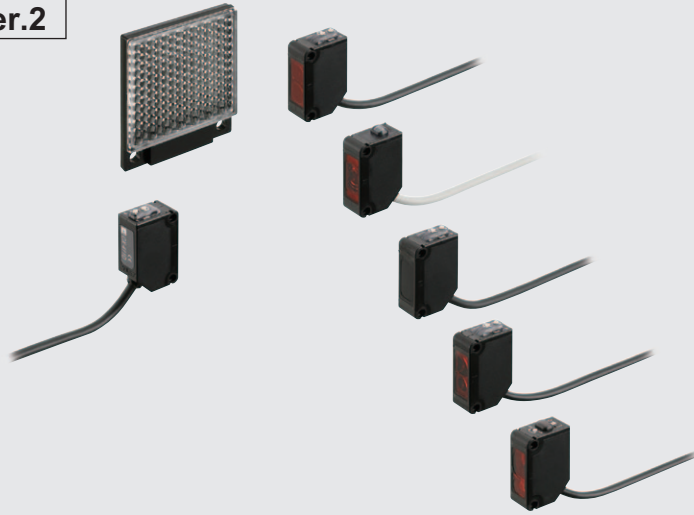


# CX-400 SERIES Ver.2

**Related Information**

■ General terms and conditions..... F-17  
 ■ MS-AJ / CHX-SC2..... P.919 / P.920  
 ■ Korea's S-mark..... P.1410

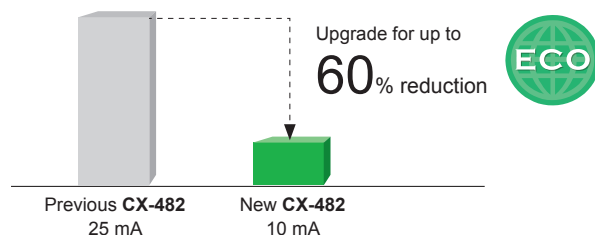
■ Sensor selection guide..... P.283~  
 ■ Glossary of terms / General precautions ..... P.1359~ / P.1405

**Ver.2**

## Sensors that are environmentally and user friendly.

### Reducing environmental burdens further Up to 60% less power consumption

The total lineup of 148 models covers through the inclusion of a newly developed custom integrated circuit. The **CX-400** series achieves reductions in power consumption of up to 60%, averaging 44% reduction when upgrading due to its unique design. These sensors reduce carbon emissions and contribute to environmental friendliness.



### Contributing to reduced carbon dioxide emissions

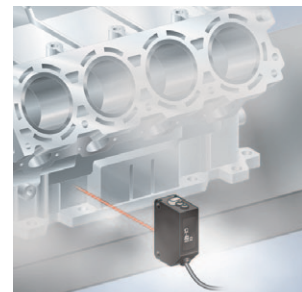
Electricity consumed by the **CX-400** series has been reduced on average 10.5 mA. Calculating 8 hours/day, 260 days (operating 5 days/week) for a total of 2,080 hours/year leads to:

▶ The **CX-400** contributes

**Approx. 84.6 t** annually in carbon dioxide reductions to the world

### Strong against oil and coolant liquids **CX-41□/42□/49□**

The lens material for the thru-beam type, retroreflective type (excluding the **CX-48□**) and the diffuse reflective type are made of a strong acrylic that resists the harmful effects of coolants. These sensors can be used with confidence even around metal processing machinery that disperses oil mists. The protection mechanism also conforms to IP67 (IEC).

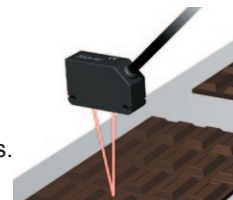


Test Oil	JIS Standard	Product Name
Lubricant	-	Velocity Oil No. 3
Water-insoluble cutting oil	2-5	Daphnecut AS-30D
	2-11	Yushiron Oil No.2ac (Note)
Water-soluble cutting oil	W1-1	Yushiron Lubic HWC68 (Note)
	W2-1	Yushiroken S50N (Note)

1,000 hours; Immersion (depth 0 m); Insulation resistance 20 MΩ/250 V  
 Note: Yushiron and Yushiroken are registered trademarks of Yushiro Chemical Industry Co., Ltd.

### Strong against ethanol **CX-44□/48□**

A strong, ethanol resistant polycarbonate was used for the front and display covers. Safe even for installing near food processing machinery that disperses ethanol based detergents. The protection mechanism also conforms to IP67 (IEC).



Caution: Set the **CX-48□** so that cleaning liquid will not get on to the attached reflector.

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

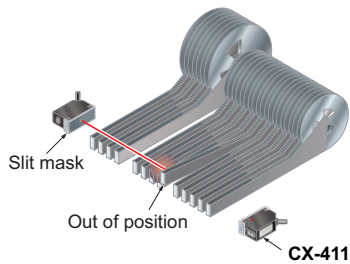
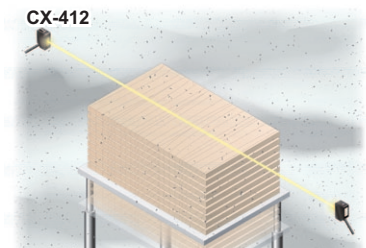
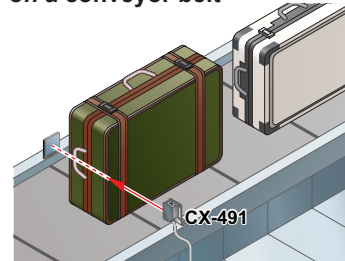
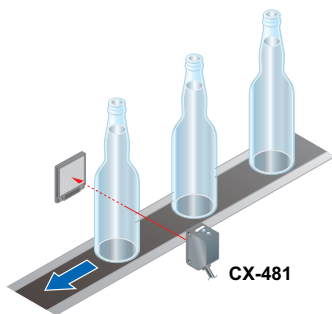
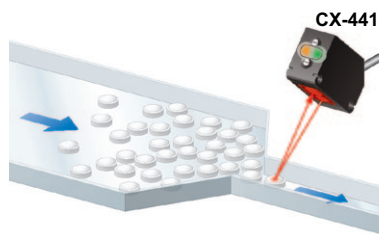
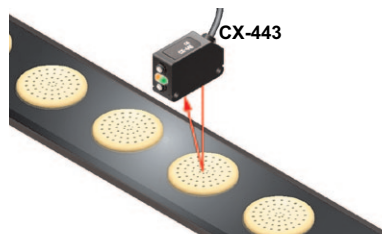
Selection Guide

Amplifier Built-in

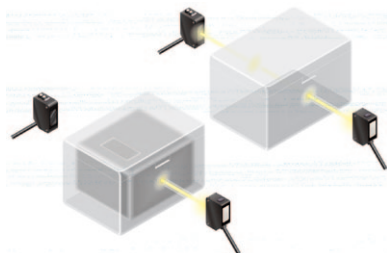
Power Supply Built-in

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 out of position tape feeder cassette****Detecting objects in places that have a lot of dust or clouds of particles****Passage confirmation of object on a conveyor belt****Detecting transparent glass bottles****Small tablet sensing****Biscuit sensing****BASIC PERFORMANCE****Strong infrared beam****CX-412/413**

Remarkable penetrating power enables applications such as package content detection.



Note: When sensing utilizing penetrating power, make sure to verify using the actual sensor.

Can sense differences as small as 0.4 mm **0.016 in**, with hysteresis of 2 % or less **CX-441/443**

An advanced optical system provides sensing performance that is 2.5 times approx. than conventional models. Even ultra-small differences of 0.4 mm **0.016 in** can be detected accurately.

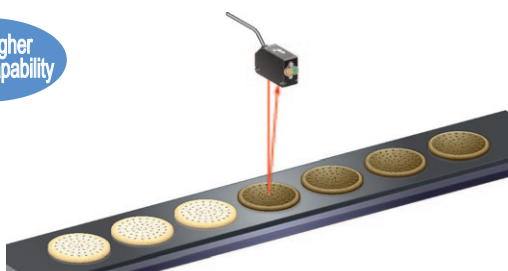
2.5 times the sensing capability!

Height differences of as little as 0.4 mm **0.016 in** can be detected at a setting distance of 20 mm **0.787 in**

**Hardly affected by colors****CX-441/443**

Both black and white objects can be sensed at the same distances. No adjuster control is needed, even when products of different colors are moving along the production line.

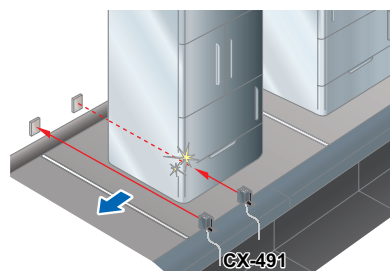
30 % higher sensing capability



[The difference in sensing ranges is 1% or less between non-glossy white paper with a setting distance of 50 mm **1.969 in** and non-glossy gray paper with a brightness level of 5.]

**Retroreflective type with polarizing filters** **CX-491**

Built-in polarizing filters ensure stable sensing even on a specular object.



**BASIC PERFORMANCE****Introducing the transparent object sensing type sensor****CX-48□**

Our unique optical system and transparent object sensing circuitry provide stable sensing of even thinner transparent objects than the conventional models.

Transparent objects detectable with **CX-48□** (Typical examples)

Sensing object	Sensing object size (mm in)
Glass sheet	50 × 50 1.969 × 1.969 t = 0.7 0.028
Cylindrical glass	ø50 ø1.969 ℓ = 50 1.969 t = 1.3 0.051
Acrylic board	50 × 50 1.969 × 1.969 t = 1.0 0.039
Styrol (Floppy case)	50 × 50 1.969 × 1.969 t = 0.9 0.035
Food wrapping film	50 × 50 1.969 × 1.969 t = 10 μm 0.394 mil
Cigarette case film	50 × 50 1.969 × 1.969 t = 20 μm 0.787 mil
Vinyl sack	50 × 50 1.969 × 1.969 t = 30 μm 1.181 mil
PET bottle (500ml)	ø66 ø2.598

Reflector setting range **CX-481**: 300 to 500 mm 11.811 to 19.685 in,  
**CX-482**: 1 to 2 m 3.281 to 6.562 ft

[with the **RF-230** reflector at the optimum condition (Note)]

Each object should pass across the beam at the center between the sensor and the reflector.

ℓ: Length of cylindrical glasses

t: Thickness of sensing object

Note: The optimum condition is defined as the condition in which the sensitivity level is set such that the stability indicator just lights up when the object is absent.

