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High-Accuracy 2D Laser Displacement Sensor

LJ-G Series

CE



Features

- Linearity of ±0.1% of F.S.
- High-speed sampling
- Simultaneous measurement/judgment of up to 8 features
- Stable measurement for all targets

8-point simultaneous measurement/judgment

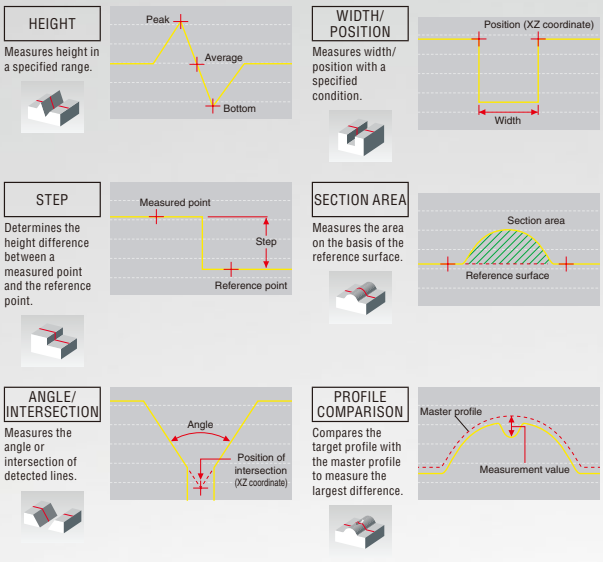
Best in its class

The LJ-G Series provides 8-point simultaneous measurement in various measuring modes (height, width, height difference, angle, profile, cross-section area, etc.). Desired measuring points can be specified relative to a profile waveform. Furthermore, the LJ-G Series provides outputs of individual measured values and upper/lower tolerance comparator outputs.

Measurements

Peak height	Bottom height	Average height	Gap
Width/Position	Section area	Angle/Intersection	Profile comparison

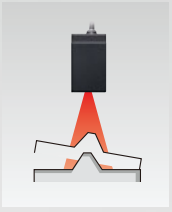
Measurement menus



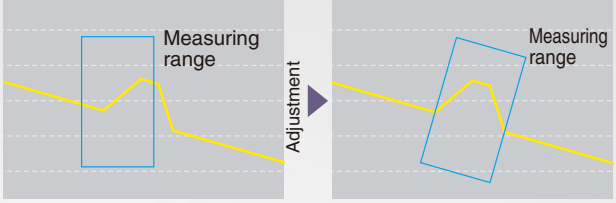
Useful Adjustment Functions

POSITION ADJUSTMENT FUNCTION

After the adjustment, the LJ-G Series can provide stable measurements though the targets are not neatly arranged or positioned.



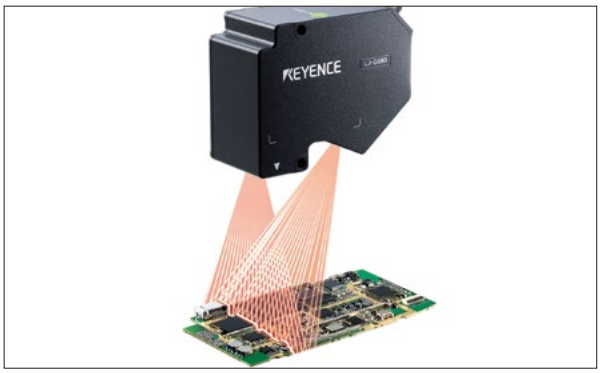
Displacement of target



Since the workpiece is not in the measuring range, a precise measurement cannot be carried out.

The measuring range moves according to the displacement of the workpiece for precise measurement.

