

# SinceVision

## 3D Sensors

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### ▣ 3D Laser Profilers



SHENZHEN SINCEVISION TECHNOLOGY CO.,LTD.

3D

3D Profiler Specialist  
Assist Industry 4.0



## 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 focused on 3D industrial sensors, launching products such as 3D Laser Profile, Spectral Confocal Displacement Sensor, Laser Displacement Sensors, and Through-Beam Edge Sensor. In 2021, SinceVision expanded into research and development and the defense market, introducing High-Speed Cameras and multiple product lines, with dozens of series now in mass production. Mass-produced products of Sincevision have successfully broken foreign monopolies, establishing us as a leader in domestic brands. Furthermore, our mature products, particularly 3D Laser Profile, have achieved some world-leading performance parameters, gradually becoming a new benchmark in the industry.

Today, SinceVision is increasingly recognized in automation. We have served hundreds of customers, with our products reaching major domestic and international brands in consumer electronics, lithium batteries, and photovoltaics. We are tirelessly promoting refined product solutions tailored to specific fields, empowering various industries with our products and services. From semiconductors and panels to automotive and rail transit, and from plastics and films to food and textiles, we contribute to cost reduction and efficiency enhancement across multiple sectors.

As labor costs rise and product quality upgrades, the future of industrial automation is unstoppable. With years of experience in 3D industrial sensor research and development, SinceVision has developed a comprehensive R&D platform encompassing optics, mechanics, electronics, and software, along with a mature production control system. In the future, we will relentlessly improve our R&D platform and build a world-class industrial product development team. With the craftsmanship of SinceVision's people, we will continue to tackle high-end sensors, ensuring that Chinese automation has reliable domestic products and trusted national brands.

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

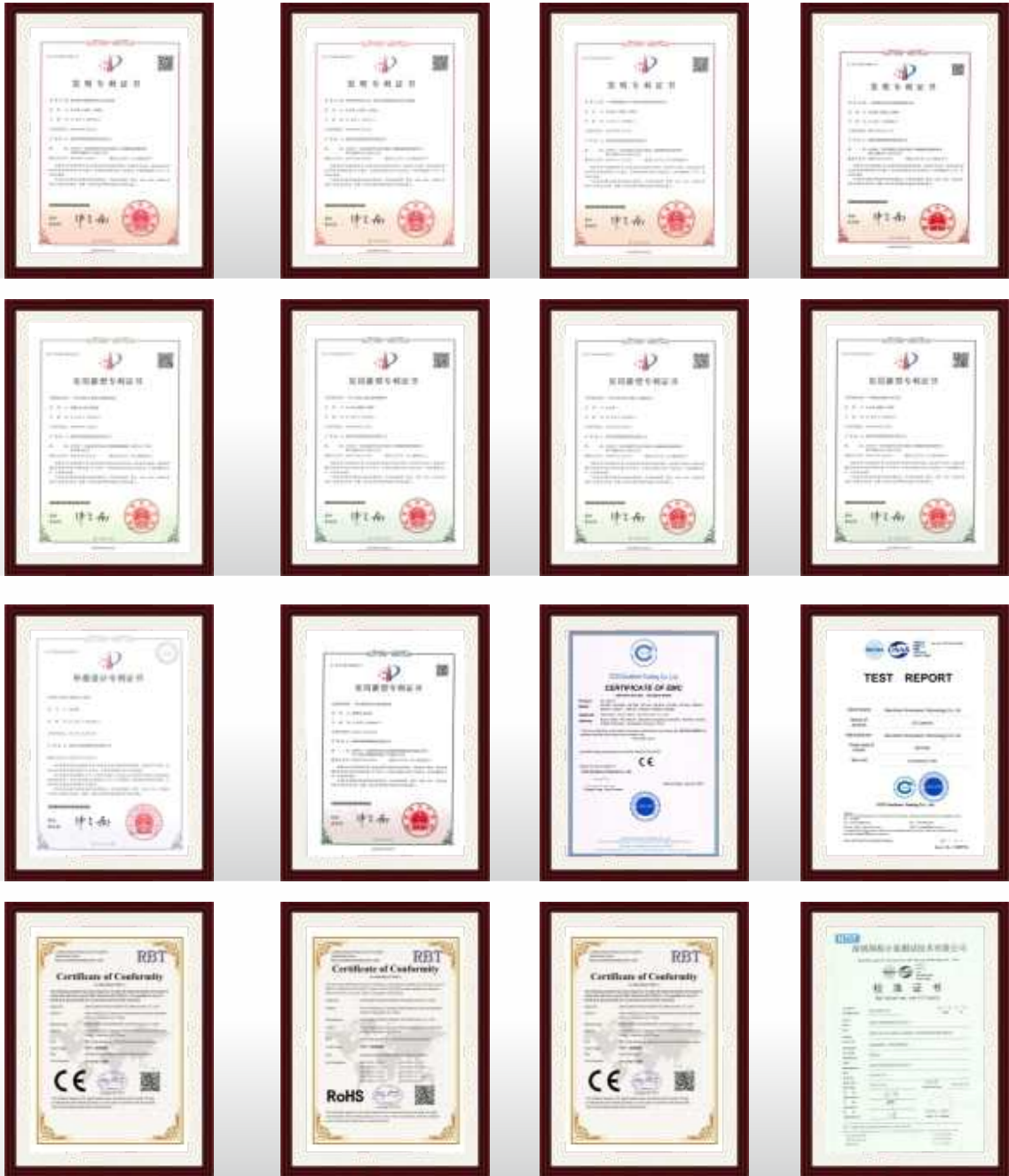
### China

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

### Overseas

South Korea, Vietnam, Thailand, Malaysia, Singapore

# INTELLECTUAL PROPERTY



## Company History

### 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 profiler 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

# Ultra High-speed 3D Laser Profilers

SR Series

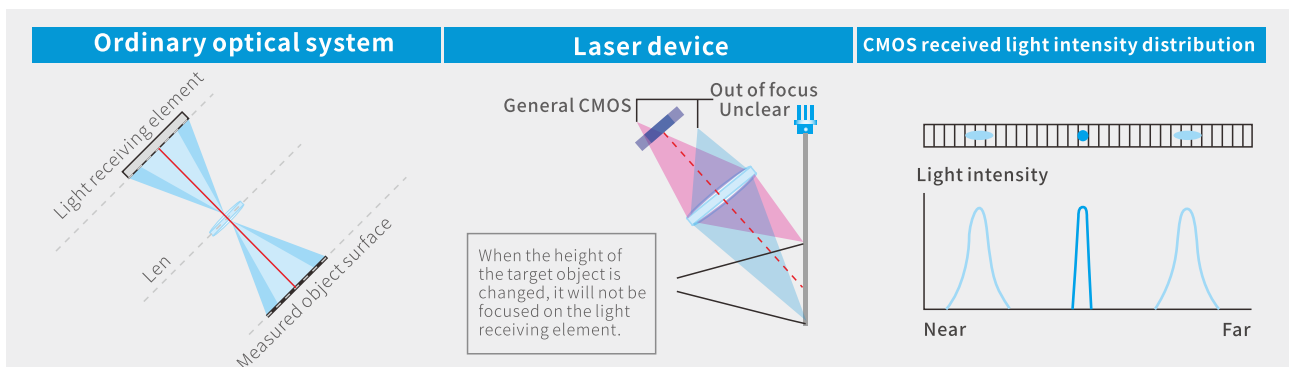
Multiple Product Matrix  
for Various Applications and Demands



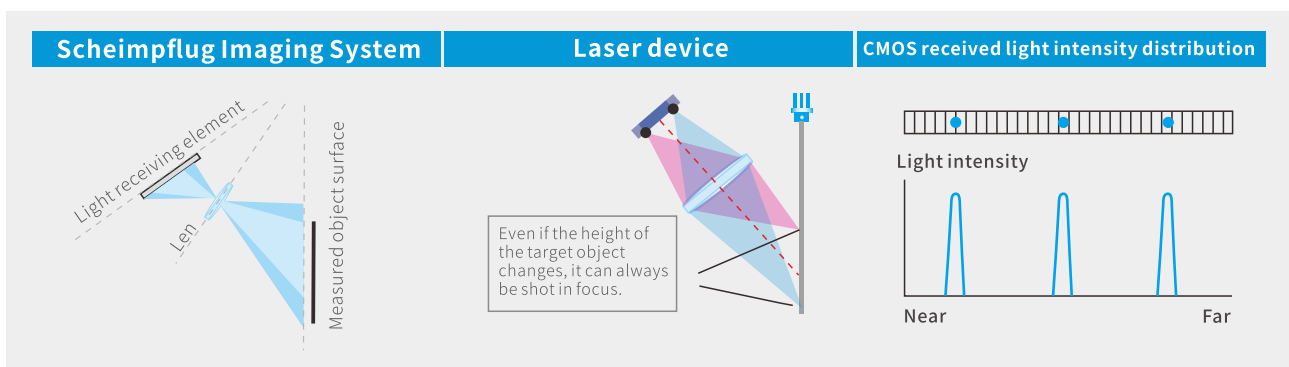
## Measuring Principle

### The difference between split type 3D measurement and SinceVision SR series 3D measurement

#### Principle of Split 3D Measurement



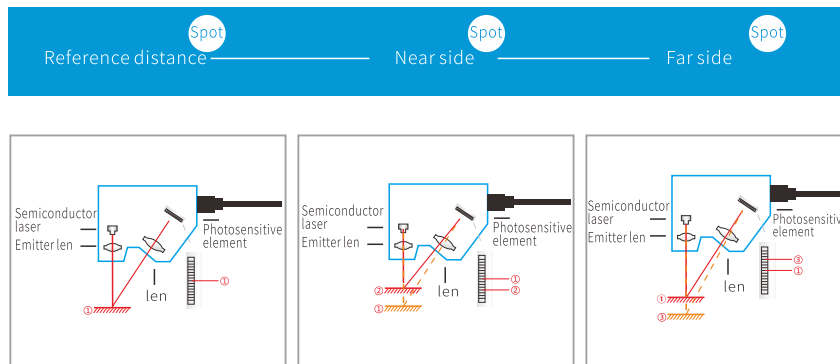
#### SR Series 3D Measurement Principle (following Scheimpflug principle)



### Practical Application

The SR series uses a Scheimpflug principle optical system that allows focusing over the entire measurement range and uses an objective lens that minimizes aberration. As a result, high accuracy of 0.02% linearity is achieved. This is particularly advantageous when measuring targets with height differences and when the position of the target changes.

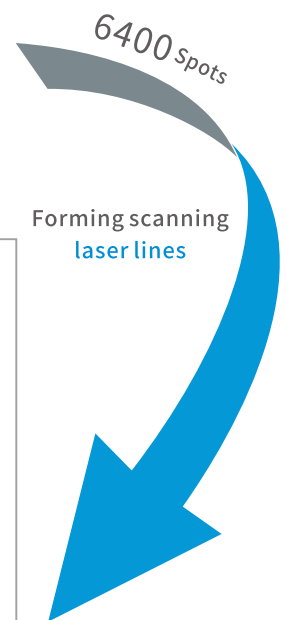
## Triangulation Principle



As shown in the figure above, a semiconductor laser emits a beam of light at the target. The lens gathers the light reflected from the target and forms an image on the sensor. The position of the light spot on the sensor varies depending on the distance to the target. The system estimates this change and converts it into a measurement of the target's position.



As shown in the figure above, a cylindrical objective lens expands the laser beam into a line. Diffuse or specular reflection is generated on the object under test. The reflected light is passed through the light-receiving lens set and imaged on the SSHE-CMOS. The height and gray-scale value of the corresponding position are calculated by the photoelectric response of the different cell on the SSHE-CMOS.



## Introduction of Features

### 01 IP67 Protection level

It meets IP67 standard and can be used with confidence in damp and dusty environments.

### 02 High toughness cable

Adopting high toughness cable, it can be bent up to 30 million times. Equipped to robot can also be used without worry.

### 03 Ultra High Speed

67,000 contours/s

### 04 Ultra-wide X-axis view

Ultra-high line laser resolution, up to 6400 pixels.

### 05 High Dynamic Range

Accurate measurement of both low-reflectivity black objects and high-reflectivity metallic objects.

### 06 High-precision Blue Laser

No external light source required, automatically optimizing brightness.



## Core Competitiveness

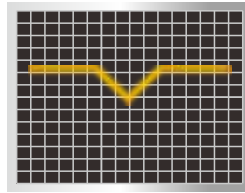
|           |                                                          |                                                                                                                                                                                     |
|-----------|----------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SR Series | Multiple SDK interface                                   | Rapidly match to Halcon, VisionPro, VB, C#, C/C++, Labview. etc.                                                                                                                    |
|           | High speed detection                                     | High-speed detection up to 67kHz                                                                                                                                                    |
|           | Output 3D+2D data simultaneously                         | 2D and 3D data can be combined to achieve complete detection; 2D data can be used for positioning, code reading, character recognition, etc.                                        |
|           | Self-developed Edge Imaging 3D software system           | Simple and easy to use                                                                                                                                                              |
|           | Equipped with auto-correction and auto-splicing function | The software can automatically correct the image when the workpiece position is shifted: multiple scanned images can be automatically stitched together to achieve stable detection |
|           | Support one-for-two control system                       | The SR7000/8000 series controller can support two sensor heads simultaneously, effectively reducing system costs                                                                    |
|           | High cost effectiveness                                  | Self-developed, fully independent intellectual property rights                                                                                                                      |
|           | Rapid technical support                                  | Localized service, quick response                                                                                                                                                   |

# Elements of High-speed and High-precision Detection

## Blue Laser

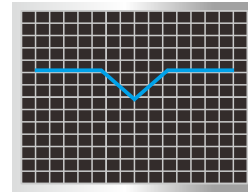
### Using 405nm blue laser

The special blue laser with a short wavelength of 405nm and a high performance optical diffusion system achieve extreme focus on the target workpiece to produce a stable and high precision profile. Blue laser has a shorter wavelength, less transmission into the object to be measured, all materials, including transparent objects can be measured stably.



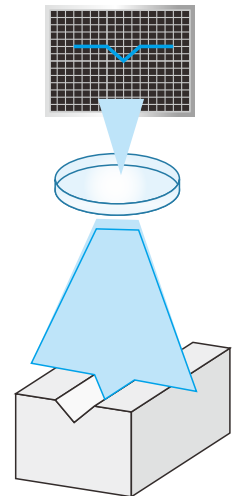
Red laser (traditional model)

Traditional models use red laser, with a thick and uneven imaging beam.



Blue laser

Blue laser imaging beam is finer to measure contours with higher accuracy.



## UFP-processor

The custom ICs equipped with Ultra-FastProcessor processors have ultra-high speed channel processing capabilities that not only allow for fast reading of CMOS recording data but also for high-resolution sub-pixel processing. It can also perform high-precision data output, etc.

### Introduction to the Functions of UFP-Processors

- Ultra-high-speed sampling and output enable online quality control in production.
- By averaging multiple data sampled at high speed, more stable measurement results can be obtained.
- The ultra-high speed sampling process allows simultaneous output of height and grayscale information, with a maximum sampling speed of 214M contour points/second.



