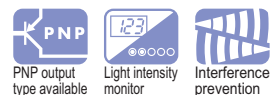
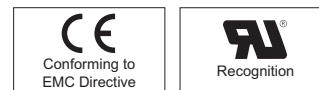
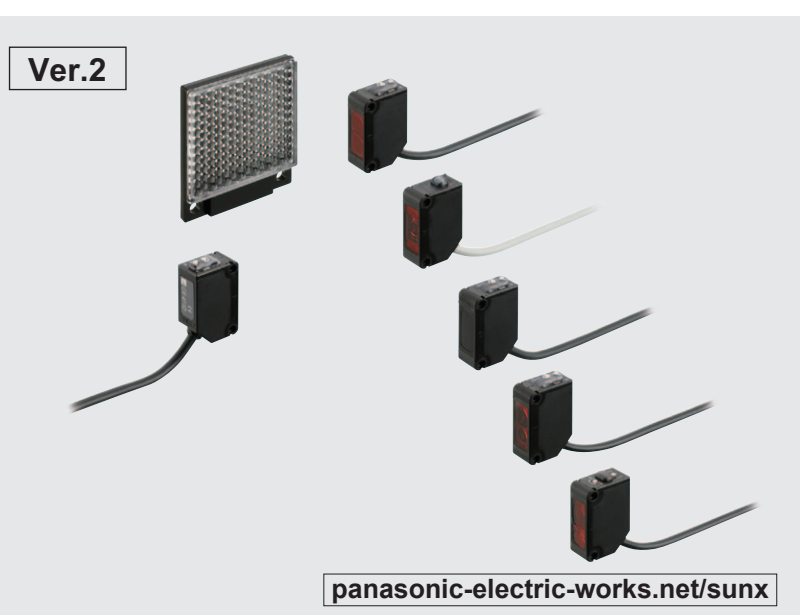


CX-400 SERIES Ver.2

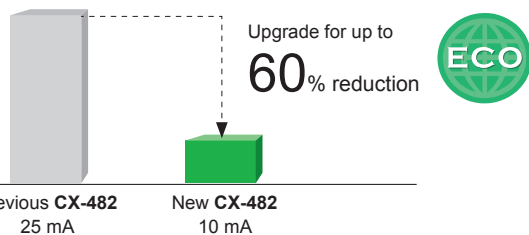
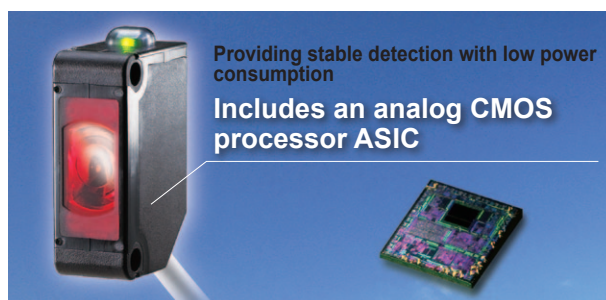
- General terms and conditions..... F-17
■ Sensor selection guide..... P.283~
■ MS-AJ / CHX-SC2..... P.919 / P.920
■ Glossary of terms / General precautions P.1359~ / P.1405
■ Korea's S-mark..... P.1410



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

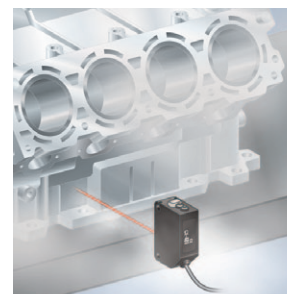
Electricity consumed by the **CX-400** series has been reduced on average 10.5 mA. Calculating 8 hours/day, 260 days (operating 5 days/week) for a total of 2,080 hours/year leads to:

▶ 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).

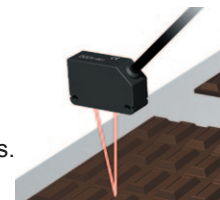


Test Oil	JIS Standard	Product Name
Lubricant	-	Velocity Oil No. 3
Water-insoluble cutting oil	2-5	Daphnecut AS-30D
	2-11	Yushiron Oil No.2ac (Note)
Water-soluble cutting oil	W1-1	Yushiron Lubic HWC68 (Note)
	W2-1	Yushiroken S50N (Note)

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).

