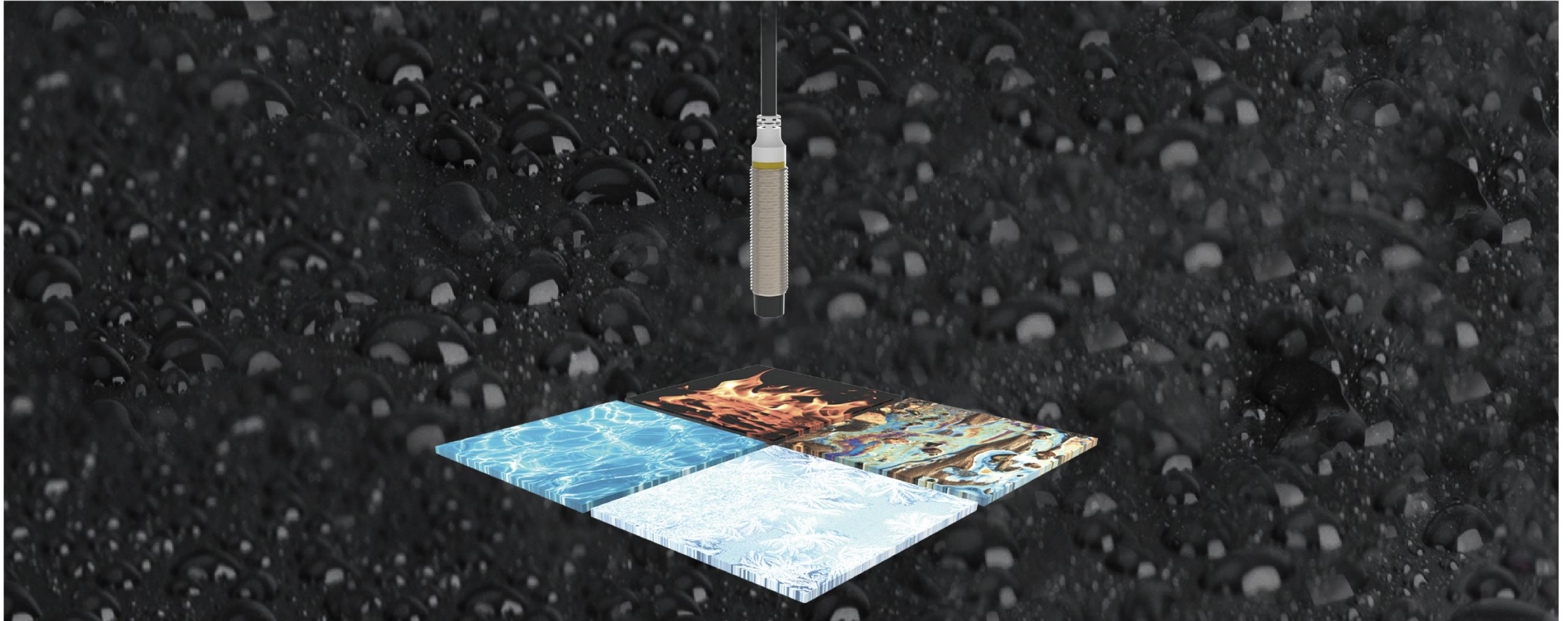
Retroreflective model



High Performance Inductive Proximity Sensors

Extremely resistant to oil mist environments

IP67 protection class, in the humid, dusty and complex environment, can still be stable and accurate detection.



Inductive Proximity Sensors-Classification

SENPUM Proprietary Information - Do Not Disclose

cylindrical

High performance

DH/DH2 Series

The lengths are divided into ultra-short, short, and standard types to meet a variety of occasions.



Square, Capacitor Standard

Square ultra compact

DT2-Q Series

The thinnest model is only 6mm thick.



Specialty Applications

Corrosion-resistant type

DP-T Series

Stable detection in extreme environments from -40°C to 200°C.



High and low temperature resistant

DP-W Series

Stable detection in extreme environments from -40°C to 200°C.



Inductive Proximity Sensors-Principle

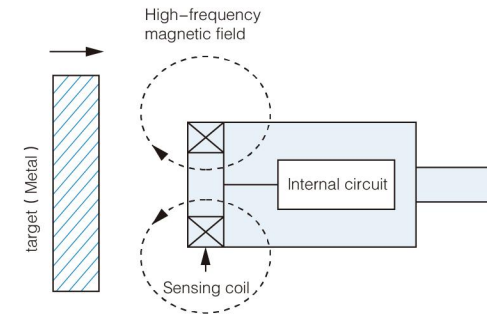
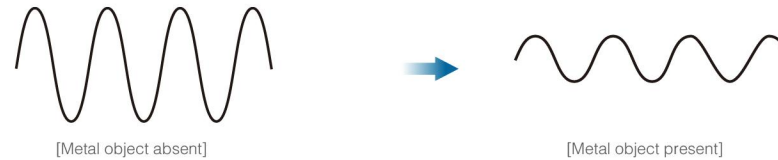
Outline

A inductive proximity sensor can detect metal targets approaching the sensor, without physical contact with the target. Inductive Proximity Sensors are roughly classified into the following three types according to the operating principle: the high-frequency oscillation type using electromagnetic induction, the magnetic type using a magnet, and the capacitance type using the change in capacitance.

Principle and major types

General sensor

A high-frequency magnetic field is generated by coil L in the oscillation circuit. When a target approaches the magnetic field, an induction current (eddy current) flows in the target due to electromagnetic induction. As the target approaches the sensor, the induction current flow increases, which causes the load on the oscillation circuit to increase. Then, oscillation attenuates or stops. The sensor detects this change in the oscillation status with the amplitude detecting circuit, and outputs a detection signal.



Nonferrousmetal type

The nonferrous-metal type is included in the high-frequency oscillation type. The nonferrous-metal type incorporates an oscillation circuit in which energy loss caused by the induction current flowing in the target affects the change of the oscillation frequency. When a nonferrous-metal target such as aluminum or copper approaches the sensor, the oscillation frequency increases. On the other hand, when a ferrous-metal target such as iron approaches the sensor, the oscillation frequency decreases. When the oscillation frequency becomes higher than the reference frequency, the sensor outputs a detection signal.



Magnetic objects and non-magnetic objects Remember that magnetic objects are easily attracted by a magnet, whereas non-magnetic objects are not.

Magnetism	Strong ← Weak		
Detecting distance of general-purpose model	Long	←	Short
Detecting distance of aluminum detection model	Short	→	Long
Typical metal	Iron/SUS440	SUS304 *	Aluminum/brass/copper

* SUS304 has an intermediate property.

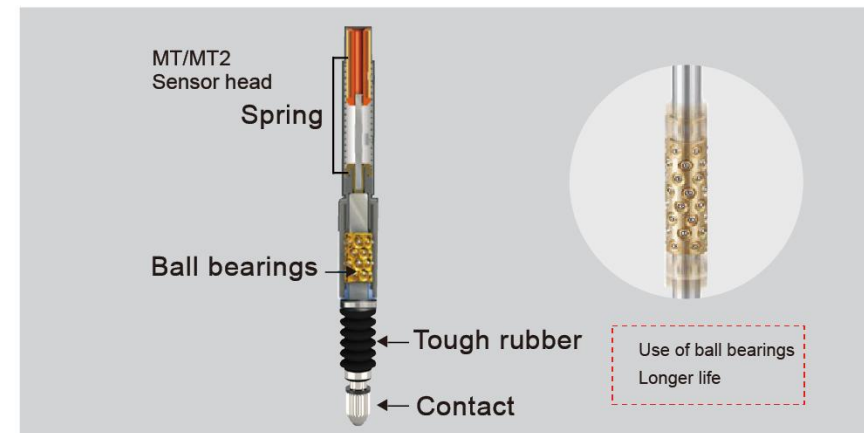
Contact Displacement Sensors

SENPUM Proprietary Information - Do Not Disclose



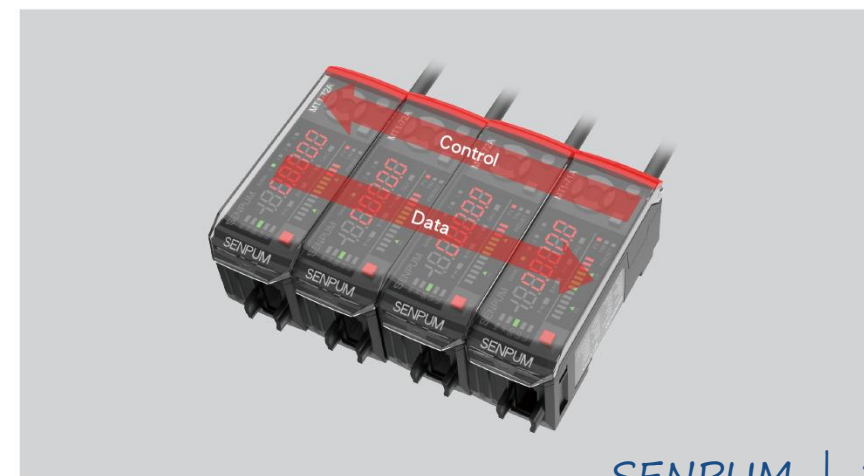
Long Life

Detecting durability: 210 million times



Cascade mountable

Significantly reduces maintenance costs and replacement man-hours.



Contact Displacement Sensors-Classification

SENPUM Proprietary Information - Do Not Disclose

Digital display

Digital display MT1 Series

In addition to high accuracy, it overcomes the problems of conventional contact sensors such as "tracking error" and "inability to detect absolute position".



High-precision type

High-precision type MT2 Series

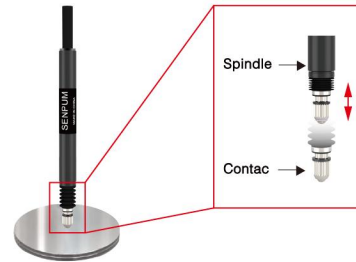
Protection class IP67;
Accurate measurement
even in oil and water
splash environments.



Contact Displacement Sensors-Principle 1

■ Outline

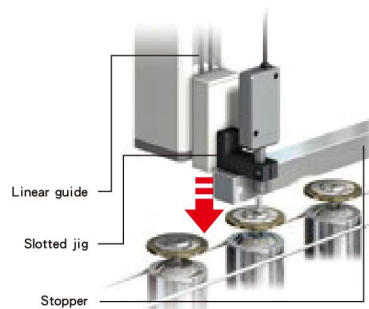
As the name indicates, this is a sensor measuring the position of a target by directly contacting it. When the height of the spindle changes as shown in the figure on the right, the sensor internally calculates the amount of displacement. Contact Positioning Sensors are mainly used for detecting the height, thickness, or warpage of the target.



【Air push type measuring by extending a spindle】

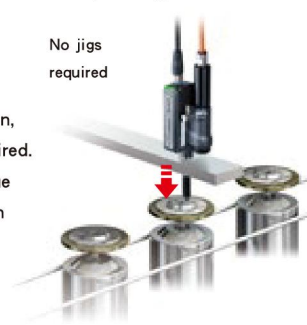
Since measurement is possible with the sensor head being fixed, no mechanism is required to move the sensor head. This saves installation space and greatly reduces man-hours during installation.

Standard model



Since the sensor can be fixed at the same position, no complicated jig is required. There is also no error due to the influence of a jig on accuracy.

MT2 Air push type



■ Principle and major types

- “Scale” method ⇒ Method using an internal scale (ruler).
- “Scale Shot System”
⇒ Method in which a CMOS sensor records a unique pattern on an absolute value glass scale.

Advantage

- Since the signal level changes according to the position of the spindle, the “absolute position” can be grasped. (No need for zero point adjustment, no tracking error)

□ Scale method

Advantage

- High accuracy (The accuracy basically depends on the resolution of the scale markings.)
- No need to consider the linearity because the scale markings are consistent along the entire scale.
- The temperature characteristics are good because the scale markings do not change with varying temperature.

□ Scale Shot System (SENPUM original principle)

Like typical scale method sensors, SENPUM’s MT1 Series includes a transmitter, a receiver, and a scale within the unit. However, its slits are not simple ones used by typical scale method sensors. The scale of the MT1 Series uses slits with complex and unique patterns. The sensor can read this pattern to identify the spindle position.

- (1) When the spindle moves, the absolute value scale moves accordingly.
- (2) The CMOS sensor reads the complex pattern in the scale at high speed.
- (3) The spindle position information is sent to the amplifier.

Contact Displacement Sensors-Principle 2

Scale Shot System

high-speed scale shot system using a CMOS sensor that absorbs light passing through an absolute value glass scale, which displays different patterns depending on the position.

Advantages of the conventional scale (pulse count) method

High accuracy along the entire measuring range

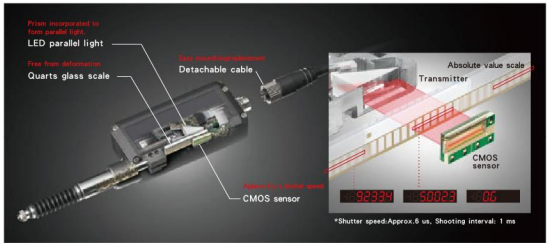
Good temperature characteristics

+

Advantages of the conventional differential transformer method

No tracking errors

Absolute position detection



Advantage

- Absolute position detection
- Since the sensor detects position information, it does not require zero point adjustment and not produce tracking errors.
- The scale method ensures high accuracy in the entire measuring range.
- Good temperature characteristics

Features

The following table shows typical characteristics that vary depending on the detection system.

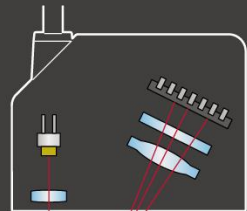
【Sensor type comparison based on the detection method】

Item	Measuring surface	Optical	Ultrasonic	Laser focus	Contact
Detectable target	Metal	Almost all materials	Almost all materials	Almost all materials	Solid
Measuring distance	Short	Normal	Large	Short	Short
Accuracy	High	High	Low	High	High
Response speed	Fast	Fast	Slow	Normal	Slow
Dust, water, oil, etc.	Unaffected	Normal	Normal	Normal	Unaffected
Measuring surface	Normal	Small	Large	Small	Small

CMOS Type Laser Displacement Sensors

20mm to 1m 1μm
Wide range of applications Repeat precision

Measurement principle



Target object

The determination principle of triangulation is applied.

