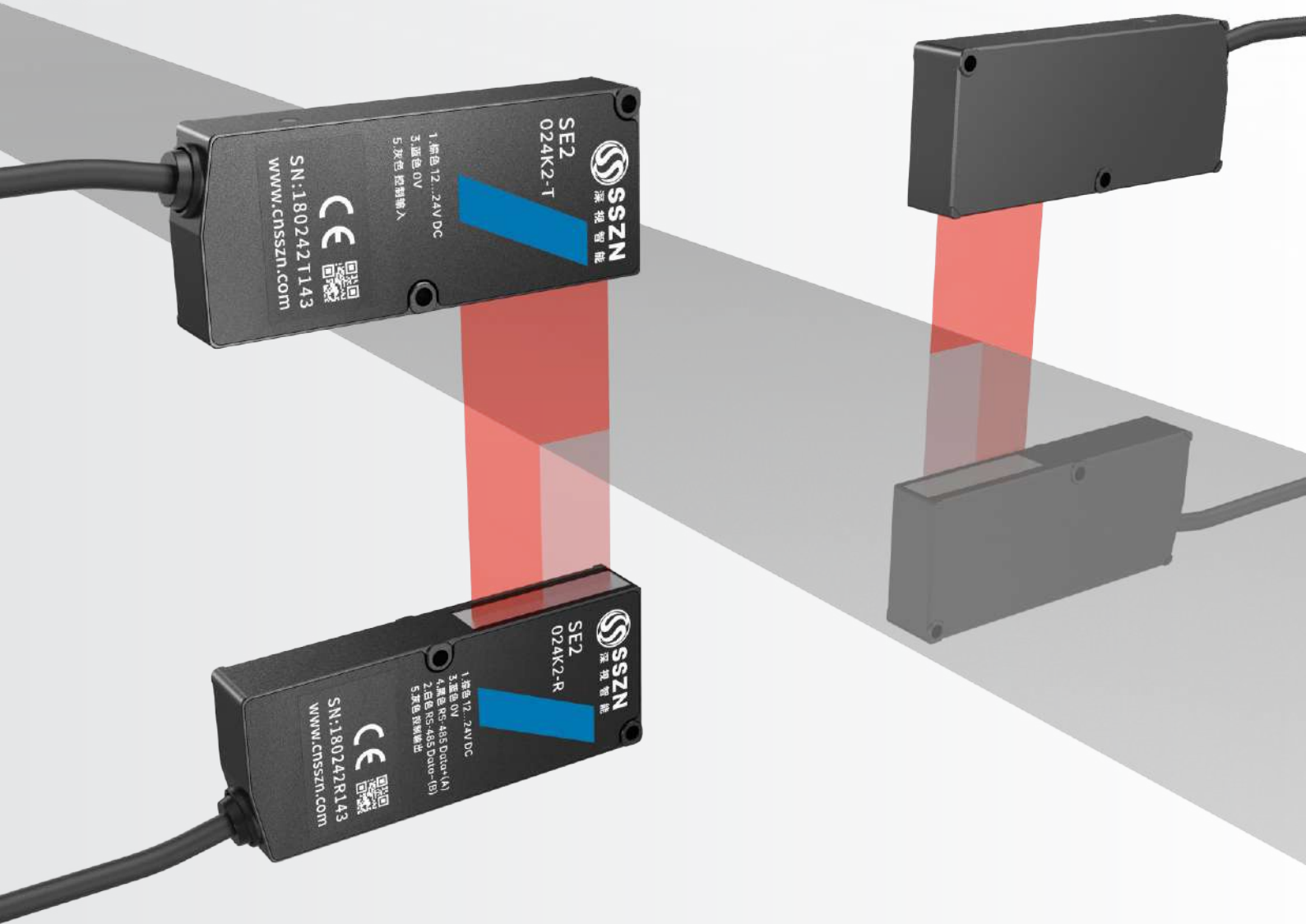


# NEW!

## Through-beam Edge Sensor

SE1 High-precision Through-beam Edge Sensor | SE2 Wide Range Through-beam Edge Sensor



SE1 Series | SE2 Series



Brand-new  
**24mm**  
Wide-range measurement



## I About SinceVision

SinceVision was established in 2014, with its headquarters located in Nanshan District, Shenzhen. It is a high-tech enterprise specializing in the research and development and production of industrial sensors.

Since its establishment, SinceVision has taken 3D industrial sensor as the entry point, and launched line laser, point laser, point spectrum correction sensor successively. In 2021, SinceVision entered the research and defense market and launched several product lines such as high-speed camera, totaling dozens of product series into the batch sales stage. At present, the products developed and produced have successfully broken the foreign monopoly, and become the leader of Chinese brand. In addition, some of the performance parameters of the mature products represented by the line laser have achieved world leadership, and gradually become a new benchmark to lead the development of the industry.

Today, the SinceVision brand is gradually becoming familiar to the automation people. We have served hundreds of customers, among which the terminal has covered domestic and foreign consumer electronics, carp electricity, photovoltaic major head brands. At present, we are sparing no effort to promote the refinement of product solutions based on niche areas, using our products and services to empower more fields. From semiconductor/panel, to automobile/railway; from plastic/film, to food/textile, to contribute to the cost reduction and efficiency of more industries. With the rise of labor cost and product quality upgrade, the future of industrial automation is unstoppable. With years of experience in R&D of 3D industrial sensors, Deep Vision has precipitated a comprehensive R&D platform involving optics, mechanics, electricity and software, as well as a mature product control system. In the future, Deep Vision will spare no effort to improve the R&D and production system, and strive to build a world-class industrial product R&D team. With the ultimate craftsmanship of Deep Vision people, we will continue to tackle high-end sensors, so that Chinese automation has a national brand available and a national brand can be trusted.

In order to provide our customers with fast and convenient services, we have set up many offices in China and overseas.

### China

Shenzhen, Dongguan, Suzhou (Kunshan), Wuxi, Shanghai, Beijing, Chengdu, Wuhan, Xi'an, Hefei, Ningde, Huizhou, Taipei

### Overseas

South Korea, Vietnam, Thailand, Malaysia, Singapore

# MILESTONE

**2014**

**April**

Shenzhen SinceVision Technology Co.,Ltd. was officially established

**2016**

**March**

Released the first generation of 3D Laser Profiler the SR7000 series.

**2017**

**March**

Obtained the titles of "National High-tech Enterprise" and "Shenzhen Industrial Stable Growth Enterprise."

**2018**

**March**

Released 3D laser profile the SR8000 series

**August**

SinceVision completed Round A financing

**2021**

**March**

Released 3D Laser Profiler the SR9000 series

**September**

SinceVision completed Round B financing

**December**

Released Laser Displacement Sensor - the SD series

**2020**

**March**

Released 3D Laser Profiler the SR5000 series

**June**

Released Spectral Confocal Displacement Sensor - the SC series

**December**

Established offices in Chengdu and Beijing, expanding services to the Southwest and North China regions.

**2019**

**March**

The East China office was officially established in Kunshan to serve the Yangtze River Delta region.

**November**

SinceVision completed Round A+ financing

**December**

Released Laser Displacement Sensor the SG series and the SGI series

**2022**

**April**

SinceVision completed Round B+ financing, co-led by MPC and GL Ventures. SinceVision entered the scientific research and defense markets, launching the first generation of High-Speed Camera - the SH6 series.

**September**

SinceVision obtained "CE Certification," "FCC Certification," "KC Certification," "Precision Certification," "ISO9001 Certification," "ISO14001 Certification," and "Social Accountability Management System Certification."

**December**

Released Through-Beam Edge Sensor - the SE1 series  
Established offices in Dongguan, Hefei, Xi'an, and other regions, covering nationwide services.

**2023**

**June**

Released High-Speed Camera the SH3 series and Through-Beam Edge Sensor- the SE2 series

**September**

SinceVision completed Round C financing, led by the Advanced Manufacturing Fund managed by SDIC Fund Management Co., Ltd., with follow-on investment from GL Ventures. SinceVision was awarded the title of "National new special 'Small Giant' Enterprise."

