

KEYENCE

NEW Image Dimension Measurement System

IM-6225 Series

Wide-field/Programmable ring-illumination model



INSTANT MEASUREMENT

DIMENSIONAL MEASUREMENT IN A NEW LIGHT

IMseries



REWRITING THE BOOK ON DIMENSIONAL MEASUREMENTS

Image Dimension Measurement System

IMseries



Optical comparator



Measuring microscope



Optical CMM



Hand caliper/
micrometer



GD&T and profile
measurement system

NEW

Programmable ring-illumination unit •



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COMMON PROBLEMS WITH DIMENSIONAL MEASUREMENTS

SLOW

Measurements take a long time

- ▮ Fiddling with jigs for part placement and datum setup is time consuming
- ▮ Parts requiring custom jigs introduce additional time and component costs
- ▮ An increase in measurements and parts can mean an exponential increase in required time

INCONSISTENT

Varying measurement results depending on the operator

- ▮ Changes in focus due to setup by different operators results in inconsistent measurements
- ▮ Variation in lighting setup between stations affect the measurement
- ▮ Measurements rely heavily on operator judgement and experience

COMPLICATED

Limited number of people can operate the device

- ▮ Learning how to operate the measuring instrument takes time
- ▮ Features requiring virtual lines or points add a layer of complexity
- ▮ Operator error easily occurs in the measurements of items such as rounded parts and curved surfaces

RESTRICTED

Complicated data management

- ▮ Requires a PC or other device to perform separate management of measurement results
- ▮ May not readily provide data formats such as process capability and trend graphs
- ▮ Can be tedious when attempting to compile inspection documentation

WITH THE IM SERIES



FAST

Measurements performed in seconds

- Automatic recognition of position and origin
- Perform hundreds of measurements with a single press
- Easily perform over 100 measurements simultaneously

CONSISTENT

Uniform measurement results regardless of the operator

- Automated focus adjustment every time
- Automated lighting settings every time
- Automated routine applied every time

EASY

Intuitive interface that anyone can use

- Easily set up measurements with just a few clicks
- Virtual elements such as center lines are automatically extracted
- Dedicated tools make it easy to inspect any shape

FLEXIBLE

Easy data management

- Measurement results are automatically recorded
- Get immediate feedback on trends and variations
- Complete inspection reports in seconds



STEP 1

Place
a target



STEP 2

Press
the button

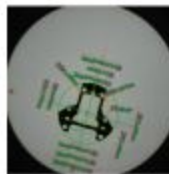
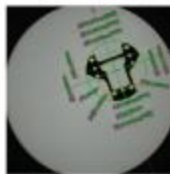


DRASTICALLY REDUCED MEASUREMENT TIME

MEASUREMENTS PERFORMED IN SECONDS

Automatic recognition of position and orientation

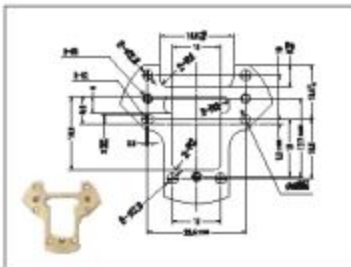
The location and orientation of the target placed on the measurement stage are automatically detected. By finding the part and comparing against the recorded shape, it is possible to perform accurate measurements without the need for precise positioning of the part.



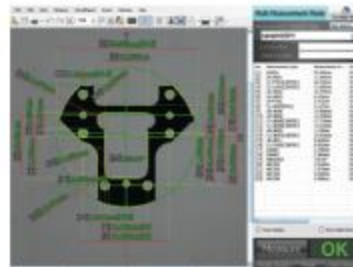
TARGETS CAN BE MEASURED
NO MATTER WHERE THEY ARE PLACED
WITHIN THE FIELD OF VIEW

Measurement of up to 99 points with a single button press

Hundreds of measurements can be easily performed on a part with just one press of the button. Even if the number of measurement points is increased, the measurement time remains the same.



Multiple measurement points specified with a diagram



Hundreds of measurements with a single button press

Easily perform over 100 measurements simultaneously

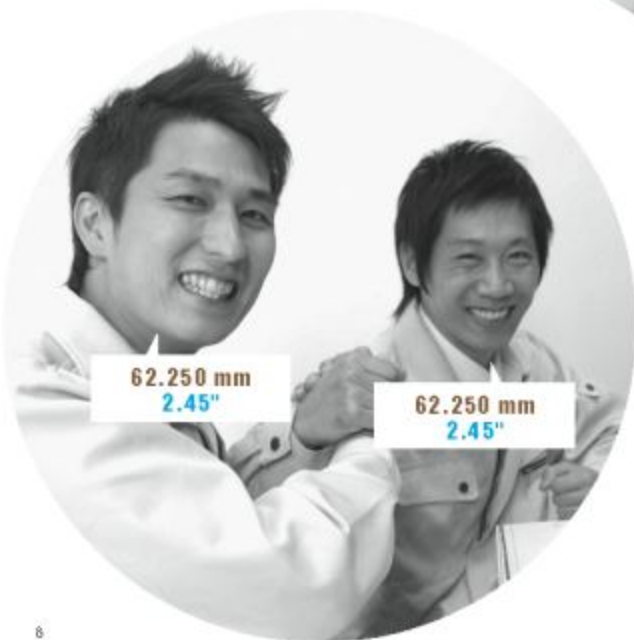
The dimensions of all targets on the stage are measured simultaneously. There is no need to measure each target individually.



Judgements can be made at a glance thanks to the OK/NG display.



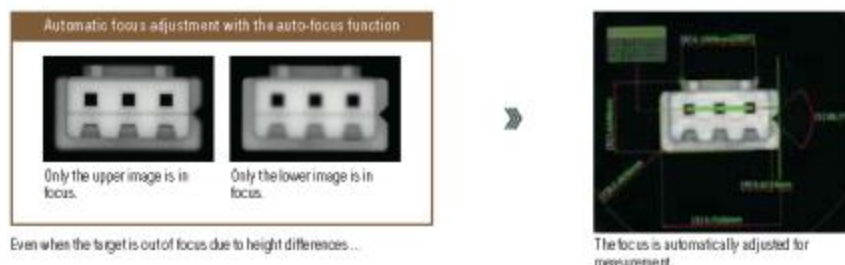
Measurement results can also be viewed just by clicking with a mouse.



