

Image Dimension Measurement System

NEW IM-7500



INSTANT MEASUREMENT



"Just Place and Press" Now Easier than Ever

- The automatic measurement function allows all settings to be done in one click
- Measurements can be performed without switching parts



Non-Contact, Push Button Measurements, The "New Standard" for the Manufacturing Industry



Measurements Performed in Seconds

Measurements on up to 99 dimensions can be completed in seconds.

Intuitive Interface That Anyone Can Use

Just pressing the measure button allows the user to acquire a stable measurement result.

Measurement Results Are Automatically Recorded

Automatically saves measurement data and creates inspection reports.









Machined part

Resin mold

Spring

Die cast part

Common Problems with Dimensional Measurements

Conventional Measurement Tools



Optical comparator





Optical CMM







Micrometer

Profile measurement system

SLOW

- Adjusting complex fixtures for part placement and datum setup is time consuming
- An increase in the number of parts or measurement points can mean an exponential increase in required time
- I Data management and creating inspection reports can be tedious

INCONSISTENT

Differences in the way the tool is used can result in inconsistent measurements
Changes in focus due to setup by different operators result in inconsistent values
Measurements rely heavily on operator judgment and experience

COMPLICATED

Learning how to operate the measuring instrument takes timeOperator error easily occurs during measurement, especially radius inspection

I Dimensions requiring virtual lines or points add a layer of complexity

The IM-7500 Solves These Problems by Consolidating Conventional Tools into a Single System.



FAST

I No time consuming positioning work or datum setup required

- I Measure up to 99 dimensions on up to 100 parts with the push of a button
- I Automatically saves measurement data and creates inspection reports

CONSISTENT

- Automatically identifies measurement points, ensuring that the same measurement results are obtained each time
- I Automatic focal adjustment prevents inconsistent values
- I The simple place-and-press operation means consistent measurement results regardless of the operator

EASY

- I Easily set up measurements with just a few clicks
- I Setting up virtual lines and points is just as simple
- I No measurement expertise is required to measure parts

Measurements Performed in Seconds



Automatic Recognition of Position and Orientation

The location and orientation of the part placed on the measurement stage are automatically detected. No need for precise positioning of the part.



Parts can be measured no matter where they are placed within the field of view

Measurements Performed in Seconds

There is no need to measure each part individually when you can measure up to 99 dimensions on up to 100 parts simultaneously.



Drawing

Measurement result



Different Parts are Identified and Measured Without **Changing Profiles**

There is no need to select the profiles for each part on the stage, multiple parts can now be identified and measured without needing to search for their profiles.



Eliminate Operator Error

Problems with Conventional Methods

Positioning errors

Focus errors

Skill level errors





Resolved with the IM-7500

No positioning required

Automated focus adjustment

Consistent results regardless of operator

Automated Focus Adjustments

The IM-7500 is equipped with a specifically designed optical lens with a large depth of field. It also automatically brings measurement points into focus. This is useful for parts with uneven surfaces, where all of the measurement areas cannot be brought into focus at the same time.

Parts with large height differences



Only the upper image is in focus.



Only the lower image is in focus.

The focus is automatically adjusted for measurement



Automatic Edge Detection

Sub-pixel processing

By splitting each pixel into 100 or more subpixels, the IM-7500 is able to provide a wide field-of-view while maintaining its high-precision measurement capability.





With sub-pixel processing

I Shape processing

Lines and circles are detected using a least square fitting of 100 or more^{*} detection points.

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

I Automatic identification of burrs and chips

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





EASY

Easily Set up Measurements with Just a Few Clicks



Easily Program Parts

Just select the desired tool from the menu and use the mouse to define the tool on the part. Settings are easy to make with intuitive mouse operations while verifying the image of the entire part.



A Wide Range of Auxiliary Measurement Tools

Even complicated measurements using center lines and other virtual lines that are difficult to handle with conventional measurement systems can be set with intuitive clicks while viewing the screen.



The Automatic Measurement Function Allows One-Click Setup

This new function truly achieves "place and press" operation. Simple dimensions can be measured without any prior setup by simply selecting the types of measurements expected. Anyone can use it right away, just as they would use a caliper or micrometer.



