Digital type

Separated amplifier type Laser sensor

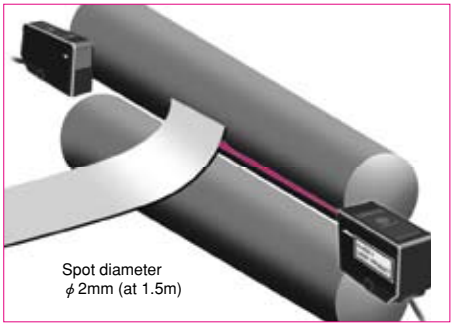
LDA SERIES CE

High performance with easy handling!
Possible to detect transparent object!

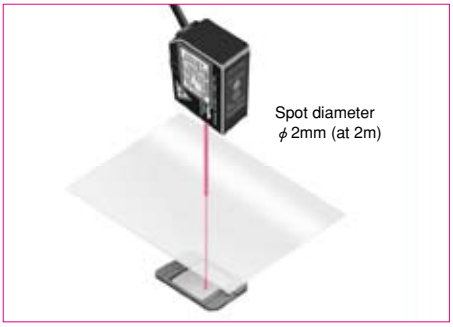
- Visible laser ray!
- High response time, 60 μsec (when Fast mode).
- 3 kinds of beam can be chosen [Spot (standard), area, line] (only retro-reflection type with coaxial).
- IP67 for sensor head.
- Sensitivity correcting function is provided.
- Coaxial-reflection type is also lined-up.

Applications

Through-beam type [Warp detection]

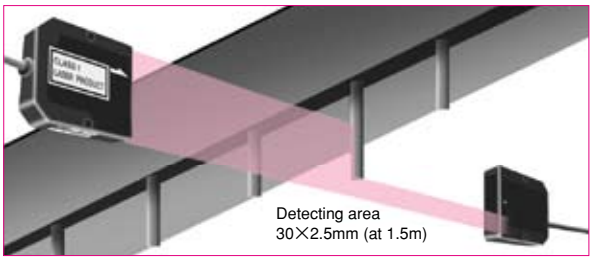


Coaxial retro-reflection type
[Transparent detection]

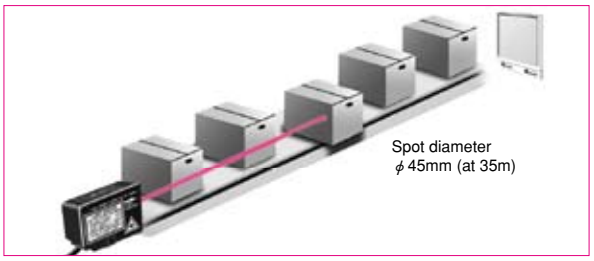


Coaxial reflection type [Tip work detection]

Through-beam,length measurement type
[Height/width detection]



Coaxial retro-reflection type,long distance
[Uneven goods detection]

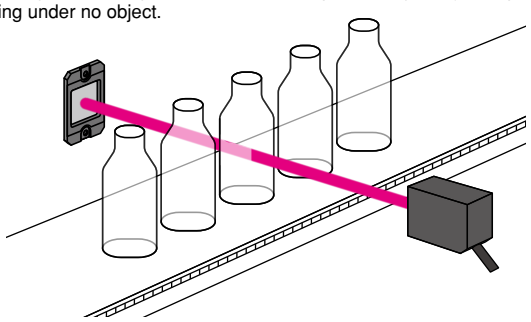


Teaching mode

It is easy to set each teaching mode in accordance with the application.

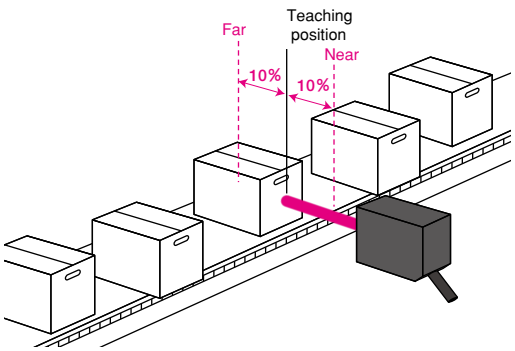
Transparent objects teaching

This mode is to detect transparent objects with retro-reflection type sensor head. (Glass or plastic film etc.) It is possible to detect objects with flat light-receiving amount like a transparent object by one point teaching under no object.



Zone teaching

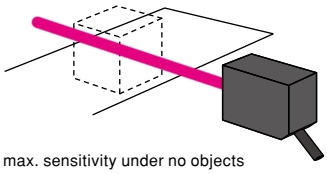
This teaching is to detect within upper/lower limit value. It is possible to set with±10% of light-receiving amount when teaching.



