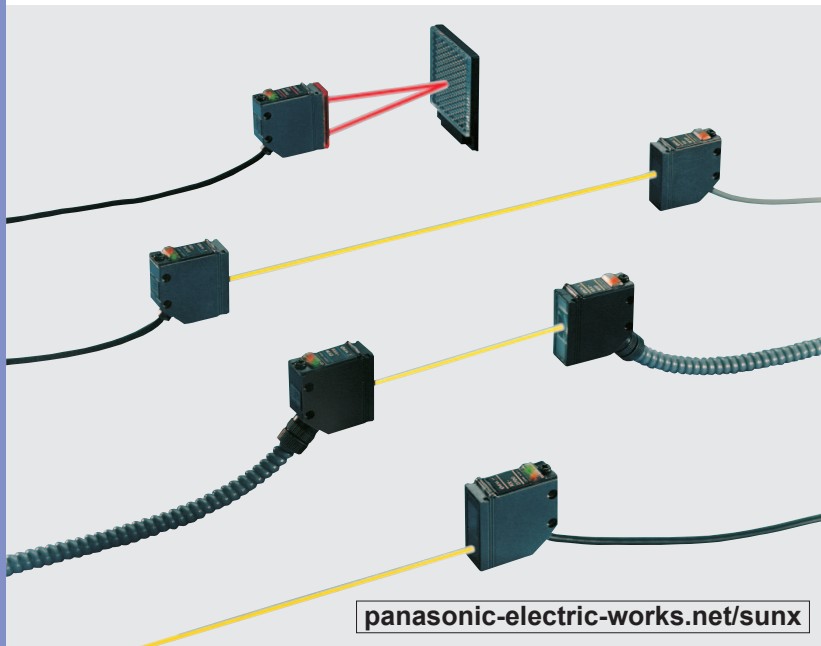


# RX SERIES

- Related Information
- General terms and conditions..... F-17
  - Sensor selection guide..... P.283~
  - Glossary of terms..... P.1359~
  - General precautions..... P.1405



[panasonic-electric-works.net/sunx](http://panasonic-electric-works.net/sunx)



## Sturdy photoelectric sensor made of die-cast zinc alloy

### Robust

The enclosure is robust as it is made of die-cast zinc alloy.

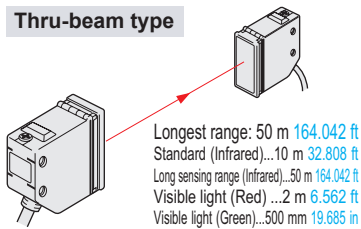
### VARIETIES

#### Standard type

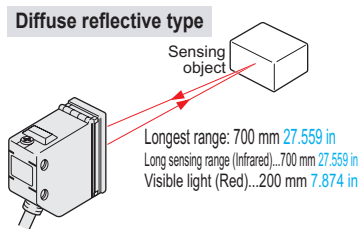
**RX**

#### Wide variety

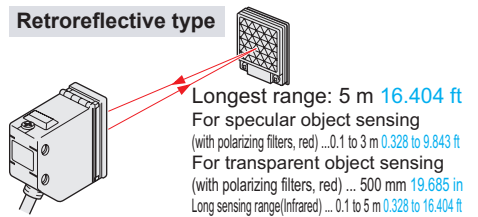
##### Thru-beam type



##### Diffuse reflective type



##### Retroreflective type



#### DC 2-wire type

**RX2**

#### Wiring reduced by 1/3

Wiring can be completed by using only two, instead of three wires.

#### Power supply cost: reduced to 1/30 or less

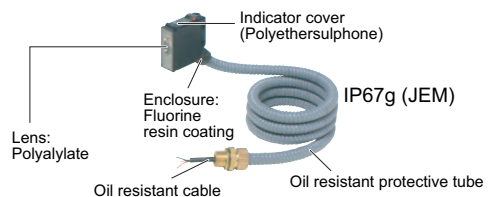
Current consumption: 1 mA or less  
 An additional power supply for the sensors is not required.

#### Heavy duty type

**RX4**

#### Durable against oil

This sensor can be used in a harsh environment.



### MAINTENANCE

#### Test input (emission halt input)

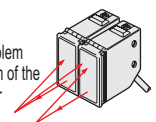
Convenient for operation check before start-up. (Excluding **RX2** types)

### FUNCTIONS

#### Automatic interference prevention function **Retroreflective / diffuse reflective types**

Two sensors can be mounted side by side because of the automatic interference prevention function. (Excluding **RX2** types)

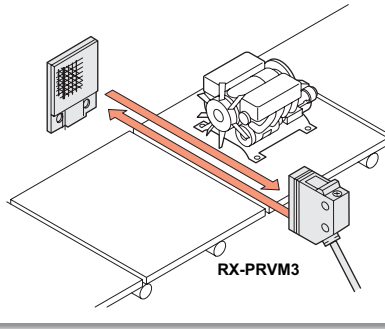
There is no problem even if the beam of the adjoining sensor is incident.



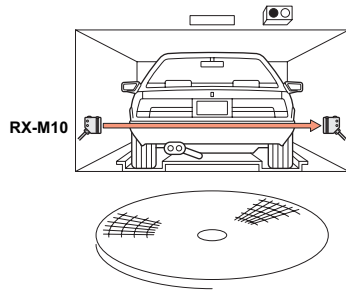
- FIBER SENSORS
- LASER SENSORS
- PHOTOELECTRIC SENSORS
- MICRO PHOTOELECTRIC SENSORS
- AREA SENSORS
- LIGHT CURTAINS
- PRESSURE / FLOW SENSORS
- INDUCTIVE PROXIMITY SENSORS
- PARTICULAR USE SENSORS
- SENSOR OPTIONS
- SIMPLE WIRE-SAVING UNITS
- WIRE-SAVING SYSTEMS
- MEASUREMENT SENSORS
- STATIC CONTROL DEVICES
- ENDOSCOPE
- LASER MARKERS
- PLC / TERMINALS
- HUMAN MACHINE INTERFACES
- ENERGY CONSUMPTION VISUALIZATION COMPONENTS
- FA COMPONENTS
- MACHINE VISION SYSTEMS
- UV CURING SYSTEMS
- Selection Guide
- Amplifier Built-in
- Power Supply Built-in
- Amplifier-separated
- CX-400
- EX-10
- EX-20
- EX-30
- EX-40
- CX-440
- EQ-30
- EQ-500
- MQ-W
- RX-LS200
- RX**
- RT-610

**APPLICATIONS**

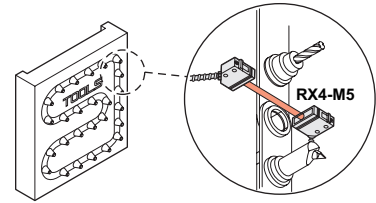
**Detecting engines**



**Confirming car position at parking garage**



**Sensing machine tools**



FIBER SENSORS

LASER SENSORS

PHOTO-ELECTRIC SENSORS

MICRO PHOTO-ELECTRIC SENSORS

AREA SENSORS

LIGHT CURTAINS

PRESSURE / FLOW SENSORS

INDUCTIVE PROXIMITY SENSORS

PARTICULAR USE SENSORS

SENSOR OPTIONS

SIMPLE WIRE-SAVING UNITS

WIRE-SAVING SYSTEMS

MEASUREMENT SENSORS

STATIC CONTROL DEVICES

ENDOSCOPE

LASER MARKERS

PLC / TERMINALS

HUMAN MACHINE INTERFACES

ENERGY CONSUMPTION VISUALIZATION COMPONENTS

FA COMPONENTS

MACHINE VISION SYSTEMS

UV CURING SYSTEMS

Selection Guide

Amplifier Built-in

Power Supply Built-in

Amplifier-separated

CX-400

EX-10

EX-20

EX-30

EX-40

CX-440

EQ-30

EQ-500

MQ-W

RX-LS200

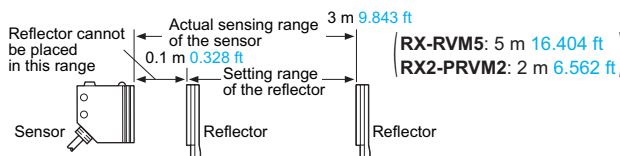
RX

RT-610

**ORDER GUIDE**

| Type                  |                    | Appearance | Sensing range                 | Model No. (Note 2)                     | Output           |                               |               |
|-----------------------|--------------------|------------|-------------------------------|--|------------------|-------------------------------|---------------|
| RX (Standard type)    | Thru-beam          |            | Infrared                      | 10 m 32.808 ft                         | <b>RX-M10</b>    | NPN open-collector transistor |               |
|                       |                    |            | For mark sensing              | Long sensing range                     | 50 m 164.062 ft  |                               | <b>RX-M50</b> |
|                       |                    |            |                               | Red                                    | 2 m 6.562 ft     |                               | <b>RX-M2R</b> |
|                       | Retroreflective    |            | Red (with polarizing filters) | 0.1 to 3 m 0.328 to 9.843 ft (Note 1)  | <b>RX-PRVM3</b>  |                               |               |
|                       |                    |            | Infrared (long sensing range) | 0.1 to 5 m 0.328 to 16.404 ft (Note 1) | <b>RX-RVM5</b>   |                               |               |
|                       | Diffuse reflective |            | Infrared                      | 700 mm 27.559 in                       | <b>RX-D700</b>   |                               |               |
| Red                   |                    |            | 200 mm 7.874 in               | <b>RX-D200R</b>                        |                  |                               |               |
| RX2 (DC 2-wire type)  | Thru-beam          |            | Infrared                      | 5 m 16.404 ft                          | <b>RX2-M5</b>    | Non contact DC 2-wire type    |               |
|                       | Retroreflective    |            | Red (with polarizing filters) | 0.1 to 2 m 0.328 to 6.562 ft (Note 1)  | <b>RX2-PRVM2</b> |                               |               |
|                       | Diffuse reflective |            | Infrared                      | 300 mm 11.811 in                       | <b>RX2-D300</b>  |                               |               |
| RX4 (Heavy duty type) | Thru-beam          |            | Infrared                      | 2 m 6.562 ft cable length              | 5 m 16.404 ft    | NPN open-collector transistor |               |
|                       |                    |            |                               | 3 m 9.843 ft cable length              |                  |                               |               |
|                       |                    |            |                               | 5 m 16.404 ft cable length             |                  |                               |               |

Notes: 1) The sensing range of the retroreflective type sensor is specified for the **RF-230** reflector. Further, the sensing range of **RX-PRVM3**, **RX-RVM5** and **RX2-PRVM2** is the possible setting range for the reflector. The sensor can detect an object less than 0.1 m 0.328 ft away.