**Long sensing range of 5 m 16.4 ft CX-493**

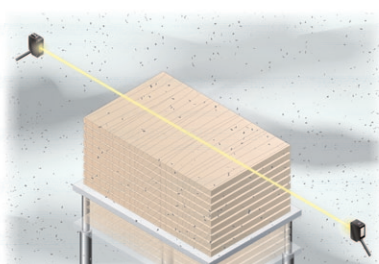
A long 5 m 16.4 ft sensing range is possible with the red LED type that is easy to align with the beam axis. Can be used for wide automatic door shutters.

**Ultra-long sensing range of 30 m 98.4 ft CX-413**

The **CX-413** achieves the ultra-long sensing range of 30 m 98.4 ft. It can be used for a stacker crane or a multilevel parking structure.

**ENVIRONMENTAL RESISTANCE****Strong on dust and dirt****CX-412/413**

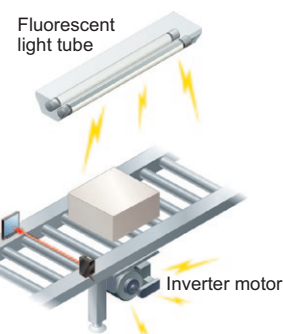
Because the light source is an infrared light, it is strong on dust and dirt compared to the red beam type.

**Strong even in cold environments**

Stable performance can be maintained even in environments of -25 °C -13 °F.

**Stronger noise resistance**

The **CX-400** has a high noise resistance than its previous model. By incorporating an inverter countermeasure circuit that appropriately shifts with peak wavelength, the sensor now resists high-frequency noise from high-voltage inverter motors and inverter lights more effectively.



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****ECO****Thoroughly eliminating unnecessary waste, Reducing many environmental burdens**

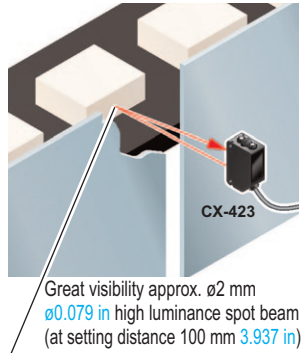
The **CX-400** series have three different cable length types and uses very simple packaging to reduce waste. The bag is made of polyethylene and does not emit toxic gasses.





**MOUNTING****Beam axis alignment made easy with a high luminance spot beam CX-423**

These sensors have a high luminance red LED spot beam which provides bright visibility enabling the sensing position to be checked at a glance. Because it achieved small beam spot approx.  $\varnothing 2$  mm  $\varnothing 0.079$  in at setting distance 100 mm 3.937 in, approx.  $\varnothing 5$  mm  $\varnothing 0.197$  in at setting distance 200 mm 7.874 in, even the minutest object can be accurately detected.

**The bright spot makes beam axis alignment easy CX-441**

These sensors have a high luminance red spot that provides bright visibility. The sensing position can be checked at a glance. Because the **CX-441** sensor has the smallest spot in its class  $\varnothing 2$  mm  $\varnothing 0.079$  in approx., even the minutest object can be accurately detected.

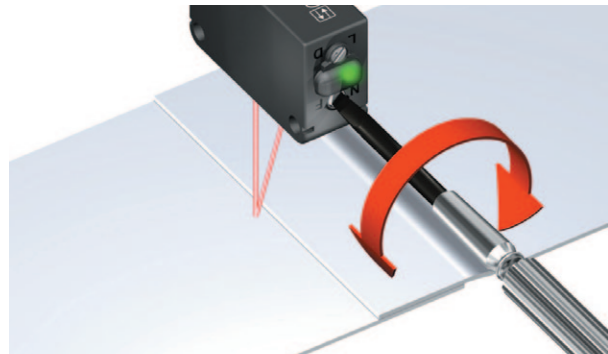
**OPERABILITY****Reduction of volume adjustment labor CX-42**

Because these sensors possess many variations depending on the sensing range, enables you to make optimal volume adjustment easily.

CX-422: 800 mm 31.496 in  
CX-421: 300 mm 11.811 in  
CX-424: 100 mm 3.937 in

**Can be used for sensing minute differences CX-44**

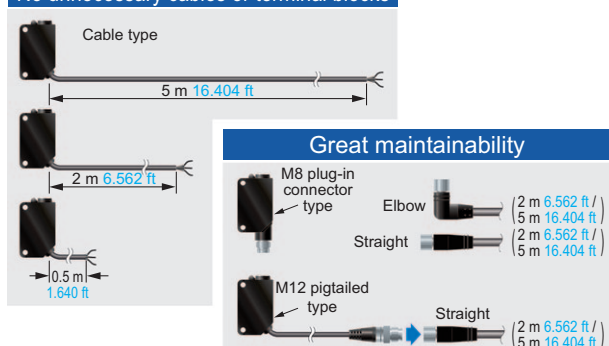
Equipped with a 5-turn adjuster so that even challenging range settings can be handled with ease.

**VARIETIES****Basic type new release****NEW**

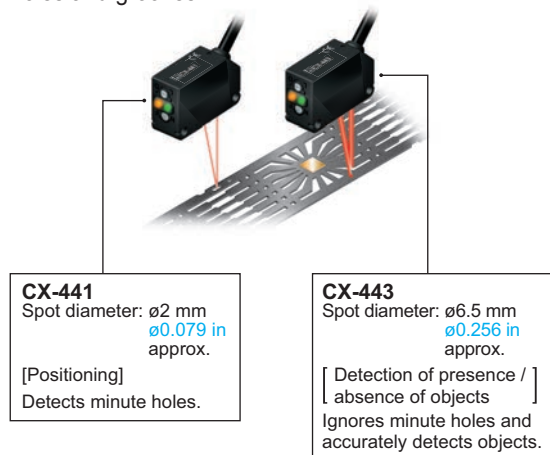
Omit the sensitivity adjuster and operation mode switch and release a basic type cable 0.5 m 1.641 ft in length. If the usage is clear, quick construction can be performed onsite without detailed adjustments and the cost can be controlled.

**Less processing**

M8 plug-in connector type and M12 pigtailed type are available. This contributes to less time spent in setting up. In addition, cable types are available with cable lengths of 0.5 m 1.640 ft, 2 m 6.562 ft and 5 m 16.404 ft. This results in less wastage.

**No unnecessary cables or terminal blocks****Select from 2 spot diameters as per the application CX-441/443**

Within the choice of 50 mm 1.969 in sensing range sensors, we offer small spot approx.  $\varnothing 2$  mm  $\varnothing 0.079$  in type optimal for detecting minute object and large approx.  $\varnothing 6.5$  mm  $\varnothing 0.256$  in spot type capable of sensing object covered with holes and grooves.



FIBER  
SENSORSLASER  
SENSORSPHOTOELECTRIC  
SENSORSMICRO  
PHOTOELECTRIC  
SENSORSAREA  
SENSORSLIGHT  
CURTAINSPRESSURE /  
FLOW  
SENSORSINDUCTIVE  
PROXIMITY  
SENSORSPARTICULAR  
USE SENSORSSENSOR  
OPTIONSSIMPLE  
WIRE-SAVING  
UNITSWIRE-SAVING  
SYSTEMSMEASUREMENT  
SENSORSSTATIC CONTROL  
DEVICES

ENDOSCOPE

LASER  
MARKERSPLC /  
TERMINALSHUMAN MACHINE  
INTERFACESENERGY CONSUMPTION  
VISUALIZATION  
COMPONENTS

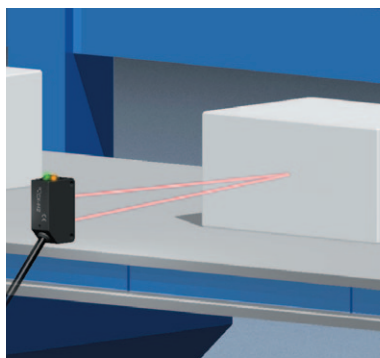
FA COMPONENTS

MACHINE 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****FUNCTIONS****BGS / FGS functions make even the most challenging settings possible!****CX-440**

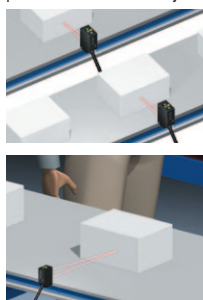
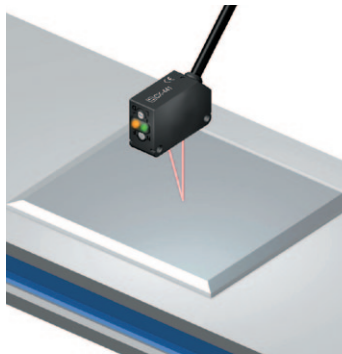
For details on the operation of the BGS / FGS functions, refer to "BGS / FGS functions" of "PRECAUTIONS FOR PROPER USE".

**The BGS function is best suited for the following case****Background not present**

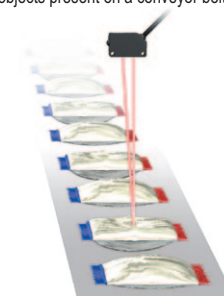
When object and background are separated

**BGS**

Not affected if the background color changes or someone passes behind the conveyor.

**The FGS function is best suited for the following case****Background present**When object and background are close together  
When the object is glossy or uneven**FGS**

Unaffected by gloss, color or uneven surfaces when sensing objects present on a conveyor belt.

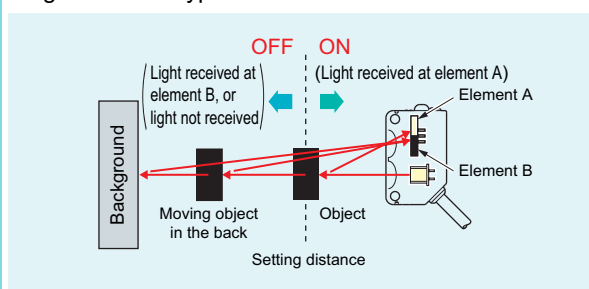


Caution: Please use the FGS function together with a conveyor or other background unit.

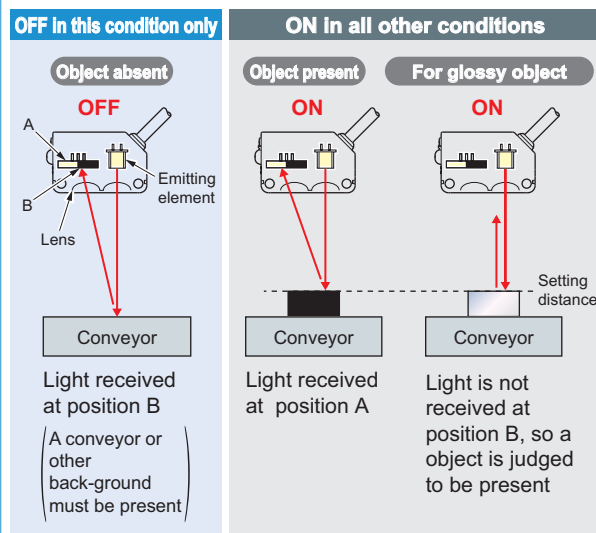
**BGS (Background suppression) function**

The sensor judges that an object is present when light is received at position A of the light-receiving element (2-segment element).

