TronSight

High Precision Measurement Product Catalog

- TS-P Series Laser Displacement Sensors
- TS-C Series Chromatic Confocal Displacement Sensors
- TS-I Series Interferometric Thickness Sensors

Suzhou Tronsight Intelligent Technology Co.,Ltd.

Company Profile

About US

Suzhou TronSight Intelligent Technology Co., Ltd. focuses on the research, development, production, and sales of precision inspection systems and sensors, established by a highly educated team in Wu Zhong District, Suzhou. The company adheres to the principles of technology-driven R&D, application demand orientation, and customer service priority, aiming to become an independent brand in the field of precision measurement.

Since its establishment, the company has received numerous honors and funding, independently developed multiple high-precision sensor products, and serves various industries. The company values intellectual property rights and quality certification, dedicated to technological innovation to support the development of China's intelligent manufacturing.

Honors

Suzhou Innovation and Entrepreneurship Leading Talent

High-tech Enterprise Certificate

Innovative and Entrepreneurial Leading Talent of Eastern Wu

Leading Companies Report

CE & RoHS

Dozens of Patent Certificates

ISO Quality Management System Certificate

2023 Chinese Invisible Unicorns

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TronSight

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Laser Triangulation Displacement Sensor

Ultra-high Repeatability

Ultra-high Linearity

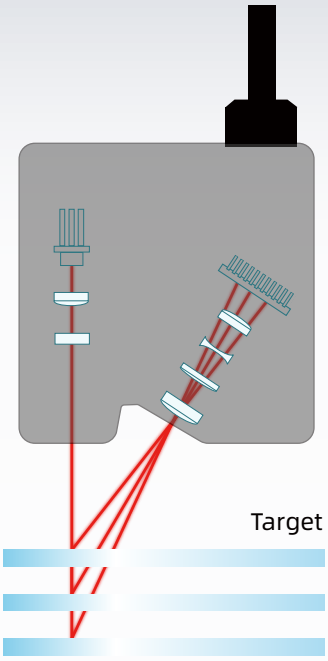
Ultra-fast Sampling Rate

Simple Interface Configuration

Why choose TronSight?

- Full-frequency Industrial IO
- Controller-Free
- Ultra-fast Sampling Rate
- Ultra-long Measuring Distance
- Self-Developed
- Specular/Diffuse Reflection

Measurement Principle

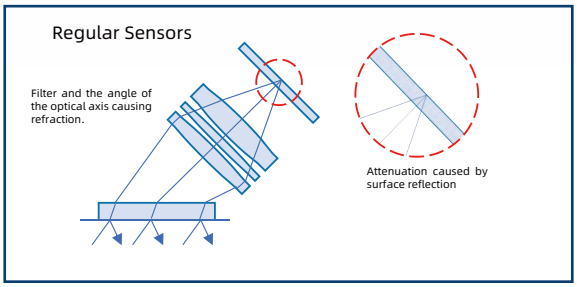


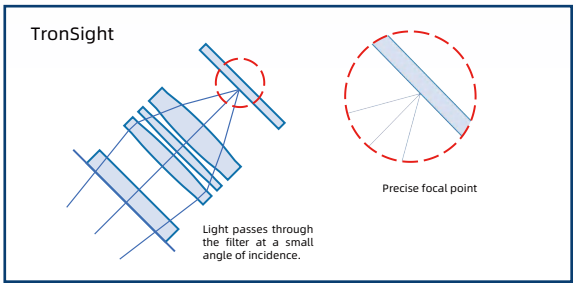
Basic Principle

The beam of light emitted by the laser shines on the target; the receiving lens focuses the diffusely reflected / reflected light from the surface of the target and focuses it on the photosensitive element.When the distance to the target changes, the position of the light spot on the photosensitive element also changes.

Optimization of the receiving lens module

TronSight has improved the structure of the conventional laser triangulation sensor receiving lens module, which can maximize the avoidance of multiple spots caused by multiple reflections on the surface of the filter and the resulting misjudgment of the measurement position. At the same time, it improves the signal-to-noise ratio of the photoelectric data.

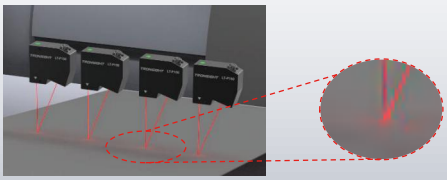


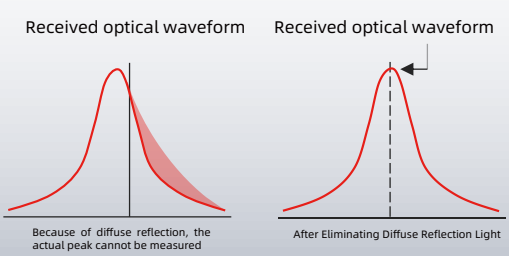


Semi-transparent object measurement algorithm

When the laser penetrates a semi-transparent object, it produces diffuse reflection from below the surface of the object, causing the received light waveform to slowly expand. The self-developed measurement algorithm for semi-transparent objects can eliminate the effect of the expanded waveform and detect the actual peak.

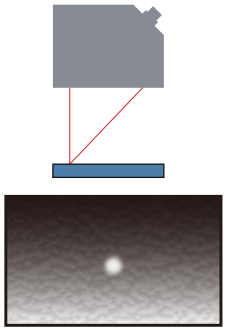
Semi-transparent object measurement algorithm





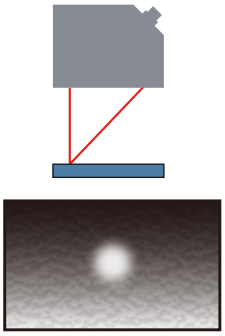
Light Spot Specification Description

Small Spot



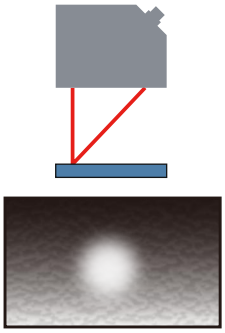
Correctly detect small targets through a minimum ϕ18 μm light spot, very suitable for shape measurement.

Wide Spot



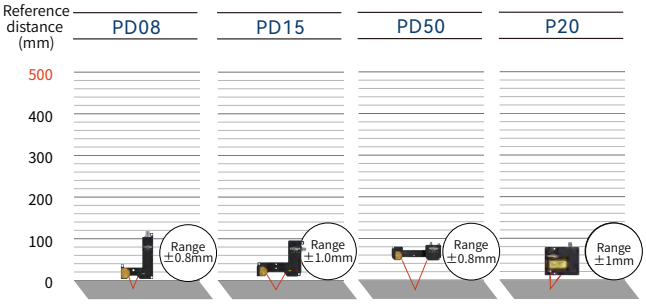
By increasing the measurement spot size, it is more suitable for measuring targets with uneven surfaces, obtaining stable measurement values.

Ultra-wide Spot

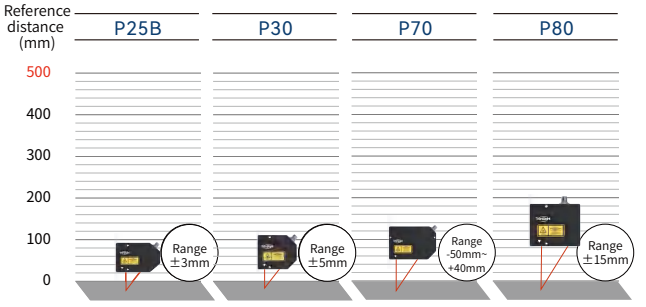


By further increasing the measurement spot size, it is suitable for accurate measurement of objects with greater surface roughness.

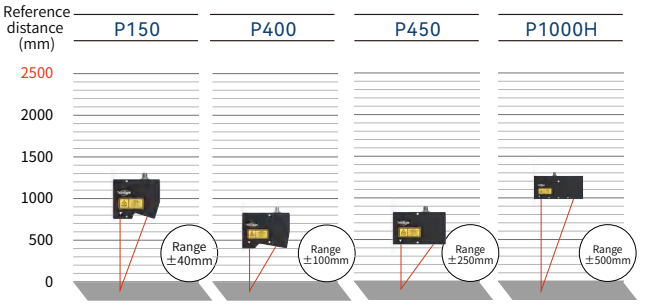
Product Specifications



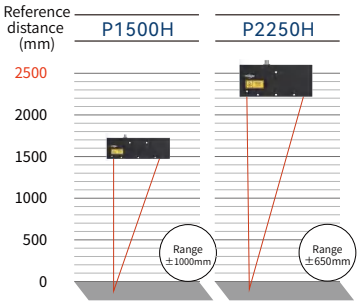
	PD08	PD15	PD50	P20
Repeatability	0.03μm	0.05μm	0.05μm	0.1μm
Linear error	< ±0.5μm	< ±0.6μm	< ±0.6μm	< ±1.2μm



	P25B	P30	P70	P80
Repeatability	0.05μm	0.15μm	0.8μm	0.5μm
Linear error	< ±0.6μm	< ±3μm	< ±20μm	< ±6μm



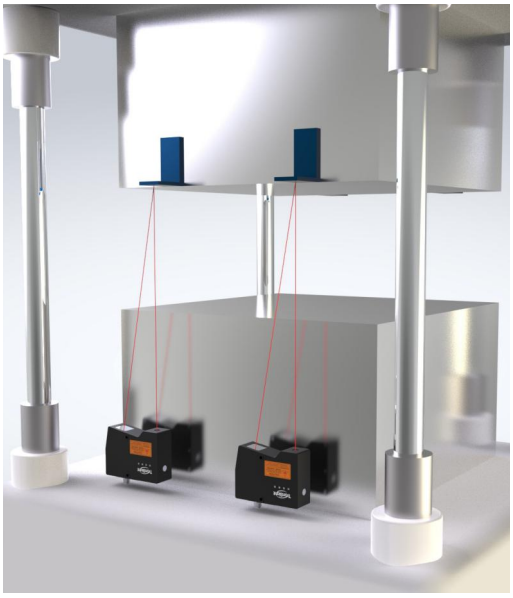
	P150	P400	P450	P1000H
Repeatability	1.2μm	3μm	8μm	12μm
Linear error	< ±16μm	< ±60μm	< ±250μm	< ±500μm



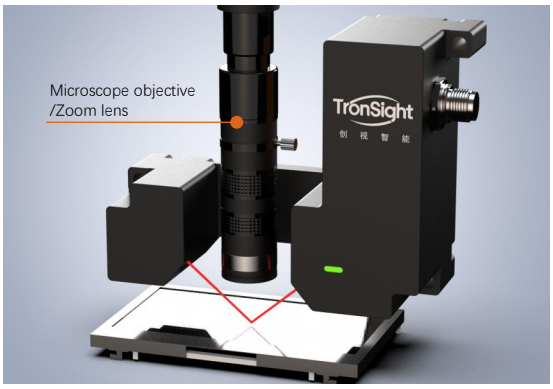
	P1500H	P2250H
Repeatability	30μm	50μm
Linear error	< ±1000μm	< ±650μm

* Only some models are displayed. For details, please refer to the parameters.

