

CMOS Analogue Laser Sensors

IA Series

Intelligent Sensor
I-SERIES



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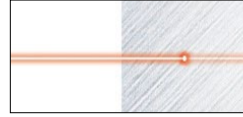
High-Accuracy Measurement

— SUPPORTS A VARIETY OF WORKPIECES

[Measurement with higher stability]

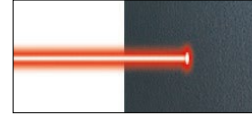
The IA Series automatically controls and optimises laser power according to the reflectance of the target. As a result, stable measurement is possible for almost any target from black rubber to shiny metal surfaces.

Reduced power



When the workpiece is bright

Increased power



When the workpiece is dark

Tough Head Structure

— USE IN ALMOST ANY ENVIRONMENT

[Die cast metal used for IP67/optical base]

The head structure was redesigned to give the sensor the smallest body in its class and make it tough enough to withstand almost any environment. In addition, the optical base is made of die cast SUS304 for added strength and protection.



Easy Installation

— CAN BE INSTALLED ALMOST ANYWHERE




[Smallest body in its class]

The IA Series makes use of a unique aspherical lens to achieve the smallest head housing in its class. Head dimensions are 36 mm x 48.5 mm x 22.6 mm* and the head weight is just 50 g* (not including cable). Minimising the installation space required and reducing the weight, make it ideal for mounting on moving parts.

*IA-030

Specifications

Head

Model	IA-030	IA-065	IA-100	
Appearance				
Reference distance	30 mm	65 mm	100 mm	
Measurement range	20 to 45 mm	55 mm to 105 mm	75 mm to 130 mm	
Light source	Red semiconductor laser, wavelength: 655 nm (visible light)			
	Laser class	Class 1 (FDA (CDRH) Part1040.10) ^{*1} Class 1 (IEC 60825-1)	Class II (FDA (CDRH) Part1040.10) Class 2 (IEC 60825-1)	
	Output	220 µW	560 µW	
Spot diameter (at standard distance)	Approx. 200 × 750 µm	Approx. 550 × 1750 µm	Approx. 400 × 1350 µm	
Linearity ^{*2}	±0.1% of F.S. (F.S.=±5 mm, 25 to 35 mm)	±0.1% of F.S. (F.S.=±10 mm, 55 to 75 mm)	±0.15% of F.S. (F.S.=±20 mm, 80 to 120 mm)	
Repeatability ^{*3}	2 µm	4 µm	10 µm	
Sampling rate	0.33/1/2/5 ms (4 levels available)			
Operation status indicators	Laser warning: Green LED, Analogue output: Red LED, Measurement centre: Green LED			
Temperature characteristics	0.05% of F.S./°C (F.S.=±5 mm, 25 to 35 mm)	0.06% of F.S./°C (F.S.=±10 mm, 55 to 75 mm)	0.06% of F.S./°C (F.S.=±20 mm, 80 to 120 mm)	
Environmental resistance	Enclosure rating	IP67		
	Ambient light ^{*4}	Incandescent lamp: 5000 lux	Incandescent lamp: 7500 lux	
	Ambient temperature	-10 to +50°C (No condensation or freezing)		
	Relative humidity	35 to 85% RH (No condensation)		
Vibration	10 to 55 Hz 1.5 mm double amplitude, in the X, Y and Z directions, 2 hours respectively			
Material	Housing material: PBT Metal parts: SUS304 Packing: NBR Lens cover: Glass Cable: PVC			
Weight (including cable)	Approx. 120g	Approx. 130g		


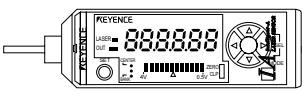
*1 The classification is implemented based on IEC 60825-1 following the requirement of Laser Notice No.50 of FDA(CDRH).

*2 Value when measuring the KEYENCE standard target (white diffuse object).

*3 Value when measuring the KEYENCE standard target (white diffuse object) at the reference distance, sampling rate: 1 ms, and average number of times: 16.

*4 Value when the sampling rate is set to 2 ms or 5 ms.