UNIFORM MEASUREMENT RESULTS REGARDLESS OF THE OPERATOR

Automated focus adjustment

The IM Series is equipped with a specifically designed optical lens with a large depth of field. It is also equipped with an auto-focus function that automatically brings measurement points into focus. This is useful for targets with uneven surfaces for which all the measurement points cannot be brought into focus at the same time.



Automated lighting settings NEW

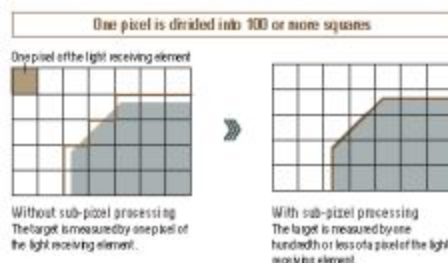
The IM Series automatically optimizes and saves the lighting conditions so anyone can easily take accurate, consistent measurements.



Automatic edge detection

Sub-pixel processing

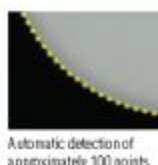
By splitting each pixel into 100 or more sub-pixels, the IM Series is able to provide a wide field-of-view while maintaining its high-precision measurement capability.



Shape processing

Lines and circles are extracted using a least squares fitting of 100 or more points.

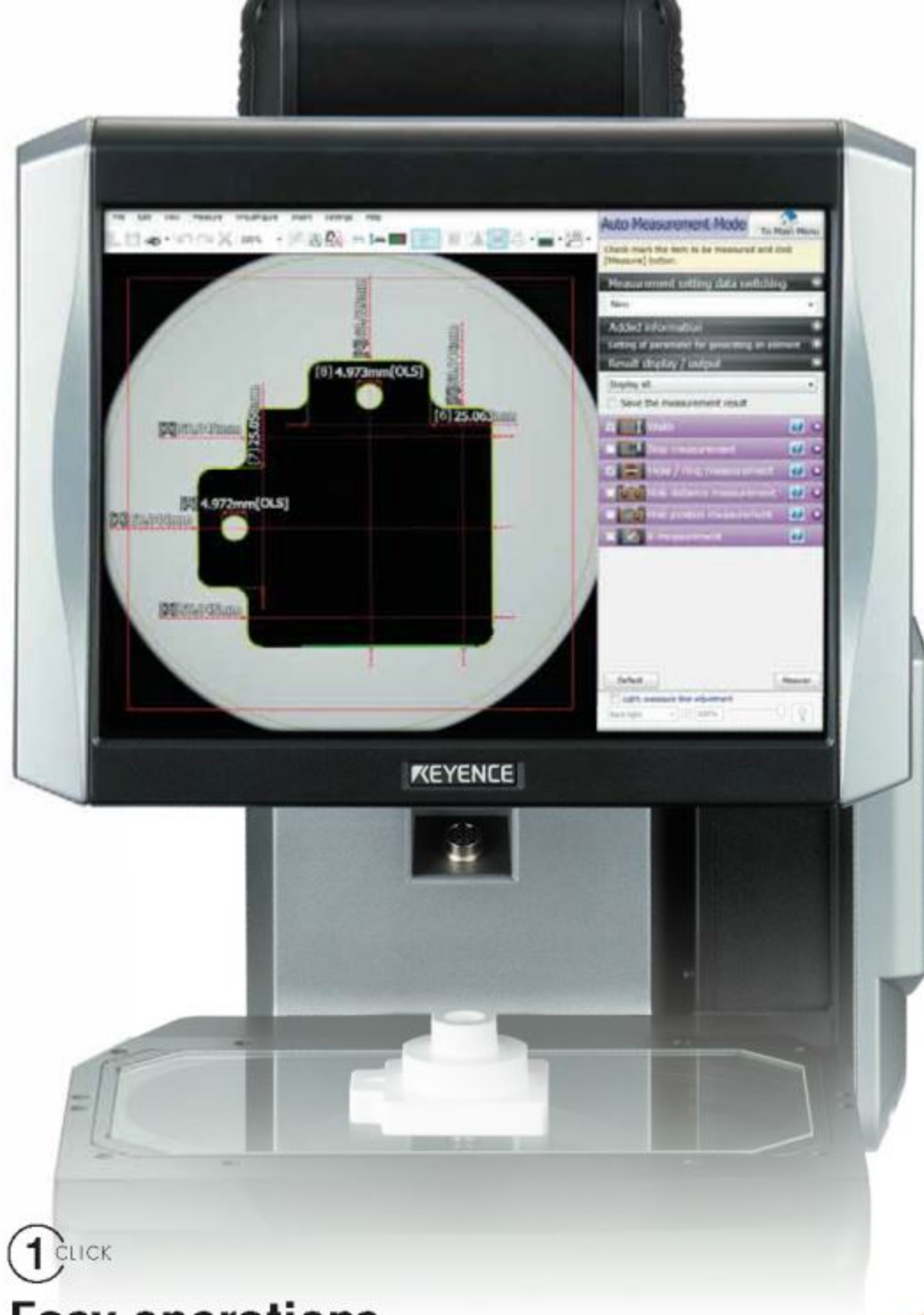
*There may be less than 100 points depending on the shape.



Automatic identification of burrs and chips

Burrs and chips found in the detection area are automatically recognized and excluded from the fitting processing as abnormal locations. It is also possible to set the system to interrupt measurement when burrs or chips are found.





① CLICK

Easy operations
performed with a mouse



CONFIGURING SETTINGS WITH THE CLICK OF A MOUSE

INTUITIVE INTERFACE THAT ANYONE CAN USE

Easily set up measurements with just a few clicks

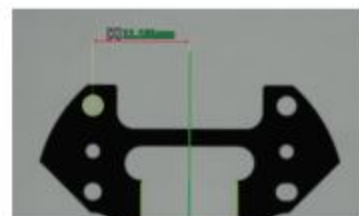
Just select the desired tool from the menu and use the mouse to define a general search region. The tool will then automatically find and snap to the edge.



Select the tool from the menu, and define the general feature location with a few clicks of the mouse.

Easily create virtual figures

Features such as center lines and virtual lines can also be created just with the click of a mouse. The IM Series will automatically find any necessary features and perform any calculations to ensure accurate feature placement every time.



Measurements using virtual center lines can also be set easily.

