Adjustable Range Reflective Photoelectric Sensor Amplifier Built-in

FIBER SENSORS

LASER **SENSORS**

MICRO PHOTOELECTRIC SENSORS

AREA SENSORS

SAFETY LIGHT CURTAINS / SAFETY COMPONENTS PRESSURE /

FLOW SENSORS INDUCTIVE PROXIMITY **SENSORS**

PARTICULAR USE SENSORS

SENSOR OPTIONS

SIMPLE WIRE-SAVING UNITS

WIRE-SAVING SYSTEMS

MEASUREMENT SENSORS

STATIC CONTROL DEVICES

LASER MARKERS

PLC

HUMAN MACHINE INTERFACES

FNFRGY MANAGEMENT SOLUTIONS

FA COMPONENTS

MACHINE VISION SYSTEMS

UV CURING SYSTEMS

Selection Guide

Power Supply Built-in Amplifier-

separated

EX-Z

CX-400

CY-100

EX-10

EX-20

EX-30

EX-40

CX-440

EQ-30

EQ-500

MQ-W RX-LS200 Related Information

■ General terms and conditions F-3 ■ Glossary of terms......P.1549~

■ Selection guide......P.231~ ■ General precautions......P.1552~







Detection of different colored objects at a certain distance

Hardly affected by color

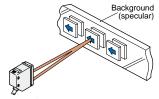
The color or size of the object does not affect its sensing performance.

Robust

Its robust enclosure is made of die-cast zinc alloy.

Hardly affected by background

The sensor does not detect the background beyond the set distance since it is of distance adjustable type.



However, changing the angle of the sensor is necessary when the background object has a specular surface.

ENVIRONMENTAL RESISTANCE

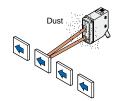
Waterproof IP67 (IEC)

The equipment on which the sensor is mounted can be washed without any problem.

Note: However, take care that if it is exposed to water splashes during operation. It may detect a water drop itself.

Insusceptible to dust

The sensing performance is less affected by dust as it does not depend on the incident light intensity.



BASIC PERFORMANCE

High-speed response time: 1 ms

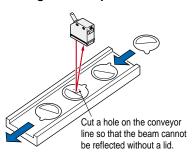
It can be used on a high speed assembly line.

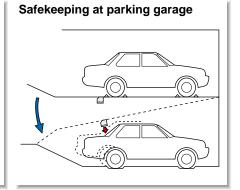
Adjustable Range Reflective Type The sensing range for which the sensor detects an object is determined by the incident beam angle, regardless of the incident light intensity. RX-LS200 Receiving element (2-segment device) Receiving lens The sensing range can be changed according to the position of the lens. Sensing object Sensing object /Emitting lens Emitting LED Sensing range

RX RT-610

APPLICATIONS

Detecting lids of cups





ORDER GUIDE

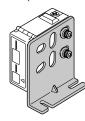
Туре	Appearance	Sensing range	Model No.	Output
NPN output		50 to 200 mm 1.969 to 7.874 in	RX-LS200	NPN open-collector transistor
PNP output			RX-LS200-P	PNP open-collector transistor

5 m cable length type

 $5\ m$ $16.404\ ft$ cable length type (standard: $3\ m$ $9.843\ ft)$ is also available for NPN output type. Model No.: RX-LS200-C5

Accessory

• MS-RX-1 (Sensor mounting bracket)



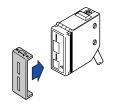
Two M4 (length 16 mm 0.630 in) hexagon-socket-head bolts are attached.

OPTIONS

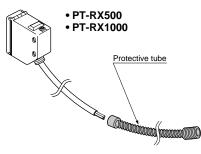
Designation	Model No.	Description		
	OS-RXL-1	Slit size	2.5 × 24 mm 0.098 0.945 in	The sensing view is narrowed laterally so that the effect of the object's surroundings is reduced.
Narrow-view slit mask	OS-RXL-2		3.0 × 24 mm 0.118 0.945 in	
	OS-RXL-3		3.5 × 24 mm 0.138 0.945 in	
Desta stirra trib s	PT-RX500	Length	500 mm 19.685 in	Cable is protected from external forces. It does not rust as it is made of stainless steel.
Protective tube	PT-RX1000		1,000 mm 39.370 in	

