



# High Precision Measurement Product Catalog

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

# C 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



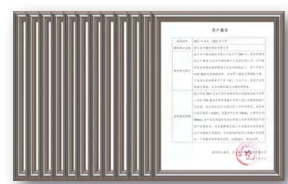
Suzhou Innovation and Entrepreneurship Leading Talent



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

# CONTENTS



## Laser Triangulation Displacement Sensor

Principle  
Model  
Application  
Parameters  
Dimension Figure

## Spectral Confocal Displacement Sensor

Principle  
Model  
Application  
Parameters  
Dimension Figure



## Interferometric thickness sensor

Principle  
Model/Application  
Parameters  
Dimension Figure





| *TS-P Series* |

## Laser Triangulation Displacement Sensor

**0.02**  
 $\mu\text{m}$

Ultra-high  
Repeatability

**$\pm 0.02$**   
% of F.S

Ultra-high  
Linearity

Max **160**  
kHz

Ultra-fast  
Sampling Rate

Ethernet  
RS-485  
Analog Output

Simple Interface  
Configuration



### ◆ Why choose TronSight?



Full-frequency  
Industrial IO



Controller-Free



Ultra-fast Sampling Rate



Ultra-long  
Measuring Distance



Self-Developed

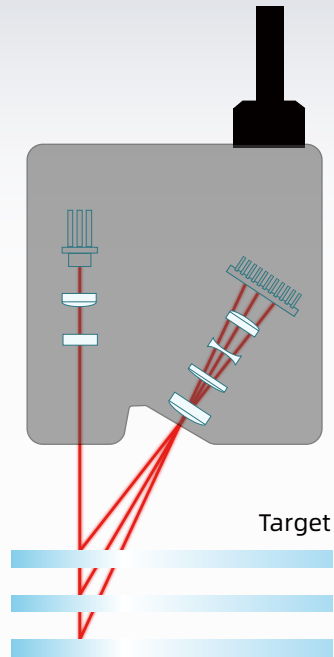


Specular/Diffuse  
Reflection





## Measurement Principle

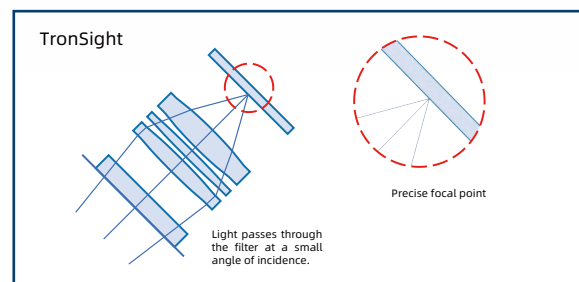
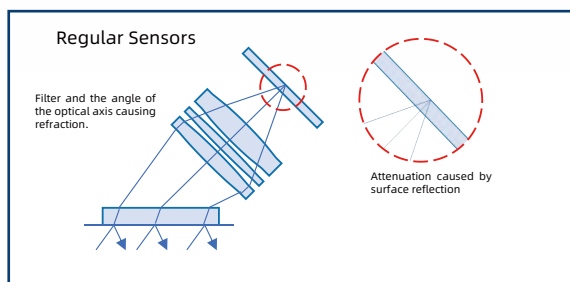


## Basic Principle

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

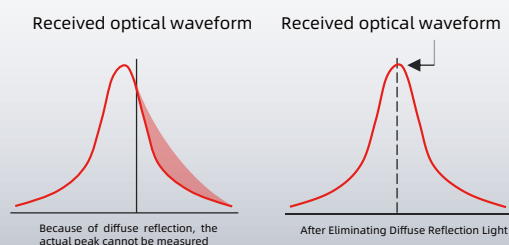
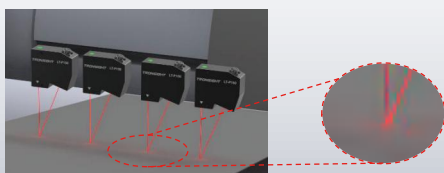
TronSight has improved the structure of the conventional laser triangulation sensor receiving lens module, which can maximize the avoidance of multiple spots caused by multiple reflections on the surface of the filter and the resulting misjudgment of the measurement position. At the same time, it improves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



## Semi-transparent object measurement algorithm

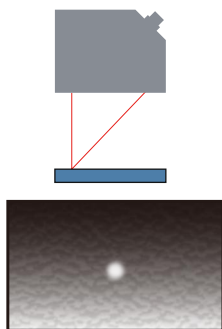
When the laser penetrates a semi-transparent object, it produces diffuse reflection from below the surface of the object, causing the received light waveform to slowly expand. The self-developed measurement algorithm for semi-transparent objects can eliminate the effect of the expanded waveform and detect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

### Semi-transparent object measurement algorithm



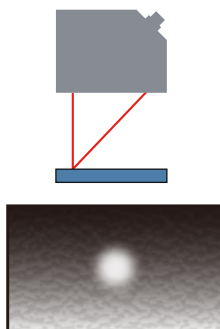
# Light Spot Specification Description

## Small Spot



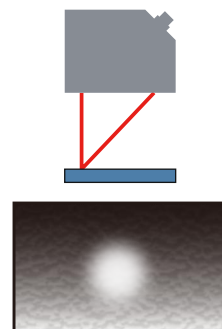
Correctly detect small targets through a minimum  $\phi 18\ \mu\text{m}$  light spot, very suitable for shape measurement.

## Wide Spot



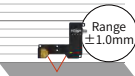
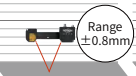
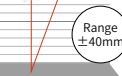
By increasing the measurement spot size, it is more suitable for measuring targets with uneven surfaces, obtaining stable measurement values.

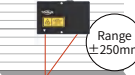
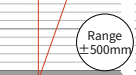
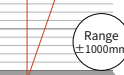
## Ultra-wide Spot



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

## 产品规格一览

| Reference distance (mm) | TS-PD08                                                                             | TS-PD15                                                                             | TS-PD50                                                                             | TS-P25                                                                              | Reference distance (mm) | TS-P30                                                                               | TS-P70                                                                                | TS-P80                                                                                | TS-P150                                                                               |
|-------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| 500                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 500                     |                                                                                      |                                                                                       |                                                                                       |                                                                                       |
| 400                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 400                     |                                                                                      |                                                                                       |                                                                                       |                                                                                       |
| 300                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 300                     |                                                                                      |                                                                                       |                                                                                       |                                                                                       |
| 200                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 200                     |                                                                                      |                                                                                       |                                                                                       |                                                                                       |
| 100                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 100                     |                                                                                      |                                                                                       |                                                                                       |                                                                                       |
| 0                       |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 0                       |                                                                                      |                                                                                       |                                                                                       |                                                                                       |
|                         |  |  |  |  |                         |  |  |  |  |
|                         | Range $\pm 0.8\text{mm}$                                                            | Range $\pm 1.0\text{mm}$                                                            | Range $\pm 0.8\text{mm}$                                                            | Range $\pm 1\text{mm}$                                                              |                         | Range $\pm 5\text{mm}$                                                               | Range -50mm~+40mm                                                                     | Range $\pm 15\text{mm}$                                                               | Range $\pm 40\text{mm}$                                                               |
| Repeatability           | 0.01 $\mu\text{m}$                                                                  | 0.05 $\mu\text{m}$                                                                  | 0.05 $\mu\text{m}$                                                                  | 0.01 $\mu\text{m}$                                                                  | Repeatability           | 0.02 $\mu\text{m}$                                                                   | 0.2 $\mu\text{m}$                                                                     | 0.1 $\mu\text{m}$                                                                     | 0.25 $\mu\text{m}$                                                                    |
| Linear error            | $< \pm 0.5\mu\text{m}$                                                              | $< \pm 0.6\mu\text{m}$                                                              | $< \pm 0.6\mu\text{m}$                                                              | $< \pm 0.6\mu\text{m}$                                                              | Linear error            | $< \pm 3\mu\text{m}$                                                                 | $< \pm 20\mu\text{m}$                                                                 | $< \pm 6\mu\text{m}$                                                                  | $< \pm 16\mu\text{m}$                                                                 |

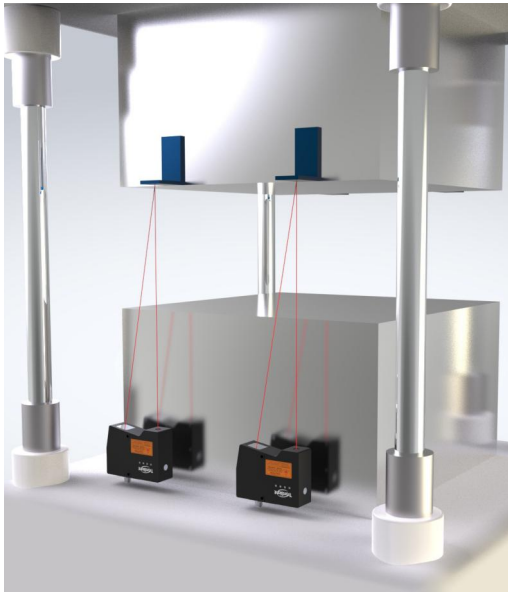
| Reference distance (mm) | TS-P400                                                                             | TS-P450                                                                             | TS-P1000                                                                            | TS-P1500                                                                            | Reference distance (mm) | TS-P2250                                                                             |
|-------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------|--------------------------------------------------------------------------------------|
| 2500                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 2500                    |                                                                                      |
| 2000                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 2000                    |                                                                                      |
| 1500                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 1500                    |                                                                                      |
| 1000                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 1000                    |                                                                                      |
| 500                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 500                     |                                                                                      |
| 0                       |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 0                       |                                                                                      |
|                         |  |  |  |  |                         |  |
|                         | Range $\pm 100\text{mm}$                                                            | Range $\pm 250\text{mm}$                                                            | Range $\pm 500\text{mm}$                                                            | Range $\pm 1000\text{mm}$                                                           |                         | Range $\pm 650\text{mm}$                                                             |
| Repeatability           | 1.5 $\mu\text{m}$                                                                   | 2 $\mu\text{m}$                                                                     | 12 $\mu\text{m}$                                                                    | 30 $\mu\text{m}$                                                                    | Repeatability           | 50 $\mu\text{m}$                                                                     |
| Linear error            | $< \pm 60\mu\text{m}$                                                               | $< \pm 250\mu\text{m}$                                                              | $< \pm 500\mu\text{m}$                                                              | $< \pm 1000\mu\text{m}$                                                             | Linear error            | $< \pm 650\mu\text{m}$                                                               |