Automatic measurement function eliminates need for setup NEW

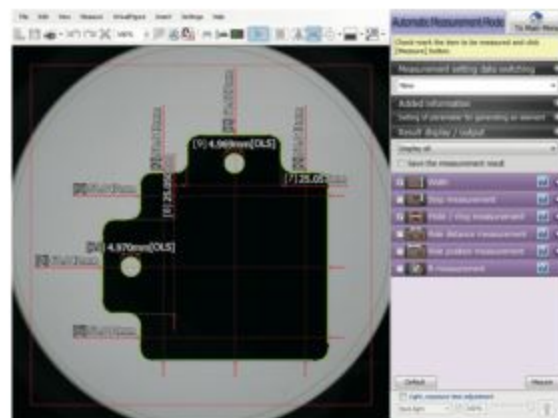
This function brings new meaning to Place and Press inspection. Simple dimensions can be measured without any prior setup by simply selecting the types of measurements expected. This makes it possible for even the most novice users to start taking fast, accurate measurements.



Just place the target on the stage ...



and select the measurement condition check boxes.



Measurements can be performed easily with just a mouse.

THIS SINGLE SYSTEM COVERS EVERYTHING FROM DATA MANAGEMENT TO ANALYSIS

FLEXIBLE DATA MANAGEMENT

Measurement results are automatically recorded

All measurement results and critical identifiers are automatically recorded to simplify data management. The IM Series then automatically calculates and displays critical statistical values such as average, σ , 3σ , 6σ , and Cpk.

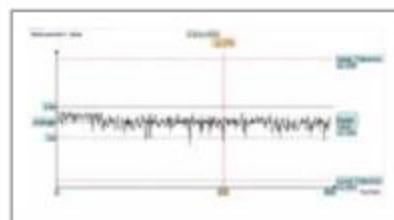


Item	Spec	Actual	Target	Avg	Stdev	3Sigma	6Sigma	Cpk
1	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00
2	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00
3	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00
4	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00
5	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00
6	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00
7	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00
8	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00
9	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00
10	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00

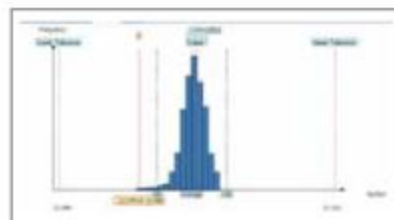
Critical statistical values required for inspection reports are provided by default.

Get immediate feedback on trends and variations

Built-in trend graph and histogram functions allow on site analysis of production trends and variations. Instant feedback lets you stay ahead of your process to prevent quality problems before they start.



The trend graph shows tendencies of a product at a quick glance.



Histogram settings can be adjusted as required.

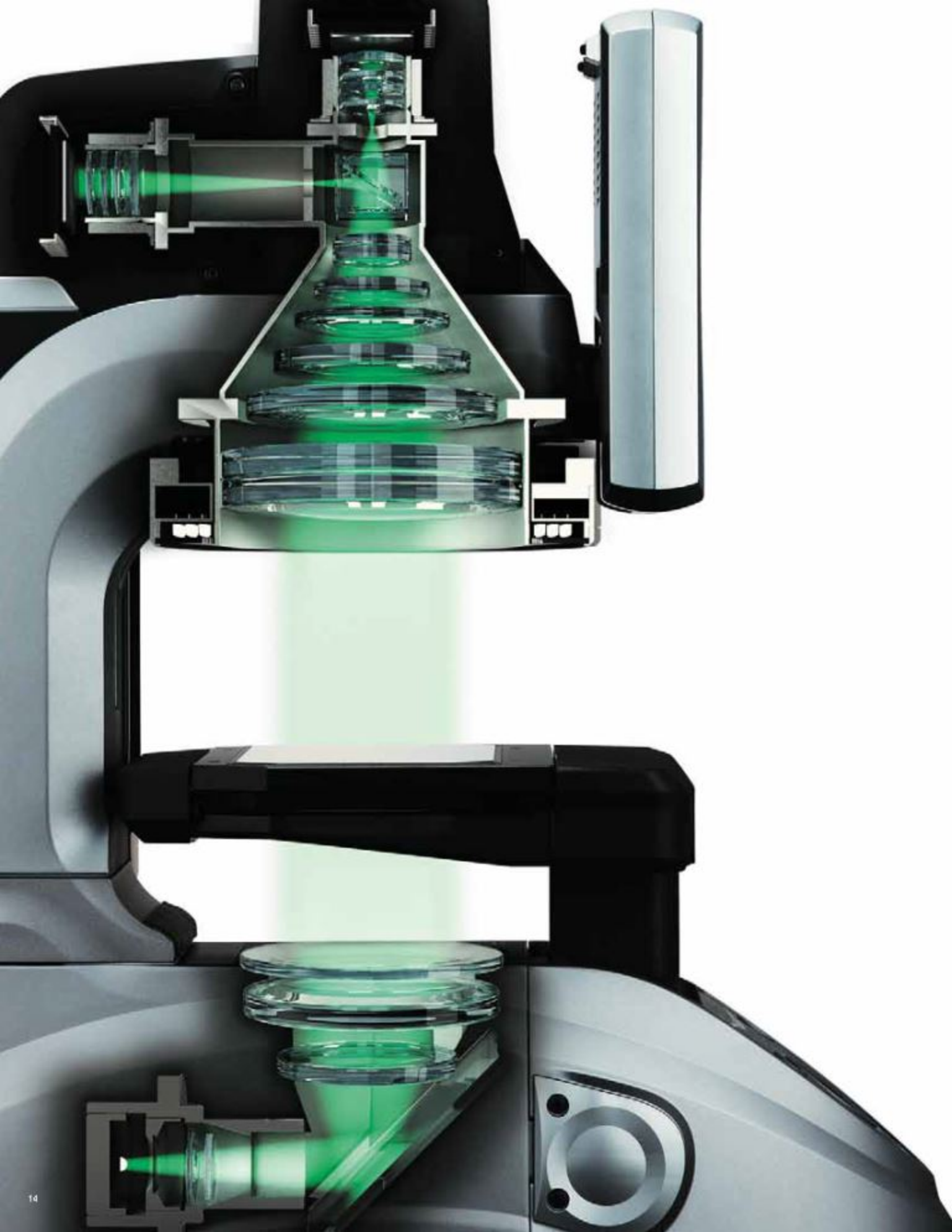
Complete inspection reports in seconds

Complete inspection and analysis reports can be generated at the click of a button. Print reports directly from the IM Series or easily export data in a convenient CSV format for additional processing.



Easy inspection recording and report preparation in one simple package.





PRECISE OPTICS

Clear focus regardless of height differences

The IM Series is equipped with a specially designed lens with a large depth of field to ensure accurate measurements despite height differences on the part.



