
Specifications

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This chapter includes the specifications of the controller and sensor head, the outer dimensions, and the characteristics such as the beam spot diameter.

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Specifications

Controller

Model	Single unit type	LK-G5001V	LK-G5001PV	LK-HA100
	Separate type	LK-G5001/ LK-HD500	LK-G5001P/ LK-HD500	
Designation		Main controller		Head expansion unit
Sensor head compatibility		Compatible		
No. of connectable sensor heads		2		1
Display (LK-HD500)	Minimum display unit	0.001 μm		N/A
	Display range	$\pm 999.999 \mu\text{m}$ to $\pm 9999.99 \text{ mm}$ (7 settings selectable)		
	Display cycle	Approx. 10 times/sec.		
Display interface	DISPLAY port	Either the display unit (LK-HD500) or dedicated touch panel (LK-HD1001) can be connected		N/A
	LED indicator	LASER ON		POWER STABILITY BRIGHT DARK
Analog voltage output		$\pm 10 \text{ V}$ output, Output impedance: 100Ω		
Analog current output		4 to 20 mA, Maximum load resistance: 350Ω		
No. of analog outputs		2		1
Terminal block	TIMING1 input* ¹	Non-voltage input	Voltage input	N/A
	RESET1 input* ¹	Non-voltage input	Voltage input	
	Auto-zero1 input* ¹			
	Laser control input			
	Laser remote input* ²	Non-voltage input		
	Alarm output	NPN open-collector output	PNP open-collector output	
	General comparator output			
Expansion connector	TIMING input	Non-voltage input	Voltage input	N/A
	RESET input	Non-voltage input	Voltage input	
	Auto-zero input			
	Program switch input			
	Binary selection input			
	Alarm output	NPN open-collector output	PNP open-collector output	
	Comparator output			
Binary output				

Model	Single unit type	LK-G5001V	LK-G5001PV	LK-HA100
	Separate type	LK-G5001/ LK-HD500	LK-G5001P/ LK-HD500	
RS-232C interface		Baud rate: 9600 to 115200 bps Data length: 8 bits Stop bit length: 1 bit Parity: None/even/odd		N/A
USB interface		USB Revision 2.0 high speed compliant* ³		
Ethernet interface* ⁴		100Base-TX/10Base-T		
Head expansion unit connector		Up to 10 head expansion units can be connected to one main controller		
Expansion unit connector		Either of the CC-Link unit (LK-CC100) or DeviceNet unit (LK-DN100) can be connected		N/A
Power supply	Power supply voltage	24 VDC±10%		24 VDC±10% (Supplied from the controller)
	Maximum current consumption	3.5 A (when the maximum number of head expansion units are connected)		
Environment resistance	Ambient temperature	When one or less head expansion unit is connected: 0 to 50°C When two or more head expansion units are connected: 0 to 40°C		
	Relative humidity	35 to 85%RH (No condensation)		
Weight		600 g		300 g

*⁷This input is applied to all of the synchronized OUT.

*⁸When the laser class 3B sensor head is connected, a key-operated switch must be used for the input to this terminal. The laser is emitted only when the key-operated switch is set to the ON position. (Select a key which can be removed only when it is set to the OFF position.) When the laser class 1, 2/3R sensor head is connected, the laser turns on when this terminal is opened and turns off when it is short-circuited.

*⁹When a PC supporting USB Revision 1.1 or USB Revision 2.0 full speed is connected, the data refresh cycle and other operations may slow down.

*¹⁰The Ethernet connection should be used only for one-to-one connection with a PC or for local connection including only the PC and the LK-G5000 Series units.

- NPN open-collector output rating: 50 mA max. (40 V max.), Residual voltage: 0.5 V max.
- PNP open-collector output rating: 50 mA max. (30 V max.), Residual voltage: 0.5 V max.
- Non-voltage input rating: ON voltage: 1 V max., OFF current: 0.6 mA max.
- Voltage input rating: Maximum input rating: 26.4 V, ON voltage: 10.2 V, OFF current: 0.6 mA
- Parts of the input/output circuit of the LK-G5000 Series are internally common. Be careful that no potential difference is generated between the internally common terminals due to the potential difference between the cables/external devices. For details, refer to "Precautions on wiring" (page 7).

