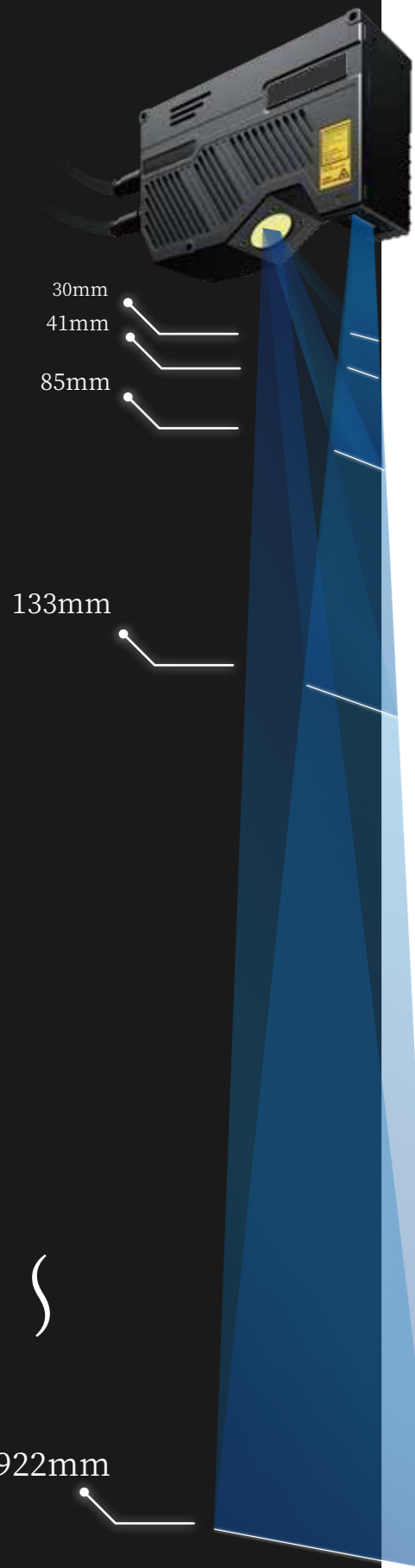


3D Laser Profile Camera

World's leading provider of LIDAR and 3D Camera and perception solutions

Various scan widths available



Various scan widths are available

• Detailed

Each profile contains 3840 data points, the shape of targets can be rendered in exceptional detail.

• Accurate inspection

Linearity up to $\pm 0.03\%$ F.S., repeatability up to 0.3um, stable output of high precision 3D images.

• Irregular reflection removal

Parallel light is emitted using a laser light source designed to minimise irregular reflection, effectively solve the problem of "bright spots" at the edge of the laser and improve the scanning clarity and resolution.

Stable

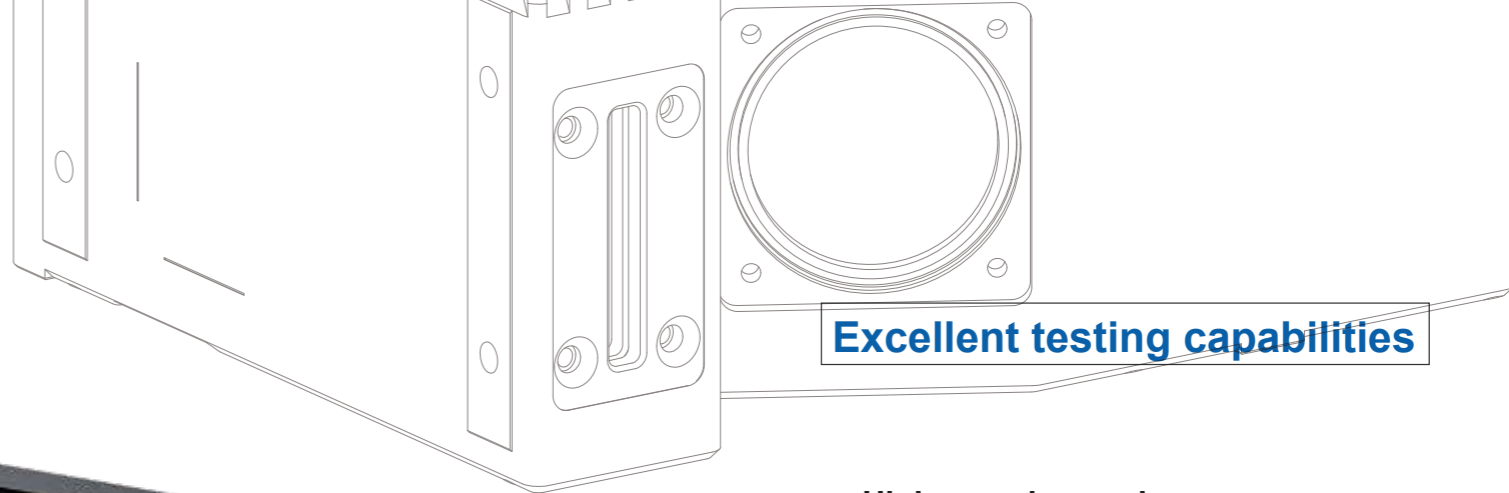
• Highly flexible cable

Equipped with highly flexible cables to adapt to various complex applications.



• IP67

In line with IP67 standard, can be used in humid and dusty environments.



Excellent testing capabilities

• High-speed scanning

The maximum of sampling frequency is 24000HZ, easily cope with high-speed and high-dynamic detection tasks.

• 405nm laser light source

A special laser light source with a limit focus of 405nm wavelength is used to accurately filter out stray light interference and avoid the effects of other ambient light.

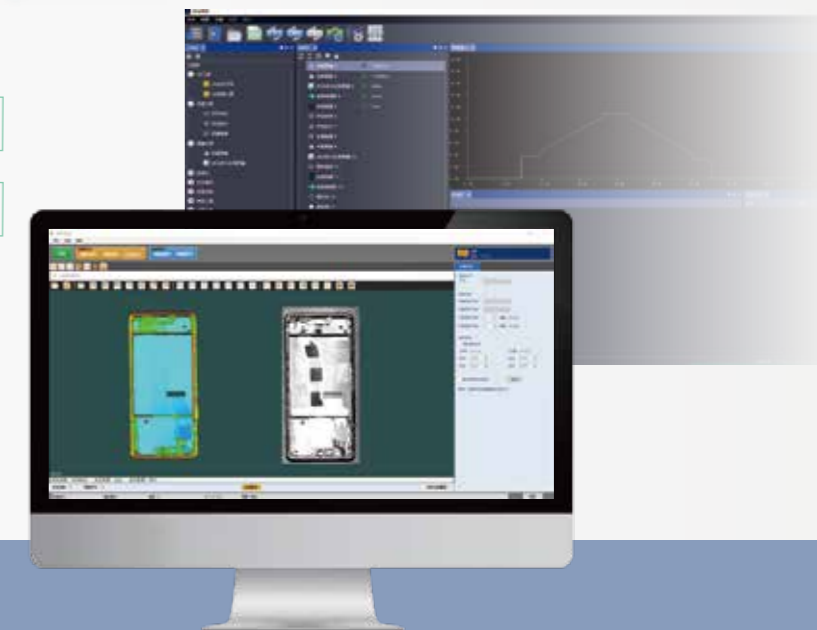
• High dynamic range

Equipped with a new generation of area array CMOS sensor, the high dynamic range adapts to a variety of detection needs.




• Multiple SDK interface

- | | | |
|---------|-----------|-----------|
| Halcon | Visionpro | Eyevision |
| Labview | Qt | C/C++ |
| C# | | |



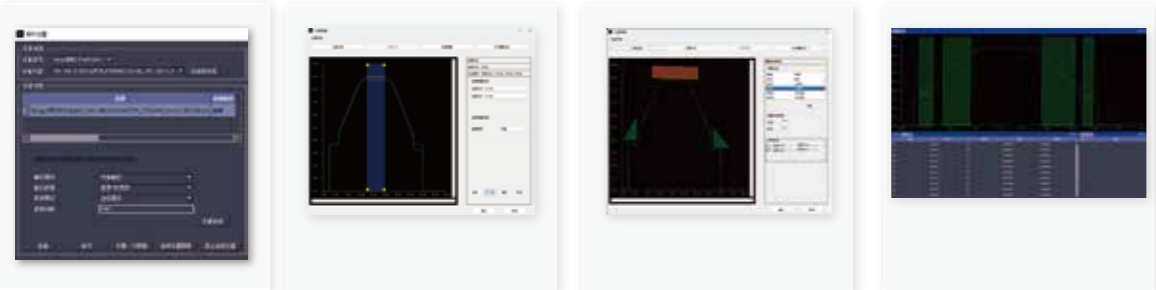
When combined with the "Panorama" software




3D laser profile camera + Setup "Panorama" software on PC

By registering the image template of the measured object, the characteristics of each incoming material are accurately positioned, and even if there is tilt and offset, it can be automatically corrected, so as to carry out stable feature measurement.