**October**

Formally established the International Department, developing markets in Southeast Asia and Europe, with a service network covering the globe.

**2024**

**February**

Released 3D Laser Profiler the SRI series

**March**

Released white light spot photoelectric sensor - the SS1series and Laser Displacement Sensor - the SDC series

**June**

Released High-Speed Camera-the SH2 series and Spectral Confocal Displacement Sensor- the SCI series

## SE1 High-precision Through-beam Edge Sensor



Compact design allows for installation in limited space.



# 01

## Easy to adjust optical axis

When installing sensors and conducting regular maintenance, in the sensing head position adjustment mode, the indicator light flashes when the optical axis tilts.

# 02

## Multiple interfaces

No worry about the connection to the upper computer. Multiple interfaces are available for connection with users system  
EtherCAT/Analog output (current · voltage)/Digital input/output (NPN/PNP)

# 03

## Chinese menu display

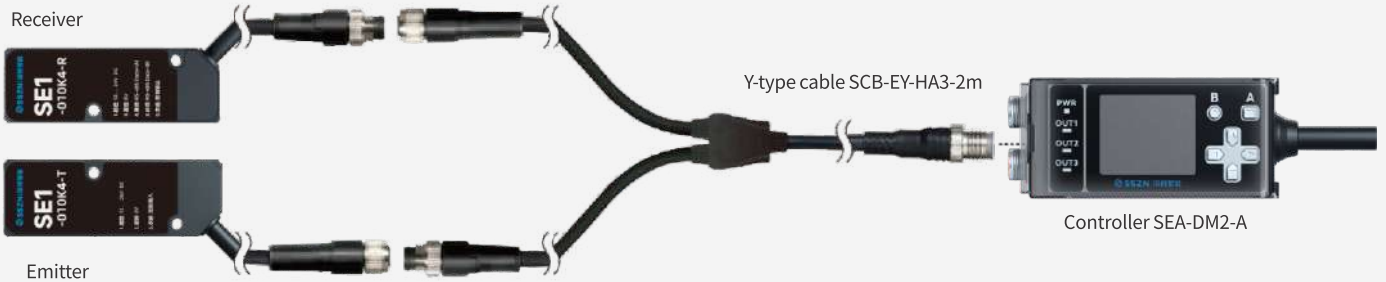
The SEA-DM2 equipped with a TFL screen for measurement value calculation simultaneously with two sets of SE1 series.

## Controller SEA series

- SEA-DM2
- SEA-DM2-A
- SEA-DM2-V



# 01 System Configuration - Analog Communication



# 02 System Configuration - EtherCAT bus communication

The communication unit SU1-EC can connect the SEA series (and SE1 series) to the EtherCAT network. Traditional methods manually configure parameters through controller buttons. It is now possible to remotely batch configure parameters through the EtherCAT communication unit.

Through-beam edge sensing head SE1



PLC



EtherCAT communication module SU1-EC



## Main Technical Specifications of Sensors

Main Technical Specifications of Sensors		
Model	SE1-010K4	
Measurement range	Edge: ±5mm; Width: 10mm	
Receiver/Transmitter head distance	300mm Max.	
Light source	Semiconductor red laser	
Linearity	Receiver/Transmitter head distance 100mm: ±0.4%F.S.(±40μm)	
Repeatability	5μm	
Response time	250μs	
Interface	RS485 (Cable length up to 10m)	
Environmental resistance	Working ambient temperature/humidity	-10°C~+50°C/35~85%RH(No condensation or freezing)
	Storing ambient temperature/humidity	-20°C~+70°C/35~85%RH (No condensation or freezing)
	Protection Level	IP67
Material	Aluminium alloy	
Dimension	21mm×61mm×10.6mm	

## Main Technical Specifications of the Controller

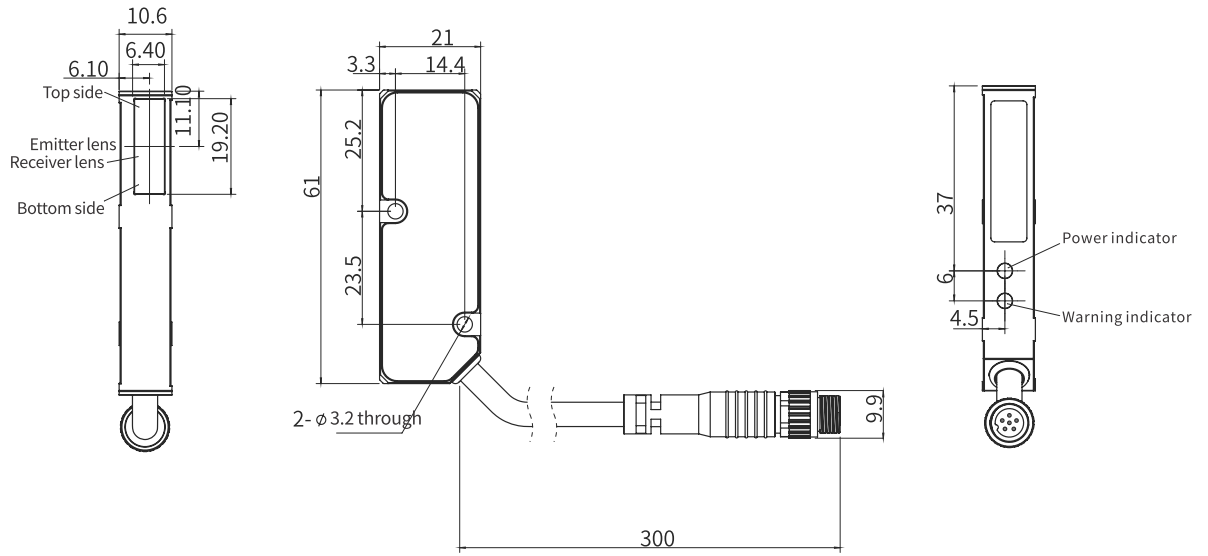
Main Technical Specifications of the Controller		
Model	SEA-DM2-A/V	SEA-DM2
Sensor head	Number of Connections	2 pairs of sensor heads at Max.
	Connection Method	M8 6-pin connector
	Communication Method	RS-485 (cable, 10m in length at Max.)
Display	Measured Value	TFT screen
	Indicator Light	Power indicator: Green. Output indicator: Red
I/O	External Input	1 channel (simultaneously effective for sensor head Channel 1/Channel 2)
	Digital Output	Optional 2-way output (PNP/NPN) Open Collector, 100mA/DC 24V Residual voltage below 1.8V
	Analog Output	2-way output analog current/voltage. Current: 4~20mA (maximum load 300Ω) or voltage: 0~10V (output resistance 100Ω)
Environment resistance	Working ambient temperature/humidity	-20~+50°C/35~85%RH (No condensation or freezing)
	Storing ambient temperature/humidity	-20~+70°C/35~85%RH (No condensation or freezing)
	Protection Level	IP50
Installation Method	35mm DIN rail (conductive)	
Material	PC+Fiberglass	