Zoom lens

The image is out of focus due to height differences.



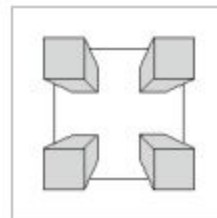
IMseries

The image is in focus regardless of height differences.



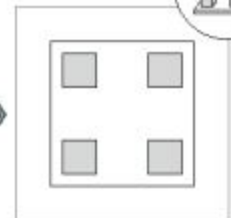
Apparent feature size not affected by height differences

The IM Series is equipped with a telecentric lens, which means that the image size is not affected by the height differences between different parts of the target. This enables accurate measurements of targets with uneven surfaces.



Zoom lens

Accurate measurements cannot be performed due to height differences between different parts of the target.



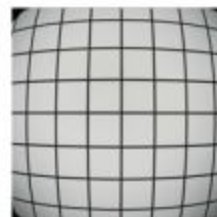
IMseries

Accurate measurements can be performed even for targets with uneven surfaces.



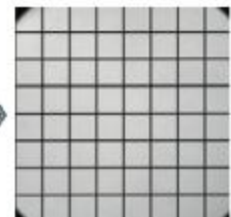
Less distortion throughout the entire field of view

The IM Series is equipped with a low distortion lens designed to not only minimize distortion near the center, but also at the outer reaches of the field of view. This allows parts to be measured accurately despite placement on the stage.



Zoom lens

The area along the outer edge is shown distorted.



IMseries

The image minimizes distortion throughout the field of view.



PROGRAMMABLE RING-ILLUMINATION UNIT

Multiple illumination units all in one **NEW**



The programmable ring-illumination unit integrates multiple ring illumination functions into a single unit. This allows a wide variety of features to be inspected without the need for lighting changeover to maximize efficiency.



Automatically find the optimal lighting settings **NEW**

- Programmable ring-illumination unit

Optimum lighting search function

It is often difficult to determine the correct lighting settings for a given feature. The optimum lighting search function simplifies this by showing you the actual images using different lighting techniques so you can simply select the one you want.

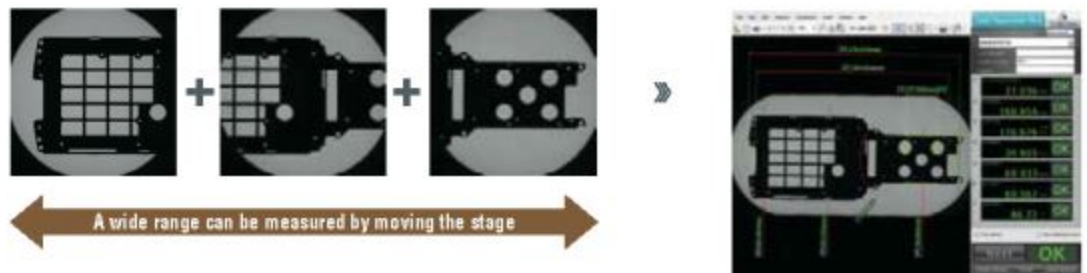




HIGH-PRECISION STAGE

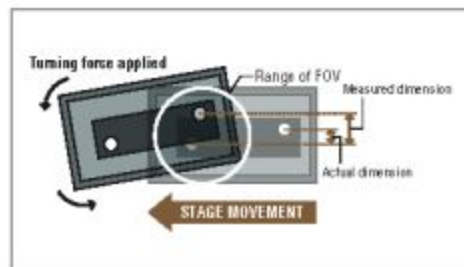
ø100 × 200 mm ø3.94" × 7.87" field of view

A newly developed high-precision stage enables multiple images to be combined. You can measure a large target even when it is not contained in the same field of view.

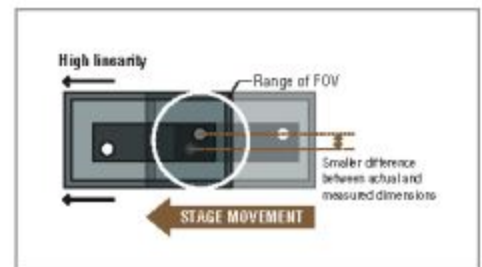


High-precision stage with high linearity

By utilizing precision cross-roller bearings, we are able to offer high accuracy while maintaining increased durability. This eliminates measurement errors due to stage movement.



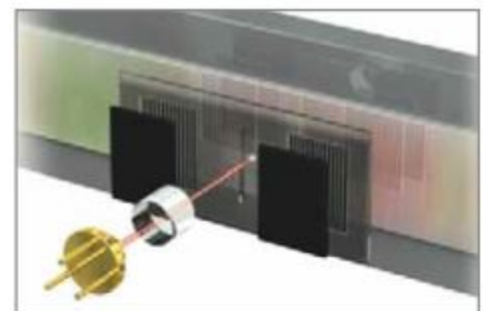
Without adjustment



IMseries

Custom high-precision linear scale

A high-precision linear scale designed specifically for the IM Series allows the stage movement to be tracked in micron increments. This makes it possible to perform accurate measurements, even on large parts.



Linear scale module

SOFTWARE FURTHER IMPROVES IM SERIES USABILITY

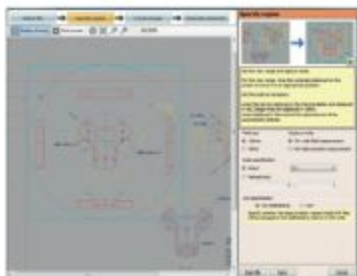
IMPORT CAD DATA



Optional: IM-H10

CAD import module

The data required for measurements can be acquired from CAD drawing data in DXF format. Even when a target is not at hand, it is still possible to quickly create measurement setting files.



CAD import module

*Measurement setup editor (IM-H11E) is also required.



Measurement setting data

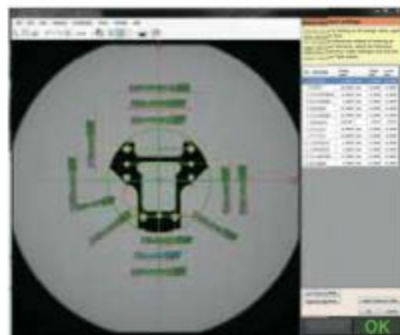
CONFIGURING SETTINGS FROM A PC



Optional: IM-H11E

Measurement setup editor

Programs can be easily created and modified from your desk with the measurement setup editor. Programming from your desk allows the IM to be used for measuring without interruption.