When the position of the target changes, the incoming light position on the CMOS moves. By detecting the incoming light position, the amount of target shift is measured.

New line-up



Laser Displacement Sensors-Classification

SENPUM Proprietary Information - Do Not Disclose

Self-contained

Long distance

LM2-Q Series

Detection distance up to 2m,
supporting various applications.



High precision

LM2-H Series

Detection distance up to 450mm,
supporting various applications.



Separate amplifier model

CMOS type

LM Series

Can support
20~1000mm
detection distance.

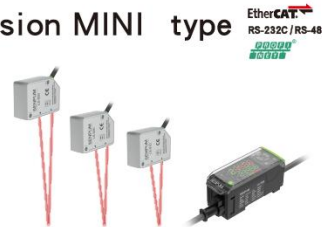


EtherCAT
RS-232C / RS-485
GIGABIT
ETHERNET

High precision MINI type

LS Series

Can support
4~600mm
detection distance.



EtherCAT
RS-232C / RS-485
GIGABIT
ETHERNET

Laser Displacement Sensors: "Position" recognition type-Classification

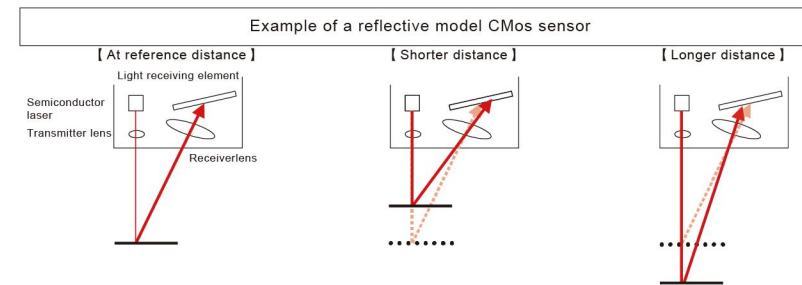
■ Outline

This type of sensor detects the position of a target. This is achieved by using a triangulation system or a time measurement system.

■ Principle and major types

Triangulation system

The change in the distance to the target affects the position of the light concentrated on the CMOS detecting element. This information is used for detecting the target position.



The laser emits a laser beam to the target as shown above. The light reflected off the target is concentrated by the receiver lens and forms an image on the light receiving element. When the distance changes, the concentrated light reflects at a different angle and the position of the image changes accordingly.

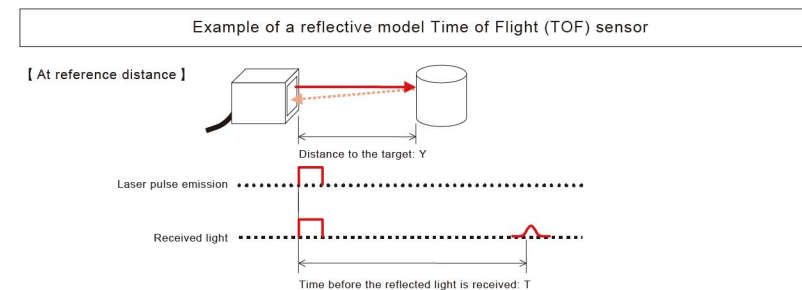
Time measurement system

The distance is measured based on the time in which the emitted laser beam returns to the sensor after hitting the target. The detection is unaffected by the surface condition of the target.

In the figure to the right, the sensor detects the time (T) that is the time until the reflected laser beam is received to calculate the distance (Y).

The calculation formula is:

$2Y$ (go-and-return distance) = C (light speed) $\times$ T (time before the reflected light is received)



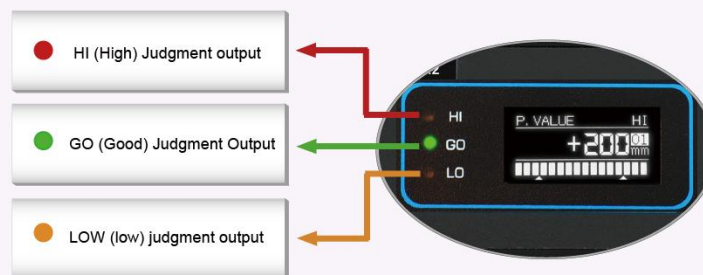
Ultrasonic Sensors

SENPUM Proprietary Information - Do Not Disclose



HI/GO/LOW three groups of switching control outputs

Direct connection to PC/PLC, position data at a glance



Digital display controller, power on instantly output accurate data

OLED high-definition digital display, instant output of accurate data at power-on

Maximum resolution $\pm 1\text{mm}$

Maximum detection distance up to 6m

Maximum accuracy up to
 $\pm 1\%$ of full scale

Ultrasonic Sensors-Classification

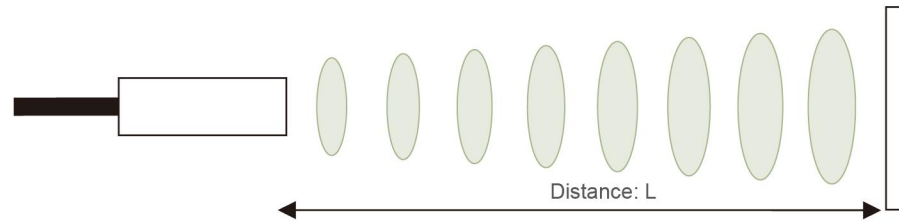
SENPUM Proprietary Information - Do Not Disclose

Type	Appearances	Specificities
high precision	TU-N Series 	▪ Realization of ultra-stable detection of transparent and semi-transparent objects ▪ Suitable for detecting liquid level, material level, distance, etc. ▪ High protection class IP67, can be used in humid environments anti-fog and dustproof
Digital display high-precision type	TU-H Series 	▪ For detecting liquid level, material level, distance, etc. ▪ HI/GO/LOW three groups of switching control outputs ▪ Digital display controller, power on instantly output accurate data

Ultrasonic Sensors-Principle

■ Outline and detection principle

As the name indicates, ultrasonic sensors measure distance by using ultrasonic waves. The sensor head emits an ultrasonic wave and receives the wave reflected back from the target. Ultrasonic Sensors measure the distance to the target by measuring the time between the emission and reception.



An optical sensor has a transmitter and receiver, whereas an ultrasonic sensor uses a single ultrasonic element for both emission and reception.

In a reflective model ultrasonic sensor, a single oscillator emits and receives ultrasonic waves alternately. This enables miniaturization of the sensor head.

【 Distance calculation 】

The distance can be calculated with the following formula:

$$\text{Distance } L = \frac{1}{2} \times T \times C$$

where L is the distance, T is the time between the emission and reception, and C is the sonic speed. (The value is multiplied by $1/2$ because T is the time for go-and-return distance.)

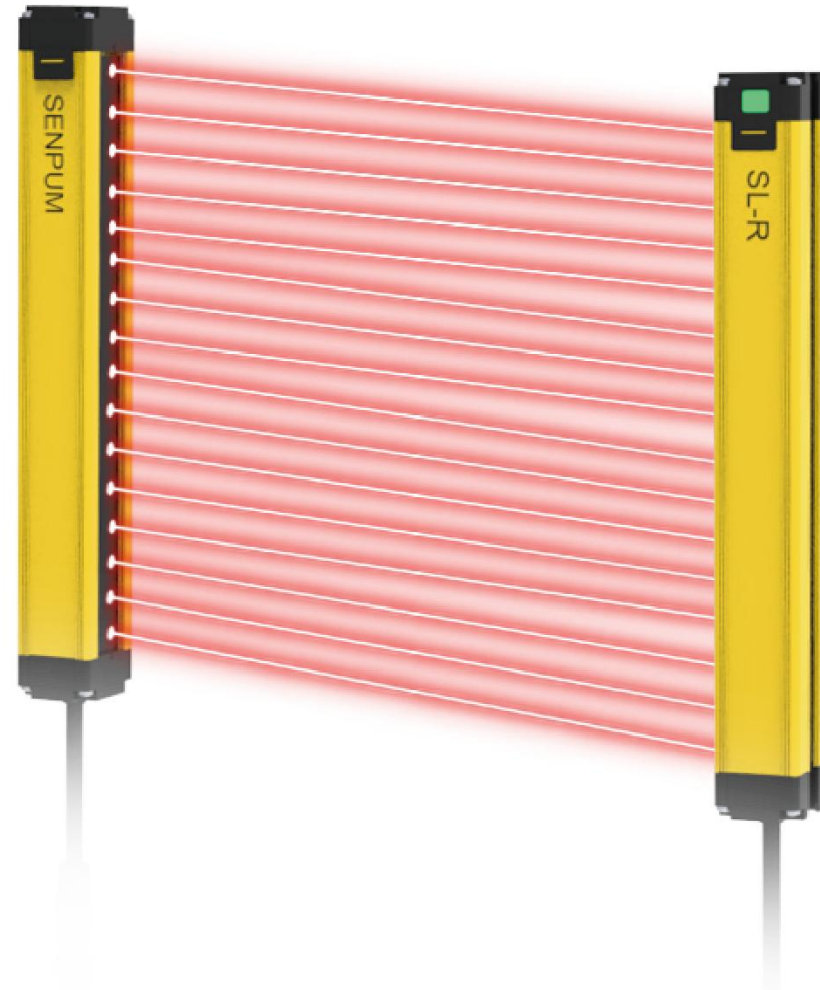
Area / Safety Light Curtain / Laser Scanner-Principle

SENPUK Proprietary Information - Do Not Disclose

- Ideal for **obstacle avoidance and navigation in mobile robots.**

- New algorithms, dust-free.

- Ensuring **productivity.**



Area / Safety Light Curtain / Laser Scanner-Classification

□ Area / Safety Light Curtain

Area Sensors

Thin anti-interference type

SA-V Series

Strong resistance to electromagnetic and light interference, with a front width of only 21.7mm.



Area Sensor

SA2-V Series

Visual indicator light, 25.5mm front width. Compact, no detection blind spots, easy to install and identify, high anti-interference.



Safety Light Curtain

Class 4 safety light curtain

SL-R Series

Good universal standard size, sturdy and durable with dual-signal output, ensuring accurate detection.



Measuring encoder

Measurement light curtain

SA-T Series

Can read the light transmission and shading status of each beam according to on-site requirements, flexibly process data, and support multiple interface outputs.



Measuring Grating

SA2-T Series

Reads each beam's light-blocking status on demand, with flexible data processing and multi-interface output.



□ Laser Scanner

safety type

safety type

SC-S Series

Safe laser detection; Easy zone setup.



High-speed

High-speed

SC-V Series

High speed detection; Stain resistant.



Area / Safety Light Curtain / Laser Scanner-Principle

■ Outline

□ Area Sensors

A sensor that uses infrared scanning detection technology to detect objects passing through an infrared area barrier formed by the infrared light emitted by a transmitter and irradiated by a receiver to control the stopping of equipment or to prevent erroneous starting of equipment.

□ Safety Light Curtain

It adopts unique synchronized scanning technology with dual outputs and perfect self-test function; it is suitable for occasions with high equipment protection level.

□ Laser Scanner

Safety laser scanners utilize TOF (Time of Flight) technology. This means that the scanner calculates the position based on the time it takes for the laser to reflect off the object and return to the unit.

■ synchronization system

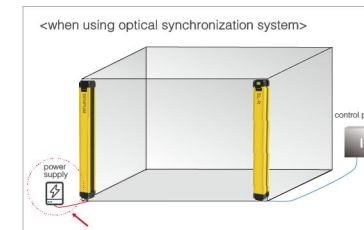
□ optical synchronization

Refers to the grating receiving and transmitting does not need to have any communication line connection, the transmitter sends out infrared light in accordance with a prescribed kind of law, the receiver relies on receiving the light signal, comparing with the transmitter to transmit the signal, if it is the same, that is, at this time, the light curtain is not blocked, and outputs the through light signal.

□ wire synchronization

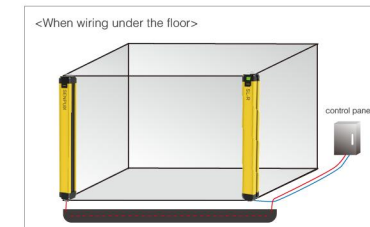
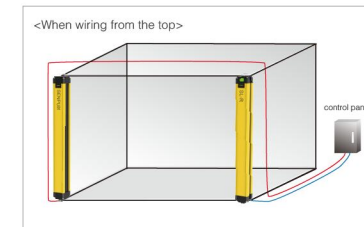
It is synchronized by a communication line between the transmitter and receiver. When one of the parties activates the transmitter or receiver, it sends a synchronization signal to the communication line, and the other party activates the receiver or transmitter based on this signal to achieve the same pace between the transmitter and receiver.

■ Light Synchronization System Features



- 1 Easy assembly of cables.
- 2 Reduces the risk of wire breakage.
- 3 Wiring can be done avoiding power sources (noise sources).
- 4 Reduced operational testing time.
- 5 Switching of optical communication codes to prevent mutual interference.