## Technical Specifications of the EtherCAT Communication Unit

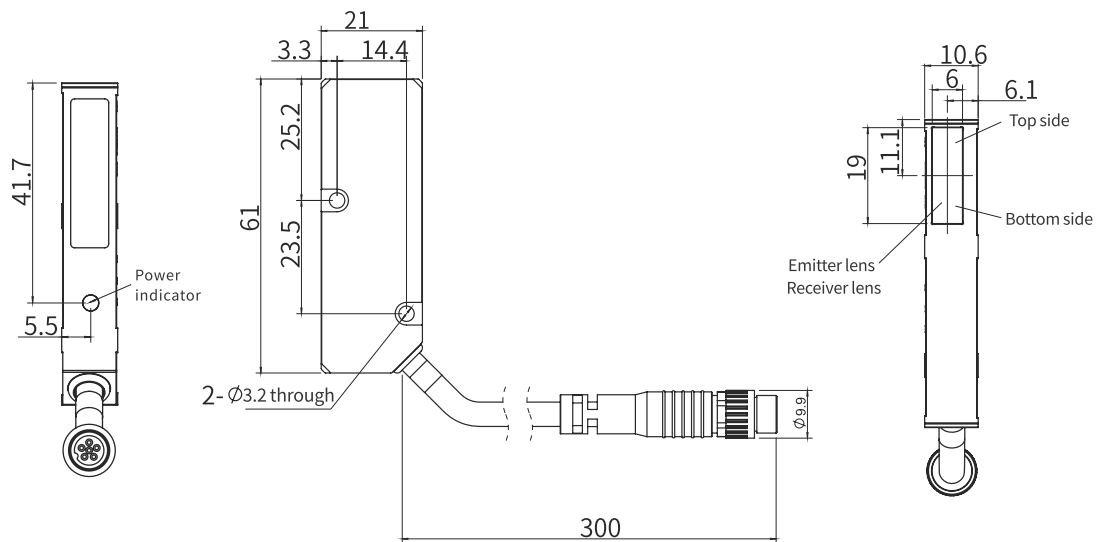
Technical Specifications of the EtherCAT Communication Unit		
EtherCAT Specifications	Distance between nodes	100m Max.
	Transmission speed	100Mbps
	Corresponding function	Process data communication, mailbox communication
Connect sensor	Connectable models	Controller SEA-DM2
	Number of connections	Up to 8 controllers (16 pairs of sensor heads)
	Connection type	10-pin connector
Data transmission	PDO communication	Supported
	SDO communication	Supported
Environmental resistance	Working ambient temperature/humidity	-20~+50°C/35~85%RH(No condensation or freezing)
	Storing ambient temperature/humidity	-40~+70°C/35~85%RH(No condensation or freezing)
	Protection Level	IP50
Installation Method	35 mm DIN rail (conductive)	
Material	PC + Fiberglass	