Applications



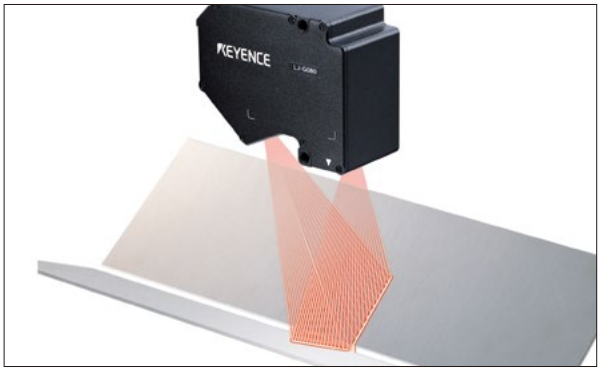
Confirmation of PCB mounting height



Confirmation of door/hood mounting accuracy



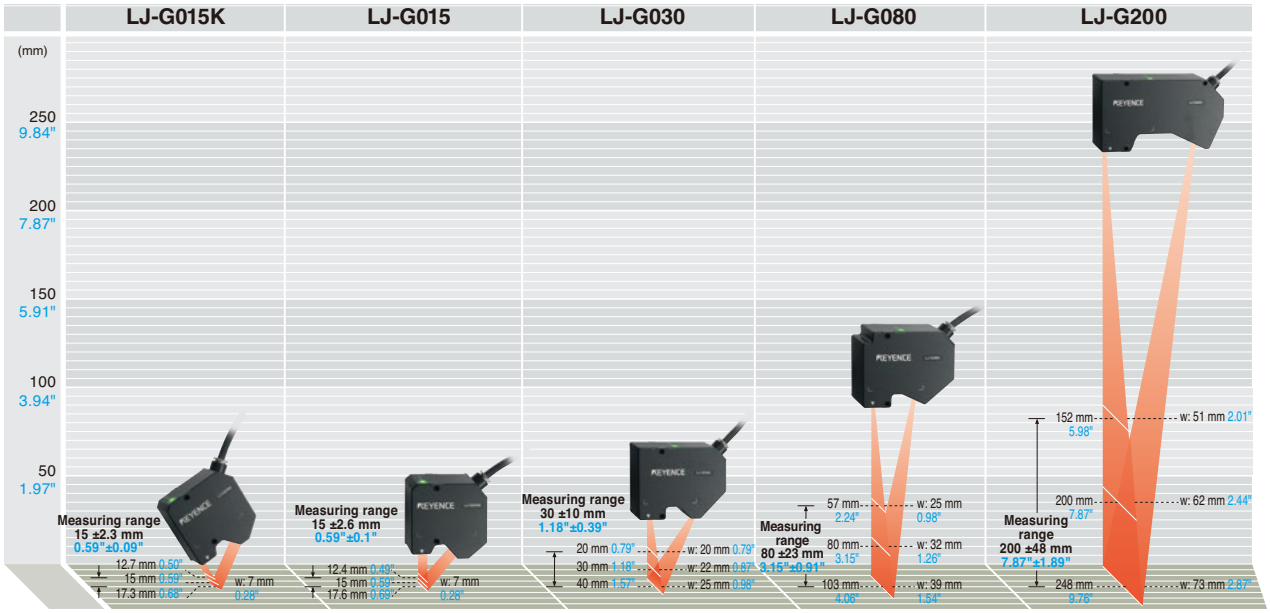
Confirmation of sealant coating profile



Pre-weld position feedback

Lineup

Sensor head

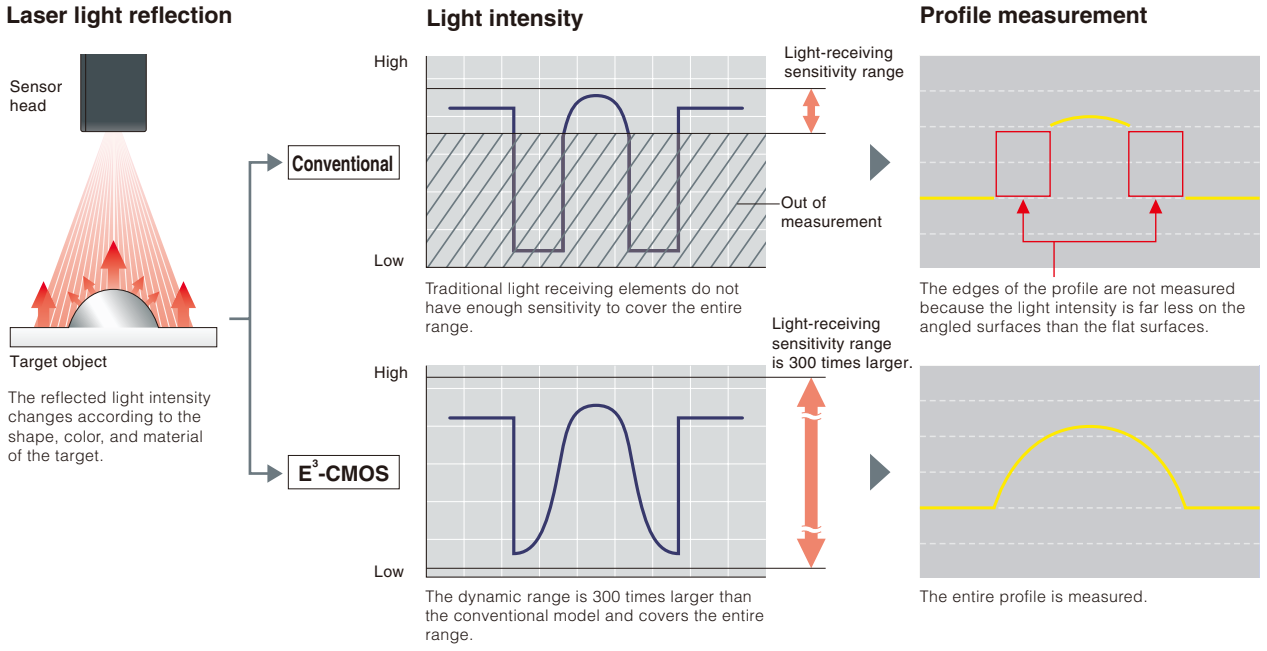


	LJ-G015K		LJ-G015		LJ-G030		LJ-G080		LJ-G200	
Z-axis (Height)	15 ±2.3 mm	0.59"±0.09"	15 ±2.6 mm	0.59"±0.1"	30 ±10 mm	1.18"±0.39"	80 ±23 mm	3.15"±0.91"	200 ±48 mm	7.87"±1.89"
X-axis (Width)	7 mm	0.28"	7 mm	0.28"	22 mm	0.87"	32 mm	1.26"	62 mm	2.44"
Z-axis repeatability	0.2 µm	0.000008"	0.2 µm	0.000008"	1 µm	0.000039"	1 µm	0.000039"	2 µm	0.000079"
X-axis repeatability	2.5 µm	0.000098"	2.5 µm	0.000098"	5 µm	0.000197"	10 µm	0.000394"	20 µm	0.000787"

E³-CMOS providing ultra-wide dynamic range First in the world

The E³-CMOS provides ultra-wide dynamic range which is approximately 300 times wider than conventional modes. The LJ-G Series enables target profile measurement and the measurement of different target materials, such as black rubber (low reflected light intensity) and reflective metal (high reflected light intensity).