Application

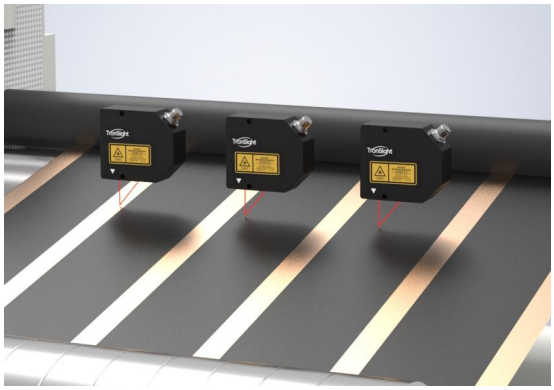


Motion platform position measurement



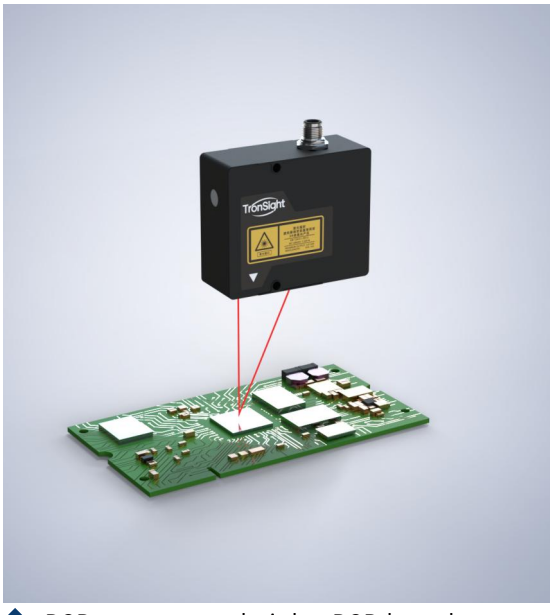
Coaxial height focus measurement

High-frequency vibration measurement



Online Thickness Measurement of Roller Pressed Plates

Road surface smoothness measurement



PCB component height, PCB board thickness measurement

Parameters

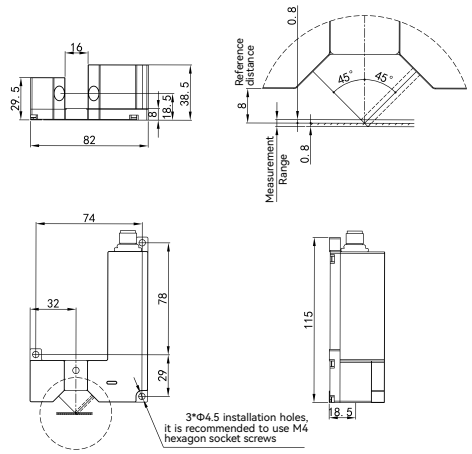
Sensor Head

Model	Reference Distance*1	Measurement Range	Spot Diameter	Repeat-ability*2	Repeat-ability*3	Linear Error*4	Outer Diameter *Length	Weight	Sample Frequency	Light Source*5
TS-PD08	8mm	±0.8 mm	Φ20μm	0.03μm	0.01μm	< ±0.5μm	82*115*38.5mm	213 g	Max. 160 kHz	655 nm Max. 4.9mW
TS-PD15	15mm	±1.0mm	Φ35μm	0.05μm	0.01μm	< ±0.6μm	102*137*55.5mm	475 g		
TS-PD15U	15mm	±1.0mm	Approx.35*1000μm	0.05μm	0.01μm	< ±0.6μm	102*137*55.5mm	475 g	Max. 25kHz	
TS-PD50	50mm	±0.8 mm	Φ25μm	0.05μm	0.01μm	< ±0.6μm	74*205*110mm	725 g	Max. 160 kHz	
TS-PD50W	50mm	±0.8 mm	Φ45*1300μm	0.05μm	0.01μm	< ±0.6μm	74*205*110mm	725 g		
TS-P20*8	20mm	±3mm	Φ30μm	0.1μm	0.01μm	< ±1.2μm	76*96*31mm	303 g		
TS-P20U*8	20mm	±3mm	Approx.30*700μm	0.05μm	0.01μm	< ±1.2μm	76*96*31mm	303 g		
TS-P25B	25 mm	±1 mm	Φ18μm	0.05μm	0.01μm	< ±0.6μm	120*80*31mm	372 g		405 nm Max. 4.9 mW
TS-P30	30mm	±5mm	Φ35μm	0.15μm	0.02μm	< ±3μm	87*76*31mm	287 g		655 nm Max. 4.9mW
TS-P30W	30mm	±5mm	Approx.35*400μm	0.15μm	0.02μm	< ±2μm	87*76*31mm	287 g		
TS-P30U	30mm	±5mm	Approx.35*1100μm	0.075μm	0.02μm	< ±2μm	87*76*31mm	287 g	Max. 25kHz	
TS-PM30U	23.9mm	±4.5 mm	Approx.35*1100μm	0.075μm	0.02μm	< ±2μm	87*76*31mm	287 g		
TS-P70	70mm	-50mm +40mm	Φ70μm	1.3μm	0.3μm	< ±18μm	130*90*31mm	408 g	Max. 160 kHz	
TS-P70W	70mm	-50mm +40mm	Approx.70*500μm	1.3μm	0.3μm	< ±18μm	130*90*31mm	408 g		
TS-P80	80mm	±15mm	Φ70μm	0.5μm	0.1μm	< ±6μm	93*78*37mm	359 g		
TS-P80W	80mm	±15mm	Approx.70*800 μm	0.5μm	0.1μm	< ±6μm	93*78*37mm	359 g		
TS-P80U	80mm	±15mm	Approx.70*2200 μm	0.25μm	0.1μm	< ±6μm	93*78*37mm	359 g	Max. 25kHz	
TS-PM80U	75.4mm	±15mm	Approx.70*2200 μm	0.25μm	0.1μm	< ±6μm	93*78*37mm	359 g		
TS-P150	150mm	±40mm	Φ110μm	1.2μm	0.25μm	< ±16μm	95*80*37 mm	374 g	Max. 160 kHz	
TS-P150W	150mm	±40mm	Approx.110*1400 μm	1.2μm	0.25μm	< ±16μm	95*80*37 mm	374 g		
TS-P400	400mm	±100mm	Φ300μm	3μm	1.5μm	< ±60μm	115*85*37mm	438 g		
TS-P400W	400mm	±100mm	Approx.300*3400 μm	3μm	1.5μm	< ±60μm	115*85*37mm	438 g		
TS-P450	450mm	±250mm	Φ320μm	8μm	2μm	< ±250μm	120*75*37mm	416 g		
TS-P450W	450mm	±250mm	Approx.320*4200 μm	8μm	2μm	< ±250μm	120*75*37mm	416 g		
TS-P1000	1000mm	±500mm	Φ320μm	12μm	/	< ±500μm	180*85*40mm	785 g		
TS-P1000H	1000mm	±500mm	Φ320μm	12μm	/	< ±500μm	180*85*40mm	785 g		660 nm Max.50mW
TS-P1500H	1500mm	±1000mm	Φ400μm	30μm	/	<±1000μm	260*85*45mm	1250 g		
TS-P2250H	2250mm	±650mm	Φ700μm	50μm	/	<±650μm	200*85*41mm	924 g		
Temperature Characteristics	0.01% of F.S./°C									
Industrial Interface*6	Ethernet, RS-485 serial port, analog signal output*7(Max. ±10V, 4-20mA)									
Measurement & Control Software	Comes with TSLaserStudio measurement & control software, C++&C# SDK									
Operating Mode	Operates independently without a controller. The head can be configured as a master or slave, the master controls the slave to achieve functions such as synchronous thickness measurement, alternating exposure for interference resistance									
Supply Voltage	DC 9~36V, maximum allowable ±10% fluctuation									
Power Consumption	Approx.2.5W									
IP Grade	IP67(IEC60529)									
Operating Temperature	0 to +50°C									

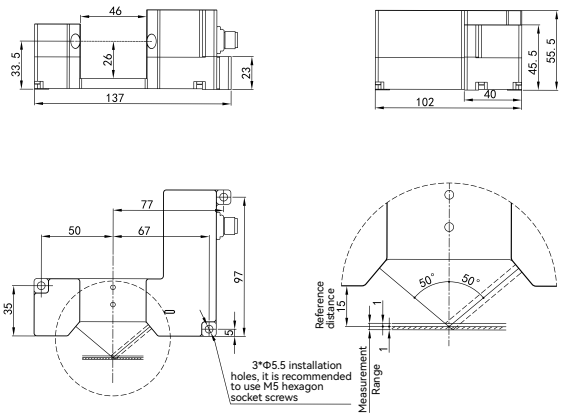
*1 Calculation based on the center position of the measurement range;
*2 Measurement of standard white ceramic sample, 50kHz without averaging, taking the root mean square deviation (1 σ) of 65536 sets of measurement data; U series probes, 8kHz without averaging, taking the root mean square deviation (1 σ) of 65536 sets of measurement data;
*3 Measurement of standard white ceramic sample, 50kHz with 1024 averaging times, taking the root mean square deviation (1 σ) of 65536 sets of measurement data; U series probes, 8kHz with 1024 averaging times, taking the root mean square deviation (1 σ) of 65536 sets of measurement data;
*4 Calibration and verification using nanometer-level high-precision laser interferometer;
*5 Laser power can be customized according to different application requirements, some models provide 405nm blue light version;
*6 The probe can independently provide voltage, current, and RS-485 output;
*7 Optional analog voltage/current output module;
*8 These models are new products, and the actual parameters may vary slightly. The contract shall prevail;
*9 For the sub-series, PD indicates a split-type structure, and PM indicates a mirror-reflection calibration type. The different suffixes are distinguished as follows:W for wide spot, U for ultra-wide spot, B for blue laser, and H for high-power laser.