Laser Triangulation  
Displacement Sensor

Spectral Confocal  
Displacement Sensor

Interferometric  
Thickness Sensor

# Application



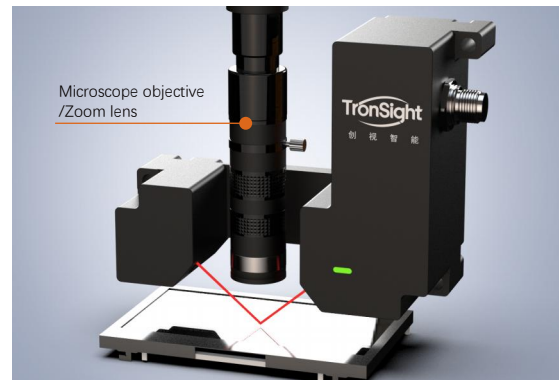
◆ Motion platform position measurement



◆ Online Thickness Measurement of Roller Pressed Plates



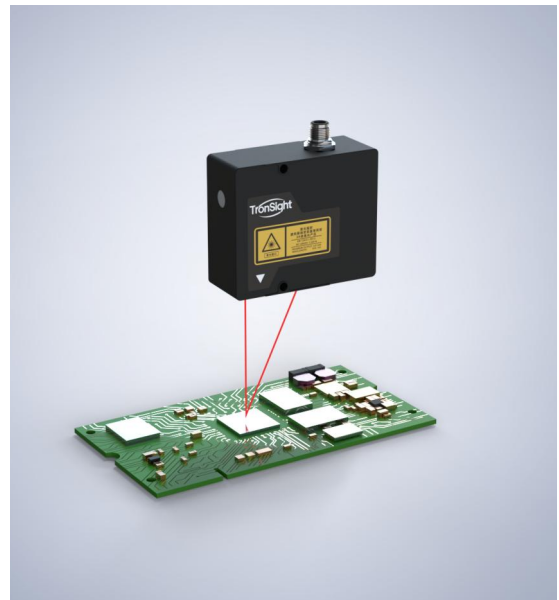
◆ Road surface smoothness measurement



◆ Coaxial height focus measurement



◆ High-frequency vibration measurement



◆ PCB component height, PCB board thickness measurement



## Parameters

### Sensor Head

| Model                                  | Reference <sup>*1</sup><br>Distance                                                                                                                                                                                                            | Measurement<br>Range | Spot Diameter     | Static Noise <sup>2</sup> | Static Noise <sup>3</sup> | Linearity Error <sup>*4</sup>   | Dimensions     | Weight           | Sampling<br>Frequency | Light source <sup>5</sup> |                                              |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|-------------------|---------------------------|---------------------------|---------------------------------|----------------|------------------|-----------------------|---------------------------|----------------------------------------------|
| PD08                                   | 8mm                                                                                                                                                                                                                                            | ±0.8 mm              | Φ20μm             | 0.03μm                    | 0.01μm                    | < ±0.5μm                        | 82*115*38.5mm  | 213 g            | Max. 160 kHz          | 655 nm<br>Max. 4.9mW      |                                              |
| PD15                                   | 15mm                                                                                                                                                                                                                                           | ±1.0mm               | Φ35μm             | 0.05μm                    | 0.01μm                    | < ±0.6μm                        | 102*137*55.5mm | 475g             |                       |                           |                                              |
| PD50                                   | 50mm                                                                                                                                                                                                                                           | ±0.8 mm              | Φ25μm             | 0.05μm                    | 0.01μm                    | < ±0.6μm                        | 74*205*110mm   | 725 g            |                       |                           |                                              |
| P25                                    | 25 mm                                                                                                                                                                                                                                          | ±1 mm                | Φ18μm             | 0.05μm                    | 0.01μm                    | < ±0.6μm                        | 120*80*31mm    | 372 g            | Max. 160 kHz          | 405 nm<br>Max. 4.9 mW     |                                              |
| P30                                    | 30mm                                                                                                                                                                                                                                           | ±5mm                 | Φ35μm             | 0.15μm                    | 0.02μm                    | < ±3μm                          | 87*76*31mm     | 287 g            |                       |                           |                                              |
| P30W                                   |                                                                                                                                                                                                                                                |                      | About Φ35*400μm   |                           |                           | < ±2μm                          |                |                  |                       |                           |                                              |
| P30U                                   |                                                                                                                                                                                                                                                |                      | About Φ35*1100μm  | 0.075μm                   |                           |                                 |                |                  |                       |                           | Max. 25kHz                                   |
| P70                                    | 70mm                                                                                                                                                                                                                                           | -50mm<br>+40mm       | Φ70μm             | 1.3μm                     | 0.3μm                     | < ±18μm                         | 130*90*31mm    | 408 g            | Max. 160 kHz          | 655 nm<br>Max. 4.9 mW     |                                              |
| P70W                                   |                                                                                                                                                                                                                                                |                      | Φ70*500μm         |                           |                           |                                 |                |                  |                       |                           |                                              |
| P80                                    | 80mm                                                                                                                                                                                                                                           | ±15mm                | About Φ70μm       | 0.5μm                     | 0.1μm                     | < ±6μm                          | 93*78*37mm     | 359 g            |                       |                           |                                              |
| P80W                                   |                                                                                                                                                                                                                                                |                      | About Φ70*800μm   |                           |                           |                                 |                |                  |                       |                           |                                              |
| P80U                                   |                                                                                                                                                                                                                                                |                      | About Φ70*2200μm  | 0.25μm                    |                           |                                 |                |                  | Max. 25kHz            |                           |                                              |
| P150                                   | 150mm                                                                                                                                                                                                                                          | ±40mm                | Φ110μm            | 1.2μm                     | 0.25μm                    | < ±16μm                         | 95*80*37 mm    | 374g             | Max. 160 kHz          |                           | 655 nm<br>Max. 4.9 mW<br>/660 nm<br>Max.50mW |
| P150W                                  |                                                                                                                                                                                                                                                |                      | About Φ110*1400μm |                           |                           |                                 |                |                  |                       |                           |                                              |
| P400                                   | 400mm                                                                                                                                                                                                                                          | ±100mm               | Φ300μm            | 3μm                       | 1.5μm                     | < ±60μm                         | 115*85*37mm    | 438 g            |                       |                           |                                              |
| P400W                                  |                                                                                                                                                                                                                                                |                      | About Φ300*3400μm |                           |                           |                                 |                |                  |                       |                           |                                              |
| P450                                   | 450mm                                                                                                                                                                                                                                          | ±250mm               | Φ320μm            | 8μm                       | 2μm                       | < ±250μm                        | 120*75*37mm    | 416 g            |                       |                           |                                              |
| P450W                                  |                                                                                                                                                                                                                                                |                      | About Φ320*4200μm |                           |                           |                                 |                |                  |                       |                           |                                              |
| P1000                                  | 1000mm                                                                                                                                                                                                                                         | ±500mm               | Φ320μm            | 12μm                      | /                         | < ±500μm                        | 180*85*40mm    | 785g             |                       |                           |                                              |
| P1500                                  | 1500mm                                                                                                                                                                                                                                         | ±1000mm              | Φ400μm            | 30μm                      | /                         | < ±1000μm                       | 260*85*45mm    | 1,250g           |                       |                           |                                              |
| P2250                                  | 2250mm                                                                                                                                                                                                                                         | ±650mm               | Φ700μm            | 50μm                      | /                         | < ±650μm                        | 200*85*41mm    | 924 g            |                       |                           |                                              |
| Customizable<br>Model                  | 8~2250mm                                                                                                                                                                                                                                       | 5~2500mm             | Model related     | 20ppm<br>of F.S.          | Model related             | Typical value<br>±0.05% of F.S. | Model related  | Model<br>related | Max. 160 kHz          | Model related             |                                              |
| Temperature<br>Drift <sup>6</sup>      | 0.01% of F.S./°C                                                                                                                                                                                                                               |                      |                   |                           |                           |                                 |                |                  |                       |                           |                                              |
| Industrial <sup>*6</sup><br>Interfaces | Ethernet, RS-485 serial port, analog signal output <sup>*7</sup> (Max. ±10V, 4-20mA)                                                                                                                                                           |                      |                   |                           |                           |                                 |                |                  |                       |                           |                                              |
| Control<br>Software                    | Comes with TSLaserStudio control and measurement software and C++, C# software development kits                                                                                                                                                |                      |                   |                           |                           |                                 |                |                  |                       |                           |                                              |
| Operating Mode                         | Operates independently without a controller. The probe 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. |                      |                   |                           |                           |                                 |                |                  |                       |                           |                                              |
| Power Voltage                          | DC 9~36V, maximum allowable ±10% fluctuation                                                                                                                                                                                                   |                      |                   |                           |                           |                                 |                |                  |                       |                           |                                              |
| Power<br>Consumption                   | About 2.5W                                                                                                                                                                                                                                     |                      |                   |                           |                           |                                 |                |                  |                       |                           |                                              |
| Degree of<br>Protection                | IP67                                                                                                                                                                                                                                           |                      |                   |                           |                           |                                 |                |                  |                       |                           |                                              |
| Ambient<br>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 RS485 output;

\*7 Optional analog voltage/current output module.

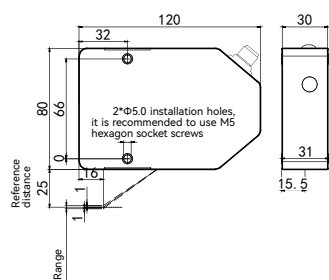
Laser Triangulation  
Displacement Sensor

Spectral Confocal  
Displacement Sensor

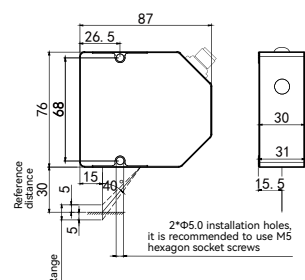
Interferometric  
Thickness Sensor

## Dimension Figure

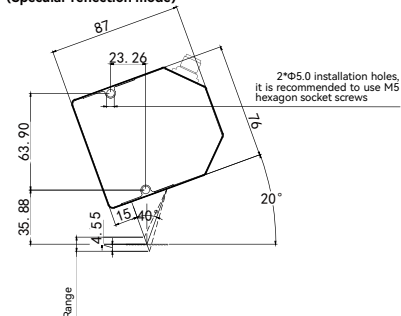
**TS-P25**



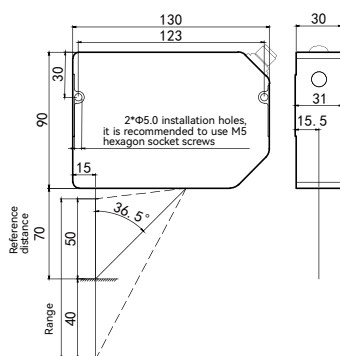
**TS-P30**



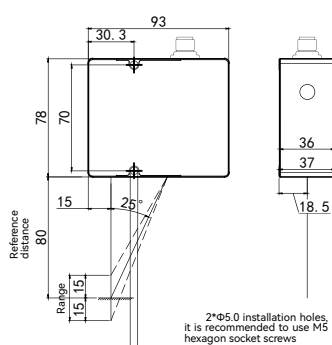
**TS-P30 Slanting Installation**  
(Specular reflection mode)



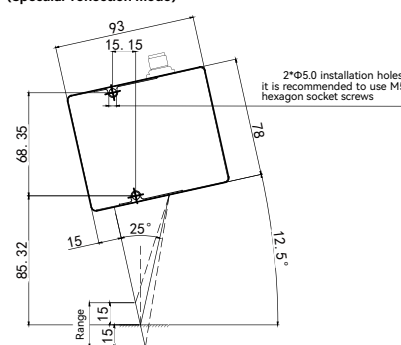
**TS-P70**



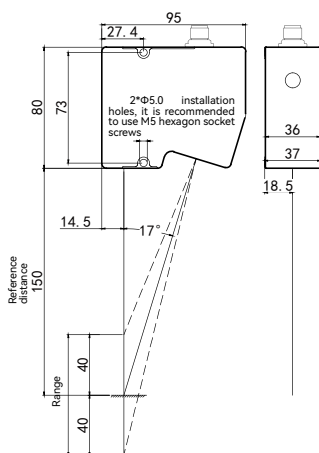
**TS-P80**



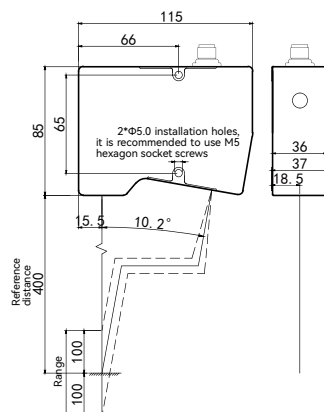
**TS-P80 Slanting Installation**  
(Specular reflection mode)