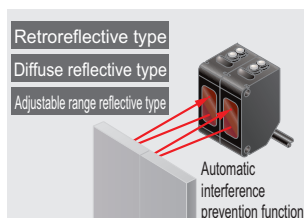
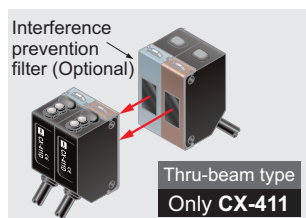
This is useful if the object and background are far apart. The distance adjustment method is the same as the conventional adjustment method for adjustable range reflective type sensors.

**FGS (Foreground suppression) function**

The sensor judges that an object is present when no light is received at position B of the light-receiving element (2-segment element). Accordingly, even objects that are glossy can be sensed. This is useful if the object and background are close together, or if the object being sensed is glossy.

**Strong against interference**

The interference prevention function lets two sensors to be mounted close together precisely.



**ORDER GUIDE****Standard type**

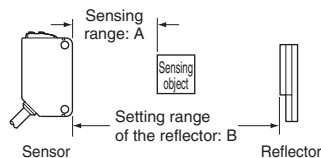
Type	Appearance	Sensing range	Model No. (Note 1)		Output operation	Emitting element
			NPN output	PNP output		
Thru-beam		10 m <b>32.808 ft</b>	<b>CX-411</b>	<b>CX-411-P</b>	Switchable either Light-ON or Dark-ON	Red LED
		15 m <b>49.213 ft</b>	<b>CX-412</b>	<b>CX-412-P</b>		Infrared LED
		30 m <b>98.425 ft</b>	<b>NEW CX-413</b>	<b>NEW CX-413-P</b>		Infrared LED
Retroreflective		3 m <b>9.843 ft</b> (Note 2)	<b>CX-491</b>	<b>CX-491-P</b>		Red LED
		5 m <b>16.404 ft</b> (Note 2)	<b>CX-493</b>	<b>CX-493-P</b>		Red LED
		50 to 500 mm <b>1.969 to 19.685 in</b> (Note 2)	<b>CX-481</b>	<b>CX-481-P</b>		Infrared LED
		50 to 1,000mm <b>1.969 to 39.37 in</b> (Note 2)	<b>NEW CX-483</b>	<b>NEW CX-483-P</b>		Infrared LED
		0.1 to 2 m <b>0.328 to 6.562 ft</b> (Note 2)	<b>CX-482</b>	<b>CX-482-P</b>		Infrared LED
Diffuse reflective		100 mm <b>3.937 in</b>	<b>CX-424</b>	<b>CX-424-P</b>	Switchable either Detection-ON or Detection-OFF	Infrared LED
		300 mm <b>11.811 in</b>	<b>CX-421</b>	<b>CX-421-P</b>		Infrared LED
		800 mm <b>31.496 in</b>	<b>CX-422</b>	<b>CX-422-P</b>		Infrared LED
Adjustable range reflective		70 to 300 mm <b>2.756 to 11.811 in</b>	<b>CX-423</b>	<b>CX-423-P</b>	Switchable either Detection-ON or Detection-OFF	Red LED
		2 to 50 mm <b>0.079 to 1.969 in</b>	<b>CX-441</b>	<b>CX-441-P</b>		Red LED
		15 to 100 mm <b>0.591 to 3.937 in</b>	<b>CX-443</b>	<b>CX-443-P</b>		Red LED
		20 to 300 mm <b>0.787 to 11.811 in</b>	<b>CX-444</b>	<b>CX-444-P</b>		Red LED
		20 to 300 mm <b>0.787 to 11.811 in</b>	<b>CX-442</b>	<b>CX-442-P</b>		Red LED

**NOTE:** Mounting bracket is not supplied with the sensor. Please select from the range of optional sensor mounting brackets.

Notes: 1) The model No. with "E" 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 **CX-411**: **CX-411E**, Receiver of **CX-411**: **CX-411D**

2) The sensing range of the retroreflective type sensor is specified for the **RF-230** reflector. The sensing range represents the actual sensing range of the sensor. The sensing ranges itemized in "A" of the table below may vary depending on the shape of sensing object. Be sure to check the operation with the actual sensing object.



	<b>CX-491□</b>	<b>CX-493□</b>	<b>CX-481□</b>	<b>CX-483□</b>	<b>CX-482□</b>
A	0 to 3 m <b>0 to 9.843 ft</b>	0 to 5 m <b>0 to 16.404 ft</b>	50 to 500 mm <b>1.969 to 19.685 in</b>	50 to 1,000 mm <b>1.969 to 39.37 in</b>	0.1 to 2 m <b>0.328 to 6.562 ft</b>
B	0.1 to 3 m <b>0.328 to 9.843 ft</b>	0.1 to 5 m <b>0.328 to 16.404 ft</b>	100 to 500 mm <b>3.937 to 19.685 in</b>	100 to 1,000 mm <b>3.937 to 39.37 in</b>	0.8 to 2 m <b>2.625 to 6.562 ft</b>

FIBER SENSORS
LASER SENSORS
PHOTO-ELECTRIC SENSORS
MICRO PHOTO-ELECTRIC SENSORS
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ENERGY CONSUMPTION VISUALIZATION COMPONENTS
FA COMPONENTS
MACHINE VISION SYSTEMS
UV CURING SYSTEMS



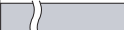


Selection Guide
Amplifier Built-in
Power Supply Built-in
Amplifier-separated

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

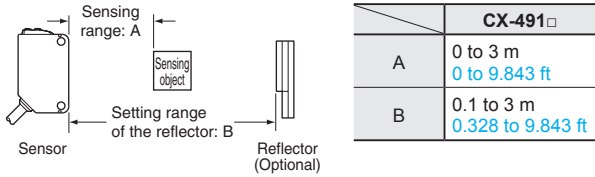
### NEW

**Basic type** (Without operation mode switch and sensitivity adjuster. Cable is 0.5 m 0.02 in long)

Type	Appearance	Sensing range	Model No.(Note 1)		Output operation	Emitting element
			NPN output	PNP output		
Thru-beam Long sensing range		 10 m 32.808 ft	CX-411A-C05	CX-411A-P-C05	Light-ON	Red LED
			CX-411B-C05	CX-411B-P-C05	Dark-ON	
		 15 m 49.213 ft	CX-412A-C05	CX-412A-P-C05	Light-ON	Infrared LED
			CX-412B-C05	CX-412B-P-C05	Dark-ON	
Retroreflective With polarizing filters	 Optional (Note 2)	 3 m 9.843 ft (Note 3)	CX-491A-C05-Y	CX-491A-P-C05-Y	Light-ON	Red LED
			CX-491B-C05-Y	CX-491B-P-C05-Y	Dark-ON	

**NOTE:** Mounting bracket is not supplied with the sensor. Please select from the range of optional sensor mounting brackets.

- Notes: 1) The model No. with "E" 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 CX-411A-C05: CX-411E, Receiver of CX-411A-C05: CX-411AD
- 2) The reflector is sold separately.
- 3) The sensing range of the retroreflective type sensor is specified for the RF-230 (optional) reflector. The sensing range represents the actual sensing range of the sensor. The sensing ranges itemized in "A" of the table below may vary depending on the shape of sensing object. Be sure to check the operation with the actual sensing object.



## ORDER GUIDE

### 0.5 m 1.640 ft / 5 m 16.404 ft cable length types

0.5 m 1.640 ft / 5 m 16.404 ft cable length types (standard: 2 m 6.562 ft, basic: 0.5 m 1.640 ft) are also available.  
 When ordering this type, suffix "-C05" for the 0.5 m 1.640 ft cable length type, "-C5" for the 5 m 16.404 ft cable length type to the model No.  
 (Excluding CX-44□ and basic type)  
 (e.g.) 0.5 m 1.640 ft cable length type of CX-411-P is "CX-411-P-C05"  
 5 m 16.404 ft cable length type of CX-411-P is "CX-411-P-C5"

### M8 plug-in connector type, M12 pigtailed type

M8 plug-in connector type and M12 pigtailed type are also available.  
 When ordering this type, suffix "-Z" for the M8 connector type, "-J" for the M12 pigtailed type to the model No.  
 (Please note that M12 pigtailed type is not available for CX-44□. Excluding basic type)  
 (e.g.) M8 connector type of CX-411-P is "CX-411-P-Z"  
 M12 pigtailed type of CX-411-P is "CX-411-P-J"

#### • Mating cable (2 cables are required for the thru-beam type.)

Type		Model No.	Cable length	Description
For M8 plug-in connector type	Straight	CN-24A-C2	2 m 6.562 ft	Can be used with all models
		CN-24A-C5	5 m 16.404 ft	
	Elbow	CN-24AL-C2	2 m 6.562 ft	
		CN-24AL-C5	5 m 16.404 ft	
For M12 pigtailed type	2-core	CN-22-C2	2 m 6.562 ft	For thru-beam type emitter (2-core)
		CN-22-C5	5 m 16.404 ft	
	4-core	CN-24-C2	2 m 6.562 ft	Can be used with all models
		CN-24-C5	5 m 16.404 ft	