Dimension Figure

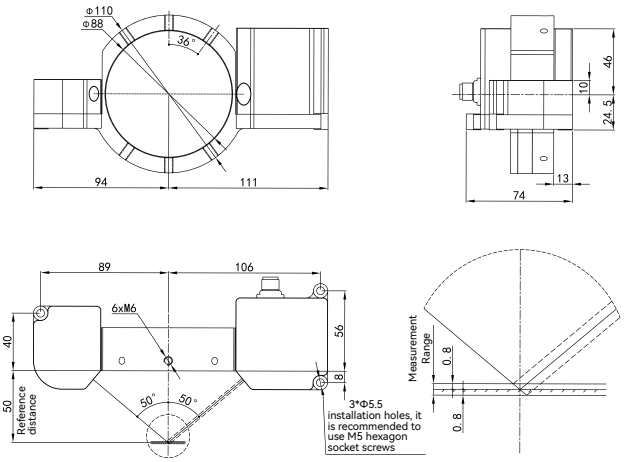
PD08



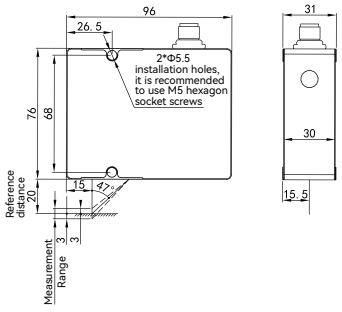
PD15_PD15U



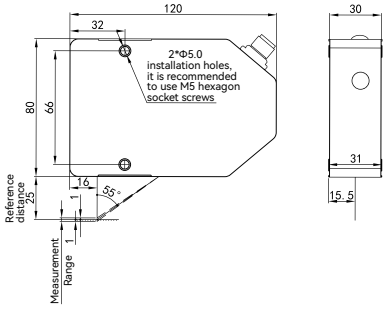
PD50



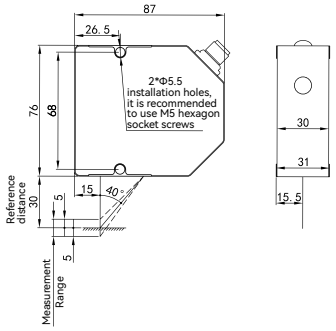
P20_P20U



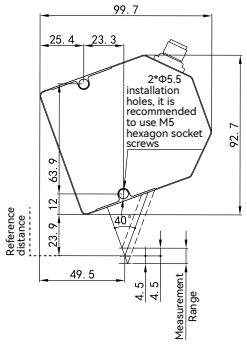
P25B



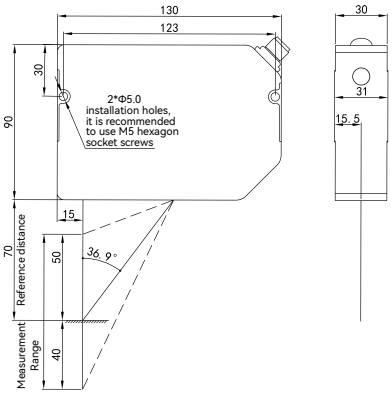
P30_30W_30U



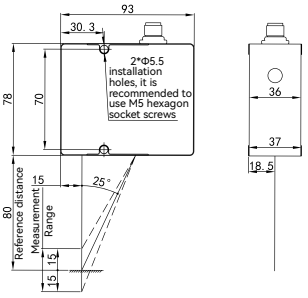
PM30U



P70_70W

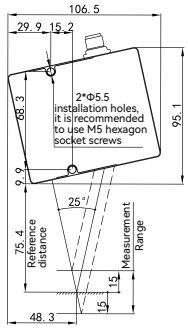


P80_P80W_P80U

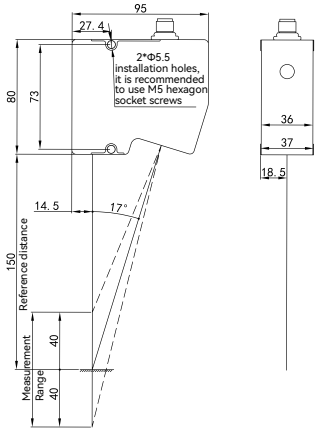


Dimension Figure

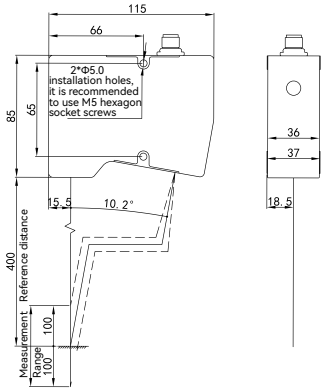
PM80U



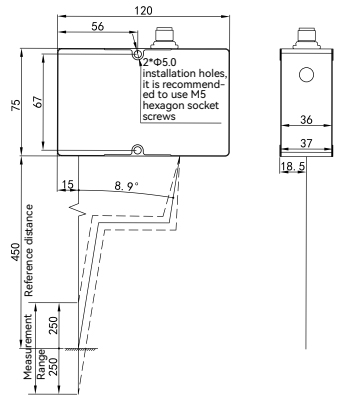
P150_150W



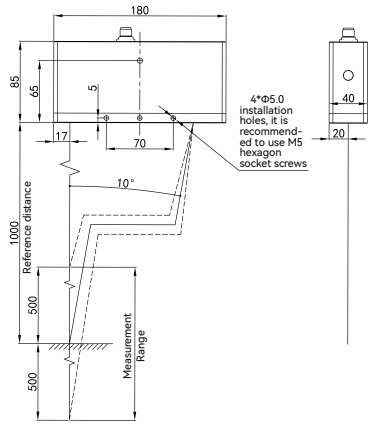
P400_P400W



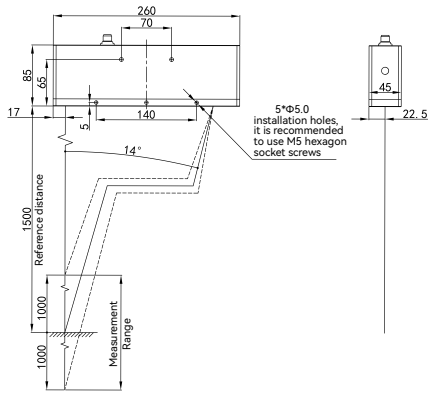
P450_P450W



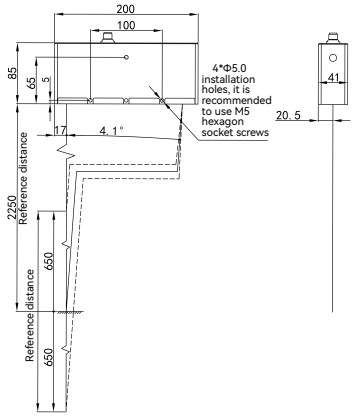
P1000_P1000H



P1500H

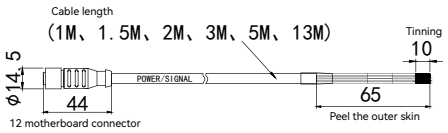


P2250H

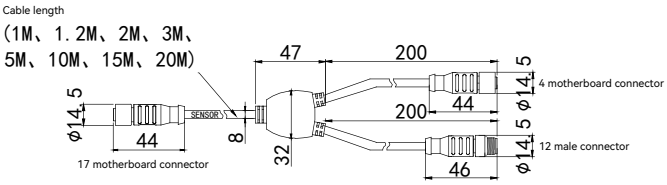


Component Drawings

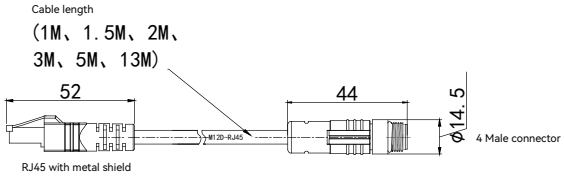
M12-12 Core Shielded Female Connector Harness



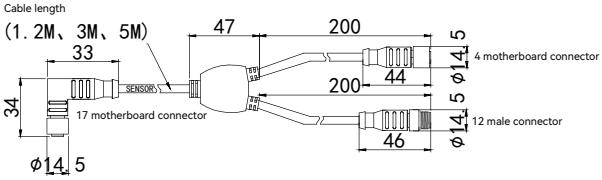
Y-type Splitter



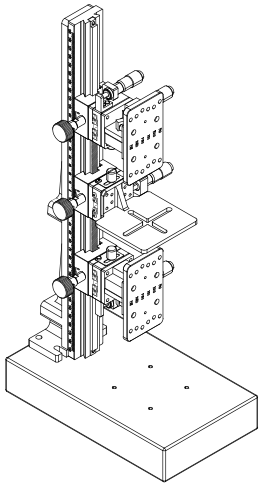
M12d Type Adapter To RJ45 Connector



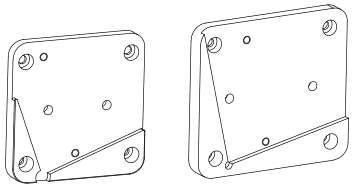
90° Y-type Splitter



Vertical Jig and Fixture

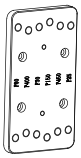


Slanting Installation Board



P30 P80

Connection Board



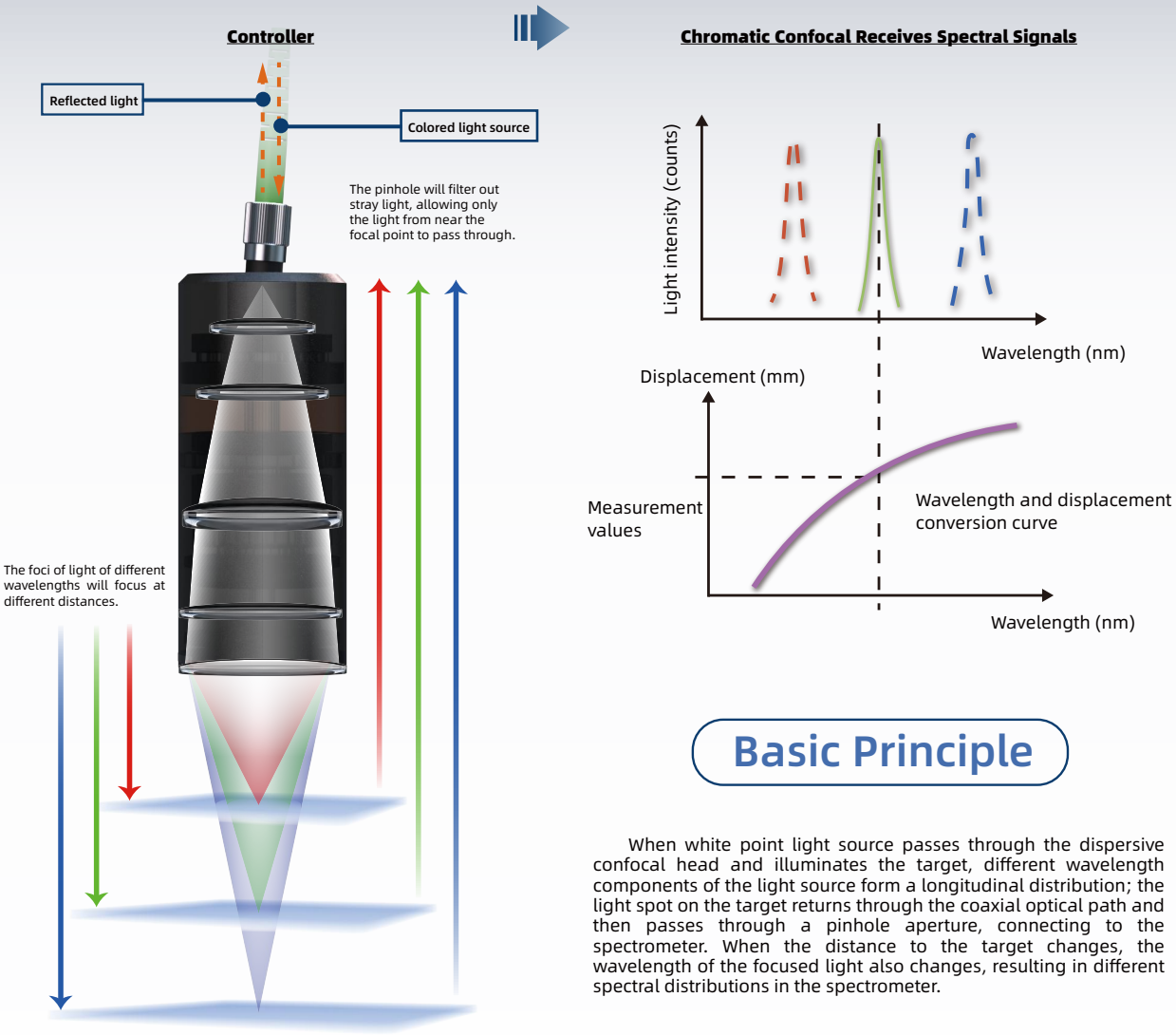
TronSight

| TS-C Series |

Chromatic Confocal Displacement Sensor

Why choose TronSight?

- Minimal Measurement Dead Zone
- High Interference Immunity
- Sub-micron Measurement Precision
- Ultra-Smooth Mirror Surface Measurement
- Multi-layer Transparent Material Thickness Measurement
- Axial and Radial Light Emission Measurement



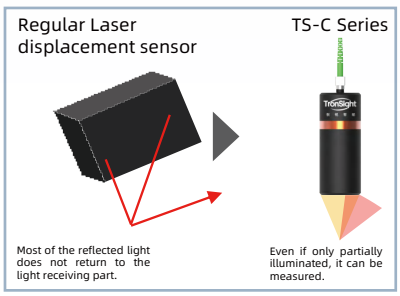
Basic Principle

When white point light source passes through the dispersive confocal head and illuminates the target, different wavelength components of the light source form a longitudinal distribution; the light spot on the target returns through the coaxial optical path and then passes through a pinhole aperture, connecting to the spectrometer. When the distance to the target changes, the wavelength of the focused light also changes, resulting in different spectral distributions in the spectrometer.

Accurately measure objects with different structural features

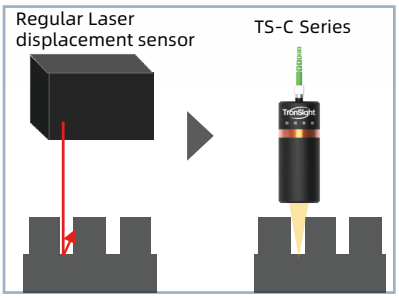
Achieving high-precision measurement of **transparent curved surfaces.**

Even with only partial reflection, high-precision measurements can be achieved.