# Drawing Specifications of SE1

## Receiver sensor head SE1-010K4-R

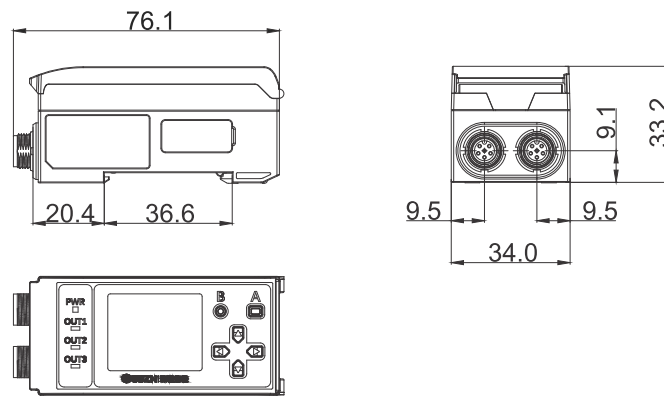


## Emitter sensor head SE1-010K4-T

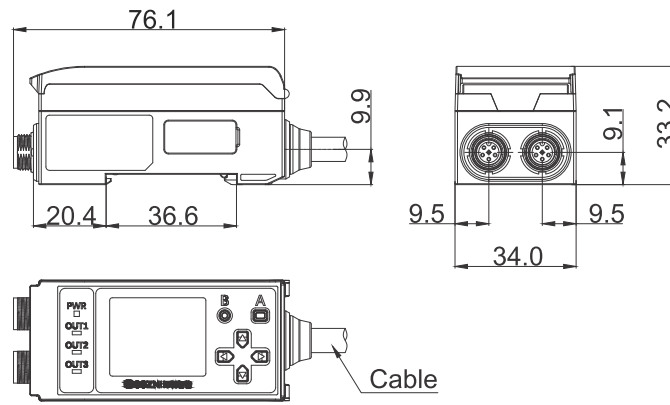




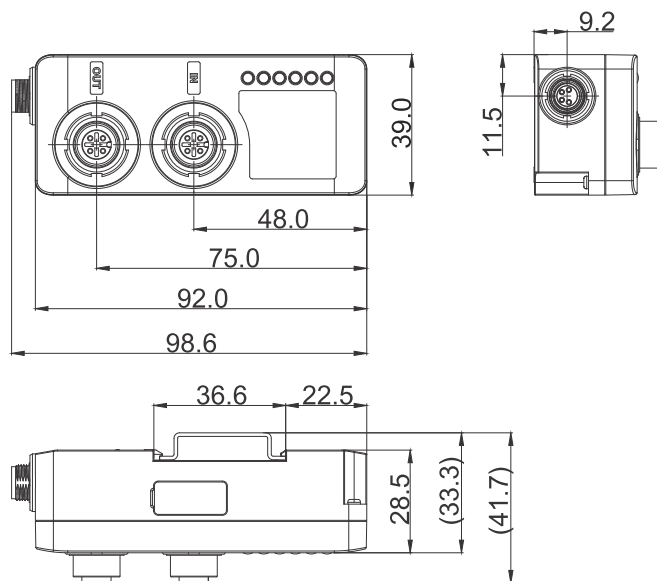
Controller SEA-DM2



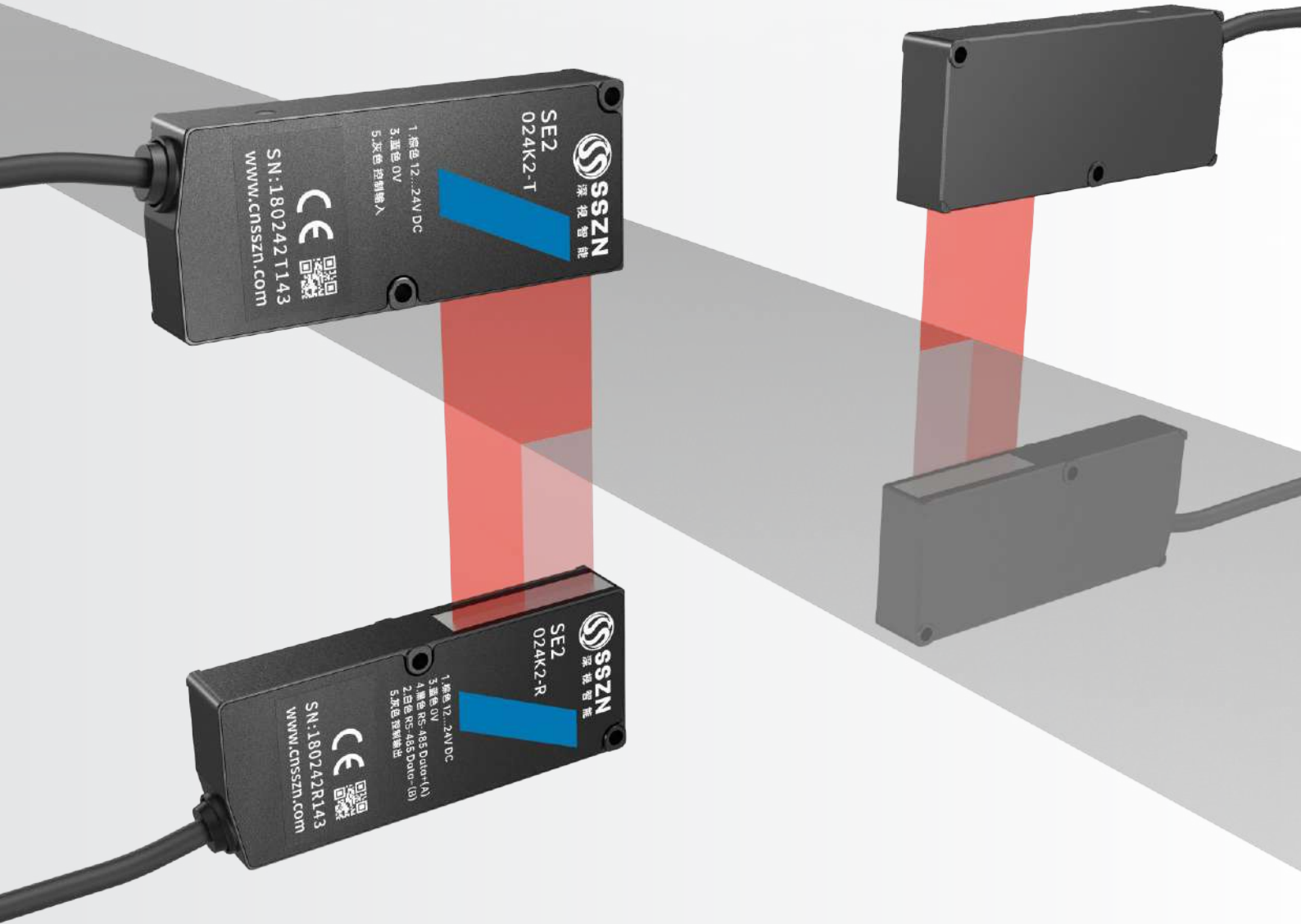
Controller SEA-DM2-A/V



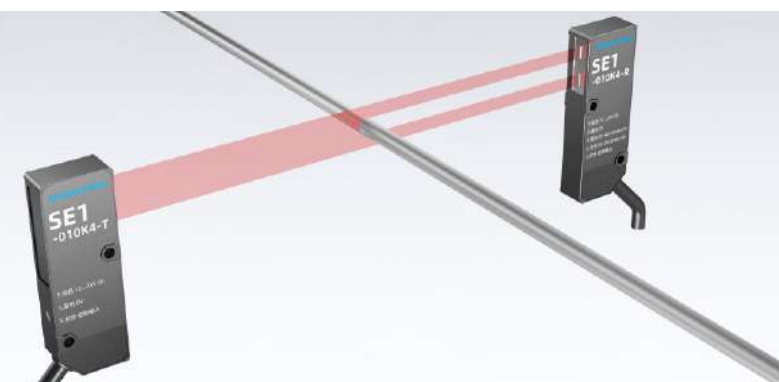
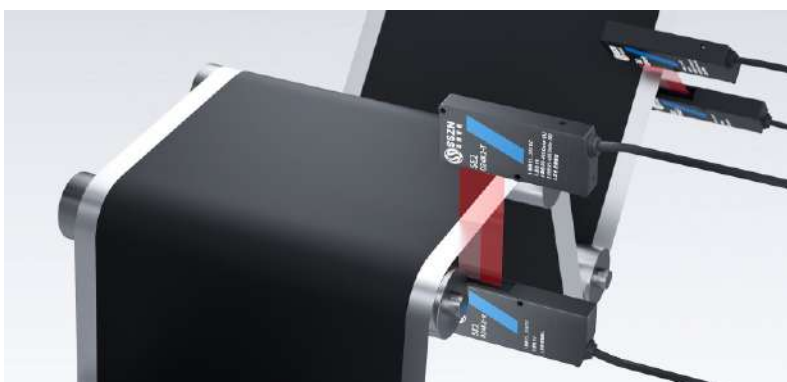
EtherCAT unit communication SU1-EC