Simply select the measurement condition check boxes



Automatic Inspection Reports



Automatically Calculate Cp and Cpk

The system automatically calculates and displays key statistical values for each measurement item including OKs, NGs, maximum point, minimum point, average, (sigma, 3sigma, 6sigma) Cp, Cpk, and others. Processing capability management by lot is also possible.

Extraction Condition			Crit	when Lance					Dates	then Tanget					-
Littleater		C Al @ Last 500-0- pep			Press	Property				-					
					1 Parts				1000	white auto-			1		
Name									-			and the second se	(And a lot		
Serial Counter			0.	ent lines	3,790,00		905/55		1		Ect.	(Fies.)	1000		
211 br		100											82		
			03	Ing North	12.40.00	P	15425425	PH (0)		and the second				S	
									~					-	
										Care	au Site lerken		Extent		
Fissurement core		la fadica Ta	-	Tend Graph	Halogreen	24b Let									-
2en sare							1.12								1
4	-11			Pess/en	ent Beit	00%	Native	Counter	have	Tame	DUDGARCE	[\$4N0.0001	[J][AVGL1812	164003	
	- II;		14	921212	203677H	OK.		0811		P1221400-	28,977	120.78	128.62	129.81	
25ah(0.000			12	9/35/2112	15120 PM	ox.		0011		pr-341400	28.677	120.34	128.27	118.40	
Sec.2002	- 111	3	32	9010107	15255794	OK.		0852		P1349460-	25.977	120.34	126.22	129.41	
Contraction of the local division of the loc	- 111		12	4/16/2112	154-076	CK.		0883		PLOFORD.	25.978	120.36	128.29	119.35	
1000000		5	12	991/2117	289877H	OK .		9891		P122540-	8.9.5	120.34	128-22	129.43	
phraenen.		. 6	9	\$21,2117	153.1174	ox.		0805		\$13\$64E	28.977	120.32	128.50	119.35	1
Concercon.		7	1.02	901/2117	2 0453 PM	OK .		089		P1249460-	25.979	120.34	128.33	129.35	
(7)AG2005	- 111		18	9/35/3117	2 10,47 PM	OK.		0817		\$10,814ED.	25.978	120.34	128.32	119.35	
MARG 8007			1.2	991/3117	141 20MC S	QK.		0008		21.225-BC-	25.978	129.38	128-29	129.38	
36atel:2008	- 111	38	9	\$21/2117	224:2PM	oc		0009		P10495450	25.998	120.39	128.12	129.50	
046001604		18	18	9253152	229/18/14	OK.		0810		PENCING.	25,979	\$20.36	128.29	119.30	
C1.00KH005		12	12	404,0112	2424576	ox		0913		21-34948C-	25.979	120.34	128.50	129.36	
		13	X	901/0112	24402194	CK.		0812		P-34640	21,979	139.30	128.27	179.35	
	- 111		18	901/0117	243.38 PM	OK.		0813		\$109040D	25.979	120.32	128.57	119.32	
		15	13	925/2112	246.30794	OK.		0814		Provide	25,908	\$20.40	128.25	129.34	
		. 76	13	#GF9115	5424336	ox		0818		p-32940	25.979	120.38	120.51	110.34	
	- 111	1.9	12	90,812	24632194	OK.		0816		P12P140.	25.979	539.27	120.4)	129.35	
	- 111-	38	15	#14(2117	100012100	OK.		0817		P-240400	0.4.11	120.45	120.24	110.34	
	- 111.	29	18	antighty.	COEL/IM	OK.		0818		P-14060.	617/7	200.07	sence	119.34	1
		e	_							-					1

Immediate Feedback on Trends and Variations

Built-in trend graph and histogram functions allow for verification of trends and variations such as those detailed below in each measured item using graphs.

- I Measured values are gradually decreasing
- I Variation has increased
- Measured values are fluctuating in a cyclical manner



Complete Inspection Reports in Seconds

IM-7500 measurement results can be automatically transfered to specific spreadsheet software on a PC.



Profiles Are Also Automatically Aggregated

Records not only the measurement results, but also the profiles of measured parts. This allows for changes in appearance to be visualized in a way that cannot be achieved using measurement results alone.





