

ideas for life

Amplifier Built-in, Convergent Reflective Type Ultra-compact Laser Sensor

Spot type EX-L261 □

Line spot type EX-L262 □

Super-accurate sensing by laser beams!



Regardless of background objects

Spot size \varnothing 1 mm (0.039 in) or less
(Visual reference value at a sensing distance of 50 mm 1.969 in)

Sensing range 50 mm (1.969 in)

Equipped with sensitivity adjuster

Sensitivity adjuster allows you to adjust sensitivity to avoid sensing background objects when the distance between the workpiece and background objects is small.

Spot type (EX-L261)

Sensitivity adjuster

Even for thin workpieces

Spot size Approx. 1×5 mm (0.039 \times 0.197 in) or less
(Visual reference value at a sensing distance of 50 mm 1.969 in)

Sensing range 70 mm (2.756 in)

Line spot type (EX-L262)

Spot type (EX-L261)

Sensing unevenly-colored workpieces

Not affected by the background, and able to reliably sense unevenly-colored workpieces.

Line spot type (EX-L262)

Sensing thin workpiece such as PCB



Able to sense only the top 0.3 mm 0.012 in thick PCB.

Line spot type (EX-L262)

Sensing glossy or curved-surface workpiece

Line spot type is able to sense glossy or curved-surface workpieces, such as metallic pipes.

ORDER GUIDE

Type		Appearance	Sensing range (Note)	Model No.		Emission spot size (Typical)	Sensitivity adjuster
				NPN output	PNP output		
Convergent reflective	Spot		20 to 50 mm 0.787 to 1.969 in (Convergent point: 22 mm 0.866 in)	EX-L261	EX-L261-P	ø1 mm ø0.039 in or less (at a sensing distance of 50 mm 1.969 in)	Incorporated
	Line spot		20 to 70 mm 0.787 to 2.756 in (Convergent point: 22 mm 0.866 in)	EX-L262	EX-L262-P	Approx. 1 × 5 mm 0.039 × 0.197 in (at a sensing distance of 50 mm 1.969 in)	Incorporated

Note: The sensing range is specified for white non-glossy paper (100 × 100 mm 3.937 × 3.937 in) as the object.

M8 pigtailed type and 5 m 16.404 ft cable length type

M8 pigtailed type and 5 m 16.404 ft cable length type (standard: 2 m 6.562 ft) are also available.

When ordering these types, suffix “-J” for the M8 pigtailed type, “-C5” for the 5 m 16.404 ft cable length type to the model No.

Please order the mating cable the M8 pigtailed type separately.

(e.g.) M8 pigtailed type of **EX-L261-P** is “**EX-L261-P-J**”.

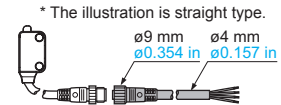
5 m 16.404 ft cable length type of **EX-L261-P** is “**EX-L261-P-C5**”.

· Mating cable

Type	Model No.	Cable length
Straight	CN-24A-C2	2 m 6.562 ft
	CN-24A-C5	5 m 16.404 ft
Elbow	CN-24AL-C2	2 m 6.562 ft
	CN-24AL-C5	5 m 16.404 ft

Mating cable

- **CN-24A-C2** · **CN-24AL-C2**
- **CN-24A-C5** · **CN-24AL-C5**



Accessories

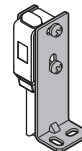
- **MS-EXL2-3** (Mounting plate for reflective type): 1 pc.

OPTIONS

Designation	Model No.	Description
Sensor mounting bracket	MS-EXL2-1	Foot angled mounting bracket
Universal sensor mounting bracket	MS-EXL2-4	It can adjust the height and the angle of the sensor.

Sensor mounting bracket

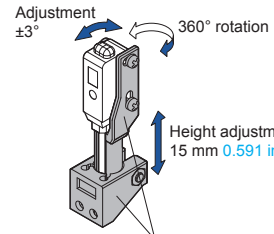
- **MS-EXL2-1**



Material: Stainless steel (SUS304)
Two M3 (length 14 mm 0.551 in) screws with washers [stainless steel (SUS304)] are attached.

Universal sensor mounting bracket

- **MS-EXL2-4**



Material: Die-cast zinc alloy

Two M3 (length 14 mm 0.551 in) screws with washers, one M3 (length 10 mm 0.394 in) hexagon-socket head bolt [stainless steel (SUS)], and one M3 hexagon nut [stainless steel (SUS)] are attached.

PRECAUTIONS FOR PROPER USE

- This catalog is a guide to select a suitable product. Be sure to read the instruction manual attached to the product prior to its use.