Step 1: Camera settings → Step 2: Position correction → Step 3: Block regional settings → Step 4: Feature enhancement **OK**



Provide multiple measurements for users to choose




Height	Segment difference	Coordinate position	Width
Central position	Distance (point - point)	Distance (point - straight line)	Angle (horizontal)
Angle (straight line - straight line)	R-angle measurement (Single base line)	Area (Single base line)	Area (2 base lines)
Area (shielding reference)	Master control comparison (Z)(Z)		

3D image processing functions

Image stitching

Adapt to the scanning modes in different scenarios, solve the problem of limiting the scanning field of view of large workpieces.

▶ Stitch images into a complete 3D images



Blind spot elimination

To avoid blind spots caused by triangulation, synthesize two reverse-scanned point cloud data and output a complete 3D appearance.

▶ Image of camera A

▶ Image of camera B

▶ Synthesize two images to eliminate measurement blind spots

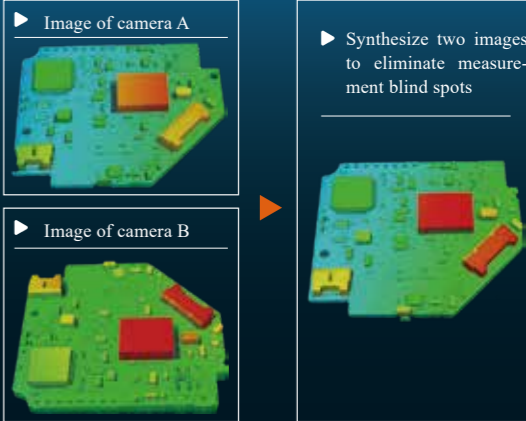
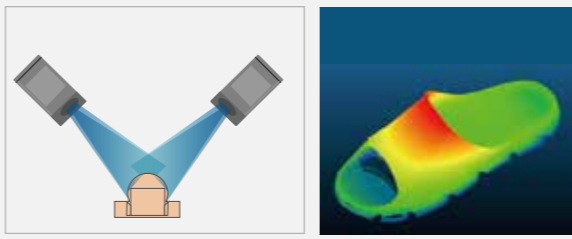



Image synthesis

To avoid blind spots caused by triangulation, multiple cameras are used to scan from different orientations to restore the actual shape of the measured object.

▶ Dual-view image synthesis




▶ Image synthesis of cylindrical measured object



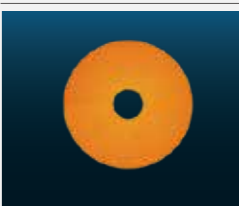
Graphic deformation

According to various needs such as stretching, flipping, and unfolding, the 3D image is deformed or restored.

▶ Scan the side of the rotating object



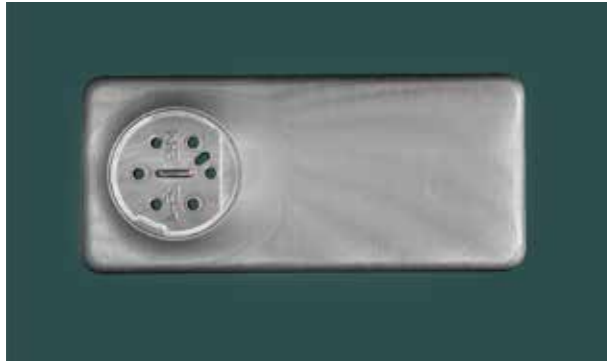
▶ Restore the matrix point cloud to a circle