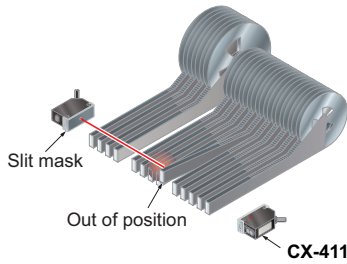


Caution: Set the **CX-48□** so that cleaning liquid will not get on to the attached reflector.

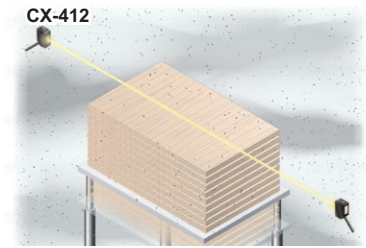
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- PHOTOELECTRIC SENSORS
- MICRO PHOTOELECTRIC SENSORS
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- EX-40
- CX-440
- EQ-30
- EQ-500
- MQ-W
- RX-LS200
- RX
- RT-610

APPLICATIONS

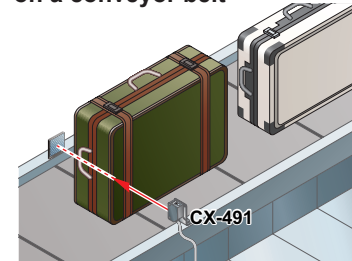
Detecting out of position tape feeder cassette



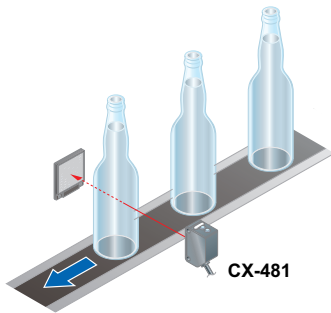
Detecting objects in places that have a lot of dust or clouds of particles



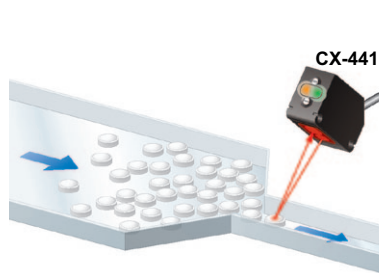
Passage confirmation of object on a conveyor belt



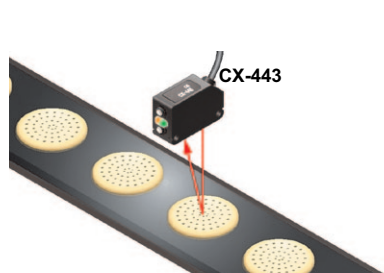
Detecting transparent glass bottles



Small tablet sensing



Biscuit sensing

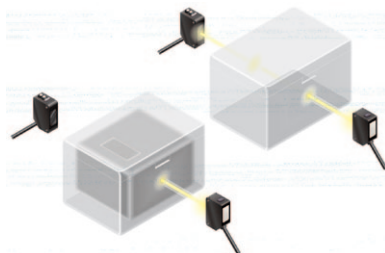


BASIC PERFORMANCE

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

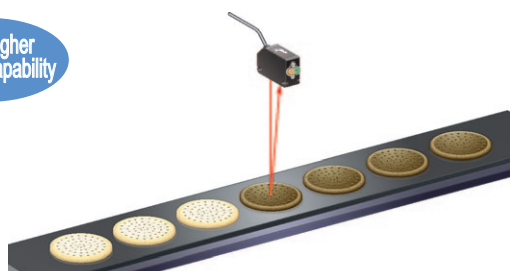


Hardly affected by colors

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

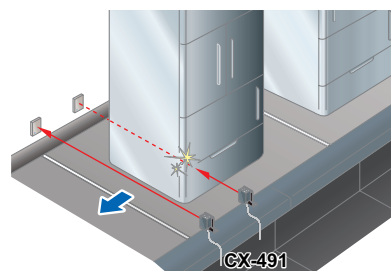


[The difference in sensing ranges is 1% or less between non-glossy white paper with a setting distance of 50 mm 1.969 in and non-glossy gray paper with a brightness level of 5.]