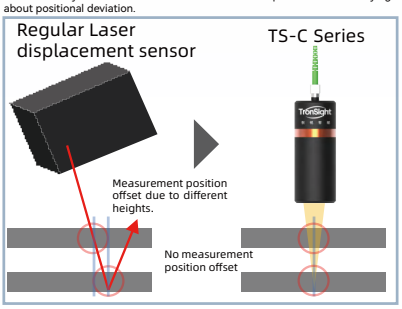
Measure **pits and steps** without blind spots.

Using a confocal coaxial method, it can measure without affecting the installation direction and movement direction of the head.



Accurate measurement of **transparent and reflective objects.**

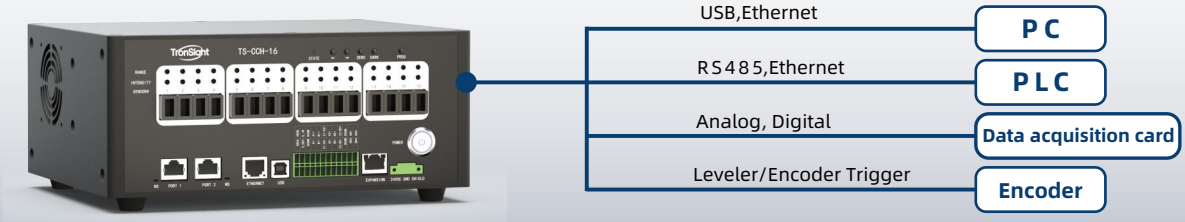
Even if the measurement height of transparent or mirrored objects changes, it can accurately measure to the same measurement point without worrying about positional deviation.



Multiple input and output methods

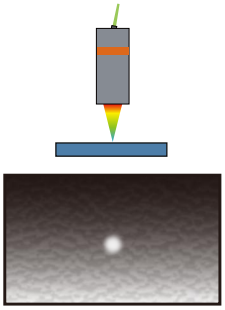
The standard configuration of the controller includes six types of I/O channels: USB, RS485, Ethernet, analog, digital, and level/encoder trigger. It supports functions such as PC-based upper computer software control, PLC bus control, multi-channel data acquisition by data acquisition card, and external encoder synchronous trigger, which can meet various usage requirements.

USB | RS485 | Ethernet | Analog | Digital | Leveler/Encoder Trigge



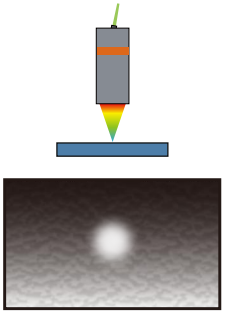
Light Spot Specification Description

Small spot



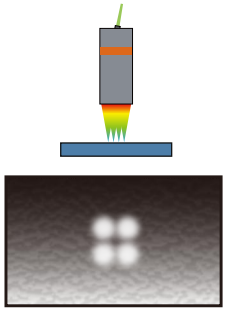
Detecting small targets accurately with a minimum spot size of Φ1.7μm is ideal for shape measurement.

Wide spot



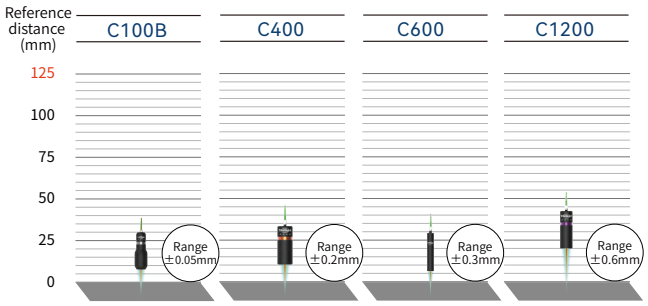
By increasing the measurement spot size, it is more suitable for measuring uneven surfaces, obtaining stable measurement values.

Ultra-wide spot

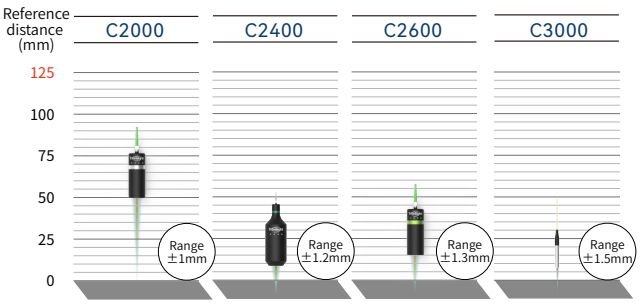


Measuring with four independent spots and performing numerical calculations can eliminate the effects of surface irregularities and roughness.

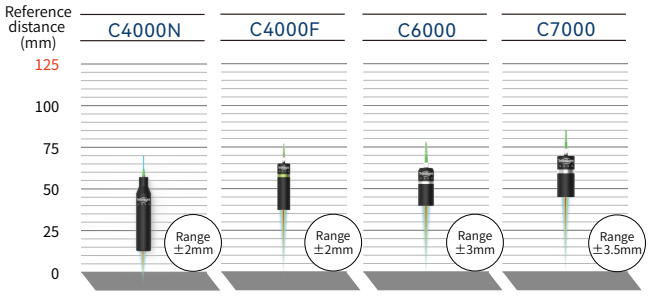
Product Specifications



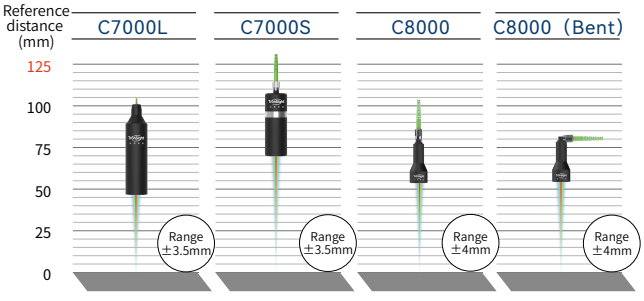
	C100B	C400	C600	C1200
Measure angle	±46.5°	±43°	±32.5°	±32°
Repeatability	3nm	12nm	16nm	30nm
Linear error	< ±0.03μm	< ±0.12μm	< ±0.18μm	< ±0.3μm



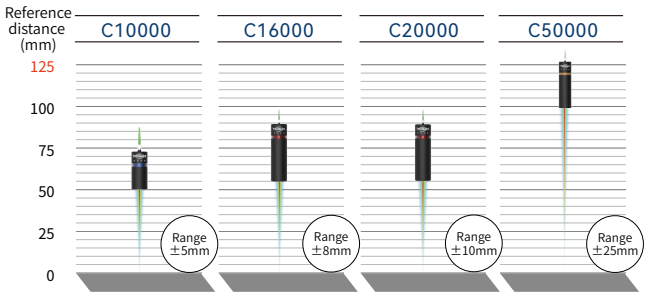
	C2000	C2400	C2600	C3000
Measure angle	±14°	±60°	±31°	±12.5°
Repeatability	85nm	45nm	50nm	100nm
Linear error	< ±0.6μm	< ±0.48μm	< ±0.3μm	< ±0.6μm



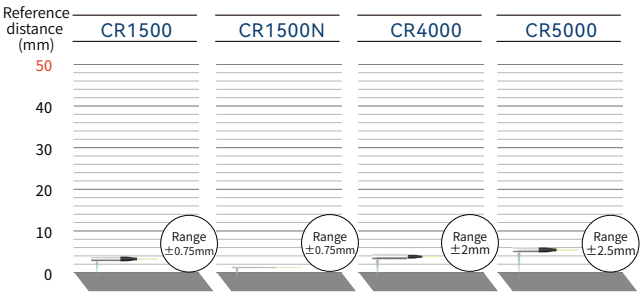
	C4000N	C4000F	C6000	C7000
Measure angle	±21°	±21°	±14°	±15.5°
Repeatability	100nm	100nm	140nm	140nm
Linear error	< ±0.8μm	< ±0.8μm	< ±1.2μm	< ±1.4μm



	C7000L	C7000S	C8000	C8000 (Bent)
Measure angle	±21°	±10°	±7.3°	±7.3°
Repeatability	140nm	200nm	250nm	250nm
Linear error	< ±1.4μm	< ±1.4μm	< ±1.6μm	< ±1.6μm



	C10000	C16000	C20000	C50000
Measure angle	±13°	±15.3°	±15.3°	±9.5°
Repeatability	250nm	300nm	300nm	850nm
Linear error	< ±2μm	< ±2μm	< ±2μm	< ±5μm

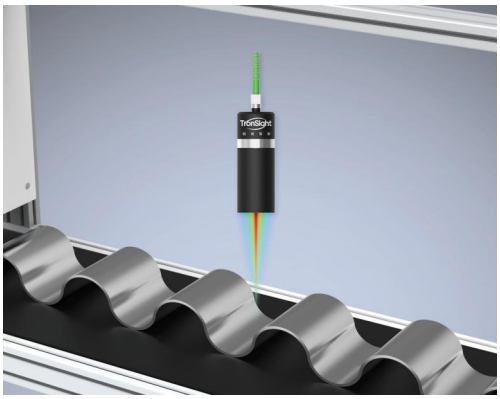


	CR1500	CR1500N	CR4000	CR5000
Measure angle	±14°	±12°	±12.5°	±13°
Repeatability	80nm	100nm	100nm	100nm
Linear error	< ±0.3μm	< ±0.75μm	< ±1.2μm	< ±2μm

* Only some models are displayed. For details, please refer to the parameters.

Application

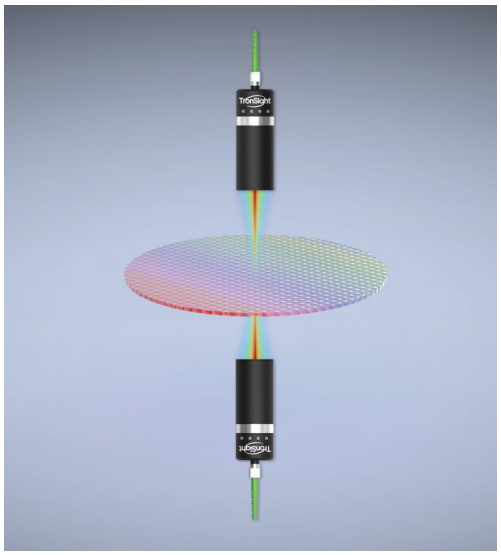
Measurement of the R-curve angle of the mobile phone screen