Industry application

3C products

Mobile phone housing segment difference detection



Grayscale image

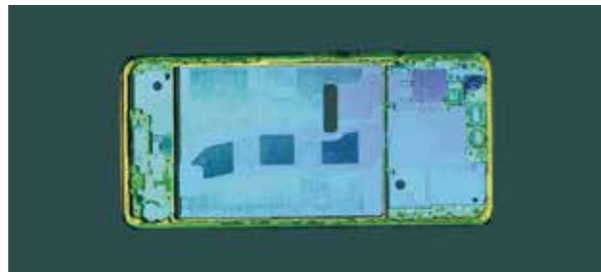


3D image

Flatness detection of the middle frame of the mobile phone



Grayscale image



3D image

Flatness detection of notebook housing

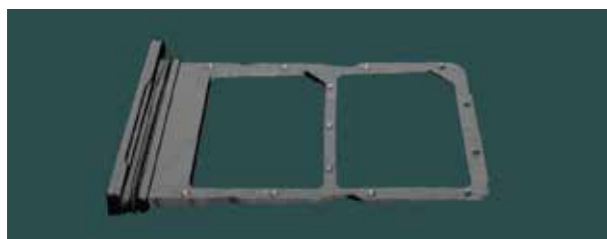


Physical image

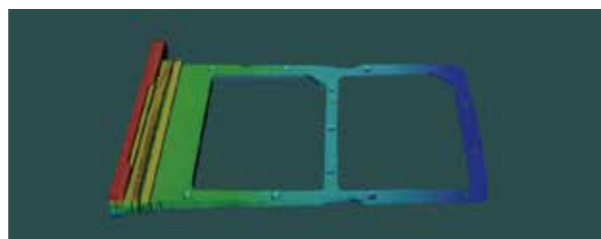


3D image

Card slot size measurement

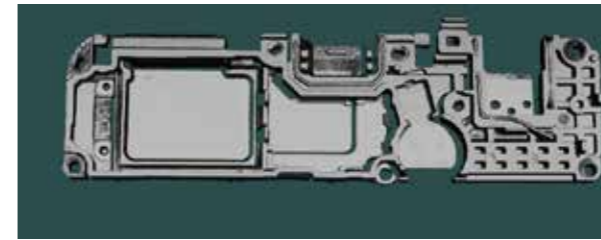


Grayscale image



3D image

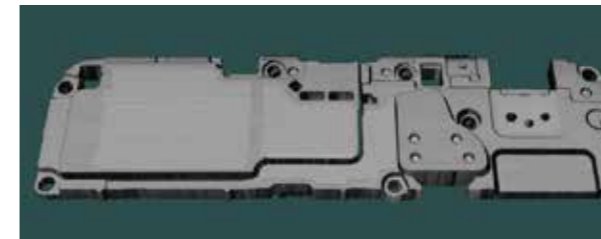
Speaker BOX inspection



Grayscale image



3D image

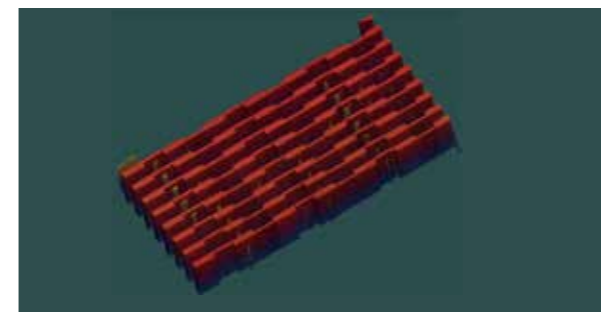


Grayscale image

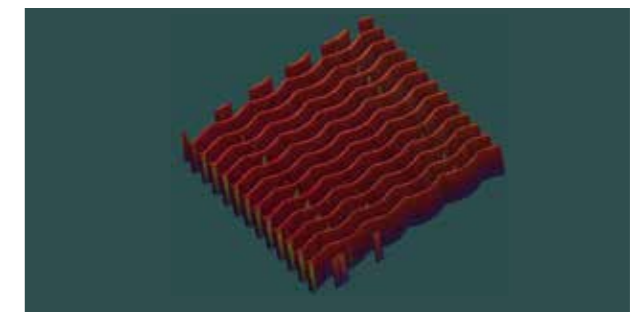


3D image

Computer controller heat sink height difference inspection

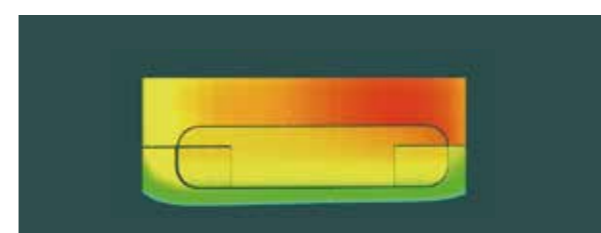


3D image

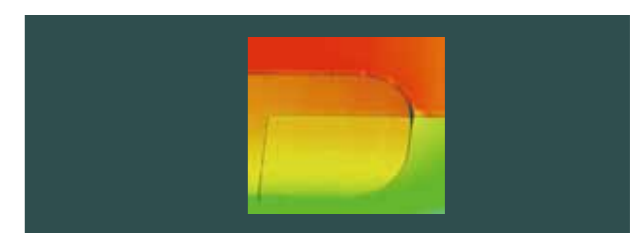


3D image

Headphone charging compartment size inspection

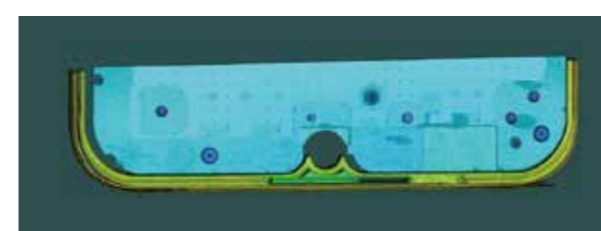


3D image



3D image

Cell phone center frame dispensing quality inspection



Short side-3D image



Long side-3D image

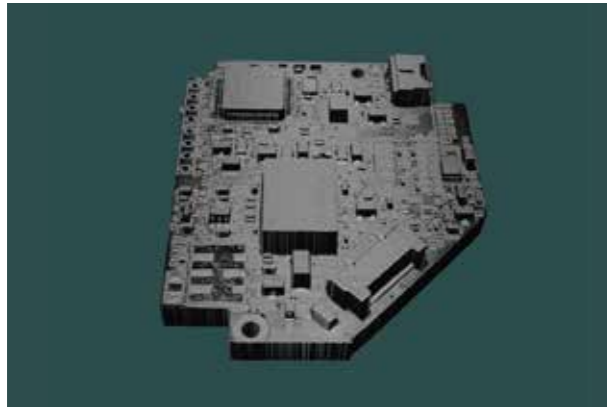


Corner-3D image

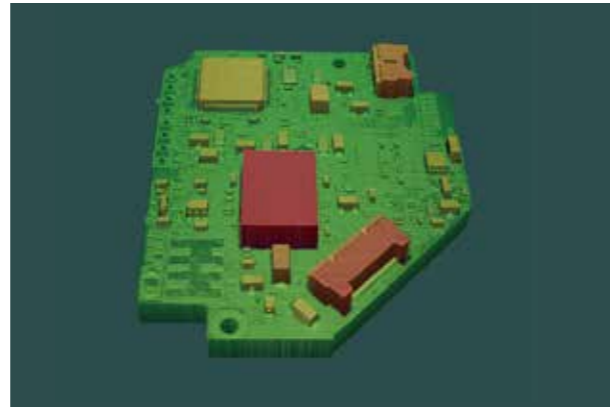
Industry application

Semiconductor

PCB component inspection



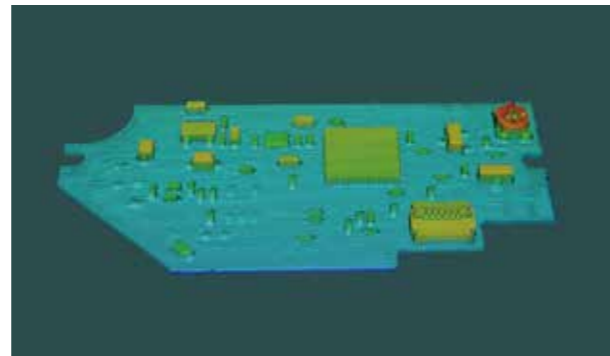
Grayscale image



3D image



Grayscale image

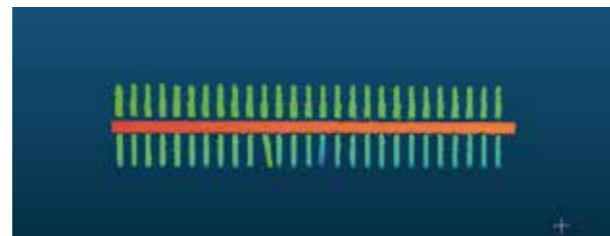


3D image

Connector PIN flatness detection



Physical image



3D image

BGA tin ball height coplanarity detection



Grayscale image

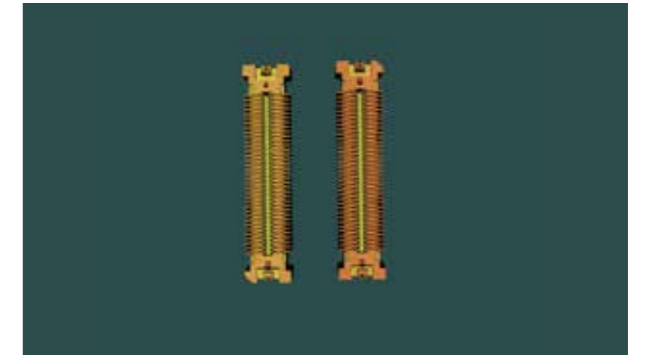


3D image

Connector height detection



Grayscale image

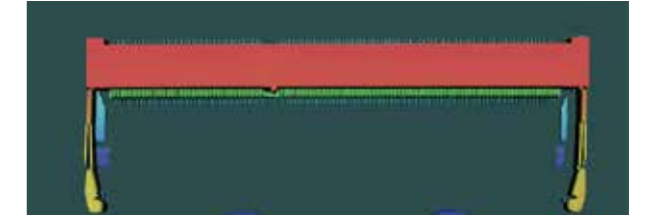


3D image

Circuit board PIN detection

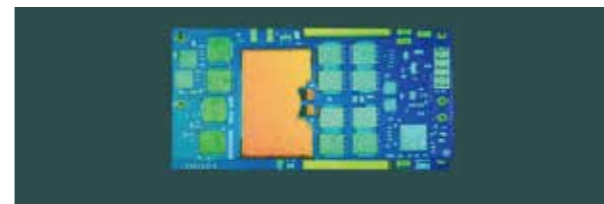


Grayscale image



3D image

IC chip adhesive path size inspection



3D image

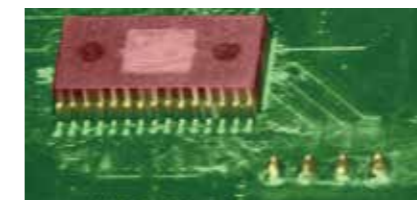


3D image

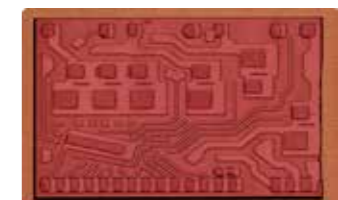
PCB inspection



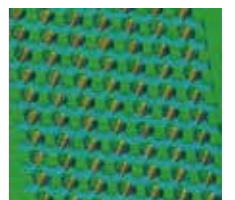
PCB component height inspection



PCB Insert Back Pin Height inspection



PCB Brush Tin Quality inspection



PIN pin height inspection



PCB component placement quality inspection



Connector position inspection



PIN pin position degree inspection

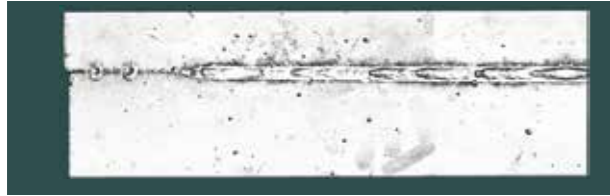


Chip height and position inspection

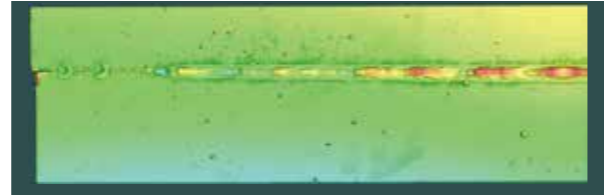
Industry application

Alloy

► Steel Plate Weld inspection

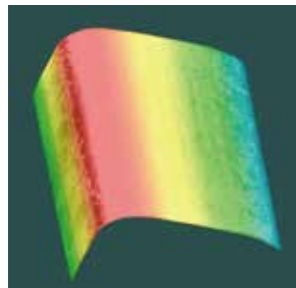


Grayscale image



3D image

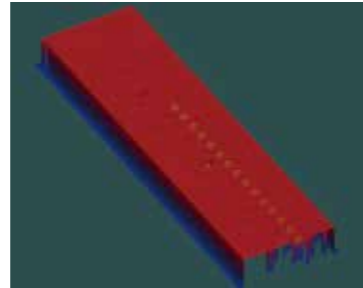
Fabrication



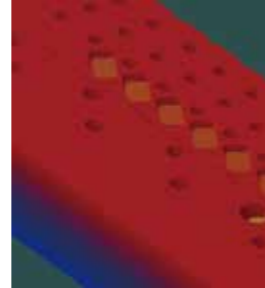
Rail surface straightness inspection



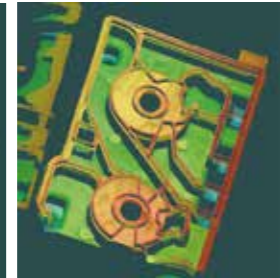
Workpiece appearance inspection



Metal Fixture Flatness inspection



Precision workpiece porosity inspection



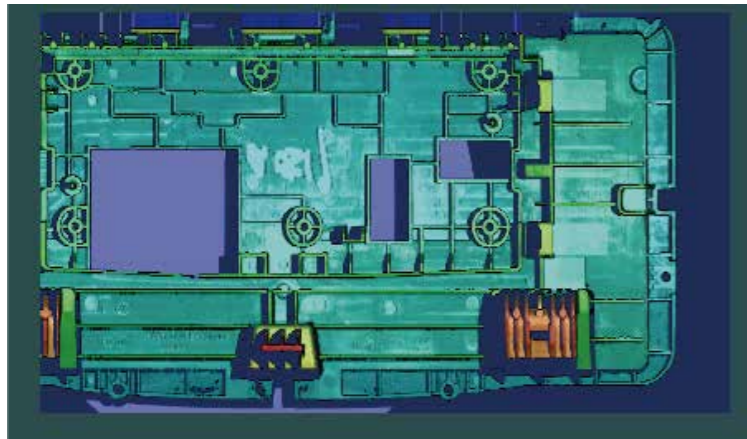
Plastic parts flatness inspection



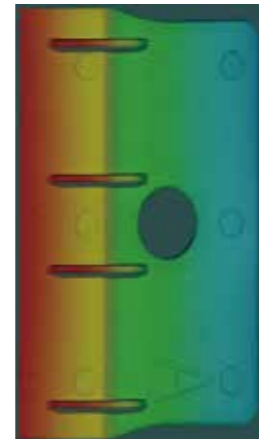
Plastic shell dispensing inspection



Casting parts 3D character recognition



Plastic panel size inspection

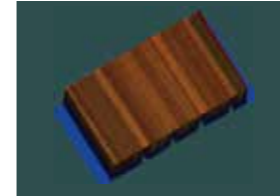