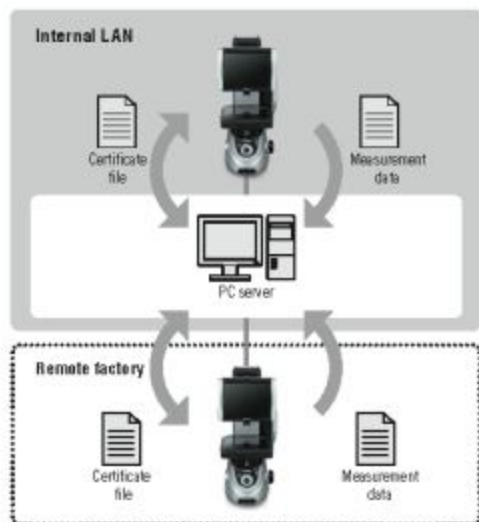
Measurement settings

COMMUNICATING WITH PCs



Data transfer over a LAN connection

A LAN connection can be used to easily synchronize settings files and measurement data to a PC, other IM's, or even units at remote locations.



Connection method	Output format
LAN	CSV File, HTML, QDAS Format
RS-232C	ASCII Format

CUSTOMIZING INSPECTION RECORDS



Optional: IM-H1T

Data transfer software

Measurement results can be automatically sent to Microsoft Excel in a user-defined, custom format.



Statistics/analysis viewer

Easily view results, analyze trends, and generate inspection reports from any PC with the statistics/analysis viewer.



PERFORMANCE AND RELIABILITY

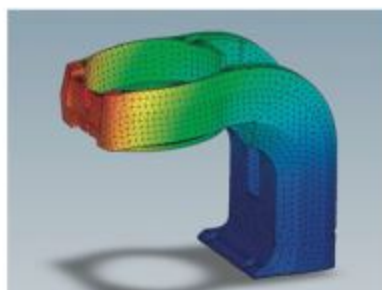
Traceability system diagram

The reference scales used for manufacturing, inspection, and calibration conform to the reference scale of JCSS accredited calibration laboratories to establish traceability back to the national standard.

International standard	National Metrology Institute of Japan (NMIJ) of National Institute of Advanced Industrial Science and Technology
JCSS accredited calibration laboratory	Reference scale
Secondary standard	Precision coordinate measuring instrument
Common standard	Reference scale
Measuring instrument to be calibrated	IM Series image dimension measurement system

Highly rigid body and temperature sensor ensures practical installation anywhere

The highly rigid body and built-in temperature sensor have enabled installation anywhere. Deformation is limited as to not affect measurement and temperature compensation ensures accurate measurement in the field.



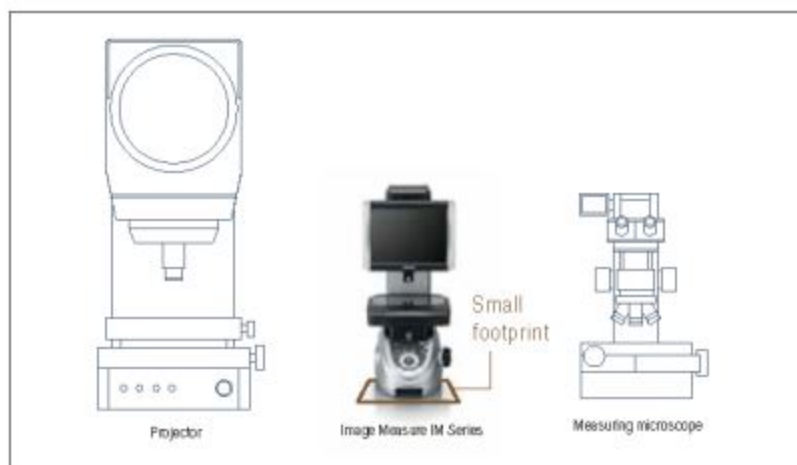
Frame strength analysis diagram



Temperature sensor ensures more stable measurement.

Space-saving design small footprint

In addition to the compact body, the built-in monitor saves significant space, allowing the IM Series to be installed anywhere. These important features allow you to take your lab to the production line for immediate part feedback.



MEASUREMENT SUPPORT TOOLS

Precision fixturing base

Optional: OP-87761 (for long objects)

Optional: OP-87501

Use these jigs to secure the target in place. These options are useful when measuring targets such as those that sit at an angle when placed on the measurement stage.



OP-87761
Precision fixturing base
(for long measurement target)



OP-87501
Precision fixturing base



PERIPHERAL EQUIPMENT

EXTERNAL ILLUMINATION

Coaxial illumination

Optional: IM-DXW12

This dedicated coaxial illumination unit has been designed to match the stage movement function of the wide-field and programmable ring-illumination model. The coaxial light is effective when attempting to measure features on glossy targets.



Plastic moulding (ring illumination)