■ Line Synchronization System Features

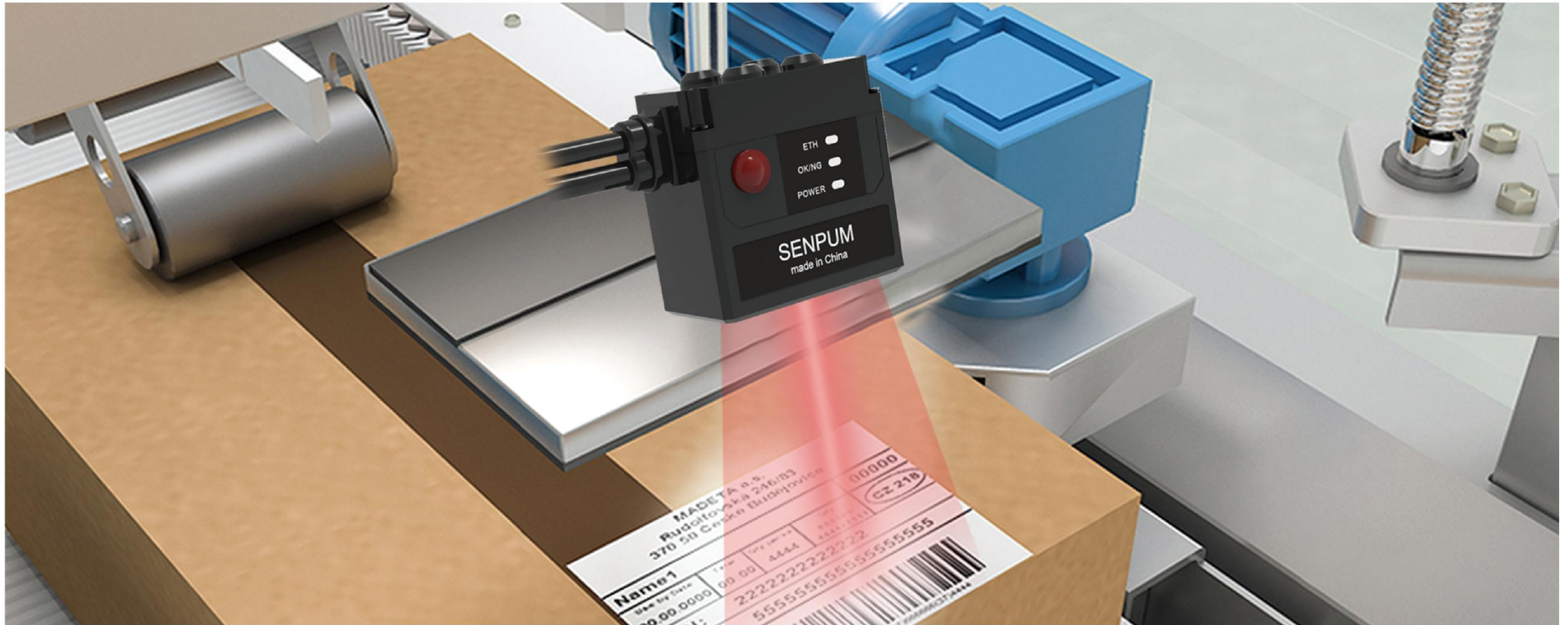


- 1 Reliable signal transmission, not susceptible to external interference.
- 2 Short distance synchronized transmission with high reliability.
- 3 Higher installation and maintenance costs due to cable transmission.

Logistics Industry **Barcode** Solution

SENPUM Proprietary Information - Do Not Disclose

An innovative work that realises a truly large field of view and depth of field!



Barcode Scanners-Classification

SENPUM Proprietary Information - Do Not Disclose

Type	Appearances	Specificities
Standard type	XR-1000 Series  A small, black, rectangular barcode scanner with a red laser line and a red button on the front. The brand name 'SENPUM' is visible on the side.	▪ Smallest resolution 0.12mm ▪ Up to 100 codes/s
Intelligent type	XR-1500 Series  A larger, black, rectangular barcode scanner with a red laser line and a red button on the front. The brand name 'SENPUM' is visible on the side.	▪ Support auto-focus, auto parameter setting ▪ Support rich communication protocols

Barcode Scanners-Principle

■ Principle and major types

Figure fixed barcode reader is a device used to automatically identify barcode or two-dimensional code, the principle usually involves optical, image processing and data parsing and other technologies. The following is the basic principle:

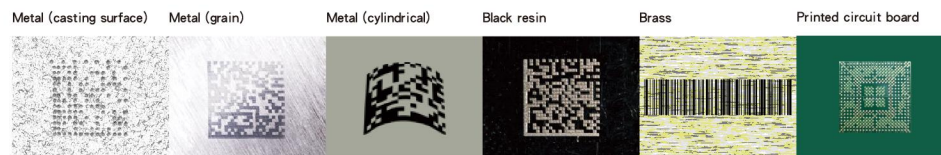
➤ Optical Scanning: Stationary barcode readers typically contain a light source and an optical sensor. The light source emits a beam of light onto the barcode, the barcode reflects the beam, and the optical sensor captures the reflected light. This creates a scanning process. By scanning the black and white stripes or modules on the barcode, the optical sensor is able to capture an image of the barcode.

➤ Image Processing: The acquired barcode image is processed by an image processing algorithm to extract the barcode's feature information. These features may include the width of the stripes, the spacing, and so on. The purpose of image processing is to reduce the effect of ambient light, enhance the contrast of the barcode, and reduce noise to improve recognition accuracy and speed.

➤ Decoding: Once the image information of the barcode is acquired, the next step is to decode the image. Decoding is the process of converting the barcode image into digital or character information. Usually used decoding algorithms include decoding algorithms for 1D barcodes (e.g. Code 39, Code 128, etc.) and decoding algorithms for 2D barcodes (e.g. QR Code, Data Matrix, etc.). The decoding algorithm will convert the barcode into a recognizable data format based on its characteristic information.

■ Specificities

Examples of readable materials



Readable Difficulty Barcode



Ultra-high Static Elimination Performance

SENPUM Proprietary Information - Do Not Disclose

No regular maintenance required

Ultra-compact Static Fan

SK3-A series All-New

Cleanse

Auto Clean



Discharge Needle

Reminder of dirt
Wear and tear

Self-cleaning function

No need to replace electrode needles for a long time



Static Eliminators-Classification

SENPUM Proprietary Information - Do Not Disclose

Static blowers

Ultra-small type

SK3-A Series

Cylindrical discharge needles, more advantageous than traditional discharge needles.



High-frequency type

SK2-A Series

No need to clean and replace electrode needles
Ionic balance within $0 \pm 10V$.



Static wind bars

Intelligent

SK-H Series

No need to connect a high voltage generator
Real-time display of ion balance status, visualization of operating status.



High-Performance and Economical

SK-E Series

High-pressure alarm and I/O functions;
Easy to install and intuitive to operate.



Air-powered

SK2-V940 Series

High-flow air duct for efficient static elimination;
Sturdy aluminum housing ensures safety and prevents electric shocks.



Static nozzle

Ultra-Small type

SK-Z300 Series

Removable discharge needle for easy maintenance; LED indicates high voltage shutdown.



Small type

SK-Z200 Series

Ion balance: $0-10 V$, with operation indicator and high-voltage warning light.



Static guns

High-frequency type

SK-L Series

Plastic gun shape fits in the hand, lightweight, only 150g
Energy saving, low voltage, no corona discharge production.



Static fieldmeters

Static fieldmeters

SK-T Series

Unique rotating sensor head measures even in confined spaces
Detection of the charged state of films, resins, etc.



Static Tester

Static Tester

SK2 Series

Ultra-compact sensor head for easy installation;
Large, easy-to-read indicator lights.



Static Eliminators-Principle 1

■ Outline and Detection Principle

Static electricity eliminator is a device that removes static electricity by using ionized air as an object and moderating the charged state of the object.

□ Corona discharge type electrostatic eliminator de-energizers

Corona discharge type eliminator is based on the corona discharge of electrons discharged from the electrode, which generates ions to neutralize the static electricity of the charged object. This type of electrostatic eliminator has three major structures: “grounding” , “high voltage power supply” , and “discharge needle” . (Figure 1)

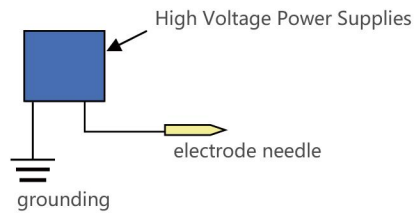


Figure 1

□ The mechanics of de-energization are as follows

1. A high voltage power supply of 3kV or more is attached to the discharge needle to produce a corona discharge at the front end of the needle.
2. The air around the discharge needle is electrically decomposed by the corona discharge, and ions are generated. At this time, a + voltage is added to generate positive ions (Fig. 2), and a – voltage is added to generate negative ions (Fig. 3).
3. By applying the ions to the electrically charged object, the static electricity is neutralized for the purpose of de-charging.

< High Voltage Plus

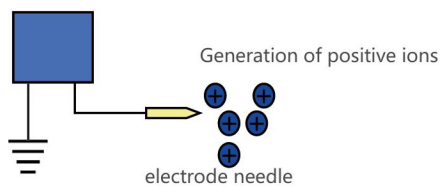


Figure 2

< The high voltage of the <-added>

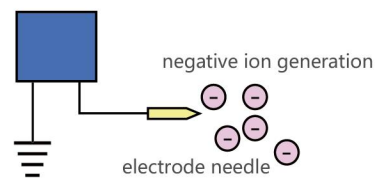


Figure 3

Static Eliminators-Principle 2

■ Type

Corona discharge type is divided into three types according to the shape ① electric fan type, ② strip type, ③ blower type, ④ hand-held gun type, ⑤ measurement type. Different types are made by maximizing the advantages of AC and DC methods.

□ Electric fan type (DC method)

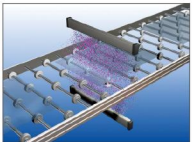
Comes with its own electric fan to provide ionized air.

Can be set up for use during on-board operations. Features simple setup and operation.



□ Bar type (pulsed AC method)

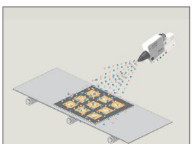
The bar lengths are suitable for a variety of uses and are best suited for wide range de-energizing.



□ Blower type (AC method)

Precise de-energization is possible with the nozzle. The air pressure supplied by the nozzle is so high that it can “blow away” dust as well as “remove electricity”.

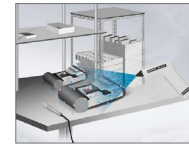
It is possible to “blow away” dust and “remove electricity” at the same time.



□ hand-held gun type

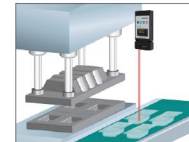
Light weight, energy saving, low voltage.

One-piece structure (built-in solenoid valve, controller)



□ measurement type

Detects the state of films, resins, etc. with points.



Non-Contact Temperature Sensors

High-temperature version for temperatures up to 1600°C.

SENPUM Proprietary Information - Do Not Disclose

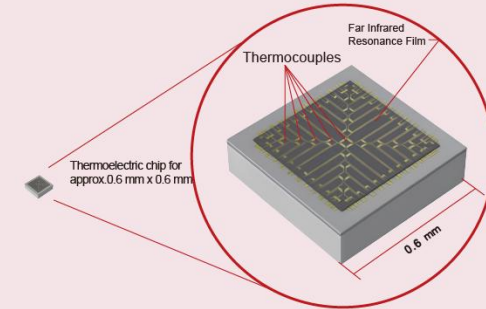


5ms response time

Application	Temperature Range
Forge	200 ~ 1600°C
Glass Forming	450 ~ 1200°C
Bonding (hot melt)	50 ~ 150°C

5ms high-speed response

1. Significantly reduces the thickness of the far-infrared resonance film.
2. Extremely efficient positioning of thermocouples for rapid and accurate detection of absorbed heat.



Laser indicator

Two laser pointers clearly indicate the detection range and simplify sensor installation.



Infrared temperature sensors-Classification

SENPUM Proprietary Information - Do Not Disclose

Multi-purpose type

Multi-purpose type

Superb, standard type are available to meet different need Up to 5ms response time for really fast temperature measurement.



Digital standard type

Digital standard type

Measured temperature range: 0~500°C-digital LCD digital display, clearly visible.



Infrared temperature sensors-Principle

■ Outline

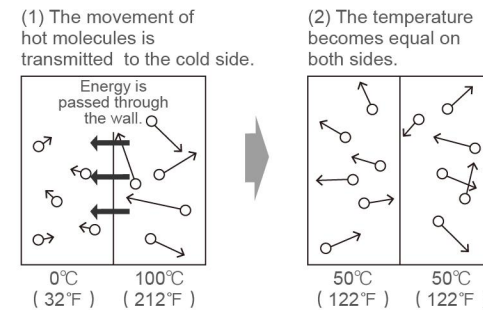
Temperature is an indicator that shows the state of a substance such as hot and cold. Temperature is expressed in units such as Kelvin (K), Celsius ($^{\circ}\text{C}$), and Fahrenheit ($^{\circ}\text{F}$). This section explains the mechanism where heat, which is closely related to temperature, is generated and the units of measurement.

■ Difference between temperature and heat

First, let's figure out what temperature and heat are.

All substances (molecules) have energy generated by vibration or other factors.

“Heat” is a form of energy. Then, what is the difference between “temperature” and “heat”? “Temperature” is a scale to measure “heat” within a substance—namely, a quantification of the state of the heat energy. Because heat energy moves between substances having different temperatures, a hot substance and a cold substance come to the same temperature after being kept in contact with each other.



■ Units of temperature

There are various units of temperature, including degrees Celsius ($^{\circ}\text{C}$), degrees Fahrenheit ($^{\circ}\text{F}$), and Kelvin (K, absolute temperature, which is mainly used in thermodynamics). These three units of temperature are compared as follows.

	Kelvin	Degrees Celsius	Degrees Fahrenheit
Absolute zero	OK	-273.15°C	-459.67°F
Fahrenheit's ice/salt mixture	255.37k	-17.78°C	0°F
Ice melts (in standard state)	273.15k	0°C	32°F
Water boils (in standard state)	373.15k	100°C	212°F

Flow Sensors-Principle

■ Outline

The clamp-on flow sensor is easily installed, without any pipe modification, by simply clamping to the outside of a pipe, tube or hose. This series provides stable flow rate measurement regardless of the pipe or liquid. In addition to metal and hard plastic piping, hoses (including high-pressure hoses) can also be supported. This product can not only measure the flow rates of various liquids such as water, DI water, oil, chemicals, and coolants but can also tolerate bubbles, high temperatures, and highly viscous liquids. Connecting a concentration sensor and temperature sensor allows for the centralized management of multiple parameters, helping improve product quality, and decrease costs.