Plastic parts size inspection

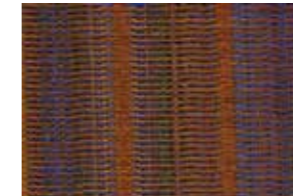


Home Appliance

► Air conditioner filter blade number detection



3D image



► Washing machine baffle plate seam height detection



3D image



Lithium

► Flatness of the top cover of the battery cell



Grayscale image



3D image

► Lithium explosion-proof valve weld seam detection



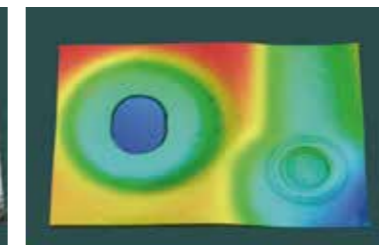
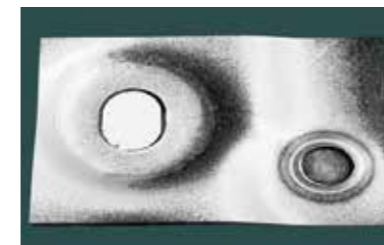
NG



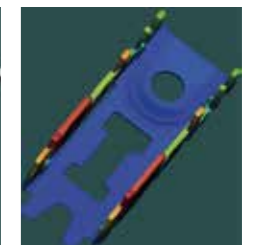
OK



Automotive



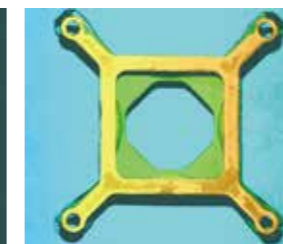
Rivet Welding inspection



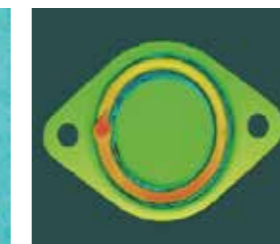
Automotive seat belt buckle groove seat size inspection



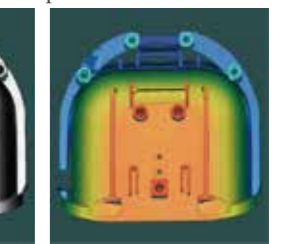
Automotive parts assembly quality inspection



Flatness Inspection of Automobile Parts



Automotive parts sealing gel size inspection



Bolt locking inspection for automotive parts

tG57N/sG57L Series Specifications

1 Specification

Ex: **sG57N 075X040**



1 represents series symbol
sG57N:sG57N Series

2 represents the optimum working distance

- 052:The optimum working distance 52mm
- 075:The optimum working distance 75mm
- 120:The optimum working distance 120mm
- 200:The optimum working distance 200mm

3 represents the scan width at the center position X

- 030:Width of X-axis 30mm
- 040:Width of X-axis 40mm
- 060:Width of X-axis 60mm
- 085:Width of X-axis 85mm
- 130:Width of X-axis 130mm

tG57N Series 3D Laser Profile Camera

Model(tG57N Series)	tG57N 030X014	tG57N 082X030	tG57N 135X045	tG57N 110X085		
Reference distance (mm)	30	82	135	110		
Measurement	Z-axi(height)(mm)	±4 (F.S.=8)	±11.25 (F.S.=22.5)	±19 (F.S.=38)	±31.5 (F.S.=63)	
	X-axis(width)(mm)	Near side	13	27	40	75
		Reference distance	14	30	45	85
		Far side	14.5	32	48	94
Repeatability ^{*1}	Z-axis(height)(um)	0.3	0.8	1.4	3	
Profile data interval	X-axis(width)(um)	9	20	30	59	
Linearity ^{*2}	Z-axis (height)	Reference distance ± within 30%;±0.035% F.S. The rest:±0.05% F.S		±0.035% F.S.		
		1600 items				
Profile data count	1600 items					
	1700 Fps					
Sampling frequency	Full frame	1700 Fps				
	ROI	Up to 21000 Fps				
Light source	Type	Blue semiconductor laser				
	Wavelength	405 nm				
	Laser classification	Class 3R laser products				
Temperature characteristics ^{*3}	0.01% F.S./°C					
Data interface	Gigabit Ethernet					
Input voltage	24 V ± 10%, the maximum current consumption is 1A					
Environmental resistance	Enclosure rating	IP67				
	Ambient temperature	0 to +50°C				
	Operating ambient humidity	20 to 85% (No condensation)				
	Vibration resistance	10 to 57 Hz, 1.5mm double amplitude in X, Y and Z directions, 2 hours respectively				
	Impact resistance	15G / 6msec				
Material	Aluminum					
Size(mm)	143x106x55	160x102x55	180x102x55	160x120x57		
Weight(g)	900	960	1040	1080		

*1: Values measured by averaging 4096 times at the reference distance.

*2: The measured target is a SENGOIC standard target. Profile data when measured by smoothing 64 times and averaging 8 times in the measurement laboratory environment.