Narrow-view slit mask

• OS-RXL-□



Protective tube



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Power Supply Built-in EX-Z CX-400 CY-100 EX-10 EX-20 EX-30 EX-40 CX-440 EQ-30 EQ-500 MQ-W RX-LS20

> RX RT-610

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Amplifier Built-in Power Supply Built-in Amplifier-separated

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RX RT-610

SPECIFICATIONS

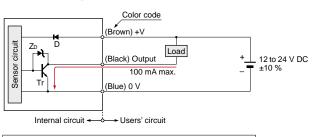
T		Adjustable range reflective					
	Туре	NPN output type	PNP output type				
Iten	n Model No.	RX-LS200	RX-LS200-P				
CE marking directive compliance		EMC Directive,	RoHS Directive				
Sensing range		50 to 200 mm 1.969 to 7.874 in with white non-glossy paper (50 x 50 mm 1.969 x 1.969 in)					
Hysteresis		10 % or less of operation distance with white non-glossy paper (50 x 50 mm 1.969 x 1.969 in)					
Repeatability		Along sensing axis: 1 mm 0.039 in or less, Perpendicular to sensing axis: 0.5 mm 0.020 in or less					
Supply voltage		12 to 24 V DC ±10 % Ripple P-P 10 % or less					
Current consumption		40 mA or less					
Output		NPN open-collector transistor • Maximum sink current: 100 mA • Applied voltage: 30 V DC or less (between output and 0 V) • Residual voltage: 1.5 V or less (at 100 mA sink current) 0.4 V or less (at 16 mA sink current)	PNP open-collector transistor • Maximum source current: 100 mA • Applied voltage: 30 V DC or less (between output and +V) • Residual voltage: 1 V or less (at 100 mA source current) 0.4 V or less (at 16 mA source current)				
	Utilization category	DC-12 or DC-13					
	Output operation	Switchable either Light-ON or Dark-ON					
	Short-circuit protection	Incorporated					
Res	ponse time	1 ms or less					
Оре	eration indicator	Red LED (lights up when the output is ON)					
Stal	oility indicator	Green LED (lights up under stable light received condition or stable dark condition)					
Distance adjuster		2-turn mechanical adjuster					
	Pollution degree	3 (Industrial environment)					
æ	Protection	IP67 (IEC)					
Environmental resistance	Ambient temperature	-25 to 60 °C −13 to 140 °F (No dew condensation or icing allowed), Storage: -30 to 70 °C −22 to 158 °F					
resis	Ambient humidity	35 to 85 % RH, Storage: 35 to 85 % RH					
ental	Ambient illuminance	Incandescent light: 3,500 & or	less at the light-receiving face				
onmo	Voltage withstandability	1,000 V AC for one min. between all supply	terminals connected together and enclosure				
invir	Insulation resistance	20 MΩ, or more, with 250 V DC megger between all supply terminals connected together and enclosure					
Ш	Vibration resistance	10 to 500 Hz frequency, 1.5 mm 0.059 in double amplitude (10 G max.) in X, Y and Z directions for two hours each					
	Shock resistance	500 m/s ² acceleration (50 G approx.) in X, Y and Z directions three times each					
Emitting element		Infrared LED (peak emission wavelength: 880 nm 0.035mil, modulated)					
Material		Enclosure: Die-cast zinc alloy, Indicator cover: Polyethersulphone, Lens: Polycarbonate					
Cable		0.15 mm² 3-core oil, heat and cold resistant cabtyre cable, 3 m 9.843 ft long					
Cable extension		Extension up to total 100 m 328.084 ft is possible with 0.3 mm², or more, cable.					
Weight		Net weight: 85 g approx.					
Acc	essories	MS-RX-1 (Sensor mounting bracket): 1 set, Adjusting screwdriver: 1 pc.					

Note: Where measurement conditions have not been specified precisely, the conditions used were an ambient temperature of +23 °C +73.4 °F.

