

# Tough, Reliable, Repeatable Laser Measurement Simplified

KEYENCE BRINGS YOU AN ECONOMICAL ANALOGUE LASER SENSOR



*Intelligent Sensor*  
**I-SERIES**





**NEW**

**CMOS Analogue Laser Sensor  
IA Series**

***In-Line, General-Purpose  
Analogue Laser Sensor with  
Low Cost & High Performance***

*Intelligent Sensor*  
***I-SERIES***

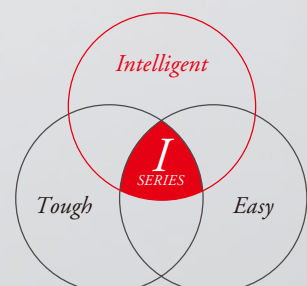


#### WHAT IS THE I-SERIES?

A range of laser displacement sensors which are highly accurate, yet tough and easy to use, with functions refined for use in the field.

*Intelligent Sensor*  
***I-SERIES***

**Low-cost  
High  
Performance**



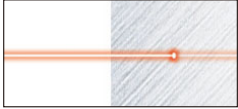
# High-Accuracy Measurement

SUPPORTS A VARIETY OF WORKPIECES

## [Measurement with higher stability]

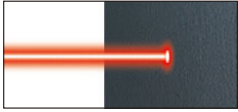
The IA Series automatically controls and optimises laser power according to the reflectance of the target. As a result, stable measurement is possible for almost any target from black rubber to shiny metal surfaces.

### 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 × 48.5 mm × 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

## APPLICATIONS BY INDUSTRY

### TRANSPORTATION

Control of gasket coating



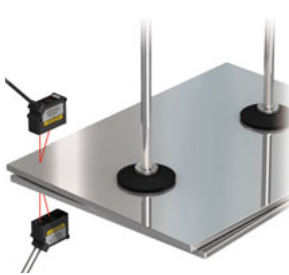
### PLASTICS & RUBBER

Detecting presence/absence of cap seals



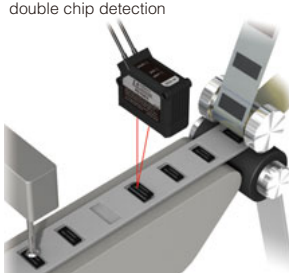
### STEEL INDUSTRY

Detection of double sheets



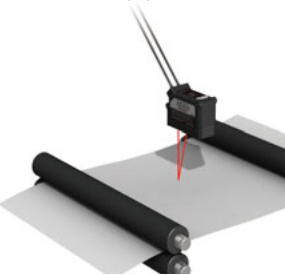
### ELECTRONICS

Chip presence/absence and double chip detection



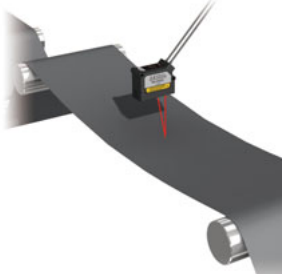
### PAPER INDUSTRY

Measurement of paper tension



### PLASTICS & RUBBER

Tension control of sheet material



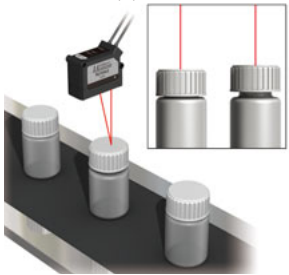
### FOOD

Counting of packages



### PHARMACEUTICALS



Detection of cap position



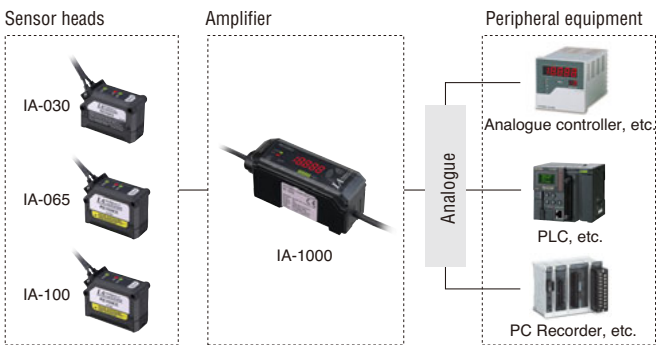
# 3 types of IA Series Sensor Heads are Available

The sensor head lineup offers three models according to application and mounting requirements, resulting in complete application solving ability of the IA Series.