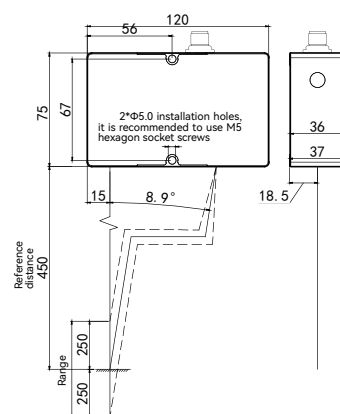
**TS-P150**



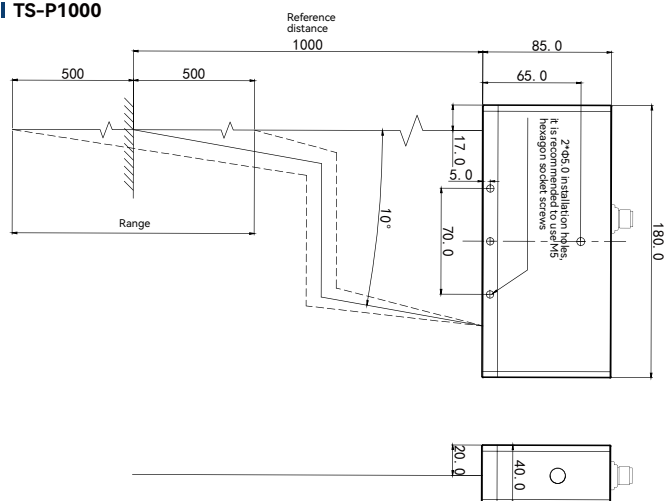
**TS-P400**



**TS-P450**

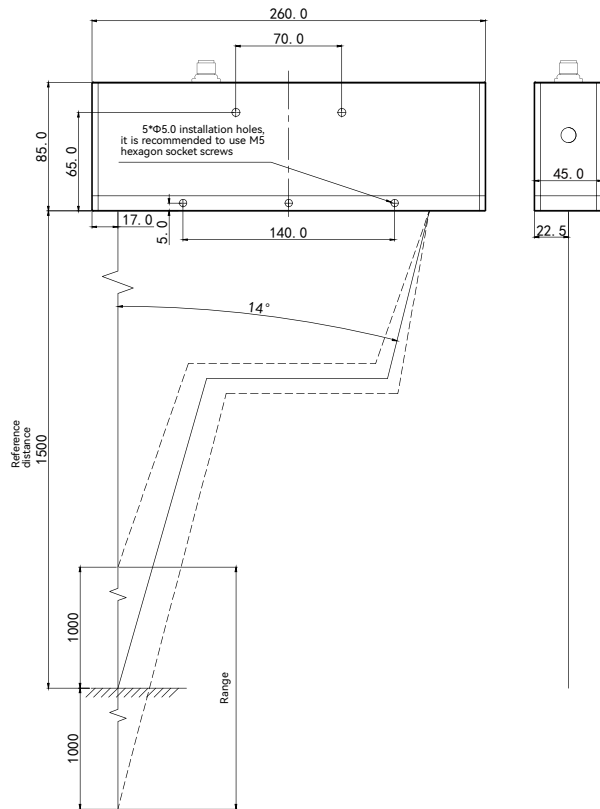


**TS-P1000**

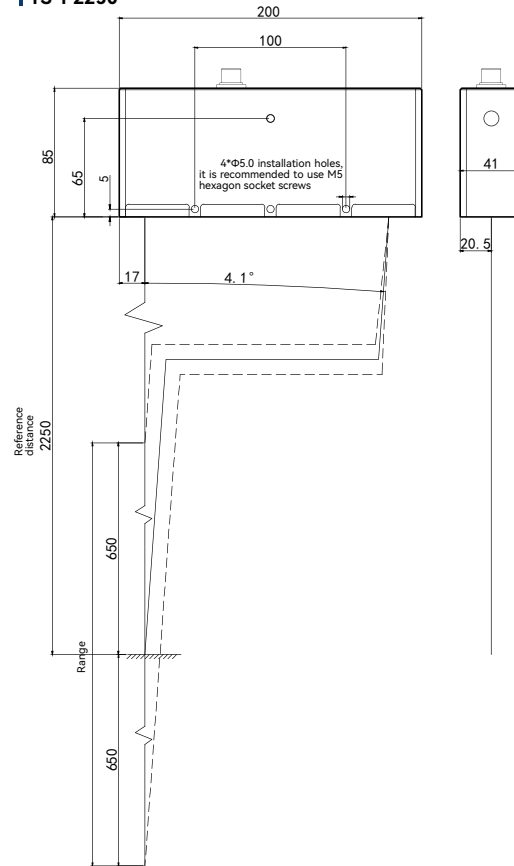


## Dimension Figure

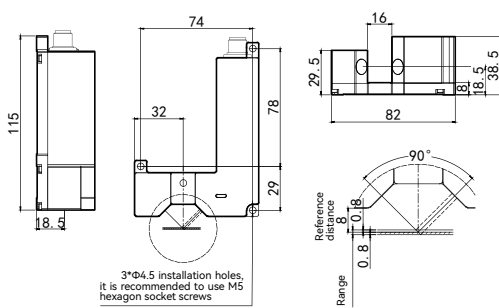
TS-P1500



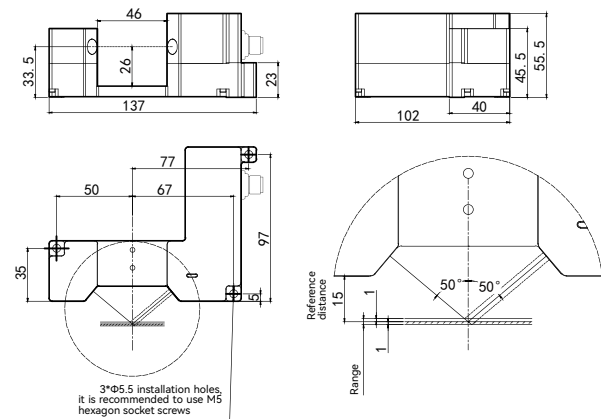
TS-P2250



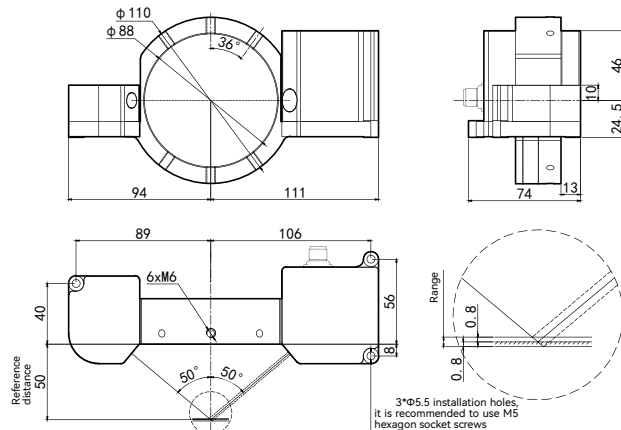
TS-PD08



TS-PD15



TS-PD50



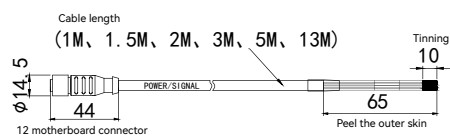
Laser Triangulation  
Displacement Sensor

Spectral Confocal  
Displacement Sensor

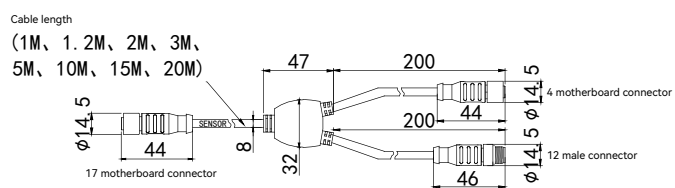
Interferometric  
Thickness Sensor

## Component Drawings

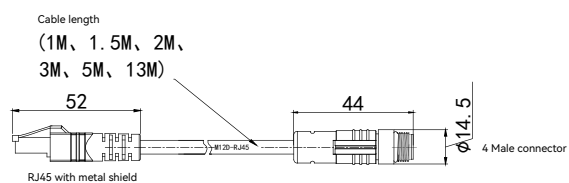
### M12-12 Core Shielded Female Connector Harness



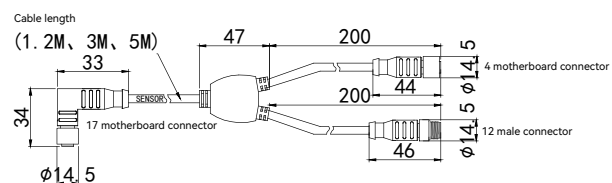
### Y-type Splitter



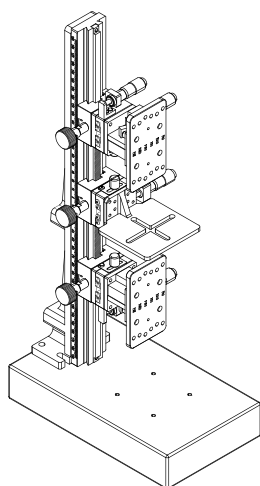
### M12d Type Adapter To RJ45 Connector



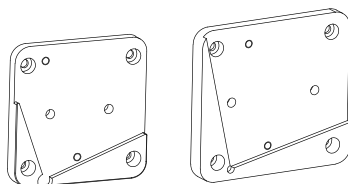
### 90° Y-type Splitter



### Vertical Jig and Fixture



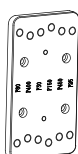
### Slanting Installation Board



P30

P80

### Connection Board







## | TS-C Series | Spectral Confocal Displacement Sensor

**3**  
nm

Ultra-high  
Repeatability

**$\pm 0.02$**   
% of F.S

Ultra-high  
Linearity

Max **30**  
kHz

Ultra-fast  
Sampling Rate

**$\pm 60^\circ$**

Ultra-large  
Measurement Angle



### ◆ Why choose TronSight?



Minimal Measurement  
Dead Zone



High Interference  
Immunity



Sub-micron  
Measurement Precision



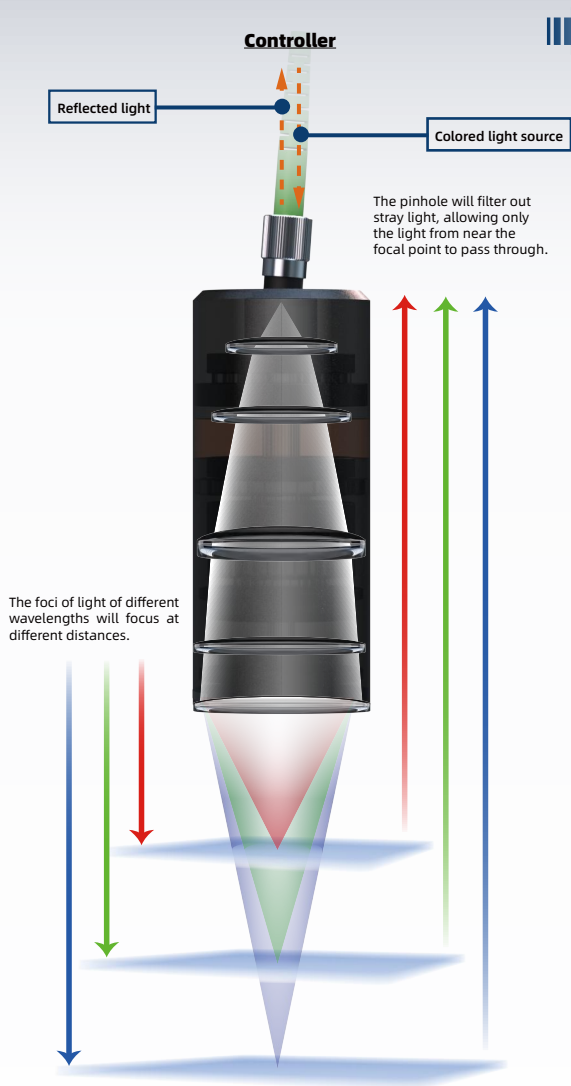
Ultra-Smooth Mirror  
Surface Measurement