Retroreflective type with polarizing filters

CX-491

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



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EX-20

EX-30

EX-40

CX-440

EQ-30

EQ-500

MQ-W

RX-LS200

RX

RT-610

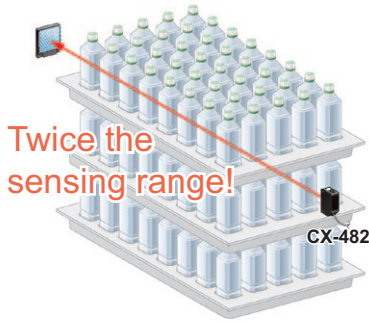
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BASIC PERFORMANCE

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**

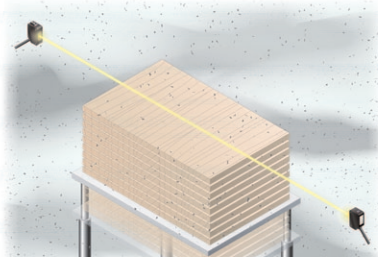
The **CX-413** achieves the ultra-long sensing range of 30 m 98.4 ft. It can be used for a stacker crane or a multilevel parking structure.



ENVIRONMENTAL RESISTANCE

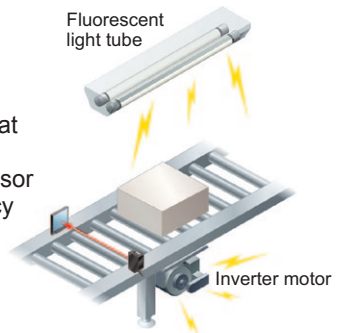
Strong on dust and dirt **CX-412/413**

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



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.



Strong even in cold environments

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

ECO

Thoroughly eliminating unnecessary waste, Reducing many environmental burdens



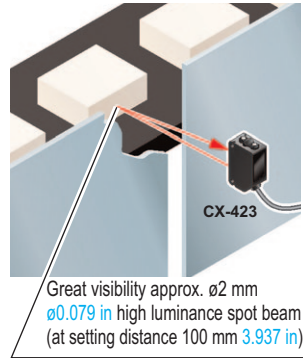
The **CX-400** series have three different cable length types and uses very simple packaging to reduce waste. The bag is made of polyethylene and does not emit toxic gasses.



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-424**

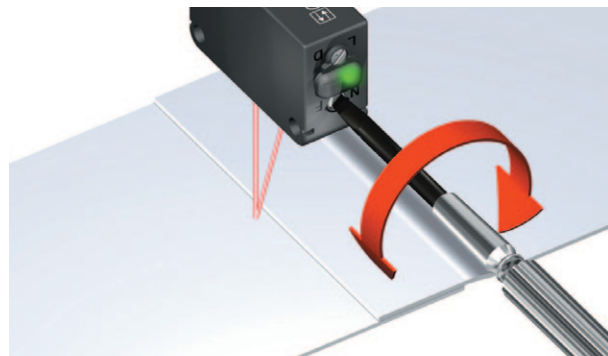
Because these sensors possess many variations depending on the sensing range, enables you to make optimal volume adjustment easily.