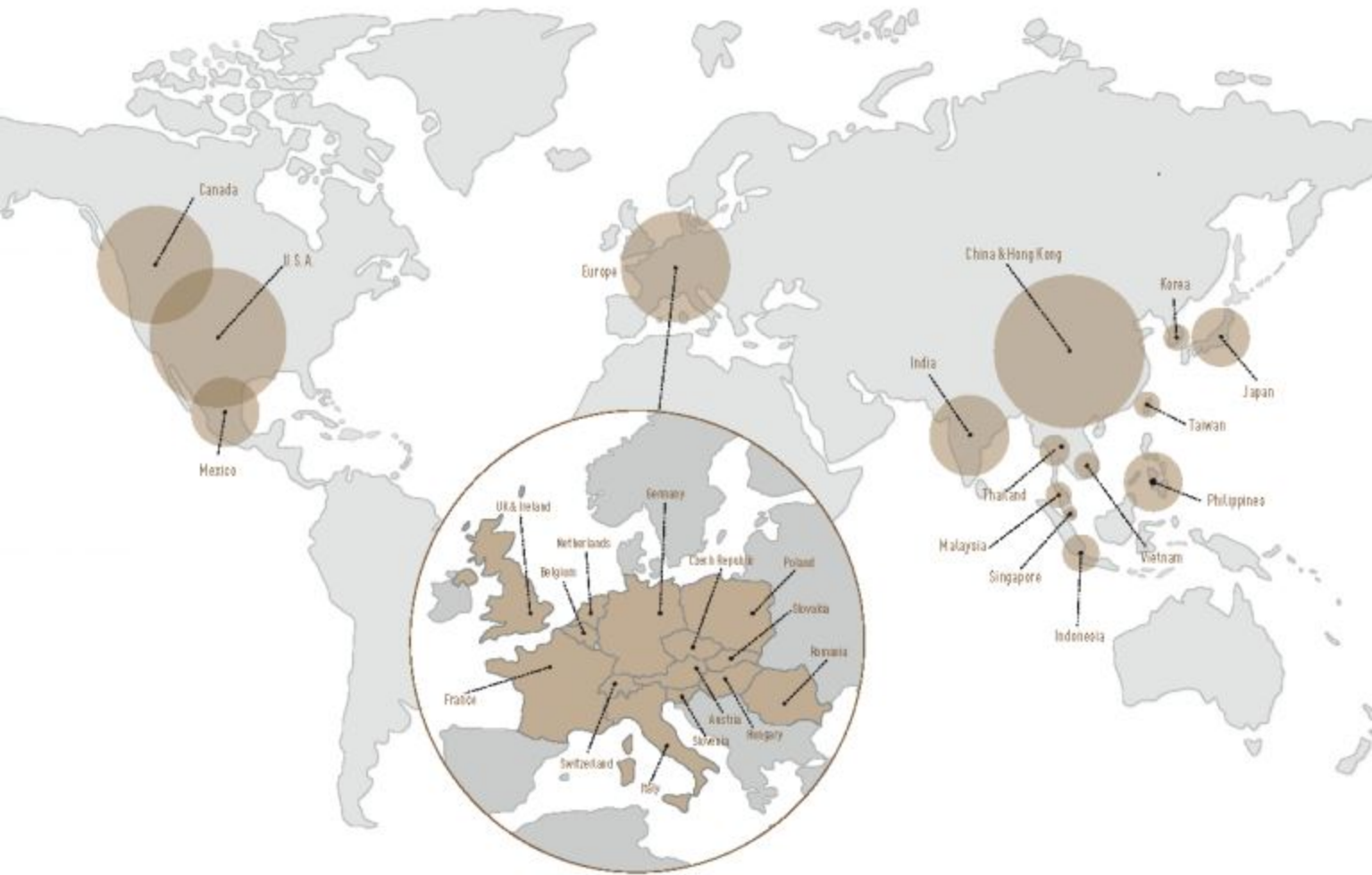


Plastic moulding (coaxial illumination)



COMPREHENSIVE COVERAGE ALL OVER THE WORLD

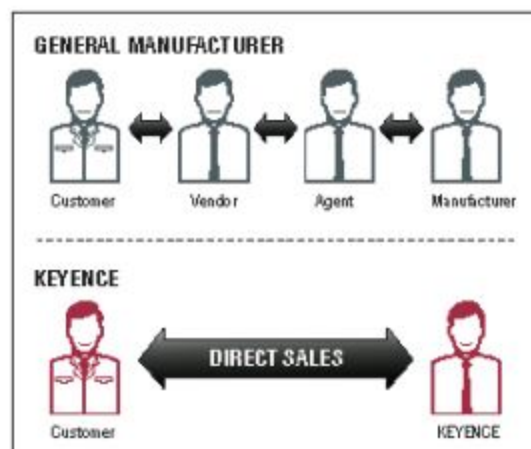
GLOBAL SUPPORT SYSTEM



Austria	Belgium	Canada
China & Hong Kong	Czech Republic	France
Germany	Hungary	India
Indonesia	Italy	Japan
Korea	Malaysia	Mexico
Netherlands	Poland	Romania
Singapore	Slovakia	Slovenia
Switzerland	Taiwan	Thailand
U.S.A.	UK & Ireland	Vietnam

Quality support only possible with a direct sales system

Our comprehensive after-sales support through technical sales representatives can only be achieved by our direct sales system. You can be confident that you will get the support you want immediately, without the hassle and delay of dealing with reps or distributors.



Support in various languages

Not only operation screens on the main unit but also other materials such as the instruction manual are available in various languages. After introduction into overseas production sites, local staff can also use this system smoothly.

SUPPORTED LANGUAGES

English	Chinese (simplified)	Chinese (traditional)
French	German	Italian
Japanese	Korean	Spanish
Thai		

Instant delivery system even for overseas

A wide variety of products are stocked at distribution sites in each country so that they can be delivered promptly on the day we receive your order. You do not need to worry about if it may take considerable effort and time to obtain a product from an overseas factory.



HIGHER PRODUCTIVITY AND RELIABILITY THROUGH THE INSTALLATION OF THE IM SERIES

1 IN-PROCESS INSPECTIONS



PRODUCTIVITY IMPROVEMENT

MEASUREMENT SPEED

- Spend less time taking measurement and more time optimizing your process.

EASY SETUP

- Give everyone the capability to perform accurate inspections.

2 PRECISE QUALITY INSPECTIONS IN LABORATORIES



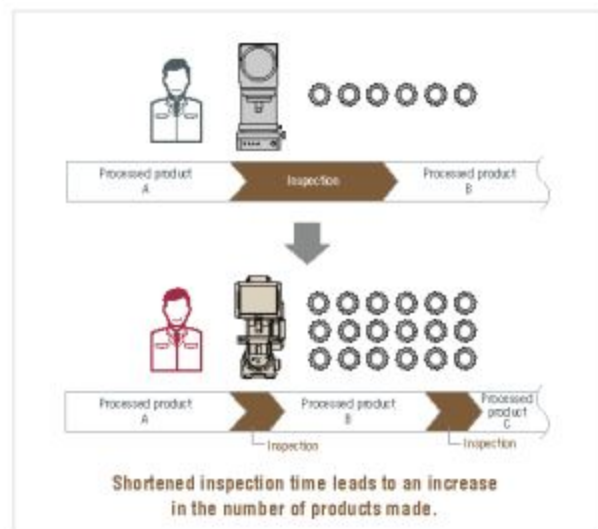
RELIABILITY IMPROVEMENT

EASY DATA MANAGEMENT

- Utilize automatic data recording to optimize your quality control system.
- Eliminate the risk of being caught without proper inspection reports.

MEASUREMENT ACCURACY

- Quality can be guaranteed with uniform standards.
- Accuracy can be guaranteed by way of the calibration certificate.