### Package without reflector

NPN output type: CX-491-Y  
 PNP output type: CX-491-P-Y

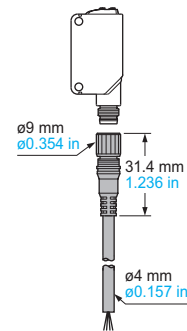
### Accessory

#### • RF-230 (Reflector)

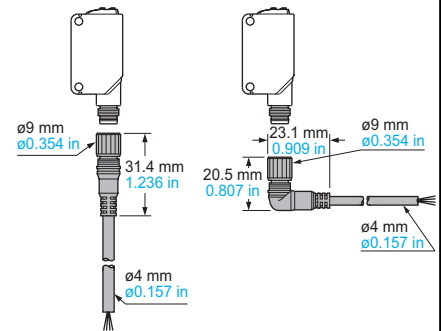


#### Mating cable

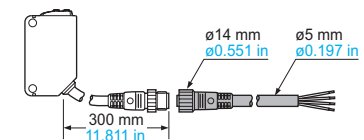
##### • CN-24A-C2 CN-24A-C5



##### • CN-24AL-C2 CN-24AL-C5



##### • CN-22-C2, CN-22-C5 CN-24-C2, CN-24-C5





**OPTIONS**

Designation	Model No.		Slit size	Sensing range		Min. sensing object	
	Slit mask	Sensor		Slit on one side	Slit on both sides	Slit on one side	Slit on both sides
Round slit mask (For thru-beam type sensor only)	<b>OS-CX-05</b>	<b>CX-411</b> □	ø0.5 mm ø0.020 in	400 mm 15.748 in	20 mm 0.787 in	ø12 mm ø0.472 in	ø0.5 mm ø0.020 in
		<b>CX-412</b> □		600 mm 23.622 in	30 mm 1.181 in		
		<b>CX-413</b> □		1,200 mm 47.242 in	60 mm 2.362 in		
	<b>OS-CX-1</b>	<b>CX-411</b> □	ø1 mm ø0.039 in	900 mm 35.433 in	100 mm 3.937 in	ø12 mm ø0.472 in	ø1 mm ø0.039 in
		<b>CX-412</b> □		1.35 m 4.429 ft	150 mm 5.906 in		ø1.5 mm ø0.059 in
		<b>CX-413</b> □		2.7 m 8.857 ft	300 mm 11.811 in		
	<b>OS-CX-2</b>	<b>CX-411</b> □	ø2 mm ø0.079 in	2 m 6.562 ft	400 mm 15.748 in	ø12 mm ø0.472 in	ø2 mm ø0.079 in
		<b>CX-412</b> □		3 m 9.843 ft	600 mm 23.622 in		ø3 mm ø0.118 in
		<b>CX-413</b> □		6 m 19.685 ft	1,200 mm 47.242 in		
Rectangular slit mask (For thru-beam type sensor only)	<b>OS-CX-05×6</b>	<b>CX-411</b> □	0.5×6 mm 0.020×0.236 in	2 m 6.562 ft	400 mm 15.748 in	ø12 mm ø0.472 in	0.5 × 6 mm 0.020 × 0.236 in
		<b>CX-412</b> □		3 m 9.843 ft	600 mm 23.622 in		
		<b>CX-413</b> □		6 m 19.685 ft	1,200 mm 47.242 in		
	<b>OS-CX-1×6</b>	<b>CX-411</b> □	1×6 mm 0.039×0.236 in	3 m 9.843 ft	1 m 3.281 ft	ø12 mm ø0.472 in	1 × 6 mm 0.039 × 0.236 in
		<b>CX-412</b> □		4.5 m 14.764 ft	1.5 m 4.921 ft		
		<b>CX-413</b> □		9 m 29.528 ft	3 m 9.843 ft		
	<b>OS-CX-2×6</b>	<b>CX-411</b> □	2×6 mm 0.079×0.236 in	5 m 16.404 ft	2 m 6.562 ft	ø12 mm ø0.472 in	2 × 6 mm 0.079 × 0.236 in
		<b>CX-412</b> □		7.5 m 24.606 ft	3 m 9.843 ft		
		<b>CX-413</b> □		15 m 49.213 ft	6 m 19.685 ft		

Designation	Model No.		Sensing range	Min. sensing object
Interference prevention filter (For CX-411□ only)	<b>PF-CX4-V</b> (Vertical, Silver)	2 pcs. per set	5 m 16.404 ft (Note 1)	ø12 mm ø0.472 in (Note 1)
	<b>PF-CX4-H</b> (Horizontal, Light brown)	2 pcs. per set		
Reflector (For retro-reflective type sensor only)	<b>RF-210</b>	<b>CX-491</b> □	1 m 3.281 ft (Note 2)	ø30 mm ø1.181 in
		<b>CX-493</b> □	1.5 m 4.921 ft (Note 2)	
		<b>CX-481</b> □	—	
		<b>CX-483</b> □	0.1 to 0.3 m 0.328 to 0.984 ft (Note 2)	
		<b>CX-482</b> □	0.1 to 0.6 m 0.328 to 1.969 ft (Note 2)	
	<b>RF-220</b>	<b>CX-491</b> □	1.5 m 4.921 ft (Note 2)	ø35 mm ø1.378 in
		<b>CX-493</b> □	3 m 9.843 ft (Note 2)	
		<b>CX-481</b> □	50 to 300 mm 1.969 to 11.811 in (Note 2)	
		<b>CX-483</b> □	0.1 to 0.7 m 0.328 to 2.297 ft (Note 2)	
		<b>CX-482</b> □	0.1 to 1.3 m 0.328 to 4.265 ft (Note 2)	
	<b>RF-230</b> (Note 3)	<b>CX-491</b> □-Y□	3 m 9.843 ft (Note 2)	ø50 mm ø1.969 in

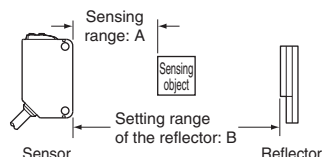
Notes: 1) Value when attached on both sides.

2) Set the distance between the CX-491□/493□ and the reflector to 0.1 m 0.328 ft or more.

However, see the table below for CX-48□.

The sensing range "A" may vary depending on the shape of sensing object.

Be sure to check the operation with the actual sensing object.

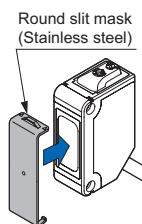


Model No.		A		B	
Sensor	Reflector				
<b>CX-481</b> □	<b>RF-220</b>	50 to 300 mm 1.969 to 11.811 in	100 to 300 mm 3.937 to 11.811 in		
	<b>RF-220</b>	0.1 to 0.7 m 0.328 to 2.297 ft	0.2 to 0.7 m 0.656 to 2.297 ft		
<b>CX-483</b> □	<b>RF-210</b>	0.1 to 0.3 m 0.328 to 0.984 ft	0.1 to 0.3 m 0.328 to 0.984 ft		
	<b>RF-230</b>	0.05 to 1 m 0.164 to 3.281 ft	0.1 to 1 m 0.328 to 3.281 ft		
<b>CX-482</b> □	<b>RF-220</b>	0.1 to 1.3 m 0.328 to 4.265 ft	0.5 to 1.3 m 1.640 to 4.265 ft		
	<b>RF-210</b>	0.1 to 0.6 m 0.328 to 1.969 ft	0.3 to 0.6 m 0.984 to 1.969 ft		

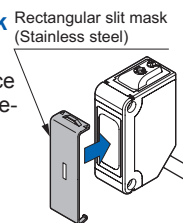
3) RF-230 is attached to the retroreflective type sensor other than the basic type.

**Round slit mask**• **OS-CX-□**

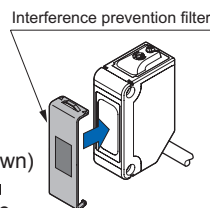
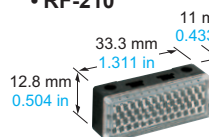
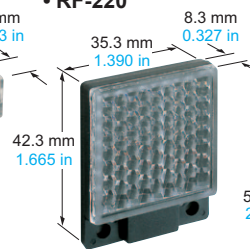
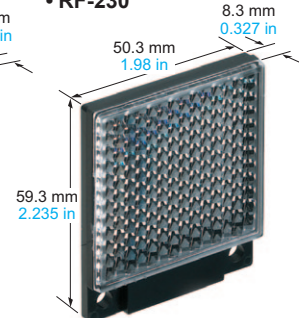
Fitted on the front face of the sensor with one-touch.

**Rectangular slit mask**• **OS-CX-□×6**

Fitted on the front face of the sensor with one-touch.

**Interference prevention filter**• **PF-CX4-V**  
(Vertical, Silver)• **PF-CX4-H**  
(Horizontal, Light brown)

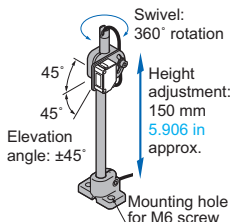
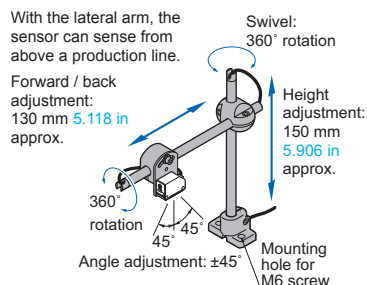
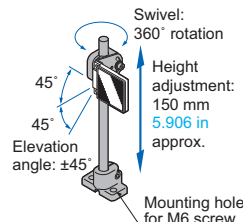
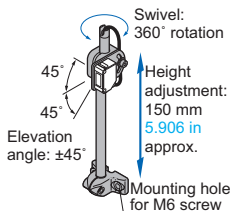
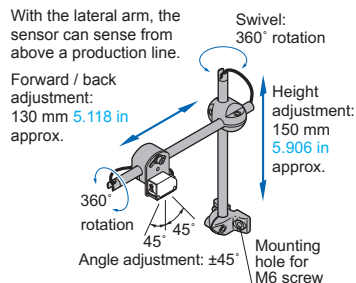
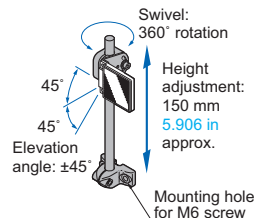
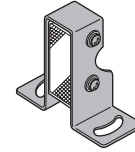
Two sets of CX-411□ can be mounted close together.