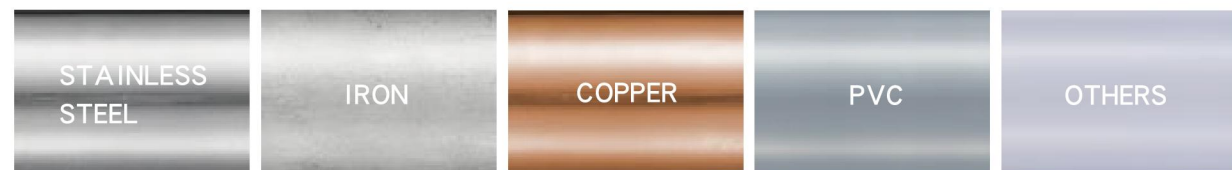
Clamp-on Flow Sensor

- 1 Easy to install for any user.
- 2 Compatible with countless flow setups.
- 3 Innovative clamp-on design prevents these common issues.

Detectable fluids



Compatible pipe materials



Flow Sensors-Classification

Non-contact

Ultra-small type

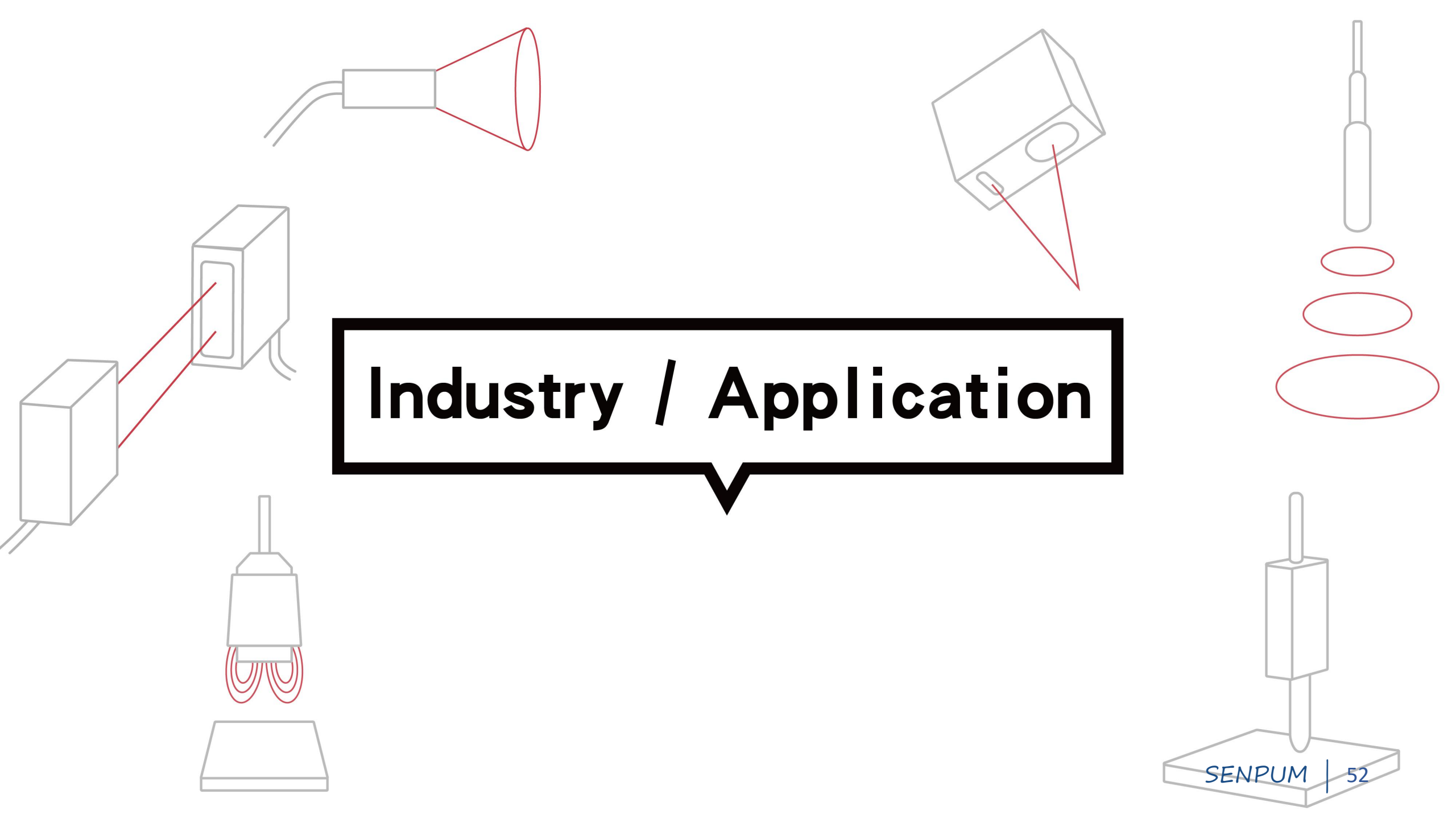
Adopting external clamping measurement method, screw fixing, easy to operate.



Standard type

Making measurement simple; Easy installation without professional training.





Industry / Application



Select by Application 1



Color and Product
Type Inspection
(Difference
Checking)



Presence Inspection



Quantity Inspection



3D Inspection



Positioning/Alignm
ent



Appearance
Inspection



Dimension
Measurement



Vision-Guided
Robotics



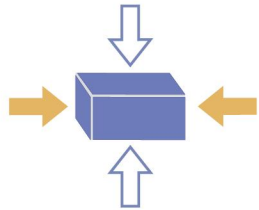
Identification
Inspection



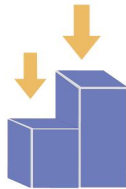


Select by Application 2

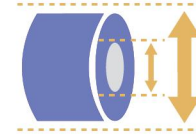
Thickness / Width



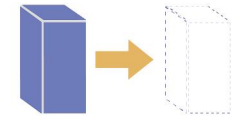
Height / Step Height



Outer / Inner Diameter



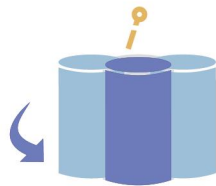
Stroke and Positioning



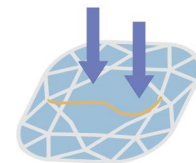
Runout / Vibration



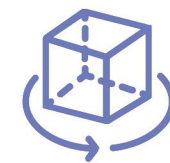
Deflection and Decentering



Shape/ Profile



3D Inspection



Thickness / Width

Depending on the measurement conditions, either single sensor or two sensor solutions are possible. Features such as simplified wiring or internal calculation functions make this easy no matter what.

Single/double blank material sheet detection



The extensive lineup covers ranges from 20 mm (0.79") to 1000 mm (39.37"), allowing for measurement that is unaffected by color and glossiness.



Measurement range: 20 to 1000 mm (0.79" to 39.37")

CMOS Multi-Function Analog Laser Sensor
LM series

Height



Height is measured by detecting the position of a product's top surface. For products with fixed reference planes, measurements can also be performed using two sensors, with the height calculated as the difference between the values of the sensors.

Indentation or Protrusion height measurement



Provides 1 μm (0.00004") precision and IP67 environmental resistance. 6 sensor lineup caters to any equipment and installation.



Measurement range: 12 to 32 mm (0.47 to 1.25")

High-Accuracy Digital Contact Sensor

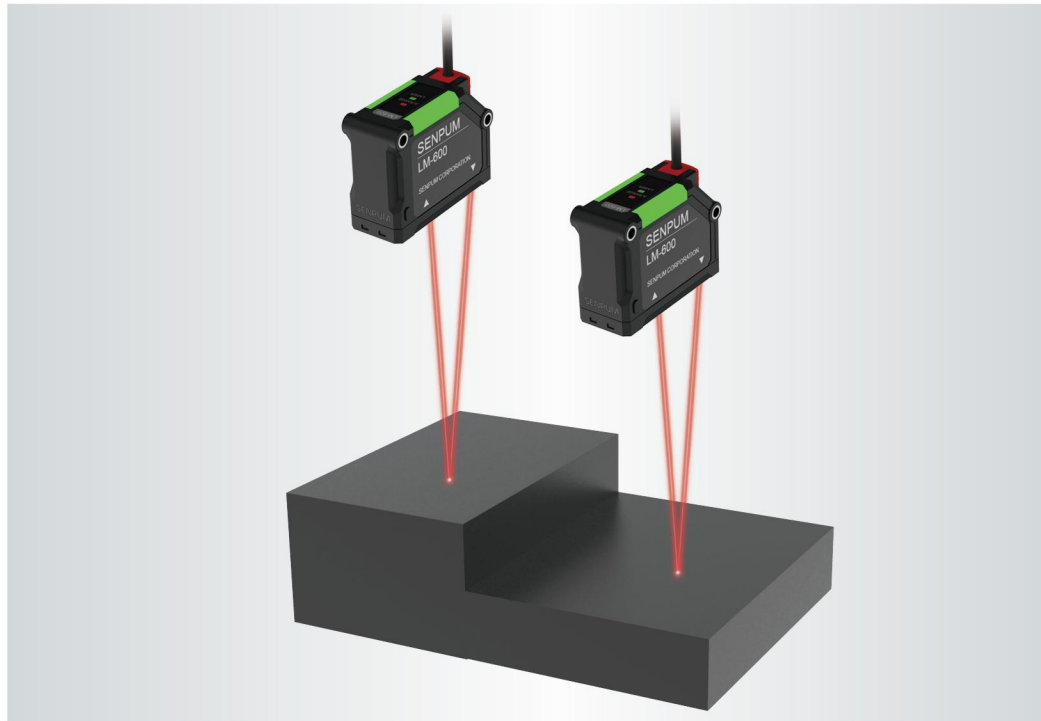
MT1 series

Step Height



The sensors here measure height differences by measuring two points on the surface of the target and calculating the difference between the locations to measure and the reference plane.

Height difference measurement



Provides 1 μm (0.00004") precision and IP67G environmental resistance. 5 sensor lineup caters to any equipment and installation.



Measurement range: 20 to 1000 mm (0.79" to 39.37")

CMOS Multi-Function Analog Laser Sensor
LM series

Outer Diameter



The outer diameter of cylindrical products can be measured with a single axis. It is also possible to rotate the product and to calculate the circularity by using sensors on two or more axes.

Shaft outer diameter measurement



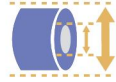
Provides 1 μm (0.00004") precision and IP67 environmental resistance. 6 sensor lineup caters to any equipment and installation.



Measurement range: 12 to 32 mm (0.47 to 1.25")

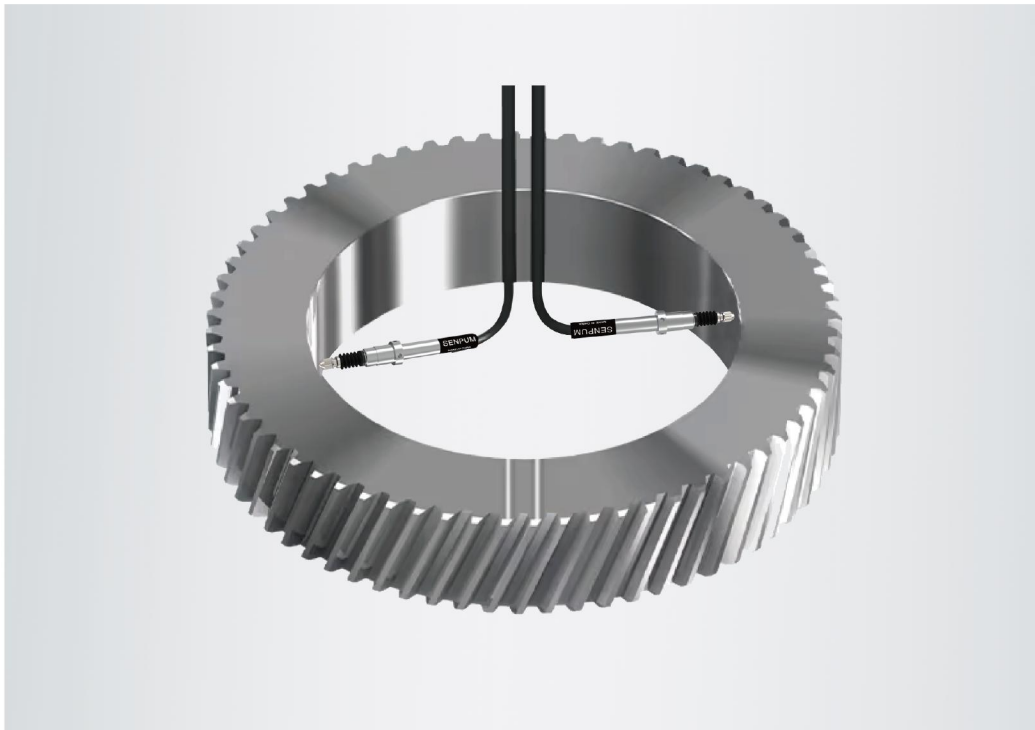
High-Accuracy Digital Contact Sensor
MT1 series

Inner Diameter



The available selections for inner diameter measurement vary depending on the environment in which to measure and the size of the diameter. Sometimes these measurements can be performed with one sensor, and sometimes calculations with two sensors are necessary.

Gear inner diameter measurement



Provides 1 μm (0.00004") precision and IP67 environmental resistance. 6 sensor lineup caters to any equipment and installation.