# SE2 Wide Range Through-beam Edge Sensor



**Brand-new**  
**24mm**  
Wide-range measurement



01

### Measurement range 24mm

Available for wide range measurement

02

### Through-beam laser

More flexible and accurate

03

### One-to-more design

One-to-four design with EtherCAT bus communication reduces cost

04

### EtherCAT bus communication

Stable communication and strong real-time performance

05

### Wide range and high precision

Linearity 0.4% F.S

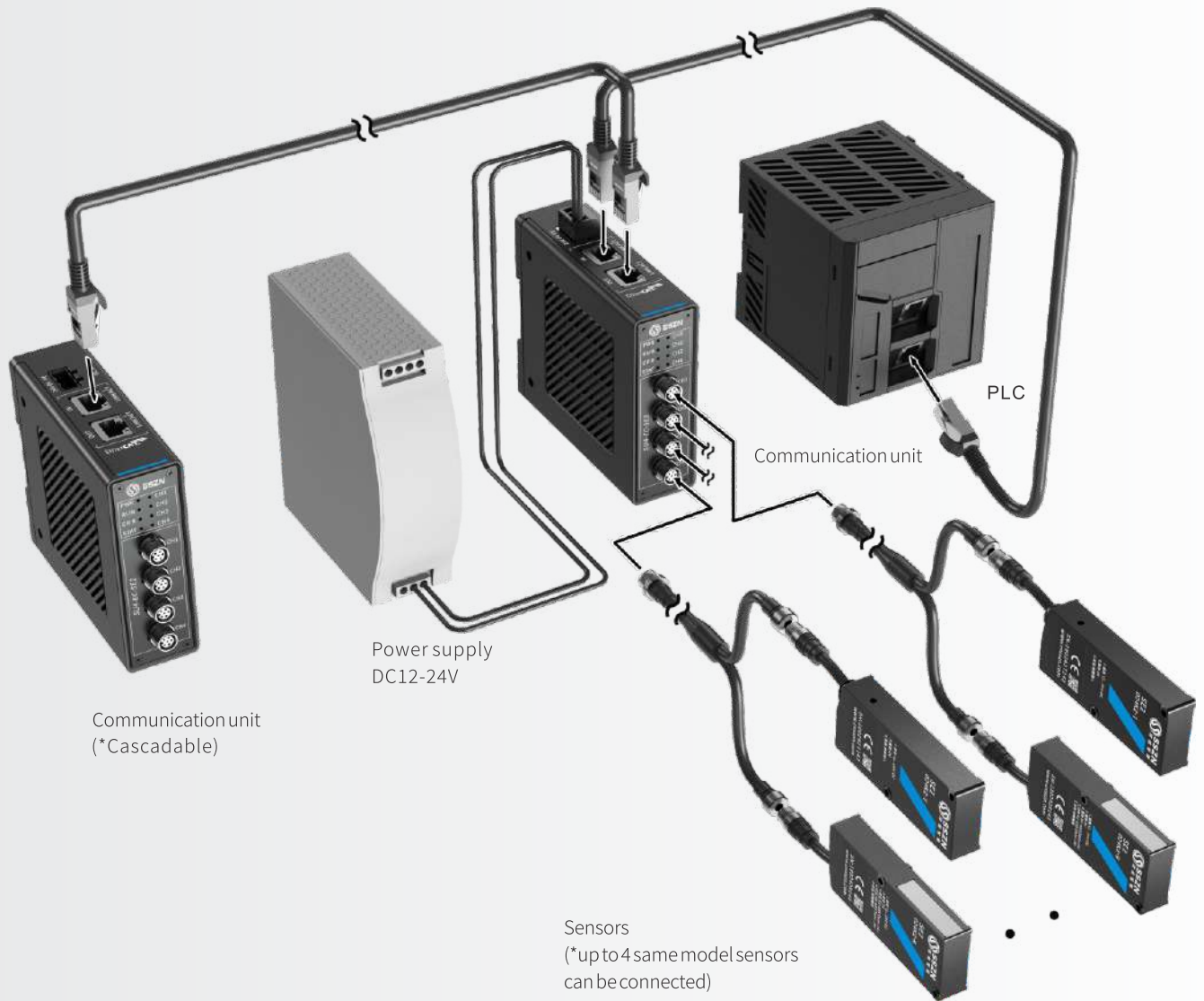
06

### Better electromagnetic compatibility

Design for stronger electromagnetic interference resistance

# SE2 System Configuration

## SE2 series Wiring Diagram of Wide Range Edge Measurement Sensor System



## SE2-024K2 Wide Range Edge Measurement Sensor



Model		SE2-024K2
Measurement range		Edge: $\pm 12\text{mm}$ Width: 24mm
Installation distance of sensing head		Max.200mm
Light source		Red semiconductor laser ·660nm
Laser class		Class I (IEC)
Spot size		5×29mm
Linearity		$\pm 0.4\%F.S$
Repeatability		50 $\mu\text{m}$
Sampling frequency		0.5ms
Temperature characteristics		$\pm 0.02\%F.S./^{\circ}\text{C}$
Indicator light		Emitter power indicator: Green. Receiver power indicator: Green. Alarm indicator: Red
Communication method		RS-485
Power supply voltage		DC12~24V $\pm 10\%$
Connection method		6-pin connector
Environmental resistance	Protection Level	IP67
	Working ambient temperature/humidity	-10 $^{\circ}\text{C}$ ~+50 $^{\circ}\text{C}$ /35~85%RH (No condensation or freezing)
	Storing ambient temperature/humidity	-20 $^{\circ}\text{C}$ ~+60 $^{\circ}\text{C}$ /35~85%RH(No condensation or freezing)
Applicable laws and regulations	EMC	EMC Directive (2014/30/EU)
	Environment	RoHS Directive (2011/65/EU)
Dimension(mm)		80×33×15
Material		Aluminium alloy

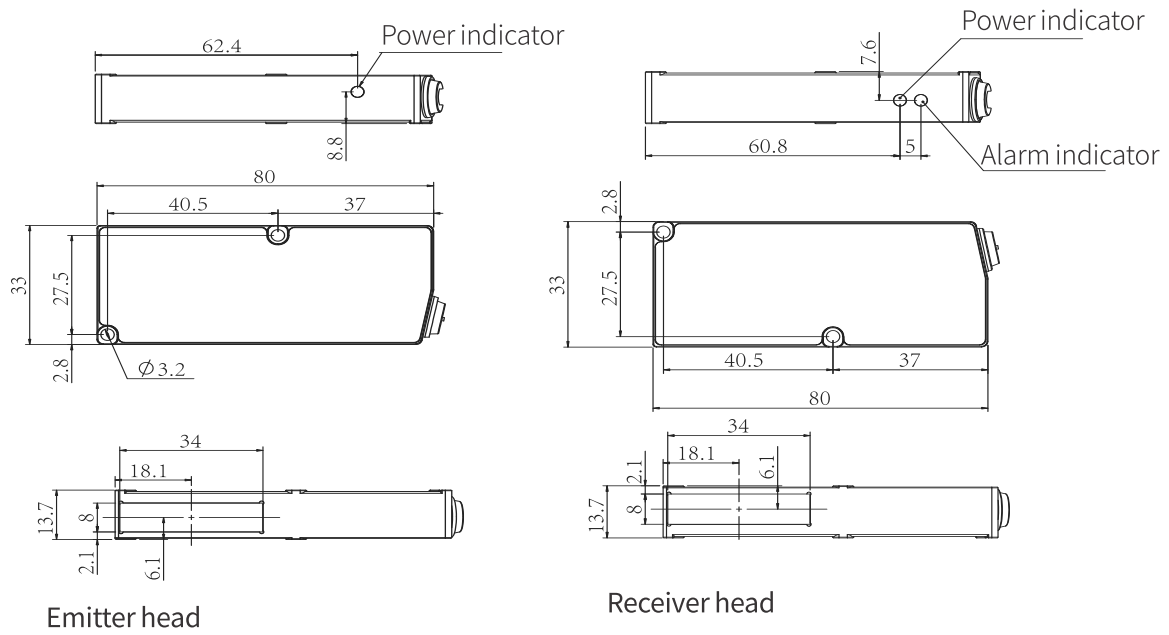
# Technical specifications for four channel EtherCAT communication unit



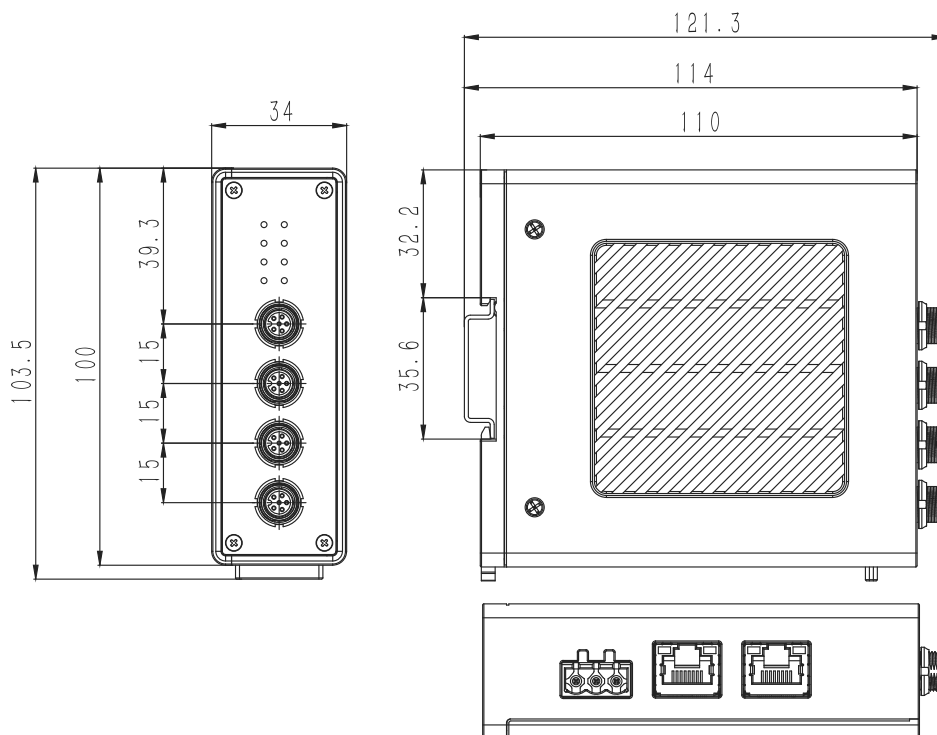
## Technical specifications for four channel EtherCAT communication unit

Model	SU4-EC-SE2	
Sensor head	Number of channels	Four channels
	Communication method	RS-485 (cable, 20m in length at Max.)
	Communication protocol	EtherCAT protocol
	Support performance	PDO: Maximum refresh rate of 2kHz SDO: Supports sensor parameter settings
Ethercat	Version	EtherCAT Slave
	Standard protocol	IEEE802.3u(100Base-TX)
	Transmission speed	100Mbps
	Communication cycle	0.5ms
	Transmission distance	100m Max.
	Communication cable	STP CAT.5E or above
	Number of ports	2个, IN/OUT
Support external power supply	Physical interface	RJ45
	Output voltage	DC24V
Power supply	Output current	Maximum 300mA per channel
	Input voltage	DC24V
Environmental resistance	Protection level	IP50
	Working ambient temperature/humidity	-10°C~+50°C/35~85%RH (No condensation or freezing)
	Storing ambient temperature/humidity	-20°C~+60°C/35~85%RH(No condensation or freezing)
Applicable laws and regulations	EMC	EMC Directive (2014/30/EU)
	Environment	RoHS Directive (2011/65/EU)
Installation method	DIN rail installation	