2) The model No. with "P" shown on the label affixed to the thru-beam type sensor is the emitter, "D" shown on the label is the receiver. (e.g.) Emitter of **RX-M10**: **RX-M10P**, Receiver of **RX-M10**: **RX-M10D**

- FIBER SENSORS
- LASER SENSORS
- PHOTO-ELECTRIC SENSORS
- MICRO PHOTO-ELECTRIC SENSORS
- AREA SENSORS
- LIGHT CURTAINS
- PRESSURE / FLOW SENSORS
- INDUCTIVE PROXIMITY SENSORS
- PARTICULAR USE SENSORS
- SENSOR OPTIONS
- SIMPLE WIRE-SAVING UNITS
- WIRE-SAVING SYSTEMS
- MEASUREMENT SENSORS
- STATIC CONTROL DEVICES
- ENDOSCOPE
- LASER MARKERS
- PLC / TERMINALS
- HUMAN MACHINE INTERFACES
- ENERGY CONSUMPTION VISUALIZATION COMPONENTS
- FA COMPONENTS
- MACHINE VISION SYSTEMS
- UV CURING SYSTEMS

## ORDER GUIDE

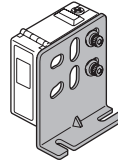
### 5 m 16.404 ft cable length type

5m 16.404 ft cable length type (standard: 2m 6.562 ft) is also available for **RX** and **RX2** types. (excluding **RX-500G**)  
 When ordering this type, suffix “-C5” to the model No.  
 (e.g.) 5 m 16.404 ft cable length type of **RX-M10** is “**RX-M10-C5**”.

### Accessories

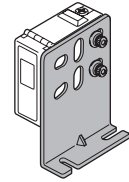
- **MS-RX-1** (Sensor mounting bracket)
- **MS-RX-2** (Sensor mounting bracket)
- **PT-RX4-1** (Oil resistant protective tube 1 m 3.281 ft long)
- **PT-RX4-2** (Oil resistant protective tube 2 m 6.562 ft long)
- **PT-RX4-4** (Oil resistant protective tube 4 m 13.123 ft long)
- **RF-230** (Reflector)

#### • MS-RX-1



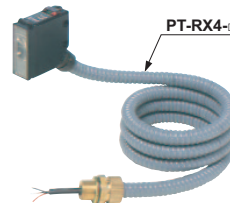
Two M4 (length 16 mm 0.630 in) hexagon-socket-head bolts are attached

#### • MS-RX-2

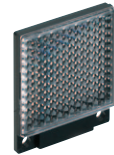


Two M4 (length 16 mm 0.630 in) hexagon-socket-head bolts are attached

#### • PT-RX4-□



#### • RF-230



- Selection Guide
- Amplifier Built-in
- Power Supply Built-in
- Amplifier-separated

- CX-400
- EX-10
- EX-20
- EX-30
- EX-40
- CX-440
- EQ-30
- EQ-500
- MQ-W
- RX-LS200
- RX**
- RT-610

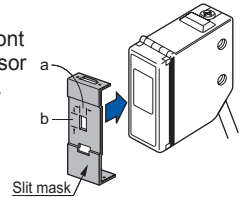
**OPTIONS**

| Designation   | Model No.  | Description  |   |
|---|--|--|---|
| Slit mask<br>(For <b>RX-M10</b><br>and <b>RX2-M5</b><br>only) | <b>OS-RX-05×5</b><br>(Slit size 0.5 × 5 mm)<br><b>0.020 × 0.197 in</b> | Slit on emitter <ul style="list-style-type: none"> <li>• Sensing range: 2.7 m <b>8.858 ft [RX-M10]</b><br/>1.4 m <b>4.593 ft [RX2-M5]</b></li> <li>• Min. sensing object: ø8 mm ø0.315 in</li> </ul>   |   |
|   |  | Slit on receiver <ul style="list-style-type: none"> <li>• Sensing range: 1.9 m <b>6.234 ft [RX-M10]</b><br/>1 m <b>3.281 ft [RX2-M5]</b></li> <li>• Min. sensing object: ø6 mm ø0.236 in</li> </ul>  |   |
|   | <b>OS-RX-5×05</b><br>(Slit size 5 × 0.5 mm)<br><b>0.197 × 0.020 in</b> | Slit on both sides <ul style="list-style-type: none"> <li>• Sensing range: 0.4 m <b>1.312 ft [RX-M10]</b><br/>0.2 m <b>0.656 ft [RX2-M5]</b></li> <li>• Min. sensing object: 0.5 × 5 mm<br/><b>0.020 × 0.197 in</b></li> </ul>   |   |
|   |  | Slit on emitter <ul style="list-style-type: none"> <li>• Sensing range: 3.8 m <b>12.467 ft [RX-M10]</b><br/>1.9 m <b>6.234 ft [RX2-M5]</b></li> <li>• Min. sensing object: ø8 mm ø0.315 in</li> </ul>  |   |
|   | <b>OS-RX-1×5</b><br>(Slit size 1 × 5 mm)<br><b>0.039 × 0.197 in</b>    | Slit on receiver <ul style="list-style-type: none"> <li>• Sensing range: 2.8 m <b>9.186 ft [RX-M10]</b><br/>1.4 m <b>4.593 ft [RX2-M5]</b></li> <li>• Min. sensing object: ø6 mm ø0.236 in</li> </ul>  |   |
|   |  | Slit on both sides <ul style="list-style-type: none"> <li>• Sensing range: 0.8 m <b>2.625 ft [RX-M10]</b><br/>0.4 m <b>1.312 ft [RX2-M5]</b></li> <li>• Min. sensing object: 1 × 5 mm<br/><b>0.039 × 0.197 in</b></li> </ul>   |   |
|   | <b>OS-RX-5×1</b><br>(Slit size 5 × 1 mm)<br><b>0.197 × 0.039 in</b>    | Slit on emitter <ul style="list-style-type: none"> <li>• Sensing range: 7 m <b>22.966 ft [RX-M10]</b><br/>3.5 m <b>11.483 ft [RX2-M5]</b></li> <li>• Min. sensing object: ø8 mm ø0.315 in</li> </ul>   |   |
|   |  | Slit on receiver <ul style="list-style-type: none"> <li>• Sensing range: 4.9 m <b>16.076 ft [RX-M10]</b><br/>2.5 m <b>8.202 ft [RX2-M5]</b></li> <li>• Min. sensing object: ø6 mm ø0.236 in</li> </ul>   |   |
|   | <b>OS-RX-3×5</b><br>(Slit size 3 × 5 mm)<br><b>0.118 × 0.197 in</b>    | Slit on both sides <ul style="list-style-type: none"> <li>• Sensing range: 2.6 m <b>8.530 ft [RX-M10]</b><br/>1.3 m <b>4.265 ft [RX2-M5]</b></li> <li>• Min. sensing object: 3 × 5 mm<br/><b>0.118 × 0.197 in</b></li> </ul>   |   |
|   |  | Slit on both sides <ul style="list-style-type: none"> <li>• Sensing range: 0.2 to 1.5 m <b>0.656 to 4.921 ft [RX-RVM5]</b><br/>0.4 to 1 m <b>1.312 to 3.281 ft [RX-PRVM3]</b></li> <li>• Min. sensing object: ø30 mm ø1.181 in</li> </ul>  |   |
|   | Reflector<br>(For retroreflective type sensor only)<br>(Note 1)        | <b>RF-210</b>  | <ul style="list-style-type: none"> <li>• Sensing range: 0.1 to 3.8 m <b>0.328 to 12.467 ft [RX-RVM5]</b><br/>0.1 to 2 m <b>0.328 to 6.562 ft [RX-PRVM3]</b></li> <li>• Min. sensing object: ø35 mm ø1.378 in</li> </ul> |
|   |  | <b>RF-220</b>  | <ul style="list-style-type: none"> <li>• Sensing range: 0.1 to 2 m <b>0.328 to 6.562 ft [RX-RVM5]</b><br/>0.1 to 1.3 m <b>0.328 to 4.265 ft [RX2-PRVM2]</b></li> <li>• Min. sensing object: ø30 mm ø1.181 in</li> </ul> |
| Reflector mounting bracket<br>(Note 1)                        | <b>MS-RF21-1</b>   | Protective mounting bracket for <b>RF-210</b><br>It protects the reflector from damage and maintains alignment.  |   |
|   | <b>MS-RF22</b>   | For <b>RF-220</b>  |   |
|   | <b>MS-RF23</b>   | For <b>RF-230</b>  |   |
| Reflective tape<br>(For <b>RX-RVM5</b> only)                  | <b>RF-T110</b>   | This tape can be used in place of the reflector by cutting it to a suitable size. <ul style="list-style-type: none"> <li>• Size: 100 × 100 mm <b>3.937 × 3.937 in</b></li> <li>• Sensing range: 3 m <b>9.843 ft</b> (at 50 × 50 mm <b>1.969 × 1.969 in</b>)<br/>(There may be a slight variation depending on the product.)</li> </ul> |   |
| Protective tube   | <b>PT-RX500</b>  | Cable is protected from external forces.<br>It does not rust as it is made of stainless steel.   |   |
|   | <b>PT-RX1000</b>   |  |   |
| Sensor checker  | <b>CHX-SC2</b><br>(Note 2)   | It is useful for beam alignment of thru-beam type sensors. The optimum receiver position is given by indicators, as well as an audio signal.   |   |

Notes: 1) Refer to **CX-400** series pages for dimensions of the reflector or the reflector mounting bracket.  
2) Refer to the sensor checker **CHX-SC2** pages for details.

**Slit mask**

- **OS-RX-□**  
Fitted on the front face of the sensor with one-touch.



\*Slit size

- **OS-RX-1×5**  
ã ã

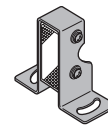
**Reflector**

- **RF-210**
- **RF-220**



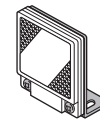
**Reflector mounting bracket**

- **MS-RF21-1**



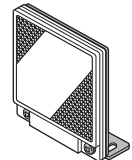
Two M3 (length 12 mm **0.472 in**) screws with washers are attached.

- **MS-RF22**



Two M3 (length 8 mm **0.315 in**) screws with washers are attached.

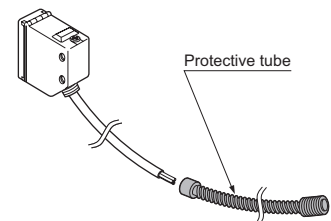
- **MS-RF23**



Two M4 (length 10 mm **0.394 in**) screws with washers are attached.