3 PRE-SHIPMENT INSPECTIONS



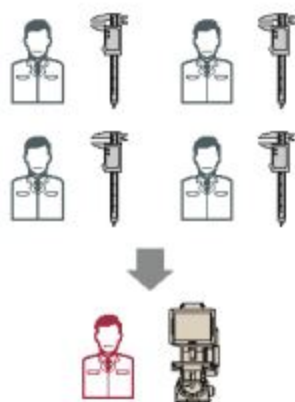
REDUCED LABOR COSTS

EASY SETUP

- Inspection time can be shortened.
- The time spent training inspectors can be reduced.

EASY DATA MANAGEMENT

- The time and effort spent creating inspection records can be reduced.
- The time and effort spent aggregating information and creating databases can be reduced.



Reduce inspection time and free up personnel to improve your process.

4 INCOMING INSPECTIONS



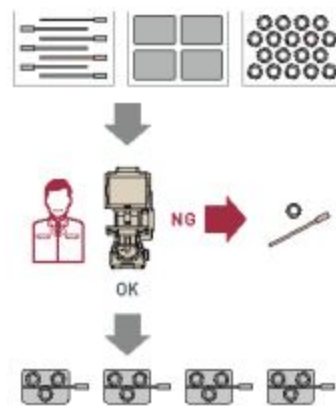
YIELD IMPROVEMENT

MEASUREMENT ACCURACY

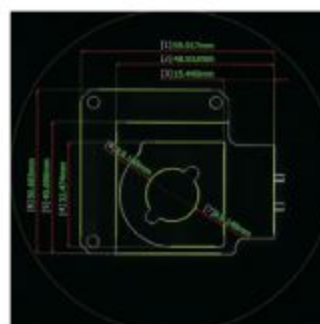
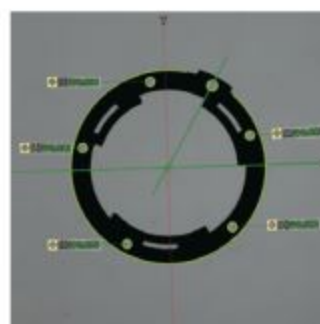
- When handling incoming inspection of a variety of parts, the IM Series eliminates variations between operators and provides uniform standards.

MEASUREMENT SPEED

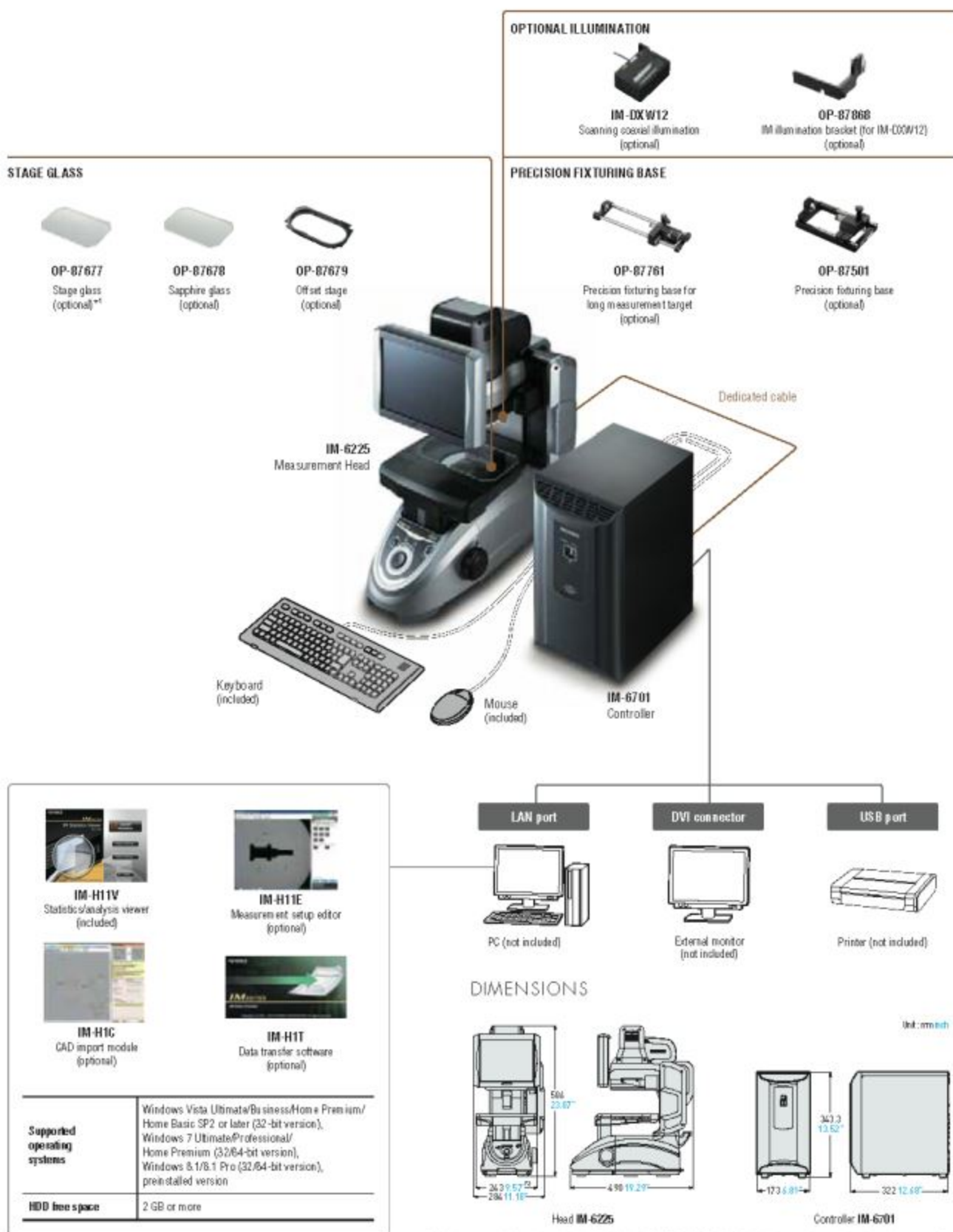
- Inspect more parts without spending more time.
- Inspect parts you previously didn't have time for.



Defective products do not enter into later processes.



SYSTEM CONFIGURATION



*1 One instance of this product is included with the IM-6225. *2: 343.13.50" when the stage is moved to its maximum position.