Advanced Technologies for Achieving Place-and-Press Measurement

Large Diameter Telecentric Lenses

No extreme focus adjustment or positioning required

Programmable Ring-Illumination Unit

Accurately extracts edges with optimal lighting conditions

Light Probe Unit

New technology allows measurements of features at specific heights

Large High Speed/High Precision Stage

6x the measurement volume

Advanced Technologies for Achieving Place-and-Press Measurement

Large Diameter Telecentric Lenses



No Extreme Focus Adjustment or Positioning Required

Clear Focus Regardless of Height Differences

The IM-7500 is equipped with a specially designed lens with a large depth of field. This ensures accurate measurements despite height differences on the part.





Zoom lens

IM-7500

Apparent Feature Size Not Affected by Height Differences

The IM-7500 is equipped with telecentric lenses, which means that the image is not affected by the height differences of the part. This enables accurate measurements of parts with uneven surfaces.





Reduced Distortion Throughout the Entire Field of View

The IM-7500 is equipped with a low distortion lens designed to not only minimize distortion near the centre, but also at the outer reaches of the field of view. This allows parts to be measured accurately despite its location on the stage.



Advanced Technologies for Achieving Place-and-Press Measurement

Large High Speed/High Precision Stage





6x the Measurement Volume

$300 \times 200 \text{ mm } 11.81^{"} \times 7.87^{"}$ Field of View, 3x Faster Stage Movement

The newly developed high-speed and high-precision stage offers a measurement field of view that is $300 \times 200 \text{ mm } 11.81^{\circ} \times 7.87^{\circ}$ in size. Also, thanks to the high speed of the stage, the field of view can be measured at three times the speed of conventional systems.



Measure Taller Parts

Innovations in the structures of the stage system and lens unit have dramatically improved support for the measurement of tall parts.



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

IM-7500

Custom High-Precision Linear Scale

A high-precision linear scale designed specifically for the IM-7500 allows the stage movement to be tracked in micron increments. This makes it possible to perform accurate measurements, even on large parts.



Advanced Technologies for Achieving Place-and-Press Measurement

Programmable Ring-Illumination Unit



Accurately Extract Edges with Optimal Lighting Conditions

Multiple Illumination Units All in One

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.



A wide area is illuminated. Placing at a high position causes the entire target to be illuminated evenly. The lower the position, the greater the contrast in lighting due to height differences. Narrow bands of light are projected horizontally. Place the illumination unit at the height with edges to detect in order to create a clear contrast at the desired location.

Automatically Finds the Optimal Lighting Settings

It is often difficult to determine the correct lighting settings for a given feature. The optimal lighting search function simplifies this by showing you the actual images using different lighting techniques so you can simply select the one you want. This means that even first time users can feel confident in their ability to use the instrument.



Select the feature to optimize



Select the settings from the automatically captured results



Measurements can be performed easily with the optimum settings

Advanced Technologies for Achieving Place-and-Press Measurement

Light Probe Unit



New Technology Allows Measurement of Features at Specified Heights

Accurately Measure Dimensions Previously Impossible with Vision Systems

The newly developed light probe unit has a deep-set shape and rounded corners that allow for easy and accurate measurements even on targets with shapes and processing states that made them difficult to measure for systems using conventional images.

New Technology Accurately Measures Sides not Visible to the Camera

A glowing sphere is brought into contact with the desired point on the part

1

2 A camera is used to recognize the motion of the probe and measure distance



The Extremely Low Force Measurement of Light and Small Parts

Conventional contact-type measurement systems use a strong measuring force that can cause misalignment due to the pressure applied to small and light targets. The light probe unit uses an extremely low measuring force of 0.015 N to accurately take measurements without the hassle or cost of fixturing parts. This also eliminates the concern of deformation when soft parts are measured.



Pressure moves the part



Since measuring pressure is extremely low, detection is possible without affecting the part

Extremely low measuring pressure 0.015 N

Shop Floor Ready 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.



Includes a Highly Rigid Body and Temperature Sensor

Highly rigid body and temperature sensor ensures practical installation anywhere. The design was optimized using topological and strength analysis in order to develop the housing stiffness necessary for the required accuracy. Temperature compensation ensures accurate measurement in the field.



Frame strength analysis diagram



Temperature sensor ensures more stable measurement

Space-Saving Design

In addition to the small footprint from the compact body, the built-in monitor saves significant space. This allows the IM-7500 to be installed anywhere.



