

# One-key Measurement Sensor SmartFlash

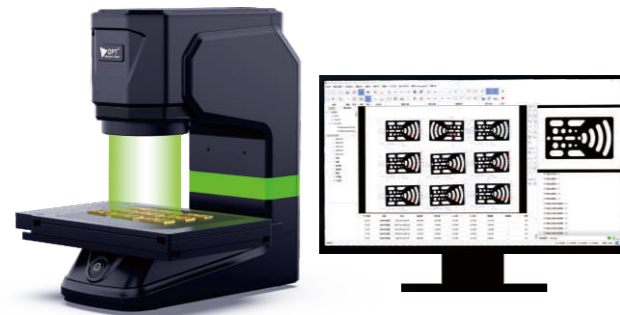
High precision | High efficiency | No need for programming



## Function introduction

Brand new

One-key Measurement Sensor SmartFlash  
SmartFlash 2020 / SmartFlash 3020



### Optimize measurement procedures, improve the test efficiency and develop new measurement standards of the industry

- ▣ No programming is required; intelligent programming can be realized by importing CAD drawings of products to facilitate operation;
- ▣ Large field of view + image mosaic for rapid measurement of large-sized products, with a measurement range of 315 x 190mm;
- ▣ The one-key measurement sensor software is compatible with a high-stability, high-precision optical image system for full-size measurement of products;
- ▣ High-efficiency and high-precision measurement and analysis on product contour;
- ▣ Special-purpose measurement modes for weight per linear meter, sectional area and wall thickness etc.

## Hardware

### ▣ Combination of two telecentric lenses

- ▣ Automatically adjust the light source to the optimal position with double telecentric lenses + automatic lifting type multi-angle diffusing ring light.
- ▣ Double telecentric lenses feature the extended depth of field and almost zero distortion, thus avoiding object and image perspective distortion and lighting attenuation and improving the measurement accuracy.



### ▣ Multi-angle + multi-channel ring light source combination

- ▣ A light source is crucial for the proper functioning and optimal performance of a one-key measurement sensor. With an appropriate light source, images of high resolution, contrast and uniformity can be obtained to ensure the accuracy and repeatability of measurement.

### ▣ Applicable to measurement of products within a certain range of height

With its compatibility with a four-axis motion control system, this product boasts superior applicability for testing purposes. A light source is crucial for a one-key measurement sensor. The combination of the multi-angle + multi-channel light source provides a more intuitive reflection of surface characteristics, delivering high resolution, high contrast and uniformly consistent images to ensure the accuracy and repeatability of measurement.



### ▣ High-precision motion platform

- ▣ Use the 0.1μm high-precision grating ruler on the moving axis for full closed-loop control, to ensure the positioning accuracy and increase the running speed.

## Hardware

- ▣ The multi-angle + multi-channel ring light source combination of this product reflects surface characteristics more intuitively, delivering clearer images.



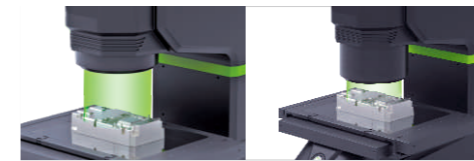
When kept far away from a workpiece, the light source provides large-scale and uniform illumination. It can be lifted for higher contrast.



Illuminating the peripheral contour laterally with a low-angle light source produces high-contrast images.

### ▣ Adjustable ring light source for optimal lighting and high-precision edge measurement

The lifting type multi-angle ring light source with multiple lighting units is adjustable to get clear contour images.

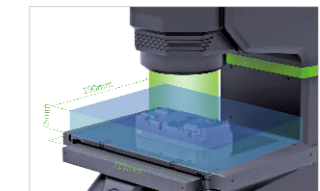


- ▣ The linear motor runs stably, so the measurement accuracy is not affected by the reciprocating platform and lead screw. This is conducive to image stitching and high-precision dimensional measurement due to no error accumulation, no reverse clearance and low repetition accuracy.