**Reflector**• **RF-210**• **RF-220**• **RF-230**

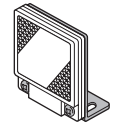
**OPTIONS**

Designation	Model No.	Description
Reflector mounting bracket	<b>MS-RF21-1</b>	Protective mounting bracket for <b>RF-210</b> 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	<b>RF-11</b>	<ul style="list-style-type: none"> <li>Sensing range (Note 4): 0.5 m <b>1.640 ft</b> [CX-491□] 0.8 m <b>2.625 ft</b> [CX-493□]</li> <li>Ambient temperature: -25 to +50 °C -13 to +122 °F</li> <li>Ambient humidity: 35 to 85 % RH</li> </ul>
	<b>RF-12</b>	<ul style="list-style-type: none"> <li>Sensing range (Note 4): 0.7 m <b>2.297 ft</b> [CX-491□] 1.2 m <b>3.937 ft</b> [CX-493□] 0.1 to 0.6 m <b>0.328 to 1.969 ft</b> [CX-482□]</li> <li>Notes: 1) Keep the tape free from stress. If it is pressed too much, its capability may deteriorate. 2) Do not cut the tape. It will deteriorate the sensing performance.</li> </ul>
	<b>RF-13</b>	<ul style="list-style-type: none"> <li>Sensing range (Note 5): 0.5 m <b>1.640 ft</b> [CX-491□]</li> <li>Ambient temperature: -25 to +55 °C -13 to +131 °F</li> <li>Ambient humidity: 35 to 85 % RH</li> </ul>
Sensor mounting bracket (Note 1)	<b>MS-CX2-1</b>	Foot angled mounting bracket It can also be used for mounting <b>RF-210</b> .
	<b>MS-CX2-2</b>	Foot biangled mounting bracket It can also be used for mounting <b>RF-210</b> .
	<b>MS-CX2-4</b>	Protective mounting bracket
	<b>MS-CX2-5</b>	Back biangled mounting bracket
	<b>MS-CX-3</b>	Back angled mounting bracket
Universal sensor mounting stand (Note 2)	<b>MS-AJ1</b>	Horizontal mounting type
	<b>MS-AJ2</b>	Vertical mounting type
	<b>MS-AJ1-A</b>	Horizontal mounting type
	<b>MS-AJ2-A</b>	Vertical mounting type
	<b>MS-AJ1-M</b>	Horizontal mounting type
	<b>MS-AJ2-M</b>	Vertical mounting type
Sensor checker (Note 3)	<b>CHX-SC2</b>	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.

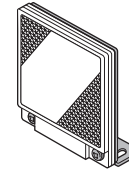
- Notes: 1) The plug-in connector type sensor does not allow use of some sensor mounting brackets because of the protrusion of the connector.  
2) Refer to the universal sensor mounting stand **MS-AJ** series pages.  
3) Refer to the sensor checker **CHX-SC2** pages.  
4) Set the distance between the sensor and the reflective tape to 0.1 m **0.328 ft** (CX-482□: 0.4 m **1.312 ft**) or more.  
5) Set the distance between the sensor and the reflective tape to 0.2 m **0.656 ft** or more.

**Universal sensor mounting stand****• MS-AJ1****• MS-AJ1-A****• MS-AJ1-M****• MS-AJ2****• MS-AJ2-A****• MS-AJ2-M****Reflector mounting bracket****• MS-RF21-1**

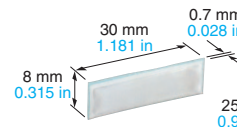
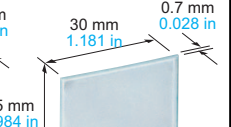
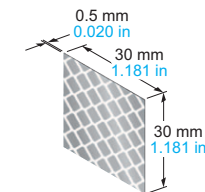
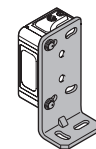
Two M3 (length 12 mm **0.472 in**) screws with washers are attached.

**• MS-RF22**

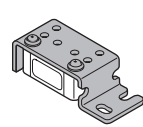
Two M3 (length 8 mm **0.315 in**) screws with washers are attached.

**• MS-RF23**

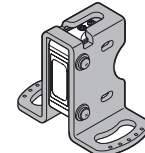
Two M4 (length 10 mm **0.394 in**) screws with washers are attached.

**Reflective tape****• RF-11****• RF-12****• RF-13****Sensor mounting bracket****• MS-CX2-1**

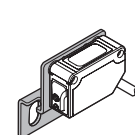
Two M3 (length 12 mm **0.472 in**) screws with washers are attached.

**• MS-CX2-2**

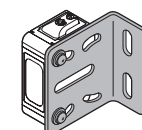
Two M3 (length 12 mm **0.472 in**) screws with washers are attached.

**• MS-CX2-4**

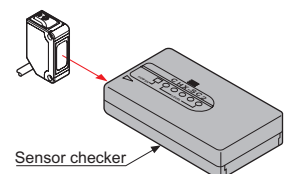
Two M3 (length 14 mm **0.551 in**) screws with washers are attached.

**• MS-CX2-5**

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

**• MS-CX-3**

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

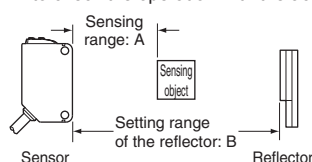
**Sensor checker****• CHX-SC2**

**SPECIFICATIONS****Standard type**

		Type	Thru-beam			Retroreflective					Diffuse reflective				
			Long sensing range			With polarizing filters	Long sensing range	For transparent object sensing			Narrow-view				
Item	Model No.	NPN output	CX-411	CX-412	CX-413	CX-491	CX-493	CX-481	CX-483	CX-482	CX-424	CX-421	CX-422	CX-423	
		PNP output	CX-411-P	CX-412-P	CX-413-P	CX-491-P	CX-493-P	CX-481-P	CX-483-P	CX-482-P	CX-424-P	CX-421-P	CX-422-P	CX-423-P	
Sensing range			10 m 32.808 ft	15 m 49.213 ft	30 m 98.425 ft	3 m 9.843 ft (Note 2)	5 m 16.404 ft (Note 2)	50 to 500 mm 1.969 to 19.685 in (Note 2)	50 to 1,000 mm 1.969 to 39.37 in (Note 2)	0.1 to 2 m 0.328 to 6.562 ft (Note 2)	100 mm 3.937 in (Note 3)	300 mm 11.811 in (Note 3)	800 mm 31.496 in (Note 3)	70 to 300 mm 2.756 to 11.811 in (Note 3)	
Sensing object			ø12 mm ø0.472 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)	ø50 mm ø1.969 in or more transparent, translucent or opaque object (Note 2, 5)			Opaque, translucent or transparent object (Note 5)			Opaque, translucent or transparent object (Note 5) (Min. sensing object: ø1.5 mm ø0.020 in copper wire)	
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: 15 mA or less Receiver: 10 mA or less	Emitter: 20 mA or less Receiver: 10 mA or less	Emitter: 25 mA or less Receiver: 10 mA or less	13 mA or less	10 mA or less				13 mA or less		15 mA or less		
Output			<NPN output type> NPN open-collector transistor • Maximum sink current: 100 mA • Applied voltage: 30 V DC or less (between output and 0 V) • Residual voltage: 2 V or less (at 100 mA sink current) 1 V or less (at 16 mA sink current)					<PNP output type> PNP open-collector transistor • Maximum source current: 100 mA • Applied voltage: 30 V DC or less (between output and +V) • Residual voltage: 2 V or less (at 100 mA source current) 1 V or less (at 16 mA source current)							
		Output operation	Switchable either Light-ON or Dark-ON												
		Short-circuit protection	Incorporated												
Response time			1 ms or less		2 ms or less		1 ms or less								
Operation indicator			Orange LED (lights up when the output is ON)(incorporated on the receiver for thru-beam type)												
Stability indicator			Green LED (lights up under stable light received condition or stable dark condition)(incorporated on the receiver for thru-beam type)												
Power indicator			Green LED (lights up when the power is ON) (incorporated on the emitter)												
Sensitivity adjuster			Continuously variable adjuster (incorporated on the receiver for thru-beam type)												
Automatic interference prevention function			Two units of sensors can be mounted close together with interference prevention filters (Sensing range: 5 m 16.404 ft)		Incorporated (Two units of sensors can be mounted close together.)										
Environmental resistance	Protection		IP67 (IEC)												
	Ambient temperature		-25 to +55 °C -13 to +131 °F (No dew condensation or icing allowed), Storage: -30 to +70 °C -22 to +158 °F												
	Ambient humidity		35 to 85 % RH, Storage: 35 to 85 % RH												
	Ambient illuminance		Incandescent light: 3,000 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 0.059 in double 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)			Red LED	Infrared LED		Red LED		Infrared LED		Infrared LED		Red LED			
Peak emission wavelength			680 nm 0.027 mil	870 nm 0.034 mil	850 nm 0.033 mil	680 nm 0.027 mil	650 nm 0.026 mil	870 nm 0.034 mil			860 nm 0.033 mil		645 nm 0.025 mil		
Material			Enclosure: PBT (Polybutylene terephthalate), Lens: Acrylic (CX-48□: Polycarbonate), Indicator cover: Acrylic (CX-48□: Polycarbonate)												
Cable			0.2 mm <sup>2</sup> 3-core (thru-beam type emitter: 2-core) cabtyre 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)												
Weight	Net		Emitter: 45 g approx., Receiver: 50 g approx.			50 g approx.									
	Gross		100 g approx.			80 g approx.						60 g approx.			
Accessories						RF-230 (Reflector): 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 of the retroreflective type sensor are specified for the RF-230 reflector. The sensing range represents the actual sensing range of the sensor. The sensing ranges itemized in "A" of the table below may vary depending on the shape of sensing object. Be sure to check the operation with the actual sensing object.



	CX-491□	CX-493□	CX-481□	CX-483□	CX-482□
A	0 to 3 m 0 to 9.843 ft	0 to 5 m 0 to 16.404 ft	50 to 500 mm 1.969 to 19.685 in	50 to 1,000 mm 1.969 to 39.37 in	0.1 to 2 m 0.328 to 6.562 ft
B	0.1 to 3 m 0.328 to 9.843 ft	0.1 to 5 m 0.328 to 16.404 ft	100 to 500 mm 3.937 to 19.685 in	100 to 1,000 mm 3.937 to 39.37 in	0.8 to 2 m 2.625 to 6.562 ft

3) The sensing range and 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, an object of ø0.5 mm ø0.020 in (using round slit mask) can be detected.

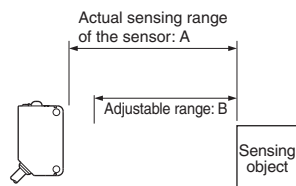
5) Make sure to confirm detection with an actual sensor before use.