## HEAD LINE-UP

	<div><div>IA-030</div><div>Standard Distance 30 mm</div><div></div></div>	<div><div>IA-065</div><div>Standard Distance 65 mm</div><div></div></div>	<div><div>IA-100</div><div>Standard Distance 100 mm</div><div></div></div>
Measurement Range	20 mm to 45 mm	55 mm to 105 mm	75 mm to 130 mm
Display Resolution	1 μm	2 μm	2 μm
Repeatability	2 μm	4 μm	10 μm

## SYSTEM CONFIGURATIONS



## ANALOGUE OUTPUT

### Multi-stage setting supported




If analogue data is transmitted to a PLC, multilevel setting can be implemented to cover various workpieces, enabling a reduction in labour-hours.

### Device feedback

Because the output is analogue, position information can be fed back, and analogue control can be implemented.


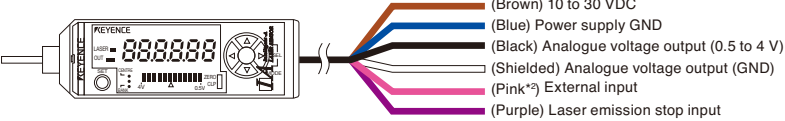
SPECIFICATIONS

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	Class1 (FDA CDRH Part1040.10)*1 Class1 (IEC 60825-1)		ClassII (FDA CDRH Part1040.10) Class2 (IEC 60825-1)
		Output	220 μW		560μW
Spot diameter (at standard distance)		Approx. 200 × 750 μm	Approx. 550 × 1750μm	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**	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 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 4V, Output impedance 100 Ω.
Control input*1	Bank switch input	Non-voltage input
	Zero-shift input	
	Stop emission input	
Power supply	Power voltage	10 to 30 VDC Ripple (P-P) 10% included
	Power consumption	1500 mW max. (at 30 V; 50 mA max.)
Environmental resistance	Ambient temperature	-10 to +55°C (No condensation or freezing)
	Relative humidity	35 to 85% RH (No condensation)
	Vibration	10 to 55 Hz 1.5 mm in the X, Y and Z directions, 2 hours respectively
Material		Front sheet: Polycarbonate Key tops: Polyacetal Cable: PVC
Weight (including cable)		Approx. 110 g
Power supply I/O cable		

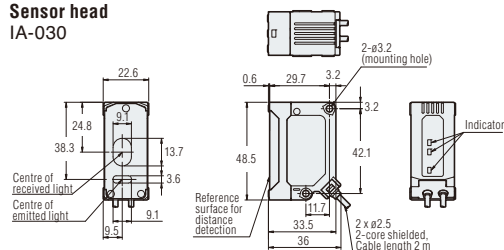
\*1 Either bank switching input or zero shift input can be used. The rated non-voltage input is: ON voltage, 2 V or less; OFF current, 0.05 mA or less.  
\*2 The external input activates, depending on the amplifier OPTIONAL settings. ( bnk: Bank switching, SFt: Zero shift, oFF: Input off )



