



- High-intensity red LED for easy alignment: DL-S100R (-J)
- Long distance type for adverse environments
- Compact size and enhanced functions
- IP 66 protective structure

Type

Type	Detecting distance	Model	Operation mode	Output mode	Power supply
Long range	0.1-1m	DL-S100R	Light ON/ Dark ON selectable (with switch)	NPN/PNP open collector dual outputs	12-24VDC
		DL-S100R-J			
	0.1-2m	DL-S202R			
		DL-S202			
		DL-S202-J			

Optional parts

Type	Model	Shape
Dedicated mounting bracket	AC-BDL1	Vertical mounting
	AC-BDL2	Back mounting
Cable with M8 connector	FBC-4R2S	Straight (2m)
	FBC-4R2L	Angled (2m)

Panel display and functions

Operation indicator (red)

Illuminated when output is activated. High-intensity red LED for excellent visibility.

Stability indicator (green)

Illuminated when received light intensity is about 120% of operation level or higher. Use of the sensor at an operation level allowing illumination of the stability indicator ensures stable detection.

Light ON/Dark ON selector switch

Turn the switch to L.ON or D.ON for Light ON or Dark ON mode respectively.
Be sure to turn all the way to the end.

Distance setting indicator

The position on the distance setting scale is shown in accordance with the 5 turn sensitivity adjustment, allowing easy reading of setting during fine-tuning.

Distance adjustment

5 turn adjustment is employed for easy fine-tuning of detecting position. Turn to FAR or NEAR for longer or shorter detecting distance respectively.



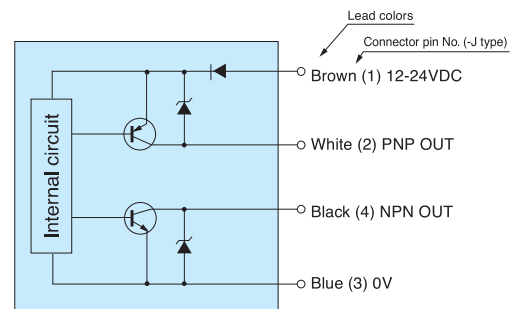
Rating/Performance/Specification

Model	DL-S100R	DL-S100R-J	DL-S202R	DL-S202	DL-S202-J
Detection method	Limited range reflective				
Detecting distance	0.1 – 1m (with adjustment at or less)		0.1 – 2m (with adjustment at or less)		
Setting distance	0.2 – 1m (with 200×200mm white drawing paper)		0.2 – 2m (with 200×200mm white drawing paper)		
Power supply	12-24V DC ±0% / Ripple 10% or less				
Current consumption	30mA or less				
Output mode	NPN/PNP open collector 2 outputs Rating: 100 mA (30 VDC) or less NPN: sink current / PNP: source current				
Operation mode	Light ON/Dark ON selectable (with switch)				
Response time	2 ms or less				
Hysteresis	10% of detecting distance or less				
Light source	Red LED (650 nm)		Infrared LED (880 nm)		
Light receiving element	2 segment photodiode				
Indicator	Red LED: Operation indicator / Green LED: Stability indicator				
Volume (VR)	NEAR/FAR: 5-turn optical distance adjustment				
Switch (SW)	Light ON/Dark ON selector switch				
Short circuit protection	Provided				
Material	Case and lens: polyarylate				
Connection	Attached cable (Outer dimension: dia.4mm) 0.2mm ² 4 cores 2m length	M8 4 pin connector pigtail Outer dimension: dia.4mm 0.2mm ² 4 cores	Attached cable (Outer dimension: dia.4mm) 0.2mm ² 4 cores 2m	M8 4 pin connector pigtail Outer dimension: dia.4mm 0.2mm ² 4 cores	
Weight	Approx. 100g	Approx. 60g	Approx. 100g	Approx. 60g	
Accessory	Operation manual *The mounting bracket and the cable with connector are separately available.				

Environmental Specification

Ambient light	Sunlight: illumination on light receiving surface 10,000 lx or less Incandescent lamp: illumination on light receiving surface 3,000 lx or less
Ambient temperature	-25 - +55°C (non-freezing)
Ambient humidity	35-85%RH (non-condensing)
Protective structure	IP66
Vibration	10-55 Hz / 1.5 mm double amplitude / 2 hours each in 3 directions
Shock	500 m/s ² / 3 times each in 3 directions
Dielectric withstanding	1,000 VAC for 1 minute
Insulation resistance	500 VDC, 20 MΩ or higher

Input/Output Circuit and Connection

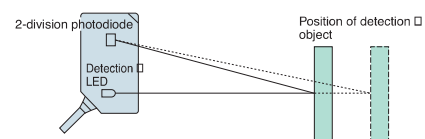


- The output transistor turns off when load short circuit or overload occurs. Check the load and turn the power back on.