## SSHE-CMOS

### Super Speed and HDR Enhanced is short for SSHE-CMOS

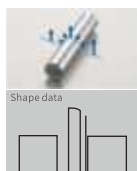
SSHE-CMOS is a special component for 3D laser measurement because of its high speed and high dynamic range. The brightness does not need to be adjusted for materials with different reflectivity. The high sensitivity and wide dynamic range enable stable measurement of all objects, and accurate measurement of black (low reflectivity) and glossy (high reflectivity) objects even with very short exposure times (10μs).



## Comparison between traditional mode and high dynamic mode

### Traditional mode

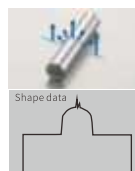
Insufficient light intensity on sloping or shaded parts after planar part optimization.



The amount of reflected light varies depending on the location or the color of the target. (The reflected light from a shaded area or an oblique surface becomes weaker. If the amount of reflected light is weak, the shape cannot be recognized.

### Traditional mode

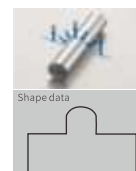
Too much light intensity near the flat part after optimization of the sloping part.



The result of increasing the laser power or exposure time to enhance the amount of reflected light is that the reflection becomes too strong in areas where there is more reflected light. If the amount of reflected light is saturated, the shape cannot be accurately identified.

### High dynamic mode

Since Vision SSHE-CMOS can accurately measure the difference between light and dark through dynamic range.



No need to change laser power or exposure time even if there is a difference in reflected light. The dynamic range is wide, so shapes can be accurately identified even if there are differences in light and dark.

## Application Cases

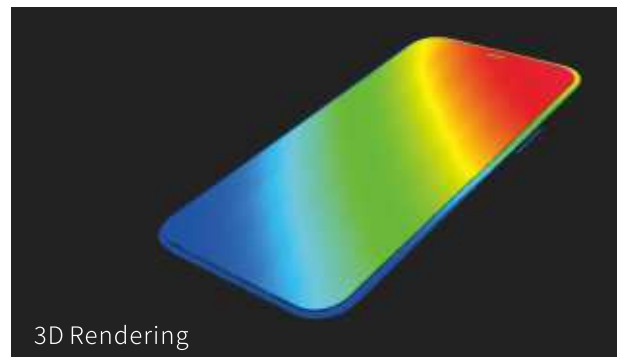
### Cell Phone Mid-frame Detection

#### Advantage

- High resolution, one scan can calculate the flatness of the center frame; TP flatness and the height of each structural member.
- Flexible, fast, easy to use, can support rapid image splicing. Can detect the height difference, flatness, internal length and width dimensions of the steps in the frame; battery compartment foreign matter and flatness LCD compartment flatness or assembly height difference; internal auxiliary material structure parts height, flatness, lack of material, screw height, glue route detection.

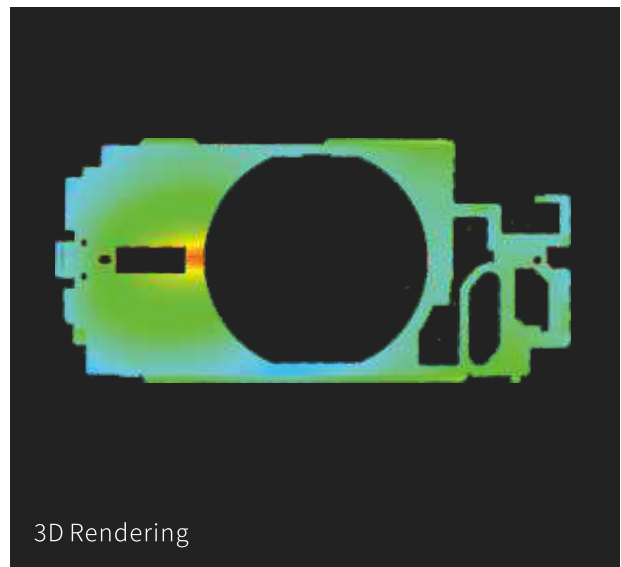
#### Detects the flatness of cell phone screen after multi-scan splicing

Reference model:SR9040/SR9041



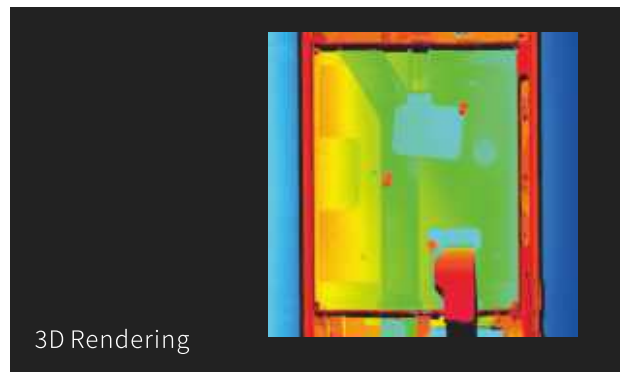
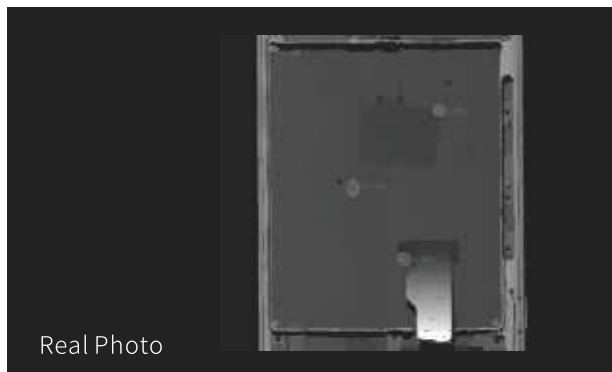
#### Detecting the flatness of the middle plate of cell phones

Reference model:SR7140



### Detection of foreign objects and flatness in the cell phone battery compartment

Reference model:SR7140



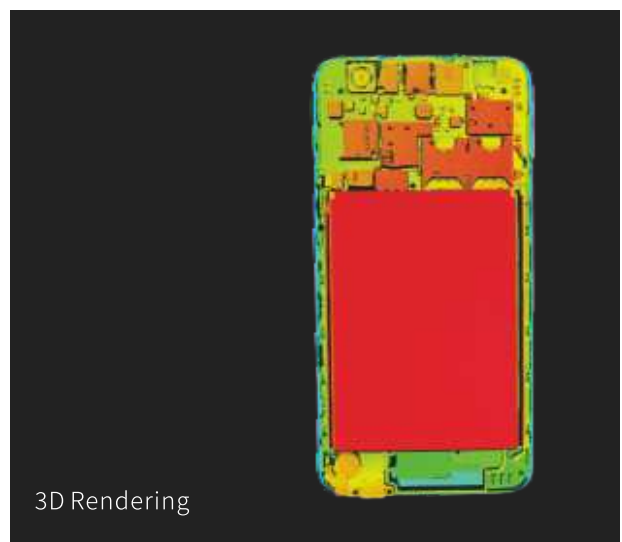
### Inside edge size of cell phone frame (for matching with glass cover), battery compartment foreign objects, flatness detection

Reference model: SR7050/SR8020



### Cell phone internal accessories detection

Reference model: SR7140



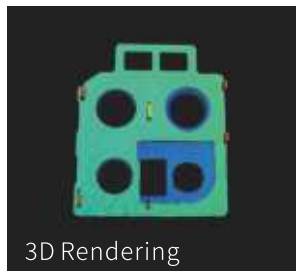
## Application Cases

### Small Metal Parts Detection

#### Advantage

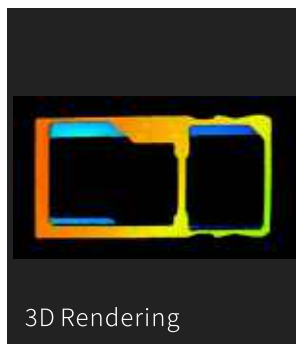
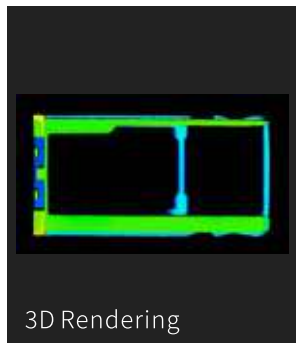
- **Quick detection:** The fastest scan rate of 67kHz/s, one scan can detect the front and back side at the same time.
- **Exclusive solution:** Equipped with supporting software suitable for metal small parts detection using turntable feeding methods, achieving high-speed online detection. For thickness detection of metal parts, due to the high requirements of UPH, a glass isolation detection scheme has been developed to overcome the optical distortion caused by glass and effectively detect the thickness of structural components.

#### Dual camera height difference detection (dual camera shooting through glass turntable)



#### Card support height difference detection (dual camera shooting through glass turntable)

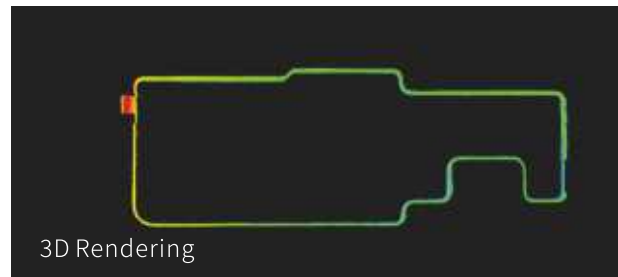
**Detection:** flatness/height difference/thickness



Reference model:SR7050B/SR7080B

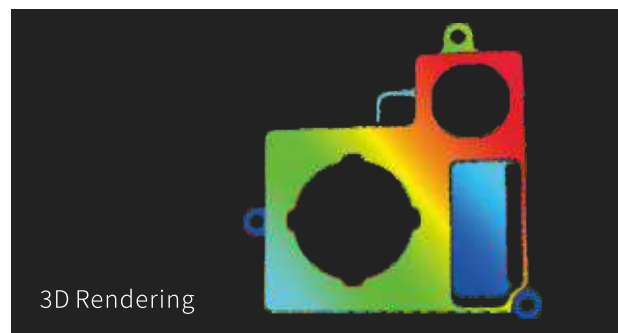
### Flatness detection of very fine shield frame

Reference model:SR7050/SR7080



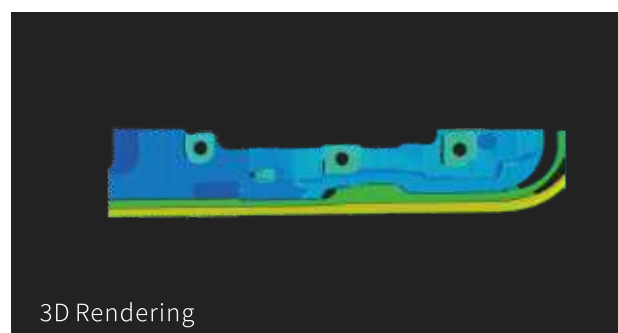
### Height difference detection of triple camera module

Reference model:SR7060/SR8080



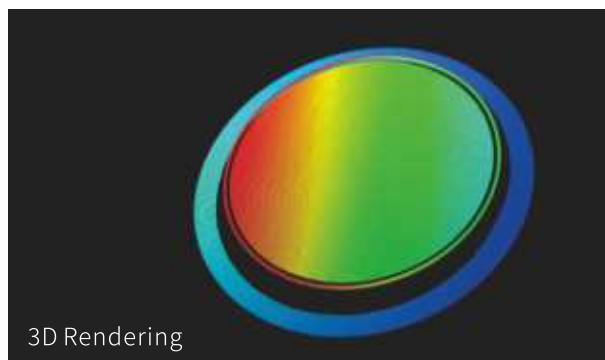
### Height difference detection of cell phone middle frame elastic piece

Reference model:SR7080/SR8060



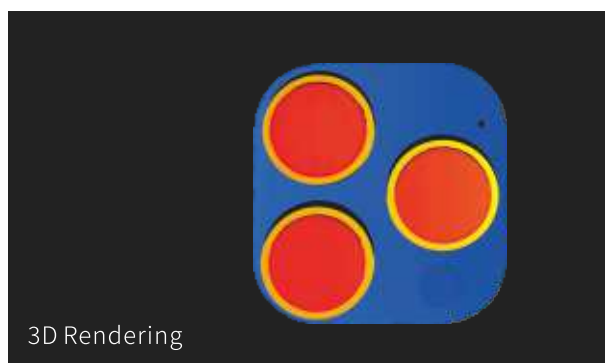
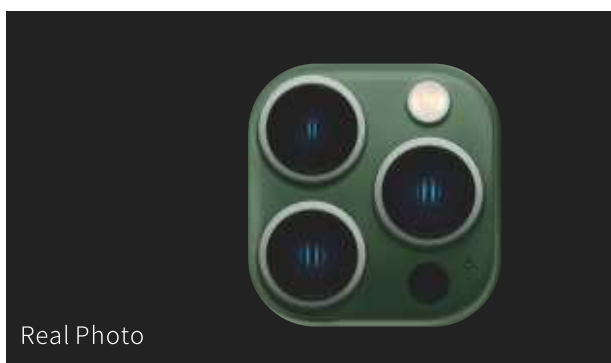
### Detection of height difference between mobile phone cameras and metal steps

Reference model:SR9040/SR9041



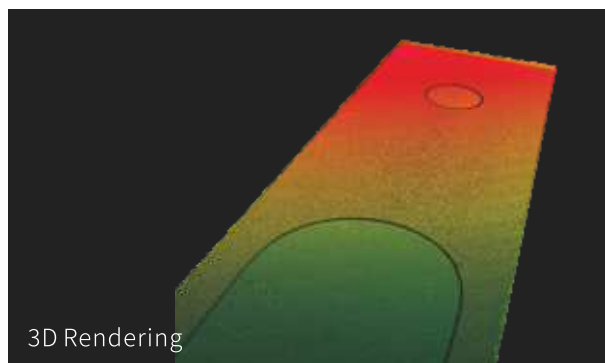
### Detection of height difference between mobile phone cameras and metal steps

Reference model:SR8080K



### Height difference detection of camera modules

Reference model:SR8060K



## PCB Detection

### Advantage

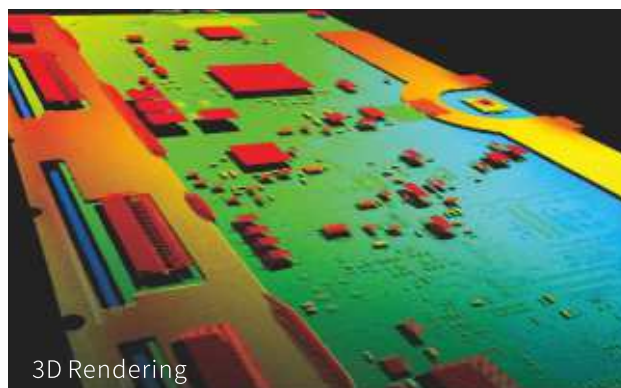
- **Ultra high X-axis resolution:** Common circuit boards can be scanned and imaged at once, without the need for multiple scans, increasing inspection speed.
- **High dynamic range:** high-precision imaging, compatible with a variety of materials, to effectively avoid the reflection of solder.
- **Quick full inspection:** detect the presence and height of components on the PCBA, the height and co-planarity of the pins, and the flatness of the whole board.