Amplifier unit

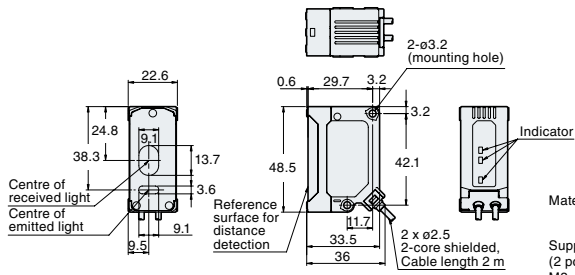
Model	IA-1000
Appearance	
Display rate	Approx. 10 times/sec
Minimum displayable unit	1 µm (IA-030) - 2 µm (IA-065/IA-100)
Display range	-99.999 to 99.999 mm (IA-030) - 99.998 to 99.998 mm (IA-065/IA-100)
Analogue output voltage	0.5 to 4 V, Output impedance 100 Ω
Control input ^{*1}	Bank switch input
	Zero-shift input
	Stop emission input
	Non-voltage input
Power supply	Power voltage
	Power consumption
Environmental resistance	Ambient temperature
	Relative humidity
	Vibration
Material	Front sheet: Polycarbonate Key tops: Polyacetal Cable: PVC
Weight (including cable)	Approx. 110 g
Power supply I/O cable	 <ul style="list-style-type: none"> (Brown) 10 to 30 VDC (Blue) Power supply GND (Black) Analogue voltage output (0.5 to 4 V) (Shielded) Analogue voltage output (GND) (Pink^{*)} External input (Purple) Laser emission stop input

*1 Either bank switching input or zero shift input can be used. The rated non-voltage input is: ON voltage, 2 V or less; OFF current, 0.05 mA or less.

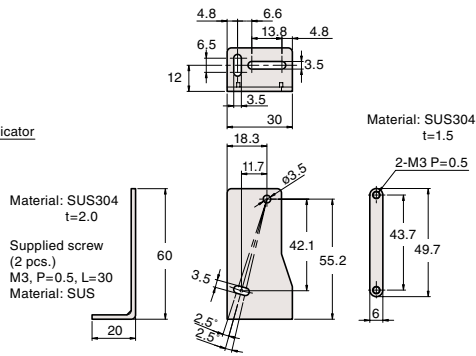
*2 The external input activates, depending on the amplifier OPTIONAL settings. (bnK: Bank switching, Sft: Zero shift, oFF: Input off)

Sensor head

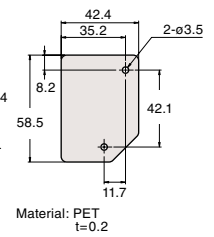
IA-030



Mounting bracket (accessory)

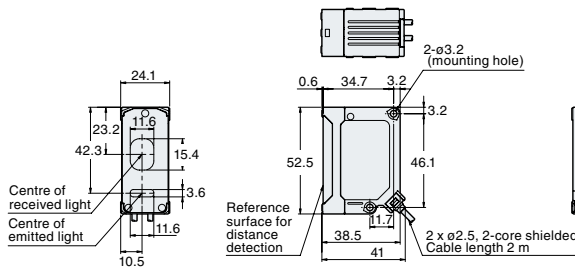


Insulation sheet (accessory)

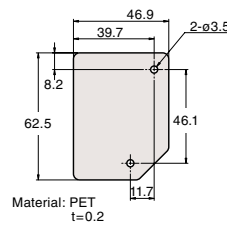


Sensor head

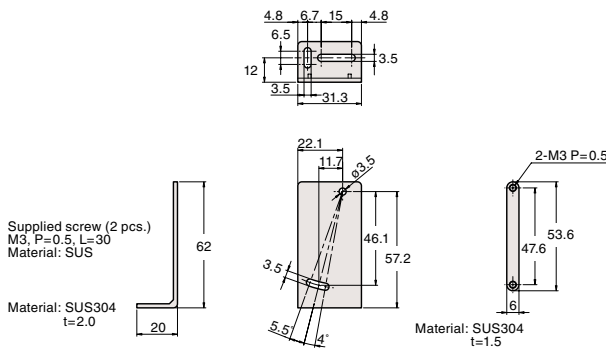
IA-065/100



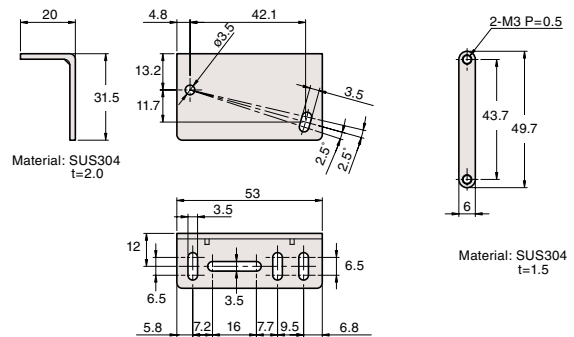
Insulation sheet (accessory)