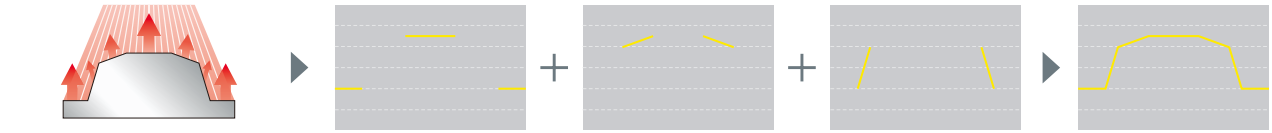
* E³-CMOS sensor: Enhanced Eye Emulation CMOS image sensor



ASAP (Automatic Sensitivity Adjustment by Pixel)

This function adjusts the sensitivity and laser power of the E³-CMOS to obtain suitable waveform data for each measurement position that has a different reflectance. The obtained data is merged as a single measurement profile.

Dynamic range 6000×



High capacity memory for saving data Best in its class

High capacity memory is built into the controller. A memory card slot is included to store the production records of mass-produced products.

Handling many product types

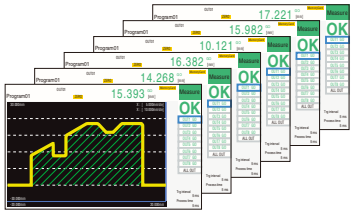
The built-in memory can store up to 16 programs. When the memory card is used, up to 160 programs can be stored to handle various product types.

	Program setting	Profile saving	Data storage
Internal memory	16	1024 × 2	65536 × 8
CF(1GB)	160	1024 × 300	65536 × 3200

Handles 160 types

Profile saving

For analyzing NG records or production history.