Sensor head

LK-H008/H008W

Model		LK-H008/ LK-H008W	
Mounting mode		Specular reflection	
Reference distance		8 mm	
Measurement range* ¹		±0.5 mm	
		Red semiconductor laser	
Light source	Wavelength	655 nm	
	Laser Class	IEC60825-1	Class II
		FDA(CDRH) Part 1040.10	Class 1
	Output	0.3 mW	
Beam spot diameter (at reference distance)		φ20 μm 20 μm x 550 μm	
Linearity* ²		±0.05% of F.S. (F.S. = 1.0 mm)	
Repeatability* ³		0.005 μm (0.001 μm)	
Sampling cycle		2.55/5/10/20/50/100/200/500/1000 μs (9 steps selectable)	
Temperature fluctuation		0.02% of F.S./°C (F.S. = 1.0 mm)	
Environment resistance	Enclosure rating	IP67	
	Ambient light	Incandescent lamp or fluorescent lamp: 10000 lx max.	
	Ambient temperature* ⁴	0 to +50°C	
	Relative humidity	35 to 85%RH (No condensation)	
	Vibration	10 to 55 Hz, 1.5 mm double amplitude in X, Y, and Z directions, 2 hours respectively	
Material		Aluminum die-cast	
Weight (including cable)		Approx. 240 g	

*1 Measurement range when the sampling cycle is 20 μs or more.

*2 This value is obtained when the KEYENCE standard target (metal mirror workpiece) is measured in the normal measurement mode.

*3 This value is obtained when the KEYENCE standard target (metal mirror workpiece) is measured at the reference distance with the number of averaging measurements set to 16384.

*4 When the ambient temperature rises to 40 °C or more, mount this on the metal plate for using.

LK-H020/H025/H023/H028/H022/H027/H022K/H027K

Model		LK-H020/ LK-H025	LK-H023/ LK-H028	LK-H022/ LK-H027	LK-H022K/ LK-H027K	
Mounting mode		Diffuse reflection	Diffuse reflection	Diffuse reflection	Specular reflection	
Reference distance		20 mm	20 mm	20 mm	16.1 mm	
Measurement range* ¹		±3 mm	±3 mm	±3 mm	±2.8 mm	
		Red semiconductor laser				
Light source	Wavelength	655 nm	690 nm	655 nm	655 nm	
	Laser Class	IEC60825-1	Class 3R	Class 3B	Class 2	Class 2
		FDA(CDRH) Part 1040.10	Class IIIa	Class IIIb	Class II	Class II
	Output	4.8 mW	50 mW	0.95 mW	0.95 mW	
Beam spot diameter (at reference distance)		φ25 μm (LK-H020/H023/H022/H022K)/ 25 μm x 1400 μm (LK-H025/H028/H027/H027K)				
Linearity* ²		±0.02% of F.S. (F.S. = 6 mm)				
Repeatability* ³		0.02 μm (0.01 μm)				
Sampling cycle		2.55/5/10/20/50/100/200/500/1000 μs (9 steps selectable)				
Temperature fluctuation		0.01% of F.S./°C (F.S. = 6 mm)				
Environment resistance	Enclosure rating	IP67				
	Ambient light	Incandescent lamp or fluorescent lamp: 10000 lx max.				
	Ambient temperature* ⁴	0 to +50°C	0 to +45°C	0 to +50°C		
	Relative humidity	35 to 85%RH (No condensation)				
	Vibration	10 to 55 Hz, 1.5 mm double amplitude in X, Y, and Z directions, 2 hours respectively				
Material		Aluminum die-cast				
Weight (including cable)		Approx. 230 g				

*1 For details about the measurement range, refer to page 1-12 (for the sampling cycles between 2.55 and 10 μs).

*2 This value is obtained when the KEYENCE standard target (light-diffusive white object) is measured in the normal measurement mode.

*3 This value is obtained when the KEYENCE standard target (light-diffusive white object) is measured at the reference distance with the number of averaging measurements set to 16384.
The value in parentheses is a typical example of a measurement with the number of averaging measurements set to 65536.

*4 The LK-H023/H028 must be mounted on a metal plate when the ambient temperature rises to 40°C or more.

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LK-H050/H055/H053/H058/H052/H057/H052K/H057K

Model		LK-H050/ LK-H055	LK-H053/ LK-H058	LK-H052/ LK-H057	LK-H052K/ LK-H057K	
Mounting mode		Diffuse reflection	Diffuse reflection	Diffuse reflection	Specular reflection	
Reference distance		50 mm	50 mm	50 mm	46.3 mm	
Measurement range* ¹		±10 mm	±10 mm	±10 mm	±5.2 mm	
		Red semiconductor laser				
Light source	Wavelength	655 nm	690 nm	655 nm	655 nm	
	Laser Class	IEC60825-1	Class 3R	Class 3B	Class 2	Class 2
		FDA(CDRH) Part 1040.10	Class IIIa	Class IIIb	Class II	Class II
Output		4.8 mW	50 mW	0.95 mW	0.95 mW	
Beam spot diameter (at reference distance)		φ50 μm (LK-H050/H053/H052/H052K)/ 50 μm x 2000 μm (LK-H055/H058/H057/H057K)				
Linearity* ²		±0.02% of F.S. (F.S. = 20 mm)				
Repeatability* ³		0.025 μm				
Sampling cycle		2.55/5/10/20/50/100/200/500/1000 μs (9 steps selectable)				
Temperature fluctuation		0.01% of F.S./°C (F.S. = 20 mm)				
Environment resistance	Enclosure rating	IP67				
	Ambient light	Incandescent lamp or fluorescent lamp: 10000 lx max.				
	Ambient temperature	0 to +50°C				
	Relative humidity	35 to 85%RH (No condensation)				
Vibration		10 to 55 Hz, 1.5 mm double amplitude in X, Y, and Z directions, 2 hours respectively				
Material		Aluminum die-cast				
Weight (including cable)		Approx. 260 g				