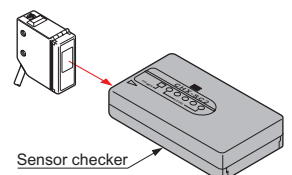
**Protective tube**

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



**Sensor checker**

- **CHX-SC2**



FIBER SENSORS

LASER SENSORS

PHOTO-ELECTRIC SENSORS

MICRO PHOTO-ELECTRIC SENSORS

AREA SENSORS

LIGHT CURTAINS

PRESSURE / FLOW SENSORS

INDUCTIVE PROXIMITY SENSORS

PARTICULAR USE SENSORS

SENSOR OPTIONS

SIMPLE WIRE-SAVING UNITS

WIRE-SAVING SYSTEMS

MEASUREMENT SENSORS

STATIC CONTROL DEVICES

ENDOSCOPE

LASER MARKERS

PLC / TERMINALS

HUMAN MACHINE INTERFACES

ENERGY CONSUMPTION VISUALIZATION COMPONENTS

FA COMPONENTS

MACHINE VISION SYSTEMS

UV CURING SYSTEMS

Selection Guide

Amplifier Built-in

Power Supply Built-in

Amplifier-separated

**CX-400**

**EX-10**

**EX-20**

**EX-30**

**EX-40**

**CX-440**

**EQ-30**

**EQ-500**

**MQ-W**

**RX-LS200**

**RX**

**RT-610**

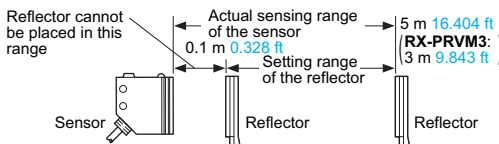
**SPECIFICATIONS**

**Standard type**

| Item  | Model No.   | Thru-beam  |                    |                  |                     | Retroreflective   |  | Diffuse reflective  |                             |
|---|---|--|--------------------|------------------|---------------------|---|--|---|-----------------------------|
|   |   | Infrared   |                    | Red              | Green               | Red (with polarizing filters)   | Infrared (Long sensing range)                                      | Infrared  | Red                         |
|   |   | Long sensing range   |                    |                  |                     |   |  |   |                             |
| Sensing range                                 |   | <b>RX-M10</b>  | <b>RX-M50</b>      | <b>RX-M2R</b>    | <b>RX-500G</b>      | <b>RX-PRVM3</b>   | <b>RX-RVM5</b>   | <b>RX-D700</b>  | <b>RX-D200R</b>             |
|   |   | 10 m<br>32.808 ft  | 50 m<br>164.042 ft | 2 m<br>6.562 ft  | 500 mm<br>19.685 in | 0.1 to 3 m<br>0.328 to 9.843 ft (Note 2)  | 0.1 to 5 m<br>0.328 to 16.404 ft (Note 2)                          | 700 mm<br>27.559 in (Note 3)  | 200 mm<br>7.874 in (Note 3) |
| Sensing object                                |   | ø10 mm 0.394 in or more opaque object (Note 4)   |                    |                  |                     | ø50 mm ø1.969 in or more opaque, translucent or specular object (Note 2, 5)   | ø50 mm ø1.969 in or more opaque, or translucent object (Note 2, 5) | Opaque, translucent or transparent object (Note 5)                              |                             |
| Hysteresis                                    |   | —————  |                    |                  |                     | —————   |  | 15 % or less of operation distance (Note 3)                                     |                             |
| Repeatability (perpendicular to sensing axis) |   | 0.5 mm 0.020 in or less  |                    |                  |                     | 1 mm 0.039 in or less   |  | 0.5 mm 0.020 in or less   |                             |
| Supply voltage                                |   | 12 to 24 V DC ±10 %  |                    |                  |                     | Ripple P-P 10 % or less   |  |   |                             |
| Current consumption                           |   | Emitter: 20 mA or less ( <b>RX-M50</b> : 25 mA or less), Receiver: 25 mA or less   |                    |                  |                     | 40 mA or less   |  |   |                             |
| Sensing output                                |   | NPN open-collector transistor<br>• Maximum sink current: 100 mA<br>• Applied voltage: 30 V DC or less (between sensing output and 0 V)<br>• Residual voltage: 2 V or less (at 100 mA sink current)<br>1 V or less (at 16 mA sink current)        |                    |                  |                     |   |  |   |                             |
| Utilization category                          |   | DC-12 or DC-13   |                    |                  |                     |   |  |   |                             |
| Output operation                              |   | Switchable either Light-ON or Dark-ON  |                    |                  |                     |   |  |   |                             |
| Short-circuit protection                      |   | Incorporated   |                    |                  |                     |   |  |   |                             |
| Self-diagnosis output                         |   | NPN open-collector transistor<br>• Maximum sink current: 50 mA<br>• Applied voltage: 30 V DC or less (between self-diagnosis output and 0 V)<br>• Residual voltage: 1.5 V or less (at 50 mA sink current)<br>1 V or less (at 16 mA sink current) |                    |                  |                     |   |  |   |                             |
| Output operation                              |   | ON under unstable sensing condition  |                    |                  |                     |   |  |   |                             |
| Short-circuit protection                      |   | —————  |                    |                  |                     |   |  |   |                             |
| Response time                                 |   | 1 ms or less   |                    |                  |                     |   |  |   |                             |
| Test input (emission halt) function           |   | Incorporated   |                    |                  |                     |   |  |   |                             |
| Operation indicator                           |   | Red LED (lights up when the sensing output is ON)  |                    |                  |                     |   |  |   |                             |
| Stability indicator                           |   | Green LED (lights up under stable light received condition or stable dark condition)   |                    |                  |                     |   |  |   |                             |
| Emitting indicator                            |   | Red LED (lights up during beam emission)   |                    |                  |                     | —————   |  |   |                             |
| Sensitivity adjuster                          |   | Continuously variable adjuster   |                    |                  |                     |   |  |   |                             |
| Automatic interference prevention function    |   | —————  |                    |                  |                     | Incorporated (Two units of sensors can be mounted close together.)  |  |   |                             |
| Environmental resistance                      | 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        |  |                    |                  |                     |   |  |   |                             |
| Vibration resistance                          | 10 to 500 Hz frequency, 1.5 mm 0.059 in amplitude (10 G max.) in X, Y and Z directions for two hours each |  |                    |                  |                     |   |  |   |                             |
| Shock resistance                              | 500 m/s <sup>2</sup> acceleration (50 G approx.) in X, Y and Z directions for three times each            |  |                    |                  |                     |   |  |   |                             |
| Emitting element (modulated)                  |   | Infrared LED   | Red LED            | Green LED        | Red LED             | Infrared LED  | Red LED  |   |                             |
|   | Peak emission wavelength  | 880 nm 0.035 mil   | 680 nm 0.027 mil   | 570 nm 0.022 mil | 680 nm 0.027 mil    | 880 nm 0.035 mil  | 680 nm 0.027 mil   |   |                             |
| Material                                      |   | Enclosure: Die-cast zinc alloy, Indicator cover: Polyethersulphone, Lens: Polycarbonate (Retroreflective type: Acrylic)  |                    |                  |                     |   |  |   |                             |
| Cable   |   | Emitter: 0.15 mm <sup>2</sup> 3-core oil, heat and cold resistant cable, 2 m 6.562 ft long<br>Receiver: 0.15 mm <sup>2</sup> 4-core oil, heat and cold resistant cable, 2 m 6.562 ft long  |                    |                  |                     | 0.15 mm <sup>2</sup> 5-core oil, heat and cold resistant cable, 2 m 6.562 ft long                                   |  |   |                             |
| Cable extension                               |   | Extension up to total 100 m 328.084 ft is possible with 0.3 mm <sup>2</sup> , or more, cable (thru-beam type: both emitter and receiver).  |                    |                  |                     |   |  |   |                             |
| Net weight                                    |   | Emitter: 70 g approx. ( <b>RX-M50</b> : 75 g approx.)<br>Receiver: 70 g approx. ( <b>RX-M50</b> : 75 g approx.)  |                    |                  |                     | 75 g approx.  |  |   |                             |
| Accessories                                   |   | <b>MS-RX-1</b> (Sensor mounting bracket):<br>1 set for emitter and receiver<br>Adjusting screwdriver: 1 pc.  |                    |                  |                     | <b>MS-RX-1</b> (Sensor mounting bracket): 1 set<br><b>RF-230</b> (Reflector): 1 pc.<br>Adjusting screwdriver: 1 pc. |  | <b>MS-RX-1</b> (Sensor mounting bracket): 1 set<br>Adjusting screwdriver: 1 pc. |                             |

Notes: 1) Where measurement conditions have not been specified precisely, the conditions used were an ambient temperature of +23 °C +73.4 °F.  
 2) The sensing range and the sensing object for the retroreflective type sensor are specified for the **RF-230** reflector. Further, the sensing range of **RX-PRVM3** and **RX-RVM5** is the possible setting range for the reflector. The sensor can detect an object less than 0.1 m 0.328 ft away.

3) The sensing range and the hysteresis of the diffuse reflective type sensor are specified for white non-glossy paper (200 × 200 mm 7.874 × 7.874 in) as the object.  
 4) If slit masks (optional) are fitted on **RX-M10**, an object of 0.5 × 5 mm 0.020 × 0.197 in can be detected.  
 5) Make sure to confirm detection with an actual sensor before use.



- FIBER SENSORS
- LASER SENSORS
- PHOTO-ELECTRIC SENSORS
- MICRO PHOTO-ELECTRIC SENSORS
- AREA SENSORS
- LIGHT CURTAINS
- PRESSURE / FLOW SENSORS
- INDUCTIVE PROXIMITY SENSORS
- PARTICULAR USE SENSORS
- SENSOR OPTIONS
- SIMPLE WIRE-SAVING UNITS
- WIRE-SAVING SYSTEMS
- MEASURE-MENT SENSORS
- STATIC CONTROL DEVICES
- ENDOSCOPE
- LASER MARKERS
- PLC / TERMINALS
- HUMAN MACHINE INTERFACES
- ENERGY CONSUMPTION VISUALIZATION COMPONENTS
- FA COMPONENTS
- MACHINE VISION SYSTEMS
- UV CURING SYSTEMS
- Selection Guide
- Amplifier Built-in
- Power Supply Built-in
- Amplifier-separated
- CX-400**
- EX-10**
- EX-20**
- EX-30**
- EX-40**
- CX-440**
- EQ-30**
- EQ-500**
- MQ-W**
- RX-LS200**
- RX**
- RT-610**