Small footprint



IM-7500



Optical comparator

_

Measuring microscope

Comprehensive Coverage All Over the World & Global Support System



Quality Support Only Possible With a Direct Sales System

Our comprehensive after-sales support through technical sales technicians 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 for Multiple Languages

In addition to the system's control screen, manuals and other documentation are also provided in a wide range of languages. Local staff can easily use KEYENCE's products after they are installed at international manufacturing bases.

Languages



^{*}To be released periodically



Instant Delivery System Also Available Internationally

KEYENCE's product inventory is not limited to Japan. 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.



IM-7500 Application Examples

For a Variety of Inspection Needs

Inspections of Prototypes and First Off-Tool Parts



- I Improvement of productivity through reductions in launch periods
- I Measurement that does not depend on the inspector's experience level
- I Measurement based on the traceability of international standards

In-Process Inspections of Samples and Parts



- I Improvement of equipment availability through reductions in setup time
- I Improvement of yield rates through better accuracy in equipment adjustment
- Since inspection can be performed by other operators in addition to the original inspector, this reduces the workload of the quality department.
- Symptom management within processes

Reduction of Inspection Time

Reductions in inspection time can improve manufacturing efficiency and reduce cost.

Reduction of Recording Time

Reductions in the work required to record inspection data can lead to reductions in data management cost.

Operators Other than Inspectors Can Also Perform Inspections

Reductions in the workload placed on the quality department can also lead to improvements in equipment availability.







In a wide variety of applications...



Lathe processing and cutting



Pressing



Plastic molding



Sintering

Pre-Shipping Inspections



- Allows for shipping inspections with shortened delivery schedules
- I Reduction of the work required to create inspection report tables
- Reduction of training time and labor costs associated with inspectors

Incoming Inspections



- Can manage acceptance inspections for multiple types with constant standards
- Reduction of the risk of defects even when the quantity of inspections is increased
- I Improved quality through measurement of previously uninspected points

Constant Inspection Standards

The use of constant inspection standards enables manufacturing with more stable quality levels.

Increased Quantity of Inspections

Since it is easy to increase the quantity of inspections, the risk of defects is decreased.

Increased Number of Dimensions

Since it is possible to measure uninspected dimensions without an increased workload, this leads to improvements in quality.





 99_{5}^{15}



Forged parts



Molded object (profile tolerance)



KEYENCE

Electronic parts

NEW Contact Height Measurement Unit

IM-7030T Option



Instant Measurement Including Height

A dedicated contact height probe for the Instant Measurement system that helps reduce the amount of time required for using other measurement tools for different dimensions and the amount of work required for taking measurement results. The pattern search function enables the system to automatically detect and measure any pre-specified height/depth dimensions. It can help drastically reduce the amount of time required for measurement related tasks such as creating work procedure documentation or for training workers. Furthermore, centralized management of the measurement results enables an overall improvement in working efficiency of measurement tasks.



Simply place the target on the stage and press







Display the height measurement results

		Height Measurement Unit		
Measurement range		0 to 75 mm 0" to 2.95"		
Measuring force		0.3 N		
Measurement accur	acy (XY)	±0.2 mm*1 ±0.0079"		
Minimum display un	nit	1 µm		
Measurable area	Wide-field measurement mode	145 × 95 mm 5.71" × 3.74"		
(XY)	High-precision measurement mode	107.5 × 95 mm 4.23" × 3.74"		
Repeatability		±2 μm ^{*2}		
Measurement accur	acy	±7.5 μm ^{*3}		

*1 Operating ambient temperature: $23^{\circ}C \pm 1^{\circ}C 73.4^{\circ}F \pm 1.8^{\circ}F$.

*2 With a maximum measurement height of 30 mm 1.18" or less. ±3 µm when maximum measurement height is between 30 mm 1.18" and 75 mm 2.95".

*3 With a maximum measurement height of 30 mm 1.18" or less. ±9.5 µm when maximum measurement height is between 30 mm 1.18" and 75 mm 2.95".

Network Functions and Software

Measurement setup editor

Offline Programming

Optional: IM-H2EA

A PC can be used to add or change measurement locations in a setting file created by the IM-7500 system, or in data created with the CAD import module.