### Detect the presence of PCB components

Reference model:SR7140/SR7240



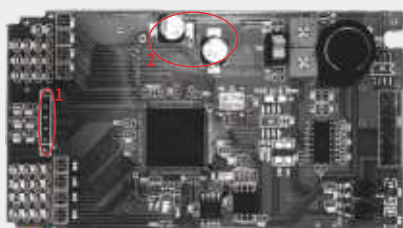
Real Photo



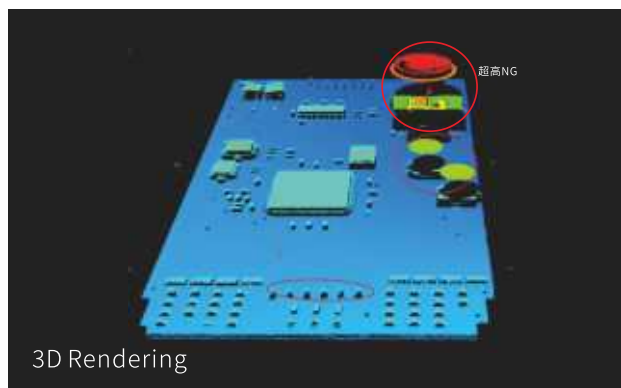
3D Rendering

### Board height detection, including the detection of devices exceeding the height or connector pins exceeding the height, etc.

Reference model:SR7080/SR7140/SR7240



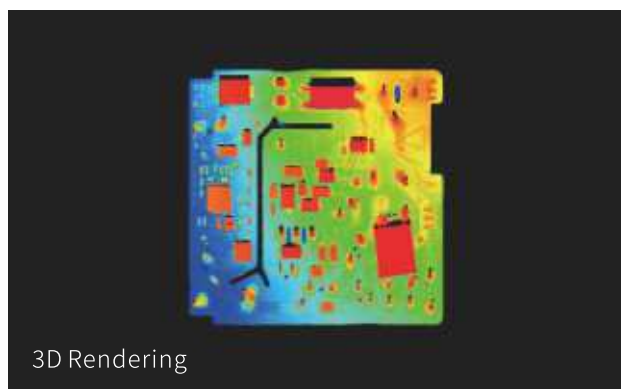
Real Photo



3D Rendering



Real Photo



3D Rendering

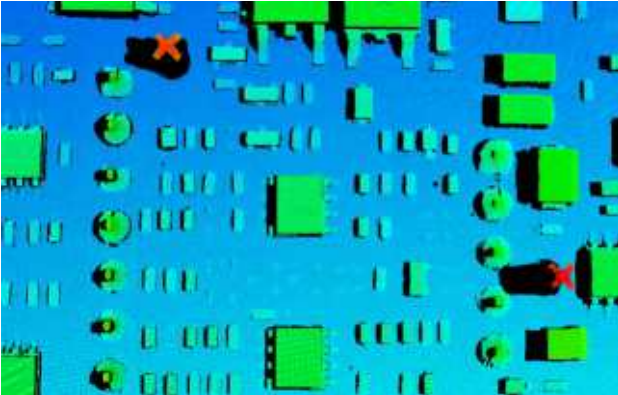
## Splicing Detection by Dual Cameras

### Advantage

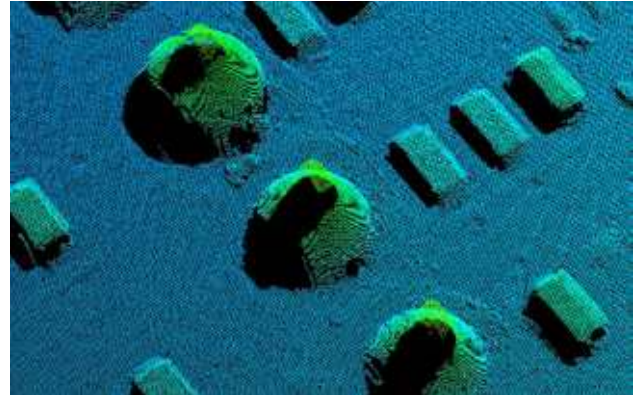
- Due to blind spots in one-way scanning, some data are missing.
- Quickly generate splicing images to compensate for missing data and generate data images without blind spots.

#### Splicing detection of PCB solder height difference

Reference model: SR7060D



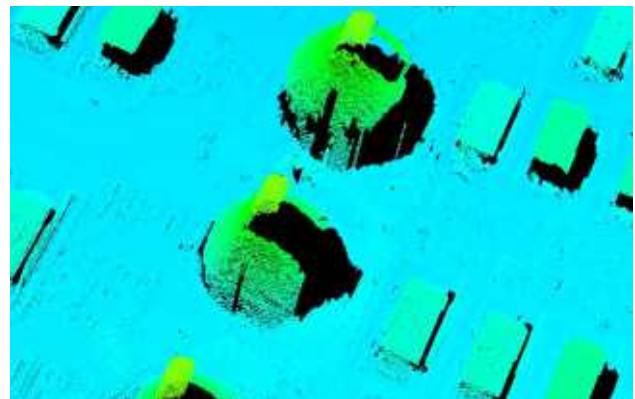
Scanning image of sensor head A



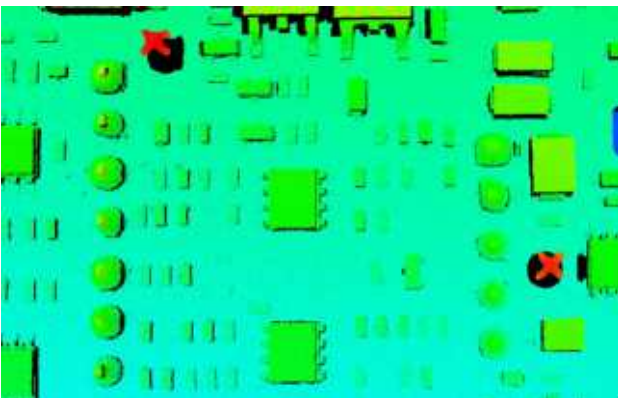
Details of scanning image of sensor head A



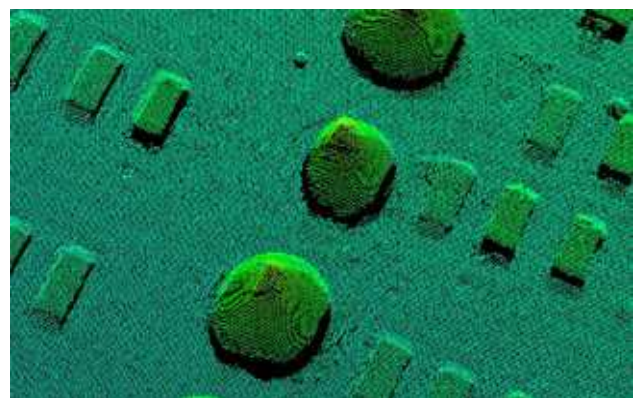
Scanning image of sensor head B



Details of scanning image of sensor head B



Splicing image by dual cameras



Details of splicing image by dual cameras

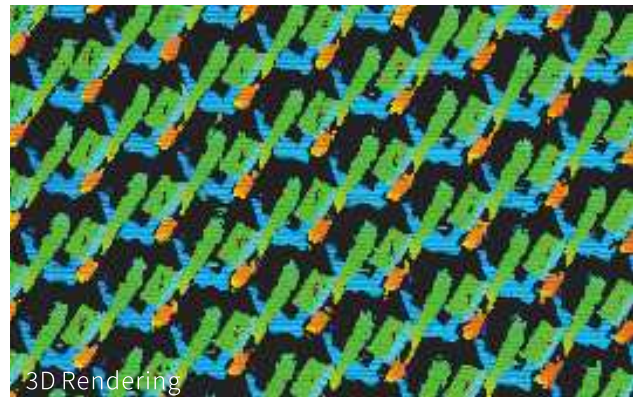
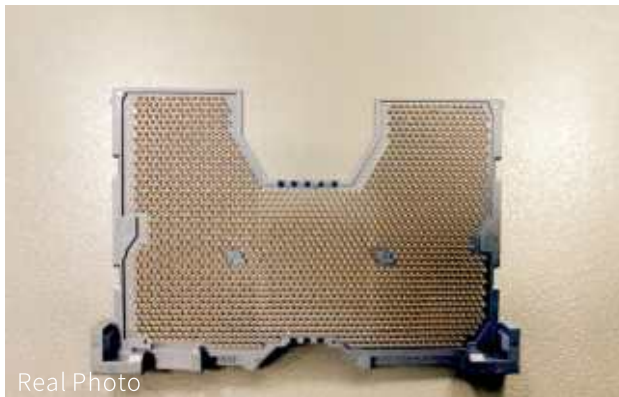
## Chip Detection

### Advantage

- Quick inspection: Scan once and get the height of all solder balls or solder pins.
- High precision detection: Fine appearance inspection can be realized with  $3\mu\text{m}$  interval for X-axis point data and  $0.1\mu\text{m}$  repeatability for Z-axis.

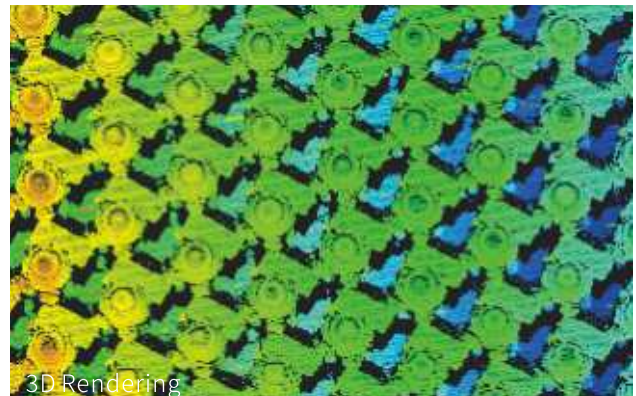
### Detection of very fine pin coplanarity and position (to avoid pin abnormalities leading to soldering problems)

Reference model: SR9040/SR9041



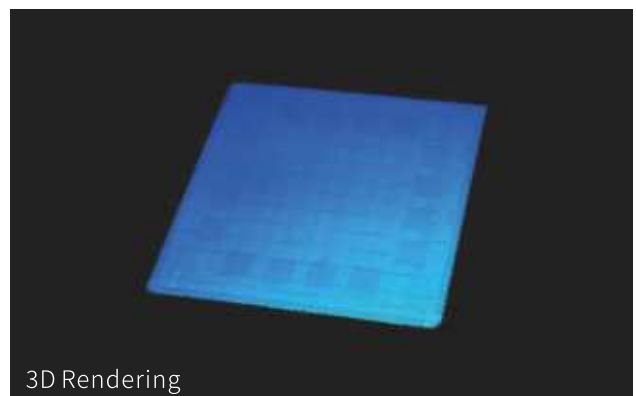
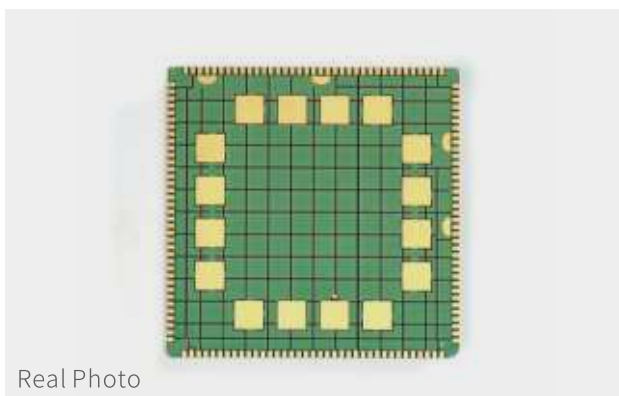
### BGA solder ball coplanarity detection (to avoid chip mis-soldering)

Reference model: SR9040/SR9041



### Chip flatness inspection (check the abnormal curvature of the chip after passing through the solder pot)

Reference model: SR7080



## Connector Measurement

### Advantage:

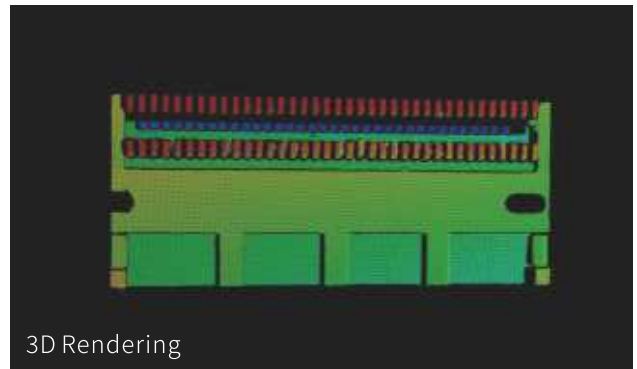
- **Accurate positioning:** can accurately detect the height and coplanarity of small area pins.
- **Scanning once:** can simultaneously detect the flatness of multiple surfaces.
- **High speed and high dynamic range:** compatible with multiple materials, it can simultaneously perform good imaging on metals and plastics, achieving high-precision detection.

### Detect connector pin height difference, coplanarity, and pin deformation

Reference model: SR7050/SR7080/SR8060



Real Photo



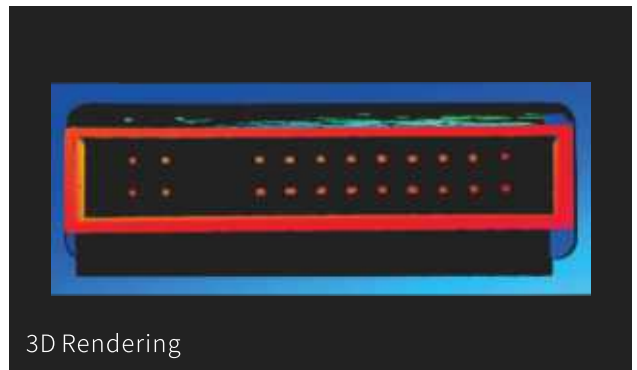
3D Rendering

### Detect the coplanarity of connector pins and the height difference between pins and reference plane

Reference model: SR7050/SR7080/SR8060



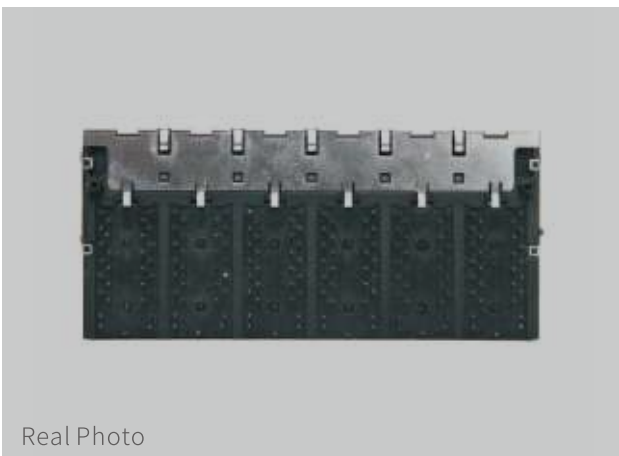
Real Photo



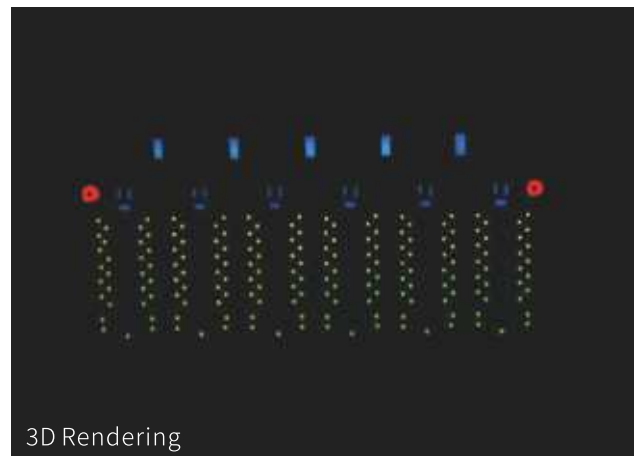
3D Rendering

### Coplanarity detection of connector welding roots, which can simultaneously detect the coplanarity of blue and green welding roots

Reference model: SR7140



Real Photo



3D Rendering

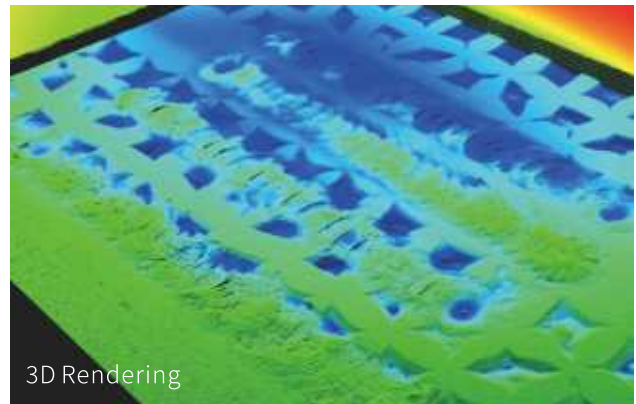
## Battery Inspection

### Advantage

- Fast detection, large line width: X-axis resolution up to 6400/3200 points, scanning frequency up to 67kHz.
- No additional light source required: Eliminates the effects of light source installation.
- Accurate measurement: can be combined with 2D grayscale image calculation.