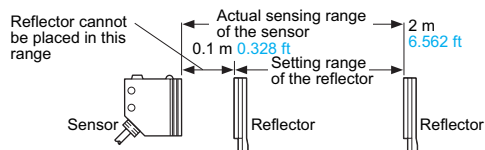
## SPECIFICATIONS

### DC 2-wire type

| Item  | Type                     | Thru-beam  | Retroreflective (with polarizing filters)   | Diffuse reflective  |
|---|--------------------------|--|---|---|
|   | Model No.                | <b>RX2-M5</b>  | <b>RX2-PRVM2</b>  | <b>RX2-D300</b>   |
| Sensing range                                 |                          | 5 m <b>16.404 ft</b>   | 0.1 to 2 m <b>0.328 to 6.562 ft</b> (Note 2)  | 300 mm <b>11.811 in</b> (Note 3)  |
| Sensing object                                |                          | ∅10 mm <b>∅0.394 in</b> or more opaque object (Note 4)   | ∅50 mm <b>∅1.969 in</b> or more opaque, translucent or specular object (Note 2, 5)                                  | Opaque, translucent or transparent object (Note 5)                              |
| Hysteresis                                    |                          | ————   | ————  | 15 % or less of operation distance (Note 3)                                     |
| Repeatability (perpendicular to sensing axis) |                          | 0.5 mm <b>0.020 in</b> or less   | 1 mm <b>0.039 in</b> or less  | 0.5 mm <b>0.020 in</b> or less  |
| Supply voltage                                |                          | 12 to 24 V DC ±10 % Ripple P-P 10 % or less  |   |   |
| Current consumption                           |                          | Emitter: 8 mA or less, Receiver: 0.8 mA or less (Note 6)   | 1 mA or less (Note 6)   |   |
| Sensing output                                |                          | Non contact DC 2-wire type<br>• Load current: 5 to 100 mA<br>• Residual voltage: 4 V or less (Note 7)                              |   |   |
|   | Output operation         | Switchable either Light-ON or Dark-ON  |   |   |
|   | Short-circuit protection | Incorporated   |   |   |
| Response time                                 |                          | 3 ms or less   |   |   |
| Operation indicator                           |                          | Red LED (lights up when the output is ON)  |   |   |
| Stability indicator                           |                          | Green LED (Light-ON mode: lights up under stable light received condition)<br>Dark-ON mode: lights up under stable dark condition) |   |   |
| Emitting indicator                            |                          | Red LED (lights up during beam emission)   | ————  |   |
| Sensitivity adjuster                          |                          | Continuously variable adjuster   |   |   |
| Environmental resistance                      | Protection               | IP67 (IEC)   |   |   |
|   | Ambient temperature      | -20 to +60 °C <b>-4 to +140 °F</b> (No dew condensation or icing allowed), Storage: -30 to +70 °C <b>-22 to +158 °F</b>            |   |   |
|   | Ambient humidity         | 35 to 85 % RH, Storage: 35 to 85 % RH  |   |   |
|   | Ambient illuminance      | Incandescent light: 3,500 lx at the light-receiving face   |   |   |
|   | 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                                 |   |   |
|   | Vibration resistance     | 10 to 500 Hz frequency, 1.5 mm <b>0.059 in</b> amplitude (10 G max.) in X, Y and Z directions for two hours each                   |   |   |
|   | Shock resistance         | 500 m/s <sup>2</sup> acceleration (50 G approx.) in X, Y and Z directions for three times each                                     |   |   |
| Emitting element                              |                          | Infrared LED (modulated)   | Red LED (modulated)   | Infrared LED (modulated)  |
|   | Peak emission wavelength | 880 nm <b>0.035 mil</b>  | 680 nm <b>0.027 mil</b>   | 890 nm <b>0.035 mil</b>   |
| Material                                      |                          | Enclosure: Die-cast zinc alloy, Indicator cover: Polyethersulphone, Lens: Polycarbonate ( <b>RX2-PRVM2</b> : Acrylic)              |   |   |
| Cable   |                          | 0.15 mm <sup>2</sup> 2-core oil, heat and cold resistant cabtyre cable, 2 m <b>6.562 ft</b> long                                   |   |   |
| Cable extension                               |                          | ———— (Note 7)  |   |   |
| Net weight                                    |                          | Emitter: 70 g approx., Receiver: 70 g approx.  | 75 g approx.  | 70 g approx.  |
| Accessories                                   |                          | <b>MS-RX-1</b> (Sensor mounting bracket): 1 set for emitter and receiver<br>Adjusting screwdriver: 1 pc.                           | <b>MS-RX-1</b> (Sensor mounting bracket): 1 set<br><b>RF-230</b> (Reflector): 1 pc.<br>Adjusting screwdriver: 1 pc. | <b>MS-RX-1</b> (Sensor mounting bracket): 1 set<br>Adjusting screwdriver: 1 pc. |

Notes: 1) Where measurement conditions have not been specified precisely, the conditions used were an ambient temperature of +23 °C **+73.4 °F**.

2) The sensing range and the sensing object for **RX2-PRVM2** are specified for the **RF-230** reflector. Further, the sensing range is the possible setting range for the reflector. The sensor can detect an object less than 0.1 m **0.328 ft** away.



3) The sensing range and the hysteresis of **RX2-D300** are specified for white non-glossy paper (200 × 200 mm **7.874 × 7.874 in**) as the object.

4) If slit masks (optional) are fitted, an object of 0.5 × 5 mm **0.020 × 0.197 in** can be detected.

5) Make sure to confirm detection with an actual sensor before use.

6) It is the leakage current when the output is in the OFF state.

7) When extending the cable, the residual voltage will be increased depending on the type of cable used. Verify the residual voltage when extending the cable.

FIBER SENSORS

LASER SENSORS

PHOTO-ELECTRIC SENSORS

MICRO PHOTO-ELECTRIC SENSORS

AREA SENSORS

LIGHT CURTAINS

PRESSURE / FLOW SENSORS

INDUCTIVE PROXIMITY SENSORS

PARTICULAR USE SENSORS

SENSOR OPTIONS

SIMPLE WIRE-SAVING UNITS

WIRE-SAVING SYSTEMS

MEASUREMENT SENSORS

STATIC CONTROL DEVICES

ENDOSCOPE

LASER MARKERS

PLC / TERMINALS

HUMAN MACHINE INTERFACES

ENERGY CONSUMPTION VISUALIZATION COMPONENTS

FA COMPONENTS

MACHINE VISION SYSTEMS

UV CURING SYSTEMS

Selection Guide

Amplifier Built-in

Power Supply Built-in

Amplifier-separated

CX-400

EX-10

EX-20

EX-30

EX-40

CX-440

EQ-30

EQ-500

MQ-W

RX-LS200

RX

RT-610

## SPECIFICATIONS

### Heavy duty type

| Item   | Type<br>Model No.        | Thru-beam  |   |   |
|--|--------------------------|--|---|---|
|  |                          | Cable length 2 m <b>6.562 ft</b>   | Cable length 3 m <b>9.843 ft</b>                | Cable length 5 m <b>16.404 ft</b>               |
|  |                          | <b>RX4-M5</b>  | <b>RX4-M5-C3</b>                                | <b>RX4-M5-C5</b>                                |
| Sensing range                                    |                          | 5 m <b>16.404 ft</b>   |   |   |
| Sensing object                                   |                          | ø10 mm <b>ø0.394 in</b> or more opaque object  |   |   |
| Repeatability<br>(perpendicular to sensing axis) |                          | 0.5 mm <b>0.020 in</b> or less   |   |   |
| Supply voltage                                   |                          | 12 to 24 V DC ±10 % Ripple P-P 10 % or less  |   |   |
| Current consumption                              |                          | Emitter: 20 mA or less, Receiver: 25 mA or less  |   |   |
| Sensing output                                   |                          | NPN open-collector transistor <ul style="list-style-type: none"> <li>• Maximum sink current: 100 mA</li> <li>• Applied voltage: 30 V DC or less (between sensing output and 0 V)</li> <li>• Residual voltage: 2 V or less (at 100 mA sink current)<br/>1 V or less (at 16 mA sink current)</li> </ul>        |   |   |
| Output operation                                 |                          | Switchable either Light-ON or Dark-ON  |   |   |
| Short-circuit protection                         |                          | Incorporated   |   |   |
| Self-diagnosis output                            |                          | NPN open-collector transistor <ul style="list-style-type: none"> <li>• Maximum sink current: 50 mA</li> <li>• Applied voltage: 30 V DC or less (between self-diagnosis output and 0 V)</li> <li>• Residual voltage: 1.5 V or less (at 50 mA sink current)<br/>1 V or less (at 16 mA sink current)</li> </ul> |   |   |
| Output operation                                 |                          | ON under unstable sensing condition  |   |   |
| Short-circuit protection                         |                          | —  |   |   |
| Response time                                    |                          | 1 ms or less   |   |   |
| Test input (emission halt) function              |                          | Incorporated   |   |   |
| Operation indicator                              |                          | Red LED (lights up when the sensing output is ON)  |   |   |
| Stability indicator                              |                          | Green LED (lights up under stable light received condition or stable dark condition)   |   |   |
| Emitting indicator                               |                          | Red LED (lights up during beam emission)   |   |   |
| Sensitivity adjuster                             |                          | Continuously variable adjuster   |   |   |
| Environmental resistance                         | Protection               | IP67 (IEC), IP67g (JEM)  |   |   |
|  | Ambient temperature      | -25 to +60 °C <b>-13 to +140 °F</b> (No dew condensation or icing allowed), Storage: -30 to +70 °C <b>-22 to +158 °F</b>   |   |   |
|  | Ambient humidity         | 35 to 85 % RH, Storage: 35 to 85 % RH  |   |   |
|  | Ambient illuminance      | Incandescent light: 3,500 lx at the light-receiving face   |   |   |
|  | 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   |   |   |
|  | Vibration resistance     | 10 to 500 Hz frequency, 1.5 mm <b>0.059 in</b> amplitude (10 G max.) in X, Y and Z directions for two hours each   |   |   |
| Shock resistance                                 |                          | 500 m/s <sup>2</sup> acceleration (50 G approx.) in X, Y and Z directions for three times each   |   |   |
| Emitting element                                 |                          | Infrared LED (Peak emission wavelength: 880 nm <b>0.035 mil</b> , modulated)   |   |   |
| Material   |                          | Enclosure: Die-cast zinc alloy (Fluorine resin coating), Indicator cover: Polyethersulphone, Lens: Polyallylate, Protective tube sheath: Oil resistant PVC   |   |   |
| Cable  |                          | 0.15 mm <sup>2</sup> 4-core (emitter: 3-core) oil, heat and cold resistant cabtyre cable   |   |   |
| Protective tube length                           |                          | 1 m <b>3.281 ft</b>  | 2 m <b>6.562 ft</b>                             | 4 m <b>13.123 ft</b>                            |
| Cable extension                                  |                          | Extension up to total 100 m <b>328.084 ft</b> is possible for both emitter and receiver with 0.3 mm <sup>2</sup> , or more, cable.   |   |   |
| Net weight                                       |                          | Emitter: 175 g approx., Receiver: 175 g approx.  | Emitter: 265 g approx., Receiver: 265 g approx. | Emitter: 495 g approx., Receiver: 495 g approx. |
| Accessories                                      |                          | <b>MS-RX-2</b> (Sensor mounting bracket): 1 set for emitter and receiver, 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**.

FIBER  
SENSORSLASER  
SENSORSPHOTO-  
ELECTRIC  
SENSORSMICRO  
PHOTO-  
ELECTRIC  
SENSORSAREA  
SENSORSLIGHT  
CURTAINSPRESSURE /  
FLOW  
SENSORSINDUCTIVE  
PROXIMITY  
SENSORSPARTICULAR  
USE  
SENSORSSENSOR  
OPTIONSSIMPLE  
WIRE-  
SAVING  
UNITSWIRE-  
SAVING  
SYSTEMSMEASURE-  
MENT  
SENSORSSTATIC  
CONTROL  
DEVICES

ENDOSCOPE

LASER  
MARKERSPLC/  
TERMINALSHUMAN  
MACHINE  
INTERFACESENERGY  
CONSUMPTION  
VISUALIZATION  
COMPONENTSFA  
COMPONENTSMACHINE  
VISION  
SYSTEMSUV  
CURING  
SYSTEMSSelection  
GuideAmplifier  
Built-inPower Supply  
Built-inAmplifier-  
separated