One point teaching

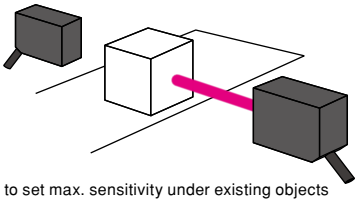
It is possible to set not to detect background by teaching under no objects.

● **Reflection type**



Possible to set max. sensitivity under no objects

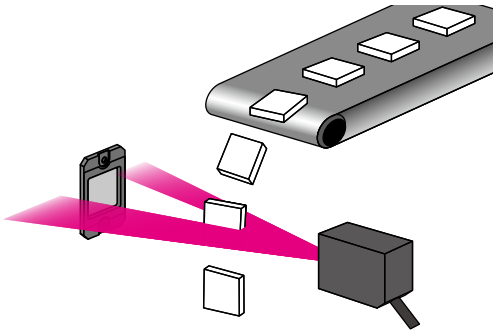
● **Through-beam/retro-reflection type**



Possible to set max. sensitivity under existing objects

Auto teaching

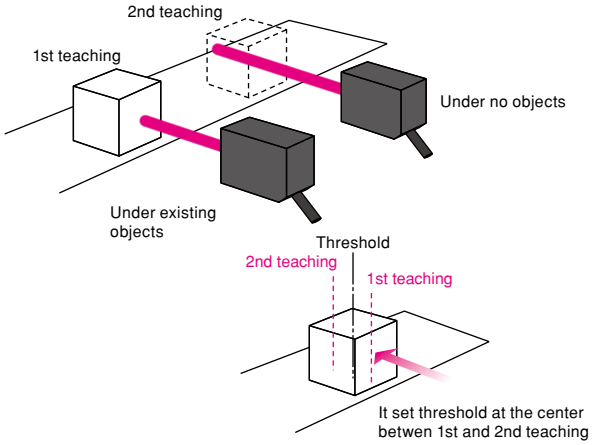
It is possible to set suitable sensitivity even if objects are moving.



Two points teaching

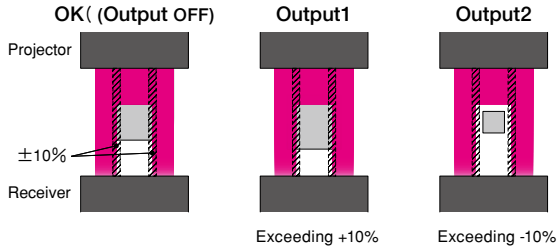
First, it makes 2 kinds of teaching for existing objects and no objects and it set threshold at the center between 2 points.
It is suitable for the detection under severe condition such as the detection of very small object or step detection.

● **Reflection type**



Length measuring teaching

It is possible to distinguish by teaching of width in the area. If exceeding +10%, output 1 operates and if exceeding -10%, output 2 operates.



■ Specifications

Sensor head

Kinds		Through-beam type	Length measurement	Coaxial retro-reflection	Coaxial retro-reflection (long type)	Coaxial reflection
Appearance						
Model No.		JDA-15K5 Projector: JDA-15K5P Receiver: JDA-15K5R	JDA-15K5-W Projector: JDA-15K5-WP Receiver:JDA-15K5-WR	HDA-70K3	HDA-350K3	HDA-08K1
Optical system		———		Coaxial reflection		
Light source		Visible red semiconductor laser 650nm				
Laser class		JIS/IEC class1		JIS/IEC class2		
Max.power		390 μW		3mW		
Laser life		Approx.45,000 hours (at 55℃)				
Detecting distance	Long	1.5m	1.5m (0.5 when length measure-ment mode*1)	0.08m～7m*2	0.5～35m*2	0.8m*3
	Standard			0.05m～4m*2	0.3～25m*2	0.6m*3
	Fast			0.02m～2m*2	0.1m～14m*2	0.2m*3
Spot diameter		φ2 mm (at 1.5m)	30×2.5 mm (at 1.5m)	φ9mm (at 7m)*4	φ45mm (at 35m)	φ1.3mm (at 0.8m)
Repeatability		0.2mm	0.3mm	0.2mm	0.2mm	0.2mm
Indication lamps		Laser emitting lamp (only projector): green LED, Output lamp (only receiver): orange LED		Laser emitting lamp: green LED, Output lamp: orange LED		
Connection		Connector type				
Ambient illuminance		Incandescent lamp: 3,000lux or less, sun light: 10,000lux or less				
Ambient temperature/humidity		-10 to +55℃ (-20 to +60℃ at stored), 35 to 85%RH (35 to 95% at stored) Not icing, not condensing				
Withstand voltage		1,000VAC/min.				
Vibration resistance		Double amplitude 1.5mm, 10 to 55Hz, each 2 hour in X, Y and Z directions				
Impact resistance		500m/s², each 3 time in X, Y and Z directions				
Protective structure		IP67 (IEC standard)				
Case materials		Case: polcarbonate, window: glass, PMMA resin				

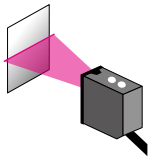
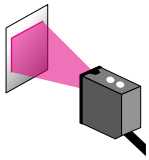
Weight (including cable)	Approx.90g	Approx.115g	Approx.45g		
Accessory	———		Reflector (RRL-23S)	Reflector (RRL-51S)	———

*1. Setting of the response time when measuring mode is available only under Long mode or standard mode.
*2. The attached reflector is used.
*3. The detecting object is a white paper with 200×200mm.
*4. Spot diameter can be changed with the attachement as an option.