Distance detection with 2 segment photodiode

While ordinary reflective type sensors operate based on the received light intensity, sensors with 2 segment photodiode judge distances based on the position of the received light.

This makes sensors with 2 segment photodiode to be less susceptible to variation in the received light intensity due to change of the color or material of the detection object, reflection on the background or soiling of the sensors, allowing stable detection.



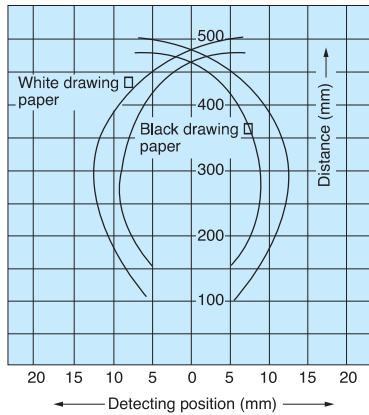
Detection based on change of the position of received light according to change of the distance from the detection object.

DL-S

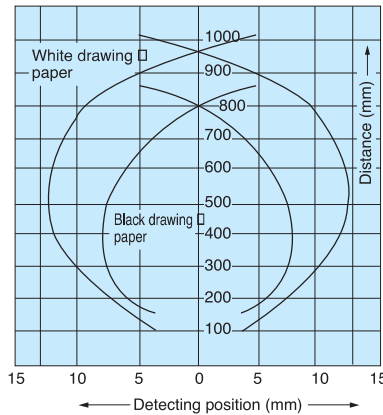
Model: DL-S100R Performance Curvers (Typical)