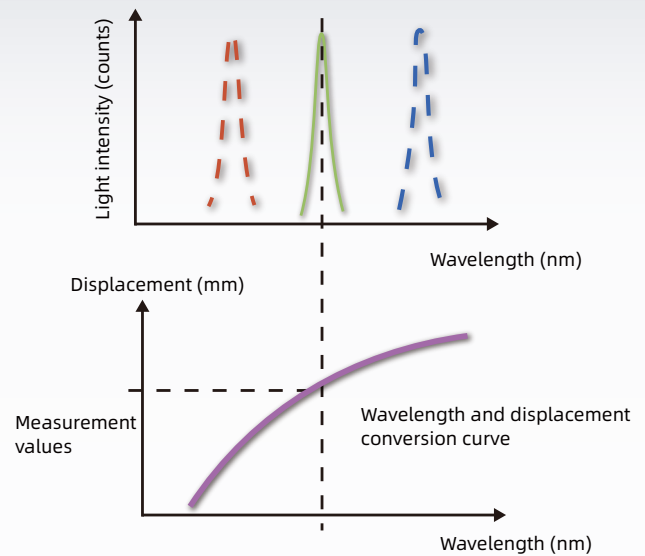
Multi-layer Transparent  
Material Thickness  
Measurement



Axial and Radial Light  
Emission Measurement



## Spectral Confocal Receives Spectral Signals



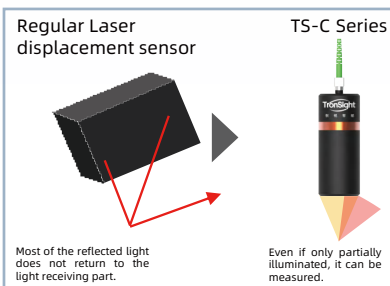
## Basic Principle

When white point light source passes through the dispersive confocal probe 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

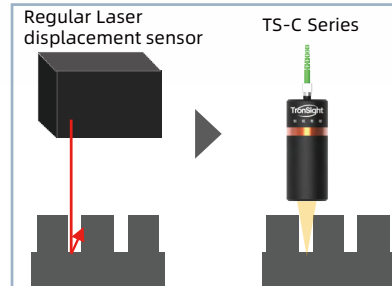
### Achieving high-precision measurement of transparent curved surfaces.

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



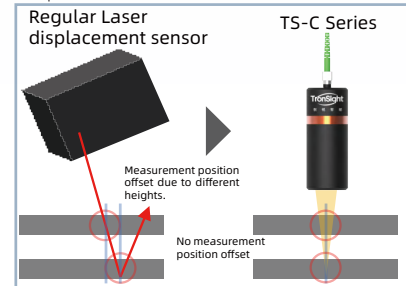
### Measure pits and steps without blind spots.

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



### 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 Trigger



USB, Ethernet

PC

RS485, Ethernet

PLC

Analog, Digital

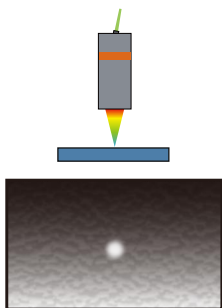
Data acquisition card

Leveler/Encoder Trigger

Encoder

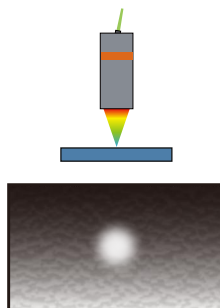
## Light Spot Specification Description

### Small spot



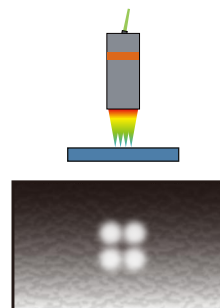
Detecting small targets accurately with a minimum spot size of  $\Phi 1.7\mu\text{m}$  is ideal for shape measurement.

### Wide spot



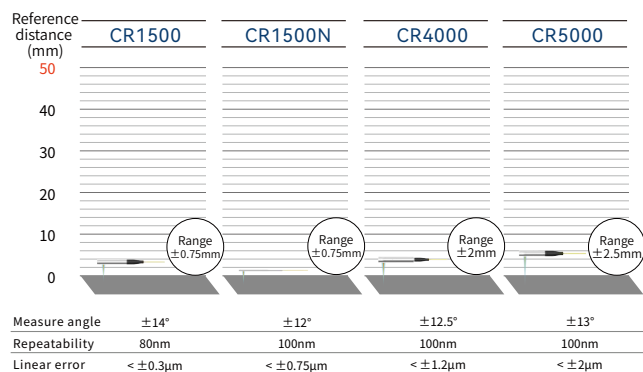
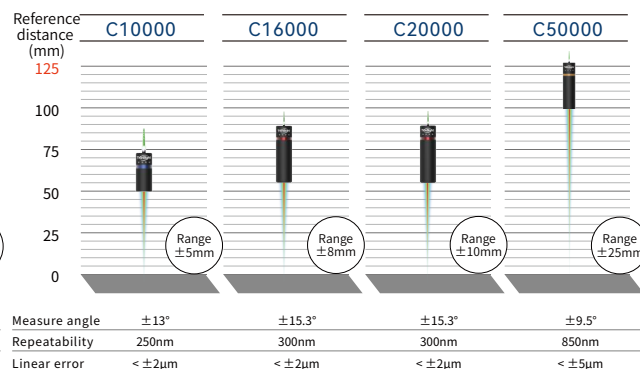
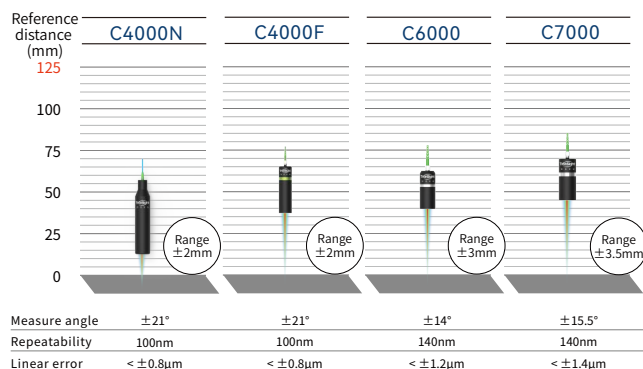
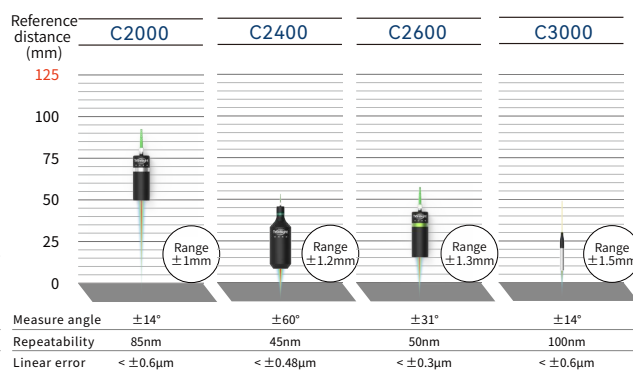
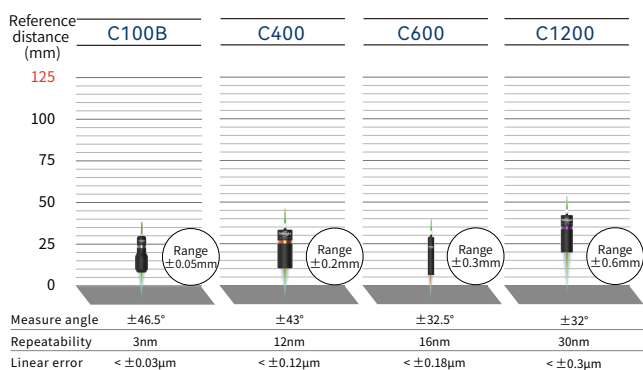
By increasing the measurement spot size, it is more suitable for measuring uneven surfaces, obtaining stable measurement values.

### Ultra-wide spot

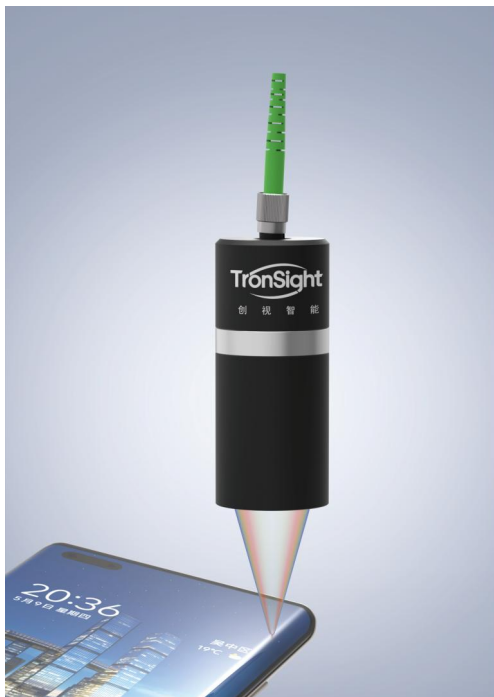


Measuring with four independent spots and performing numerical calculations can eliminate the effects of surface irregularities and roughness.