1024 profiles

Specifications

Model			LJ-G015K	LJ-G015	LJ-G030	LJ-G080	LJ-G200
Type			Specular reflective	Diffuse reflective			
Reference distance			15 mm 0.59"		30 mm 1.18"	80 mm 3.15"	200 mm 7.87"
Measuring range	Z-axis (Height)		±2.3 mm ±0.09"	±2.6 mm ±0.1"	±10 mm ±0.39"	±23 mm ±0.91"	±48 mm ±1.89"
	X-axis (Width)	Near	6.5 mm 0.26"		20 mm 0.79"	25 mm 0.98"	51 mm 2.01"
		Reference distance	7.0 mm 0.28"		22 mm 0.87"	32 mm 1.26"	62 mm 2.44"
		Far	7.5 mm 0.30"		25 mm 0.98"	39 mm 1.54"	73 mm 2.87"
Light source			Red semiconductor laser				
		Wavelength	655 nm (Visible light)				
		Laser Class	Class II Laser Product (FDA (CDRH) PART1040.10), Class 2 Laser Product (IEC 60825-1)				
		Output	0.95 mW				
Spot diameter (at reference distance)			Approx. 32 µm × 12 mm 0.001260" × 0.47"		Approx. 40 µm × 25 mm 0.001575" × 0.98"	Approx. 80 µm × 46 mm 0.003150" × 1.81"	Approx. 180 µm × 70 mm 0.007087" × 2.76"
Repeatability*1	Z-axis (Height) *2		0.2 µm 0.000008"		1 µm 0.000039"	1 µm 0.000039"	2 µm 0.000079"
	X-axis (Width) *3		2.5 µm 0.000098"		5 µm 0.000197"	10 µm 0.000394"	20 µm 0.000787"
Linearity Z-axis (Height) *2			±0.1% of F.S.				
Sampling frequency (Trigger interval) *4			3.8 ms				
Temperature characteristics			0.02% of F.S./°C				
Environmental resistance		Enclosure rating	IP67 (IEC60529)				
		Ambient light *5	Incandescent lamp or fluorescent lamp: 5000 lux max.				
		Ambient temperature	0 to +50°C 32 to 122°F				
		Relative humidity	35 to 85%, No condensation				
		Vibration	10 to 55 Hz, double amplitude 1.5 mm 0.06", two hours in each direction of X, Y, and Z				
Material			Aluminum				
Weight			Approx. 260 g		Approx. 290 g	Approx. 350 g	Approx. 480 g

*1 The value obtained after 64 times averaging at the reference distance.
*2 The target is KEYENCE standard object. (White diffusing material). The value is the average of the widths in the Height mode.
*3 The target is ø10 mm ø0.39" pin gauge. The value is the edge in the Position mode after 16 times of the Smoothing.
*4 With initial setting, minimum measuring range, and single smoothing processing
*5 The illumination on the receiver of the sensor head when targeting an illuminated white paper.