## SPECIFICATIONS

### Standard type

		Type	Adjustable range reflective					
			Small spot					
Item	Model No.	NPN output	CX-441	CX-443	CX-444	CX-442		
		PNP output	CX-441-P	CX-443-P	CX-444-P	CX-442-P		
Adjustable range (Note 2)			20 to 50 mm 0.787 to 1.969 in		20 to 100 mm 0.787 to 3.937 in	40 to 300 mm 1.575 to 11.811 in		
Sensing range (with white non-glossy paper)			2 to 50 mm 0.079 to 1.969 in		15 to 100 mm 0.591 to 3.937 in	20 to 300 mm 0.787 to 11.811 in		
Hysteresis (with white non-glossy paper)			2 % or less of operation distance			5 % or less of operation distance		
Repeatability			Along sensing axis: 1 mm 0.039 in or less, Perpendicular to sensing axis: 0.2 mm 0.008 in or less (with white non-glossy paper)					
Supply voltage			12 to 24 V DC ±10 % Ripple P-P 10 % or less					
Current consumption			20 mA or less					
Output			<NPN output type> 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 output and 0 V)</li><li>• Residual voltage: 2 V or less (at 100 mA sink current) 1 V or less (at 16 mA sink current)</li></ul>		<PNP output type> PNP open-collector transistor <ul style="list-style-type: none"><li>• Maximum source current: 100 mA</li><li>• Applied voltage: 30 V DC or less (between output and +V)</li><li>• Residual voltage: 2 V or less (at 100 mA source current) 1 V or less (at 16 mA source current)</li></ul>			
			Output operation				Switchable either Detection-ON or Detection-OFF	
			Short-circuit protection				Incorporated	
Response time			1 ms or less					
Operation indicator			Orange LED (lights up when the output is ON)					
Stability indicator			Green LED (lights up under stable operating condition) (Note 3)					
Distance adjuster			5-turn mechanical adjuster					
Sensing mode			BGS / FGS functions Switchable with wiring of sensing mode selection input					
Automatic interference prevention function (Note 4)			Incorporated					
Environmental resistance	Protection		IP67 (IEC)					
	Ambient temperature		-25 to +55 °C -13 to +131 °F (No dew condensation or icing allowed), Storage: -30 to +70 °C -22 to +158 °F					
	Ambient humidity		35 to 85 % RH, Storage: 35 to 85 % RH					
	Ambient illuminance		Incandescent light: 3,000 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, 3 mm 0.118 in double amplitude in X, Y and Z directions for two hours each					
	Shock resistance		500 m/s <sup>2</sup> acceleration (20 G approx.) in X, Y and Z directions for three times each					
Emitting element			Red LED (Peak emission wavelength: 650 nm 25.591 in, modulated)					
Spot diameter			ø2 mm ø0.079 in approx. (at 50 mm 1.969 in distance)	ø6.5 mm ø0.256 in approx. (at 50 mm 1.969 in distance)	ø9 mm ø0.354 in approx. (at 100 mm 3.937 in distance)	ø15 mm ø0.591 in approx. (at 300 mm 11.811 in distance)		
Material			Enclosure: PBT (Polybutylene terephthalate), Lens: Polycarbonate, Indicator cover: Polycarbonate					
Cable			0.2 mm <sup>2</sup> 4-core cabtyre 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.					
Weight			Net weight: 55 g approx., Gross weight: 65 g approx.					

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 adjustable range stands for the maximum sensing range which can be set with the distance adjuster. The sensor can detect an object 2 mm **0.079 in** [CX-444(-P)]: 15 mm **0.591 in**, CX-442(-P): 20 mm **0.787 in**], or more, away.



	CX-441□/443□	CX-444□	CX-442□
A	2 to 50 mm <b>0.079 to 1.969 in</b>	15 to 100 mm <b>0.591 to 3.937 in</b>	20 to 300 mm <b>0.787 to 11.811 in</b>
B	2 to 50 mm <b>0.787 to 1.969 in</b>	20 to 100 mm <b>0.787 to 3.937 in</b>	40 to 300 mm <b>1.575 to 11.811 in</b>

- 3) Refer to "PRECAUTIONS FOR PROPER USE" for operation of the stability indicator.  
 4) Note that detection may be unstable depending on the mounting conditions or the sensing object. In the state that this product is mounted, be sure to check the operation with the actual sensing object.

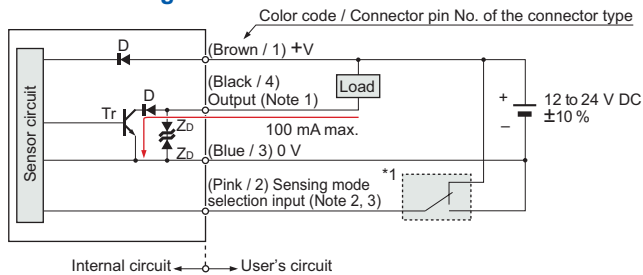


3) If slit masks (optional) are fitted, an object of  $\varnothing 0.5$  mm **0.020 in** (using round slit mask) can be detected.

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

3) If slit masks (optional) are fitted, an object of  $\varnothing 0.5$  mm **0.020 in** (using round slit mask) can be detected.

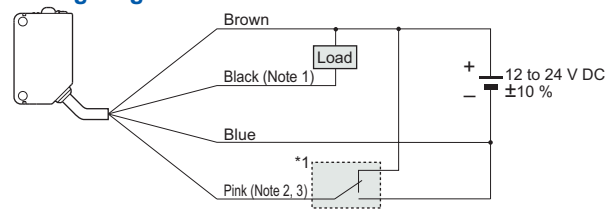
4) Make sure to confirm detection with an actual sensor before use.

**I/O CIRCUIT AND WIRING DIAGRAMS****NPN output type****I/O circuit diagram**

- Notes: 1) The emitter of the thru-beam type sensor does not incorporate the output.
- 2) Sensing mode selection input is incorporated only for the **CX-44** adjustable range reflective type. When using the **CX-44**, be sure to wire the sensing mode selection input (pink / 2) as mentioned \*1. Unstable operation may occur.
- 3) When the mating cable is connected to the plug-in connector type of **CX-44**, its color is white.

- \*1
- Sensing mode selection input  
BGS function: Connect to 0 V  
FGS function: Connect to +V

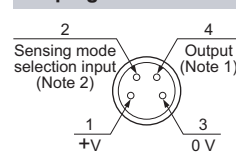
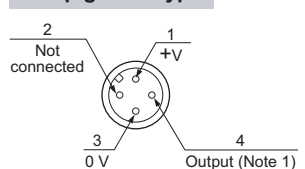
Symbols ... D : Reverse supply polarity protection diode  
ZD : Surge absorption zener diode  
Tr : NPN output transistor

**Wiring diagram**

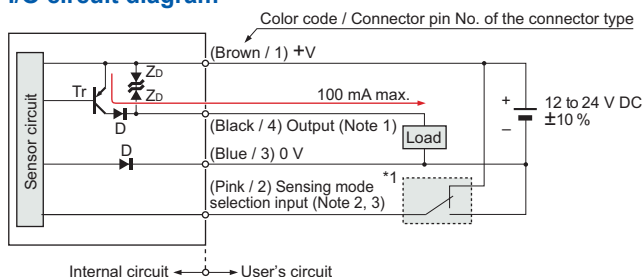
- Notes: 1) The emitter of the thru-beam type sensor does not incorporate the black wire.
- 2) The pink wire is incorporated only for the **CX-44** adjustable range reflective type. When using the **CX-44**, be sure to wire the pink wire as mentioned \*1. Unstable operation may occur.
- 3) When the mating cable is connected to the plug-in connector type of **CX-44**, its color is white.

\*1

- Sensing mode selection input  
BGS function: Connect to 0 V  
FGS function: Connect to +V

**Connector pin position****M8 plug-in connector type****M12 pigtailed type**

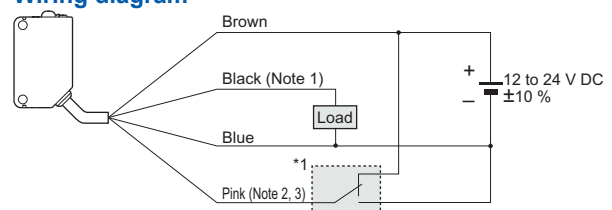
- Notes: 1) The emitter of the thru-beam type sensor does not incorporate the output.
- 2) Sensing mode selection input is incorporated only for the **CX-44** adjustable range reflective type. When using the **CX-44**, be sure to wire the sensing mode selection input (pink / 2). Unstable operation may occur.

**PNP output type****I/O circuit diagram**

- Notes: 1) The emitter of the thru-beam type sensor does not incorporate the output.
- 2) Sensing mode selection input is incorporated only for the **CX-44-P** adjustable range reflective type. When using the **CX-44-P**, be sure to wire the sensing mode selection input (pink / 2) as mentioned \*1. Unstable operation may occur.
- 3) When the mating cable is connected to the plug-in connector type of **CX-44-P**, its color is white.

- \*1
- Sensing mode selection input  
BGS function: Connect to 0 V  
FGS function: Connect to +V

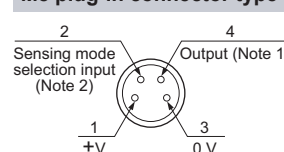
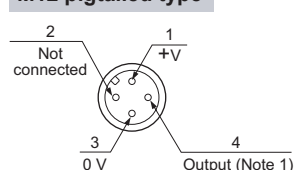
Symbols ... D : Reverse supply polarity protection diode  
ZD : Surge absorption zener diode  
Tr : PNP output transistor

**Wiring diagram**

- Notes: 1) The emitter of the thru-beam type sensor does not incorporate the black wire.
- 2) The pink wire is incorporated only for the **CX-44-P** adjustable range reflective type. When using the **CX-44-P**, be sure to wire the pink wire as mentioned \*1. Unstable operation may occur.
- 3) When the mating cable is connected to the plug-in connector type of **CX-44-P**, its color is white.

\*1

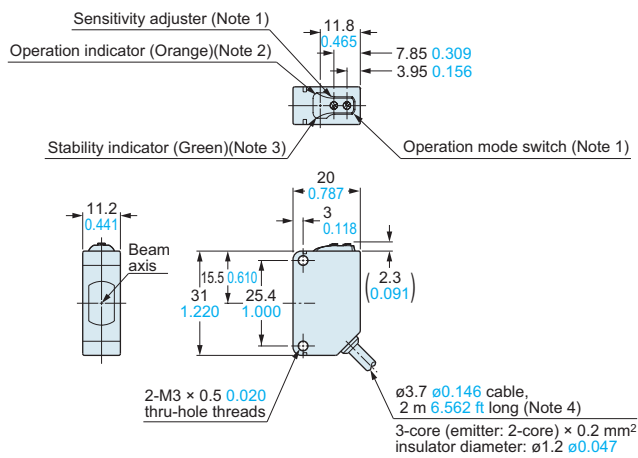
- Sensing mode selection input  
BGS function: Connect to 0 V  
FGS function: Connect to +V

**Connector pin position****M8 plug-in connector type****M12 pigtailed type**

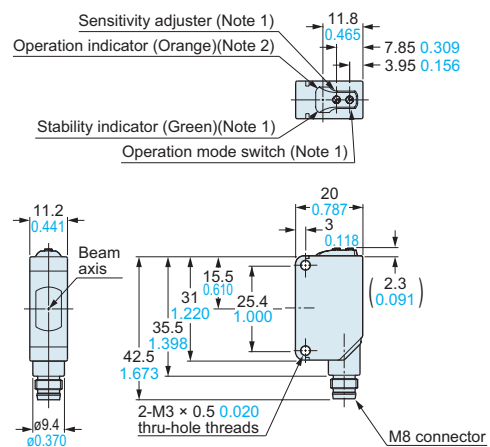
- Notes: 1) The emitter of the thru-beam type sensor does not incorporate the output.
- 2) Sensing mode selection input is incorporated only for the **CX-44-P** adjustable range reflective type. When using the **CX-44-P**, be sure to wire the sensing mode selection input (pink / 2). Unstable operation may occur.