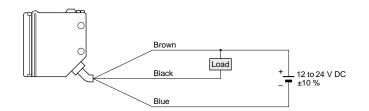
I/O CIRCUIT AND WIRING DIAGRAMS

NPN output type RX-LS200

I/O circuit diagram



Symbols ... D : Reverse supply polarity protection diode ZD: Surge absorption zener diode Tr : NPN output transistor





Wiring diagram

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FX-20

EX-30

EX-40

CX-440

EQ-30

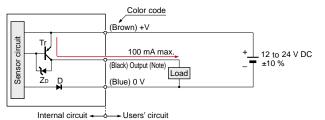
FQ-500

MQ-W

I/O CIRCUIT AND WIRING DIAGRAMS

RX-LS200-P PNP output type

I/O circuit diagram

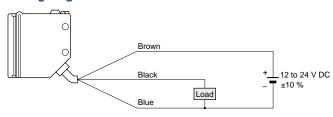


Note: The output does not incorporate a short-circuit protection circuit.

Do not connect it directly to a power supply or a capacitive load.

symbols ... D : Reverse supply polarity protection diode ZD: Surge absorption zener diode Tr: PNP output transistor

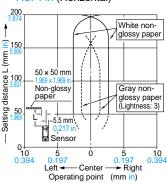
Wiring diagram



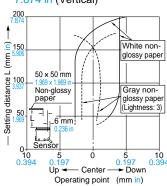
SENSING CHARACTERISTICS (TYPICAL)

Sensing fields

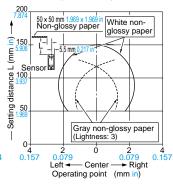
Setting distance: 200 mm
 7.874 in (Horizontal)



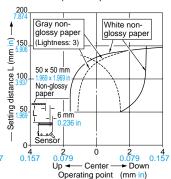
Setting distance: 200 mm
 7.874 in (Vertical)



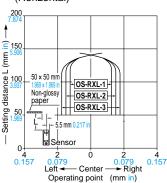
Setting distance: 150 mm
 5.906 in (Horizontal)



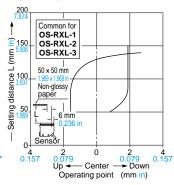
Setting distance: 150 mm
 5.906 in (Vertical)



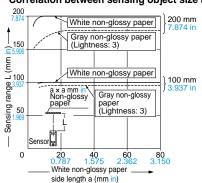
 Setting distance: 150 mm
 5.906 in with slit mask (Horizontal)



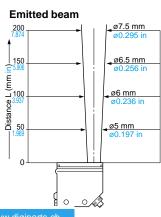
 Setting distance: 150 mm
 5.906 in with slit mask (Vertical)



Correlation between sensing object size and sensing range



These curves show the characteristics with the maximum sensing range set to 100 mm 3.937 in, 200 mm 7.874 in, each, with white non-glossy paper (50×50 mm 1.969×1.969 in).



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RX RT-610 FIBER SENSORS

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Amplifier Built-in Power Supply Built-in

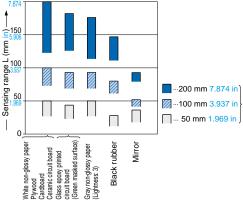
EX-Z CX-400 CY-100 EX-10 FX-20

EX-30 EX-40 CX-440 EQ-30 FQ-500 MQ-W

RX-LS20 RX RT-610

SENSING CHARACTERISTICS (TYPICAL)

Correlation between material (50 x 50 mm 1.969 x 1.969 in) and sensing range



These bars indicate the sensing range with respective objects when the distance adjuster is set at the sensing range of 200 mm 7.874 in, 100 mm 3.937 in and 50 mm 1.969 in long, each, with white non-glossy paper.

PRECAUTIONS FOR PROPER USE

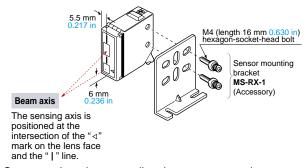
Refer to p.1552~ for general precautions.

 Never use this product as a sensing device for personnel protection.

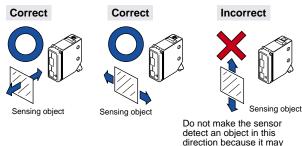
 In case of using sensing devices for personnel protection, use products which meet laws and standards, such as OSHA, ANSI or IEC etc., for personnel protection applicable in each region or country.