Metal workpiece profile measurement

Flatness measurement of structural components

PCB component height difference measurement



Wafer Mapping Thickness Measurement

Flatness measurement of structural components

Parameters

Sensor Head

Model*8	Reference Distance*1	Measurement Range	Angle*2	Spot Diameter*3	Repeat-ability*4	Linear Error*5	Outer Diameter *Length	Weight	Minimum Measurable Thickness	Temperature Characteristics	IP Grade
C100B*7	8mm	±0.05mm	±46.5°	Φ2.7μm/5.4μm/43.2μm	3nm	< ±0.03μm	φ40*111.5mm	256 g	5%ofF.S.	<0.03%F.S./°C	IP40
C400	10mm	±0.2mm	±43°	Φ7μm/14μm/112μm	12nm	< ±0.12μm	φ40*99.4mm	186 g			
C600	6.5mm	±0.3mm	±32.5°	Φ8μm/16μm/128μm	16nm	< ±0.18μm	φ20*110mm	73 g			
C1200	20mm	±0.6mm	±32°	Φ9.5μm/19μm/152μm	30nm	< ±0.3μm	φ36*106.3mm	182 g			
C2000	50mm	±1mm	±14°	Φ20μm/40μm/320μm	85nm	< ±0.6μm	φ34*90.7mm	162 g	10%ofF.S.	≈0.1%F.S./°C	
C2400	9mm	±1.2mm	±60°	Φ5.5μm/11μm/88μm	45nm	< ±0.48μm	φ94*267.5mm	2350 g	5%ofF.S.	<0.03%F.S./°C	
C2600	15mm	±1.3mm	±31°	Φ9μm/18μm/144μm	50nm	< ±0.3μm	φ36*97.9mm	228 g			
C2600H	15mm	±1.3mm	±31°	Φ9μm/18μm/144μm	50nm	< ±0.3μm	φ36*97.9mm	228 g			
C3000	7mm	±1.5mm	±12.5°	Φ20μm/40μm/320μm	100nm	< ±0.6μm	φ8*65.7 mm	23 g*6	10%ofF.S.	≈0.05%F.S./°C	IP67
C4000N	14.5mm	±2mm	±21°	Φ12μm/24μm/192μm	100nm	< ±0.8μm	φ32*158.8mm	238 g	5%ofF.S.	<0.03%F.S./°C	IP40
C4000F	38mm	±2mm	±21°	Φ16μm/32μm/256μm	100nm	< ±0.8μm	φ36*126.1mm	226 g			
C6000	40mm	±3mm	±14°	Φ22μm/44μm/352μm	140nm	< ±1.2μm	φ30*65.3 mm	112 g		≈0.05%F.S./°C	
C7000	45mm	±3.5mm	±15.5°	Φ20μm/40μm/320μm	140nm	< ±1.4μm	φ36*84.2mm	200 g		<0.03%F.S./°C	
C7000L	47mm	±3.5mm	±21°	Φ16μm/32μm/256μm	140nm	< ±1.4μm	φ52*207mm	784 g			
C7000S	70mm	±3.5mm	±10°	Φ25μm/50μm/400μm	200nm	< ±1.4μm	φ30*84.2mm	130 g			
C8000*7	54.5mm	±4mm	±7.3°	Φ34μm/68μm/544μm	250nm	<±1.6μm	φ23*50mm	29 g			
C8000(Bent)*7	54.5mm	±4mm	±7.3°	Φ34μm/68μm/544μm	250nm	<±1.6μm	φ23*48.5mm				
C10000	50mm	±5mm	±13°	Φ20μm/40μm/320μm	250nm	< ±2μm	φ36*84mm	203 g			
C10000H	50mm	±5mm	±13°	Φ20μm/40μm/320μm	250nm	< ±2μm	φ36*84mm	/			
C16000	55mm	±8mm	±15.3°	Φ15μm/30μm/240μm	300nm	< ±2μm	φ60*211.1mm	1180 g			
C20000	55mm	±10mm	±15.3°	Φ15μm/30μm/240μm	300nm	< ±2μm					
C50000	100mm	±25mm	±9.5°	Φ25μm/50μm/400μm	850nm	< ±5μm	φ60*217.3mm	1154 g			
CR1500*7	Axial:3.92mm Radial:5.75mm	±0.75mm	±14°	Φ20μm	80nm	< ±0.3μm	φ8*68.8mm φ8*70.2mm	23 g*6	10%ofF.S.		
CR1500N	Axial:1.7mm Radial:3mm	±0.75mm	±12°	Φ17μm	100nm	< ±0.75μm	φ3.8*85mm	23 g*6			
CR4000	Axial:4.7mm Radial:8mm*7	±2mm	±12.5°	Φ20μm	100nm	< ±1.2μm	φ8*73.1mm	59 g*6			
CR5000*7	Axial:6.75mm Radial:12mm	±2.5mm	±13°	Φ19μm	100nm	< ±2μm	φ12*94.6mm	37 g*6	—	—	

*1 Calculated from the center position of the measurement range;
*2 Tilt test using standard flat mirror at 1kHz sample frequency;
*3 Measurement of sharp glass edges, verified with a sub-micron positioning accuracy motion platform and laser interferometer as the displacement reference, the spot diameter values correspond to the diameters of small spot/large spot/four-spot pattern;
*4 Measurement of standard silver-coated mirror, 1kHz without averaging, root mean square deviation of 10,000 continuous data sets;
*5 Calibration verification using high-precision nanoscale laser interferometer;
*6 This head model includes a 3m tail cable, and the weight in the table includes the weight of the cable;
*7 These models are new products, and the actual parameters may vary slightly. The contract shall prevail;
*8 The CR series is available in two configurations: axial and radial light emission. The different suffixes are distinguished as follows:N for near reference distance,F for far reference distance,S for small size,L for Large size,H for high-temperature version.

Parameters

Controller(CC-)

Model		TS-CCS	TS-CCD	TS-CCF	TS-CCH
Head Connection Capacity		1	2	4	16
Sample Frequency		1 Channel: Max. 10 kHz; 2 Channel: Max. 5 kHz; 4 Channel: Max. 2.5 kHz			1 Channel: Max. 20 kHz; 2 Channel:Max. 18 kHz; 4 Channel: Max. 12.5 kHz;6 Channel: Max. 10 kHz; 7 6 Channel: Max. 8 kHz;12 Channels: Max. 6 kHz; 16 Channel: Max. 4 kHz
Input port	Encoder Input	AB / ABZ encoder input, configurable for trigger			
	Trigger Signal Input	Pulse / Level trigger			
Output port	Digital Signal Output	Alarm output, comparator output (configurable as comparator output or data invalid warning)			
	Analog Signal Output	Linear ±10 V analog voltage output / 4~20 mA analog current output (optional)			
Industrial Interface	Ethernet	100BASE-TX			1000/100Mbps
	USB	Complies with USB2.0 Full-speed standard			USB2.0 High-speed (480Mbps)
	RS-485	Modbus protocol, 19200~115200 baud rate			
	EtherCat	\			Optional
Measurement & Control Software	Host Computer Software	TSConfocalStudio measurement & control software			
	SDK	C++&C#SDK			
Rated Power	Supply Voltage	24 VDC±10%			
	Current Consumption	Approx.0.4 A			Approx.0.5A (1 channel), Approx.4A (16 channels) ,recommended power supply 24V 6A or above
Environmental Tolerance	Operating Temperature	0 to +50°C			
	Relative Humidity	20 to 85% RH(No condensation)			
Weight		Approx.2000 g			Approx.2800g(Related channel number & configuration)

Controller(CP-*)

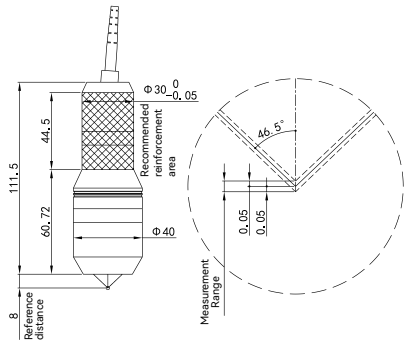
Model		TS-CPS / TS-CPS-L	TS-CPD / TS-CPD-L	TS-CPF
Head Connection Capacity		1	2	4
Sample Frequency		1 Channel: Max.32 kHz; 2 Channel: Max.16 kHz; 4 Channel: Max.8 kHz		
Input Port	Encoder Input	AB / ABZ encoder input, configurable for trigger		
	Trigger Signal Input	Pulse / Level trigger		
Output Port	Digital Signal Output	Alarm output, comparator output (Configurable as comparator output or data invalid warning)		
	Analog Signal Output	Linear ±10 V analog voltage output / 4~20 mA analog current output (Optional)		
Industrial Interface	Ethernet	100BASE-TX		
	USB	USB2.0 High-speed (480Mbps)		
	RS-485	Modbus protocol, 19200~115200 baud rate		
	EtherCAT	Optional		
Measurement & Control Software	Host Computer Software	TSConfocalStudio measurement & control software		
	SDK	C++&C#SDK		
Rated Power	Supply Voltage	24 VDC±10%		
	Current Consumption	Approx.0.5 A		
Environmental Tolerance	Operating Temperature	0 to +50°C		
	Relative Humidity	20 to 85% RH(No condensation)		
Weight		Approx.3200 g		

* These models are new products. The drawings are still being perfected, and the actual parameters may vary slightly. The contract shall prevail.