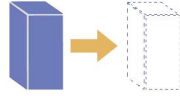


Measurement range: 12 to 32 mm (0.47 to 1.25")

High-Accuracy Digital Contact Sensor

MT1 series

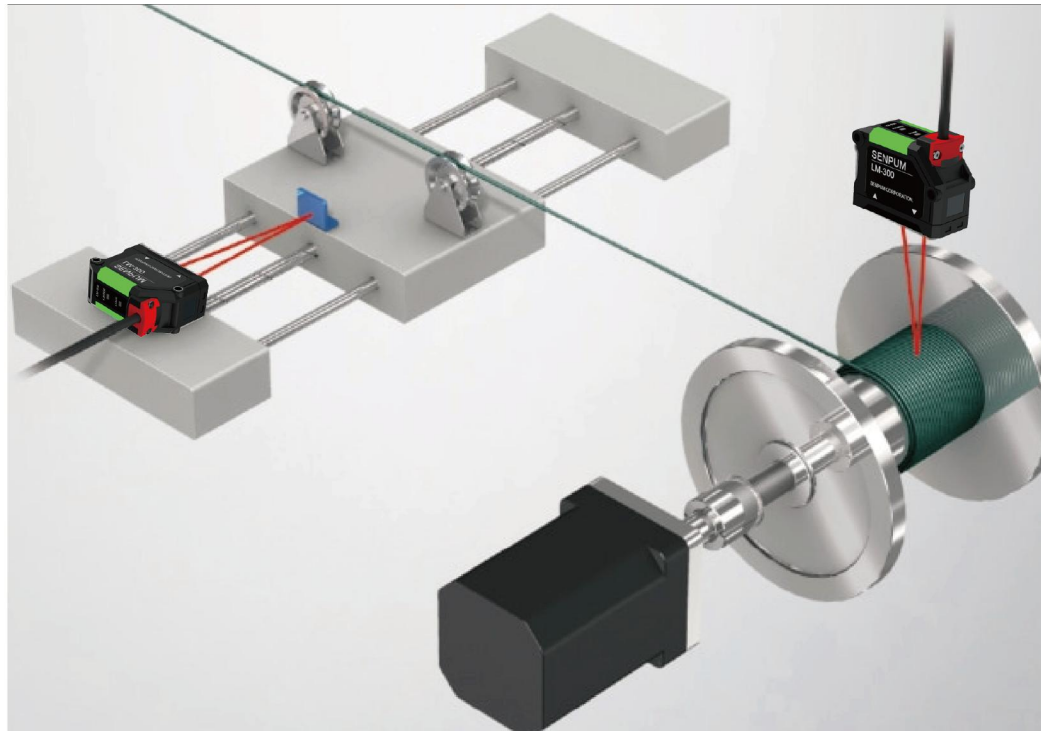
Stroke and Positioning



Stroke observation allows for predictive detection of equipment defects.

Checking that the positions of the product and equipment are correct during each cycle leads to a lower defect rate.

Traverser stroke inspection



Provides 1 μm (0.00004") precision and IP67G environmental resistance.
5 sensor lineup caters to any equipment and installation.



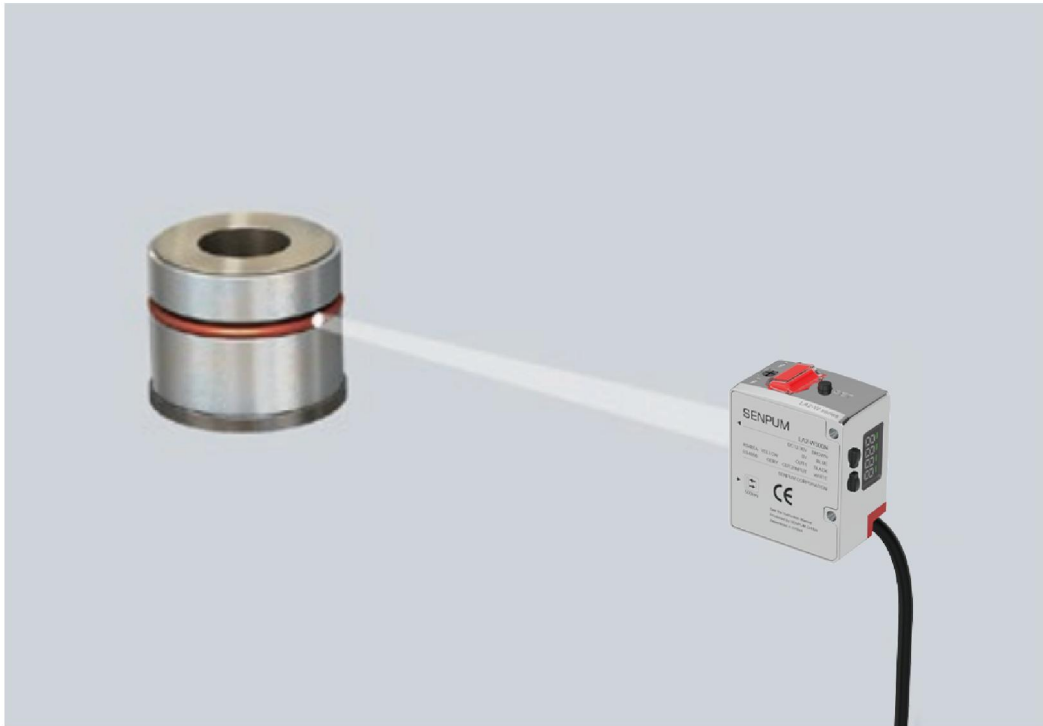
Measurement range: 20 to 1000 mm (0.79" to 39.37")

CMOS Multi-Function Analog Laser Sensor
LM series

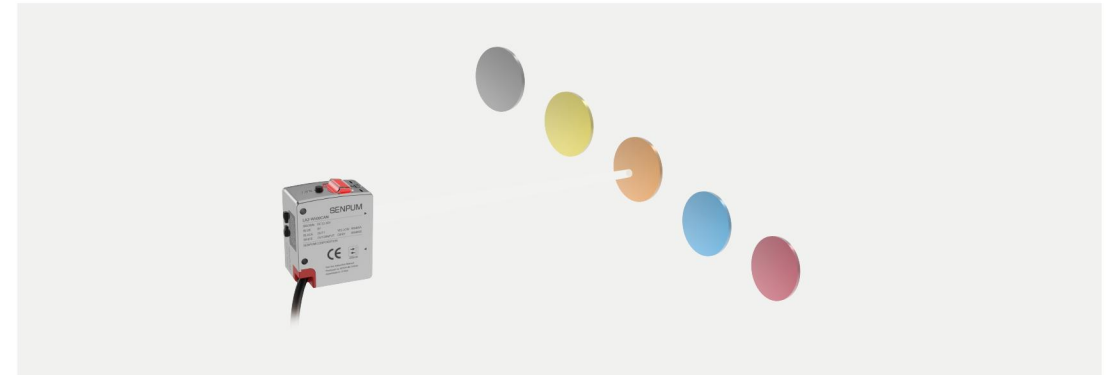
Assembly Inspection

The LA2-W Series can detect any difference in appearance (including color) and is in a durable metal housing. It has one touch calibration and can store up to 16 colors with an optional controller. This series has a range of up to 500mm (19.69") and offers hard wired and M12 connector cable options.

Confirmation of component assembly



“White spot” for stable detection of differences in appearance (color)



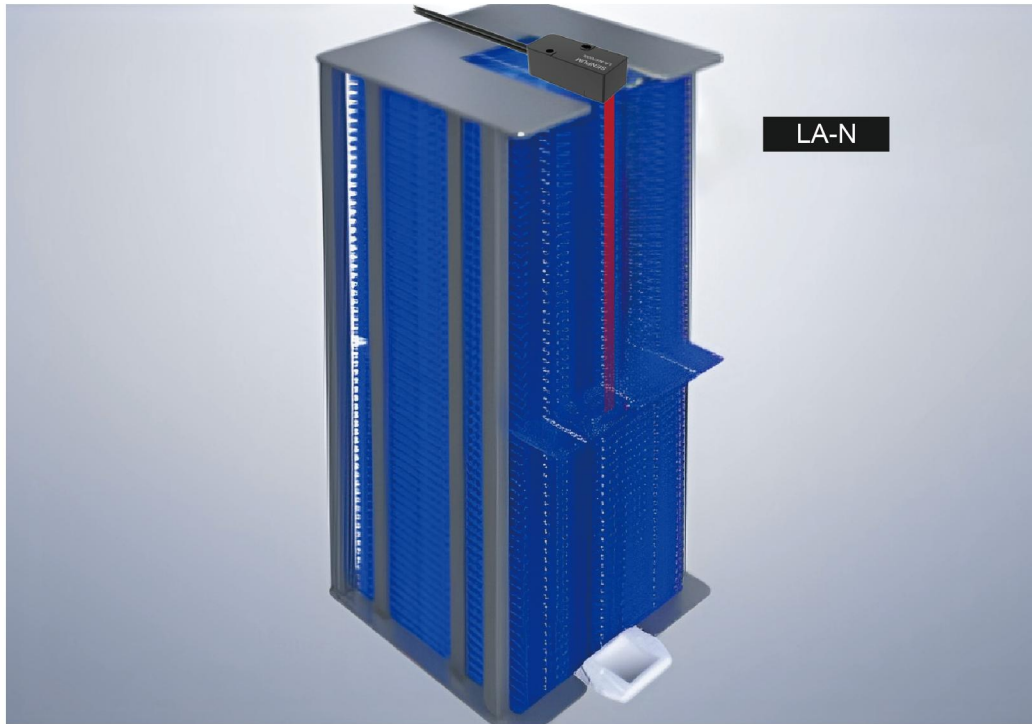
Measuring range: 30 to 500 mm (1.1 to 19")

White Light Color Sensor
LA2-W series

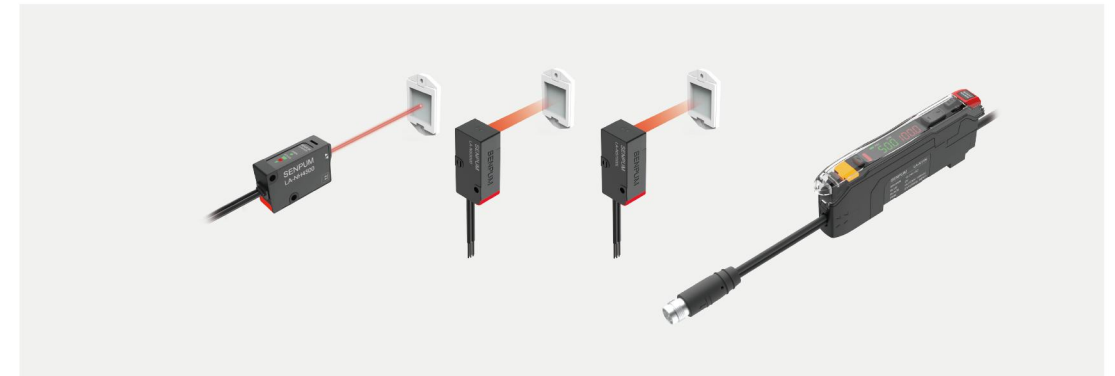
Area types

The use of a laser as a light source for inspection, with a small and visible spot, allows for long-distance inspection and is suitable for a wide range of inspection situations.

PCB misalignment detection



Long Range & Visible Beam Spot Precision Detection and Easy to Operate



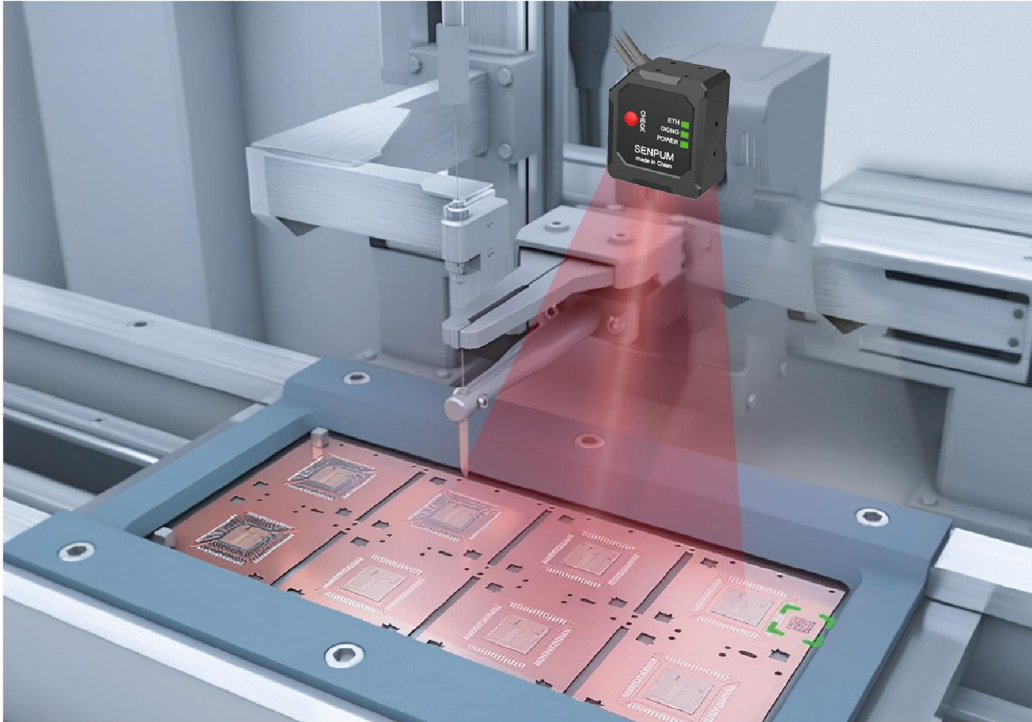
Measuring range: 2 to 6 m (78 to 236")

Multi-Purpose Digital Laser Sensor
LA-N series

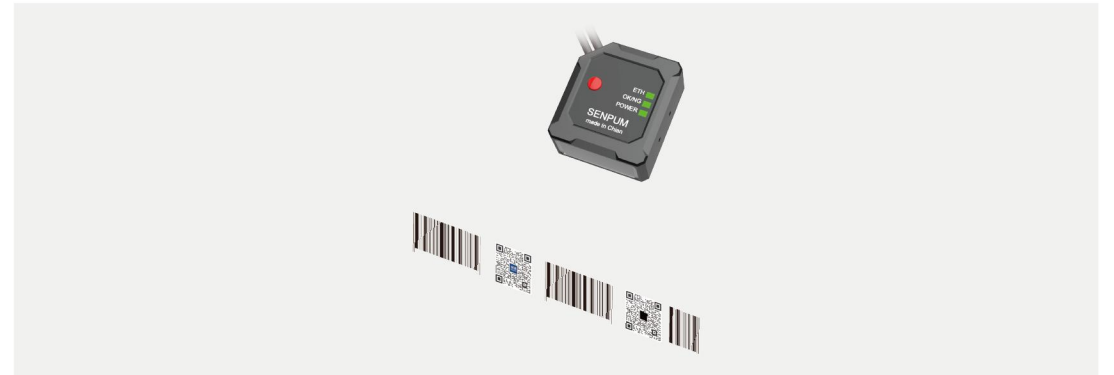
color change

Without interrupting on-site operations, stable reading can be realized with just this one device; intelligent response to changes in barcode status, equipped with AI, ultra-compact × ultra-high-performance barcode readers are born.