• Response Curves : Detecting Position

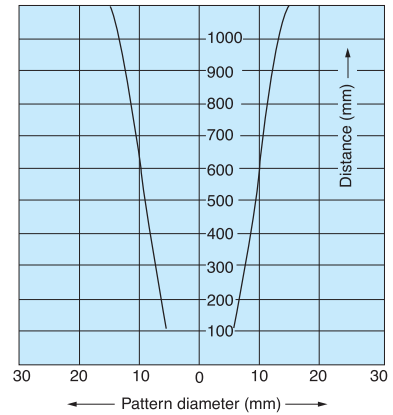
With 200 × 200mm white paper at 500 mm



With 200 × 200mm white paper at 1 m

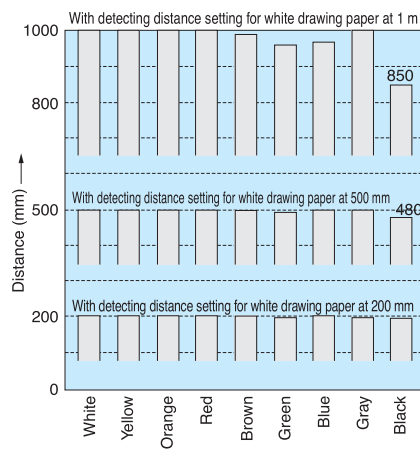


• Response Curves : Beam Diameter

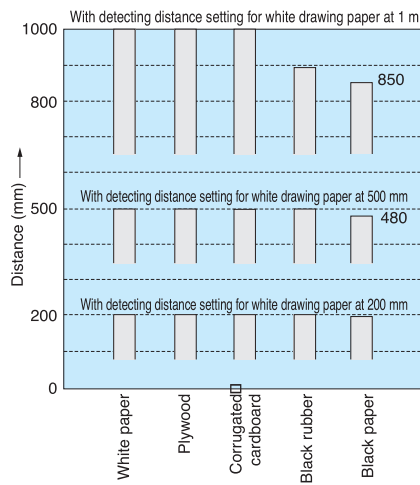


• Response Curves: Color Cards

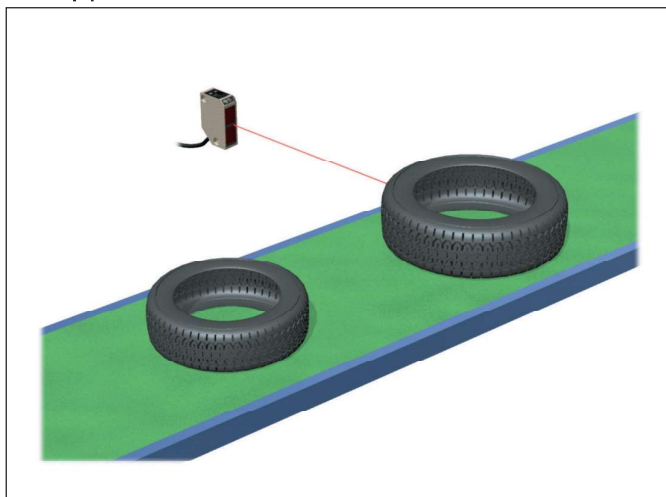
150 × 150mm color card



• Response Curves: Materials



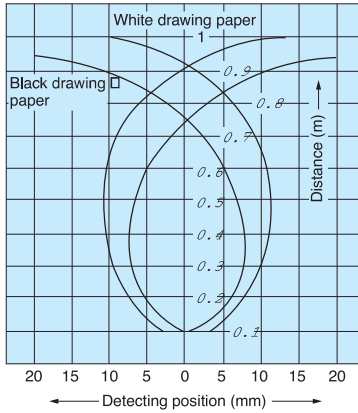
Applications



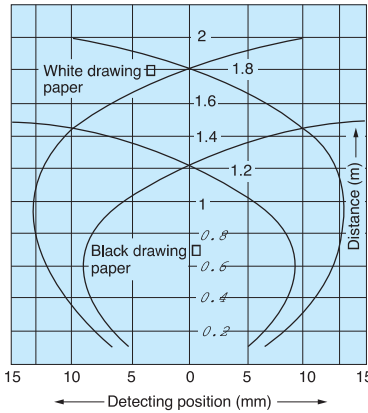
Model: DL-S202 Performance Curvers (Typical)

• Response Curves : Detecting Position

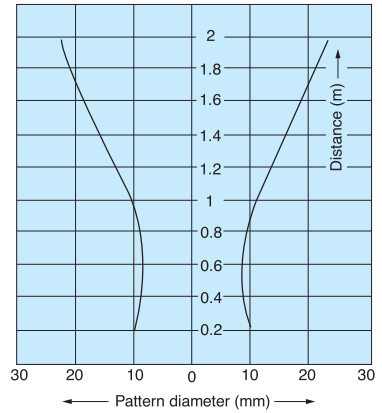
With 200×200mm white paper at 1 m



With 200×200mm white paper at 2 m

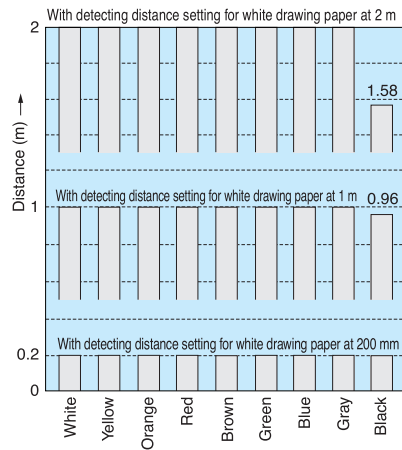


• Response Curves : Beam Diameter

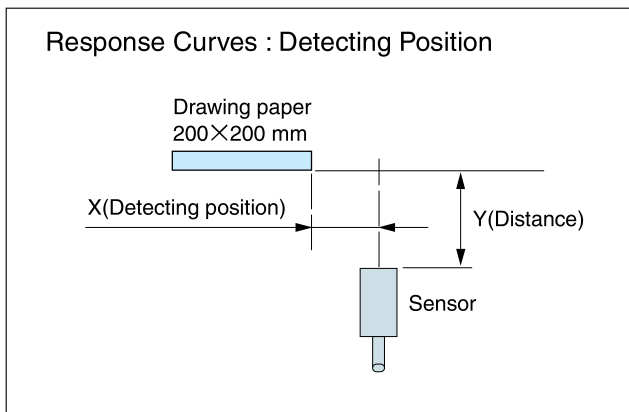
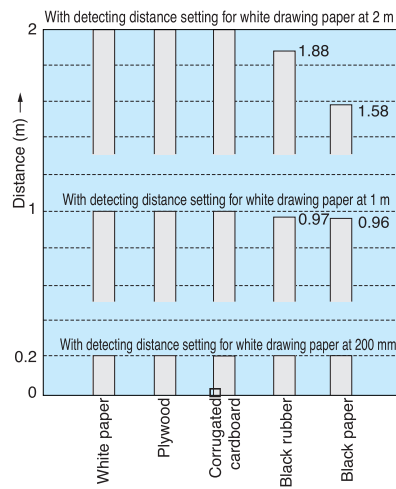


• Response Curves: Color Cards

150×150mm color card



• Response Curves: Materials

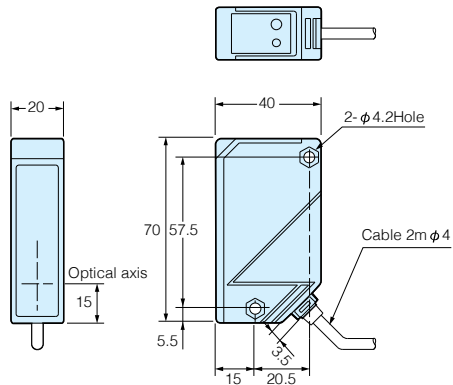


DL-S

Dimensions (in mm)