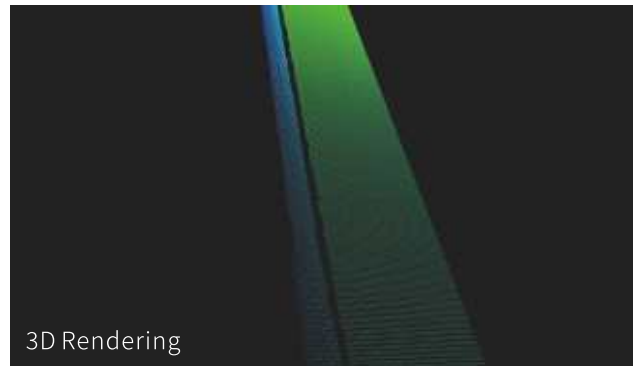
### Quality inspection of soldering tabs

Reference model: SR8020/ SR8060H



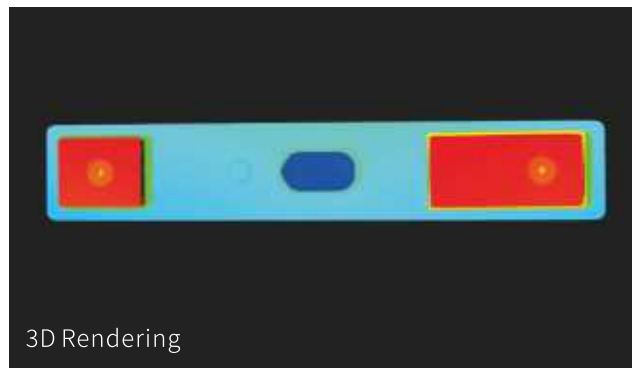
### Core case pre-solder inspection

Reference model: SR8062/SR8020



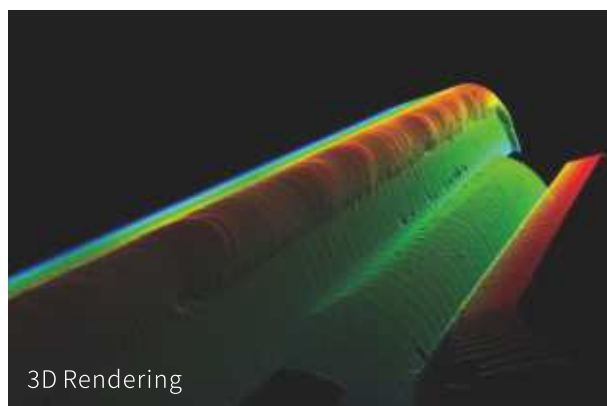
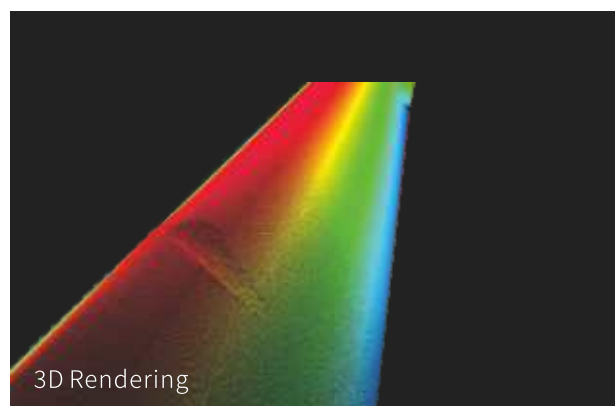
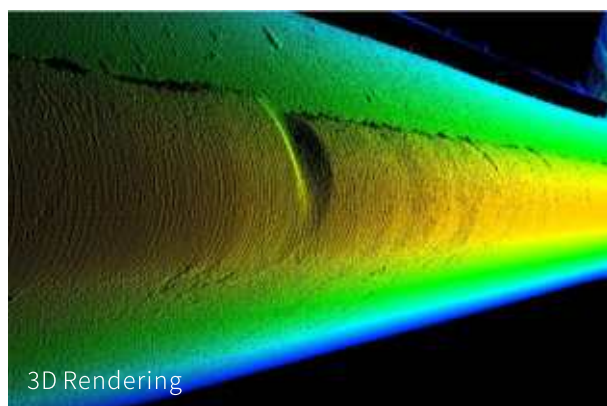
### Coplanarity inspection of battery poles

Reference model: SR7140



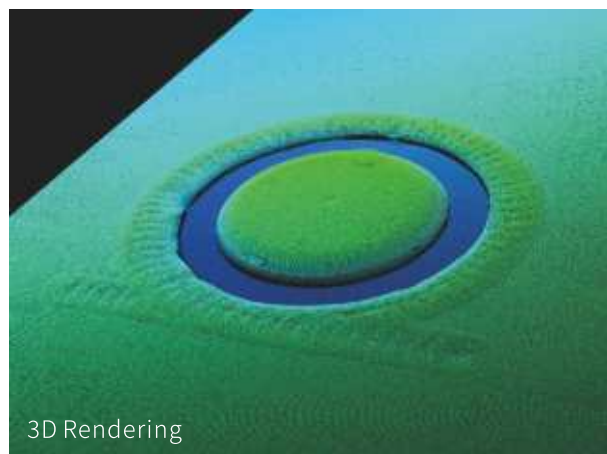
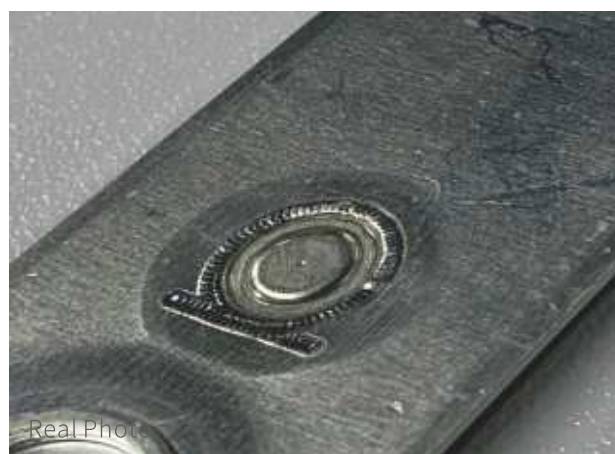
### Quality inspection after full welding of the top cover

Reference model: SR8020/SR8060H



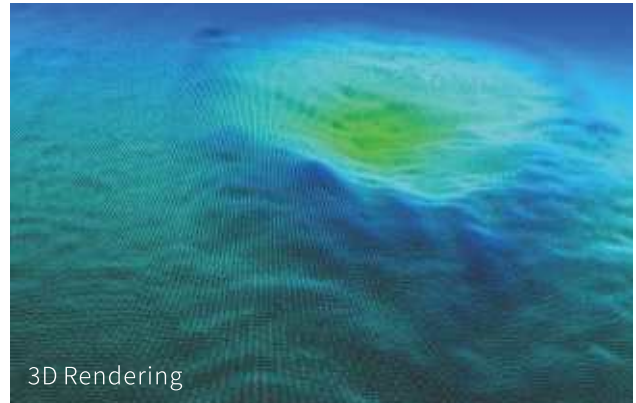
### Sealing nail inspection after welding

Reference model: SR8062/SR8020



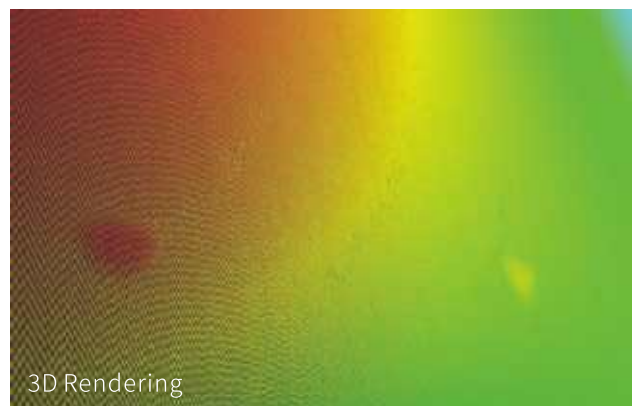
### Appearance inspection of the six sides of the battery cell

Reference model: SR7140



### Blue film defect inspection

Reference model: SR7140



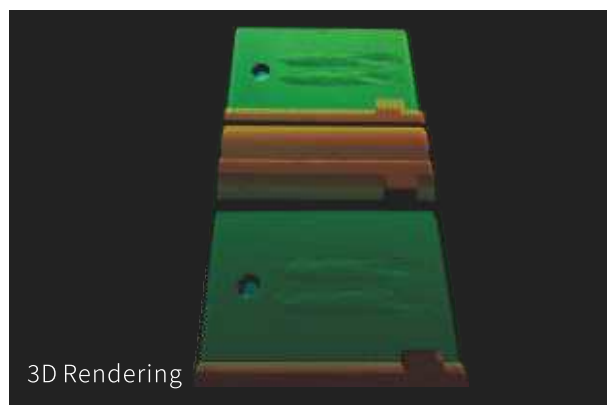
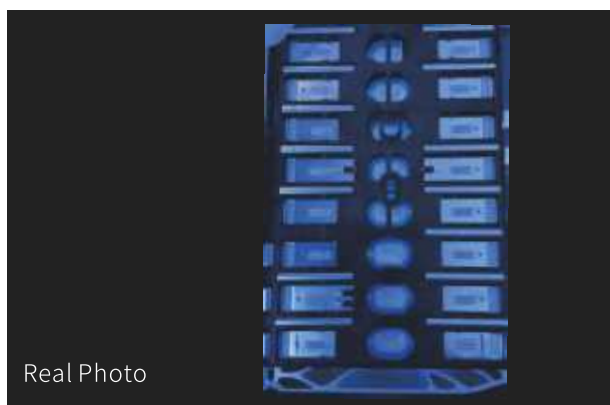
### Electrode lug height difference detection (to avoid the battery not being installed in place)

Reference model: SR7140



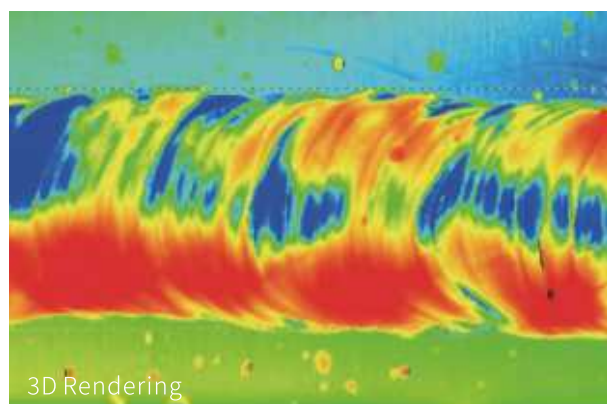
### Module pack section battery Busbar welding

Reference model: SR7140/SR8060



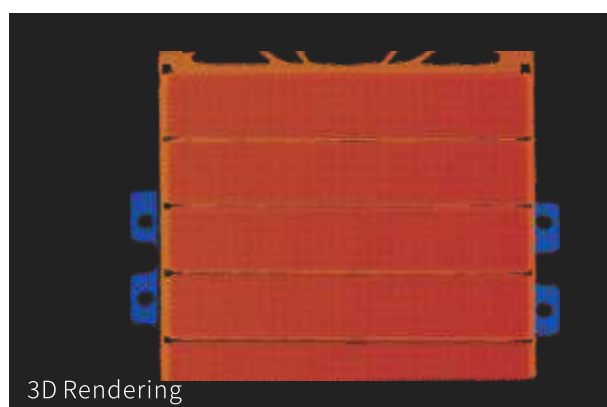
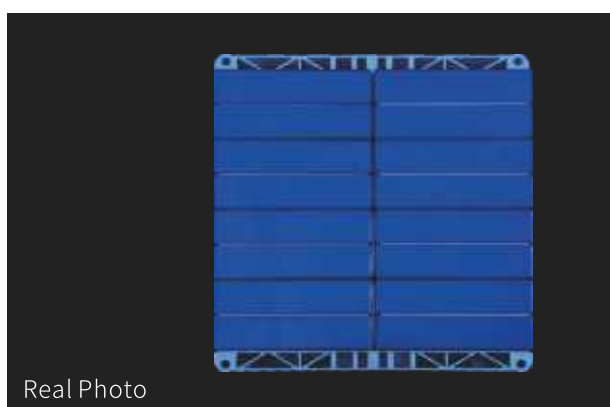
### Inspection of module side seam after welding

Reference model: SR7050/SR8060



### Module Dimensional Inspection

Reference model: SR7400



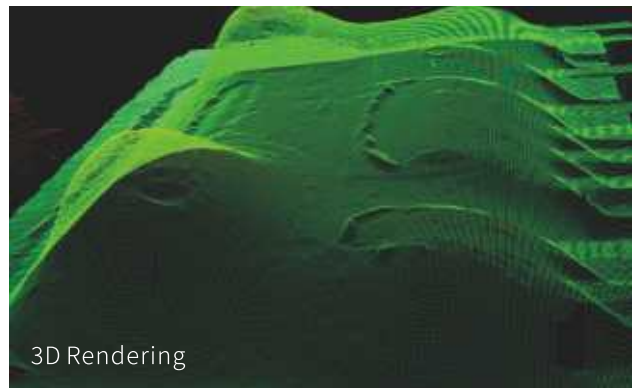
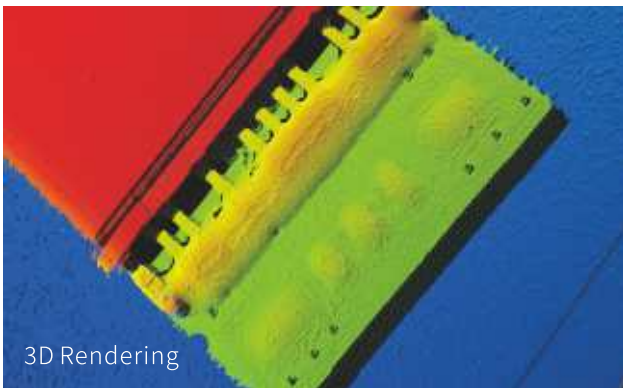
## Glue Bead Inspection

**Advantage** :

- High speed detection: The maximum speed is 67K/S.
- Compatible with various adhesives: transparent, semi transparent, all black, etc.