Leadframe code color change due to heat treatment



No interruption of field operations Stable reading with just this one device



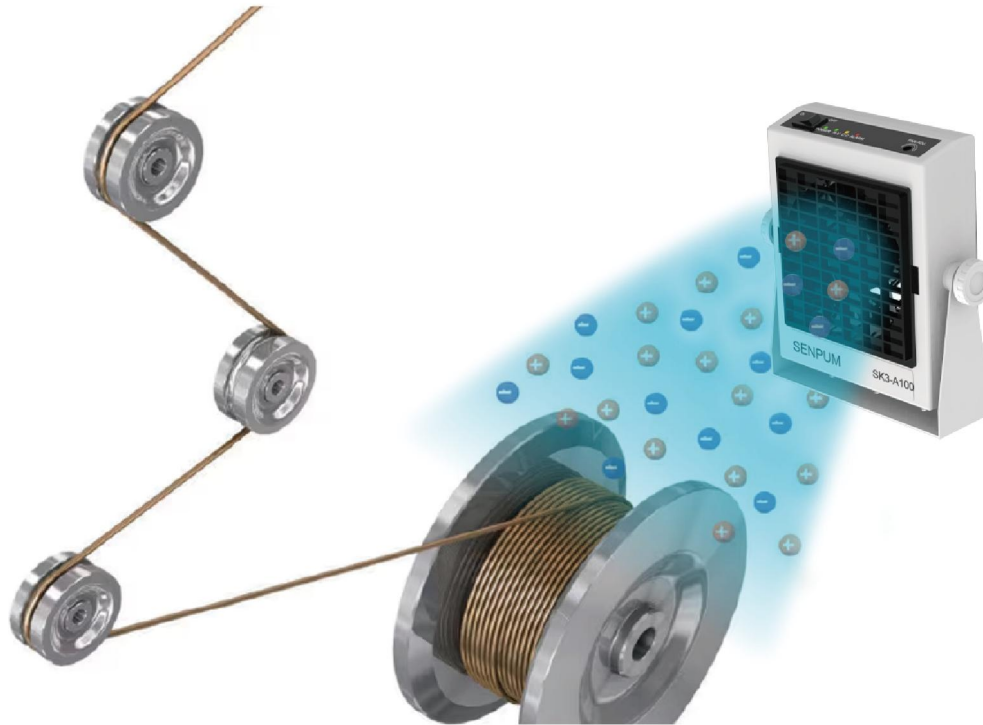
Measuring range: 50 to 600 mm

Intelligent Barcode Reader
XR-1500 series

Color change

Since contact and friction occurs at various locations, a large amount of charge is generated. Charged and unruly rolls occur, and when the ordering party rolls out the device, it leads to tangling, and complaints occur. By using a static electricity eliminator, it is possible to prevent unruly rolls.

Prevents the copper wire from winding around



Maintains superb static elimination performance for a long time

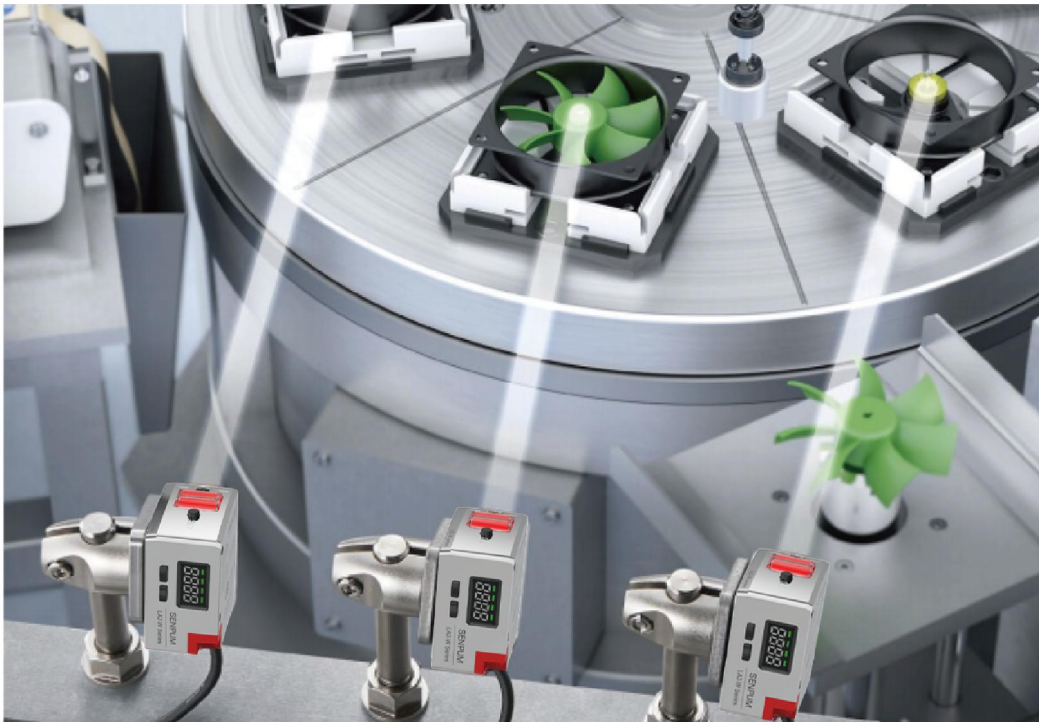


Ultra-compact Static Fan
SK3-A series

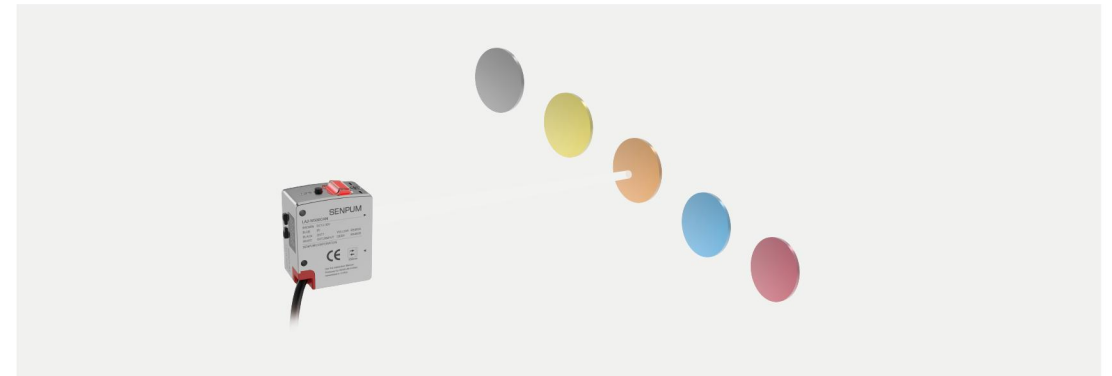
Color change

The LA2-W Series can detect any difference in appearance (including color) and is in a durable metal housing. It has one touch calibration and can store up to 16 colors with an optional controller. This series has a range of up to 500mm (19.69") and offers hard wired and M12 connector cable options.

Detecting Fan Blade Color



“White spot” for stable detection of differences in appearance (color)



Measuring range: 30 to 500 mm (1.1 to 19")

White Light Color Sensor
LA2-W series



Select by Industry



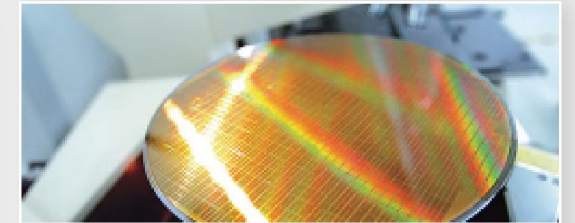
Automotive



E-mobility



Film / Sheet



Semiconductor



Medical



Electronics



Fiber / Cable

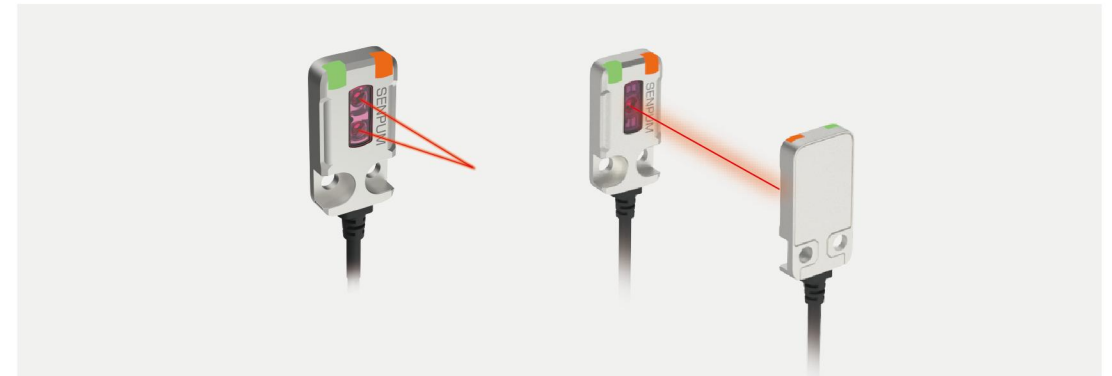
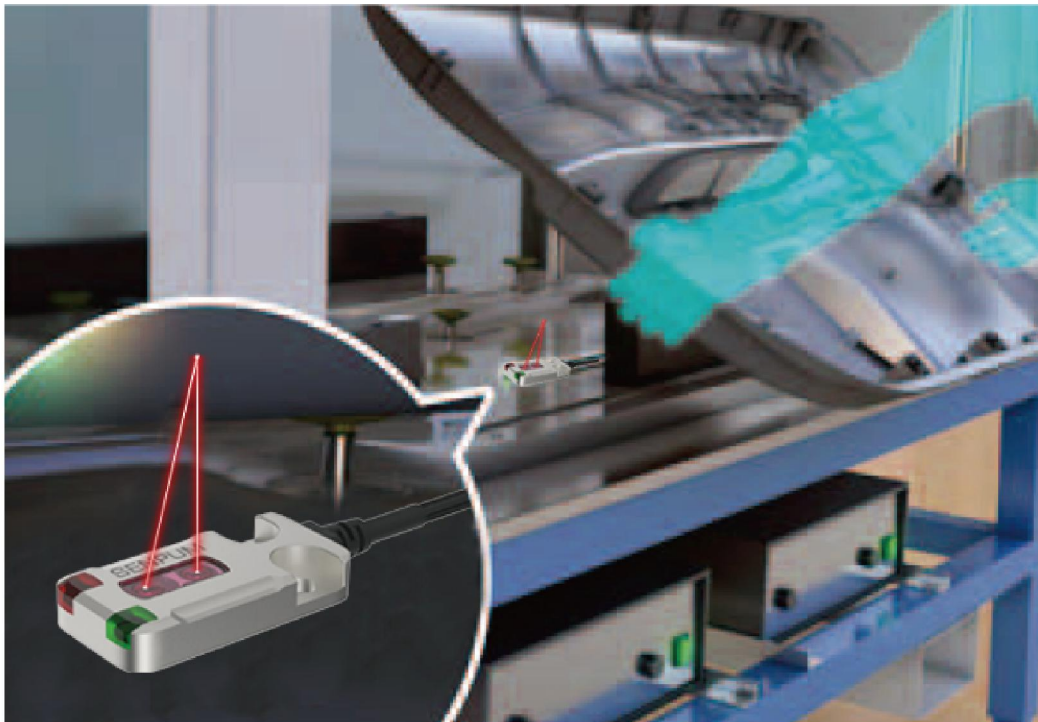


Steel

Automotive

The equipped background suppression function provides stable detection of components only in the specified operating range, eliminating false detection.

Presence/absence confirmation on instrument panels



Maximum detecting distance: 600mm; response time: 0.5ms

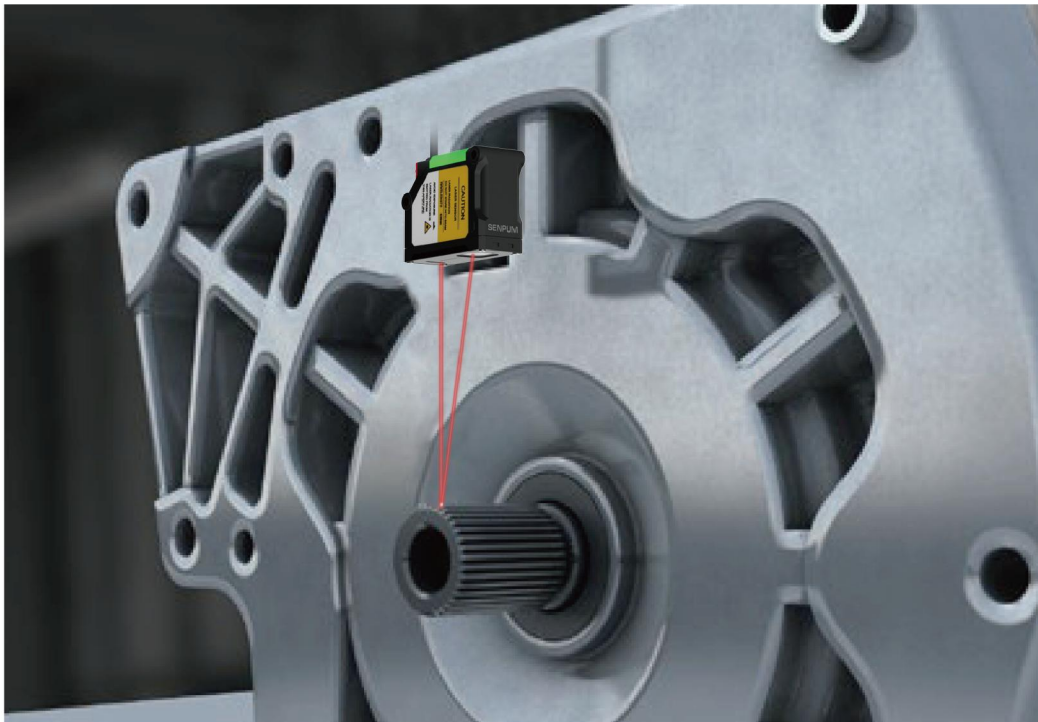
Self-contained Miniature Photoelectric Sensor

PL-F series

Automotive

It is not easily affected by color and can be inspected with repeatable accuracy of 1 μm ; the results can be output without a PLC.