**Sensor SE2-024K2**



**EtherCAT Communication Unit SU4-EC-SE2**

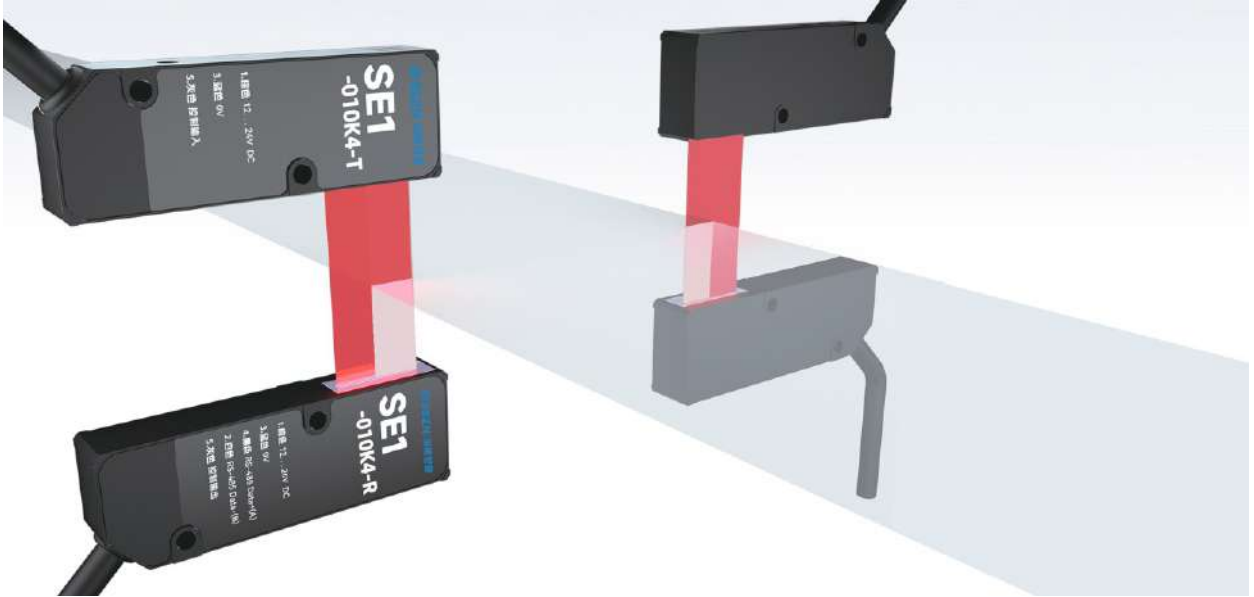




## 01 | Electrode Rolled Deviation Detection and Damage Detection

Application scenario: In the winding process of battery cell production, as the final detection station, the winding correction requires real-time detection of the edge position and damage of the electrode. To avoid quality issues caused by misaligned or damaged edges of the electrode plates, it is necessary to have a deviation sensor with extremely high response speed and detection accuracy.

Use the high-precision edge measurement sensor SE1 series of SinceVision, installed them opposite for through-beam measurement at the winding station, with a sampling frequency of 4kHz, a response time of 250  $\mu$ s and repeatability 5  $\mu$ m. Use EtherCAT bus communication, which has a high speed of communication and strong anti-interference ability. It's able to perfectly solve the problems of winding correction and electrode edge damage detection.



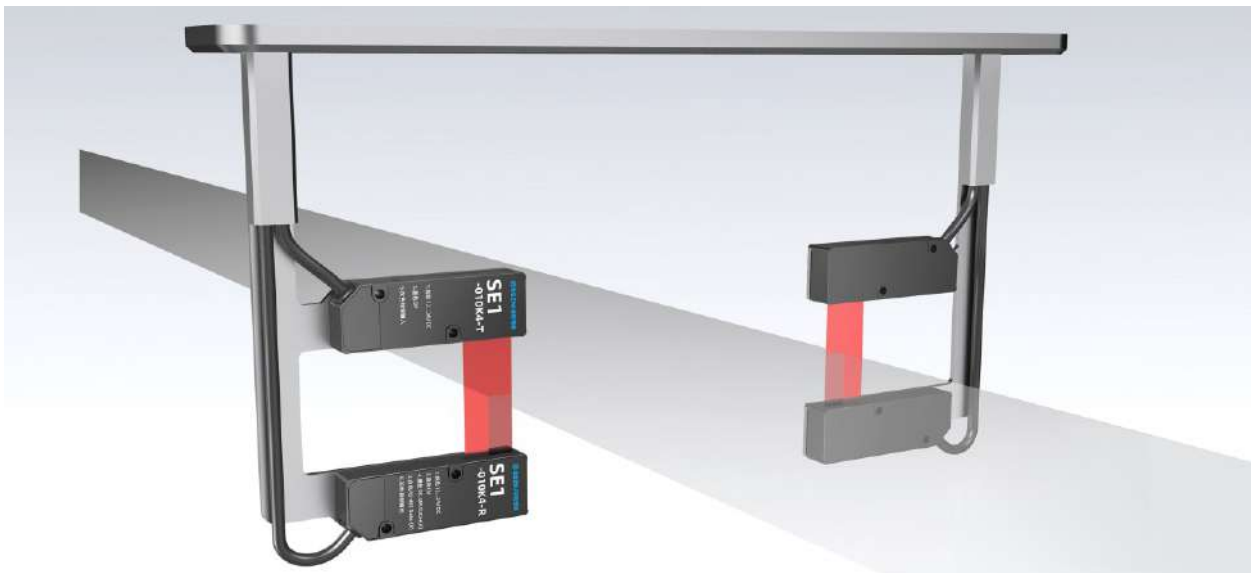
## 02 | Separator deviation measurement, Separator width detection

Application scenario: In the winding process of battery cell production, it is necessary to detect the edge positions of the upper and lower separators in real-time to ensure the alignment of the Separator edges during battery cell winding.

There are two types of separator materials: dry Separator and wet Separator, with different light transmittance. It is required that the deviation sensor can adapt to the light transmittance of the two types of separator materials and ensure the correction accuracy.

At the same time, the customer has requirements for measuring the width of the separator, and needs to use an edge measurement sensor to measure the width of the separator.

Solution: Use the high-precision edge measurement sensor SE1 series, installed them opposite for through-beam measurement at the winding station, which can adapt to the different light transmittance of dry and wet separators, ensuring correction accuracy. For the requirement of separator width measurement, use a bracket that can calibrate the installation distance to install 2 pairs of sensors on both sides of the bracket to complete the separator width measurement.



## 03 | Wafer Concentricity and Notch Detection

Application scenario: In the chip packaging testing phase, it is necessary to perform concentricity and notch detection on the wafer to locate the center and direction of the wafer. Accurate positioning of the wafer center and notch position can improve the accuracy of wafer cutting, thereby increasing the yield of chip production.

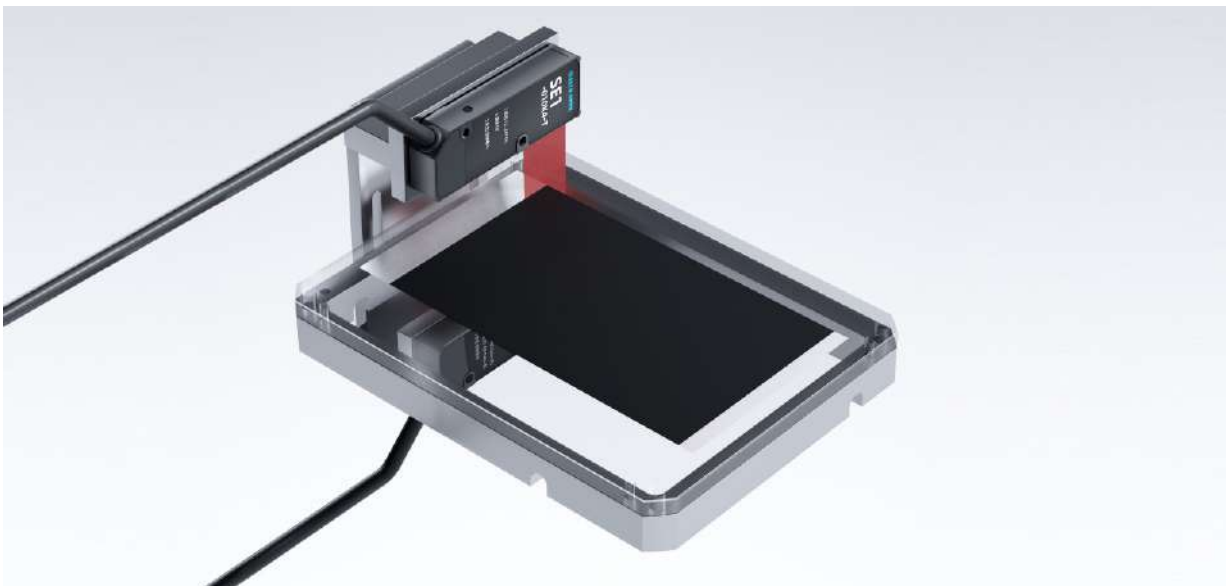
Solution: Use the high-precision edge measurement sensor SE1 series, installed them opposite for through-beam measurement at the edge of the wafer. When the wafer rotates, the correction sensor calculates the center position of the circle through measurement data, and then moves the center of the wafer to the center of the rotation axis through a robotic arm or actuator; After aligning the center of the wafer, rotate it again, and the correction sensor locates the wafer gap. After positioning the gap position, the actuator rotates the gap to the specified angle.