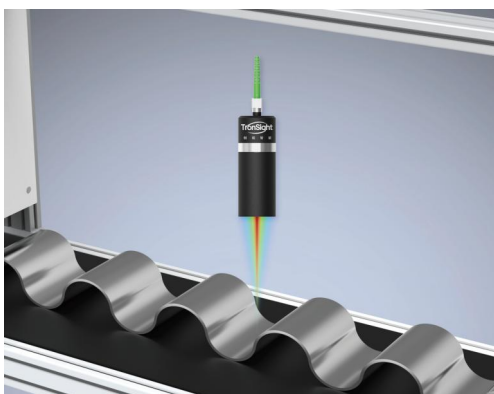
## Product Specifications



# Application



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



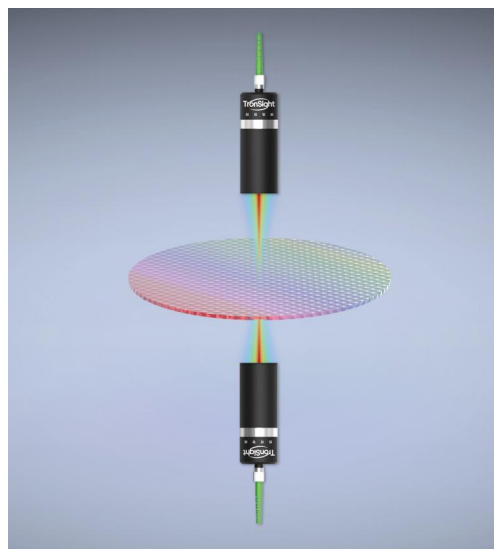
◆ Metal workpiece profile measurement



◆ Flatness measurement of structural components



◆ PCB component height difference measurement



◆ Wafer Mapping Thickness Measurement



◆ Flatness measurement of structural components

## Parameters

### Sensor Head

| Model                | Reference Distance <sup>*1</sup>         | Measurement Range | Spot Diameter <sup>*2</sup> | Spot Diameter <sup>*3</sup> | Static Noise <sup>*4</sup> | Linearity Error <sup>*5</sup>   | Outer Diameter<br>*Length | Weight            | Minimum Measurable Thickness | Temperature Characteristics | Degree of Protection |  |
|----------------------|------------------------------------------|-------------------|-----------------------------|-----------------------------|----------------------------|---------------------------------|---------------------------|-------------------|------------------------------|-----------------------------|----------------------|--|
| C100B <sup>*8</sup>  | 8mm                                      | ±0.05mm           | ±46.5°                      | Φ2.7μm/5.4μm/43.2μm         | 3nm                        | < ±0.03μm                       | φ40*111.5mm               | 256g              | 5%off.F.S.                   | <0.03%F.S./°C               | IP40                 |  |
| C400                 | 10mm                                     | ±0.2mm            | ±43°                        | Φ7μm/14μm/112μm             | 12nm                       | < ±0.12μm                       | φ40*99.4mm                | 186g              |                              |                             |                      |  |
| C600                 | 6.5mm                                    | ±0.3mm            | ±32.5°                      | Φ8μm/16μm/128μm             | 16nm                       | < ±0.18μm                       | φ20*110mm                 | 73g               |                              |                             |                      |  |
| C1200                | 20mm                                     | ±0.6mm            | ±32°                        | Φ9.5μm/19μm/152μm           | 30nm                       | < ±0.3μm                        | φ36*106.3mm               | 182g              |                              |                             |                      |  |
| C2000                | 50mm                                     | ±1mm              | ±14°                        | Φ20μm/40μm/320μm            | 85nm                       | < ±0.6μm                        | φ34*90.7mm                | 162g              | 10%off.F.S.                  | ~0.1%F.S./°C                |                      |  |
| C2400                | 9mm                                      | ±1.2mm            | ±60°                        | Φ5.5μm/11μm/88μm            | 45nm                       | < ±0.48μm                       | φ94*267.5mm               | 2350g             | 5%off.F.S.                   | <0.03%F.S./°C               |                      |  |
| C2600                | 15mm                                     | ±1.3mm            | ±31°                        | Φ9μm/18μm/144μm             | 50nm                       | < ±0.3μm                        | φ36*97.9mm                | 228g              | 5%off.F.S.                   |                             |                      |  |
| C2600H               | 15mm                                     | ±1.3mm            | ±31°                        | Φ9μm/18μm/144μm             | 50nm                       | < ±0.3μm                        | φ36*97.9mm                | 228g              |                              |                             |                      |  |
| C3000                | 7mm                                      | ±1.5mm            | ±12.5°                      | Φ20μm/40μm/320μm            | 100nm                      | < ±0.6μm                        | φ8*38.7mm                 | 23g <sup>*7</sup> | 10%off.F.S.                  | ~0.05%F.S./°C               | IP67                 |  |
| C4000N               | 14.5mm                                   | ±2mm              | ±21°                        | Φ12μm/24μm/192μm            | 100nm                      | < ±0.8μm                        | φ32*158.8mm               | 238g              | 5%off.F.S.                   | <0.03%F.S./°C               | IP40                 |  |
| C4000F               | 38mm                                     | ±2mm              | ±21°                        | Φ16μm/32μm/256μm            | 100nm                      | < ±0.8μm                        | φ36*126.1mm               | 226g              |                              | ~0.05%F.S./°C               |                      |  |
| C6000                | 40mm                                     | ±3mm              | ±14°                        | Φ22μm/44μm/352μm            | 140nm                      | < ±1.2μm                        | φ30*71mm                  | 112g              |                              |                             |                      |  |
| C7000                | 45mm                                     | ±3.5mm            | ±15.5°                      | Φ20μm/40μm/320μm            | 140nm                      | < ±1.4μm                        | φ36*84.2mm                | 200g              |                              | <0.03%F.S./°C               |                      |  |
| C7000L               | 47mm                                     | ±3.5mm            | ±21°                        | Φ16μm/32μm/256μm            | 140nm                      | < ±1.4μm                        | φ52*207mm                 | 784g              |                              |                             |                      |  |
| C7000S               | 70mm                                     | ±3.5mm            | ±10°                        | Φ25μm/50μm/400μm            | 200nm                      | < ±1.4μm                        | φ30*84.2mm                | 130g              |                              |                             |                      |  |
| C10000               | 50mm                                     | ±5mm              | ±13°                        | Φ20μm/40μm/320μm            | 250nm                      | < ±2μm                          | φ36*84mm                  | 203g              |                              |                             |                      |  |
| C16000               | 55mm                                     | ±8mm              | ±15.3°                      | Φ15μm/30μm/240μm            | 300nm                      | < ±2μm                          | φ60*211.1mm               | 1180g             |                              |                             |                      |  |
| C20000               | 55mm                                     | ±10mm             | ±15.3°                      | Φ15μm/30μm/240μm            | 300nm                      | < ±2μm                          |                           |                   |                              |                             |                      |  |
| C50000               | 100mm                                    | ±25mm             | ±9.5°                       | Φ25μm/50μm/400μm            | 850nm                      | < ±5μm                          | φ60*217.3mm               | 1154g             |                              |                             |                      |  |
| CR1500 <sup>*6</sup> | Axial: 3.92mm<br>Radial:5.75mm           | ±0.75mm           | ±14°                        | Φ20μm                       | 80nm                       | < ±0.3μm                        | φ8*47.7mm                 | 23g <sup>*7</sup> | 10%off.F.S.                  |                             |                      |  |
| CR1500N              | Axial: 1.7mm<br>Radial:3mm               |                   |                             |                             |                            |                                 |                           |                   |                              |                             |                      |  |
| CR4000               | Axial: 4.7mm<br>Radial:8mm <sup>*8</sup> | ±2mm              | ±12.5°                      | Φ20μm                       | 100nm                      | < ±1.2μm                        | φ8*39mm                   | 24g <sup>*7</sup> |                              |                             |                      |  |
| CR5000 <sup>*8</sup> | Axial: 6.75mm<br>Radial:12mm             |                   |                             |                             |                            |                                 |                           |                   |                              |                             |                      |  |
| Customizable Model   | 1~500mm                                  | 0.1~50mm          | ±5°~60°                     | 1~100μm                     | 4~2000nm                   | Typical value<br>±0.02%off.F.S. | Model related             | Model related     | Model related                | Model related               |                      |  |

\*1 Calculated from the center position of the measurement range;

\*2 Tilt test using standard flat mirror at 1kHz sampling rate;

\*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 Models starting with CR have a 90° side-emitting version suitable for deep hole, inner wall, and side feature measurements;

\*7 This probe model includes a 3m tail cable, and the weight in the table includes the weight of the cable;

\*8 This model is a new product, actual parameters may vary slightly, refer to the contract.

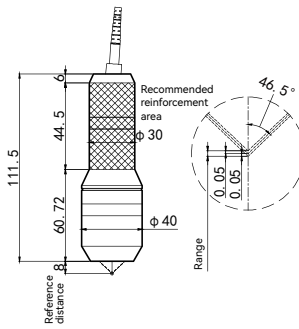
### Controller

| Model                            | TS-CCS                                                                                           | TS-CCD                                                                                      | TS-CCF | TS-CCH                                                                                                                                                                                                                                                                      |
|----------------------------------|--------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sensor Head Connection Capacity  | 1                                                                                                | 2                                                                                           | 4      | 4,8,16                                                                                                                                                                                                                                                                      |
| Sampling Frequency               | Single Channel Mode: Max. 10 kHz; Dual Channel Mode: Max. 5 kHz; Quad Channel Mode: Max. 2.5 kHz |                                                                                             |        | Single Channel Mode: Max. 20 kHz; Dual Channel Mode: Max. 18 kHz; Quad Channel Mode: Max. 12.5 kHz; Eight Channel Mode: Max. 8 kHz; Sixteen Channel Mode: Max. 4 kHz (The above are preliminary evaluation results, specifications may change at the time of final release) |
| Input Port                       | Trigger Signal 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 module)        |        |                                                                                                                                                                                                                                                                             |
| Industrial Interface             | Ethernet Interface                                                                               | 100BASE-TX                                                                                  |        | 1000/100Mbps                                                                                                                                                                                                                                                                |
|                                  | USB Interface                                                                                    | Complies with USB2.0 Full-speed standard                                                    |        | USB2.0 High-speed                                                                                                                                                                                                                                                           |
|                                  | RS485                                                                                            | Modbus protocol, 19200~115200 baud rate                                                     |        |                                                                                                                                                                                                                                                                             |
|                                  | EtherCAT                                                                                         | \                                                                                           |        | Optional configuration                                                                                                                                                                                                                                                      |
| Control and Measurement Software | Host Computer Software                                                                           | TSConfocalStudio Control and Measurement Software                                           |        |                                                                                                                                                                                                                                                                             |
|                                  | Secondary Development Package                                                                    | C++ and C# Software Development Package                                                     |        |                                                                                                                                                                                                                                                                             |
| Rated Power                      | Supply Voltage                                                                                   | 24 VDC                                                                                      |        |                                                                                                                                                                                                                                                                             |
|                                  | Current Consumption                                                                              | About 0.4 A                                                                                 |        | About 0.5A (when only one channel is enabled), about 4A (when 16 channels are enabled), it is recommended to configure a power supply of 24V 6A or above                                                                                                                    |
| Environmental Tolerance          | Operating Temperature                                                                            | 0 to +50°C                                                                                  |        |                                                                                                                                                                                                                                                                             |
|                                  | Relative Humidity                                                                                | 20 to 85% RH (no condensation)                                                              |        |                                                                                                                                                                                                                                                                             |
| Weight                           |                                                                                                  | About 2,000g                                                                                |        | About 2,800g (varies depending on the number of channels and configuration)                                                                                                                                                                                                 |