**DIMENSIONS (Unit: mm in)**

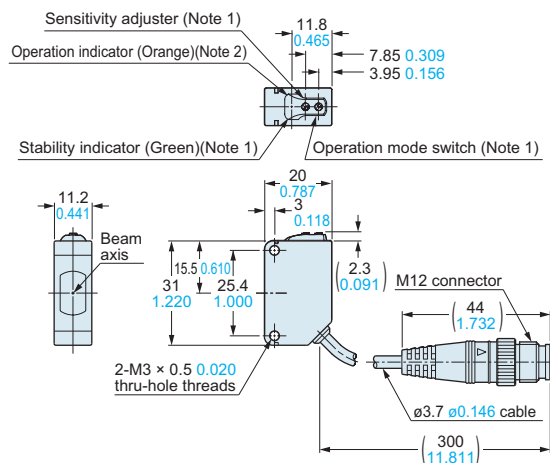
The CAD data in the dimensions can be downloaded from our website.

**CX-41□****Sensor**

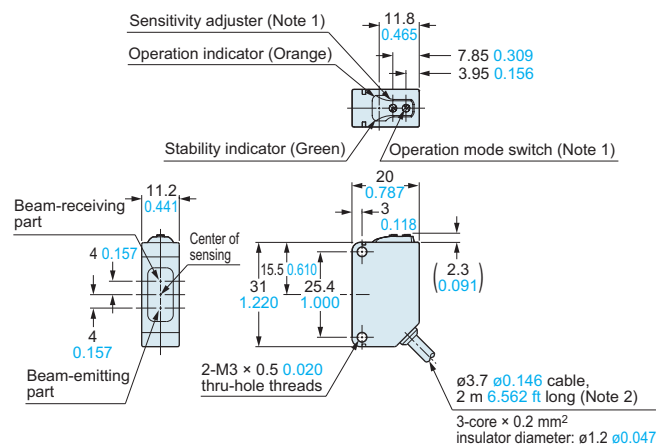
- Notes: 1) Not incorporated on the emitter and the basic type sensor.  
 2) It is the power indicator (green) on the emitter.  
 3) Not incorporated on the emitter.  
 4) Basic type: 0.5 m 1.640 ft long

**CX-41□-Z****Sensor**

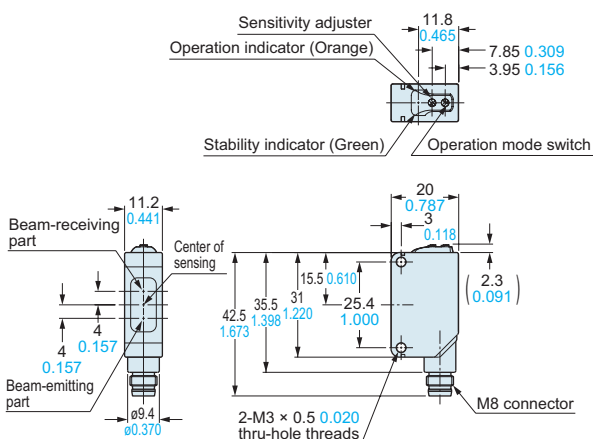
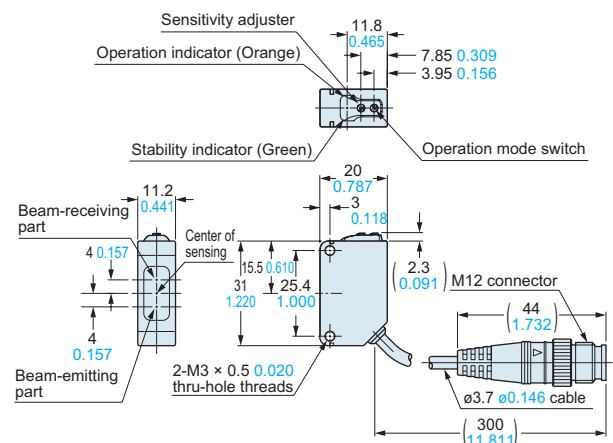
- Notes: 1) Not incorporated on the emitter.  
 2) It is the power indicator (green) on the emitter.

**CX-41□-J****Sensor**

- Notes: 1) Not incorporated on the emitter.  
 2) It is the power indicator (green) on the emitter.

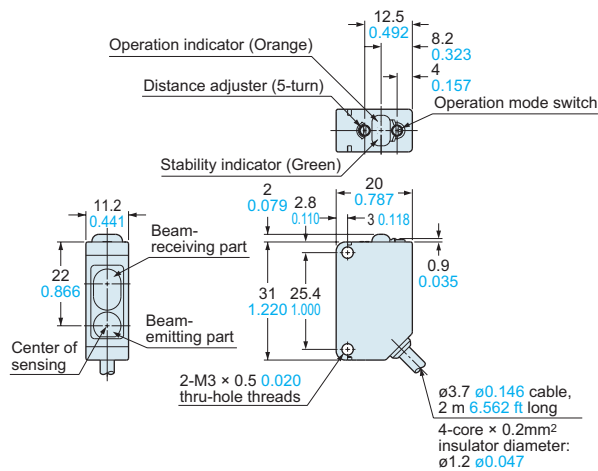
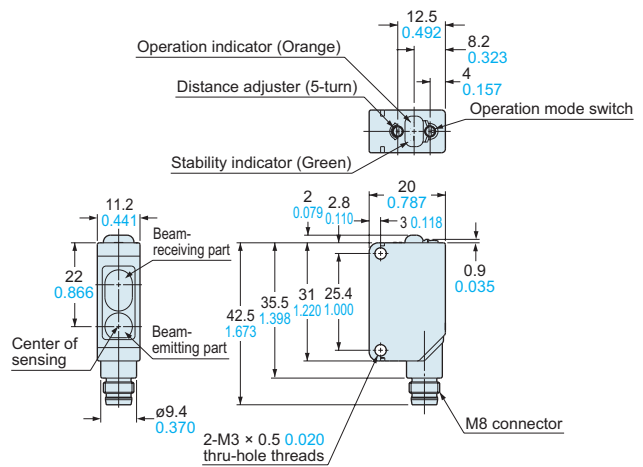
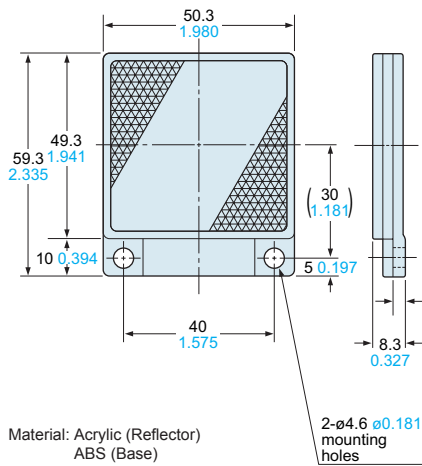
**CX-49□ CX-48□ CX-42□****Sensor**

- Notes: 1) Not incorporated on the Basic type sensors.  
 2) Basic type: 0.5 m 1.640 ft long

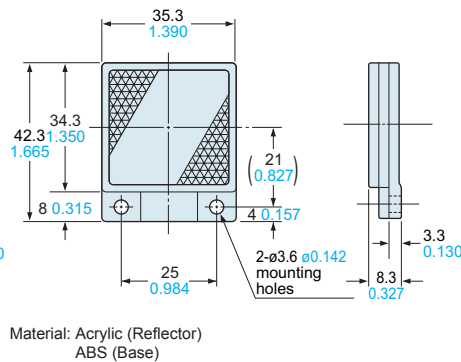
**CX-49□-Z CX-48□-Z CX-42□-Z****Sensor****CX-49□-J CX-48□-J CX-42□-J****Sensor**

**DIMENSIONS (Unit: mm in)**

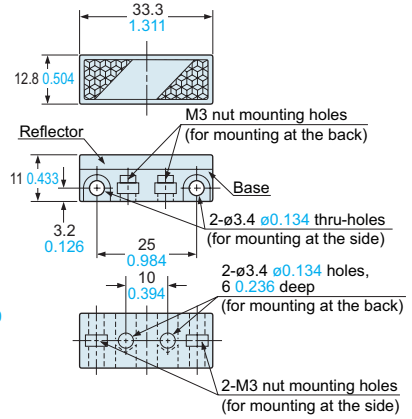
The CAD data in the dimensions can be downloaded from our website.

**CX-44□****Sensor****CX-44□-Z****Sensor****RF-230** Reflector (Accessory for the retroreflective type sensor)**RF-220**

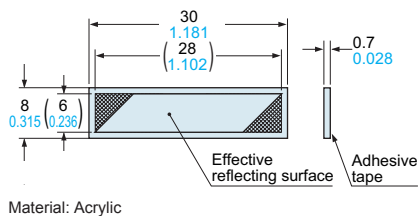
Reflector (Optional)

**RF-210**

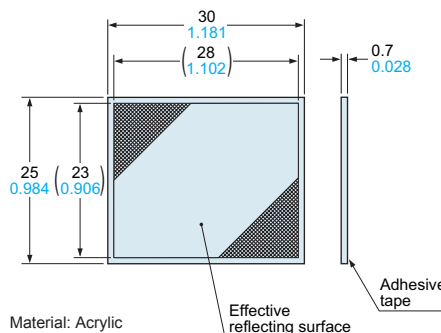
Reflector (Optional)

Material: Acrylic (Reflector)  
ABS (Base)Two M3 (length 8 mm 0.315 in)  
screws with washers and two nuts are attached.

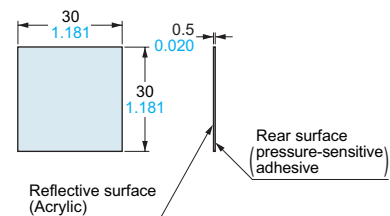
Note: It is not attached with the basic type sensor.

