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.

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.

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.

BASIC PERFORMANCE

High-speed response time: 1 ms
It can be used on a high speed assembly line.

Adjustable Range & Fixed-focus 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.
Adjustable Range Reflective Photoelectric Sensor RX-LS200

**APPLICATIONS**

Detecting lids of cups

Safekeeping at parking garage

Cut a hole on the conveyor line so that the beam cannot be reflected without a lid.

**ORDER GUIDE**

<table>
<thead>
<tr>
<th>Type</th>
<th>Appearance</th>
<th>Sensing range</th>
<th>Model No.</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>NPN output</td>
<td></td>
<td>50 to 200 mm 1.969 to 7.874 in</td>
<td>RX-LS200</td>
<td>NPN open-collector transistor</td>
</tr>
<tr>
<td>PNP output</td>
<td></td>
<td></td>
<td>RX-LS200-P</td>
<td>PNP open-collector transistor</td>
</tr>
</tbody>
</table>

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**

<table>
<thead>
<tr>
<th>Designation</th>
<th>Model No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Narrow-view slit mask</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OS-RXL-1</td>
<td></td>
<td>2.5 × 24 mm 0.098 0.945 in</td>
</tr>
<tr>
<td>OS-RXL-2</td>
<td></td>
<td>3.0 × 24 mm 0.118 0.945 in</td>
</tr>
<tr>
<td>OS-RXL-3</td>
<td></td>
<td>3.5 × 24 mm 0.138 0.945 in</td>
</tr>
<tr>
<td>Protective tube</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PT-RX500</td>
<td></td>
<td>500 mm 19.685 in</td>
</tr>
<tr>
<td>PT-RX1000</td>
<td></td>
<td>1,000 mm 39.370 in</td>
</tr>
</tbody>
</table>

Narrow-view slit mask

- **OS-RXL-□**

The sensing view is narrowed laterally so that the effect of the object’s surroundings is reduced.

Protective tube

- **PT-RX500**
- **PT-RX1000**

Cable is protected from external forces. It does not rust as it is made of stainless steel.
### SPECIFICATIONS

<table>
<thead>
<tr>
<th>Type</th>
<th>Adjustable range reflective</th>
<th>PNP output type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensing range</td>
<td>RX-LS200</td>
<td>RX-LS200-P</td>
</tr>
<tr>
<td>50 to 200 mm 1.969 to 7.874 in with white non-glossy paper (50 × 50 mm 1.969 × 1.969 in)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hysteresis</td>
<td>10 % or less of operation distance with white non-glossy paper (50 × 50 mm 1.969 × 1.969 in)</td>
<td></td>
</tr>
<tr>
<td>Repeatability</td>
<td>Along sensing axis: 1 mm 0.039 in or less, Perpendicular to sensing axis: 0.5 mm 0.020 in or less</td>
<td></td>
</tr>
<tr>
<td>Supply voltage</td>
<td>12 to 24 V DC ±10 %</td>
<td>12 to 24 V DC ±10 %</td>
</tr>
<tr>
<td>Current consumption</td>
<td>40 mA or less</td>
<td>40 mA or less</td>
</tr>
</tbody>
</table>

**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

**Response time**

- 1 ms or less

**Operation indicator**

- Red LED (lights up when the output is ON)

**Stability 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)

**Protection**

- IP67 (IEC)

**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

**Ambient humidity**

- 35 to 85 % RH, Storage: 35 to 85 % RH

**Ambient illuminance**

- Incandescent light: 3,500 ℓx at the light-receiving face

**EMC**

- EN 60947-5-2

**Voltage withstandability**

- 1,000 V AC for one min. between all supply terminals connected together and enclosure

**Insulation resistance**

- 20 MΩ or more, with 250 V DC megger between all supply terminals connected together and enclosure

**Shock resistance**

- 500 m/s² acceleration (50 G approx.) in X, Y and Z directions for three times each

**Emitting element**

- Infrared LED (peak emission wavelength: 880 nm 0.035mil, modulated)

**Material**

- Enclosure: Die-cast zinc alloy, Indicator cover: Polymethersulphone, Lens: Polycarbonate

**Cable**

- 0.15 mm² 3-core oil, heat and cold resistant 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.

**Accessories**

- 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

#### RX-LS200

**I/O circuit diagram**

Symbols:
- D: Reverse supply polarity protection diode
- ZD: Surge absorption zener diode
- Tr: PNP open collector transistor

**Wiring diagram**

Symbols:
- Brown
- Black
- Blue
- Load

12 to 24 V DC ±10 %
I/O CIRCUIT AND WIRING DIAGRAMS

RX-LS200-P

I/O circuit diagram

Wiring diagram

SENSING CHARACTERISTICS (TYPICAL)

Setting fields

- Setting distance: 200 mm (Horizontal) 7.874 in
- Setting distance: 200 mm (Vertical) 7.874 in
- Setting distance: 150 mm (Horizontal) 5.906 in
- Setting distance: 150 mm (Vertical) 5.906 in

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).

Correlation between sensing object size and sensing range

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
- Zc : Surge absorption zener diode
- Tr : PNP output transistor

Do not use an external power supply.
**SENSING CHARACTERISTICS (TYPICAL)**

Correlation between material (50 × 50 mm) and sensing range

![Sensing Characteristics Graph]

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

**PRECAUTIONS FOR PROPER USE**

Refer to p.1458~ 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.

**Wiring**

- The output of RX-LS200-P does not incorporate a short-circuit 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.
## PRECAUTIONS FOR PROPER USE

### Adjusters adjustment

**Pointer**
- It shows how much the distance adjuster is rotated.

**Operation indicator (Red)**
- Lights up when the output is ON.

**Stability indicator (Green)**
- ‘Lights up under stable light received’ condition or stable dark condition.

### Adjusting procedure

#### <When a sensing object moves horizontally to 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.

1. Remove the object, turn the distance adjuster clockwise, and find out point ‘A’ where the sensor changes to the light received condition.
2. When the sensor does not go to the light received condition even if the adjuster is fully turned clockwise, point ‘A’ is this extreme point.
3. The optimum position to stably detect objects is the center point between ‘A’ and ‘B’.

**The optimum position to stably detect objects is the center point between ‘A’ and ‘B’**

#### DIMENSIONS (Unit: mm in)

**RX-LS200**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beam-receiving part</td>
<td>14</td>
</tr>
<tr>
<td>Sensing axis</td>
<td>35</td>
</tr>
<tr>
<td>Beam-emitting part</td>
<td>14</td>
</tr>
</tbody>
</table>

**RX-LS200-P**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beam-receiving part</td>
<td>14</td>
</tr>
<tr>
<td>Sensing axis</td>
<td>35</td>
</tr>
<tr>
<td>Beam-emitting part</td>
<td>14</td>
</tr>
</tbody>
</table>

**Sensor**

**PT-RX500**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Length L</th>
</tr>
</thead>
<tbody>
<tr>
<td>PT-RX500</td>
<td>500</td>
</tr>
</tbody>
</table>

**PT-RX1000**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Length L</th>
</tr>
</thead>
<tbody>
<tr>
<td>PT-RX1000</td>
<td>1,000</td>
</tr>
</tbody>
</table>

**MS-RX-1**

Material: Cold rolled carbon steel (SPCC)
- Two M4 (length 16 mm) hexagon-socket-head bolts are attached.

### Assembly dimensions

**Sensor mounting bracket (Accessory)**

**Adjustable Range Reflective Photoelectric Sensor RX-LS200**

Refer to p.1458~ for general precautions.

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