## 04 | Stacking machine separator deviation detection, electrode damage detection, electrode positioning detection

Application scenario: Stacked batteries represent a high level of production technology for lithium batteries, with complex processes. In the production of stacked batteries, according to the different production process requirements of customers, it is necessary to perform deviation detection on the separator, damage of the electrode edge, and locate the electrode to improve the production efficiency and yield of stacked batteries.

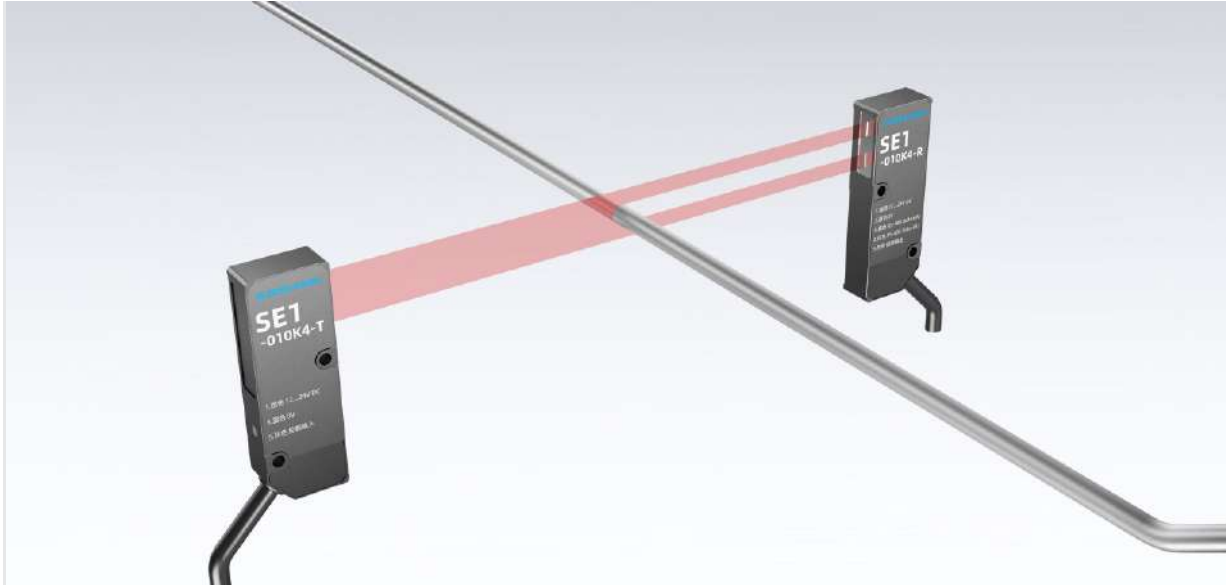
Solution: Install SE1 series high-precision edge measurement sensors at different workstations of the stacking machine according to customer inspection requirements, with a sampling frequency of 4kHz and a response time of 250  $\mu$ s. There are obvious advantages in detecting electrode damage, with good correction effect for separator with different light transmittance, and fully meeting the detection requirements for electrode positioning.



### 05 | Outer Diameter Inspection of Small Components

Application scenario: In the precision manufacturing industry, some customers need to measure the outer diameter of some small components to determine whether the processing accuracy meets the process requirements.

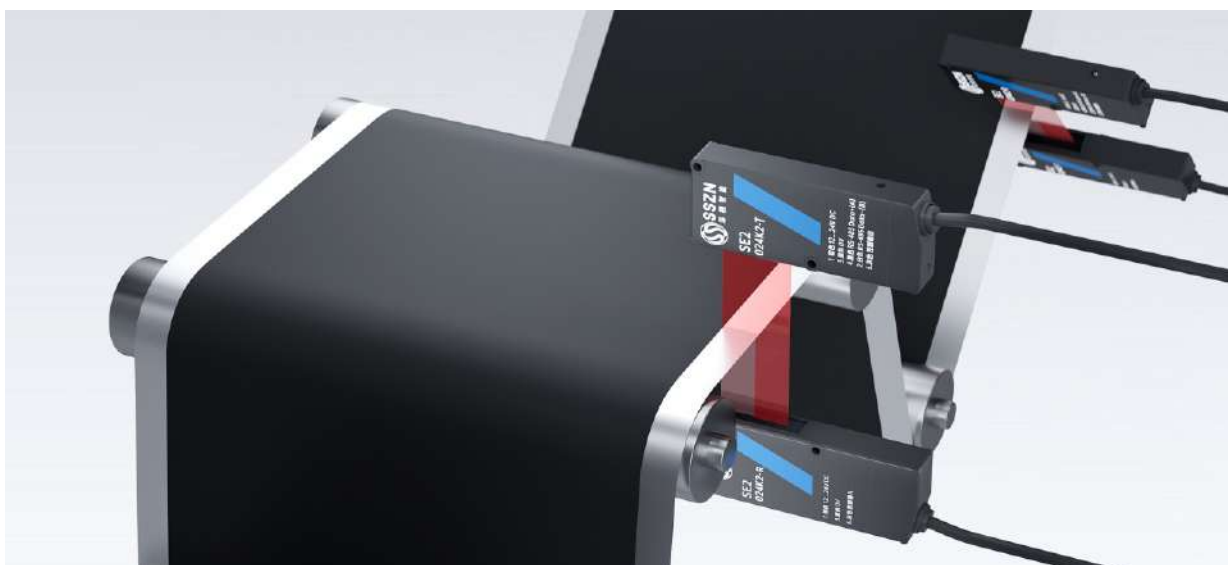
Solution: Using SE1 series high-precision edge measurement sensors by SinceVision, using the width measurement mode, place small components in the measurement area of the laser beam, and accurately measure the outer diameter of the small components.