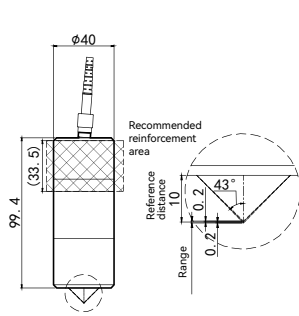


## Dimension Figure

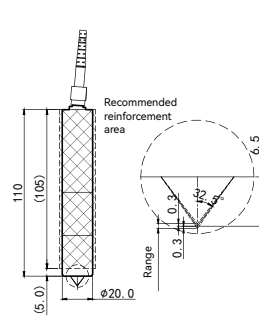
**TS-C100**



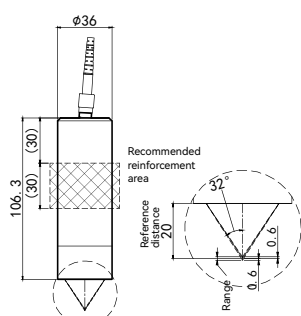
**TS-C400**



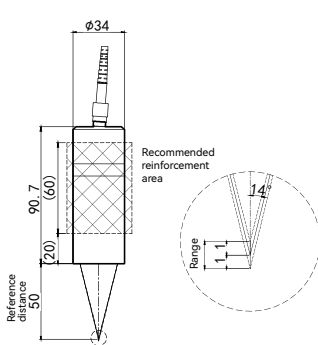
**TS-C600**



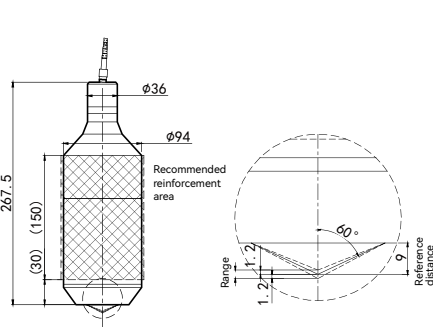
**TS-C1200**



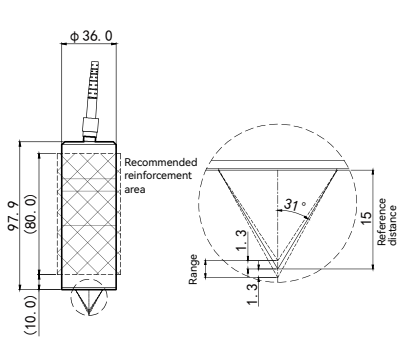
**TS-C2000**



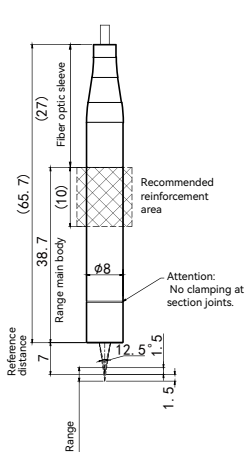
**TS-C2400**



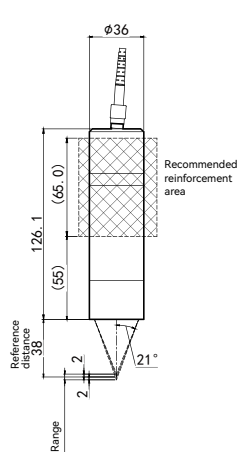
**TS-C2600**



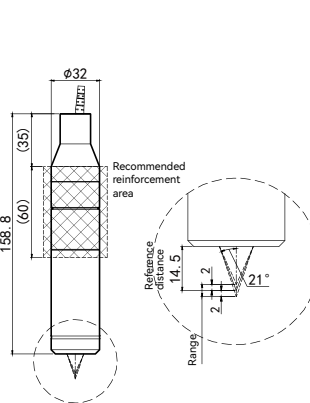
**TS-C3000**



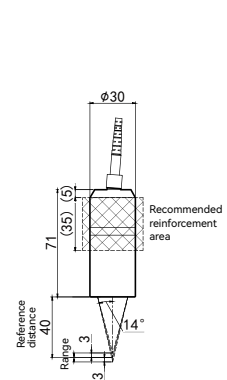
**TS-C4000F**



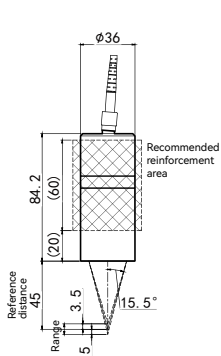
**TS-C4000N**



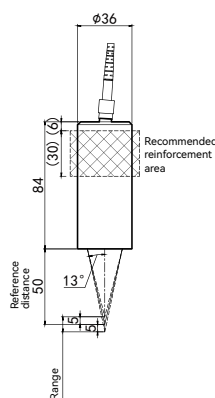
**TS-C6000**



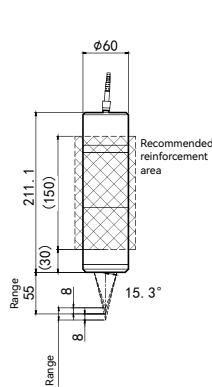
**TS-C7000**



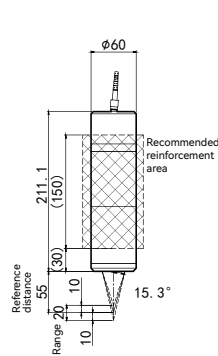
**TS-C10000**



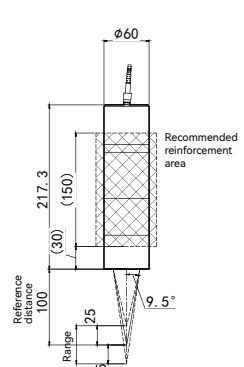
**TS-C16000**



**TS-C20000**

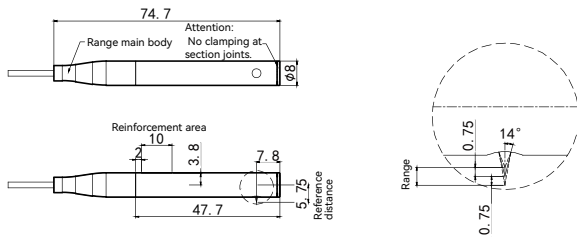


**TS-C50000**

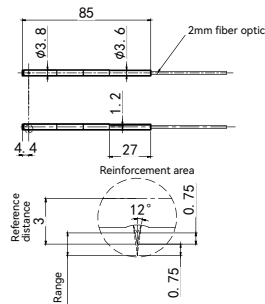


## Dimension Figure

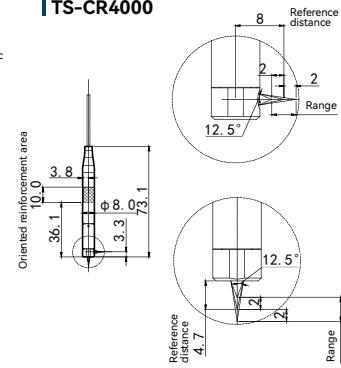
TS-CR1500



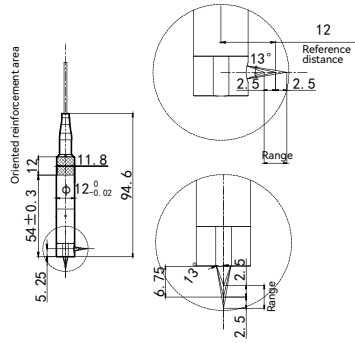
TS-CR1500N



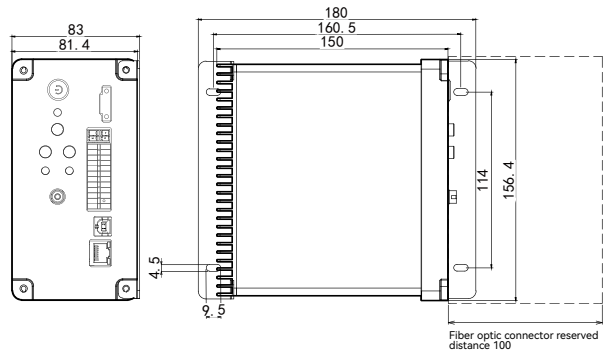
TS-CR4000



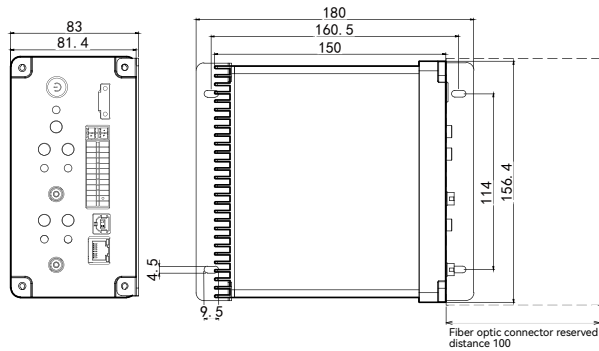
TS-CR5000



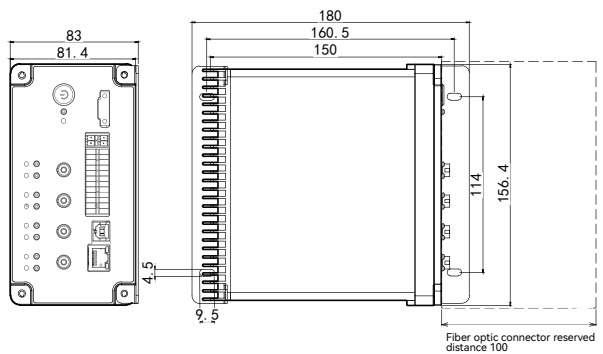
TS-CCS(With Footpad)



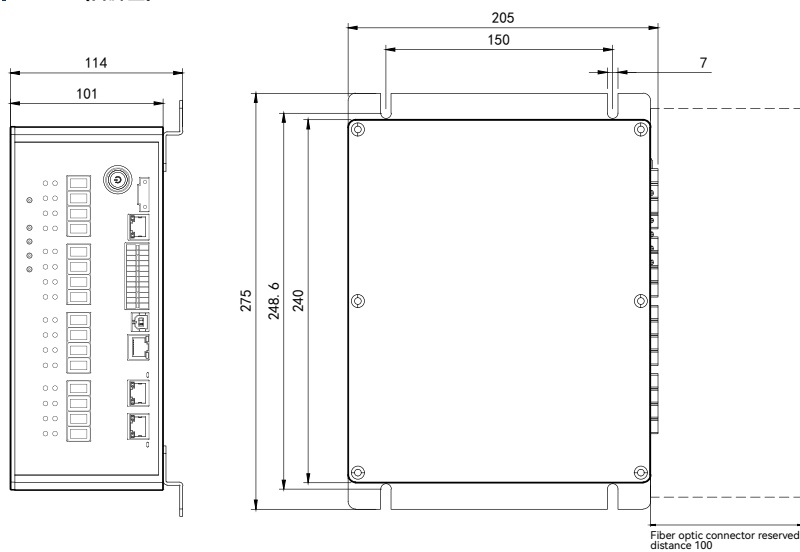
TS-CCD(With Footpad)



TS-CCF(With Footpad)

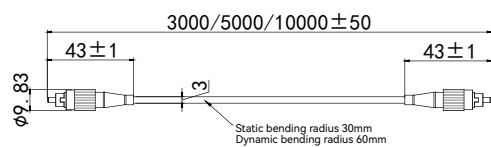


TS-CCH(含脚垫)