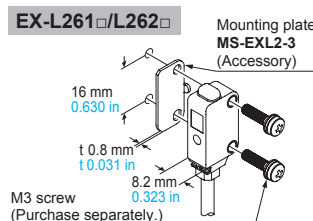
- Never use this product as a sensing device for personnel protection.
- In case of using sensing devices for personnel protection, use products which meet laws and standards, such as OSHA, ANSI or IEC etc., for personnel protection applicable in each region or country.



- This product is classified as a Class 1 Laser Product in IEC / JIS / FDA regulations 21 CFR 1040.10 and 1040.11 Laser Notice No.50. Do not look at the laser beam through optical system such as a lens.

Mounting

- When mounting this sensor, use a mounting plate (**MS-EXL2-3**). Without using the mounting plate, beam misalignment may occur. Also, install the mounting plate in between the sensor and the mounting surface.
 - The tightening torque should be 0.5 N·m or less.
- Note: The mounting direction of the mounting plate is fixed. Install in a way so that the bending shape is facing the sensor side.



SPECIFICATIONS

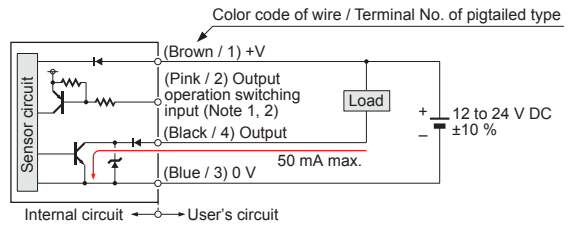
Item	Type	Convergent reflective	
		Spot	Line spot
	NPN output	EX-L261	EX-L262
	PNP output	EX-L261-P	EX-L262-P
Sensing range (Note 1)		20 to 50 mm 0.787 to 1.969 in (Convergent point: 22 mm 0.866 in)	20 to 70 mm 0.787 to 2.756 in (Convergent point: 22 mm 0.866 in)
Emission spot size (Typical)		∅1 mm ∅0.039 in (at a sensing distance of 50 mm 1.969 in)	Approx. 1 × 5 mm 0.039 × 0.197 in (at a sensing distance of 50 mm 1.969 in)
Sensing object		Opaque, translucent or transparent object	
Minimum sensing object (Typical)		Gold wire of ∅0.01 mm ∅0.0004 in (Note 2)	
Hysteresis		20 % or less of operation distance	
Repeatability		Perpendicular to sensing axis: 0.2 mm 0.0080 in or less	
Supply voltage		12 to 24 V DC ±10 % Ripple P-P 10 % or less	
Current consumption		15 mA or less	
Output		<NPN output type> NPN open-collector transistor • Maximum sink current: 50 mA <PNP output type> PNP open-collector transistor • Maximum source current: 50 mA	
	Output operation	Light-ON / Dark-ON selectable by the output operation switching input	
Short-circuit protection		Incorporated (short-circuit protection / inverse polarity protection)	
Response time		0.5 ms or less	
Sensitivity adjuster		Continuously variable adjuster	
Protection		IP67 (IEC)	
Ambient temperature		-10 to +55 °C +14 to +131 °F (No dew condensation or icing allowed), Storage: -30 to +70 °C -22 to +158 °F	
Ambient humidity		35 to 85 % RH, Storage: 35 to 85 % RH	
Emitting element		Red semiconductor laser Class 1 (IEC / JIS / FDA) (Note 3) (Maximum output: EX-L261 □ 1 mW, EX-L262 □ 1.3 mW, Peak emission wavelength: 655 nm 0.026 mil)	
Material		Enclosure: Polybutylene terephthalate, Front cover: Acrylic, Lens: Glass	
Cable		0.15 mm ² 4-core cabytre cable, 2 m 6.562 ft long	
Cable extension		Extension up to total 50 m 164.042 ft is possible with 0.3 mm ² , or more, cable	
Weight		Net weight: 45 g approx., Gross weight: 60 g approx.	
Accessory		MS-EXL2-3 (Metal plate): 1 pc.	

Notes: 1) The sensing range is specified for white non-glossy paper (100 × 100 mm **3.937 × 3.937 in**) as the object.
 2) Typical values when the sensitivity adjuster is optimally adjusted.
 3) This product complies with 21 CFR 1040.10 and 1040.11 Laser Notice No. 50, dated June 24, 2007, issued by CDRH (Center for Devices and Radiological Health) under the FDA (Food and Drug Administration).

I/O CIRCUIT DIAGRAMS

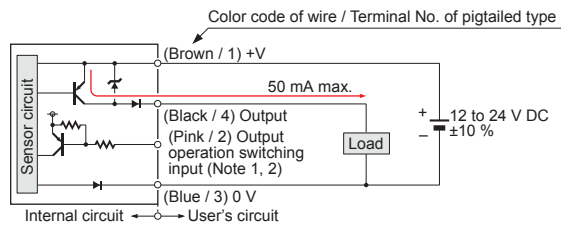
NPN output type

I/O circuit diagrams



PNP output type

I/O circuit diagrams

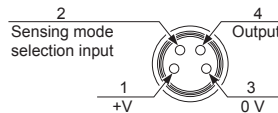


Notes: 1) Be able to select either Light-ON or Dark-ON by wiring the output operation switching input (pink / 2) as shown in the following table.