CX-400

EX-10

EX-20

EX-30

EX-40

CX-440

EQ-30

EQ-500

MQ-W

RX-LS200

RX

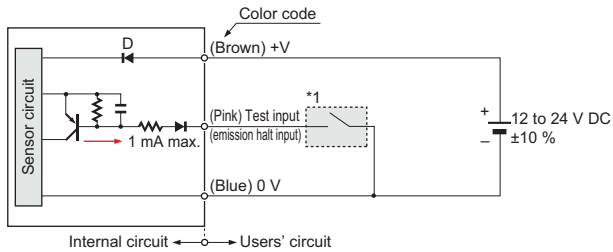
RT-610

## I/O CIRCUIT AND WIRING DIAGRAMS

RX-□ RX4-□

### I/O circuit diagrams

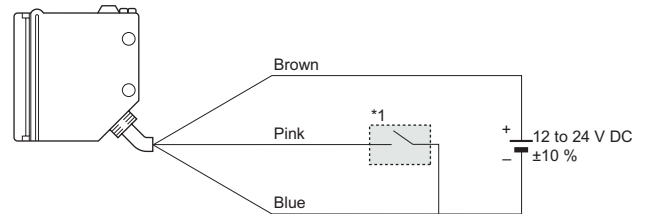
#### Emitter of thru-beam type sensor



Symbol ... D: Reverse supply polarity protection diode

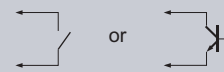
### Wiring diagram

#### Emitter of thru-beam type sensor



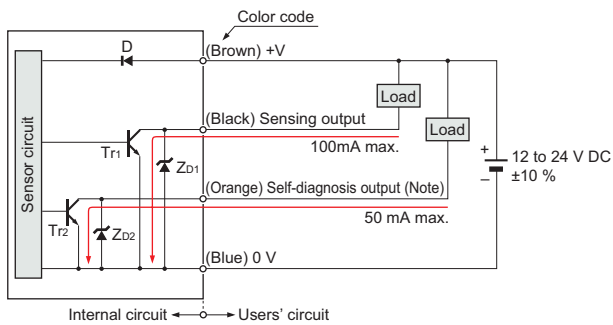
\* 1

Non-voltage contact or NPN open-collector transistor



- Test input (emission halt input)  
[Supply voltage – 2.5 V] or more: Emission  
[Supply voltage – 3.3 V] or less: Emission halt

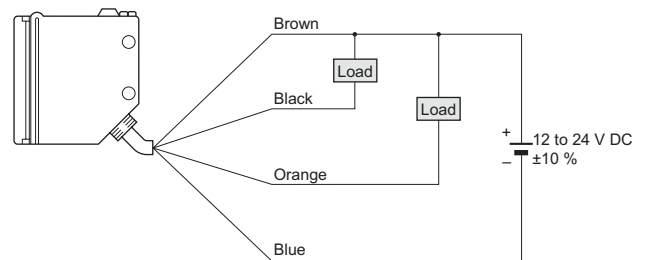
#### Receiver of thru-beam type sensor



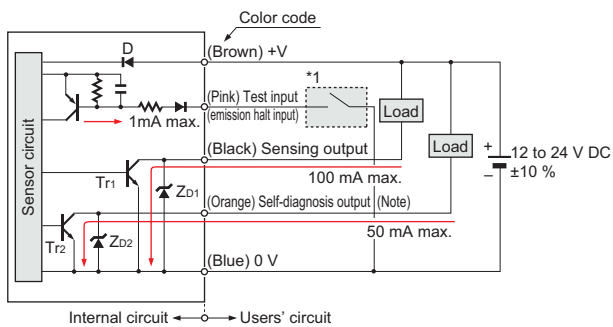
Note: The self-diagnosis output does not incorporate a short-circuit protection circuit. Do not connect it directly to a power supply or a capacitive load.

Symbols ... D: Reverse supply polarity protection diode  
ZD1, ZD2: Surge absorption zener diode  
Tr1, Tr2 : NPN output transistor

#### Receiver of thru-beam type sensor



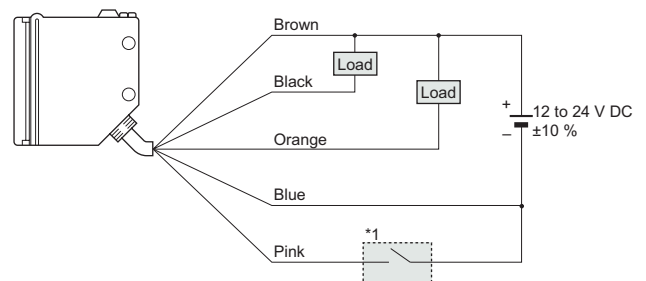
#### Retroreflective and diffuse reflective type sensors



Note: The self-diagnosis output does not incorporate a short-circuit protection circuit. Do not connect it directly to a power supply or a capacitive load.

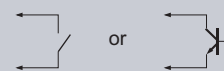
Symbols ... D: Reverse supply polarity protection diode  
ZD1, ZD2: Surge absorption zener diode  
Tr1, Tr2 : NPN output transistor

#### Retroreflective and diffuse reflective type sensors



\* 1

Non-voltage contact or NPN open-collector transistor



- Test input (emission halt input)  
[Supply voltage – 2.5 V] or more: Emission  
[Supply voltage – 3.3 V] or less: Emission halt

FIBER SENSORS

LASER SENSORS

PHOTO-ELECTRIC SENSORS

MICRO PHOTO-ELECTRIC SENSORS

AREA SENSORS

LIGHT CURTAINS

PRESSURE / FLOW SENSORS

INDUCTIVE PROXIMITY SENSORS

PARTICULAR USE SENSORS

SENSOR OPTIONS

SIMPLE WIRE-SAVING UNITS

WIRE-SAVING SYSTEMS

MEASUREMENT SENSORS

STATIC CONTROL DEVICES

ENDSCOPE

LASER MARKERS

PLC / TERMINALS

HUMAN MACHINE INTERFACES

ENERGY CONSUMPTION VISUALIZATION COMPONENTS

FA COMPONENTS

MACHINE VISION SYSTEMS

UV CURING SYSTEMS

Selection Guide

Amplifier Built-in

Power Supply Built-in

Amplifier-separated

CX-400

EX-10

EX-20

EX-30

EX-40

CX-440

EQ-30

EQ-500

MQ-W

RX-LS200

RX

RT-610



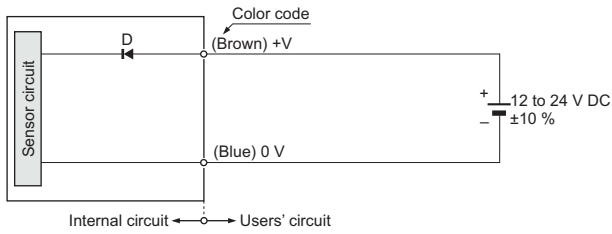
- FIBER SENSORS
- LASER SENSORS
- PHOTO-ELECTRIC SENSORS
- MICRO PHOTO-ELECTRIC SENSORS
- AREA SENSORS
- LIGHT CURTAINS
- PRESSURE / FLOW SENSORS
- INDUCTIVE PROXIMITY SENSORS
- PARTICULAR USE SENSORS
- SENSOR OPTIONS
- SIMPLE WIRE-SAVING UNITS
- WIRE-SAVING SYSTEMS
- MEASUREMENT SENSORS
- STATIC CONTROL DEVICES
- ENDOSCOPE
- LASER MARKERS
- PLC / TERMINALS
- HUMAN MACHINE INTERFACES
- ENERGY CONSUMPTION VISUALIZATION COMPONENTS
- FA COMPONENTS
- MACHINE VISION SYSTEMS
- UV CURING SYSTEMS

## I/O CIRCUIT AND WIRING DIAGRAMS

### RX2-□

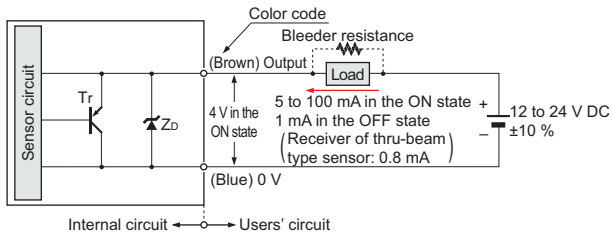
#### I/O circuit diagrams

##### Emitter of thru-beam type sensor



Symbol ... D: Reverse supply polarity protection diode

##### Receiver of thru-beam type sensor, retroreflective and diffuse reflective type sensors



Symbols ... D : Reverse supply polarity protection diode  
Zd: Surge absorption zener diode  
Tr : PNP output transistor

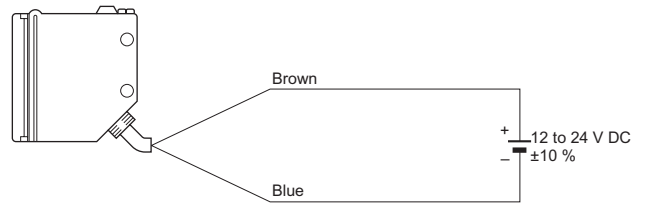
#### Conditions for the load

- 1) The load should not be actuated by the leakage current (1 mA; 0.8 mA for receiver of thru-beam type sensor) in the OFF state.
- 2) The load should be actuated by (supply voltage - 4 V) in the ON state.
- 3) The current in the ON state should be between 5 to 100 mA DC.

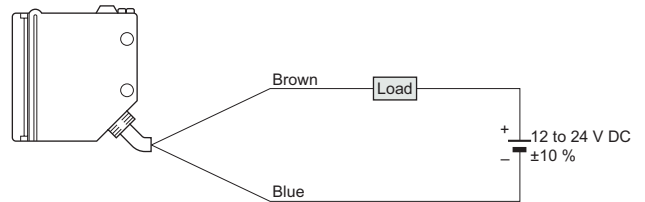
[ In case the current is less than 5 mA, connect a bleeder resistance in parallel to the load (shown in dotted line above) so that a current of 5 mA, or more, flows. ]

#### Wiring diagrams

##### Emitter of thru-beam type sensor



##### Receiver of thru-beam type sensor, retroreflective and diffuse reflective type sensors

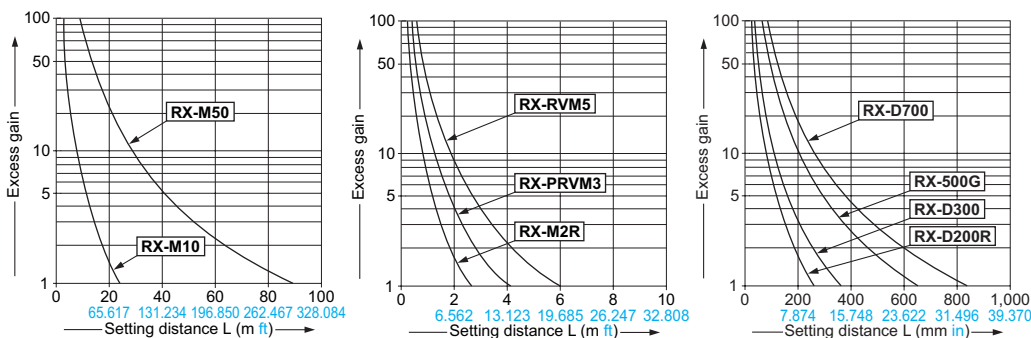


## SENSING CHARACTERISTICS (TYPICAL)

### RX-□

All models

#### Correlation between setting distance and excess gain



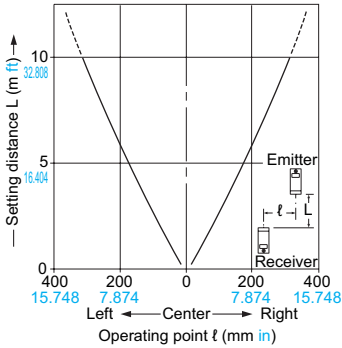
- Selection Guide
- Amplifier Built-in
- Power Supply Built-in
- Amplifier-separated
- CX-400
- EX-10
- EX-20
- EX-30
- EX-40
- CX-440
- EQ-30
- EQ-500
- MQ-W
- RX-LS200
- RX
- RT-610