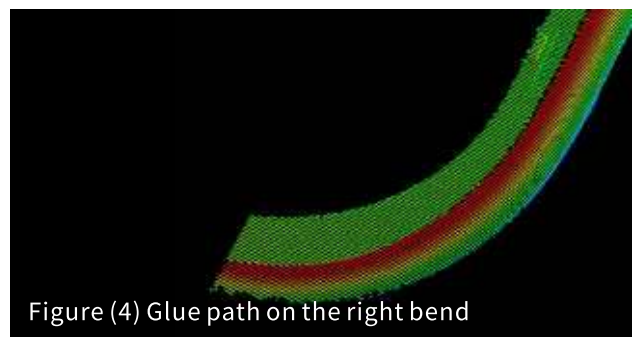
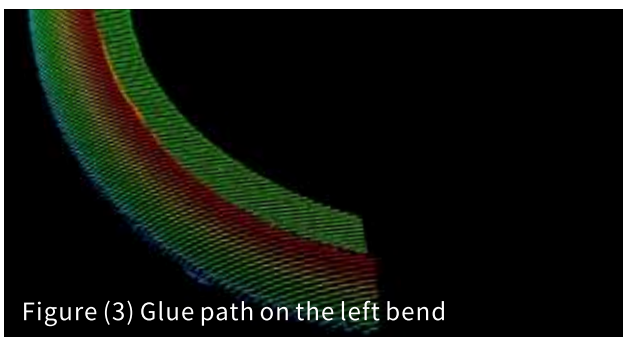
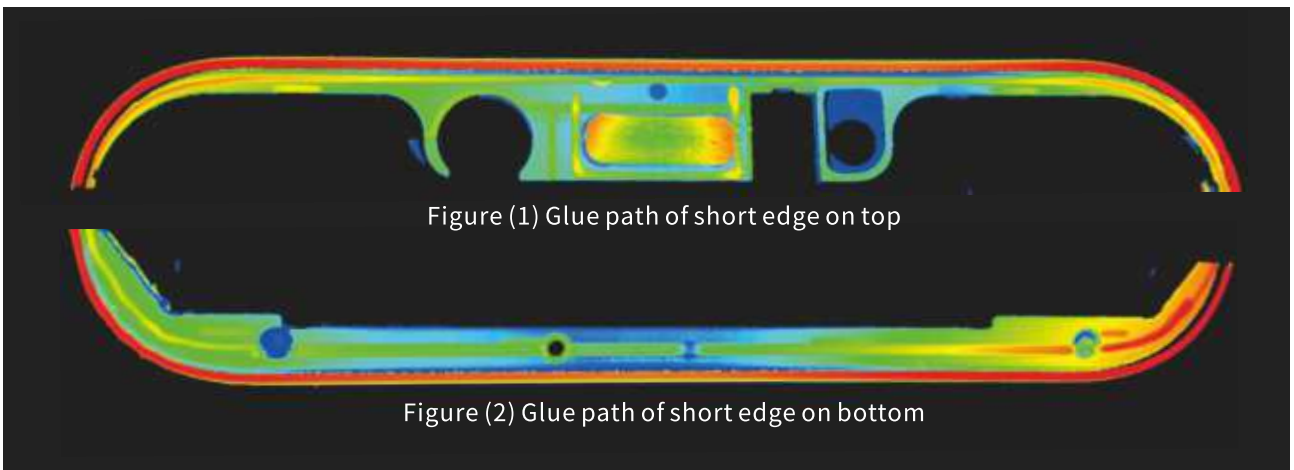
### TPC glue bead height detection

Reference model: SR8020/SR8062



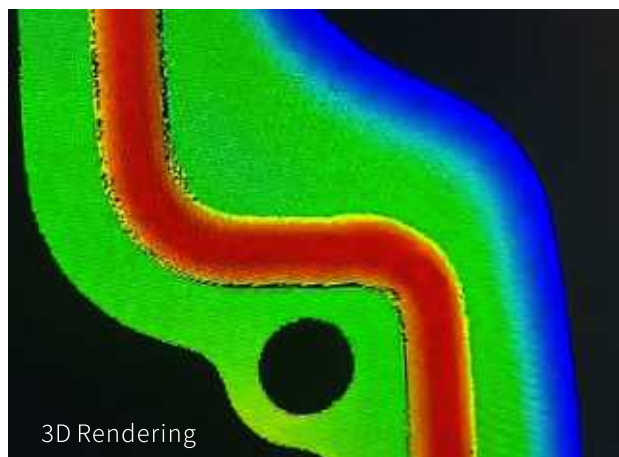
### Detection of the height and width of the middle frame adhesive in cell phones

Reference model: SR8020/SR8062



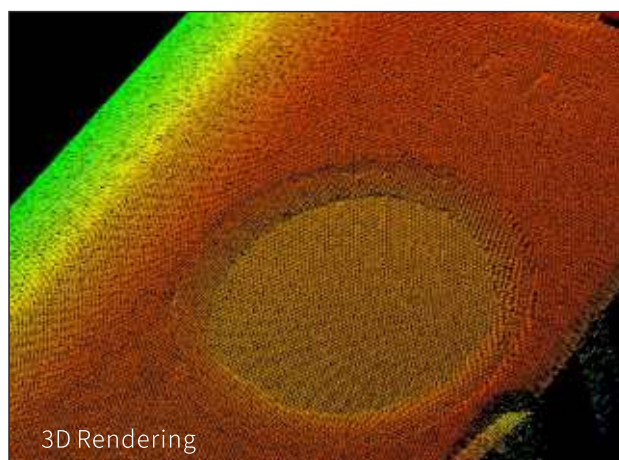
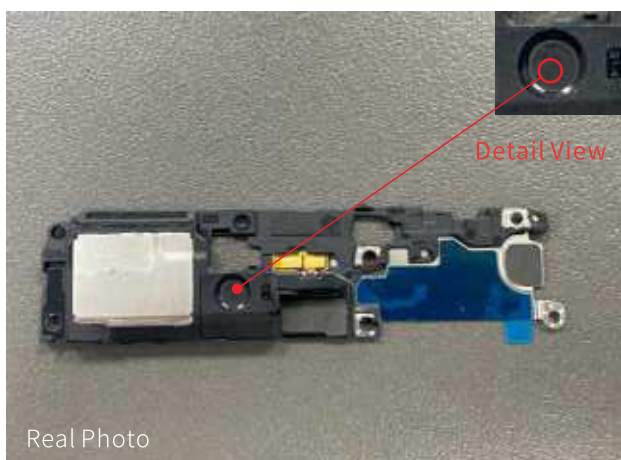
### Glue height detection of black glue on automobile engines

Reference model: SR7050



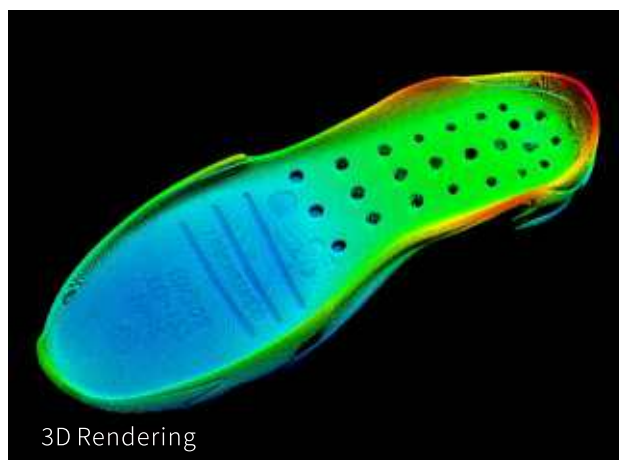
### Height difference detection of transparent UV adhesive for speakers

Reference model: SR9040/SR9041



### Sole gluing/upper guiding

Reference model: SR7240



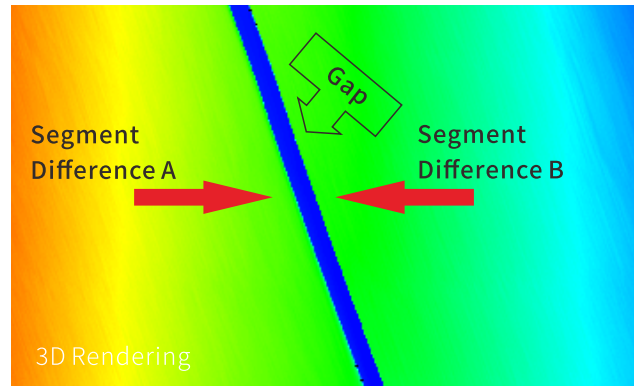
Automobile industry testing applications

## Advantage

- High speed detection: it can detect multiple materials.
- High precision detection: it can restore character and graphic information at micron level height.

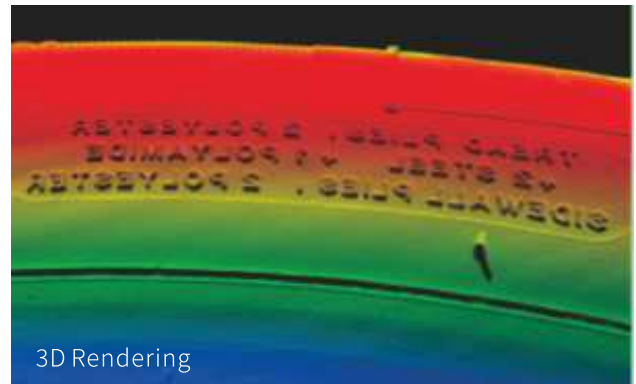
### Door gap detection

Reference model: SR7140/SR7400



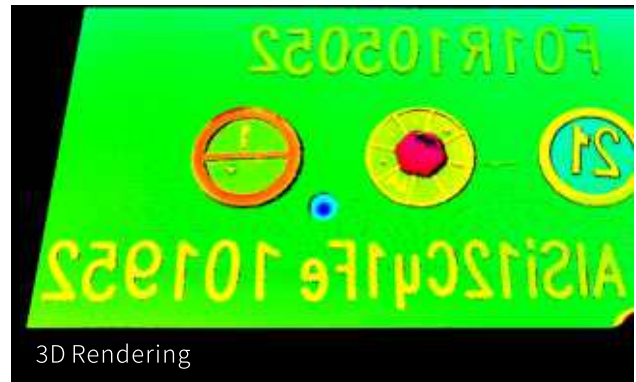
### Tire quality inspection

Reference model: SR7240



### Engine steel stamp character detection

Reference model: SR7400



## Rail transit applications

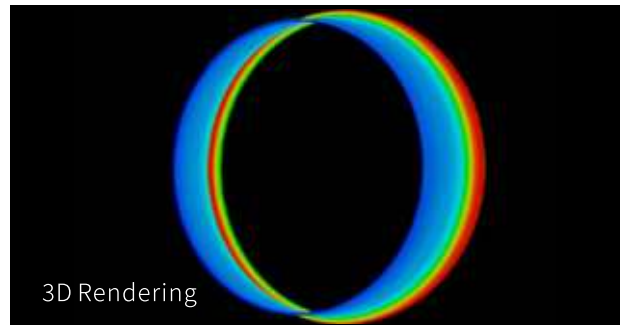
### 360 ° surround detection



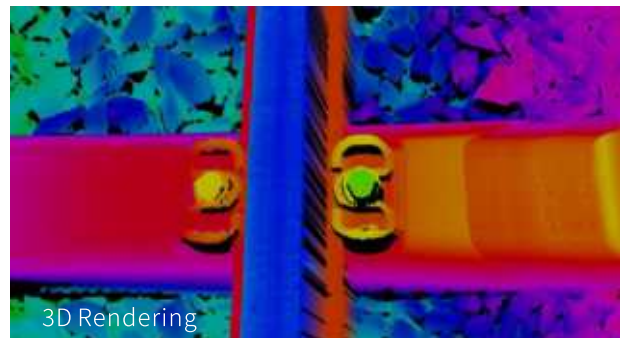
### Fastener detection



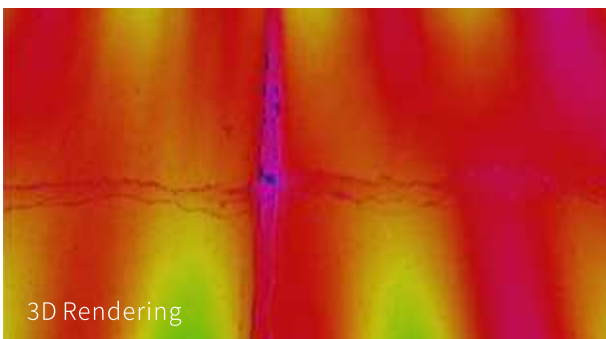
### Wheel set detection



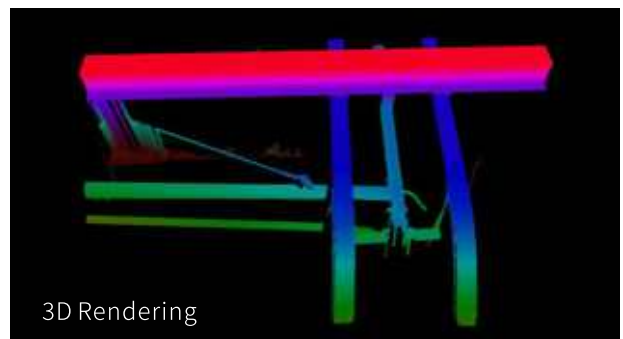
### Track wear detection



### Road surface detection



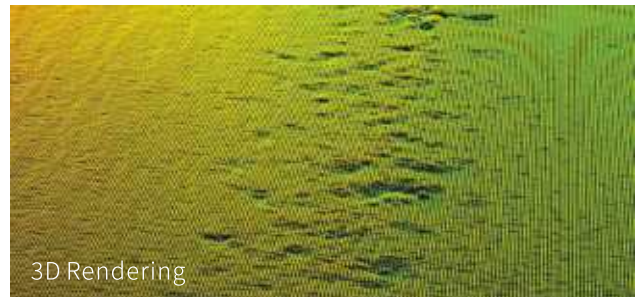
### Pantograph carbon strip detection



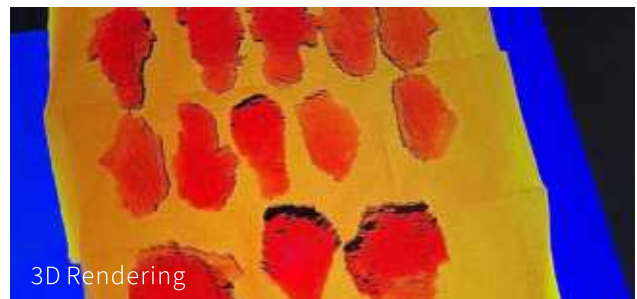
## Other industry testing applications

**Advantage :** High speed detection: it can detect multiple materials.  
High precision detection: it can restore character and graphic information at micron level height.

