Mitutoyo

LENS INDUSTRY MEASUREMENTS

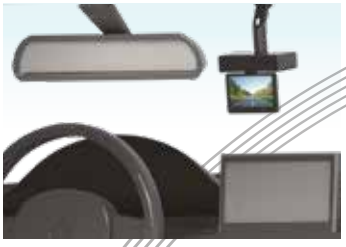
INTRODUCTION TO PRECISION MEASURING INSTRUMENT SOLUTIONS

GENERAL

PRE1567

Solutions for Lens Industry Measurements

Mitutoyo offers solutions for measuring a wide variety of lenses, from research and development, to pre- and mass production.



In-vehicle Camera

Security Camera

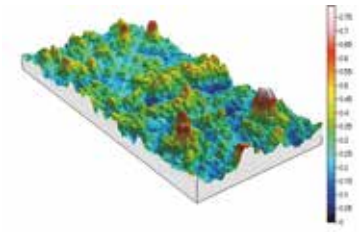
Smart Phone Camera

Drone Camera

Action Camera

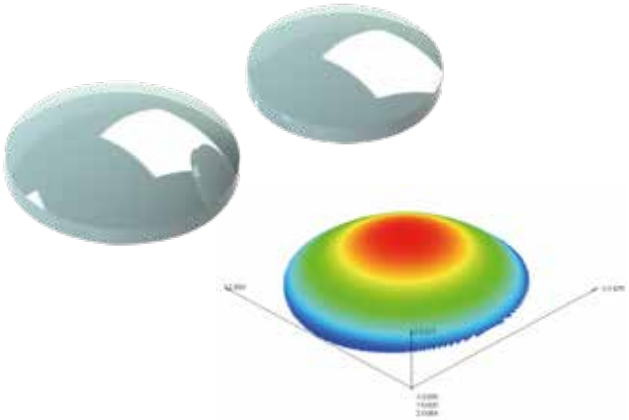
Mitutoyo Precision Measurement Instruments That

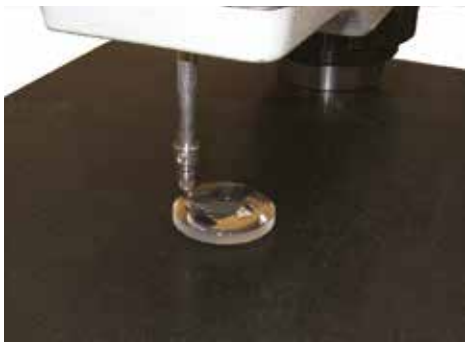
Aspheric Lens



Non-contact 3D Measuring System: HQV-WLI

Allows non-contact 3D & 2D surface roughness evaluation of a lens surface. Additionally, being provided with the functions of a vision measuring machine, geometrical tolerance evaluations such as diameter and flatness can be made.
(Dual-role system)





High-accuracy Digital Length Measuring Machine: VL-50

Allows desktop measurement of a lens' thickness. This machine enables measurement of an easily-deformed, thin-walled lens with a low measuring force of 0.01 N (minimum).

Surface Roughness and Contour Measuring System: CS-H5000CNC

Allows nano-level PV value evaluation of an aspheric lens' contour. This instrument can also evaluate in 3D.
Additionally, since lens alignment is performed mechanically instead of correction by software, this allows correct alignment measurement on the lens' optical axis. The installed dimensional analysis function can also measure the values of distance, angle, and step.

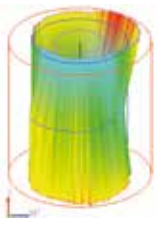
Support Development and Production of Lenses

Lens Mold (Cavity)

Ultra-high Accuracy CNC CMM: LEGEX

The accuracy of a mold cavity will affect the deviation from the optical axis on both sides of a lens. Therefore, a mold cavity needs high machining accuracy.
This CMM can evaluate coordinates, positional deviation, diameter, circularity, etc., with an accuracy of 0.28 µm.

Lens Mold (Core)



CNC Roundness/Cylindricity Measuring System: RA-H5200

The coaxiality of a mold core will affect the deviation from the optical axis on both sides of a lens. Therefore, this mold needs a high machining accuracy. This system can evaluate circularity, cylindricity, and coaxiality with a rotational accuracy of 20 nm.