**SENSING CHARACTERISTICS (TYPICAL)**

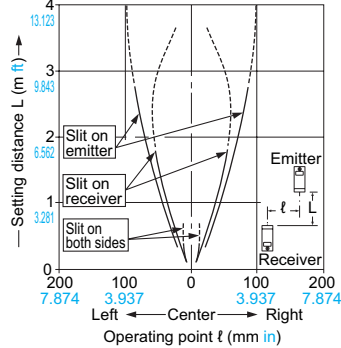
**RX-M10**

Thru-beam type

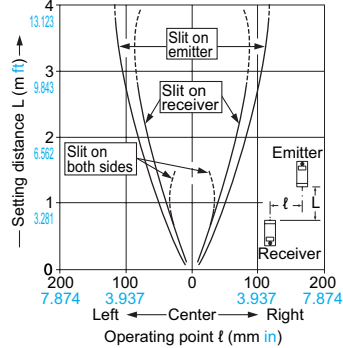
Parallel deviation



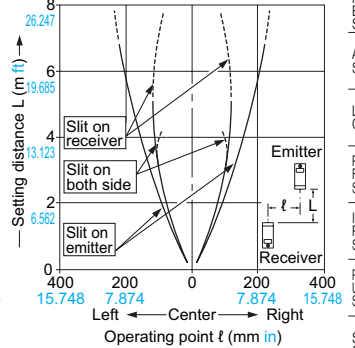
Parallel deviation with slit masks  
(0.5 × 5 mm 0.020 × 0.197 in)



Parallel deviation with slit masks  
(1 × 5 mm 0.039 × 0.197 in)



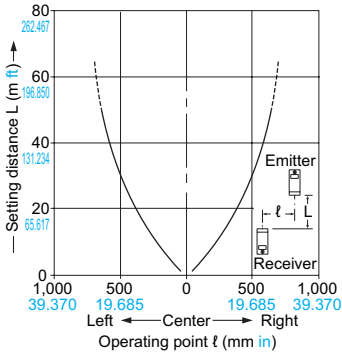
Parallel deviation with slit masks  
(3 × 5 mm 0.118 × 0.197 in)



**RX-M50**

Thru-beam type

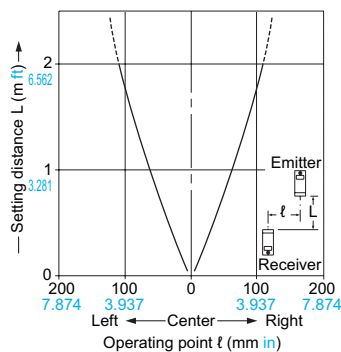
Parallel deviation



**RX-M2R**

Thru-beam type

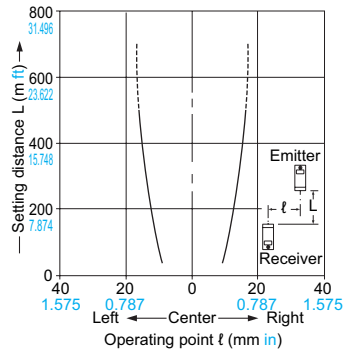
Parallel deviation



**RX-500G**

Thru-beam type

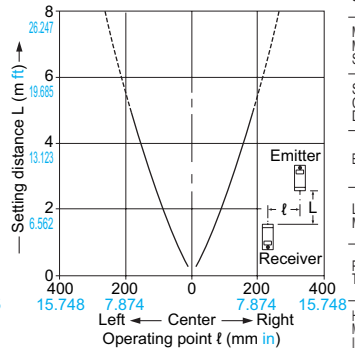
Parallel deviation



**RX4-M5□**

Thru-beam type

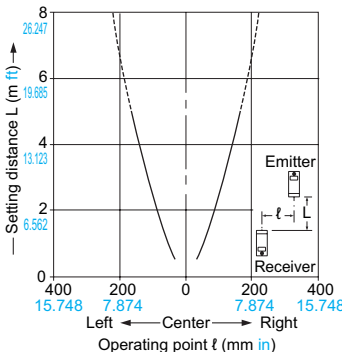
Parallel deviation



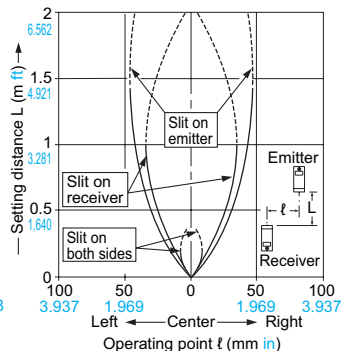
**RX2-M5**

Thru-beam type

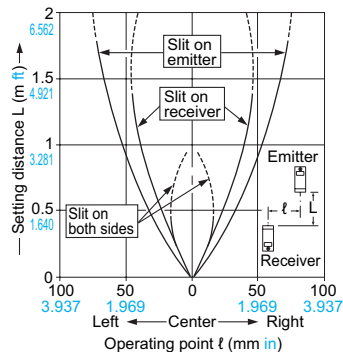
Parallel deviation



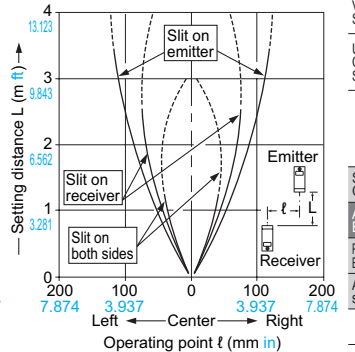
Parallel deviation with slit masks  
(0.5 × 5 mm 0.020 × 0.197 in)



Parallel deviation with slit masks  
(1 × 5 mm 0.039 × 0.197 in)



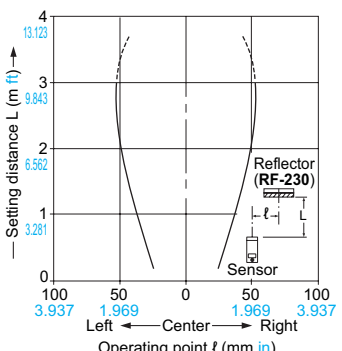
Parallel deviation with slit masks  
(3 × 5 mm 0.118 × 0.197 in)



**RX-PRVM3**

Retroreflective type

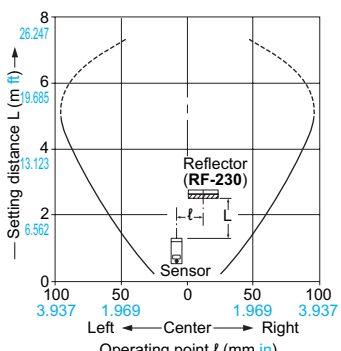
Parallel deviation



**RX-RVM5**

Retroreflective type

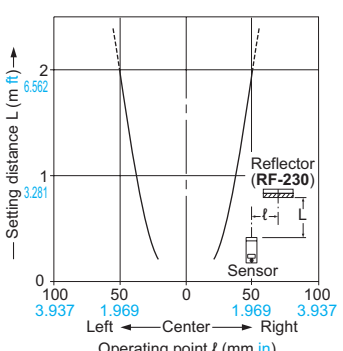
Parallel deviation



**RX2-PRVM2**

Retroreflective type

Parallel deviation



FIBER SENSORS

LASER SENSORS

PHOTO-ELECTRIC SENSORS

MICRO PHOTO-ELECTRIC SENSORS

AREA SENSORS

LIGHT CURTAINS

PRESSURE / FLOW SENSORS

INDUCTIVE PROXIMITY SENSORS

PARTICULAR USE SENSORS

SENSOR OPTIONS

SIMPLE WIRE-SAVING UNITS

WIRE-SAVING SYSTEMS

MEASUREMENT SENSORS

STATIC CONTROL DEVICES

ENDOSCOPE

LASER MARKERS

PLC / TERMINALS

HUMAN MACHINE INTERFACES

ENERGY CONSUMPTION VISUALIZATION COMPONENTS

FA COMPONENTS

MACHINE VISION SYSTEMS

UV CURING SYSTEMS

Selection Guide

Amplifier Built-in

Power Supply Built-in

Amplifier-separated

**CX-400**

**EX-10**

**EX-20**

**EX-30**

**EX-40**

**CX-440**

**EQ-30**

**EQ-500**

**MQ-W**

**RX-LS200**

**RX**

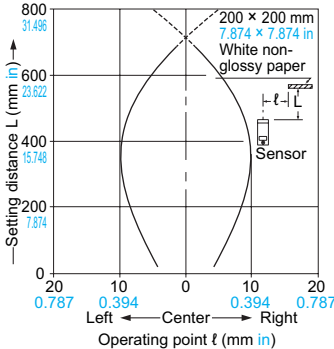
**RT-610**

|   |
|---|
| FIBER SENSORS                               |
| LASER SENSORS                               |
| PHOTO-ELECTRIC SENSORS                      |
| MICRO PHOTO-ELECTRIC SENSORS                |
| AREA SENSORS                                |
| LIGHT CURTAINS                              |
| PRESSURE / FLOW SENSORS                     |
| INDUCTIVE PROXIMITY SENSORS                 |
| PARTICULAR USE SENSORS                      |
| SENSOR OPTIONS                              |
| SIMPLE WIRE-SAVING UNITS                    |
| WIRE-SAVING SYSTEMS                         |
| MEASUREMENT SENSORS                         |
| STATIC CONTROL DEVICES                      |
| ENDOSCOPE                                   |
| LASER MARKERS                               |
| PLC / TERMINALS                             |
| HUMAN MACHINE INTERFACES                    |
| ENERGY CONSUMPTION VISUALIZATION COMPONENTS |
| FA COMPONENTS                               |
| MACHINE VISION SYSTEMS                      |
| UV CURING SYSTEMS                           |
| Selection Guide                             |
| Amplifier Built-in                          |
| Power Supply Built-in                       |
| Amplifier-separated                         |
| CX-400                                      |
| EX-10                                       |
| EX-20                                       |
| EX-30                                       |
| EX-40                                       |
| CX-440                                      |
| EQ-30                                       |
| EQ-500                                      |
| MQ-W  |
| RX-LS200                                    |
| <b>RX</b>                                   |
| RT-610                                      |

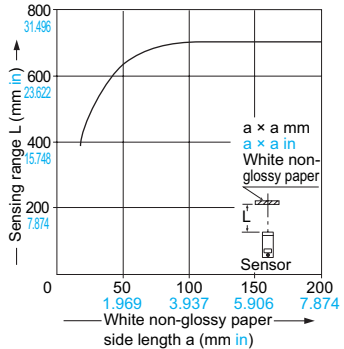
## SENSING CHARACTERISTICS (TYPICAL)

**RX-D700** Diffuse reflective type

### Sensing field



### Correlation between sensing object size and sensing range

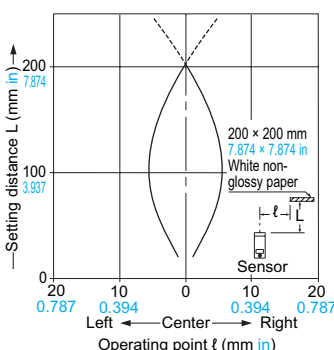


As the sensing object size becomes smaller than the standard size (white non-glossy paper 200 × 200 mm 7.874 × 7.874 in), the sensing range shortens, as shown in the left graph.