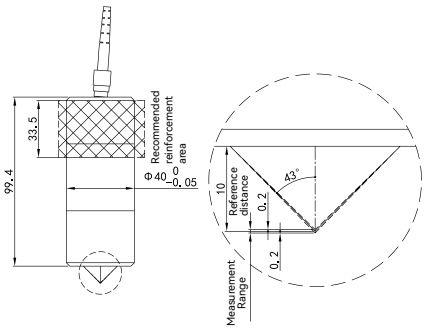
Dimension Figure

Sensor Head

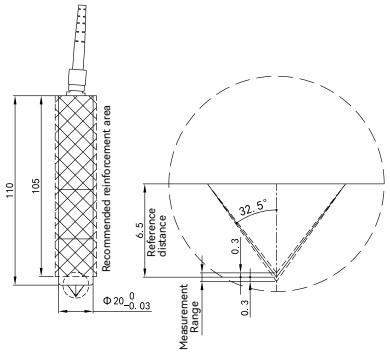
C100B



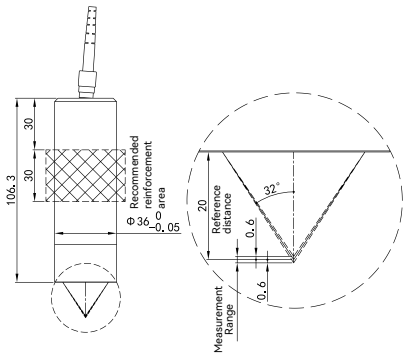
C400



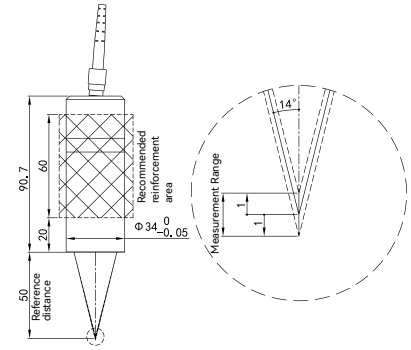
C600



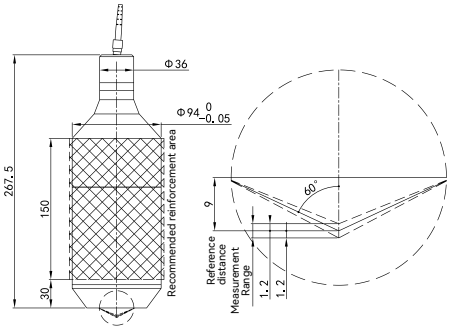
C1200



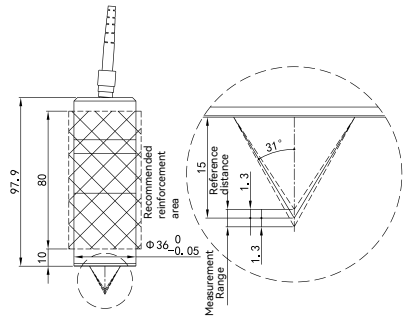
C2000



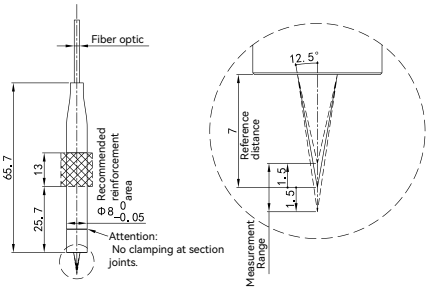
C2400



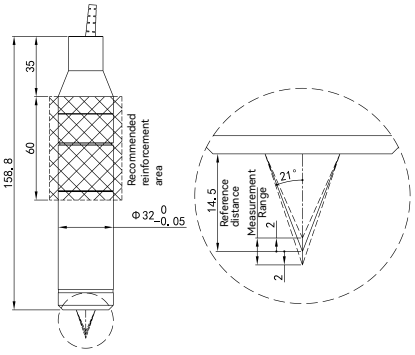
C2600_2600H



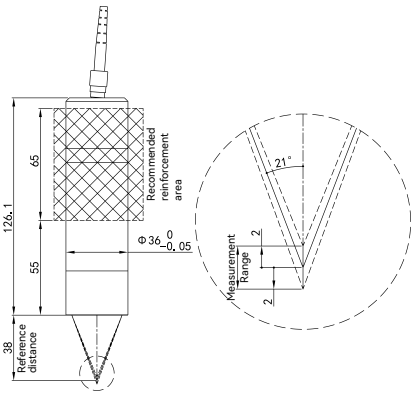
C3000



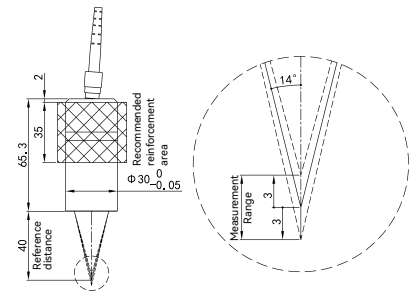
C4000N



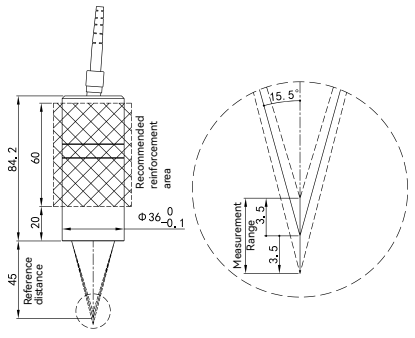
C4000F



C6000

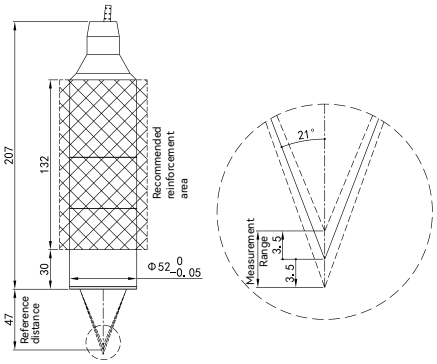


C7000

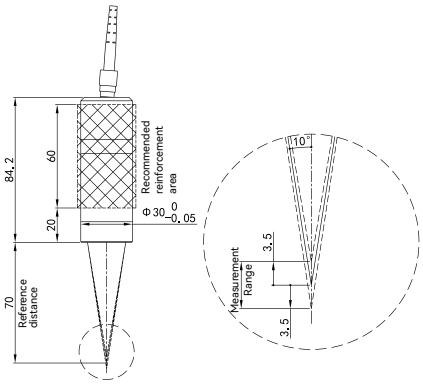


Dimension Figure

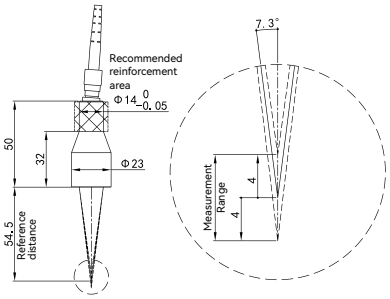
C7000L



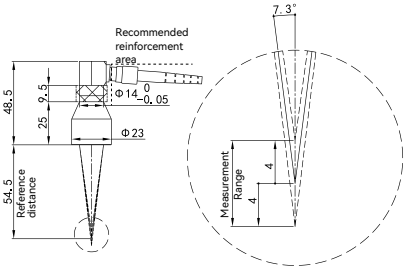
C7000S



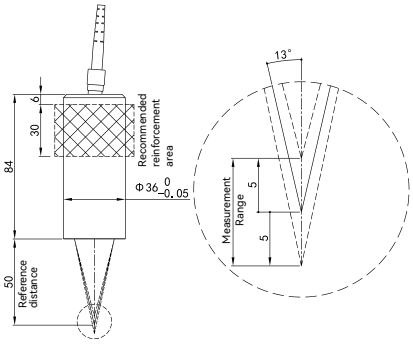
C8000（直款）



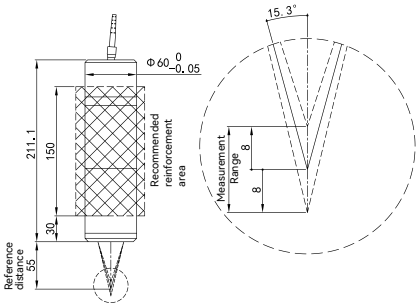
C8000（折款）



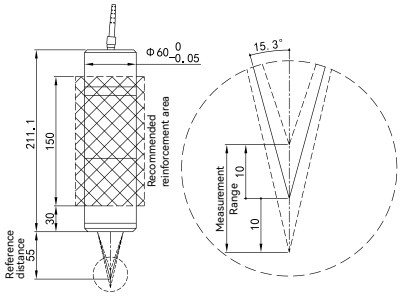
C10000_C10000H



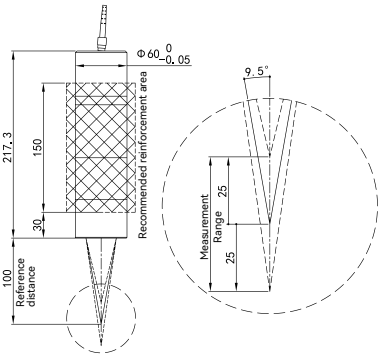
C16000



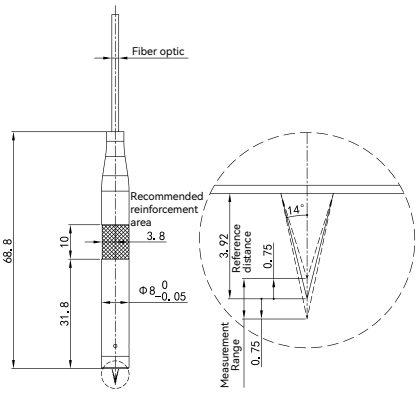
C20000



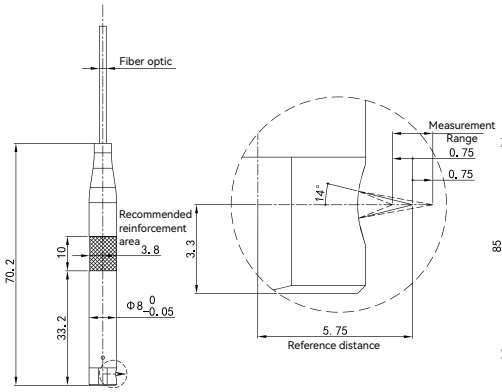
C50000



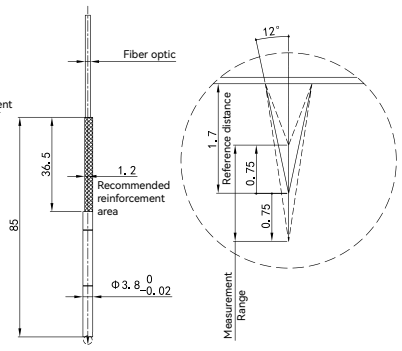
CR1500（Axial）



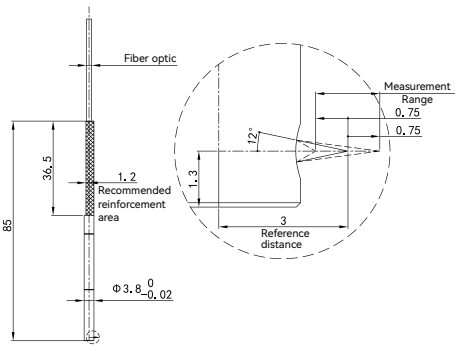
CR1500（Radial）



CR1500N（Axial）

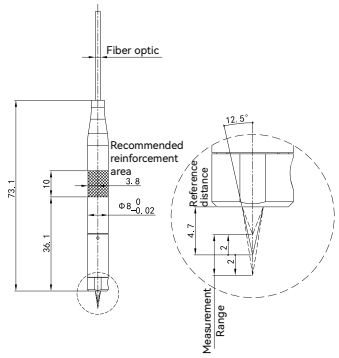


CR1500N（Radial）

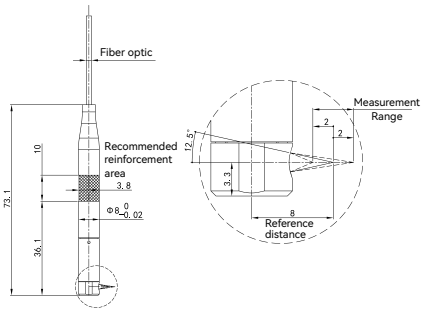


Dimension Figure

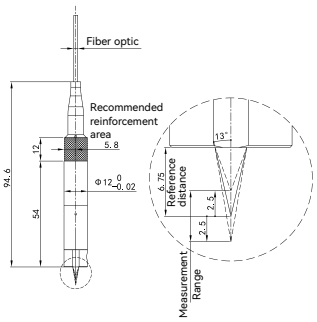
CR4000（Axial）



CR4000（Radial）

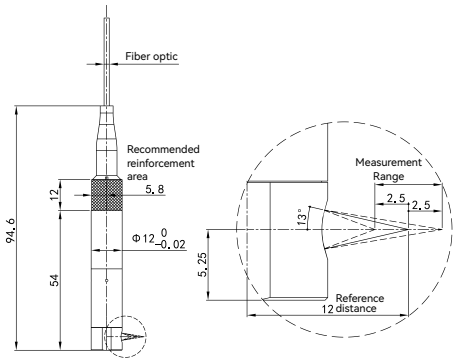


CR5000（Axial）

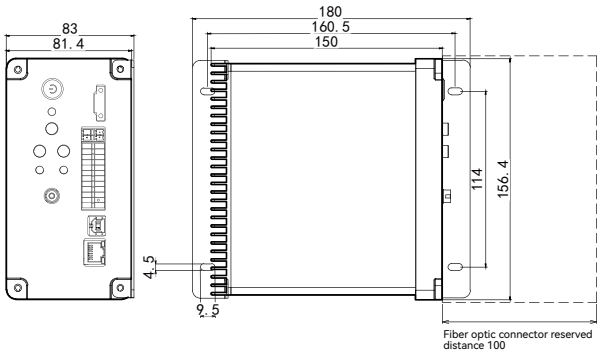


Controller

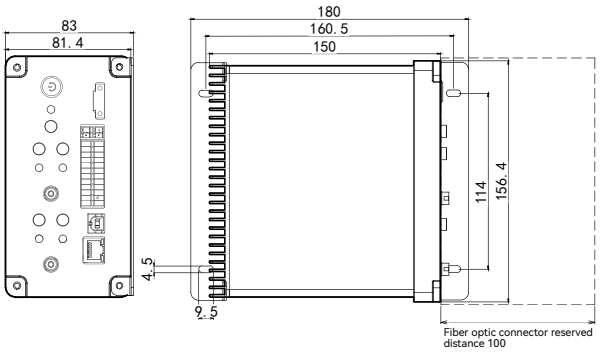
CR5000（Radial）



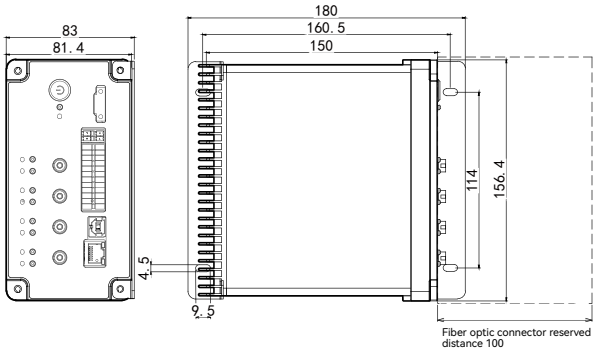
CCS(With Footpad)