*1 For details about the measurement range, refer to page 1-13 (for the sampling cycles between 2.55 and 10 μs).

*2 This value is obtained when the KEYENCE standard target (light-diffusive white object) is measured in the normal measurement mode.

*3 This value is obtained when the KEYENCE standard target (light-diffusive white object) is measured at the reference distance with the number of averaging measurements set to 16384.

LK-H080/H085/H082/H087

Model		LK-H080/ LK-H085	LK-H082/ LK-H087
Mounting mode		Diffuse reflection	Diffuse reflection
Reference distance		80 mm	80 mm
Measurement range* ¹		±18 mm	±18 mm
		Red semiconductor laser	
Light source	Wavelength	655 nm	655 nm
	Laser Class	IEC60825-1	Class 3R
		FDA(CDRH) Part 1040.10	Class IIIa
	Output	4.8 mW	0.95 mW
Beam spot diameter (at reference distance)		ϕ 70 μ m (LK-H080/082) 70 μ m x 2500 μ m (LK-H085/087)	
Linearity* ²		±0.02% of F.S. (F.S. = 36 mm)	
Repeatability* ³		0.10 μ m	
Sampling cycle		2.55/5/10/20/50/100/200/500/1000 μ s (9 steps selectable)	
Temperature fluctuation		0.01% of F.S./°C (F.S. = 36 mm)	
Environment resistance	Enclosure rating	IP67	
	Ambient light	Incandescent lamp or fluorescent lamp: 10000 lx max.	
	Ambient temperature* ⁴	0 to +50°C	
	Relative humidity	35 to 85%RH (No condensation)	
	Vibration	10 to 55 Hz, 1.5 mm double amplitude in X, Y, and Z directions, 2 hours respectively	
Material		Aluminum die-cast	
Weight (including cable)		Approx. 280 g	

*1 This measurement range is when the sampling cycle is over 20 μ s.

*2 This value is obtained when the KEYENCE standard target (diffusive, white object) is measured whilst using the standard mode.

*3 This value is obtained when the KEYENCE standard target (light-diffusive white object) is measured at the reference distance with the number of averaging measurements set to 16384.

*4 Should the ambient temperature be above 40°C, a metal plate must be attached before use.

6 Specifications

LK-H150/H155/H152/H157

Model		LK-H150/ LK-H155	LK-H152/ LK-H157
Mounting mode		Diffuse reflection	Diffuse reflection
Reference distance		150 mm	150 mm
Measurement range* ¹		±40 mm	±40 mm
		Red semiconductor laser	
Light source	Wavelength	655 nm	655 nm
	Laser Class	IEC60825-1	Class 3R
		FDA(CDRH) Part 1040.10	Class IIIa
	Output	4.8 mW	0.95 mW
Beam spot diameter (at reference distance)		ϕ 120 μ m (LK-H150/152) 120 μ m x 4200 μ m (LK-H155/157)	
Linearity* ²		±0.02% of F.S. (F.S. = 80 mm)	
Repeatability* ³		0.25 μ m	
Sampling cycle		2.55/5/10/20/50/100/200/500/1000 μ s (9 steps selectable)	
Temperature fluctuation		0.01% of F.S./°C (F.S. = 80 mm)	
Environment resistance	Enclosure rating	IP67	
	Ambient light	Incandescent lamp or fluorescent lamp: 10000 lx max.	Incandescent lamp or fluorescent lamp: 5000 lx max.
	Ambient temperature* ⁴	0 to +50°C	
	Relative humidity	35 to 85%RH (No condensation)	
	Vibration	10 to 55 Hz, 1.5 mm double amplitude in X, Y, and Z directions, 2 hours respectively	
Material		Aluminum die-cast	
Weight (including cable)		Approx. 300 g	

*1 This measurement range is when the sampling cycle is over 20 μ s.

*2 This value is obtained when the KEYENCE standard target (diffusive, white object) is measured whilst using the standard mode.

*3 This value is obtained when the KEYENCE standard target (light-diffusive white object) is measured at the reference distance with the number of averaging measurements set to 16384.

*4 Should the ambient temperature be above 40°C, a metal plate must be attached before use.