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-441**

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



VARIETIES

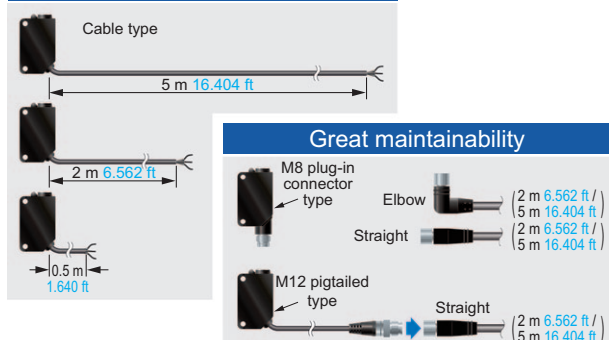
Basic type new release **NEW**

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 **ECO**

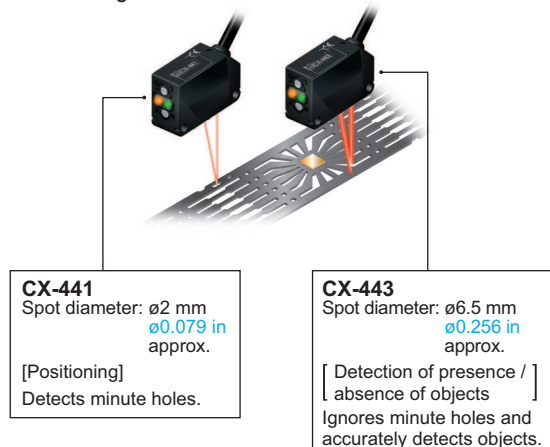
M8 plug-in connector type and M12 pigtailed type are available. This contributes to less time spent in setting up. In addition, cable types are available with cable lengths of 0.5 m 1.640 ft, 2 m 6.562 ft and 5 m 16.404 ft. This results in less wastage.

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.



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EX-20

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FUNCTIONS

BGS / FGS functions make even the most challenging settings possible!

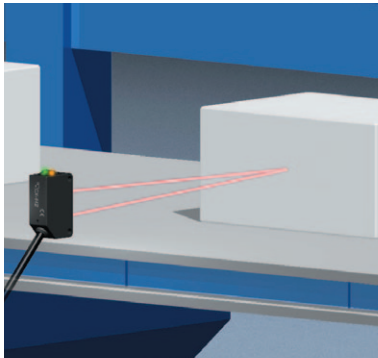
CX-44□

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

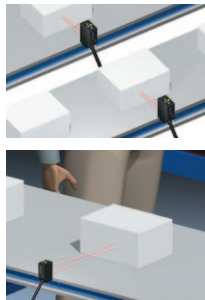
The BGS function is best suited for the following case

Background not present

When object and background are separated



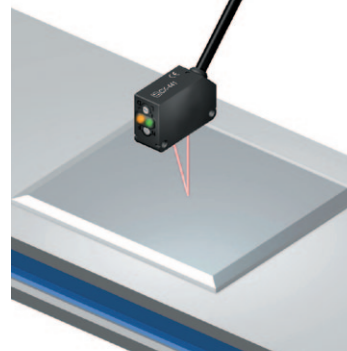
Not affected if the background color changes or someone passes behind the conveyor.



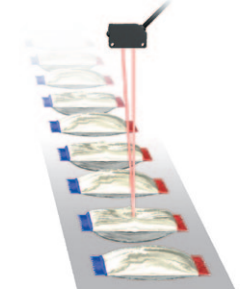
The FGS function is best suited for the following case

Background present

When object and background are close together
When the object is glossy or uneven



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

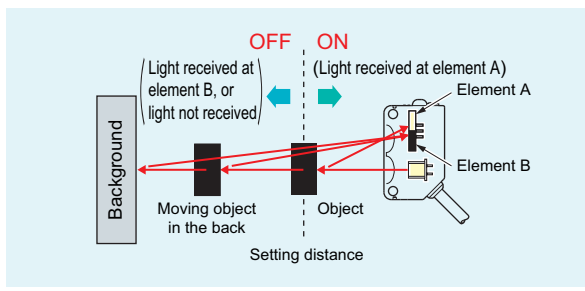


Caution: Please use the FGS function together with a conveyor or other background unit.

BGS (Background suppression) function

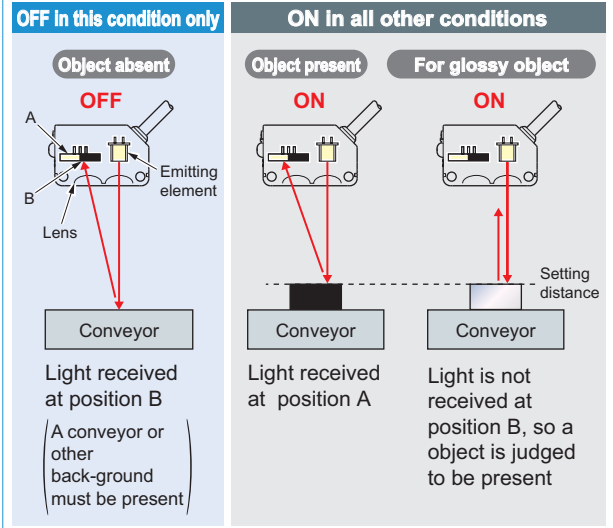
The sensor judges that an object is present when light is received at position A of the light-receiving element (2-segment element).

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.