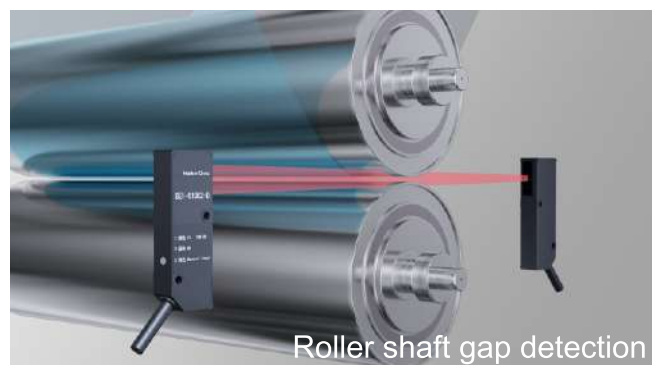
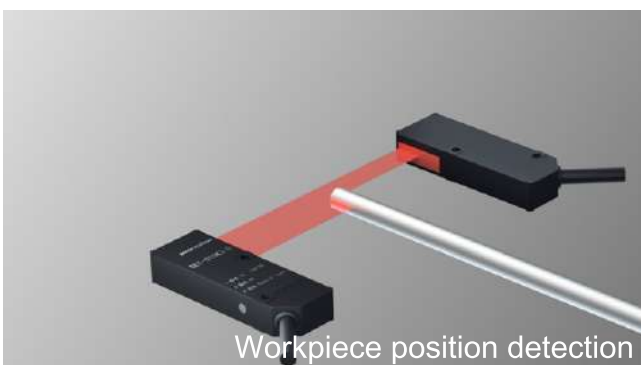
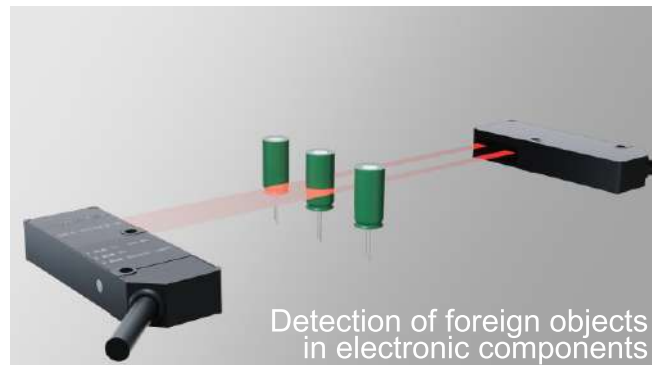
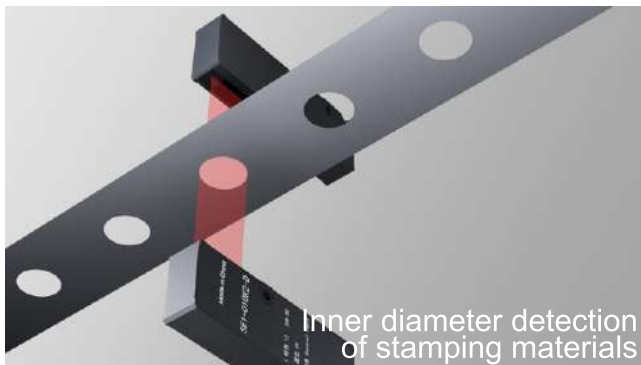
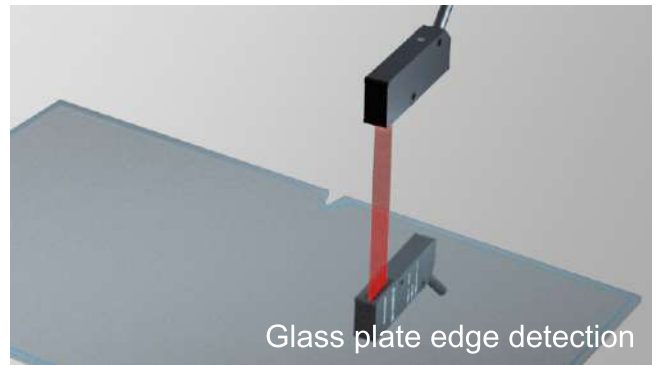
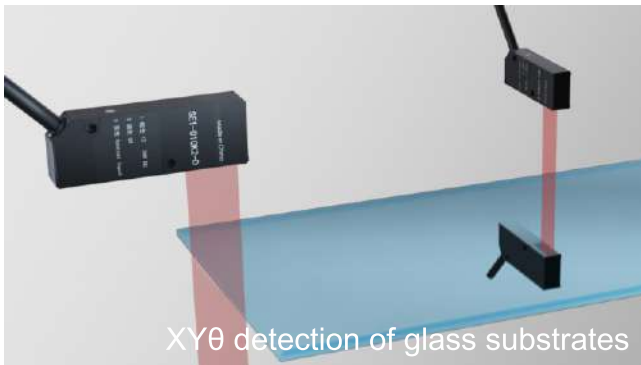
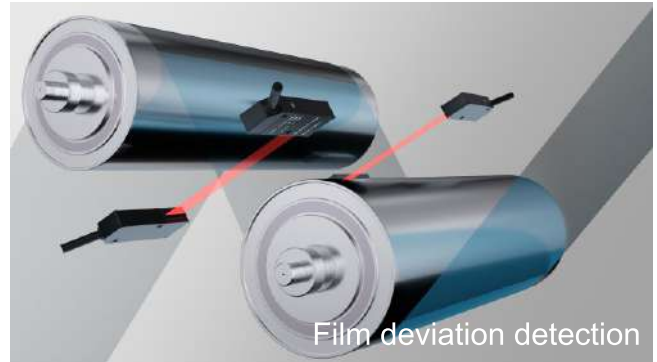
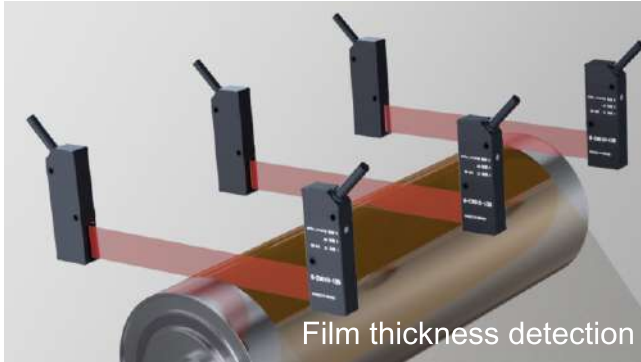
### 06 | Electrode plate, separator deviation detection in processing (roughly detection)

Application scenario: In the winding process of battery cell production, a large number of process deviation sensors are required for positive and negative electrode plates and separator in the winding and transmission process. Currently, in the lithium battery industry, process deviation sensors generally use analog communication, which is easy to interfere with signals and requires a large wiring workload. The sensors and controllers adopt a one-to-one configuration, and customers need to purchase an additional AD conversion module for signal conversion, resulting in high purchase cost.

Solution: SinceVision has launched a brand new SE2 wide range edge measurement sensor, which uses EtherCAT bus communication with a sensing head range of 24mm and RS485 communication. It is directly connected to the EtherCAT communication module without a controller and adopts a 1-to-4 configuration. One EtherCAT communication module can connect to 4 sensor heads, using aviation plug-in wiring, which is convenient and reliable. The signal communication is stable and not disturbed, without AD conversion module, which reduces cost for customers at most.



# 07 | Other Cases





SE1 High-precision Through-beam Edge Sensor      SE2 Wide Range Through-beam Edge Sensor

◎ Service covering:

China: Shenzhen, Suzhou (Kunshan), Shanghai, Wuxi, Beijing, Chengdu, Ningde, Taiwan, Wuhan, Xi'an, Hefei, Dongguan  
 Overseas: South Korea, Vietnam, Thailand, Malaysia, Singapore

**SHENZHEN SINCEVISION TECHNOLOGY CO., LTD.**

Headquarters:  
 5th Floor, Building 2, Chongwen Industrial Park, Nanshan Zhiyuan, Nanshan District, Shenzhen, China  
 Dongguan Office:  
 Room 406, Building F4, Tian'an Digital City, Nancheng District, Dongguan City, Guangdong Province, China  
 North China Office:  
 Room 808, Building 3, Jinmao Plaza, Auto Museum East Road, Fengtai District, Beijing, China  
 East China Office:  
 Room 1305, Building 7, Xiangyu Liang'an Trade Center, No.1588, Chuangye Road, Kunshan, Jiangsu Province, China  
 Southwest China Office:  
 Room 604, Block B, Yingchuang International Building, No. 66, Chuangzhi South 1st Road, Pidu District, Chengdu  
 Northwest China Office:  
 Room 601, Chuangke Building, Cuihua Road, Yanta District, Xi'an City, Shaanxi Province, China  
 Website: [sincevision.com](http://sincevision.com)    Tel: 0755-29655425 400-966-0626



SinceVision's  
 Linked in Account



SinceVision's  
 YouTube Account

The product information and images in this brochure are for reference only. As the products are constantly updated, please refer to the actual products. SinceVision reserves the right of final interpretation and revision of this brochure.