Mounting

• The tightening torque should be 1.17 N·m or less.



• Care must be taken regarding the sensor mounting direction with respect to the object's direction of movement.



- When detecting a specular object (aluminum or copper foil) or an object having a glossy surface or coating, please take care that there are cases when the object may not be detected due to a small change in angle, wrinkles on the object surface, etc.
- When a specular body is present below the sensor, use the sensor by tilting it slightly upwards to avoid wrong operation.

- If a specular body is present in the background, wrong operation may be caused due to a small change in the angle of the background body. In that case, install the sensor at an inclination and confirm the operation with the actual sensing object.
- Do not install the sensor at a distance of less than 50 mm 1.969 in from the object because the sensing is unstable in this range.

Wiring

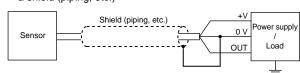
 The output of RX-LS200-P does not incorporate a shortcircuit protection circuit. Do not connect it directly to a power supply or a capacitive load.

Use conditions to comply with CE Marking

 Following work must be done in case of using this product as a CE marking (European standard EMC Directive) conforming product.

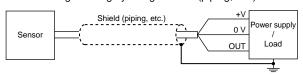
Ensure that the shield is connected to 0 V or the actual ground.

• In case of connecting a sensor to power supply 0 V by using a shield (piping, etc.)



Note: The shield (piping, etc.) must be insulated.

• In case of grounding by using a shield (piping, etc.)



Others

• Do not use during the initial transient time (50 ms) after the power supply is switched on.

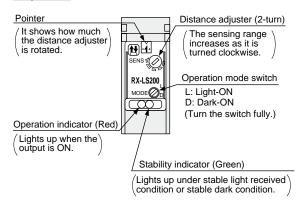
cause unstable operation

PRECAUTIONS FOR PROPER USE

Refer to p.1552~ for general precautions.

Distance adjustment

Adjusters



Adjusting procedure

<When a sensing object moves horizontally to the sensor>

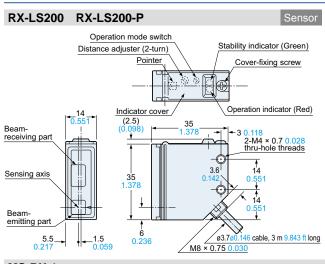
Step	Description	Distance adjuster
1	Turn the distance adjuster fully counterclockwise to the minimum sensing range position (50 mm 1.969 in approx.). (Do not turn excessively.)	Turn
2	Place an object at the required distance from the sensor, turn the distance adjuster gradually clockwise, and find out point "(A)" where the sensor changes to the light received condition.	VOI)
3	Remove the object, turn the distance adjuster further clockwise, and find out point "®" where the sensor changes to the light received condition again with only the background. When the sensor does not go to the light received condition even if the adjuster is fully turned clockwise, point "®" is this extreme point.	B
4	The optimum position to stably detect objects is the center point between "A" and "B".	B A Optimum position

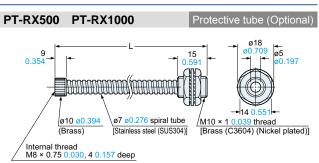
<When a sensing object is approaching / moving away from the sensor>

Follow only steps ① and ② respectively. Since the sensing point
may change depending on the sensing object, be sure to check
the operation with the actual sensing object.

The CAD data can be downloaded from our website.

DIMENSIONS (Unit: mm in)





Length L

Model No.	Length L		
PT-RX500	500 ⁺¹⁰ ₀	19.685 +0.394	
PT-RX1000	1,000 +10	39.370 +0.394	

MS-RX-1 Sensor mounting bracket (Access **Assembly dimensions** Sensing axis 16.5 Vν 甫 10 8.5 Material: Cold rolled carbon steel (SPCC) _10_ Two M4 (length 16 mm 0.630 in) hexagon-socket-. 37 (2.5) (0.098 35 Sensing axis 45 772 38 45 1.772 16 63 0.6 16 0.63

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Power Supply Built-in

Amplifierseparated

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EQ-500 MQ-W

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