Amplifier

Model No.	**LDA-DC**	**LDA-DA**
Power source	12 to 24VDC (+10%, -10%, ripple 10% or less)	
Current consumption	45mA when 24VDC (including sensor head but excluding analog output current)	
Response speed (sensing mode)	60 μs/500 μs/2ms (Fast/Standard/Long depending on the sensing mode)	
Output	NPN open-collector output	PNP open-collector output
Control output	100mA 24VDC or less (Residual voltage 1.8V or less)	
Indication lamps	Laser emission lamp: Green, output lamp: orange, teaching lamp: red, channel lamp: green (1/2CH)	
Digital indicators	7-segment LED, 8 digits	
Timer function	ON-delay, OFF-delay, one-shot	
Timer time	1msec to 9sec	
Teaching	1-point, 2-point, zone, transparent detection, length measuring	
Operating mode	Changeover switch (L: Light-ON, D: Dark-ON)	
Analog output	4 to 20mA	
Input/output setting	Outer input setting:1-point teaching, synchronous input, laser OFF, counter reset Output setting:2CH output + alarm setting	
Zero reset	Provided	
Initial reset	Provided (Mode is returned to initial setting)	
Connection	Cable 2m long	
Ambient temperature/humidity	-25 to +55℃ (-20 to +60℃ at stored), 35 to 85%RH (35 to 95% at stored) Not icing, not condensing	
Withstand voltage	1,000VAC/min.	
Insulation resistance	20MΩ(500VDC) or more	
Vibration resistance	Double amplitude 1.5mm, 10 to 55Hz, each 2 hour in X, Y and Z directions	
Impact resistance	500m/s², each 3 time in X, Y and Z directions	
Protective structure	IP50 (IEC standard)	
Case material	Body/cover: Polycarbonate	
Weight	Approx.65g (including cable)	
Accessory	Fitting metal	
Mounting	DIN rail mounting	

Lens attachment (as an option)

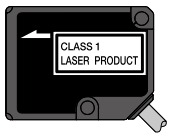
Appearance	**Model No.**	**Spot daimeter**	**Remark**
	FPL-A01	Line type 40×1mm (at 300mm)  Area type 35×35mm (at 300mm) 	Spot diamenter can be changed with exclusive lens attachment.

■ Cautions for Laser Product

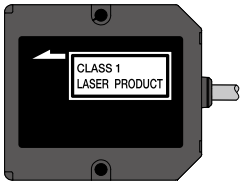
This product is radiating the infrared laser beam and is classified as Class 1/2 by JIS C6802:2005/IEC 60825-1 Laser Safety Standard. Refer to Page 159.

Warning Don't view the laser beam directly or expose it to human eyes. It may injure human eyes or damage health.