Model	Controller		IM-6701
	Measurement head		IM-6225
		Wide field	High precision
Image pickup device	1" 6.6 mega pixel CMOS		
Display	10.4" LCD monitor (XGA: 1024 × 768) External monitor connectable (clone output)		
Light receiving lens	Double telecentric lens		
Field of view	ø100 × 1200 mm ø3.94" × 7.87"		25 × 1125 mm 0.98" × 4.43"
Minimum display unit	0.1 µm 0.004 Mil		
Repetition accuracy	W/o stage movement	±1 µm ±0.04 Mil	±0.5 µm ±0.02 Mil
	With stage movement	±2 µm ±0.08 Mil	±1.5 µm ±0.06 Mil
Measurement accuracy (±2σ)	W/o binding	±5 µm ±0.2 Mil ^{*1}	±2 µm ±0.08 Mil ^{*2}
	With binding	±17 ± 0.02 L µm ±0.28 ± 0.0038 L Mil ^{*3}	±4 ± 0.02 L µm ±0.16 ± 0.0038 L Mil ^{*4}
External remote input	Non-voltage input (with and without contact) Relay output/rated load: 24 VDC, 0.5 A/ON resistance: 50 mΩ or less		
External output	OK/NG/FAIL	RJ-45 (10BASE-T/100BASE-TX/1000BASE-T)	
	LAN	6 ports (front: 2, rear: 4)	
	USB 2.0 series A	250 GB	
Record	Hard disk drive	+10°C to 35°C +50 to 95°F	
Resistance to environment	Operating ambient temperature	20%RH to 80%RH (no condensation)	
	Operating ambient humidity	Telecentric transparent illumination (green LED)	
Illumination system	Transparent	Four division, multi-angle illumination (electric, white LED)	
	Ping	Slit ring (directivity) illumination (electric, green LED)	
	External	Externally connected illumination (coaxial)	
		30 mm 1.18" (electric)	
Z stage	Moving range	100 mm 3.94" (electric)	
X stage	Moving range	2 kg	
	Withstand load	100 to 240 VAC 50/60 Hz	
Power supply	Voltage	310 VA max.	
Weight	Power consumption	Controller	
	Controller	Approx. 6 kg	
	Head	Approx. 31 kg	

*1. In the range of ø90 mm ø3.15" from the centre of the stage within the operating temperature range of +23°C ±1°C +73.4°F ±1.8°F at the focused focal point position

*2. In the range of ø20 mm ø0.79" from the centre of the stage within the operating temperature range of +23°C ±1°C +73.4°F ±1.8°F at the focused focal point position

*3. In the range of ø90 × 180 mm ø3.15" × 7.09" from the centre of the stage, within the operating temperature range of +23°C ±1°C +73.4°F ±1.8°F at the focused focal point position, and with a load weighing 1 kg or less on the stage
(L = amount of stage movement in mm units)

*4. In the range of ø20 × 120 mm ø0.79" × 4.72" from the centre of the stage, within the operating temperature range of +23°C ±1°C +73.4°F ±1.8°F at the focused focal point position, and with a load weighing 1 kg or less on the stage
(L = amount of stage movement in mm units)

Measurement points	99 points max. (99 × 9 points possible when the function for consolidating measurement settings is used)	
Pattern search (profile tracking function)	XYθ (with 360° rotary position compensation)	
Pattern registration	1000 patterns or more ^{*5}	
Measurement time	2 seconds ^{*6}	
Basic measurement function	Distance measurement	8 types (point-point/line-point/line-line/circle-point/circle-line/circle-circle/circle-arc)
	Angle measurement	Provided
	Calculation	Provided
Virtual line function	Point	Middle point/intersection
	Conjunction edge	Line conjunction/circular conjunction
	Line	6 types (midline/perpendicular line/parallel lines/tangent line/line passing through a point/approximate line)
	Circle	Middle circle/approximate circle/auxiliary circle/inscribed and circumscribed circle
Application tool	Pitch measurement	Line/circumference
	Pitch angle	Line/circumference
	Width measurement	Edge width
	Thickness measurement	Thickness measurement/gap measurement between inner and outer diameters
	Special tool	Rounded corner/curved surface/oval/reticle/point position/perimeter/area/screw/automatic measurement
GD&T	Shape tolerance	Straightness/circularity/profile
	Orientation tolerance	Squareness/parallelism
	Position tolerance	Point position/concentricity
Element tool	Point	Point (on a line or arc)/maximum and minimum (rectangle, circle, arc)
	Line	Line/centre line/peak line
	Circle	Circle/arc/peak circle/peak arc
	Profile extraction	Provided
	Special tool	Automatic generation/gauge line
Manual measurement	Provided	
Coordinate system configuration	Provided	
Batch configuration of tolerance	Provided	
Element list editing	Provided	
Measurement setting data binding function	Provided	
DXF export function	Provided	
Automatic measurement function	Provided	
O-DAS data save function	Provided	
Measurement settings support functions ^{*7}	Provided	

*5. Depending on the measurement setting data and number of data pieces being stored

*6. Without pattern search, applied measurement, and stage movement

*7. Optimum lighting guide, optimum lighting search, automatic edge extraction parameter adjustment function, and multiple edge extraction function

WIDE-FIELD + ADJUSTABLE ILLUMINATION MODEL

Wide-field and adjustable illumination model of the image dimension measurement system that enables illuminated place-and-press measurement

This model is equipped with an adjustable illumination unit that integrates multiple ring illumination functions into a single unit. The optimal illumination conditions can be reproduced, which enables even stable illuminated measurement.

Field of view: **200 mm 7.87"**



IM-6225

WIDE-FIELD MODEL

Wide-field model of the image dimension measurement system that enables place-and-press measurement with a 200 mm 7.87" field of view with basic illumination features

Achieves twice as wide a field of view as conventional systems so that large targets can be measured. Just place and press to complete measurement easily and accurately.

Field of view: **200 mm 7.87"**



IM-6125

GENERAL-PURPOSE MODEL

Just place and press General-purpose type image dimension measurement system

A dimension measurement system born from a new concept which eliminates the need for X-Y stages. With a built-in #100 optical lens, this model enables all points in the entire field of view to be measured in a batch.

Field of view: **#100 mm #3.94"**



IM-6015/6025

HIGH-PRECISION MODEL

Just place and press even for micro machined parts High-precision type image dimension measurement system

An innovative stage designed for reducing measurement time achieves place-and-press measurement even for micro machined parts. Perform hundreds of measurements in seconds without worrying about target placement and focus.

Repetition accuracy: **±0.1 μm ±0.004 μm**



IM-6145

KEYENCE

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1-888-539-3623

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SAFETY INFORMATION

Please read the instruction manual carefully in order to safely operate any KEYENCE product.

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