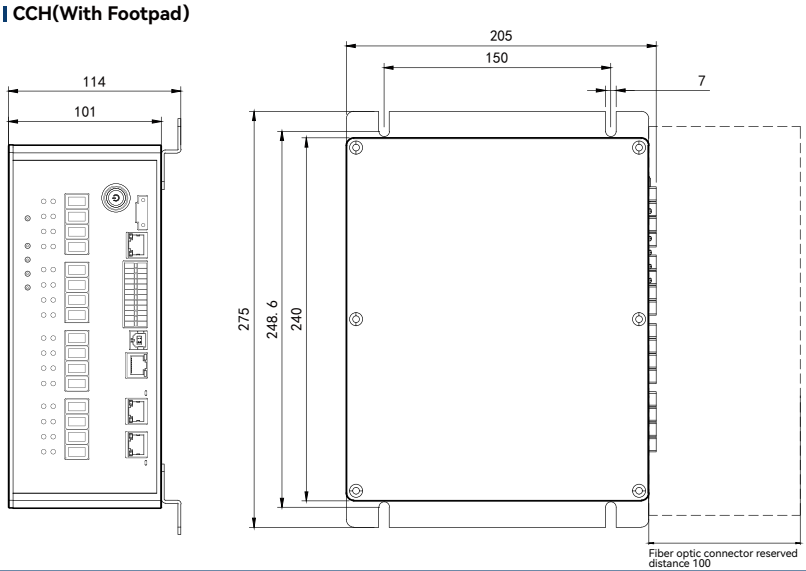
CCD(With Footpad)



CCF(With Footpad)

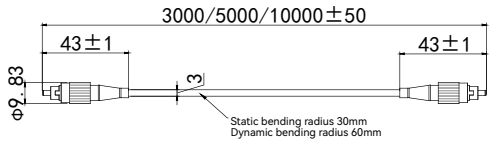


CCH(With Footpad)

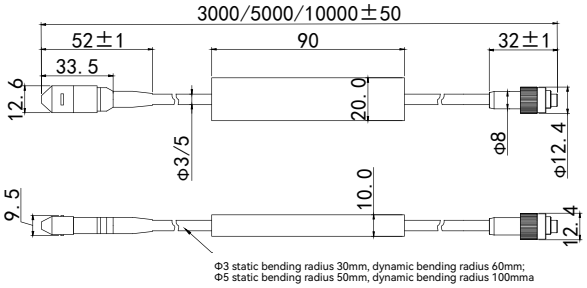


Component Drawings

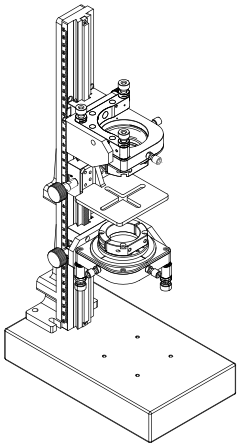
FC Fiber Optic Jumper



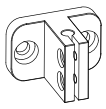
MPO Fiber Optic Jumper



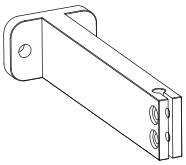
Vertical Jig and Fixture



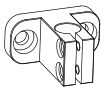
Clamp Piece



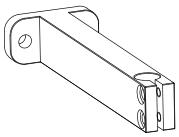
D3.8L15



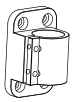
D3.8L80



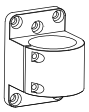
D8L15



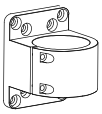
D8L80



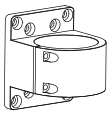
D20



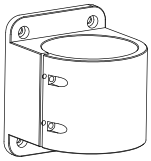
D30



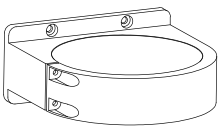
D36



D40



D60

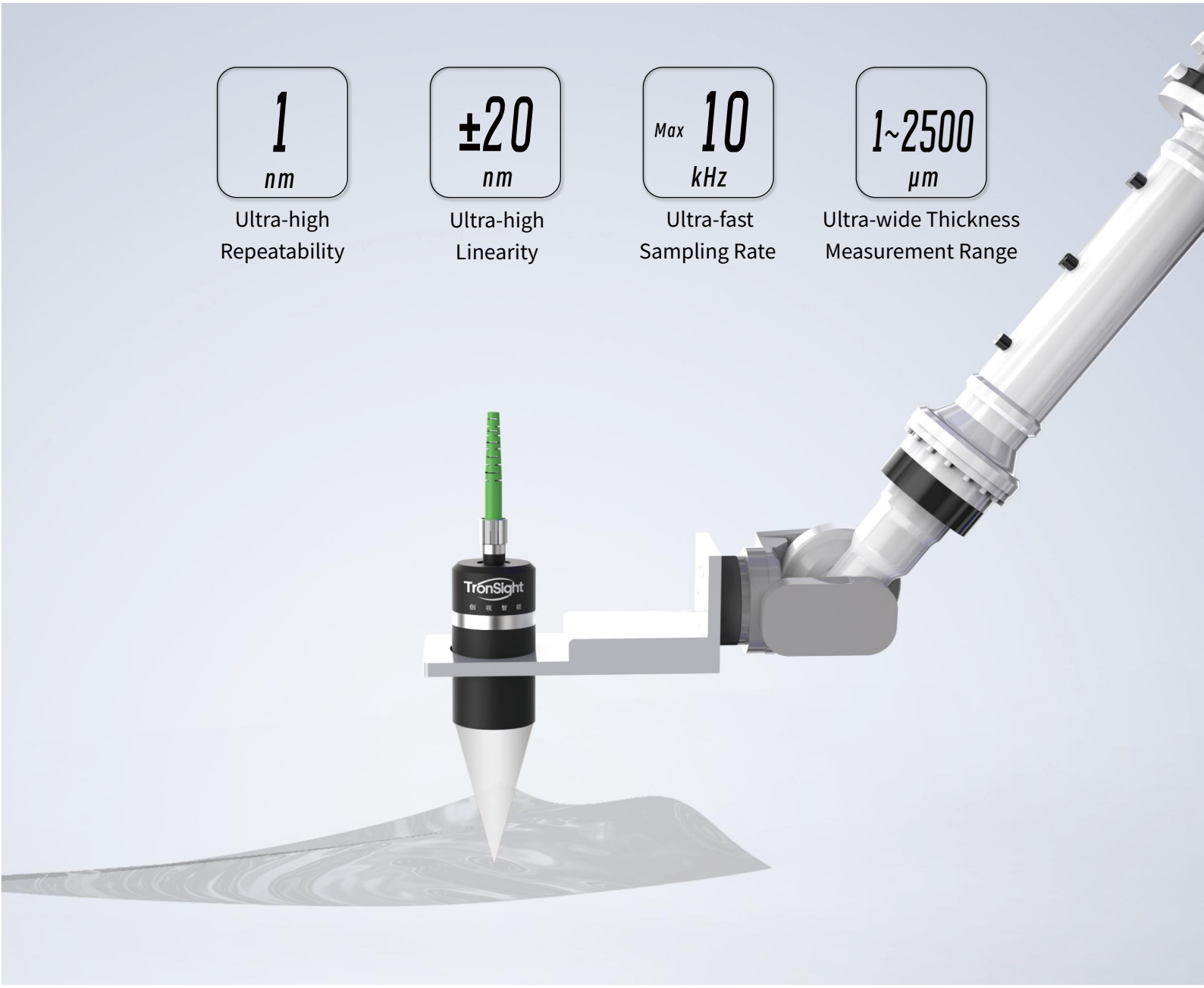


D94

TronSight

| TS-I Series |

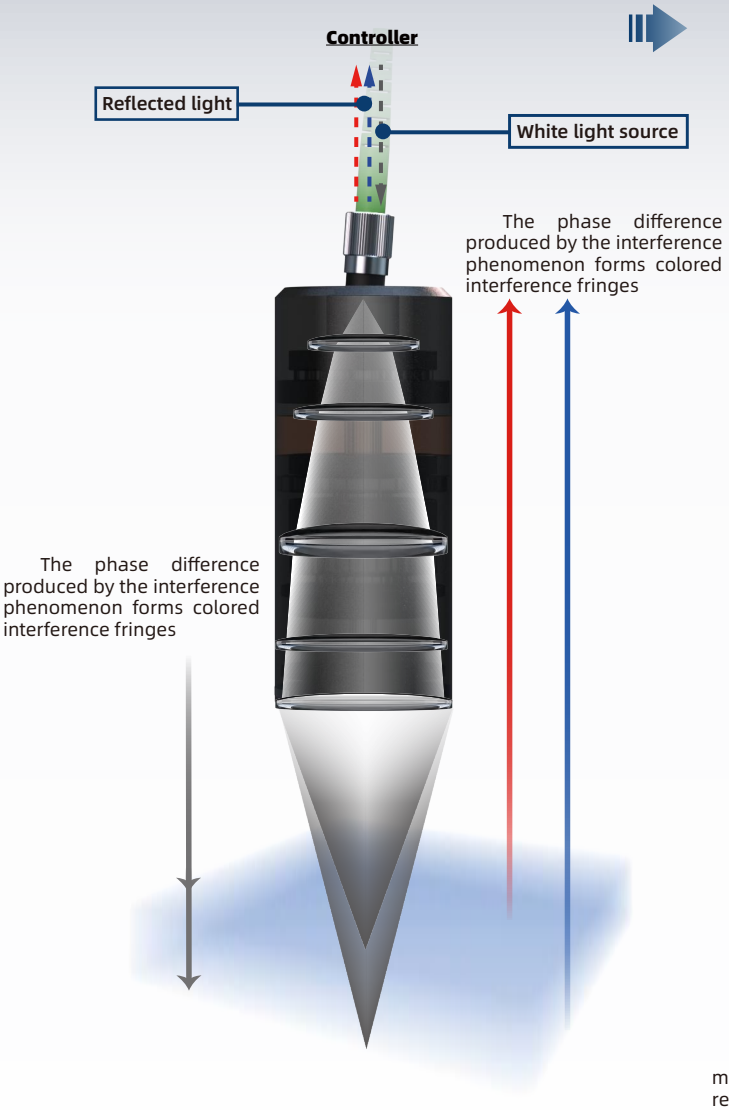
Interferometric Thickness Sensors



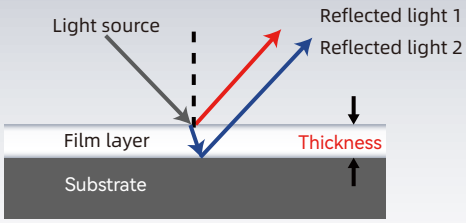
1 nm	±20 nm	Max 10 kHz	1~2500 μm
Ultra-high Repeatability	Ultra-high Linearity	Ultra-fast Sampling Rate	Ultra-wide Thickness Measurement Range

Why choose TronSight?

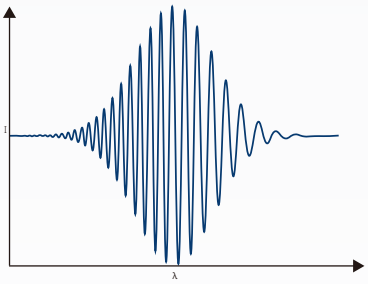
- 360° Minimal Measurement Dead Zone
- High Interference Immunity
- Nanometer-level Measurement Accuracy
- Non-contact Measurement
- Film And Coating Thickness Measurement
- Wide Range Working Distance



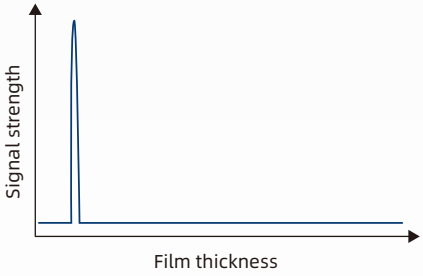
Measurement Principle



White Light Interference Receives Spectral Signals



Interference Signal Analysis And Thickness Mapping



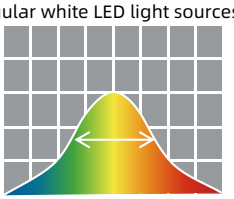
Basic Principle

The white point light spectrum passes through the interferometric probe and illuminates the surface of the sample. The reflected light from the upper and lower surfaces of the sample is simultaneously received by the interferometric probe. The phase difference between the two reflected beams is related to the film thickness, thus allowing the calculation of the film thickness value by analyzing the interference fringes.