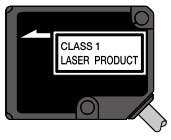
through-beam type



Length measurement

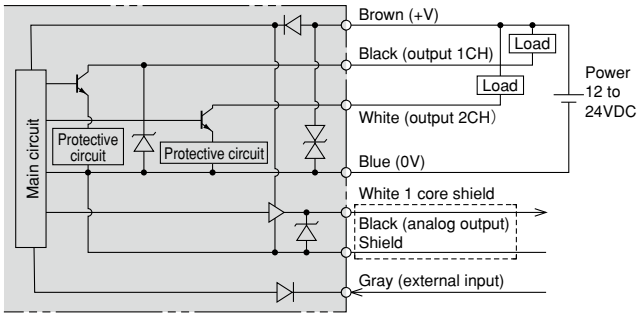


Coaxial retro-reflection
Coaxial retro-reflection (long type)
Coaxial reflection

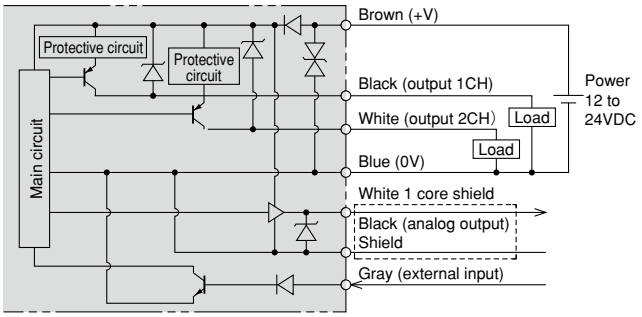


■ Output circuit

NPN output



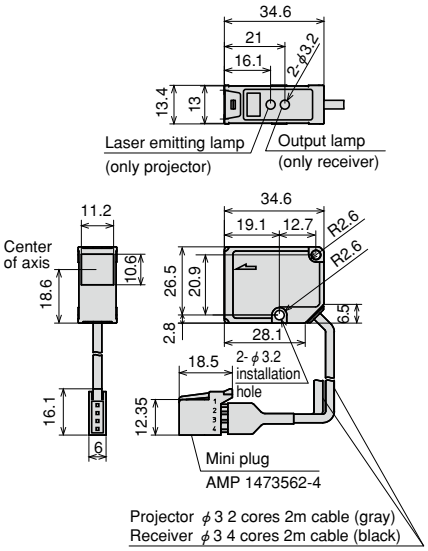
PNP output



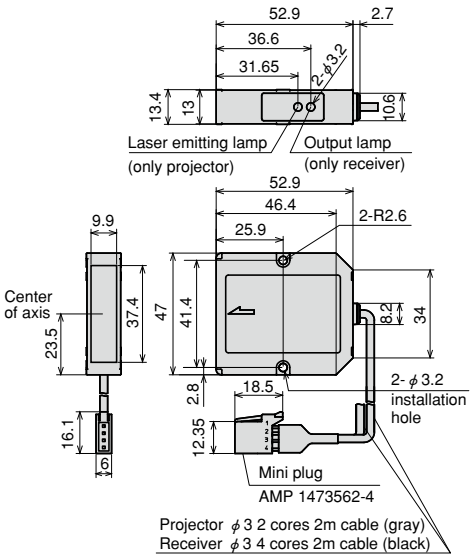
■ External dimensions

Sensor head

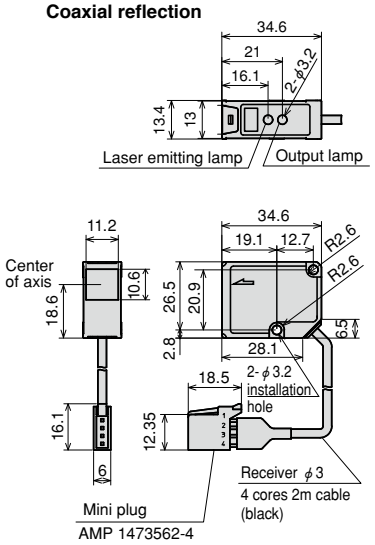
● **Through-beam type**



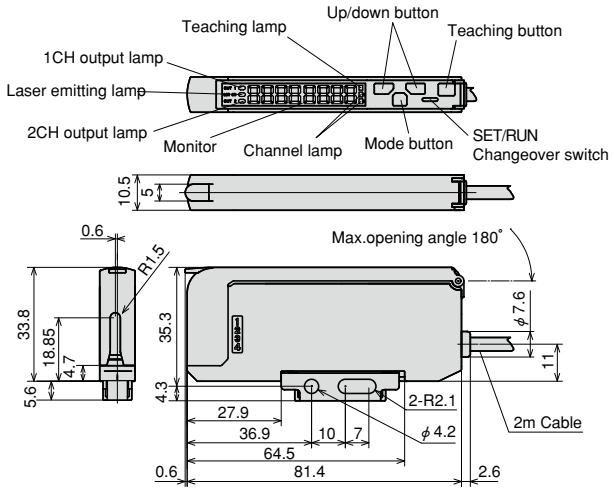
● **Length measurement**



● **Coaxial retro-reflection**
Coaxial retro-reflection long distance
Coaxial reflection

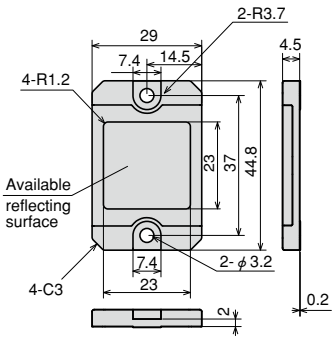
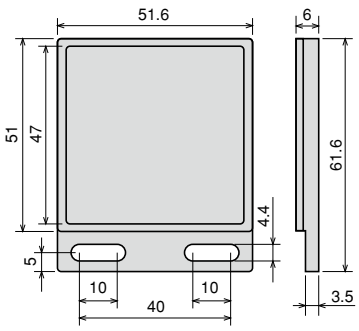


Amplifier



Reflector

● **RRL-23S (RRRL001)**
(attached to HDA-70K3)



● **RRL-51S (RRRL002)**
(attached to HDA-350K3)