CAD import module Import CAD Data Optional: IM-H2C

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.

*Measurement setup editor (IM-H2EA) is also required.

PC software operating environment

Supported OS	Windows 7 Ultimate/Professional/Home Premium (64-bit version) Windows 8.1/Windows 8.1 Pro (64-bit version) Windows 10 Home/Pro/Enterprise (64-bit version)
Required free space on hard disk	5 GB or more

Windows® is a trademark or registered trademark of Microsoft Corporation in the United States and other countries.
 The formal name of Windows is Microsoft Windows® operating system.

Data transfer software

Creating Inspection Reports Optional: IM-H1T

IM-7500 measurement results can be automatically transfered to specific cells in spreadsheet software on a specified PC.

Data transfer over a LAN connection

Communicating with PCs

It is easy to transfer a setting file created on an IM-7500 system or a PC to another IM-7500 system in another location.

System Configuration





SPECIFICATIONS

Model		Controller		IM-7501				
		Head		IM-7010	IM-7020	IM-7030		
Image sensor				1" 6.6 mega pixel monochrome CMOS				
Display				10. 4" LCD monitor (XGA: 1024 × 768)				
Receiver lens				Double telecentric lens				
Field of view		Wide-field measurem	ent mode	200 mm × 200 r (4×	300 mm × 200 mm 11.81" × 7.87" (4× R50)			
		High-precision measure	urement mode	125 x 125 mm	225 × 125 mm 8.86" × 4.92"			
	Minimum display u	nit		0.1 um				
Image measurement		Wide-field	W/o stage movement	±1 µm				
		measurement mode	With stage movement	±2 μm				
	Repeatability	High-precision	W/o stage movement	±0.5 µm				
		measurement mode	With stage movement	±1.5 μm				
		Wide-field	W/o binding	±5 um ¹				
	Measurement	measurement mode	With binding	±(7 + 0.0	12 L) μm ^{*2}	±(7 + 0.02 L) μm ^{*3}		
	accuracy (±2 σ)	High-precision	W/o binding		±2 μm ^{•4}	· · · · ·		
	, , , , , , , , , , , , , , , , , , , ,	measurement mode	With binding	±(4 + 0.0	i2 L) μm⁵	± (4 + 0.02 L) μm ^{*6}		
Measurable ar		(Y)	,	-	90 × 90 mm 3.54" × 3.54"	190 × 90 mm 7.48" × 3.54"		
	Maximum measure	ment depth		-	30 mr	n 1.18"		
Light probe	Light probe diameter			-	ø3 mm			
Measurement	Measuring force			-	0.015 N			
Repeatability				-	±2 µm ⁻⁷			
Measurement accuracy				-	±(8 + 0.02 L) μm ^{*8}	±(8 + 0.02 L) μm ^{*9}		
External remote input				Non-vo	Itage input (with and without o	contact)		
External output		OK/NG/FAIL/MEAS.		PhotoMos output Rated load 24 VDC 0.5 A				
				ON resistance 50 mΩ or lower				
Interface		LAN		RJ-45 (10BASE-T/100BASE-TX/1000BASE-T)				
		USB 3.1		4 ports (rear: 4)				
		USB 2.0 series A		2 ports (front: 2)				
Record		Hard disk drive		500 GB				
Environmental resistance		Operating ambient te	mperature	+10°C to 35°C +50°F to 95°F				
		Operating ambient hu	umidity	20% RH to 80% RH (no condensation)				
Illumination system		Transparent		Telecentric transparent illumination				
		Ring		Four division ring illumination	-			
		Ring		-	- Four division, multi-angle illumina			
		Ring		-	Slit ring (directivity) illumination (electric)			
XY stage		Moving range		100 × 100 mm 3.94" × 3.94" (electric) 200 × 100 mm 7.87" × 3.94" (electric)				
		Withstand load		5	kg	7.5 kg		
Z stage		Moving range		75 mm 2.95" (electric)				
Power supply		Power voltage		100–240 VAC, 50/60 Hz				
		Power consumption		430 VA or lower				
Weight		Controller		Approx. 8 kg				
		Head		Approx 30 kg	Approx 31 kg	Approx 33 kg		