High-brightness color laser light source

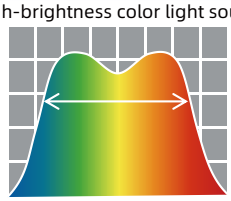
Blue laser light is shone on a phosphor that simultaneously emits red and green light, generating multi-color light. Compared to ordinary white LED light sources, it can achieve stable high-brightness emission over a wider range of wavelengths.

Regular white LED light sources



The wavelength range for high-brightness emission is relatively narrow.

High-brightness color light source

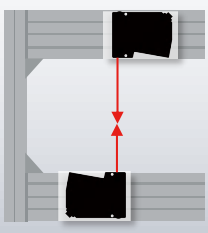


The wavelength range that can emit high-brightness light is relatively wide

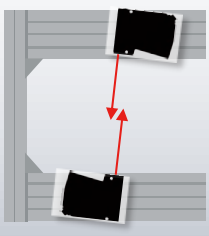
Zero heat-generating probe design

Traditional laser displacement sensors can cause deformation of the fixture and optical axis misalignment due to their own emissions, leading to measurement errors. The probe of this sensor is designed with only lens structures internally. Since there are no electronic components, it does not generate heat, thus preventing the deformation of the fixture where the probe is installed. This design allows for ideal high-precision measurements.

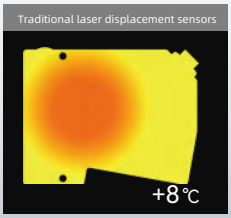
Before the probe heats up

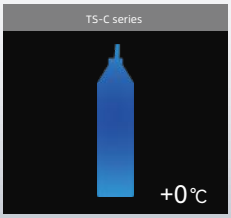


After the probe heats up

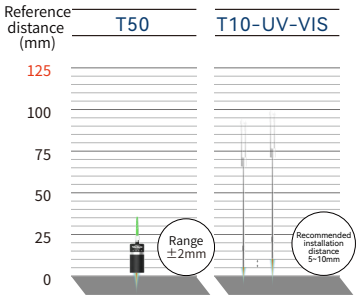


Traditional laser displacement sensors



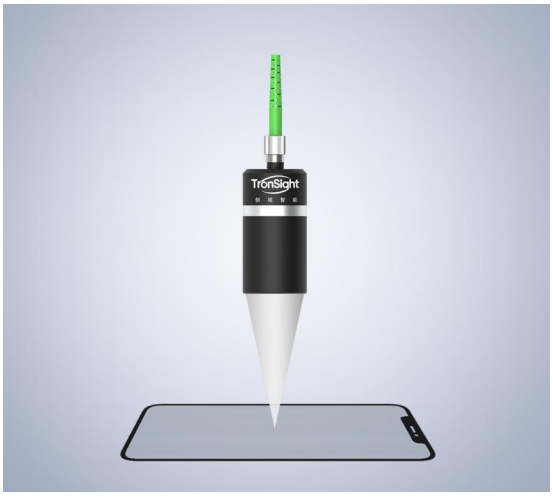


Product Specifications

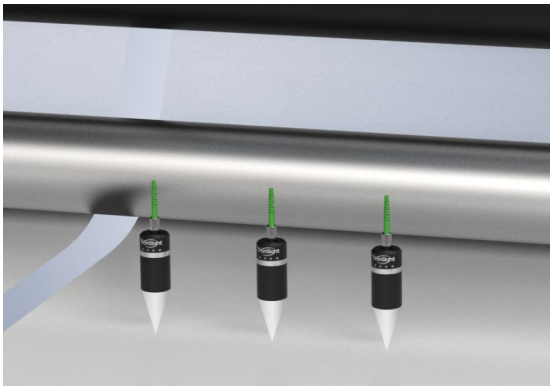


Measure angle	±3°	±10°
Repeatability	1nm	1nm
Linear error	< ±20nm	< ±20nm

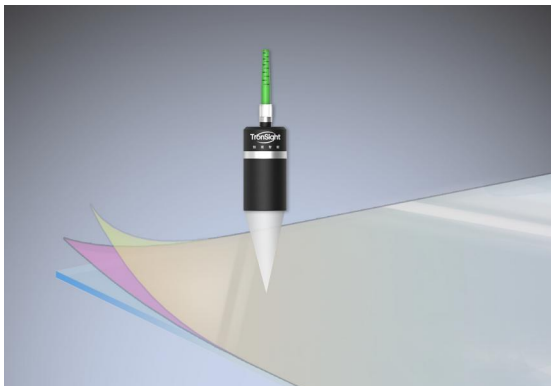
Application



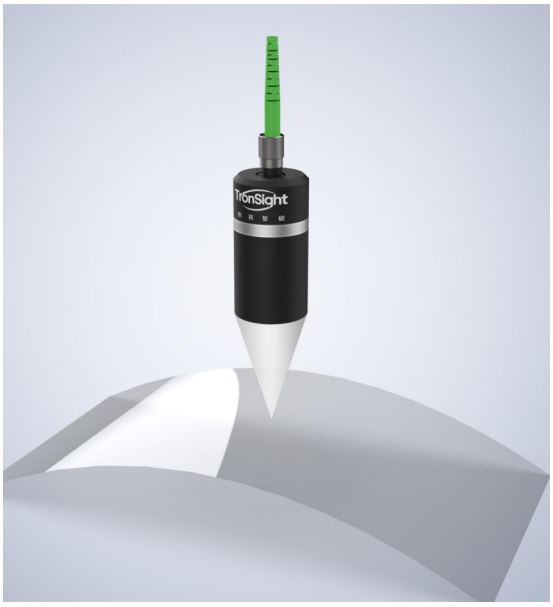
◆ Thickness Measurement of ITO Film for Touch Screens



◆ Thickness Measurement of Lithium-ion Battery Separator



◆ Thickness Measurement of Multilayer PET Films



◆ Thickness Measurement of Ultra-Thin Flexible Glass (UTG)

Parameters

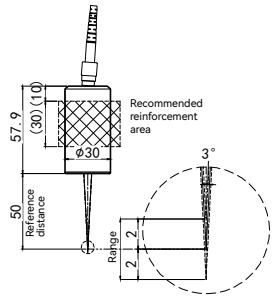
Sensor Head

Series Name		IVS-100	IVS-100W	IVS-50	IVS-50W
Controller Model		IVCS-100	IVCS-100W	IVCS-50	IVCS-50W
Adapt Head Model		IVP-T50	IVP-T10-UV-VIS	IVP-T50	IVP-T10-UV-VIS
Reference Distance*1		50mm	Non-focused head	50mm	Non-focused head
Recommended Measurement Range		±2mm	Installation distance recommended 5-10mm	±2mm	Installation distance recommended 5-10mm
Measurement Angle*2		±3°	±10°	±3°	±10°
Spot type*3		Focus spot,Φ100μm	Dispersive spot, Φ4mm (Installation distance =10mm)	Focus spot,Φ100μm	Dispersive spot, Φ4mm (Installation distance =10mm)
Repeatability*4		1nm	1nm	1nm	1nm
Linear Error*5		<±20nm	<±20nm	<±20nm	<±20nm
Outer Diameter*Length		φ30*58mm	φ6.35*65mm	φ30*58mm	φ6.35*65mm
Head weight		90 g	—	90 g	—
IP Grade		IP40	—	IP40	—
Head Connection Capacity		1	1	1	1
Sample Frequency		Max.10 kHz			
Range of thickness measurement		Approx.2μm~100μm (Refractive index=1.5)		Approx.1μm~50μm(Refractive index=1.5)	
Input port	Encoder Input	AB / ABZ encoder input, configurable for trigger			
	Trigger Signal Input	Pulse / Level trigger			
Output port	Digital Signal Output	Alarm output, comparator output			
	Analog Signal Output	Linear ±10 V analog voltage output / 4~20 mA analog current output (Optional)			
Industrial Interface	Ethernet	100BASE-TX			
	USB	Complies with USB2.0 Full-speed standard			
	RS-485	Modbus protocol, 19200~115200 baud rate			
Measurement & Control Software	Host Computer Software	TSConfocalStudio measurement & control software			
	SDK	C++&C#SDK			
Rated Power	Supply Voltage	24 VDC±10%			
	Current Consumption	Approx.0.4 A			
Environmental Tolerance	Operating Temperature	0 to +50°C			
	Relative Humidity	20 to 85% RH(No condensation)			
Weight		Approx.2000 g			

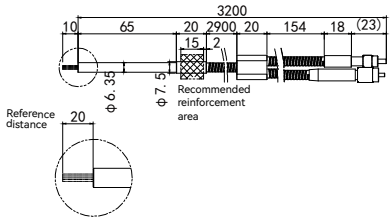
*1 Focus position, where the return signal from the sensor is strongest;
*2 Use a standard flat mirror for tilt testing at a 1kHz sampling rate;
*3 Measure sharp glass edges using a sub-micron positioning accuracy motion platform with a laser interferometer as the displacement reference for verification;
*4 Measure standard film thickness samples, collect 10,000 sets of thickness data continuously at 1kHz without averaging to calculate the root mean square deviation;
*5 Theoretical value.

Dimension Figure

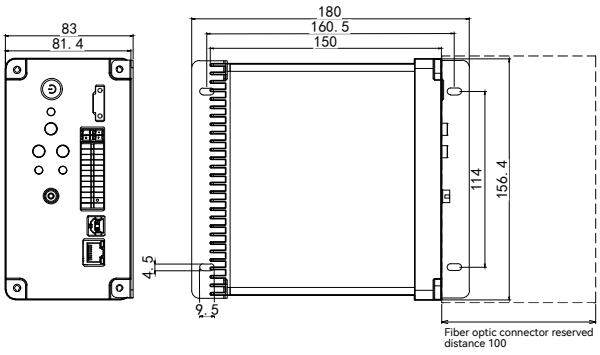
IVP-T50



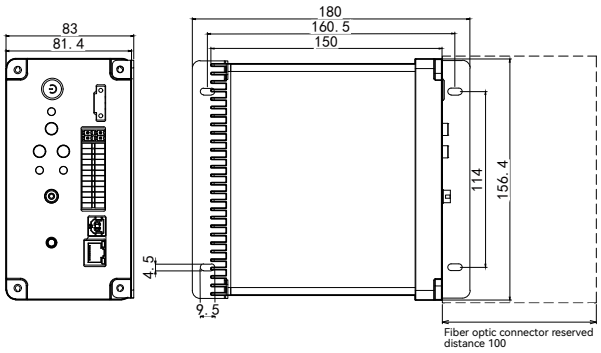
IVP-T10-UV-VIS



IVCS50/IVCS100(With Footpad)

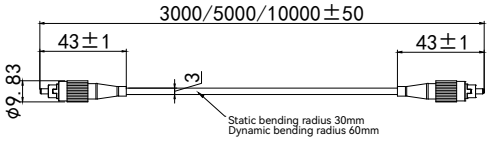


IVCS50W/IVCS100W(With Footpad)



Component Drawings

FC Fiber Optic Jumper



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