Type	Light-ON	Dark-ON
Convergent reflective	Connect to +V or, Open	Connect to 0 V

* Insulate the output operation switching input wire (pink / 2) when leaving it open.
 2) When connecting the mating cable to the pigtailed type, color code of wire is "white".

Connector pin position (pigtailed type)



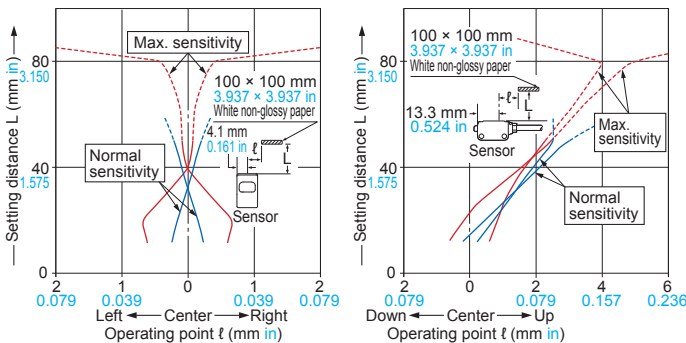
SENSING CHARACTERISTICS (TYPICAL)

EX-L261 □

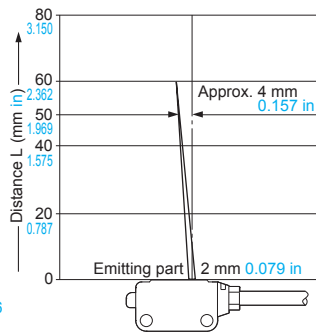
Convergent reflective

Sensing field

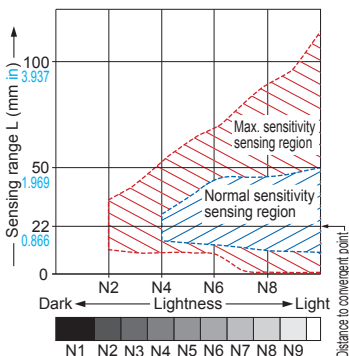
- Horizontal (left and right) direction
- Vertical (up and down) direction



Emitted beam



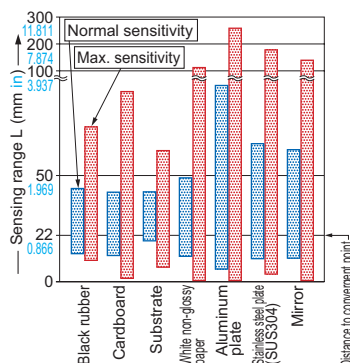
Correlation between lightness and sensing range



The sensing region (typical) is represented by oblique lines in the left figure. However, the sensitivity should be set with enough margin because of slight variation in products.

(Lightness shown on the left may differ slightly from the actual object condition.)

Correlation between material and sensing range



The bars in the graph indicate the sensing range (typical) for the respective material. However, there is a slight variation in the sensing range depending on the product. Further, if there is a reflective object (conveyor, etc.) in the background of the sensing object, since it affects the sensing, separate it by more than twice the sensing range shown in the left graph, or adjust the sensitivity adjuster. Make sure to confirm detection with an actual sensor.

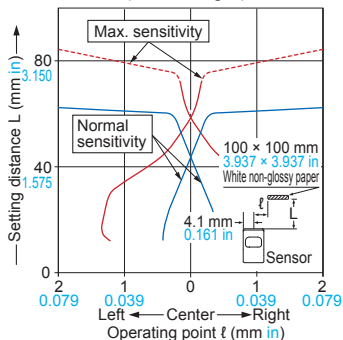
SENSING CHARACTERISTICS (TYPICAL)