Mounting bracket (accessory)



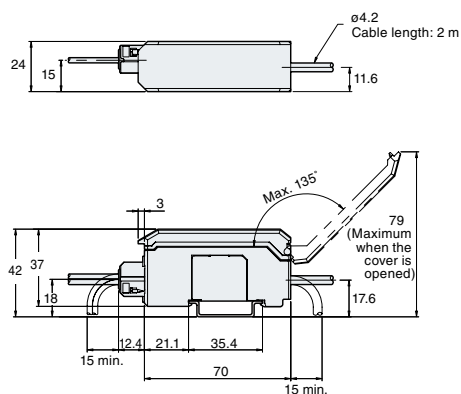
Rear mounting bracket for IA-030 (optional) OP-87128



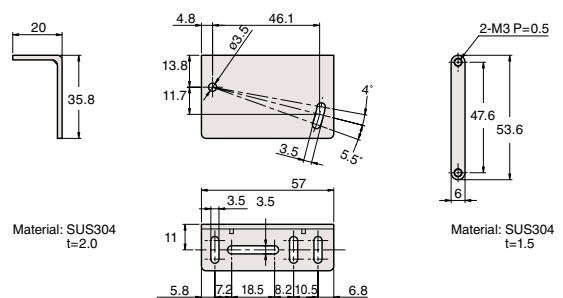
Supplied screw (2 pcs.) M3, P=0.5, L=30, Material: SUS

Amplifier unit

IA-1000



Rear mounting bracket for IA-065/100 (optional) OP-87129



Supplied screw (2 pcs.) M3, P=0.5, L=30, Material: SUS

Related Product

Laser Displacement Sensors

LB-70 Series

Features

- High repeatability of 2 μm
- Quick response time of 0.15 ms
- Precise 0 V setting
- Long distance measurement



Specifications

Type		Long-range	High-resolution
Model	Sensor head	LB-11	LB-12
	Controller	LB-70	LB-72
Reference distance ¹		100 mm	40 mm
Measuring range		± 40 mm	± 10 mm
Light source		Invisible infrared semiconductor laser	
Output		3.0 mW (FDA)	
Pulse duration		2.5 mW (IEC)	1.0 mW (IEC)
Wavelength		70 μs	15 μs
Laser Class		785 nm	780 nm
Laser Class		FDA (CDRH) Part 1040. 10 IEC 60825-1	Class IIIb Laser Product
Spot diameter ²		Class 3R Laser Product	Class 1 Laser Product
Linearity ³		1.0 x 2.0 mm	1.0 mm dia.
Repeatability ⁴		1.6% of F.S. (80 to 120 mm)	1% of F.S.
		10 μm (at 500 ms)/ 40 μm (at 20 ms)/ 180 μm (at 0.7 ms)	2 μm (at 60 ms)/ 15 μm (at 2 ms)/ 50 μm (at 0.15 ms)

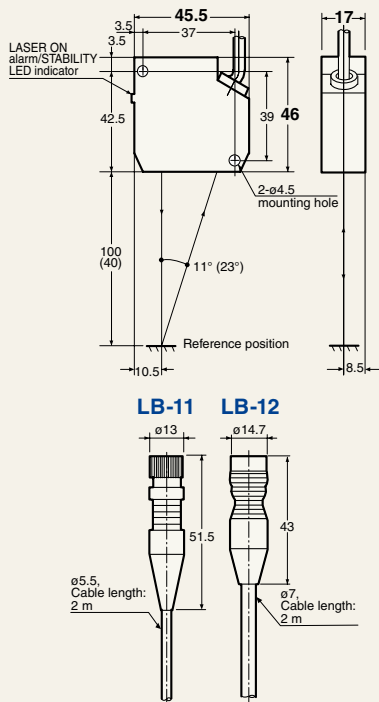
1. Distance from the surface of the laser-emitting portion of the sensor head.
2. The beam spot is visible when the object (white paper) is placed at a reference distance from the laser-emitting portion of the sensor head.
3. F.S. stands for a measuring range of 80 mm.
4. The value when the object (white paper) is measured at a reference distance from the laser-emitting portion of the sensor head.

Dimensions

Sensor heads

LB-11/12

* Data in () applies to **LB-12**. All other dimensions are the same for both models.



Controllers

LB-70/72

* Data in () applies to **LB-72**. All other dimensions are the same for both models.