Controller

Model		LJ-G5001	LJ-G5001P
Sensor head compatibility		Compatible	
Number of connectable sensors		2 units max.	
Display	Minimum display unit	0.1 µm *1, 0.001 mm², 0.01° (Inch mode: 0.000004", 0.00001 inch)	
	Maximum display range	±99999.9 mm, ±999999 mm², ±99999.9°	
Input terminal block	Laser remote interlock input	Non-voltage input	
	Trigger input	For sensor head A, non-voltage input	For sensor head A, voltage input
	Timing 1 input	Non-voltage input	Voltage input
	Auto-zero 1 input		
	Reset input		
Output terminal block	Analog voltage output	±10 V × 2 outputs, output impedance: 100 Ω	
	Total judgment output	NPN open-collector output	PNP open-collector output
	Error output	NPN open-collector output (N.C.)	PNP open-collector output (N.C.)
	Process output	NPN open-collector output	PNP open-collector output
	Trigger input enable output	For sensor head A, NPN open-collector output	For sensor head A, PNP open-collector output
	Adjusted error output		
Expansion connector	Timing 2 input	Non-voltage input	Voltage input
	Auto-zero 2 input		
	Trigger input	For sensor head B, non-voltage input	For sensor head B, voltage input
	Program switching input	Non-voltage input, 4 inputs	Voltage input, 4 inputs
	Memory card save input	Non-voltage input	Voltage input
	Laser-Off input	For sensor head A/B, non-voltage input	For sensor head A/B, voltage input
	Judgment/Binary output *2	3-level judgment output: OUT1 to OUT8, total judgment output Binary output: OUT1 to OUT8 measured data output (21 bits) NPN open-collector output	3-level judgment output: OUT1 to OUT8, total judgment output Binary output: OUT1 to OUT8 measured data output (21 bits) PNP open-collector output
	Strobe output	NPN open-collector output	PNP open-collector output
	Trigger input enable output	For sensor head B, NPN open-collector output	For sensor head B, PNP open-collector output
	Adjusted error output		
Analog RGB monitor output		SVGA (800 × 600 pixels)	
RS-232C interface		Measured data output and control input/output (Maximum baud rate: 115200 bps, selectable)	
USB interface		In conformity with USB Revision 2.0 HI-SPEED (USB 1.1 Full-SPEED compatible)	
Ethernet interface		100BASE-TX/10BASE-T	
Memory card		Compatible with NR-M32 (32 MB), GR-M256 (256MB), and NR-M1G (1GB). (with FAT32)	
Major functions		Sensor heads calculation, Profile adjustment, Filter, Smoothing, Averaging, Position adjustment, OUT name change, Measurement mode selection (Height, position, gap, width, center position, section area, intersection, angle, profile comparison, profile tracking), Scaling, Average, Measurement, Measured value alarm, Tolerance setting, Auto-zero, Storage (data/profile), Memory card saving, Program memory, Trigger mode change, Mutual interference prevention, Measuring range change, Calibration, Laser light adjustment, Sampling time setting, Mask, Profile alarm setting, Inclination adjustment, Height adjustment, Display language switch, Setting support software connection, Trigger pitch/Measuring time display, etc.	
Ratings	Power supply voltage	24 VDC ±10%, Ripple: 10% (P to P) or less	
	Current consumption	800 mA or less with 1 sensor head/1 A or less with two sensor heads	
Environmental resistance	Ambient temperature	0 to +50°C 32 to 122°F	
	Relative humidity	35 to 85%, No condensation	
Weight		Approx. 1050 g	

*1 When LJ-G015 or LJ-G015K is connected only. When other sensor heads are connected, the minimum display unit is 1 µm.
*2 Time-sharing output of judgment results or binary measured data.
The rating of the NPN open-collector output: 50 mA max. (30 V max.), residual voltage of 1 V max. The rating of the PNP open-collector output: 50 mA max. (30 V max.), residual voltage of 1 V max.
The rating of the non-voltage input: 1 V or less ON voltage, 0.6 mA or less OFF current (Trigger input terminal: 1 V or less ON voltage, 1.0 mA or less OFF current)
The rating of the voltage input: 26.4 V maximum rating, 10.8 V or less ON voltage, 0.6 mA or less OFF current (Trigger input terminal: 26.4 V maximum rating, 10.8 V or less ON voltage, 1.0 mA or less OFF current)

3D Interference Measurement Sensor NEW

WI-5000 Series

Features

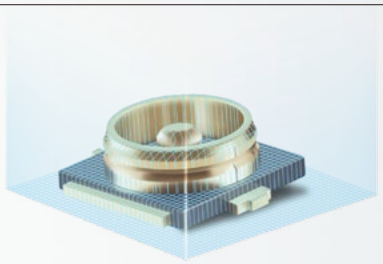
- Repeatability of 0.1 µm 0.000004"
- 80,000 points of height data in just 0.13 seconds



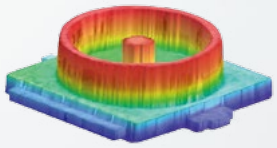


Capture shapes exactly as they are

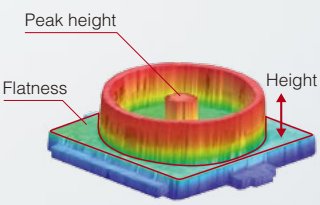
The WI-5000 Series captures 80,000 points of height data instantaneously across a maximum measurement area of 10 × 10 mm 0.39" × 0.39". The principles of white light interferometry result in accurate measurement of the target shape even if its colors or materials vary in reflectivity.



Capture 80,000 points of height data



Correct position, tilted angle



Measure multiple points

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