EX-L262□

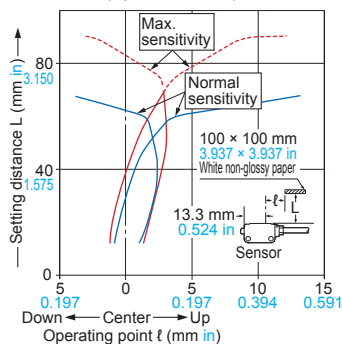
Convergent reflective

Sensing field

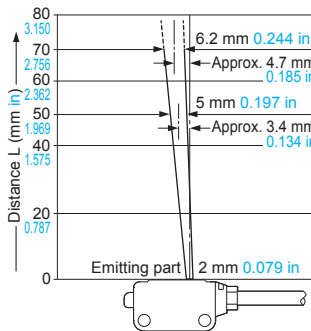
• Horizontal (left and right) direction



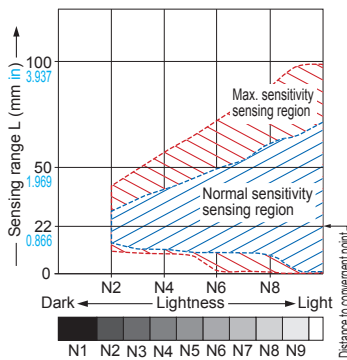
• Vertical (up and down) direction



Emitted beam



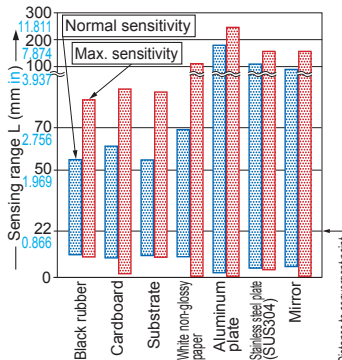
Correlation between lightness and sensing range



The sensing region (typical) is represented by oblique lines in the left figure. However, the sensitivity should be set with enough margin because of slight variation in products.

(Lightness shown on the left may differ slightly from the actual object condition.)

Correlation between material and sensing range



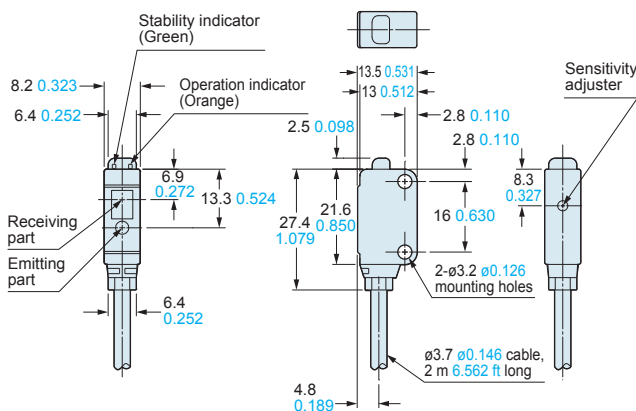
The bars in the graph indicate the sensing range (typical) for the respective material. However, there is a slight variation in the sensing range depending on the product. Further, if there is a reflective object (conveyor, etc.) in the background of the sensing object, since it affects the sensing, separate it by more than twice the sensing range shown in the left graph, or adjust the sensitivity adjuster. Make sure to confirm detection with an actual sensor.

DIMENSIONS (Unit: mm in)

The CAD data in the dimensions can be downloaded from our website.

EX-L261(-P) EX-L262(-P)

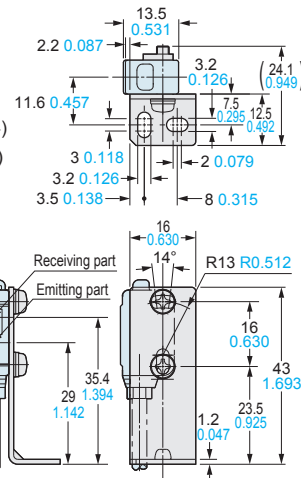
Sensor



Assembly dimensions

Mounting drawing with MS-EXL2-1

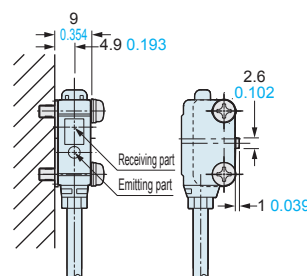
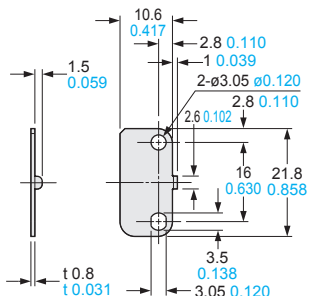
Material: Stainless steel (SUS304)
Two M3 (length 14 mm 0.551 in) screws with washers [stainless steel (SUS304)] are attached.



MS-EXL2-3

Mounting plate (Accessory for EX-L26□)

Assembly dimensions



Material: Stainless steel (SUS304)

Note: Screws are not attached. Purchase separately.

* Without using the mounting plate, beam misalignment may occur.

EX-L200 SERIES Others

Thru-beam type

EX-L211□
EX-L212□

Retroreflective type

EX-L291□

Spot reflective type

EX-L221□

Sensing range

EX-L211□: 1 m

3.281 ft

EX-L212□: 3 m

9.843 ft

Sensing range

4 m 13.123 ft

Sensing range

45 to 300 mm

1.772 to 11.811 in