Detection of motor oscillation



Supports detection distances from 20~1000mm
for a variety of applications

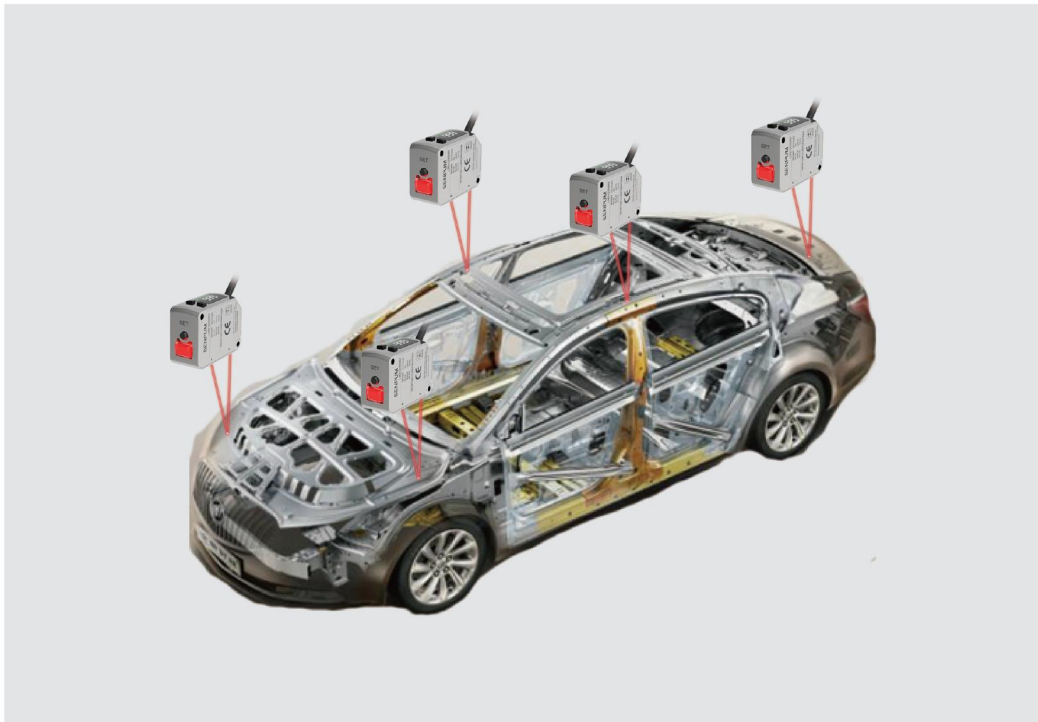
Laser Displacement Sensors

LM series

E-mobility

For inaccessible objects, the LM2-Q series can measure the breakage of the object at a distance.

E-mobility body size measurement



**Supports detection distances from 20~1000mm
for a variety of applications**

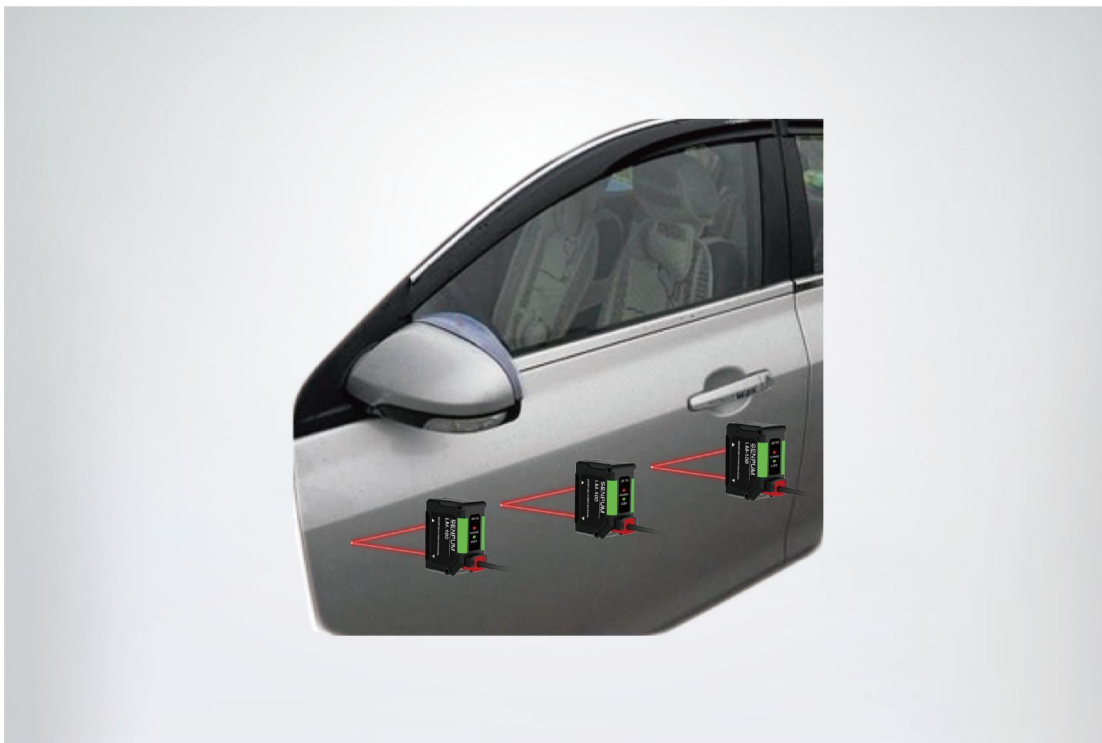
Laser Displacement Sensors

LM2-Q series series

E-mobility

LM series laser displacement sensors are not affected by changes in door posture, warping, or color, and the automatic light volume adjustment function ensures stable detection.

Door flatness inspection



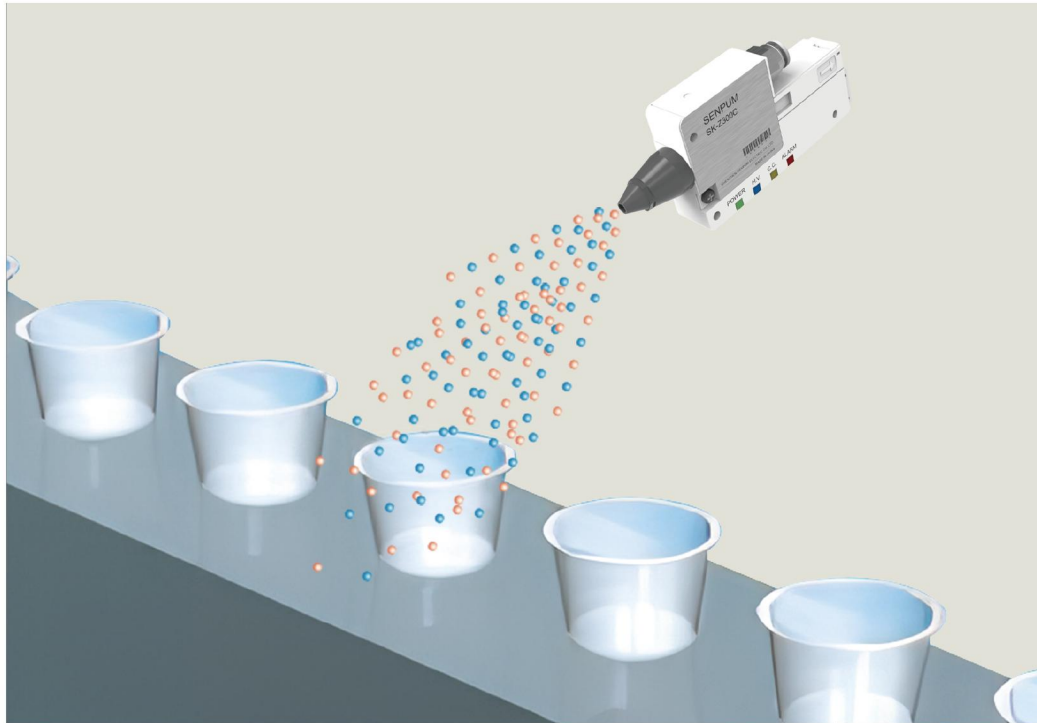
**Supports detection distances from 20~1000mm
for a variety of applications**

**Laser Displacement Sensors
LM series series**

Medical

When cleaning and inspection is required, it can be detected by the LED indicator and the abnormal discharge of the discharge pin can be notified

Resinware static electricity



High voltage stop alarm

Ultra-small static nozzles

SK-Z300 series

Medical

With a large field of view and large depth of field, it is easy to cope with package size and barcode position variations.

Read the barcode of a test tube



Support auto-focus , auto parameter setting

Intelligent type Barcode Scanners

XR-1500 series

Semiconductor

The cylinder drives the laser sensor to determine the number of wafers. A small spot laser sensor is used because the wafer detection surface is small.

Wafer Quantity Confirmation

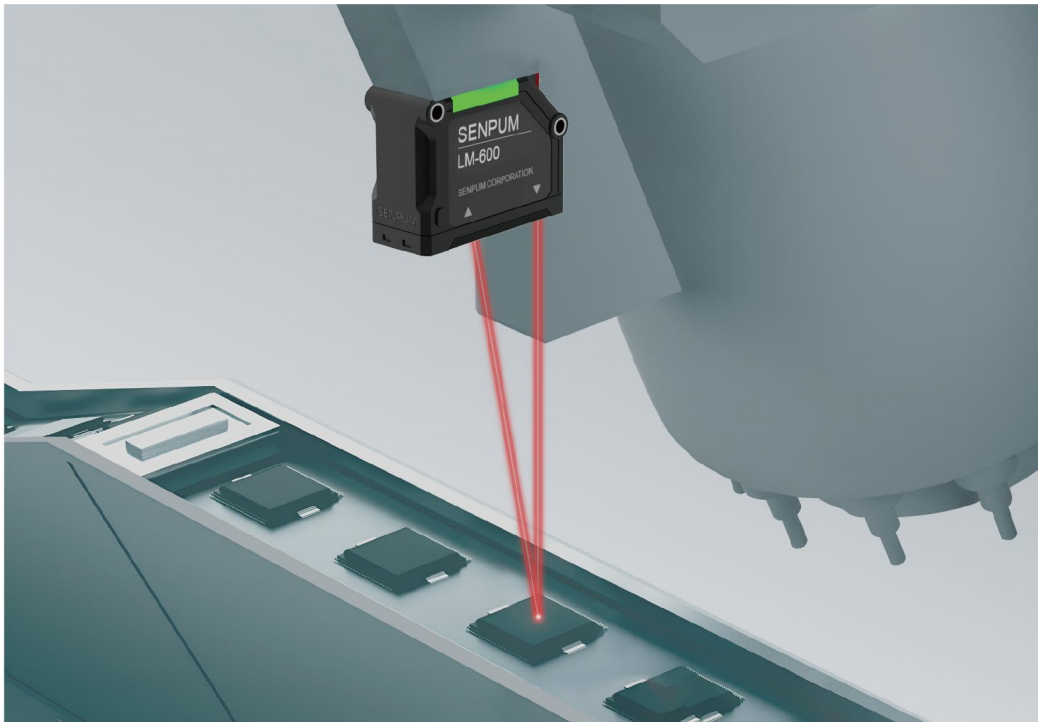


Stable resolution of object step height with high accuracy
CMOS laser sensor type laser sensors
LA2-ZB series

Semiconductor

The optical axis is easier to adjust, and it is possible to adjust the angle to avoid rounding off the light. At the same time, the intensity of the received light is greater, enabling stable detection.

Chip height detection



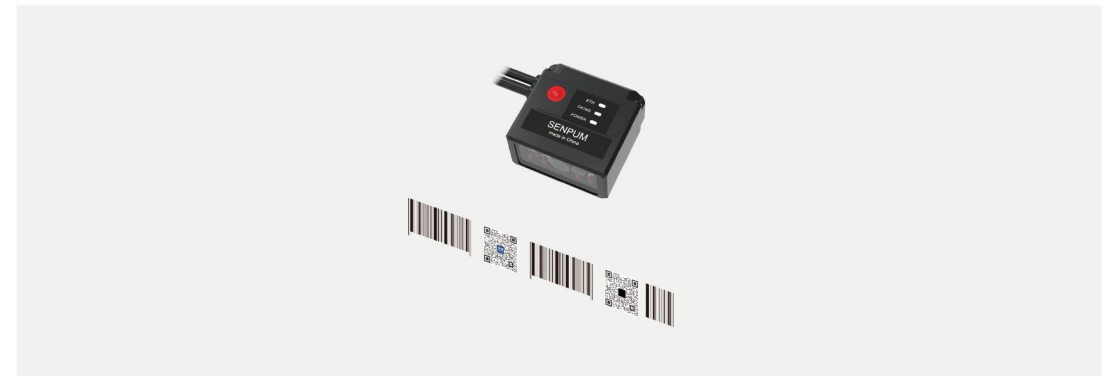
**Supports detection distances from 20~1000mm
for a variety of applications**

**Laser Displacement Sensors
LM series**

Semiconductor

Reads multiple components on a pallet at once, with a reading speed A of up to 100 codes/sec.