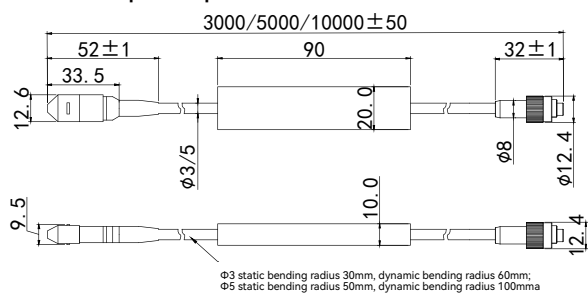


## Component Drawings

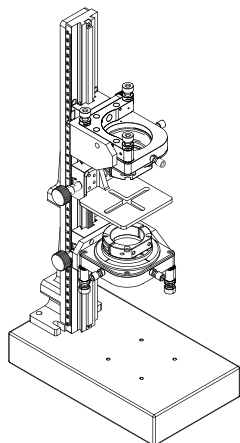
### FC Fiber Optic Jumper



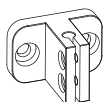
### MPO Fiber Optic Jumper



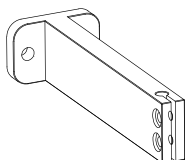
### Vertical Jig and Fixture



### Clamp Piece



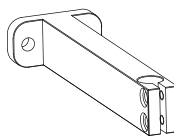
D3.8L15



D3.8L80



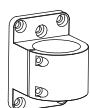
D8L15



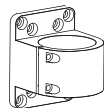
D8L80



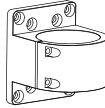
D20



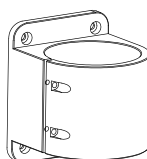
D30



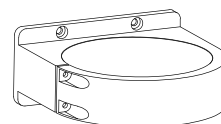
D36



D40



D60



D94



## | TS-I Series | Interferometric Thickness Sensors

**1**  
nm

Ultra-high  
Repeatability

**$\pm 20$**   
nm

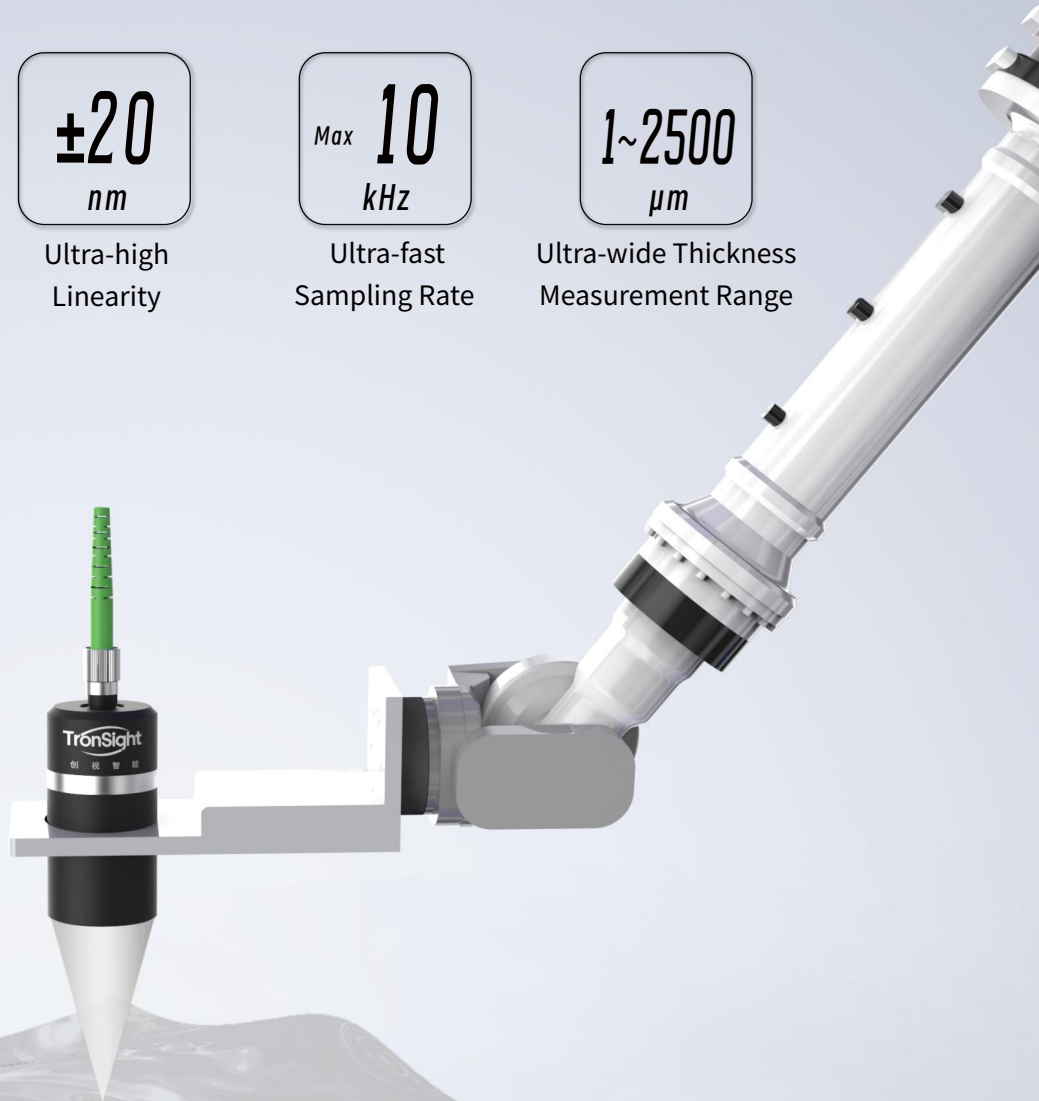
Ultra-high  
Linearity

Max **10**  
kHz

Ultra-fast  
Sampling Rate

**1~2500**  
 $\mu\text{m}$

Ultra-wide Thickness  
Measurement Range



### ◆ Why choose TronSight?



Minimal Measurement  
Dead Zone



High Interference  
Immunity



Nanometer-level  
Measurement Accuracy



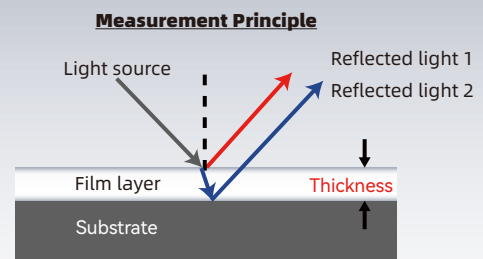
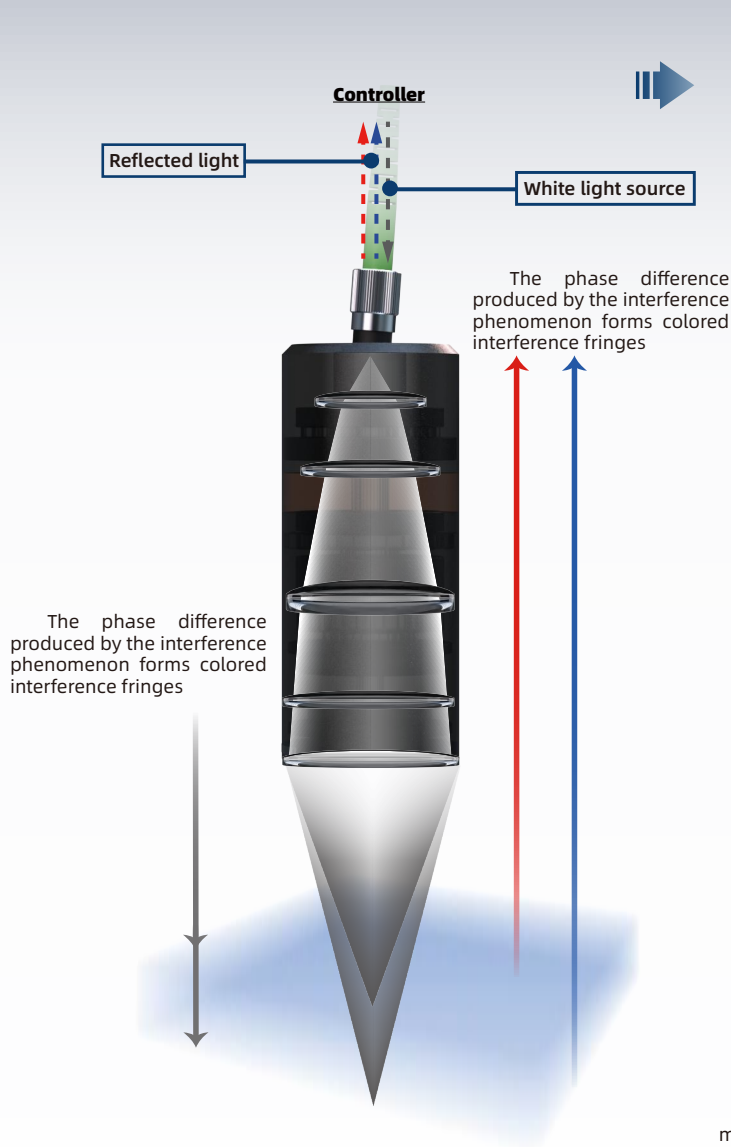
Non-contact  
Measurement



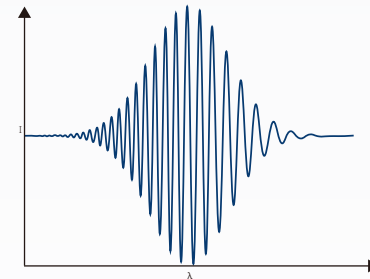
Film And Coating  
Thickness Measurement



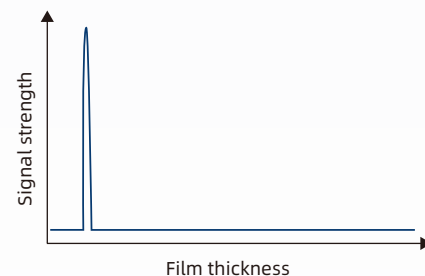
Wide Range  
Working Distance



#### White Light Interference Receives Spectral Signals



#### Interference Signal Analysis And Thickness Mapping

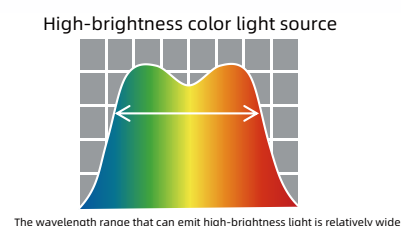
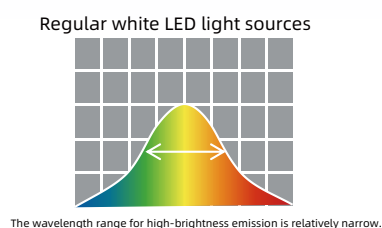


### Basic Principle

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.

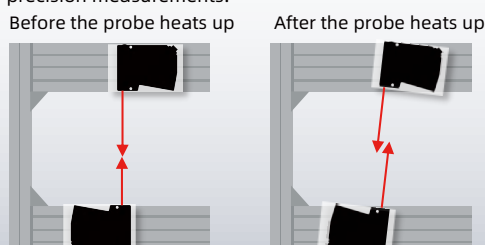
### High-brightness color laser light source

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.

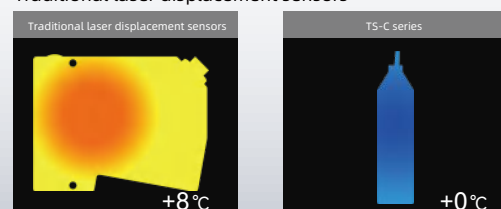


### Zero heat-generating probe design

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.