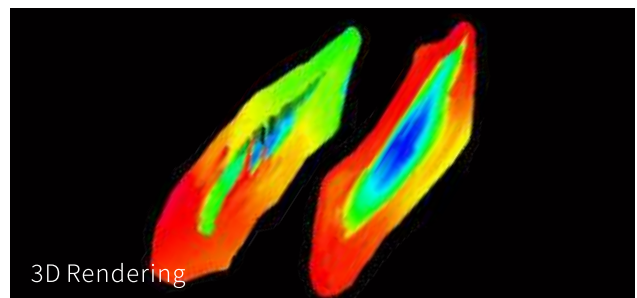
### Plate size and surface inspection Reference model: SR7400



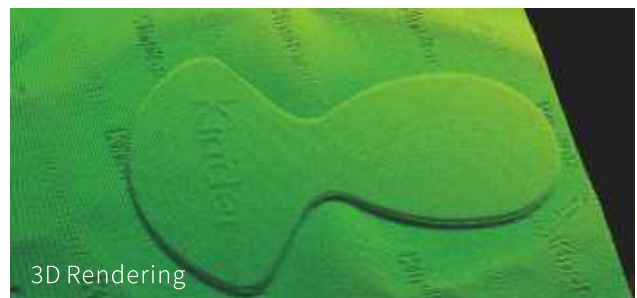
### Food counting Reference model: SR7900



### Internal cavity volume detection of Betel nuts and guide to add bitterness Reference model: SR7900/SR7300



### Sealing detection of Kinder Joy eggs Reference model: SR7900/SR7300



## Basic Parameters of Products

### SR5000 Series - 3D Camera

| Parameter / Model                    |                    | SR5220           | SR5280      | SR5320      | SR5540      |
|--------------------------------------|--------------------|------------------|-------------|-------------|-------------|
| Reference Distance (CD) <sup>①</sup> |                    | 350mm            | 380mm       | 500mm       | 730mm       |
| Z-axis height (FS)                   |                    | 340mm            | 280mm       | 510mm       | 460mm       |
| X-axis width                         | Near side          | 440mm            | 180mm       | 360mm       | 399mm       |
|                                      | Reference Distance | 565mm            | 234mm       | 470mm       | 480mm       |
|                                      | Remote side        | 640mm            | 320mm       | 640mm       | 608mm       |
| Light source wavelength              |                    | 450nm Blue laser |             |             |             |
| Laser class                          |                    | 3R               |             |             |             |
| Laser output power                   |                    | 50mW             |             |             |             |
| Z-axis repeatability <sup>②</sup>    |                    | 8μm              | 4μm         | 7.5μm       | 8μm         |
| X-axis repeatability                 |                    | 50μm             | 25μm        | 50μm        | 50μm        |
| X-axis data interval                 |                    | 200μm            | 100μm       | 200μm       | 200μm       |
| Z-axis linearity                     |                    | ±0.02% F.S.      |             |             |             |
| X-axis profile points                |                    | 3200             |             |             |             |
| Reflection angle (°)                 |                    | 40               | 28.7        | 35          | 33.9        |
| Scanning speed (Hz)                  |                    | 4000~67000       | 2500~67000  |             |             |
| Dimension (mm)                       |                    | 436x110.5x64.5   | 325x89.5x62 | 460x92.5x62 | 608x98.5x62 |
| Weight (g)                           |                    | 1800             | 1500        | 1900        | 2700        |

Notes:

① The recommended optimal installation distance.

② The data was obtained through 4096 average tests.

The dimensions of the SR5000 series cameras are shown on pages 33, and the accessory controller model is SR7002.

### SR7000 Series - 3D Camera

| Parameter / Model                    |                    | SR7050           | SR7060      | SR7060D    | SR7080      | SR7140        | SR7240      |
|--------------------------------------|--------------------|------------------|-------------|------------|-------------|---------------|-------------|
| Reference Distance (CD) <sup>①</sup> |                    | 50mm             | 60mm        | 57mm       | 80mm        | 140mm         | 240mm       |
| Z-axis height (FS)                   |                    | 5 mm             | 9.5mm       | 6mm        | 12mm        | 24mm          | 40mm        |
| X-axis width                         | Near side          | 30mm             | 41.5mm      | 29mm       | 57.5mm      | 89mm          | 138mm       |
|                                      | Reference Distance | 30.5mm           | 44mm        | 30mm       | 60mm        | 95mm          | 147mm       |
|                                      | Remote side        | 31.5mm           | 46.5mm      | 31mm       | 62.8 mm     | 96mm          | 157mm       |
| Light source wavelength              |                    | 405nm Blue laser |             |            |             |               |             |
| Laser class                          |                    | 2M               |             |            |             |               |             |
| Laser output power                   |                    | 10mW             |             |            |             |               |             |
| Z-axis repeatability <sup>②</sup>    |                    | 0.2μm            | 0.3μm       | 0.2μm      | 0.4μm       | 0.5μm         | 1μm         |
| X-axis repeatability                 |                    | 2.5μm            | 4μm         | 2.5μm      | 5μm         | 8μm           | 13μm        |
| X-axis data interval                 |                    | 10μm             | 15μm        | 10μm       | 20μm        | 30μm          | 50μm        |
| Z-axis linearity                     |                    | ±0.05% F.S.      |             |            |             |               |             |
| X-axis profile points                |                    | 3200             |             |            |             |               |             |
| Reflection angle (°)                 |                    | 45               | 30          | 30         | 37          | 28            | 26          |
| Scanning speed (Hz)                  |                    | 2500~8000        |             |            |             |               |             |
| Dimension (mm)                       |                    | 159.5x98x48.2    | 156x98x55.2 | 228x107x52 | 143.5x93x48 | 143x93.2x48.3 | 189.5x93x48 |
| Weight (g)                           |                    | 750              | 750         | 1500       | 730         | 730           | 840         |

Notes:

① The recommended optimal installation distance.

② The reference distance was obtained through 4096 average static tests.

The dimensions of the SR7000 series cameras are shown on pages 33-35, and the accessory controller model is SR7001.

## SR7000 Series - 3D Camera

| Parameter / Model                    |                    | SR7400           | SR7300           | SR7900        | SR71600      |
|--------------------------------------|--------------------|------------------|------------------|---------------|--------------|
| Reference Distance (CD) <sup>①</sup> |                    | 400mm            | 300mm            | 900mm         | 1600mm       |
| Z-axis height (FS)                   |                    | 200mm            | 288mm            | 500mm         | 1500mm       |
| X-axis width                         | Near side          | 180mm            | 175mm            | 359mm         | 1000mm       |
|                                      | Reference Distance | 220mm            | 290mm            | 489mm         | 1600mm       |
|                                      | Remote side        | 280mm            | 320mm            | 576mm         | 1600mm       |
| Light source wavelength              |                    | 405nm Blue laser | 450nm Blue laser |               |              |
| Laser class                          |                    | 2M               | 3R               |               |              |
| Laser output power                   |                    | 10mW             | 50mW             |               |              |
| Z-axis repeatability <sup>②</sup>    |                    | 5μm              | 8μm              | 12μm          | 100μm        |
| X-axis repeatability                 |                    | 20μm             | 45μm             | 40μm          | 150μm        |
| X-axis data interval                 |                    | 90μm             | 100μm            | 180μm         | 500μm        |
| Z-axis linearity                     |                    | ±0.02% F.S.      | ±0.05% F.S.      |               |              |
| X-axis profile points                |                    | 3200             | 3200             | 3200          | 3200         |
| Reflection angle (°)                 |                    | 17               | 22               | 13            | 8.1          |
| Scanning speed (Hz)                  |                    | 1250-10000       | 1000~4000        | 1250~4500     | 100~2200     |
| Dimension (mm)                       |                    | 189.5x93x48      | 192.5x105.2x59   | 275.5x98.5x59 | 290.5x100x59 |
| Weight (g)                           |                    | 840              | 1145             | 1300          | 1500         |

Notes:

①The recommended optimal installation distance.

② The data was obtained through 4096 average tests.

The dimensions of the SR7000 series cameras are shown on pages 33-35, and the accessory controller model is SR7001.

## SR8000 Series - 3D Camera

| Parameter / Model                    |                    | SR8020           | SR8060        | SR8060H       | SR8060K        | SR8062       |
|--------------------------------------|--------------------|------------------|---------------|---------------|----------------|--------------|
| Reference Distance (CD) <sup>①</sup> |                    | 23mm             | 60mm          | 60mm          | 60mm           | 60mm         |
| Z-axis height (FS)                   |                    | 5.2 mm           | 18mm          | 18mm          | 7.5mm          | 8.5mm        |
| X-axis width                         | Near side          | 13mm             | 26mm          | 20mm          | 28mm           | 16mm         |
|                                      | Reference Distance | 14.5mm           | 31mm          | 20mm          | 28mm           | 17mm         |
|                                      | Remote side        | 16mm             | 36mm          | 20mm          | 28mm           | 17.6mm       |
| Light source wavelength              |                    | 405nm Blue laser |               |               |                |              |
| Laser class                          |                    | 2M               |               |               |                |              |
| Laser output power                   |                    | 10mW             |               |               |                |              |
| Z-axis repeatability <sup>②</sup>    |                    | 0.1μm            | 0.2μm         | 0.2μm         | 0.2μm          | 0.15μm       |
| X-axis repeatability                 |                    | 1.5μm            | 5μm           | 5μm           | 5μm            | 1.5μm        |
| X-axis data interval                 |                    | 5μm              | 12μm          | 12μm          | 12μm           | 5.5μm        |
| Z-axis linearity                     |                    | ±0.02% F.S.      |               |               |                |              |
| X-axis profile points                |                    | 3200             |               |               |                |              |
| Reflection angle (°)                 |                    | 41.5             | 33            | 33            | 33             | 35           |
| Scanning speed (Hz)                  |                    | 3200~67000       |               |               |                | 2500~6700    |
| Dimension (mm)                       |                    | 125.5x82x55      | 123.5x84x55.2 | 123.5x84x55.2 | 123.5x 84x55.2 | 142x69.5x133 |
| Weight (g)                           |                    | 650              | 630           | 650           | 650            | 1500         |

Notes:

①The recommended optimal installation distance.

② The data was obtained through 4096 average tests.

The dimensions of the SR8000 series cameras are shown on pages 35-36, and the accessory controller model is SR7002.

## SR9000 Series - 3D Camera

| Parameter / Model                    |                    | SR9040           | SR9041         | SR9060         | SR9061       | SR9080         | SR9160       |
|--------------------------------------|--------------------|------------------|----------------|----------------|--------------|----------------|--------------|
| Reference Distance (CD) <sup>①</sup> |                    | 40mm             | 42mm           | 60mm           | 60mm         | 80mm           | 160mm        |
| Z-axis height (FS)                   |                    | 6.6 mm           | 8.6mm          | 24mm           | 14.5mm       | 35mm           | 90mm         |
| X-axis width                         | Near side          | 16.2mm           | 18mm           | 36mm           | 25mm         | 48mm           | 84mm         |
|                                      | Reference Distance | 17mm             | 19mm           | 39mm           | 27mm         | 52mm           | 99mm         |
|                                      | Remote side        | 18mm             | 20mm           | 42mm           | 30mm         | 59mm           | 120mm        |
| Light source wavelength              |                    | 405nm Blue laser |                |                |              |                |              |
| Laser class                          |                    | 2M               |                |                |              |                |              |
| Laser output power                   |                    | 10mW             |                |                |              |                |              |
| Z-axis repeatability <sup>②</sup>    |                    | 0.1μm            | 0.1μm          | 0.4μm          | 0.3μm        | 0.6μm          | 1.5μm        |
| X-axis repeatability                 |                    | 0.6μm            | 0.6μm          | 1.5μm          | 1.2μm        | 2μm            | 4μm          |
| X-axis data interval                 |                    | 3μm              | 3.5μm          | 7μm            | 5μm          | 10μm           | 19μm         |
| Z-axis linearity                     |                    | ±0.02% F.S.      |                |                |              |                |              |
| X-axis profile points                |                    | 6400             |                |                |              |                |              |
| Reflection angle (°)                 |                    | 50               | 50             | 30             | 30           | 30             | 28           |
| Scanning speed (Hz)                  |                    | 1500~13000       |                |                |              |                |              |
| Dimension (mm)                       |                    | 177x130.3x69.5   | 177x130.3x69.5 | 177x145.6x69.4 | 189x125.5x67 | 177x130.6x69.5 | 206x127x70.5 |
| Weight (g)                           |                    | 1920             | 1920           | 1940           | 2050         | 1910           | 2020         |

Notes:

① The recommended optimal installation distance.

② The data was obtained through 4096 average tests.

The dimensions of the SR9000 series cameras are shown on pages 37, and the accessory controller model is SR9001.

## General Parameters of Products

| Parameter / Model           | General Parameters of Products                                                    |
|-----------------------------|-----------------------------------------------------------------------------------|
| Temperature Characteristics | 0.02% F.S./°C                                                                     |
| Encoder input               | Support single end and differential encoder                                       |
| Input/Output                | 1 Ethernet interface 100Base-TX/1000Base-T                                        |
| Working Temperature         | 0~50°C                                                                            |
| Storage Temperature         | -20~70°C                                                                          |
| Working humidity            | 35%~85% No condensation                                                           |
| ESD Protection              | Contact discharge 4kV, air discharge 8kV, comply with IEC 61000-4-2               |
| EFT Protection              | Power port 2kV/5 or 100kHz, signal port 1kV/5 or 100kHz, comply with IEC61000-4-4 |
| Shock resistance            | Each axis 50Gs/3ms, comply with IEC 68-2-27 Ea                                    |
| Vibration resistance        | 10Gs (10-500Hz) , comply with IEC 68-2-6 Fc                                       |
| Protection level            | IP67, comply with IEC 60529                                                       |