### ▣ Range of measurement 315\*190 mm

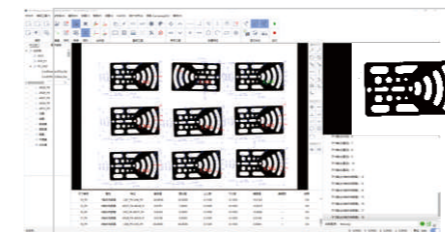
High-speed and high-precision mobile platform is used and together with software image stitching, can realize measurement of 315\*190 view field rapidly.



## Software

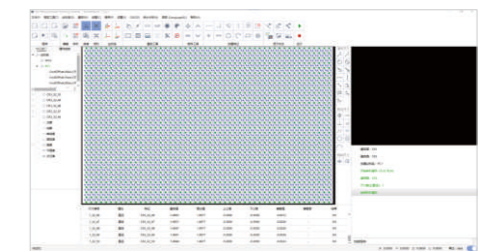
### ▣ Concise and straightforward software interface, easy measurement operations

In the learning mode, measurement program can be generated automatically by operating related measurement tools, in a convenient and easy-to-use way.



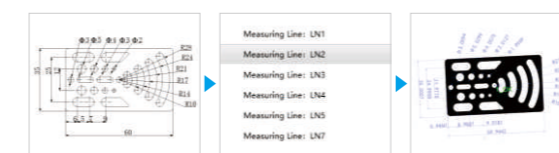
### ▣ Efficient parallel measurement

Fast parallel measurement: measurement and output of 1600 parts within 7s.



### ▣ CAD drawing import and automatic programming

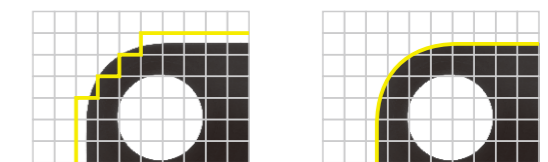
Support CAD drawing import and realize automatic offline programming in a rapid manner.



Import of CAD drawing file    Program conversion    Measurement and report output

### ▣ Sub-pixel computing for extraction of edge features

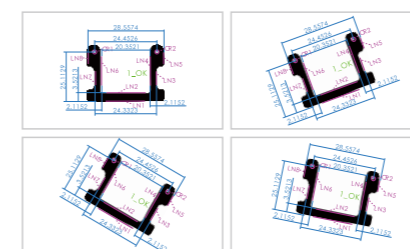
Sub-pixel computing is done for extraction of edge features. Divide one pixel into data less than 0.01 pixel for computing, to realize high-precision measurement.



Sub-pixel not used for computing    Sub-pixel used for computing

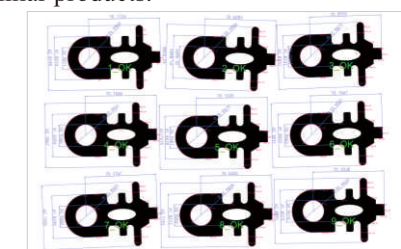
### ▣ One-key measurement can be realized wherever the product is located.

Quickly measure any workpieces within the field of view due to automatic template matching, without the need for fixture.



### ▣ Simultaneous measurement of multiple products

Software positioning recognition; it may measure over 100 products and more than 300 parts at the same time. Individual programming measurement is unnecessary for similar products.



Software

Automatic recognition of edge burrs

It may recognize burr or defect at the point of detection automatically and skip, to assure stability and high precision of the results of measurement.



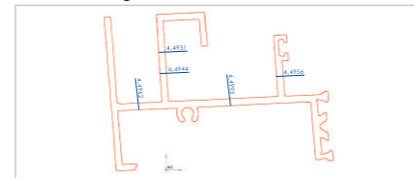
Imaging of general-purpose lens



Imaging of OPT double telecentric lens

Special measurement function

Software has a special function of measuring the wall thickness, surface area and weight per linear meter etc., to facilitate operation.