Lens Barrel

Minute Form Measuring System: UMAP

This measuring system is a contact type using a high aspect-ratio minute probe stylus (e.g.: ø70 µm, 5 mm) that enables high-accuracy evaluation of the diameter, circularity, and coaxiality of a lens barrel. An ultra-low measuring force (1 µN minimum) eliminates the concern about possible workpiece deformation and allows measurement without the use of fixtures.

Electrode

Ultra-high Accuracy Vision Measuring System: ULTRA QV

The electrode used in the electrical discharge machining process of a lens molding die needs high machining accuracy with respect to its position and form. This measuring system can evaluate the coordinates and form of a lens electrode with an accuracy of 0.25 µm.

CMM with External Setup System: STRATO-Apex

The use of this CMM allows external setup for measurement of alignment error between an electrical discharge machining electrode for forming a plastic lens mold and a workpiece, thereby improving productivity thanks to an increase in machine operating time.
And when combined with a robot or stocker, an automated system can be easily established.

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Precision Measurement Instruments That Support Development and Production of New Lenses

The following introduces Mitutoyo's precision measurement instruments suitable for various applications.

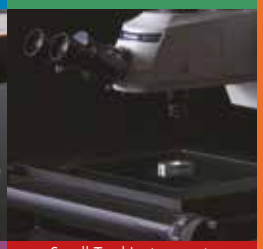
Workpiece / Measuring machine	Aspheric lens	Lens barrel	Lens mold (cavity)	Lens mold (core)	Electrode (for electrical discharge machining)
Surface Roughness and Contour Measuring System **CS-H5000CNC**	✓ Aspheric contour ✓ SAG ✓ Fit distance ✓ Fit angle			✓ Aspheric contour ✓ SAG ✓ Fit distance ✓ Fit angle	
Micro Form Measuring System **UMAP**	✓ Optical axis eccentricity	✓ Diameter ✓ Concentricity ✓ Parallelism			
CNC Vision Measuring System **QUICK VISION**	✓ Diameter				✓ External setup
Non-contact 3D Measuring System **HQV-WLI**	✓ 3D surface roughness	✓ 3D surface roughness		✓ 3D surface roughness	
High-accuracy Digital Measuring Machine **VL-50**	✓ Thickness				
Vision Measuring Machine with Micro-Form Scanning Probe **MiSCAN Vision System**		✓ Diameter ✓ Circularity ✓ Coaxiality ✓ Parallelism		✓ Optical axis inclination	
Ultra-high Accuracy CNC CMM **LEGEX**			✓ Coordinates ✓ True position ✓ Diameter ✓ Circularity ✓ Cylindricity	✓ Diameter ✓ Circularity ✓ Cylindricity ✓ Coaxiality	
CNC Roundness/Cylindricity Measuring System **RA-H5200CNC**			✓ Circularity ✓ Squareness ✓ Coaxiality ✓ Cylindricity	✓ Circularity ✓ Cylindricity ✓ Coaxiality	
Ultra-high Accuracy CNC Vision Measuring System **ULTRA QV**					✓ Coordinates ✓ True profile
CMM with External Setup System **STRATO-Apex**					✓ External setup
Outside diameter **Laser Scan Micrometer**				✓ Diameter	
Post-wound Form Tester **MDH-25M**				✓ Diameter	

Coordinate Measuring Machines

Vision Measuring Systems

Form Measurement

Optical Measuring



Sensor Systems

Test Equipment and Seismometers

Digital Scale and DRO Systems

Small Tool Instruments and Data Management

Whatever your challenges are, Mitutoyo supports you from start to finish.

Mitutoyo is not only a manufacturer of top-quality measuring products but one that also offers qualified support for the lifetime of the equipment backed up by comprehensive services, ensuring your staff can make the very best use of the investment.

Apart from the basics of calibration and repair, Mitutoyo offers product and metrology training, as well as IT support for the sophisticated software used in modern measuring technology. We can also design, build, test, and deliver bespoke measuring solutions and even, if deemed cost-effective, take your critical measurement challenges in-house on a sub-contract basis.

Find additional product literature and our complete catalog here.

www.mitutoyo.eu

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