## Accessories - Controller

| Model                              |                             | SR7001/SR7002                                                                                                                                                                                                                                                                                                                            |         | SR9001                                                            |
|------------------------------------|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-------------------------------------------------------------------|
| Mode                               |                             | 2.5D mode                                                                                                                                                                                                                                                                                                                                | 3D mode | 3D mode                                                           |
| Sensor head input                  |                             | 2 at Max. (SR7001 supports SR7000 series sensor heads, SR7002 supports SR5000 and SR8000 series sensor heads.)<br><br>♦ When using 2 sensors, the sensor heads must be of the same model.                                                                                                                                                |         | SR9001 supports SR9000 series sensor heads and for one head only. |
| Sampling period (trigger interval) |                             | 2500-10000HZ/3200-67000HZ                                                                                                                                                                                                                                                                                                                |         | 1500-13000HZ                                                      |
| Ethernet interface                 |                             | <ul style="list-style-type: none"> <li>Numerical output</li> <li>Connect to the included computer application software produced by SinceVision. In addition to the above functions, you can also upload or download detection settings. Send and receive various data including profile/image.</li> <li>1000BASE-T/100BASE-TX</li> </ul> |         |                                                                   |
| Digital input                      | Level control enable input  | Adaptable to NPN and PNP outputs                                                                                                                                                                                                                                                                                                         |         |                                                                   |
|                                    | Measurement start input     |                                                                                                                                                                                                                                                                                                                                          |         |                                                                   |
|                                    | Measurement end input       |                                                                                                                                                                                                                                                                                                                                          |         |                                                                   |
|                                    | Trigger input               |                                                                                                                                                                                                                                                                                                                                          |         |                                                                   |
| Digital output                     | Batch status output         | NPN open collector output                                                                                                                                                                                                                                                                                                                |         |                                                                   |
| Encoder input                      |                             | 1 set: compatible with RS-422 linear drive output (with 5V output: 150 mA Max.), or open collector output (Supports 5V/12V/24V)                                                                                                                                                                                                          |         |                                                                   |
| Encoder input Response frequency   | RS-422                      | 2-phase/1 increasing 1.6MHz, 2-phase/2 increasing 3.2MHz, 2-phase/4 increasing 6.4MHz                                                                                                                                                                                                                                                    |         |                                                                   |
|                                    | Open collector (OC)         | 2-phase/1 increasing 100kHz, 2-phase/2 increasing 200kHz, 2-phase/4 increasing 400kHz                                                                                                                                                                                                                                                    |         |                                                                   |
| Language                           |                             | Support simplified Chinese and English                                                                                                                                                                                                                                                                                                   |         |                                                                   |
| Minimum display unit               |                             | 0.1μm                                                                                                                                                                                                                                                                                                                                    |         |                                                                   |
| Heat dissipation                   |                             | Natural heat dissipation                                                                                                                                                                                                                                                                                                                 |         |                                                                   |
| Rated                              | Supply voltage              | 24 VDC ± 10%                                                                                                                                                                                                                                                                                                                             |         |                                                                   |
|                                    | Consumption current at Max. | 6.0A                                                                                                                                                                                                                                                                                                                                     |         |                                                                   |
| Environmental resistance           | Ambient temperature         | 0~50°C (installed below)                                                                                                                                                                                                                                                                                                                 |         |                                                                   |
|                                    | Ambient humidity            | 35%~85%RH (No condensation)                                                                                                                                                                                                                                                                                                              |         |                                                                   |
| Dimension (mm)                     |                             | 182x169x64                                                                                                                                                                                                                                                                                                                               |         |                                                                   |
| Weight (g)                         |                             | Approx. 1900                                                                                                                                                                                                                                                                                                                             |         |                                                                   |

## Accessories - High toughness cables

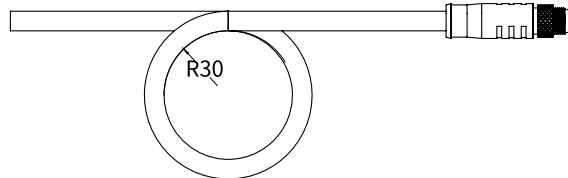
| Parameter / Model                                  | SCB-HCAM-HR1/SCB-HCAM-HB1/SCB-HCAM-HR2/SCB-HCAM-HR2Z/SCB-HCAM-HB2/SCB-HCAM-HB2Z                                                                |                                |                       |                                                 |
|----------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|-----------------------|-------------------------------------------------|
| Protection                                         | IP67, comply with IEC 60529 ①                                                                                                                  |                                |                       |                                                 |
| Minimum bending radius of cable components (fixed) | 30mm                                                                                                                                           |                                |                       |                                                 |
| Service life                                       | Cable carrier installation with a radius of no less than 72mm (recommended 100mm), with repeated bending times greater than 10 million times ② |                                |                       |                                                 |
| Adapted model                                      | SR7000/SR8000                                                                                                                                  |                                | SR5000/SR9000         |                                                 |
|                                                    | L-joint (bending end)                                                                                                                          | "—" shape joint (straight end) | L-joint (bending end) | "—" shape joint (straight end)                  |
| 1m cable                                           | SCB-HCAM-HR1-1m                                                                                                                                | SCB-HCAM-HB1-1m                | /                     | /                                               |
| 3m cable                                           | SCB-HCAM-HR1-3m                                                                                                                                | SCB-HCAM-HB1-3m                | SCB-HCAM-HR2-3m       | SCB-HCAM-HB2-3m                                 |
|                                                    |                                                                                                                                                |                                | SCB-HCAM-HR2Z-3m      | SCB-HCAM-HB2Z-3m (Assembly type aviation plug)  |
| 6m cable                                           | SCB-HCAM-HR1-6m                                                                                                                                | SCB-HCAM-HB1-6m                | SCB-HCAM-HR2-6m       | SCB-HCAM-HB2-6m                                 |
|                                                    |                                                                                                                                                |                                | SCB-HCAM-HR2Z-6m      | SCB-HCAM-HB2Z-6m (Assembly type aviation plug)  |
| 10m cable                                          | SCB-HCAM-HR1-10m                                                                                                                               | SCB-HCAM-HB1-10m               | /                     | SCB-HCAM-HB2-10m                                |
|                                                    |                                                                                                                                                |                                | /                     | SCB-HCAM-HB2Z-10m                               |
| Extension cable of 3m cable                        | /                                                                                                                                              | SCB-HCAM-HBY-3m                | /                     | /                                               |
| Extension cable of 5m cable                        | SCB-HCAM-HRY-5m                                                                                                                                | SCB-HCAM-HBY-5m                | SCB-HCAM-HR2Y-5m      | SCB-HCAM-HB2Y-5m                                |
|                                                    |                                                                                                                                                |                                | SCB-HCAM-HR2YZ-5m     | SCB-HCAM-HB2YZ-5m (Assembly type aviation plug) |
| Extension cable of 20m cable                       | SCB-HCAM-HRY-20m                                                                                                                               | SCB-HCAM-HBY-20m               |                       |                                                 |

Notes:

① The value when connecting the sensor head, but not including the connector of the controller.

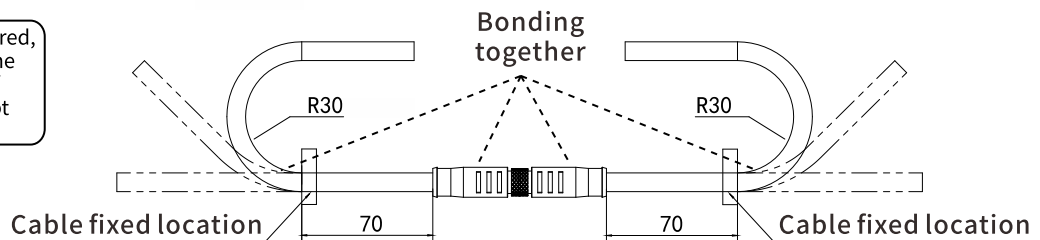
② Testing environment: temperature/humidity 23°C/40%RH; test conditions: cable carrier radius: R72mm; cable carrier distance: 1000mm, running speed: 60 round trips/min. Measurement results: Standard value > 30 million times; minimum value > 10 million times.

Please ensure that the minimum bending radius of the sensor head cable is above 30mm.



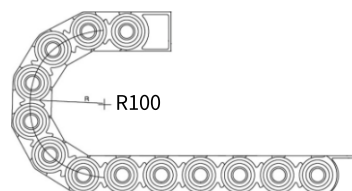
Minimum cable bending radius

When a splice is required, the splice head and the cable within 70mm of each end must be kept relatively fixed.



Cable splice connection

When using cable carriers, if not specifically specified, please choose products with R100 or higher.



Minimum cable bending radius

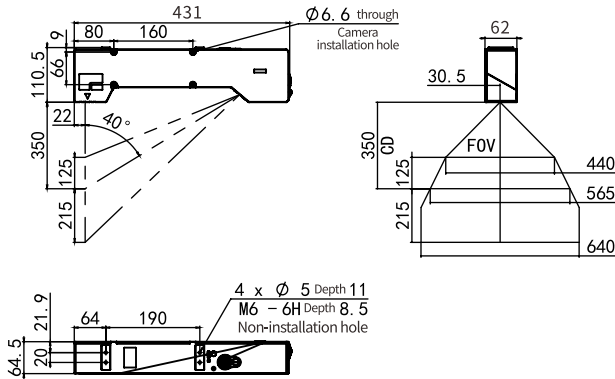
An abstract graphic composed of several light blue geometric shapes, including rectangles and parallelograms, arranged in a staggered, overlapping fashion. From the bottom-left corner of these shapes, a series of thin, parallel blue lines extend towards the right side of the page, creating a sense of depth and movement.