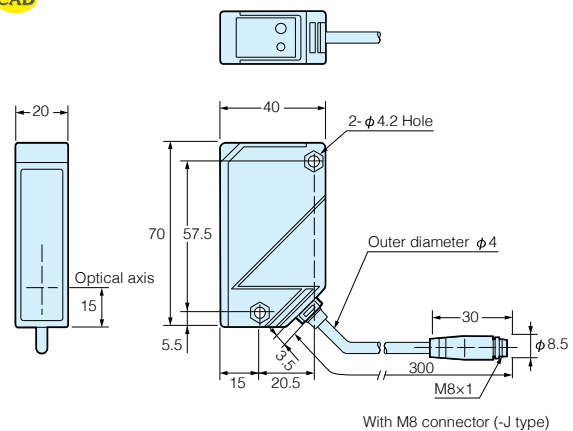
DL-S100R
DL-S202
DL-S202R

CAD



DL-S100R-J
DL-S202-J

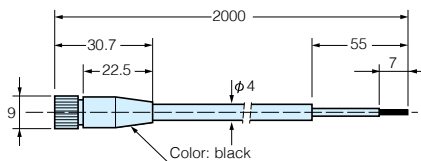
CAD



Cable with M8 connector (optional)
Outer diameter: 4mm, 0.2 mm² x 4 cores (sheath: black)

FBC-4R2S (straight type)

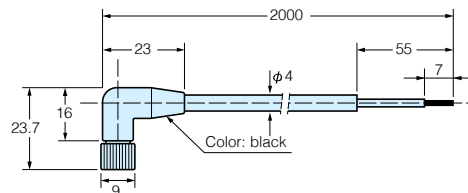
CAD



Cable with M8 connector (optional)
Outer diameter: 4mm, 0.2 mm² x 4 cores (sheath: black)

FBC-4R2L (angle type)

CAD

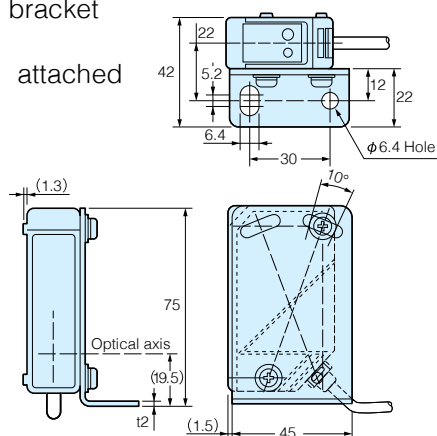


Dedicated mounting bracket
(optional)

- Accessories
Screw: 2
Nut: 2
- Materials SUS

Mounting bracket
(vertical)
AC-BDL1 attached

CAD

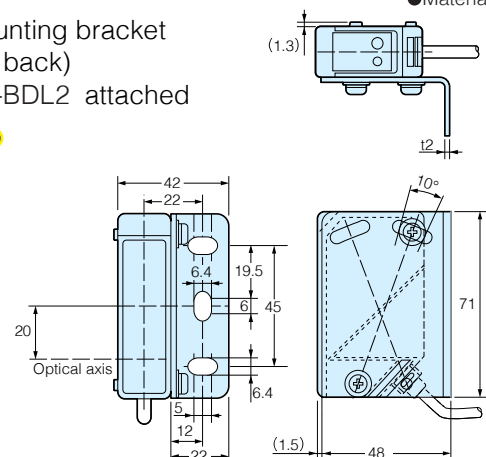


Dedicated mounting bracket
(optional)

- Accessories
Screw: 2
Nut: 2
- Materials SUS

Mounting bracket
(on back)
AC-BDL2 attached

CAD

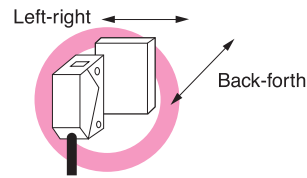


For Correct Use

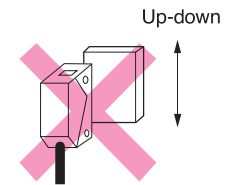
Be sure to follow the instructions in the operation manual provided for correct use of the product.

• Detecting direction

The 2 segment photodiode has directionality and the sensor may not be used in a certain direction. The direction of movement of the object must be as shown in the figure.



Permitted direction



Prohibited direction

Up-down movement shown in the figure may be allowed within the detecting distance set with the distance adjustment.

• Background

Any glossy or mirror-like object present in the background of the detection object may cause faulty operation depending on the angle of the background. In such cases, mount the sensor at an angle.

• Stability indicator

The stability indicator does not show the margin of distance but intensity of light with reference to the operation level. The distance at which the indicator is illuminated/not illuminated may vary depending on the reflectance of the detection object. Situations in which the stability indicator is not illuminated may cause unstable detection.



- This sensor is not designed to prevent death or injury. It is not a life saving device.
- For safety applications except such usage, ensure safe operation of the system as a whole including detection and control function.