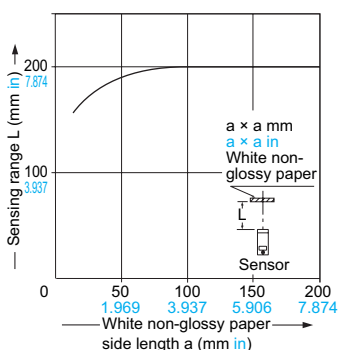
(For plotting the left graph, the sensitivity has been set such that a 200 × 200 mm 7.874 × 7.874 in white non-glossy paper is just detectable at a distance of 700 mm 27.559 in.)

**RX-D200R** Diffuse reflective type

### Sensing field



### Correlation between sensing object size and sensing range

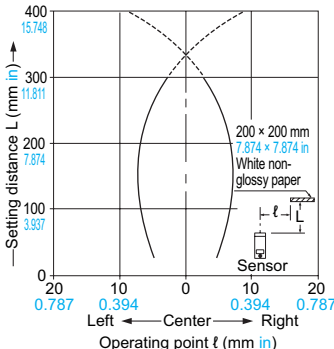


As the sensing object size becomes smaller than the standard size (white non-glossy paper 200 × 200 mm 7.874 × 7.874 in), the sensing range shortens, as shown in the left graph.

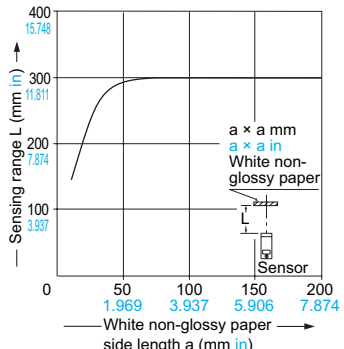
(For plotting the left graph, the sensitivity has been set such that a 200 × 200 mm 7.874 × 7.874 in white non-glossy paper is just detectable at a distance of 200 mm 7.874 in.)

**RX2-D300** Diffuse reflective type

### Sensing field



### Correlation between sensing object size and sensing range




As the sensing object size becomes smaller than the standard size (white non-glossy paper 200 × 200 mm 7.874 × 7.874 in), the sensing range shortens, as shown in the left graph.

(For plotting the left graph, the sensitivity has been set such that a 200 × 200 mm 7.874 × 7.874 in white non-glossy paper is just detectable at a distance of 300 mm 11.811 in.)

## PRECAUTIONS FOR PROPER USE

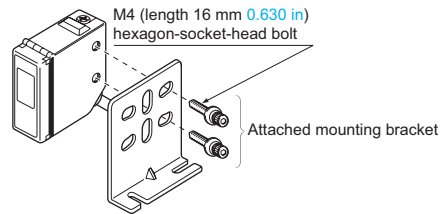
Refer to General precautions.



- 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.



### Others

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

### Wiring

- The self-diagnosis output does not incorporate a short-circuit protection circuit. Do not connect it directly to a power supply or a capacitive load.

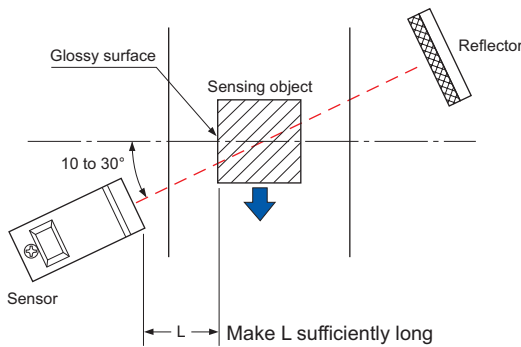
**PRECAUTIONS FOR PROPER USE**

Refer to General precautions.

**RX-RVM5**

**Glossy object sensing**

- Please take care of the following points when detecting materials having a gloss.
- ① Make L, shown in the diagram, sufficiently long.
- ② Install at an angle of 10 to 30 degrees to the sensing object.



**RX-PRVM3 RX2-PRVM2**

**Retroreflective type sensor with polarizing filters**

- If a shiny object is covered or wrapped with a transparent film such as those described below, the retroreflective type sensor with polarizing filters may not be able to detect it.
- In that case, follow the steps given below.

**Example of sensing objects**

- Can wrapped by clear film
- Aluminum sheet covered by plastic film
- Gold or silver color (specular) label or wrapping paper

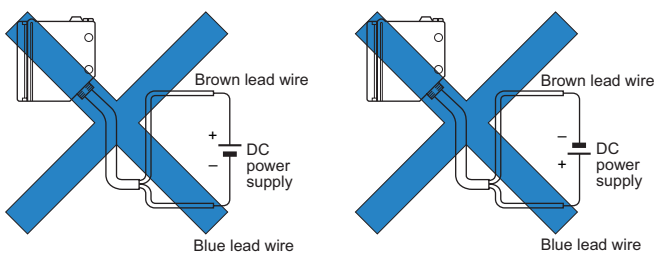
**Steps**

- Tilt the sensor with respect to the sensing object while fitting.
- Reduce the sensitivity.
- Increase the distance between the sensor and the sensing object.

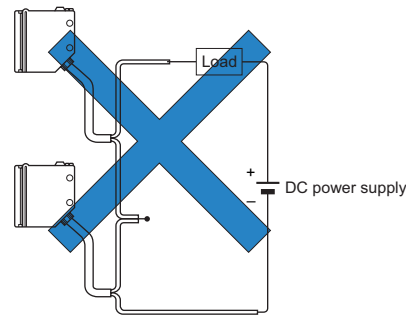
**RX2-□**

**Wiring**

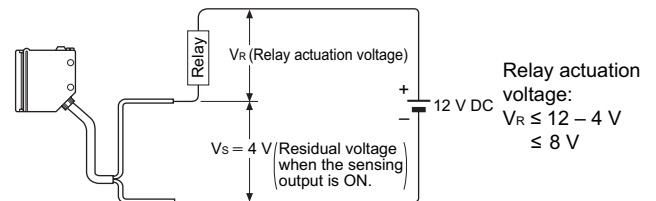
- Always connect the sensor to the power supply through a load. If the sensor is connected to the power supply directly, the short-circuit protection makes the sensor inoperable. (The output stays in the OFF state and no indicator lights up.) If this happens, connect the sensor to the power supply through a load.
- Further, note that the sensor will be damaged if the power supply is connected in reverse without a load.



- Do not connect sensors in series (AND circuit).



- The residual voltage of the sensor is 4 V. Before connecting to a relay, be aware of the actuation voltage of the relay. (Not all 12 V relays may be connected as the load.)

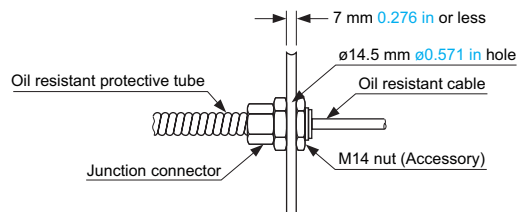


**RX4-□**

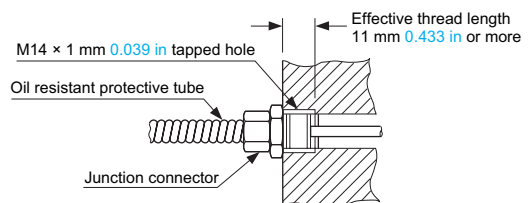
**Connection of protective tube connector**

- Connect the junction connector securely as shown below. The tightening torque should be 0.98 N·m or less.

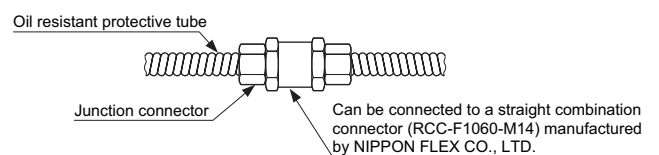
**When mounted on a plate**



**When mounted with a female screw**



**When connected to another protective tube**

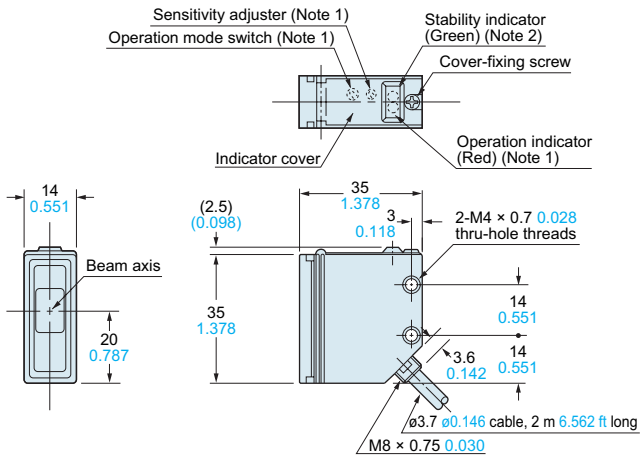


FIBER SENSORS  
LASER SENSORS  
PHOTO-ELECTRIC SENSORS  
MICRO PHOTO-ELECTRIC SENSORS  
AREA SENSORS  
LIGHT CURTAINS  
PRESSURE / FLOW SENSORS  
INDUCTIVE PROXIMITY SENSORS  
PARTICULAR USE SENSORS  
SENSOR OPTIONS  
SIMPLE WIRE-SAVING UNITS  
WIRE-SAVING SYSTEMS  
MEASUREMENT SENSORS  
STATIC CONTROL DEVICES  
ENDOSCOPE  
LASER MARKERS  
PLC / TERMINALS  
HUMAN MACHINE INTERFACES  
ENERGY CONSUMPTION VISUALIZATION COMPONENTS  
FA COMPONENTS  
MACHINE VISION SYSTEMS  
UV CURING SYSTEMS  
Selection Guide  
Amplifier Built-in  
Power Supply Built-in  
Amplifier-separated  
CX-400  
EX-10  
EX-20  
EX-30  
EX-40  
CX-440  
EQ-30  
EQ-500  
MQ-W  
RX-LS200  
RX  
RT-610

The CAD data in the dimensions can be downloaded from our website. Refer to **CX-400** series pages for dimensions of the reflector or the reflector mounting bracket.