# PRODUCT DIMENSION DRAWINGS

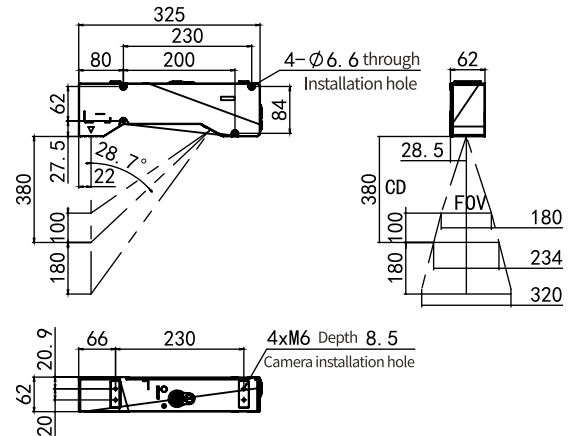
# PRODUCT DIMENSION DRAWINGS

## SR5000 Series

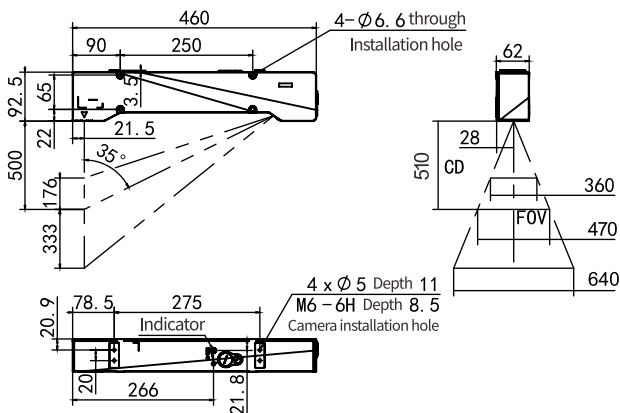
SR5220



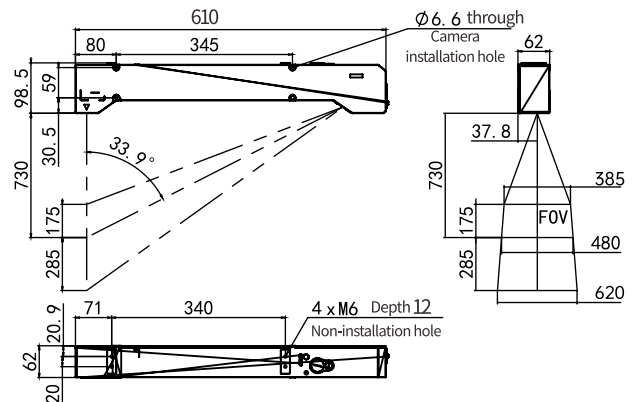
SR5280



SR5320

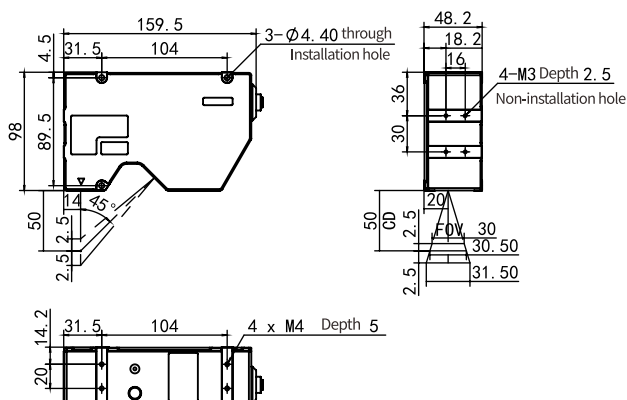


SR5540



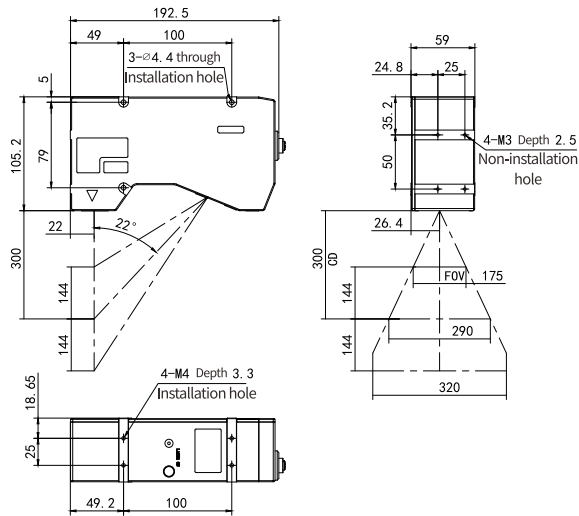
## SR7000 Series

SR7050

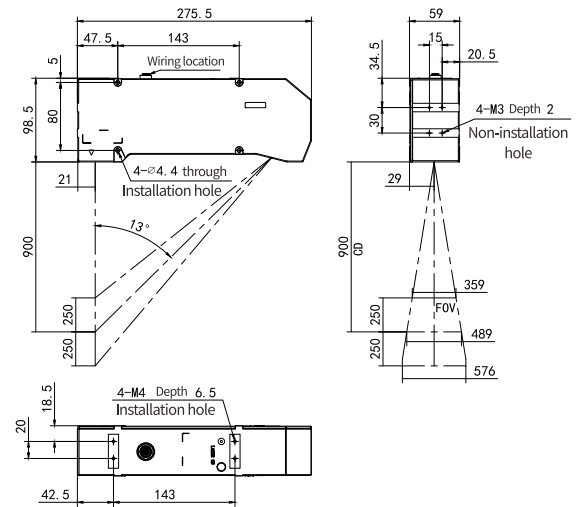




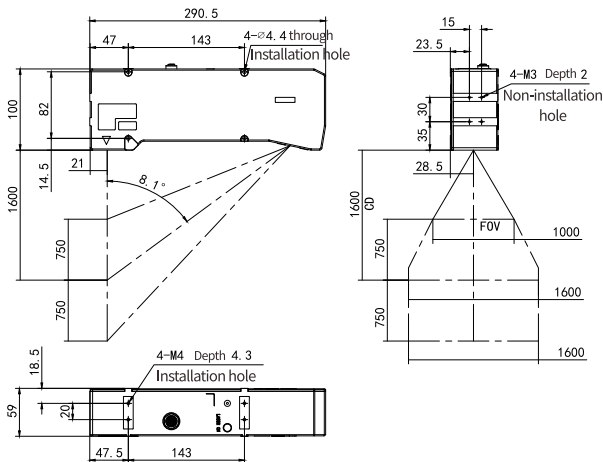
SR7300



SR7900

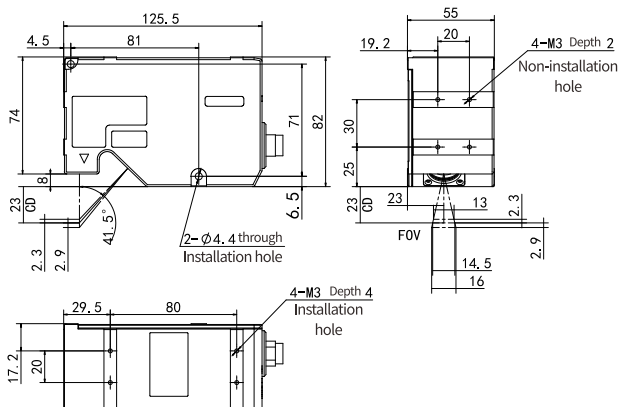


SR71600

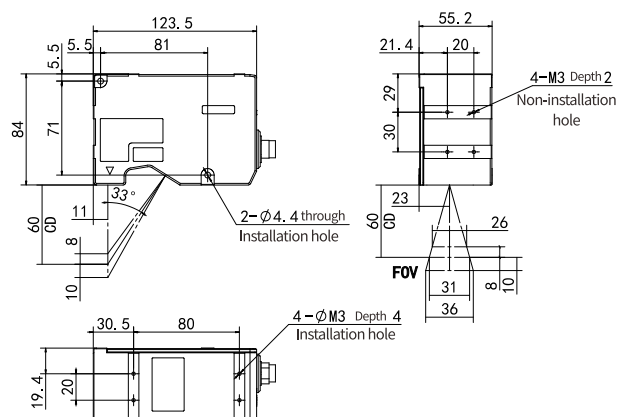


## SR8000 Series

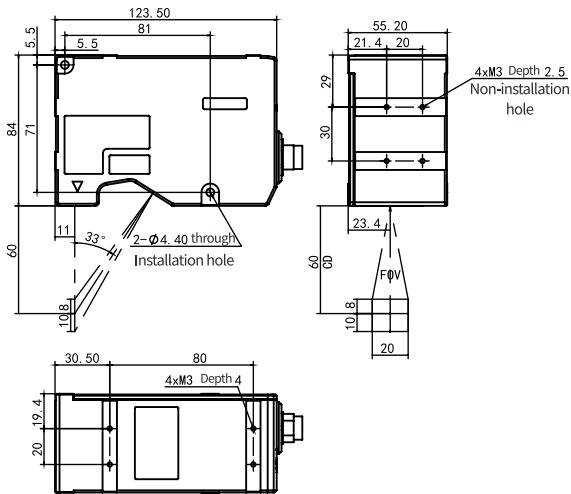
SR8020



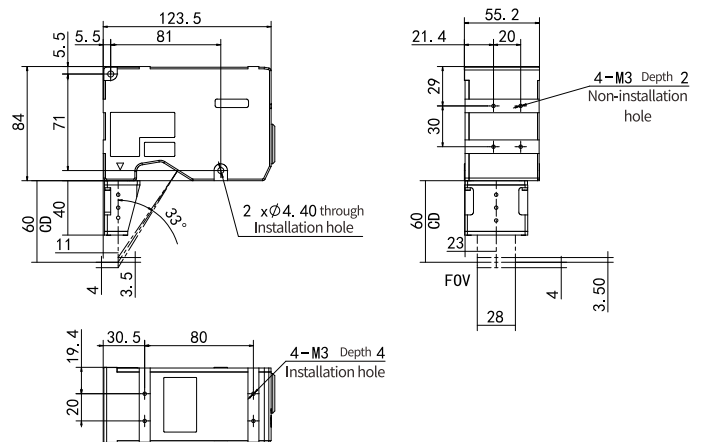
SR8060



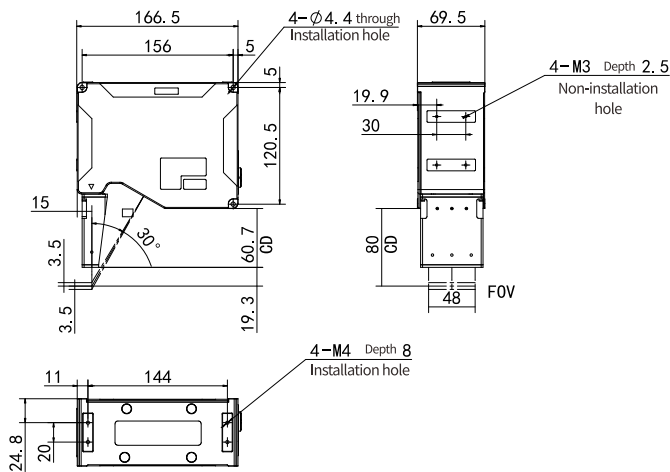
SR8060H



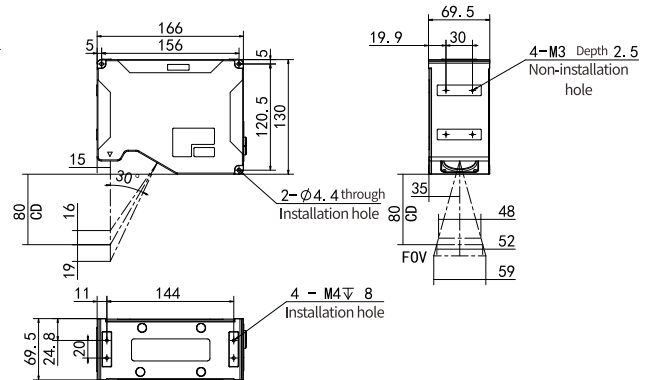
SR8060K



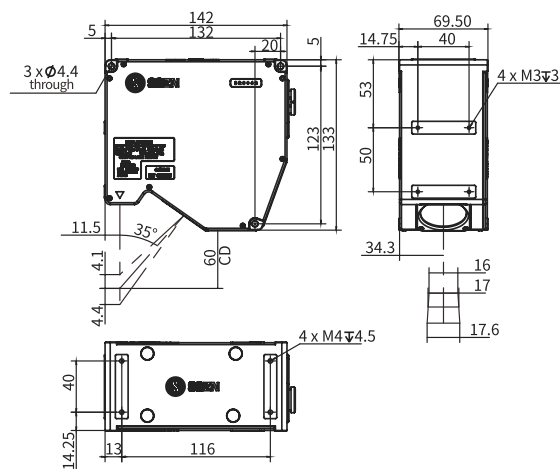
SR8080K



SR8080

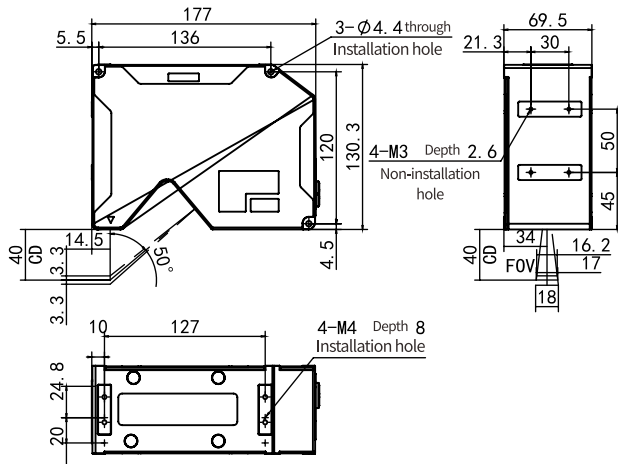


SR8062

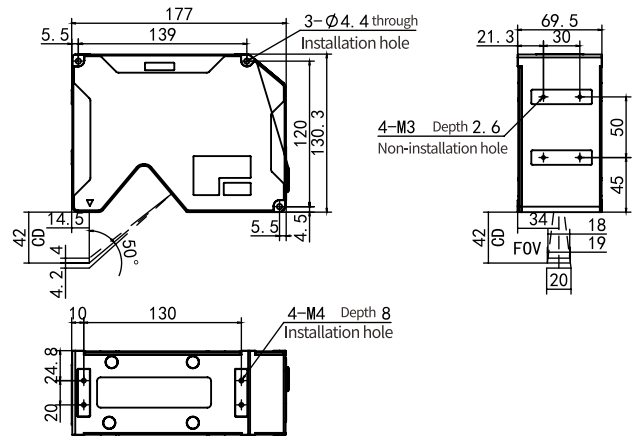


## SR9000 Series

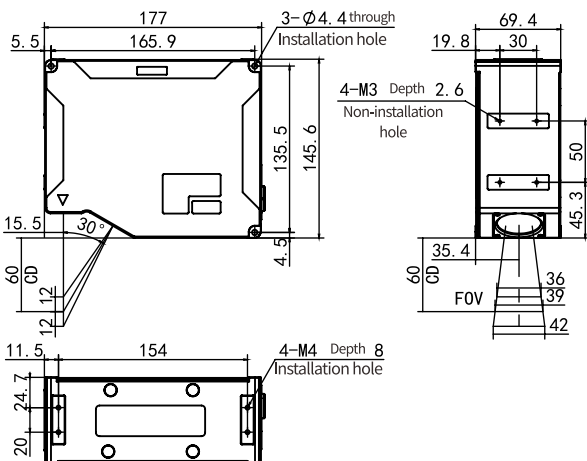
SR9040



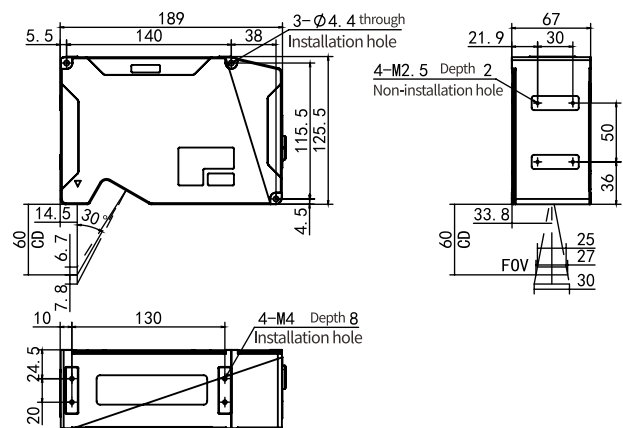
SR9041



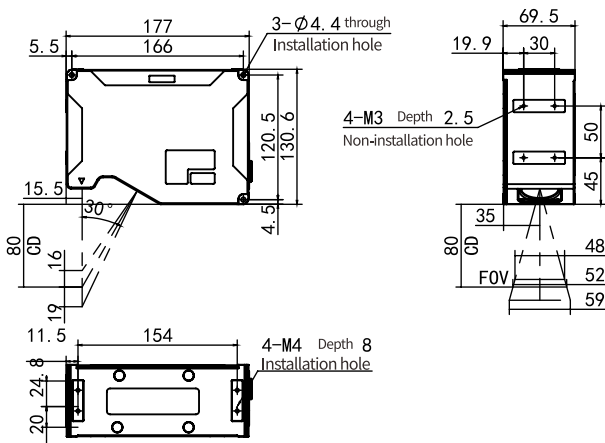
SR9060



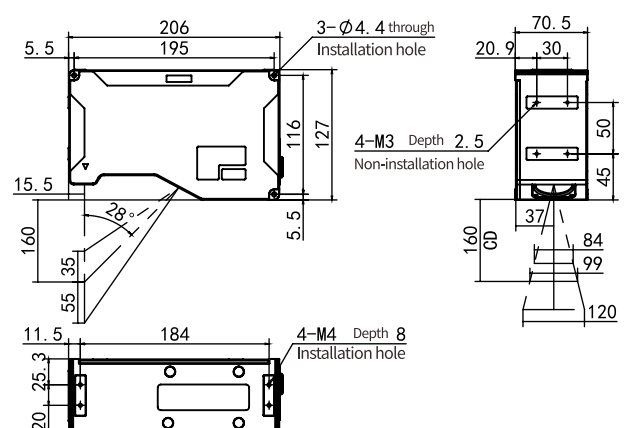
SR9061



SR9080



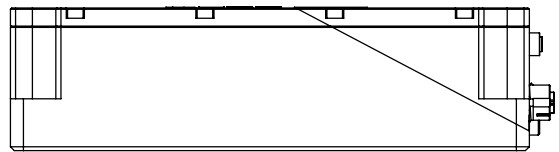
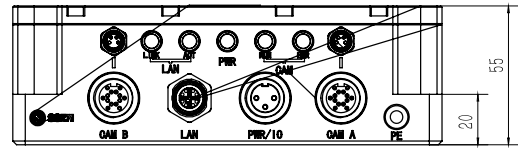
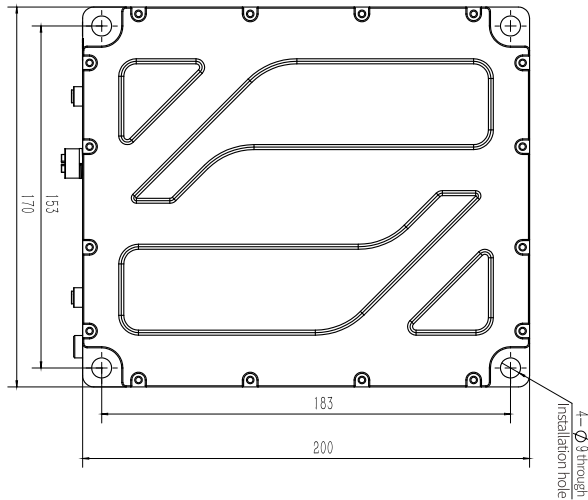
SR9160



## Accessories - Controller

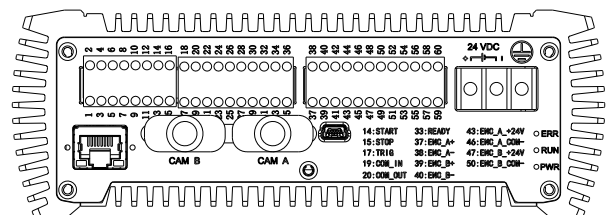
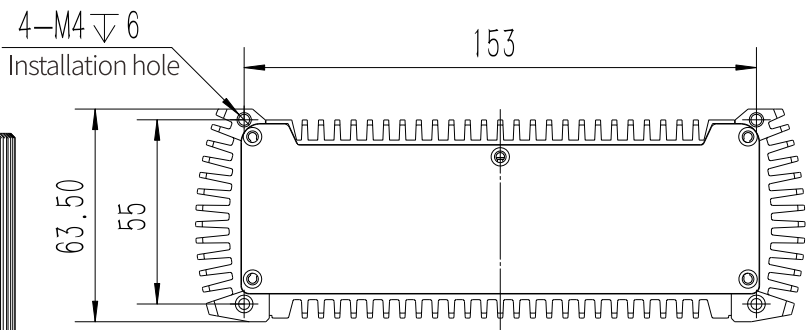
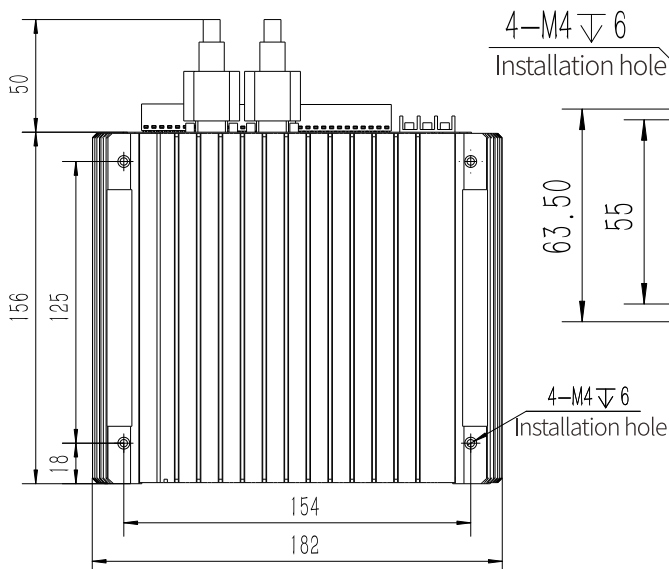
### SR5001

For SR5000 series



### SR7001/SR7002/SR9001

For SR7000/SR8000/SR9000 series



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