*3: The data is obtained by testing aluminum alloy standard blocks in the measurement laboratory environment.

sG57L Series 3D Laser Profile Camera

Model(sG57L Series)	sG57L 030X013		
Reference distance (mm)	30		
Measurement	Z-axis(height)(mm)	±4(F.S.=8)	
	X-axis(width)(mm)	Near side	12.5
		Reference distance	13
	Far side	13	
Repeatability ^{*1}	Z-axis(height)(um)	0.3	
Profile data interval	X-axis(width)(um)	6.5	
Linearity ^{*2}	Z-axis(height)	Reference distance ± within 30% ±0.03% F.S.;	
		The rest: ±0.05% F.S	
Profile data count	2040 items		
Sampling frequency	Full frame	2000 Fps	
	ROI	Up to 24000 Fps	
Light source	Type	Blue semiconductor laser	
	Wavelength	405 nm	
	Laser classification	Class 3R laser products	
Temperature characteristics ^{*3}	0.01% F.S./°C		
Data interface	Gigabit Ethernet		
Input voltage	24 V ± 10%, the maximum current consumption is 1A		
Environmental resistance	Enclosure rating	IP67	
	Ambient temperature	0 to +50°C	
	Operating ambient humidity	20 to 85% (No condensation)	
	Vibration resistance	10 to 57 Hz, 1.5mm double amplitude in X, Y and Z directions 2 hours respectively	
	Impact resistance	15G / 6msec	
Material	Aluminum		
Size(mm)	143x106x52.5		
Weight(g)	860		

*1: Values measured by averaging 4096 times at the reference distance.

*2: The measured target is a SENGOIC standard target. Profile data when measured by smoothing 64 times and averaging 8 times in the measurement laboratory environment.

*3: The data is obtained by testing aluminum alloy standard blocks in the measurement laboratory environment.

sG57N/sG58M Series Specifications

sG57N Series 3D Laser Profile Camera

Model(sG57N Series)	sG57N 055X013	sG57N 020X018	sG57N 052X030	sG57N 075X040	sG57N 102X085	sG57N 120X060	sG57N 120X085	sG57N 200X130	sG57N 275X180	sG57N 420X265	sG57N 820X490	sG57N 922X700		
Reference distance(mm)	55	20	52	75	102	120	120	200	275	420	820	922		
Measurement	Z-axis(height)(mm)	±2 (F.S.=4)	±3.25 (F.S.=6.5)	±7.1 (F.S.=14.2)	±10.5 (F.S.=21)	±21 (F.S.=42)	±17 (F.S.=34)	±26.5 (F.S.=53)	±47.5 (F.S.=95)	±65 (F.S.=130)	±110.5 (F.S.=221)	±281.5 (F.S.=563)	±420 (F.S.=840)	
	X-axis (width) (mm)	Near side	12.5	17	28	38	76	54	72	111	146	206	332	400
		Reference distance	13	17.8	30	41	85	59	85	133	178	265	490	700
	Far side	13	17.8	32	45	94	64	97	155	178	324	648	1000	
Repeatability ^{*1}	Z-axis(height)(um)	0.2	0.3	0.6	0.8	1.5	1.3	2	4	4.5	8	21	42	
Profile data interval ^{*2}	X-axis(width)(um)	4	5.5	10	14	29	20	30	48	55	100	200	308	
Linearity ^{*3}	Z-axis(height)	±0.05% F.S.					±0.035% F.S.					±0.05% F.S.		
Profile data count		3240 items												
Sampling frequency	Full frame	1250 Fps												
	ROI	Up to 24000 Fps												
Light source	Type	Blue semiconductor laser					Red semiconductor laser							
	Wavelength	405 nm					638 nm							
	Laser classification	Class 3R laser products												
Temperature characteristics ^{*4}		0.01% F.S./°C												
Data interface		Gigabit Ethernet												
Input voltage		24 V ± 10%, the maximum current consumption is 1.2A												
Environmental resistance	Enclosure rating	IP67												
	Ambient temperature	0 to +50°C												
	Operating ambient humidity	20 to 85% (No condensation)												
	Vibration resistance	10 to 57 Hz, 1.5mm double amplitude in X, Y and Z directions, 2 hours respectively												
Impact resistance	15G / 6msec													
Material		Aluminum												
Size(mm)		145x112x55	140x115x55	145x105x55	156x105x55	195x105x55	172x105x55	165x105x55	185x105x55	225x105x55	252x105x55	295x110x55	305x116x55	
Weight (g)		950	910	940	980	1130	1040	1000	1090	1250	1400	1650	1900	

*1: Values measured by averaging 4096 times at the reference distance.
 *2: The profile data interval can be changed. If changed, profile data count in the X direction will also change.
 *3: The measured target is a SENGIOC standard target. Profile data when measured by smoothing 64 times and averaging 8 times in the measurement laboratory environment.
 *4: The data is obtained by testing aluminum alloy standard blocks in the measurement laboratory environment.



sG58M Series 3D Laser Profile Camera

Model(sG58M Series)	sG58M 060X030	sG58M 060X045	sG58M 075X060	sG58M 137X085		
Reference distance(mm)	60	60	75	137		
Measurement	Z-axis(height)(mm)	±5.5 (F.S.=11)	±10 (F.S.=20)	±12 (F.S.=24)	±21 (F.S.=42)	
	X-axis(width)(mm)	Near side	27	40	55	78
		Reference distance	30	45	60	87
	Far side	30	45	65	96	
Repeatability ^{*1}	Z-axis(height)(um)	0.4	0.7	0.8	1.5	
Profile data interval	X-axis(width)(um)	8	12	17	25	
Linearity ^{*2}	Z-axis(height)	±0.03% F.S.				
Profile data count		3840 items				
Sampling frequency	Full frame	2500 Fps				
	ROI	Up to 17000 Fps				
Light source	Type	Blue semiconductor laser				
	Wavelength	405 nm				
	Laser classification	Class 3R laser products				
Temperature characteristics ^{*3}		0.01% F.S./°C				
Data interface		Gigabit Ethernet				
Input voltage		24 V ± 10%, the maximum current consumption is 1.5A				
Environmental resistance	Enclosure rating	IP67				
	Ambient temperature	0 to +50°C				
	Operating ambient humidity	20 to 85% (No condensation)				
	Vibration resistance	10 to 57 Hz, 1.5mm double amplitude in X, Y and Z directions, 2 hours respectively				
Impact resistance	15G / 6msec					
Material		Aluminum				
Size(mm)	150x105x57	130x100x55	160x105x57	172x100x55		
Weight(g)	988	850	1010	1040		

*1: Values measured by averaging 4096 times at the reference distance.
 *2: The measured target is a SENGIOC standard target. Profile data when measured by smoothing 64 times and averaging 8 times in the measurement laboratory environment.
 *3: The data is obtained by testing aluminum alloy standard blocks in the measurement laboratory environment.

2 Quick-access

Please download the user manual on the official website of Sengo.
www.sengoic.com

NO.	Name	Graphic	Qty
1	3D Camera sG57N Series		1
2	5m Power signal cable	-	1
3	5m Network data cable	-	1
4	M4x60 socket head cap screw		3

Installation environment

- Stay away from strong electromagnetic interference environments and high-power electrical appliances.
- Avoid sharing power with high-power electrical appliances.
- Avoid laying 3D camera cables parallel to power lines with frequent switching of strong currents or voltages.

sG57N/sG58M Series Specifications

Description of camera components

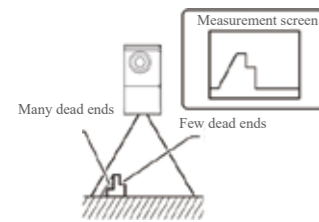


NO.	Name	Graphic
1	Mounting Hole	Install the camera using the included hexagonal perforated bolts. Please refer to "Installing a Camera".
2	Installation special screw hole 1	Depending on the usage environment, the camera can be installed using the screw hole on this side. Please refer to "Installing a Camera".
3	Installation special screw hole 2	Depending on the usage environment, the camera can be installed using the screw hole on this side. Please refer to "Installing a Camera".
4	Camera laser emission window	Emits the laser used for the measurement. Protected by a glass cover.
5	Camera photosensitive window	Emits the laser used for the measurement. Protected by a glass cover.
6	Camera network data cable connector	Connect to a dedicated Gigabit Ethernet cable.
7	Camera power signal line connector	Connect a dedicated power signal line.
8	Work indicator light	Indicates the working status of the camera. Please refer to "Camera indicator Definition".