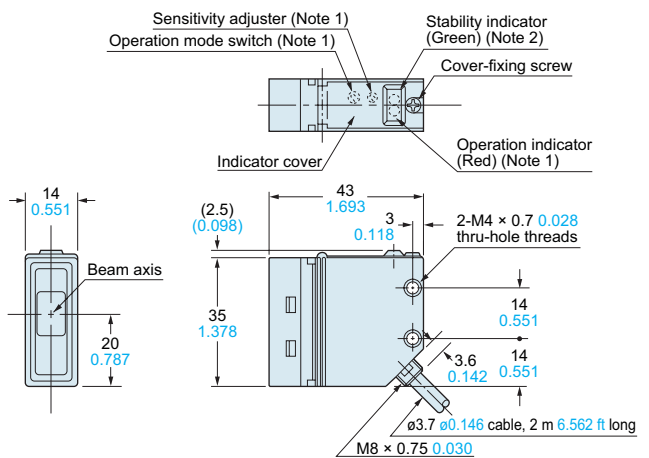
**DIMENSIONS (Unit: mm in)**

**RX-M10 RX-M2R RX-500G RX2-M5** Sensor



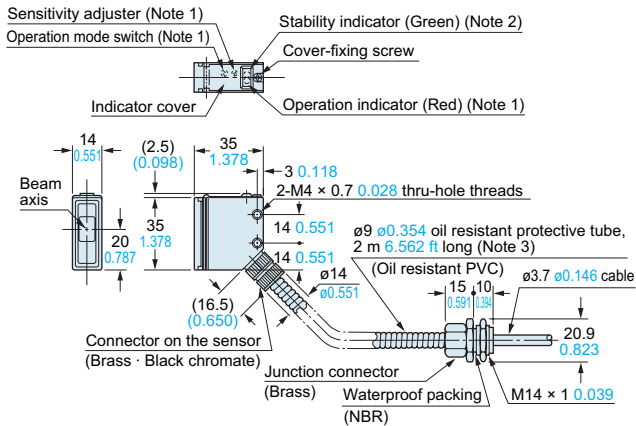
Notes: 1) Not incorporated on the emitter.  
2) It is the emitting indicator (red) on the emitter.

**RX-M50** Sensor



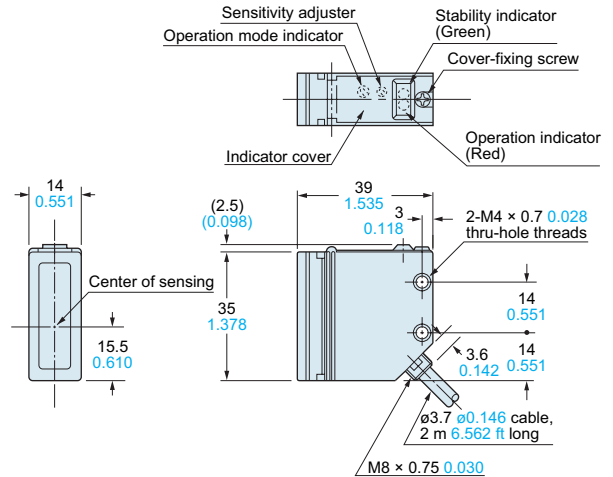
Notes: 1) Not incorporated on the emitter.  
2) It is the emitting indicator (red) on the emitter.

**RX4-M5□** Sensor

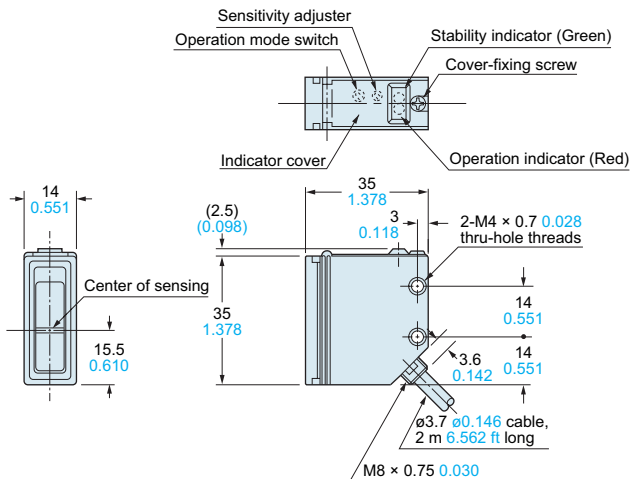


Notes: 1) Not incorporated on the emitter.  
2) It is the emitting indicator (red) on the emitter.  
3) The given length of the protective tube is for **RX4-M5-C3**.  
(**RX4-M5**: 1 m 3.281 ft, **RX4-M5-C5**: 4 m 13.123 ft)

**RX-PRVM3 RX-RVM5 RX2-PRVM2** Sensor



**RX-D700 RX-D200R RX2-D300** Sensor



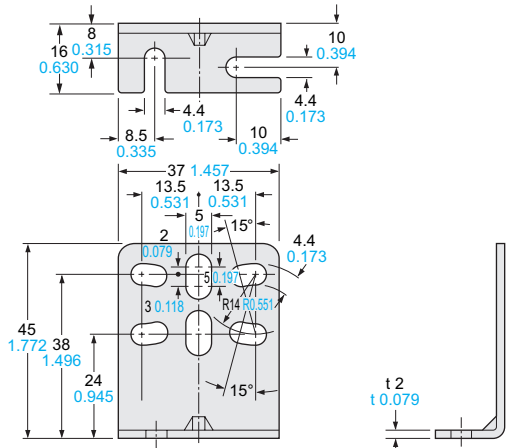
- FIBER SENSORS
- LASER SENSORS
- PHOTO-ELECTRIC SENSORS
- MICRO PHOTO-ELECTRIC SENSORS
- AREA SENSORS
- LIGHT CURTAINS
- PRESSURE / FLOW SENSORS
- INDUCTIVE PROXIMITY SENSORS
- PARTICULAR USE SENSORS
- SENSOR OPTIONS
- SIMPLE WIRE-SAVING UNITS
- WIRE-SAVING SYSTEMS
- MEASUREMENT SENSORS
- STATIC CONTROL DEVICES
- ENDOSCOPE
- LASER MARKERS
- PLC / TERMINALS
- HUMAN MACHINE INTERFACES
- ENERGY CONSUMPTION VISUALIZATION COMPONENTS
- FA COMPONENTS
- MACHINE VISION SYSTEMS
- UV CURING SYSTEMS
- Selection Guide
- Amplifier Built-in
- Power Supply Built-in
- Amplifier-separated
- CX-400
- EX-10
- EX-20
- EX-30
- EX-40
- CX-440
- EQ-30
- EQ-500
- MQ-W
- RX-LS200
- RX**
- RT-610

**DIMENSIONS (Unit: mm in)**

The CAD data in the dimensions can be downloaded from our website. Refer to **CX-400** series pages for dimensions of the reflector or the reflector mounting bracket.

**MS-RX-1**

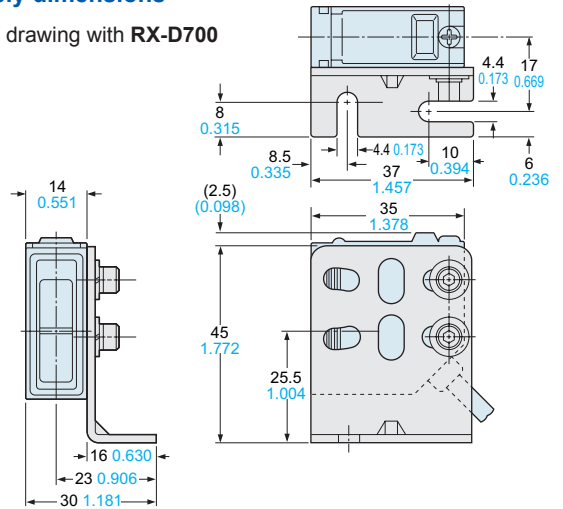
Sensor mounting bracket (Accessory for **RX-□**, **RX2-□**)



Material: Cold rolled carbon steel (SPCC)  
Two M4 (length 16 mm 0.630 in) hexagon-socket-head bolts are attached.

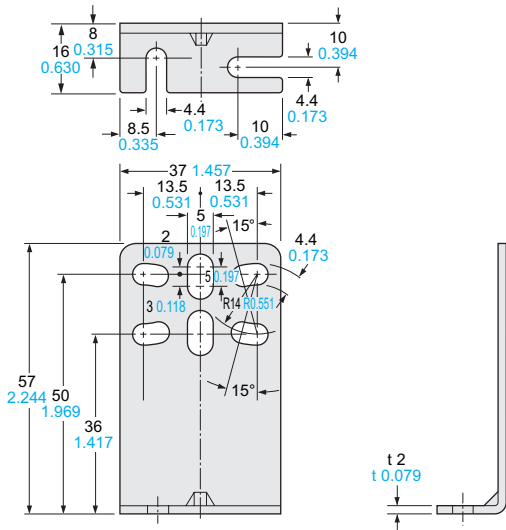
**Assembly dimensions**

Mounting drawing with **RX-D700**



**MS-RX-2**

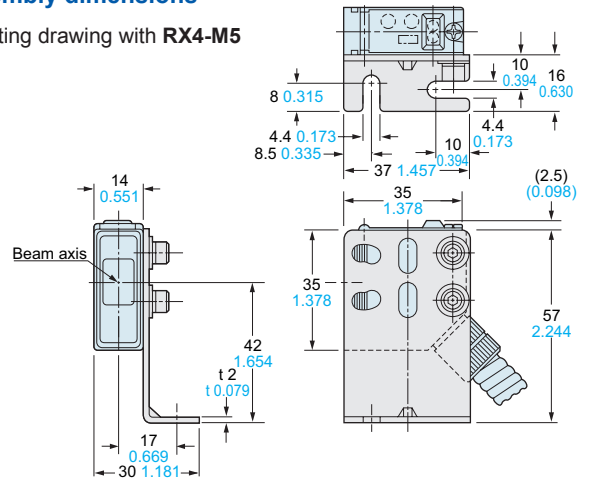
Sensor mounting bracket (Accessory for **RX4-□**)



Material: Cold rolled carbon steel (SPCC)  
Two M4 (length 16 mm 0.630 in) hexagon-socket-head bolts are attached.

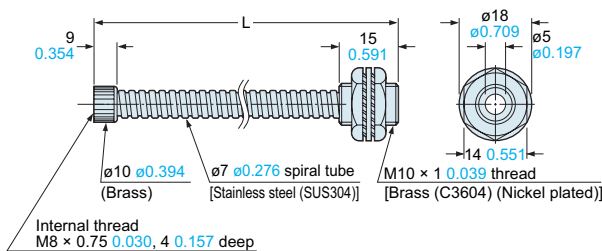
**Assembly dimensions**

Mounting drawing with **RX4-M5**



**PT-RX500 PT-RX1000**

Protective tube (Optional)



• Length L

| Model No. | Length L                     |
|-----------|------------------------------|
| PT-RX500  | 500 + 10<br>19.685 + 0.394   |
| PT-RX1000 | 1,000 + 10<br>39.370 + 0.394 |

FIBER SENSORS

LASER SENSORS

PHOTO-ELECTRIC SENSORS

MICRO PHOTO-ELECTRIC SENSORS

AREA SENSORS

LIGHT CURTAINS

PRESSURE / FLOW SENSORS

INDUCTIVE PROXIMITY SENSORS

PARTICULAR USE SENSORS

SENSOR OPTIONS

SIMPLE WIRE-SAVING UNITS

WIRE-SAVING SYSTEMS

MEASUREMENT SENSORS

STATIC CONTROL DEVICES

ENDOSCOPE

LASER MARKERS

PLC / TERMINALS

HUMAN MACHINE INTERFACES

ENERGY CONSUMPTION VISUALIZATION COMPONENTS

FA COMPONENTS

MACHINE VISION SYSTEMS

UV CURING SYSTEMS

Selection Guide

Amplifier Built-in

Power Supply Built-in

Amplifier-separated

CX-400

EX-10

EX-20

EX-30

EX-40

CX-440

EQ-30

EQ-500

MQ-W

RX-LS200

RX

RT-610