IC parts for high-speed dynamic reading



Smallest resolution 0.12mm; up to 100 codes/s

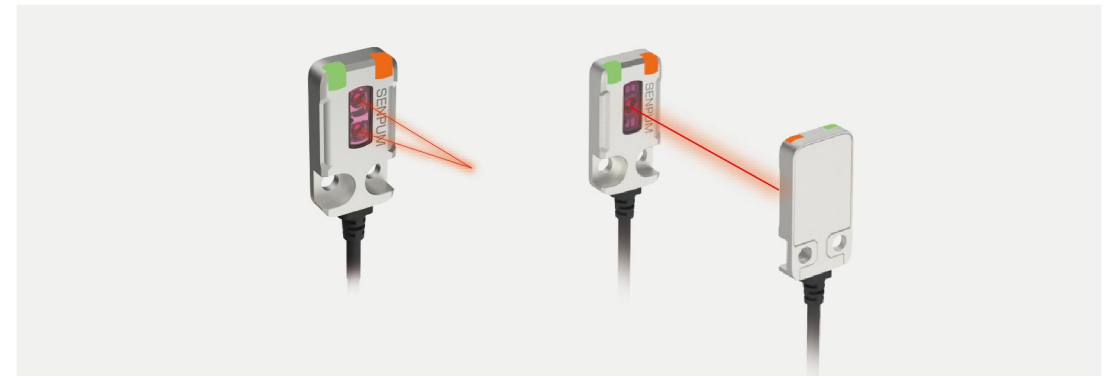
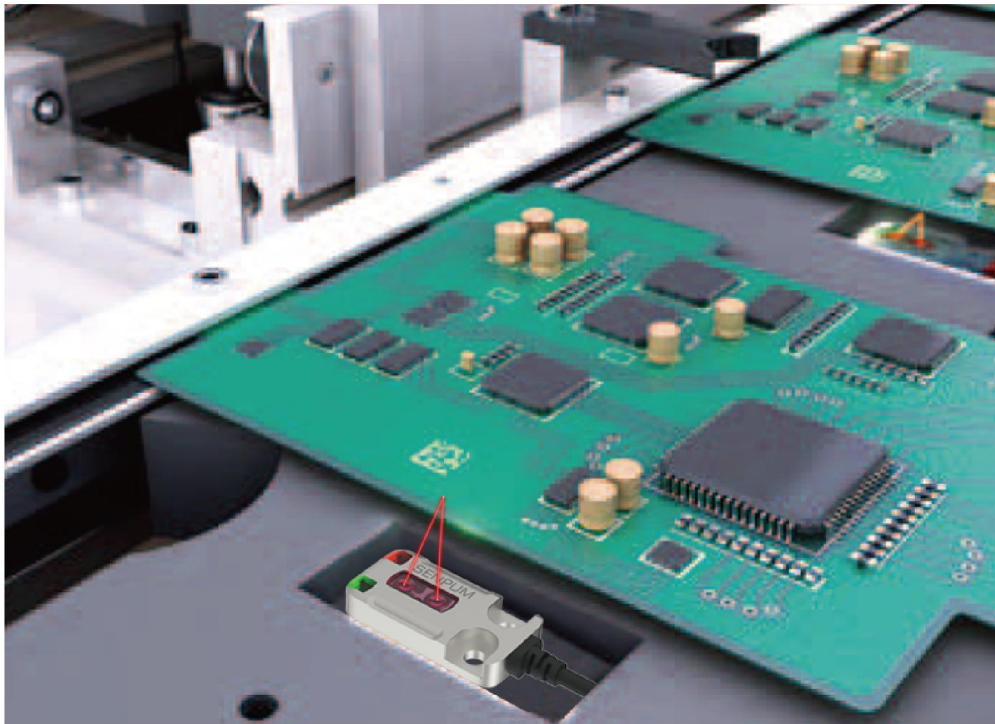
Standard type 1D / 2D Barcode Scanners

XR-1000 series

Electronics

The sensitivity is automatically adjusted according to the light intensity received by the sensor, which reduces the effects of the angle and color of the target, and results in stable operation.

Arrival confirmation of electronic PCBs



Maximum detecting distance: 600mm; response time: 0.5ms

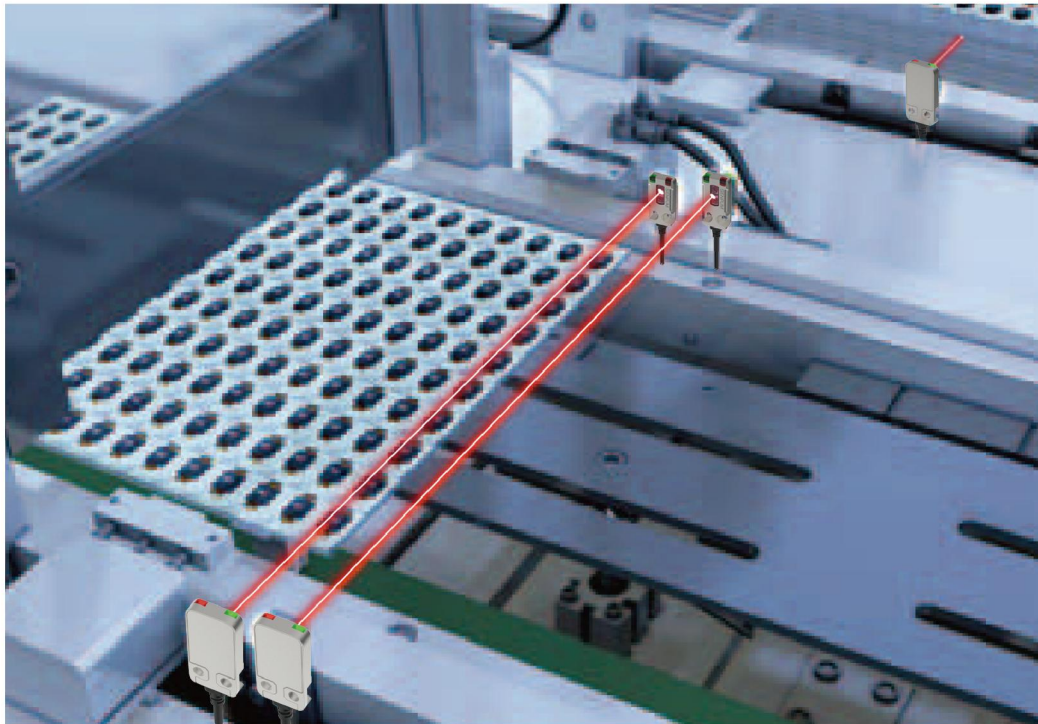
Self-contained Miniature Photoelectric Sensor

PL-F series

Electronics

The sensitivity is automatically adjusted according to the light intensity received by the sensor, which reduces the effects of the angle and color of the target, and results in stable operation.

Detecting improper seating of IC chips



Maximum detecting distance: 600mm; response time: 0.5ms

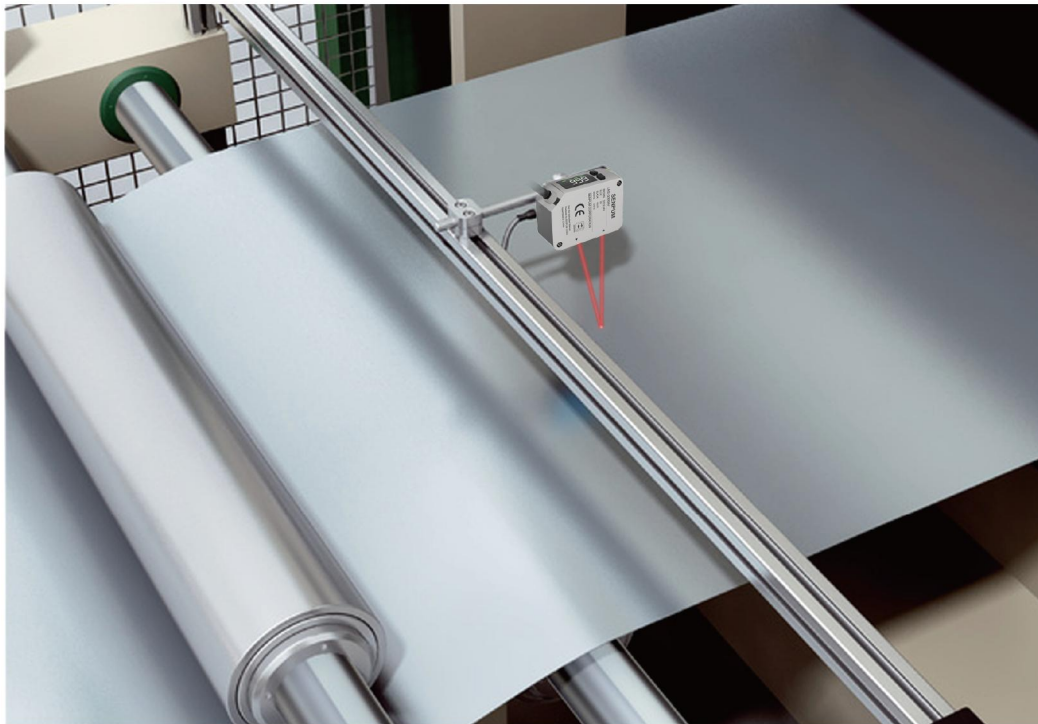
Self-contained Miniature Photoelectric Sensor

PL-F series

Steel

With switching output, the upper and lower limit positions are easier to set. Sense head amplifier integrated, ultra-small size, simple and easy to install.

Sheet metal tracking



Ultra-high precision, accurate and stable detection for multiple occasions

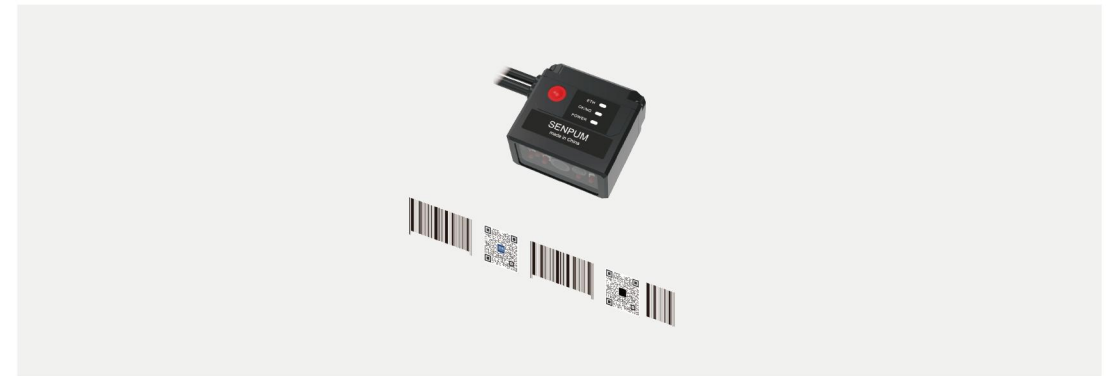
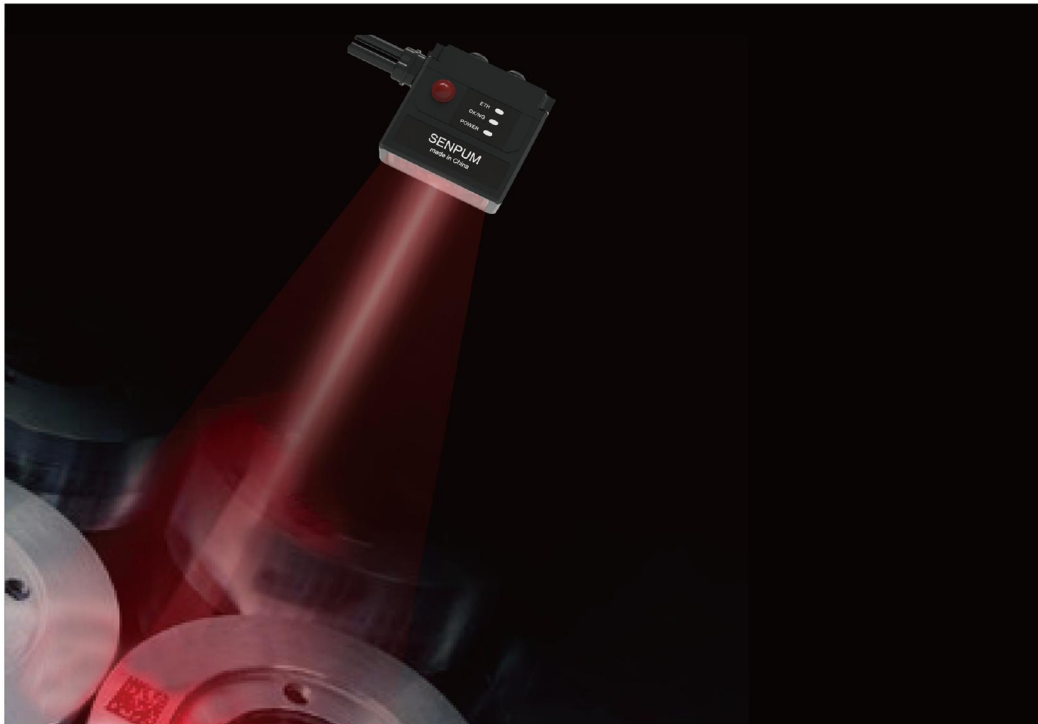
Long distance high-precision type laser displacement sensors

LM2-Q series

Steel

Rich IO interface, access to multiple inputs and signal outputs, support for RS232 serial transmission protocol, Ethernet (TCP / IP).

Production process traceability



1 million pixel processor for minimum resolution of 0.12mm

Standard type 1D / 2D Barcode Scanners

XR-1000 series