*1. In the range of ø80 mm $o3.15^{\circ}$, within the operating ambient temperature range of $+23^{\circ}C \pm 1^{\circ}C +73.4^{\circ}F \pm 1.8^{\circ}F$ at the focused focal point position

*2. In the range of 180 × 180 mm 7.09° × 7.09° (4× R40), within the operating ambient temperature range of +23°C ±1°C +73.4°F ± 1.8°F at the focused focal point position, and with a load weighing 2 kg or less on the stage (L = amount of stage movement in mm units)
*3. In the range of 280 × 180 mm 11.02° × 7.09° (4× R40), within the operating ambient temperature range of +23°C ±1°C +73.4°F ± 1.8°F at the focused focal point position, and with a load weighing 2 kg or less on the stage (L = amount of stage movement in mm units)

weighing 3 kg or less on the stage (L = amount of stage movement in mm units)

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

5. In the range of 120 × 120 mm 4.72 × 4.72*, within the operating ambient temperature range of +23°C ±1°C +73.4°F ± 1.8°F at the focused focal point position, and with a load weighing 2 kg or less on the stage (L = amount of stage movement in mm units) *6. In the range of 220×120 mm $9.45^{\circ} \times 4.72^{\circ}$, within the operating ambient temperature range of $+23^{\circ}$ C $\pm 1^{\circ}$ C $+73.4^{\circ}$ F $\pm 1.8^{\circ}$ F at the focused focal point position, and with a load weighing 3 kg

or less on the stage (L = amount of stage movement in mm units)

*7. When the detection system is standard. If the detection system is at a deep position, then $\pm 3 \ \mu m$

*8. When the detection system is standard, and the ambient temperature is +23°C ±1°C +73.4°F ± 1.8°F, with a stage load weighing 2 kg or less. If the detection system is at a deep position, then $\pm(10$ + 0.02 L) μm with L as the measurement length in mm.

*9. When the detection system is standard, and the ambient temperature is +23°C ±1°C +73.4°F ± 1.8°F, with a stage load weighing 3 kg or less. If the detection system is at a deep position, then ±(10 + 0.02 L) µm with L as the measurement length in mm.

DIMENSIONS

Unit (mm inch)



IM-7020 head







IM-7501 controller





www.keyence.com



SAFETY INFORMATION

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

CONTACT YOUR NEAREST OFFICE FOR RELEASE STATUS

KEYENCE CORPORATION OF AMERICA

Head Office 500 Park Boulevard, Suite 200, Itasca, IL 60143, U.S.A. PHONE: +1-201-930-0100 FAX: +1-855-539-0123 E-mail: keyence@keyence.com IL Chicago PA Philadelphia AL Birmingham CA San Jose CO Denver MI Detroit MO St. Louis NC Raleigh PA Pittsburgh AR Little Rock CA Cupertino IN Indianapolis MI Grand Rapids NJ Elmwood Park OH Cincinnati FL Tampa CA Los Angeles AZ Phoenix GA Atlanta KY Louisville MN Minneapolis NY Rochester OH Cleveland SC Greenville CA San Francisco CA Irvine IA Iowa MA Boston MO Kansas City NC Charlotte **OR** Portland TN Knoxville **KEYENCE CANADA INC.**

Head Office PHONE: +1-905-366-7655 FAX: +1-905-366-1122 E-mail: keyencecanada@keyence.com PHONE: +1-514-694-4740 FAX: +1-514-694-3206 Windsor PHONE: +1-905-366-7655 FAX: +1-905-366-1122 Montreal

TN Nashville TX Austin TX Dallas WA Seattle

WI Milwaukee

KEYENCE MEXICO S.A. DE C.V. PHONE: +52-55-8850-0100 FAX: +52-81-8220-9097

E-mail: keyencemexico@keyence.com

The information in this publication is based on KEYENCE's internal research/evaluation at the time of release and is subject to change without notice.

Company and product names mentioned in this catalog are either trademarks or registered trademarks of their respective companies. The specifications are expressed in metric units. The English units have been converted from the original metric units. Unauthorized reproduction of this catalog is strictly prohibited.

Copyright © 2019 KEYENCE CORPORATION. All rights reserved.

IM7000-KA-C3-US 1079-1 611K20

KA1-1049