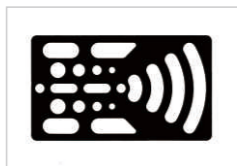


Parts of segment different within the measurement range for the depth of field, no influence on size

Together with telecentric lens, camera imaging will not increase the error change and even though there is segment different at the point of detection, it may mitigate the influence of surface segment difference on measurement.



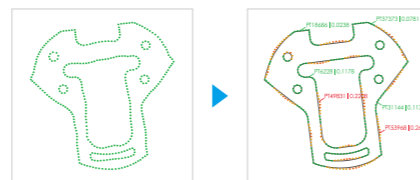
Imaging of general-purpose lens



Imaging of OPT double telecentric lens

Contour comparison

Extract the product image contour and compare it with standard contour on CAD drawing, and calculate the contour difference rapidly.



Applications

Machinery, electronics, mold, injection molding, hardware, rubber, LV electrical appliances, magnetic materials, precision hardware, precision stamping, connector, coupler, terminal, mobile phone, home appliances, printed circuit board (circuit board and PCB), automobile, medical apparatus and instruments, clock & watch, instruments and apparatus etc.



Non-professional detection personnel can operate.

The operation is convenient and non-professional detection personnel can also learn how to operate it rapidly, so as to minimize the difference arising from different operators and improve the equipment activation by reducing the burden of quality department.

Reduce time of product detection

Improve production capacity and lower down manufacturing cost by reducing time of product detection.

Small imaging distortion within the field of view

The matched lens is of small distortion. Edge distortion of product imaging is very small. Influence of position on results of measurement is very little.

Automatic saving of measurement report

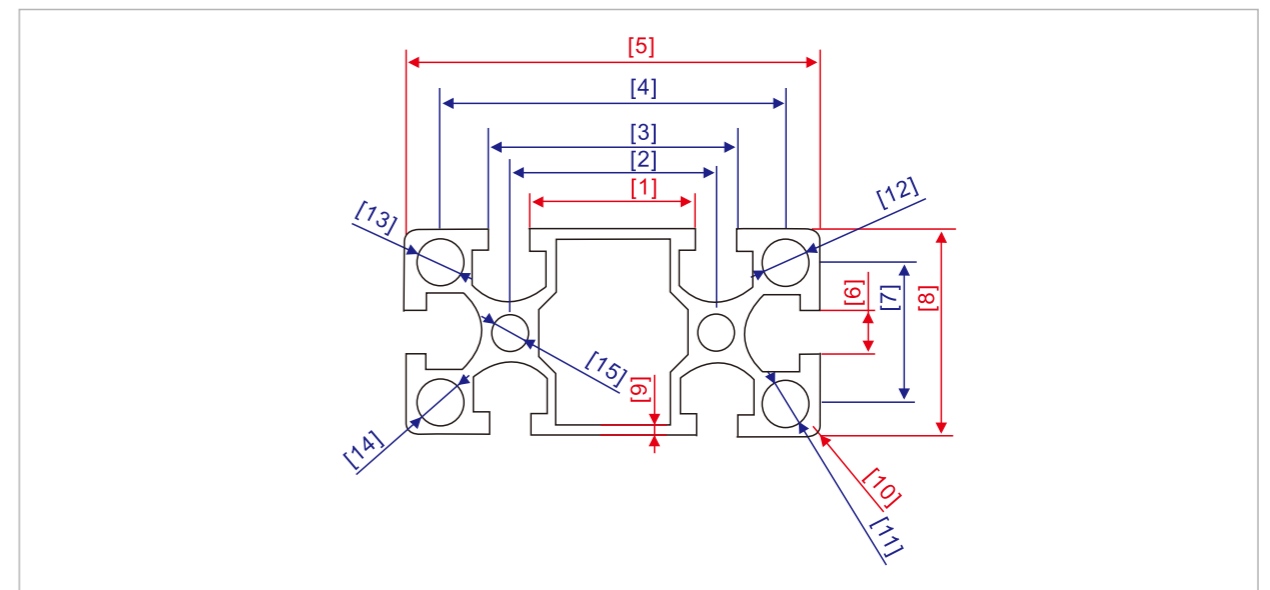
Data about the measurement results will be saved to the designated location automatically and it can be saved in pdf, xlsx, txt and a multiple of formats.