**RF-11** Reflective tape (Optional)**RF-12**

Reflective tape (Optional)

**RF-13**

Reflective tape (Optional)



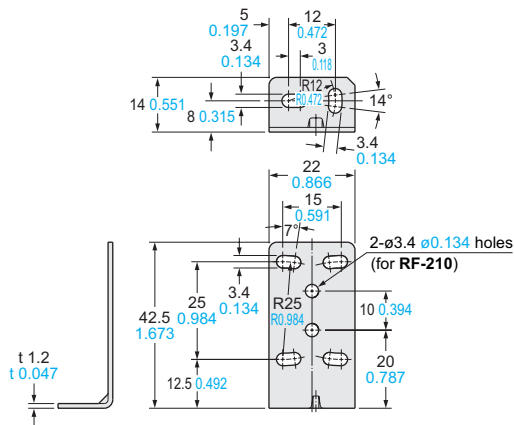


**DIMENSIONS (Unit: mm in)**

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

**MS-CX2-1**

Sensor mounting bracket (Optional)

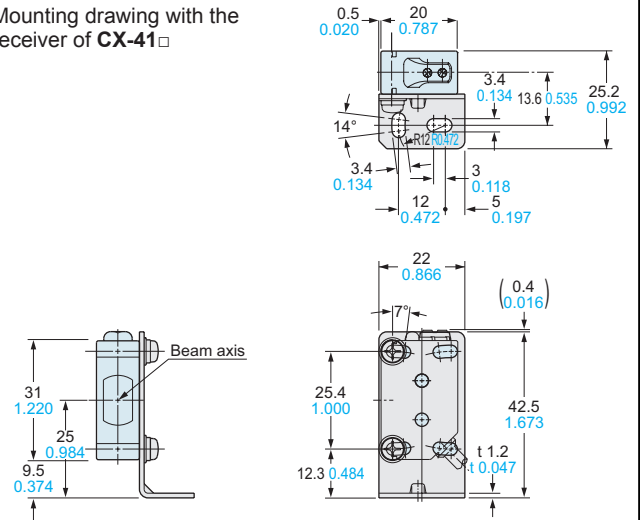


Material: Stainless steel (SUS304)

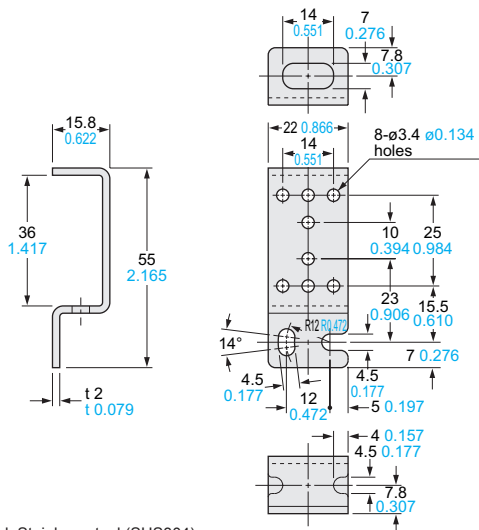
Two M3 (length 12 mm 0.472 in) screws with washers are attached.

**Assembly dimensions**

Mounting drawing with the receiver of CX-41□

**MS-CX2-2**

Sensor mounting bracket (Optional)

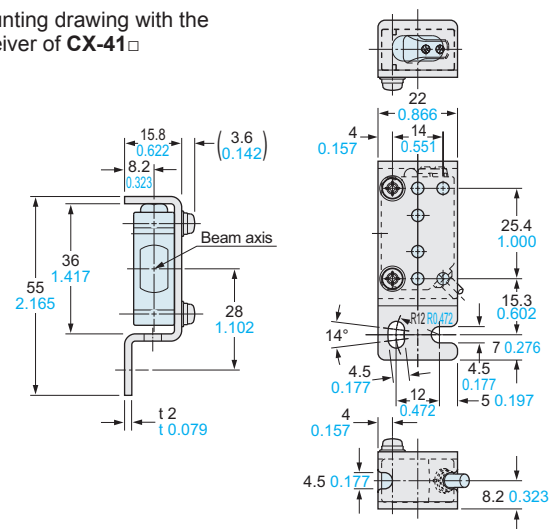


Material: Stainless steel (SUS304)

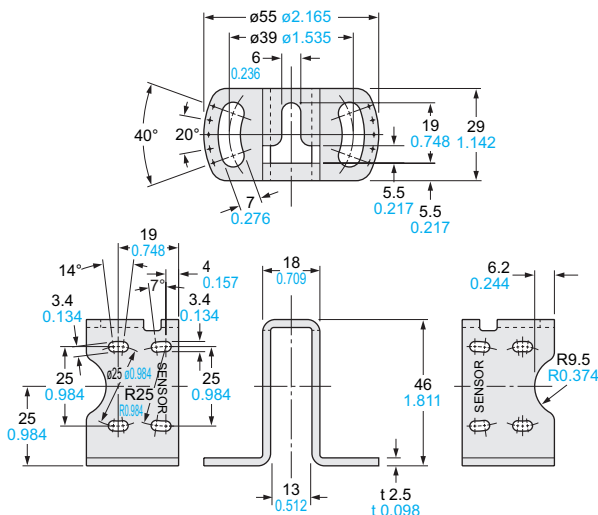
Two M3 (length 12 mm 0.472 in) screws with washers are attached.

**Assembly dimensions**

Mounting drawing with the receiver of CX-41□

**MS-CX2-4**

Sensor mounting bracket (Optional)

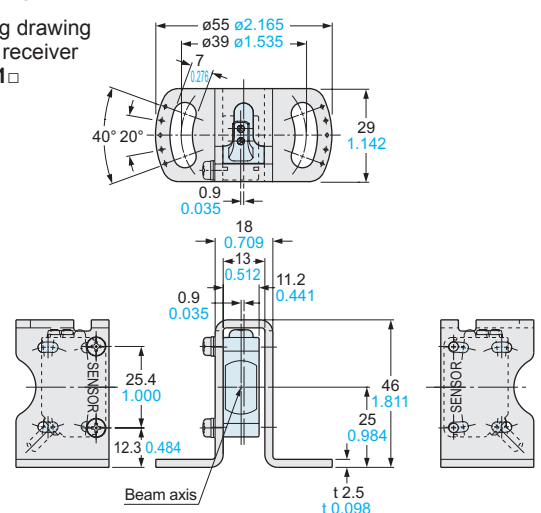


Material: Stainless steel (SUS304)

Two M3 (length 14 mm 0.551 in) screws with washers are attached.

**Assembly dimensions**

Mounting drawing with the receiver of CX-41□





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

### Reflector mounting bracket for **RF-220** (Optional)

Technical drawing of a mechanical part with dimensions in inches and millimeters. The drawing includes a top view, a front view, and a side view.

**Top View Dimensions:**

- Overall width: 25 (0.984)
- Distance from left edge to centerline: 12.5 (0.492)
- Distance from centerline to right edge: 12.5 (0.492)
- Overall height: 35 (1.378)
- Distance from top edge to centerline: 17.5 (0.689)
- Distance from centerline to bottom edge: 17.5 (0.689)
- Distance from left edge to first hole center: 12.5 (0.492)
- Distance from first hole center to second hole center: 12.5 (0.492)
- Distance from second hole center to right edge: 12.5 (0.492)
- Distance from top edge to first hole center: 16 (0.630)
- Distance from first hole center to second hole center: 10 (0.394)
- Distance from second hole center to third hole center: 8 (0.315)
- Distance from third hole center to bottom edge: 6 (0.236)

**Front View Dimensions:**

- Overall width: 25 (0.984)
- Distance from left edge to centerline: 12.5 (0.492)
- Distance from centerline to right edge: 12.5 (0.492)
- Overall height: 44 (1.732)
- Distance from top edge to centerline: 22 (0.869)
- Distance from centerline to bottom edge: 22 (0.869)
- Distance from left edge to first hole center: 12.5 (0.492)
- Distance from first hole center to second hole center: 12.5 (0.492)
- Distance from second hole center to right edge: 12.5 (0.492)
- Distance from top edge to first hole center: 16 (0.630)
- Distance from first hole center to second hole center: 10 (0.394)
- Distance from second hole center to third hole center: 8 (0.315)
- Distance from third hole center to bottom edge: 6 (0.236)

**Side View Dimensions:**

- Overall width: 20 (0.787)
- Distance from left edge to centerline: 10 (0.394)
- Distance from centerline to right edge: 10 (0.394)
- Overall height: 44 (1.732)
- Distance from top edge to centerline: 22 (0.869)
- Distance from centerline to bottom edge: 22 (0.869)
- Distance from left edge to first hole center: 10 (0.394)
- Distance from first hole center to second hole center: 10 (0.394)
- Distance from second hole center to right edge: 10 (0.394)
- Distance from top edge to first hole center: 16 (0.630)
- Distance from first hole center to second hole center: 10 (0.394)
- Distance from second hole center to third hole center: 8 (0.315)
- Distance from third hole center to bottom edge: 6 (0.236)

**Other Dimensions:**

- 8-M3 x 0.5 thru-hole threads
- 4.5 (0.177)
- 11 (0.433)
- 10 (0.394)
- 4 (0.157)
- 16 (0.630)
- 10 (0.394)
- 8 (0.315)
- 6 (0.236)
- 44 (1.732)
- 20 (0.787)
- t 1.6
- t 0.063

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

Technical drawing of a mechanical part showing two views: a top view and a side view.

**Top View Dimensions:**

- Overall width: 40
- Distance from left edge to centerline: 1.575
- Distance from right edge to centerline: 1.575
- Overall height: 11
- Distance from top edge to centerline: 4.5
- Distance from bottom edge to centerline: 0.394
- Radius of corner fillets: 0.118
- Radius of central square hole: 0.433

**Side View Dimensions:**

- Overall height: 61
- Distance from top edge to centerline: 5
- Distance from centerline to bottom edge: 16
- Distance from bottom edge to base: 15
- Distance from base to flange: 18
- Flange thickness: 7
- Flange width: 20
- Flange radius: 0.276
- Base thickness: t 2
- Base width: t 0.079

**Bottom View Dimensions:**

- Overall width: 50
- Distance from left edge to centerline: 1.969
- Distance from right edge to centerline: 1.575
- Overall height: 35
- Distance from top edge to centerline: 1.024
- Distance from bottom edge to centerline: 1.102
- Radius of corner fillets: 1.378
- Radius of central square hole: 0.472

**Notes:**

- 8-M4 × 0.7 thru-hole threads

Two M4 (length 10 mm [0.394 in](#)) screws with washers are attached.