Camera installation

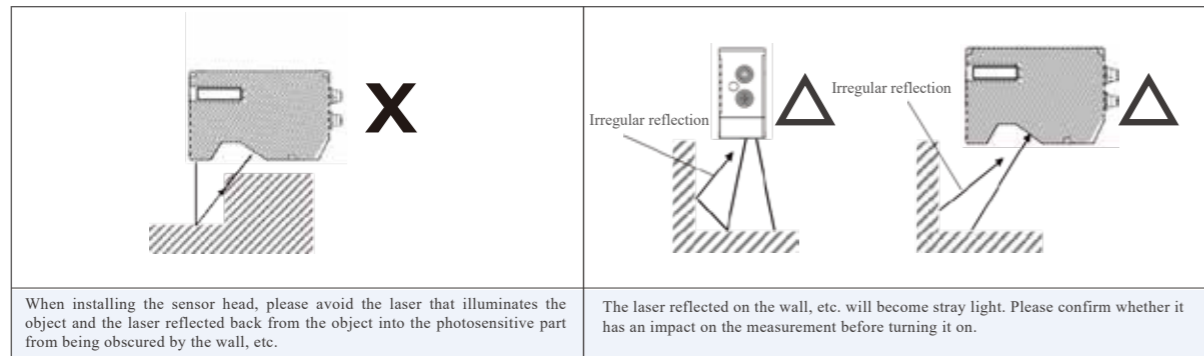
After confirming the precautions during installation, install the camera correctly.

- Schematic diagram of dead angle generation



Depending on the shape of the object, the measurement range will produce dead ends. Please confirm whether the dead angle has an impact on the measurement.

- Schematic diagram of the optical path being blocked



When installing the sensor head, please avoid the laser that illuminates the object and the laser reflected back from the object into the photosensitive part from being obscured by the wall, etc.

The laser reflected on the wall, etc. will become stray light. Please confirm whether it has an impact on the measurement before turning it on.

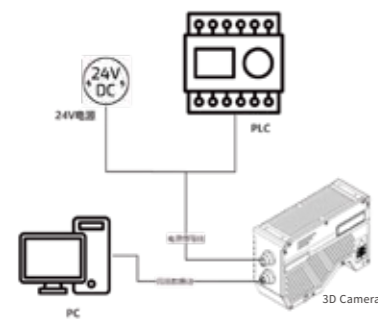
- Schematic diagram of correct installation

Adjust the distance between the sensor head and the object and fix it with screws. (Socket head cap screw M4x60:3 pcs)
Please refer to the "Dimensions" for installation dimensions. The fastening torque of the mounting screws should be within the following range.



3 Hardware connection

System wiring diagram



- Be sure to connect and remove the cables after cutting off the power supply to the controller. If the connection and removal are carried out while the power is turned on, it will cause failure.
- Please confirm the orientation of the connector before connecting. If the connection is incorrect, the pins of the connector will be bent, resulting in failure.

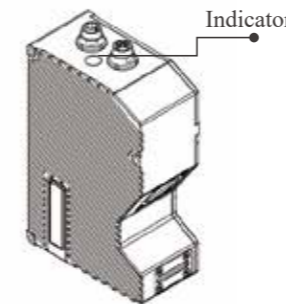
Network signal line interface definition

The network signal cable adopts standard Gigabit Ethernet, and the supporting network signal cable can be used to connect the camera and the PC.

Network signal line interface definition

Wiring definition	Description	Character
1—Black→GND	Power supply 0V/power supply maximum current 1000mA	Black GND
2—Red→24V+/-10%	Power supply positive electrode/power supply maximum current 1000mA	Red 24V
3—Yellow→Batch measurement	Low-speed input interface, single-frame data trigger input interface, level or pulse mode, only supports 24V voltage, valid at high level	Yellow Batch measurement
4—Blue→External trigger	High-speed input interface, single-contour external pulse input trigger signal, only supports 24V voltage, high-level effective	Blue External trigger
5—Brown→External triggerCOM	External trigger reference COM, PNP is connected to the 0V of the PLC, NPN is connected to the 24V positive electrode of the PLC	Brown External triggerCOM
6—Green→EncoderENC-	RS485 or RS422 A-, the maximum input frequency is 1MHz, and the voltage range is 3.3V-5V+/-10%	Green EncoderENC-
7—White→EncoderENC+	RS485 or RS422 A+, the maximum input frequency is 1MHz, and the voltage range is 3.3V-5V+/-10%	White EncoderENC+
8—Purple→Batch measurementCOM	Batch measurement reference COM, PNP is connected to the 0V of the PLC, NPN is connected to the	Purple Batch measurementCOM

4 Indicator definition

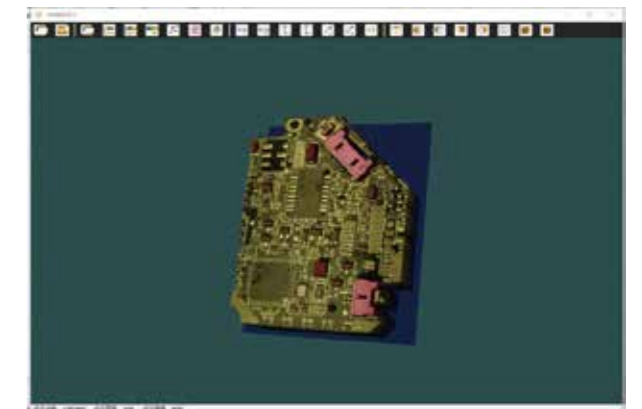


3D series camera indicator description	
Green light (power and network indicators)	Just after power-on, the green light is on (controlled by the hardware circuit, indicating that the power supply is powered on) The camera configuration is complete, and it flashes slowly when connected to the PC After the camera is connected to the PC, it is always on
Blue light (laser on indicator light)	When the laser is turned on or about to be turned on, turn off the green light and the blue light is always on After the laser is turned off, the green light is turned on, and the blue light is always dark
Red light (camera abnormal indicator light)	Always bright-represents abnormality Normally dark-means no abnormality Flicker frequency-special abnormal state (reserved)
Three lights are lit in turn	The camera is powered on and configured successfully, the three lights blink once in turn, and the green light starts flashing again to indicate that the camera is ready

5 Debugging software

About PanSight software

PanSight software is a camera parameter setting software developed by Xinge Intelligent Technology Co., Ltd. (hereinafter referred to as Xinge Company) for the company's laser 3D contour camera.



Operating environment

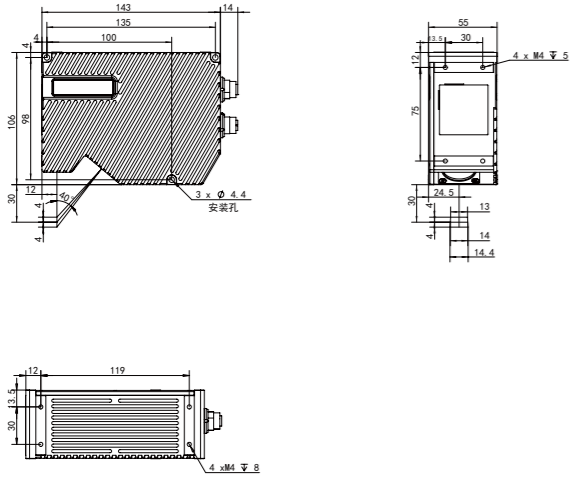
In order to be able to use this product (PanSight software) normally and safely, please ensure the operating environment

- Hardware: 57N\58M series 3D camera, camera supporting cable
- Else:

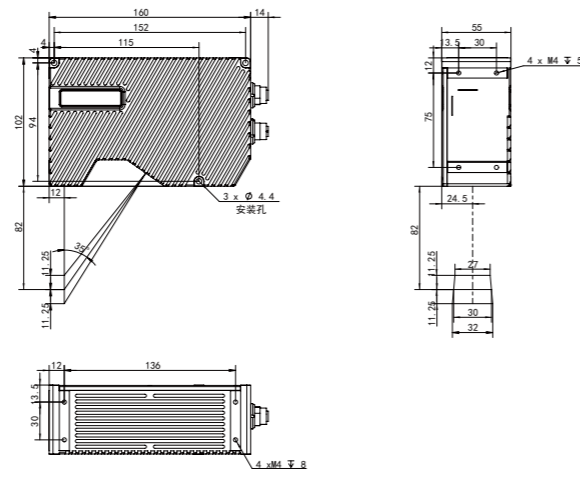
Processor: INTEL 64 or AMD 64 above i3
Minimum 2.0GB of free disk space
Minimum computer memory: 4G
High-version graphics card (discrete graphics card is recommended)
Minimum 1024*768 display resolution
Operating system: Windows 7, 10, requires a 64-bit operating system
Microsoft DLL Running Library Support (VC2017_Redist_x64.exe in the program directory)