Dimensional Measurement Report

Date:2023/2/15 17:07:57

Company name:	OPT	Product name:	P1
Equipment no.:	BH00530	Program no.:	Prog01
Operator:	QA		



Measurement Results:

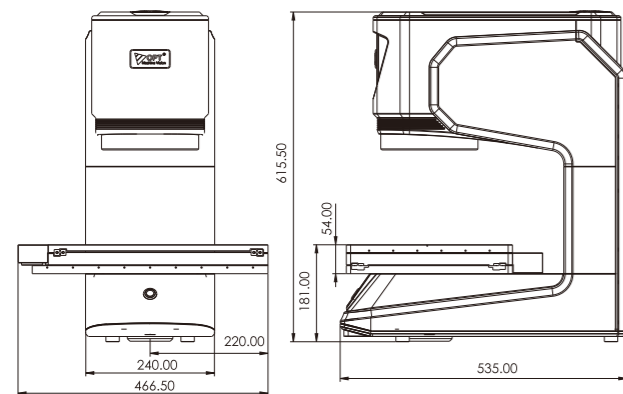
Dimension number	Measured value	Theoretical value	Upper tolerance	Lower tolerance	Deviation value	Result
1	31.5110	31.7000	0.1500	-0.1500		NG
2	40.0442	40.0000	0.1500	-0.1500		OK
3	48.3722	48.3000	0.1500	-0.1500		OK
4	66.9522	67.0000	0.1500	-0.1500		OK
5	79.7657	80.0000	0.1500	-0.1500		NG
6	8.6750	8.3000	0.1000	-0.1000		NG
7	27.0206	27.0000	0.1500	-0.1000		OK
8	39.6985	40.0000	0.0500	-0.1500		NG
9	1.6621	2.2000	0.0500	-0.0500		NG
10	0.0000	1.5000	0.0500	-0.0500		NG
11	9.3309	9.4000	0.1000	-0.1000		OK
12	9.3474	9.4000	0.1000	-0.1000		OK
13	9.3746	9.4000	0.1000	-0.1000		OK
14	9.3386	9.4000	0.1000	-0.1000		OK

**List of Parameters**

Product name		One-key Measurement Sensor SmartFlash		
Software		2D Measurement System-SmartFlash		
Specification and model		SmartFlash 3020	SmartFlash 2020	
Measurement range	Wide-field mode	315x190 mm	215x190 mm	
	High-precision mode	265x160 mm	165x160 mm	
Image system	Wide-field mode	20 million pixels		
	High-precision mode	12 million pixels		
Optical lens	Wide-field mode	82x55 mm		
	High-precision mode	32x24 mm		
Illuminating system	Rim light	Telecentric parallel light source		
	Surface light	Multi-channel multi-angle diffusing ring light (optional, green)		
Working distance		145 mm		
Max load of workbench		3 KG		
Z1-axis motion range		75 mm		
Z2-axis motion range		40 mm		
Moving range of axis X/Y		235x135 mm	135x135 mm	
Repeated precision	Not moving	Wide field	± 1.5 μm	± 1.5 μm
		High precision	± 1 μm	± 1 μm
	Moving	Wide field	± 3 μm	± 3 μm
		High precision	± 2 μm	± 2 μm
Measurement precision	Spliced	Wide field	± 3 μm	± 3 μm
		High precision	± 2 μm	± 2 μm
	Not spliced	Wide field	±(5+0.02L)μm	±(5+0.02L)μm
		High precision	±(3+0.02L)μm	±(3+0.02L)μm
Machine dimension(mm)		467(W)x535(L)x616(H)	367(W)x535(L)x615(H)	
Machine weight		46KG	42KG	
Working power supply		AC220V50-60HZ (note: earth wire provided)		
Operating environment		Temperature 20±2°C, humidity 20%-70%RH, away from vibration source		

**Schematic Diagram of Product Size (mm)**

1.SmartFlash3020



2.SmartFlash2020