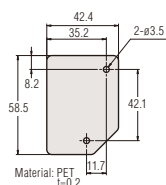
## DIMENSIONS

Unit: mm

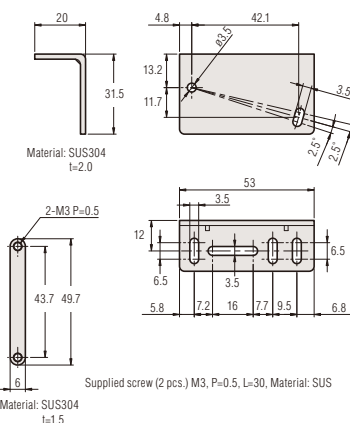
### Sensor head IA-030



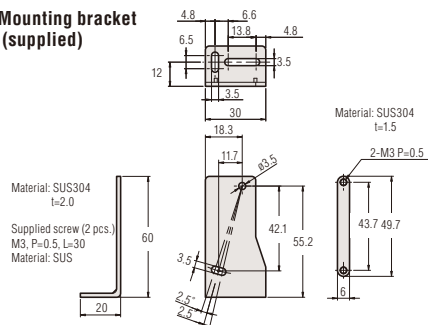
### Insulation sheet (accessory)



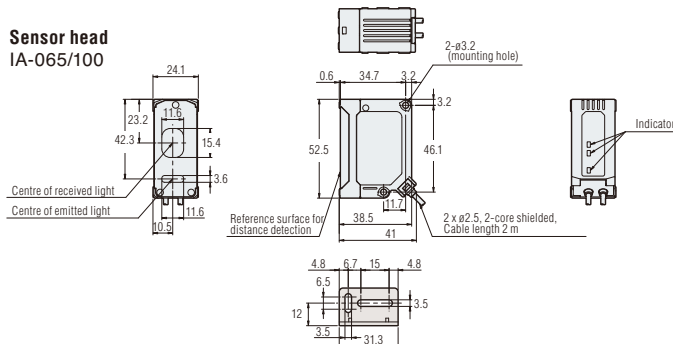
### Rear mounting bracket for IA-030 (optional) OP-87128



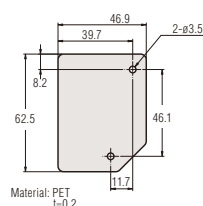
### Mounting bracket (supplied)



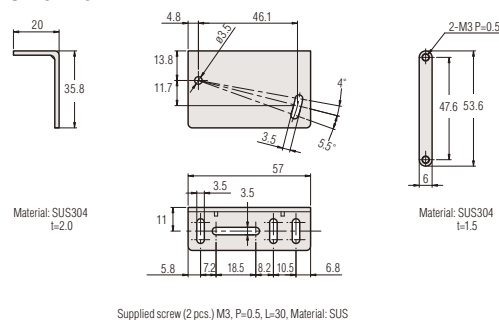
### Sensor head IA-065/100



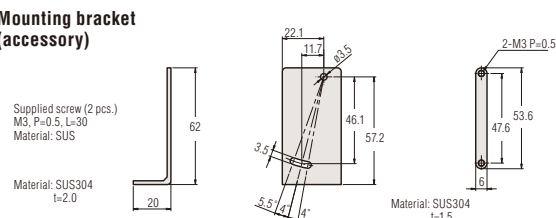
### Insulation sheet (accessory)



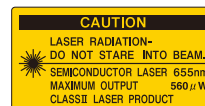
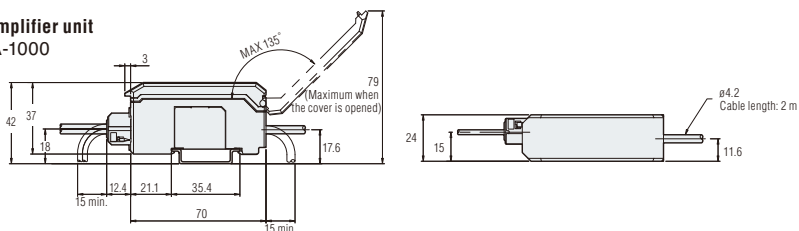
### Rear mounting bracket for IA-065/100 (optional) OP-87129



### Mounting bracket (accessory)



### Amplifier unit IA-1000



# KEYENCE

Please visit: [WWW.keyence.com](http://WWW.keyence.com)

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