tG57N Series dimensions

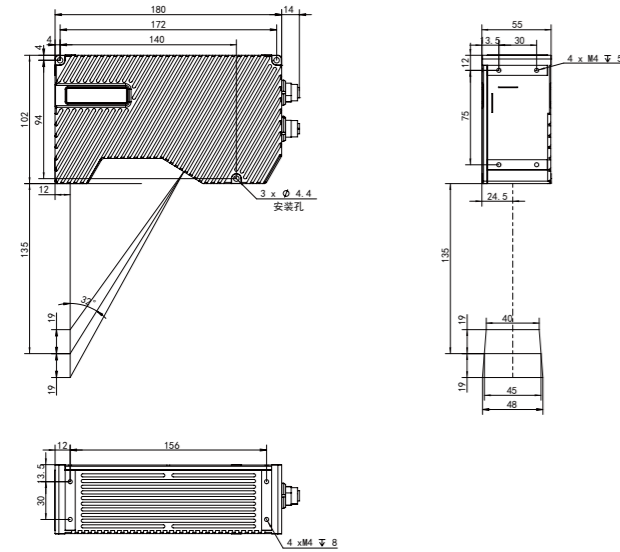
tG57N030X014



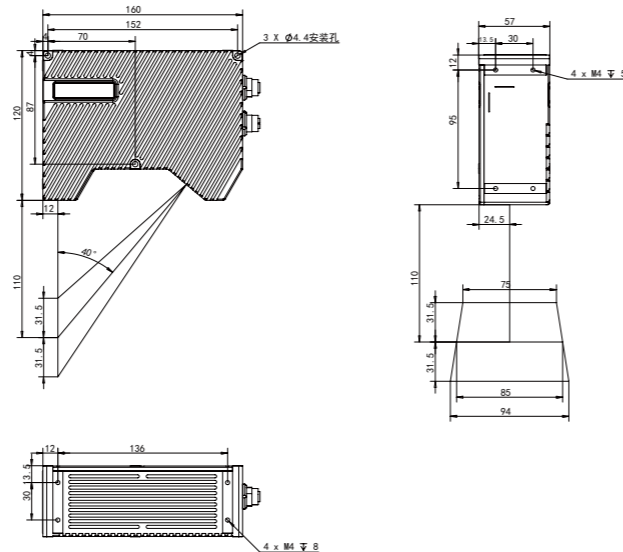
tG57N082X030



tG57N135X045

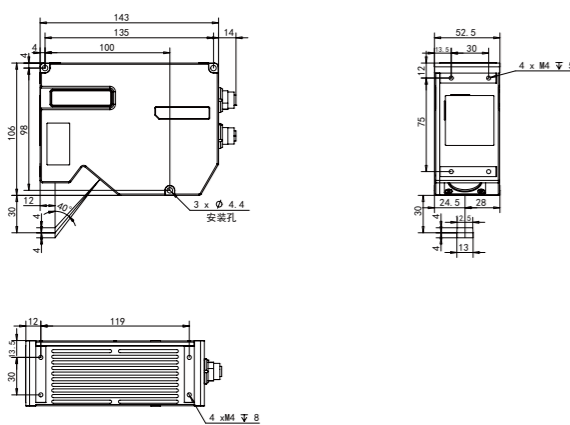


tG57N110X085



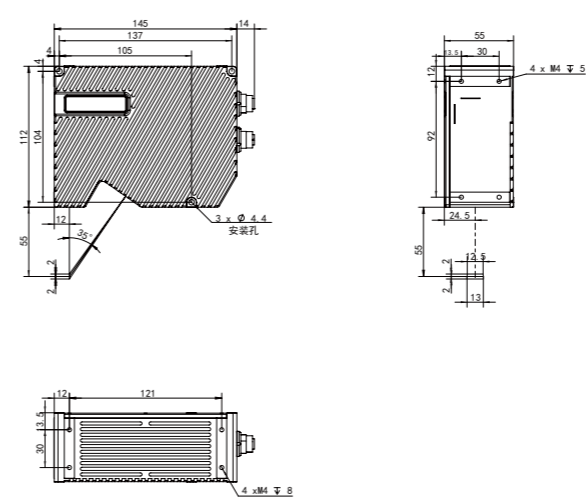
sG57L Series dimensions

sG57L030X013

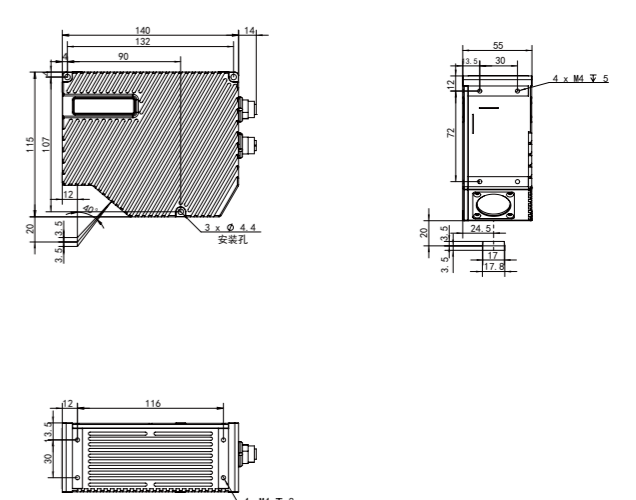


sG57N Series dimensions

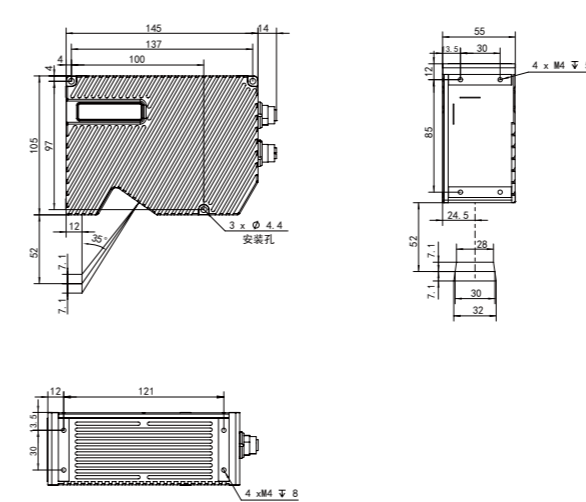
sG57N055X013



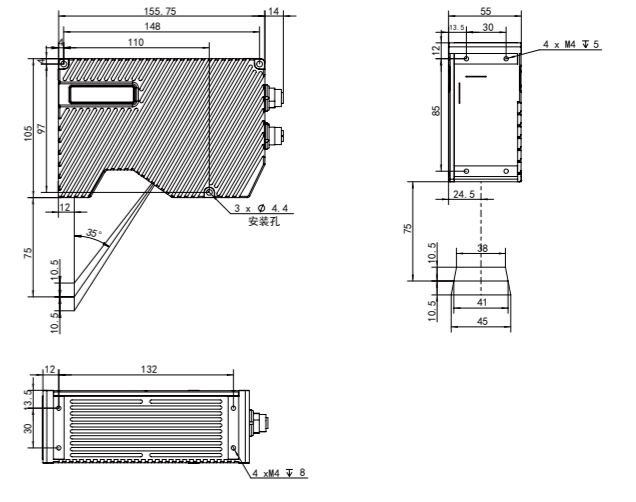
sG57N020X018



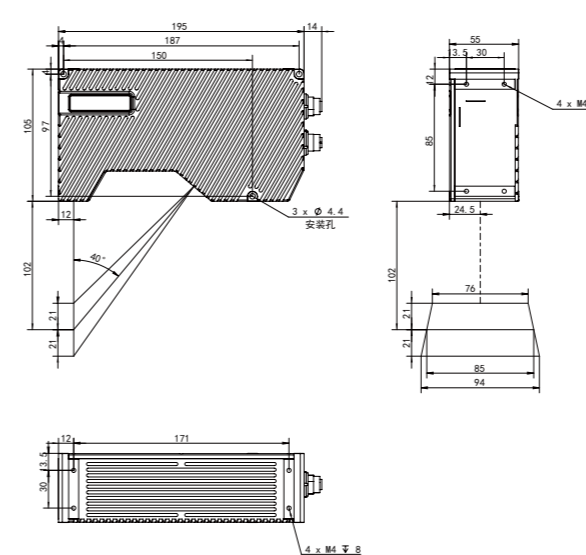
sG57N052x030



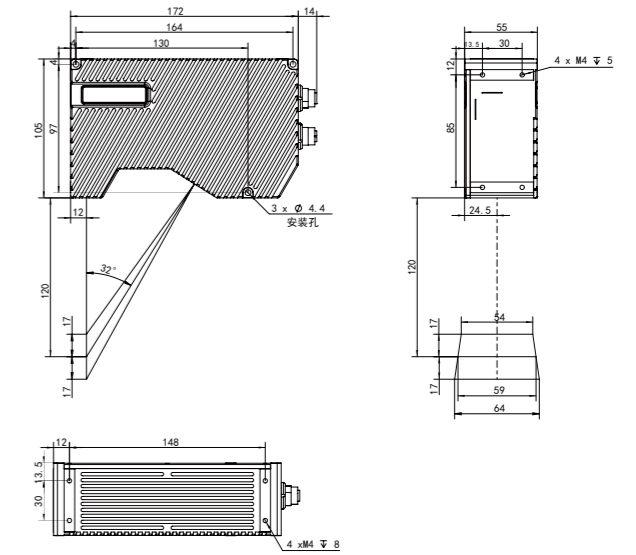
sG57N075x040



sG57N102X085

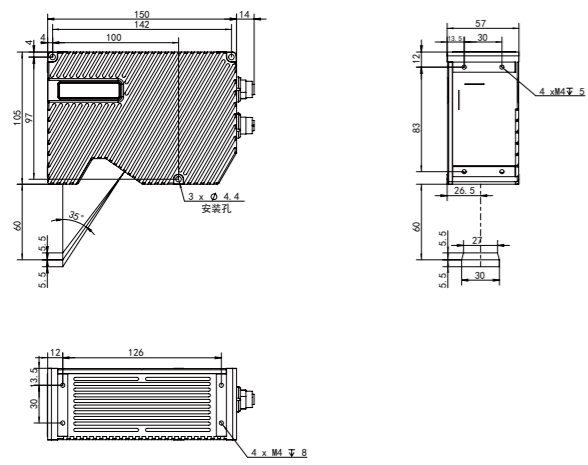


sG57N120X060

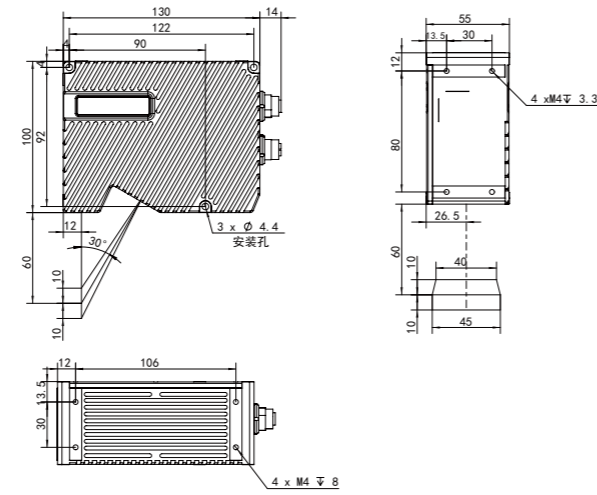


sG58M Series dimensions

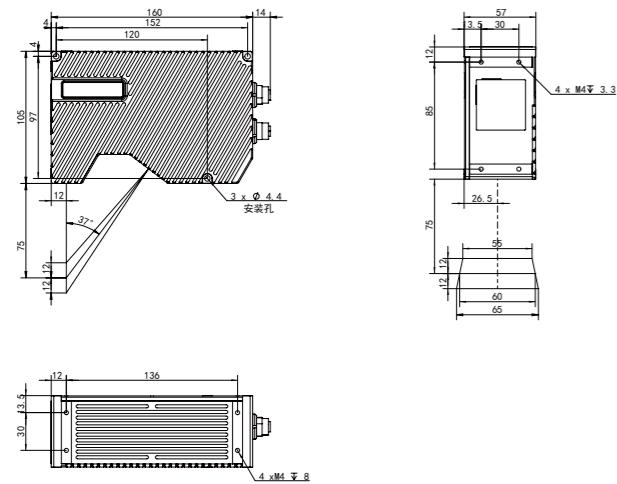
sG58M060X030



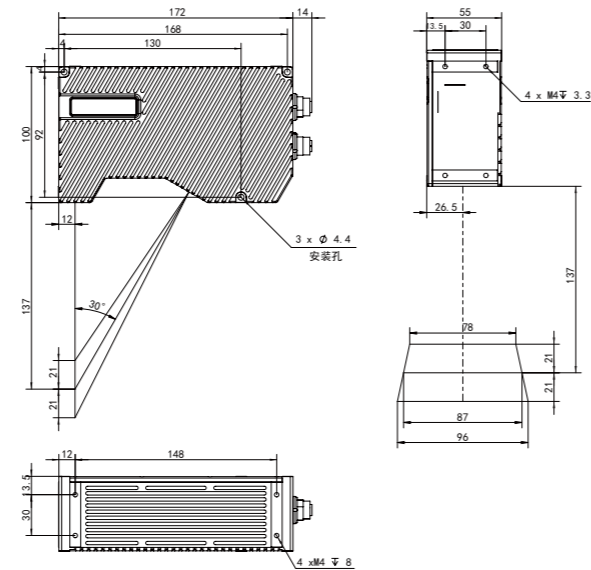
sG58M060X045



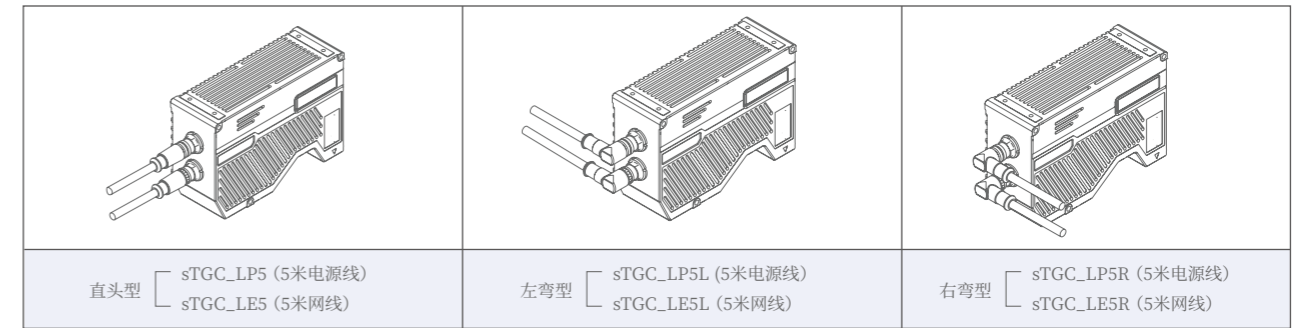
sG58M075X060



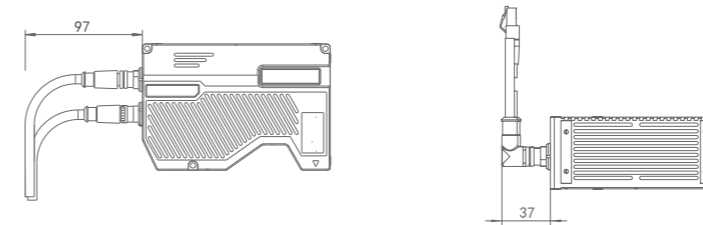
sG58M137X085



线缆尺寸示意



线缆型号示意



■ sG57N/sG58M系列专用线缆型号

线长	电源线	网线
5米	sTGC-LP5	sTGC-LE5
10米	sTGC-LP10	sTGC-LE10
20米	sTGC-LP20	sTGC-LE20

以上均为直头型接口线缆型号，另配左弯/右弯型号接口线缆（如左图），弯头型号为直头型号后增加L/R后缀。