#### Traditional laser displacement sensors

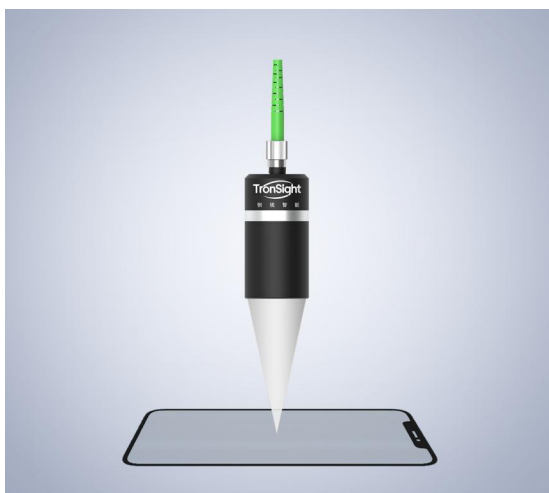




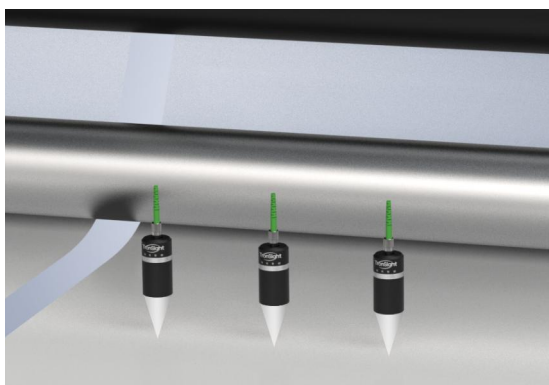
## Product Specifications

| Reference distance (mm) | T50                    | T10-UV-VIS                               |
|-------------------------|------------------------|------------------------------------------|
| 125                     |                        |                                          |
| 100                     |                        |                                          |
| 75                      |                        |                                          |
| 50                      |                        |                                          |
| 25                      |                        |                                          |
| 0                       |                        |                                          |
|                         | Range $\pm 2\text{mm}$ | Recommended installation distance 5-10mm |
| Measure angle           | $\pm 3^\circ$          | $\pm 10^\circ$                           |
| Repeatability           | 1nm                    | 1nm                                      |
| Linear error            | $< \pm 20\text{nm}$    | $< \pm 20\text{nm}$                      |

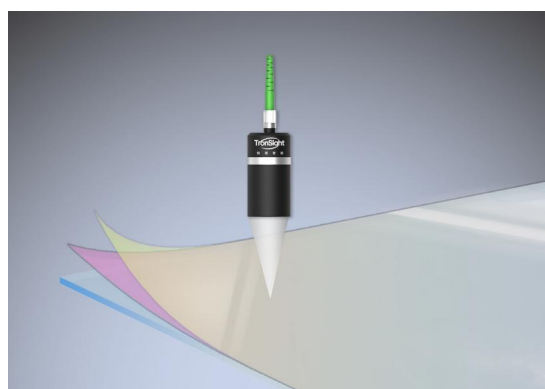
## Application



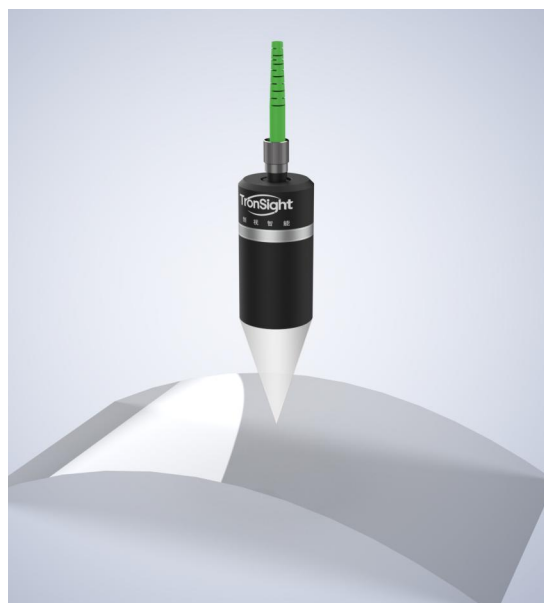
◆ Thickness Measurement of ITO Film for Touch Screens



◆ 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                          | IVS-100                                              | IVS-100W                                                                              | IVS-50                                              | IVS-50W                                                                               |
|---------------------------------|------------------------------------------------------|---------------------------------------------------------------------------------------|-----------------------------------------------------|---------------------------------------------------------------------------------------|
| Controller Model                | IVCS-100                                             | IVCS-100W                                                                             | IVCS-50                                             | IVCS-50W                                                                              |
| Adapt Probe Model               | IVP-T50                                              | IVP-T10-UV-VIS                                                                        | IVP-T50                                             | IVP-T10-UV-VIS                                                                        |
| Reference Distance <sup>1</sup> | 50mm                                                 | Non-focused probe                                                                     | 50mm                                                | Non-focused probe                                                                     |
| Recommended Measurement Range   | ±2mm                                                 | The recommended installation distance is 5-10mm                                       | ±2mm                                                | The recommended installation distance is 5-10mm                                       |
| Measurement Angle <sup>2</sup>  | ±3°                                                  | ±10°                                                                                  | ±3°                                                 | ±10°                                                                                  |
| Spot Type <sup>3</sup>          | Focus light dots, Φ100μm                             | Dispersive spot, spot diameter of about 4mm at a mounting distance of 10mm            | Focus light dots, Φ100μm                            | Dispersive spot, spot diameter of about 4mm at a mounting distance of 10mm            |
| Static Noise <sup>4</sup>       | 1nm                                                  | 1nm                                                                                   | 1nm                                                 | 1nm                                                                                   |
| Linear Error <sup>5</sup>       | <±20nm                                               | <±20nm                                                                                | <±20nm                                              | <±20nm                                                                                |
| External Diameter*Length        | Φ30*58mm                                             | Φ6.35*65mm                                                                            | Φ30*58mm                                            | Φ6.35*65mm                                                                            |
| Probe Weight                    | 90g                                                  | \                                                                                     | 90g                                                 | \                                                                                     |
| Degree of Protection            | IP40                                                 | \                                                                                     | IP40                                                | \                                                                                     |
| Sensor Head Connection Capacity | 1                                                    | 1                                                                                     | 1                                                   | 1                                                                                     |
| Sampling Frequency              | Max.10 kHz                                           |                                                                                       |                                                     |                                                                                       |
| Scope Of Thickness Measurement  | About 2 μm~100 μm (when the refractive index is 1.5) |                                                                                       | About 1 μm~50 μm (when the refractive index is 1.5) |                                                                                       |
| Input Port                      | Encoder Input                                        | The AB / ABZ encoder input, which can be configured for triggering                    |                                                     | The AB / ABZ encoder input, which can be configured for triggering                    |
|                                 | Trigger Signal Input                                 | Pulse / level trigger                                                                 |                                                     | Pulse / level trigger                                                                 |
| Output Port                     | Digital Signal Output                                | Alert output, comparator output                                                       |                                                     | Alert output, comparator output                                                       |
|                                 | Analog Signal Output                                 | Linear ± 10 V analog voltage output / 4-20 mA analog current output (optional module) |                                                     | Linear ± 10 V analog voltage output / 4-20 mA analog current output (optional module) |
| Industrial Interface            | Ethernet Interface                                   | 100BASE-TX                                                                            |                                                     | 100BASE-TX                                                                            |
|                                 | Usb Joggle                                           | Meet the USB2.0 Full-speed criteria                                                   |                                                     | Meet the USB2.0 Full-speed criteria                                                   |
|                                 | The RS485 Interface                                  | Modbus Protocol, 19200 to 115200 baud rates                                           |                                                     | Modbus Protocol, 19200 to 115200 baud rates                                           |
| Tt&c Software                   | Upcomputer Software                                  | TSConfocalStudio Measurement and control software                                     |                                                     | TSConfocalStudio Measurement and control software                                     |
|                                 | Secondary Development Package                        | C++ and C# software development package                                               |                                                     | C + + and C # software development package                                            |
| Rated Power                     | Supply Voltage                                       | 24 VDC±10%                                                                            |                                                     | 24 VDC±10%                                                                            |
|                                 | Current Consumption                                  | About 0.4 A                                                                           |                                                     | About 0.4 A                                                                           |
| Environmental Resistance        | Working Temperature                                  | From 0 to + 50°C                                                                      |                                                     | From 0 to + 50°C                                                                      |
|                                 | Relative Humidity                                    | 20 to 85% RH (no condensation)                                                        |                                                     | 20 to 85% RH (no condensation)                                                        |
| Controller Weight               | About 2,000g                                         |                                                                                       | About 2,000g                                        |                                                                                       |

\*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;

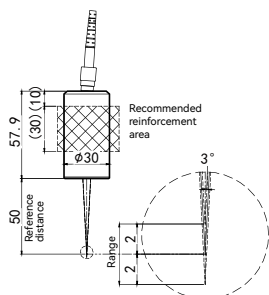
\*3 Measure sharp glass edges using a sub-micron positioning accuracy motion platform with a laser interferometer as the displacement reference for verification;

\*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;

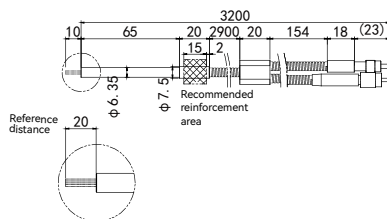
\*5 Theoretical value

## Dimension Figure

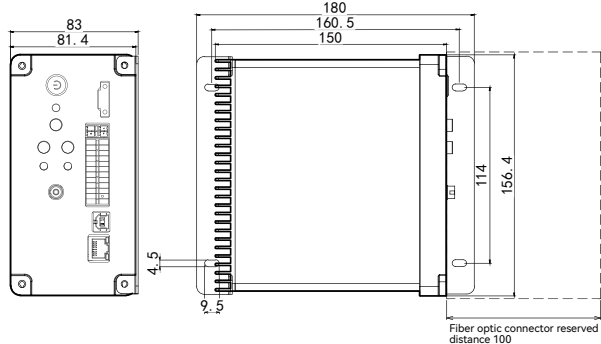
### IVP-T50



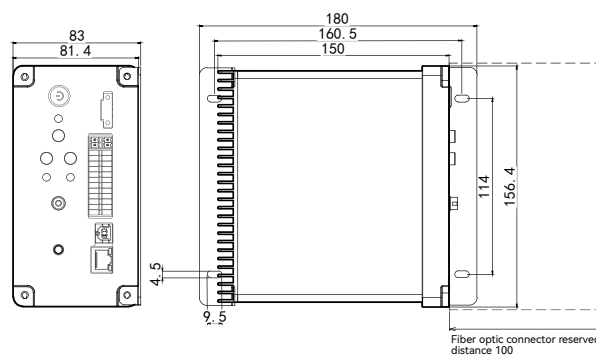
### IVP-T10-UV-VIS



### TS-IVS50/TS-IVS100(With Footpad)

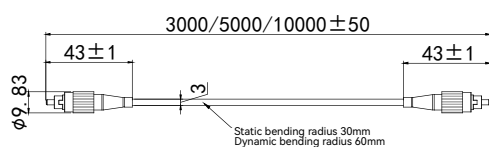


### TS-IVS100W(With Footpad)



## Component Drawings

### FC Fiber Optic Jumper





China's Leading Provider of High-End Photoelectric Displacement Sensors



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Suzhou, Jiangsu Province, China



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