

Information of Discontinued Models

Adjustable range & fixed-focus reflective photoelectric sensor EQ-20 series

Stopping taking order date: **30, Sep, 2005**
Date of production discontinuance: **31, Dec, 2005**

Discontinued models

Adjustable range & fixed-focus reflective photoelectric sensor
EQ-20 series

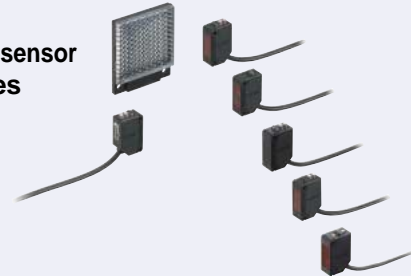


※Confirm that table in

Main points of difference between recommended replacements and discontinued models for details on model numbers for each type.

Recommended replacements

Compact photoelectric sensor
CX-400 series



Refer to 'Compact photoelectric sensor CX-400 series catalog' for details.

Advantages of switching to recommended replacements

2.5 times the sensing capability

This series has a sensing capability that is 2.5 times that of the EQ-20 series, and the hysteresis is 2 % or less. Even ultra-small differences of as small as 0.4 mm **0.016 in** can be detected.

World standard size

The mounting hole pitch is the world standard 25.4 mm **1.000 in**.

Wire-saving

A cable type and M8 plug-in connector type are included in the lineup to make setup less processing.

Includes a BGS / FGS function

The adjustable range reflective type sensors in the CX-400 series of recommended replacements are equipped with a BGS / FGS function.

BGS (Background suppression): This is used when the objects being sensed and the background are separate from each other. This is useful when sensing objects on a conveyor line from the side of the conveyor. Not affected if the background color changes or someone passes behind the conveyor.

FGS (Foreground suppression): This is used when the objects being sensed and the background are close together other. This is useful when sensing objects on a conveyor line from above the conveyor. If there is an object on the conveyor that has been set, sensing is not affected by the glossy, color or uneven in the object.

Notes on using recommended replacements

Recommended replacements	Sensing performance	Specifications	Output circuit	Mounting dimensions	Dimensions	Enclosure color
CX-400 series	◎	◎	○	○	○	○

◎: Highly interchangeable

○: Almost no difference

※: Large differences

—: No corresponding item or model

- High degree of interchangeability in specifications, mounting dimensions and operability, so that replacement of the EQ-20 series with the CX-400 series can be carried out smoothly.
- The mounting hole pitch for the EQ-20 series is 25.0 mm **0.984 in** which is 0.4 mm **0.016 in** different from the CX-400 series, but they can be used in the workplace with almost no resulting problems.
- The EQ-20 series is equipped with self-diagnosis output, but the CX-400 series is not
- The recommended replacements have blind sectors.

Main points of difference between recommended replacements and discontinued models

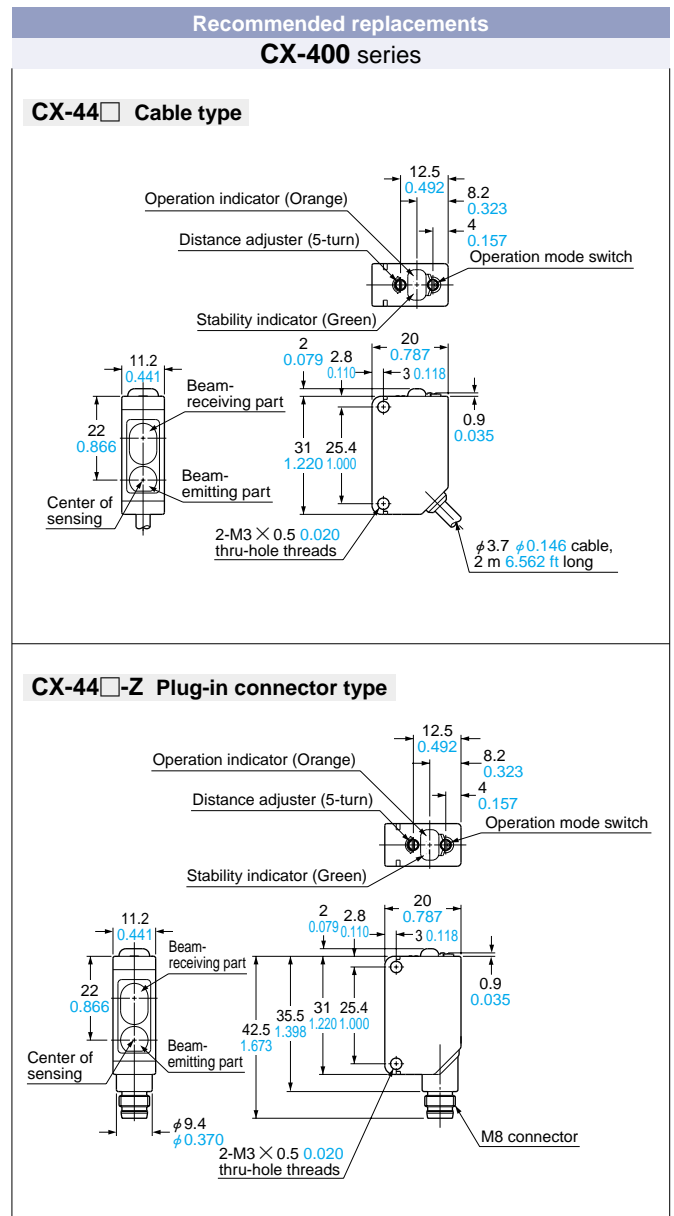
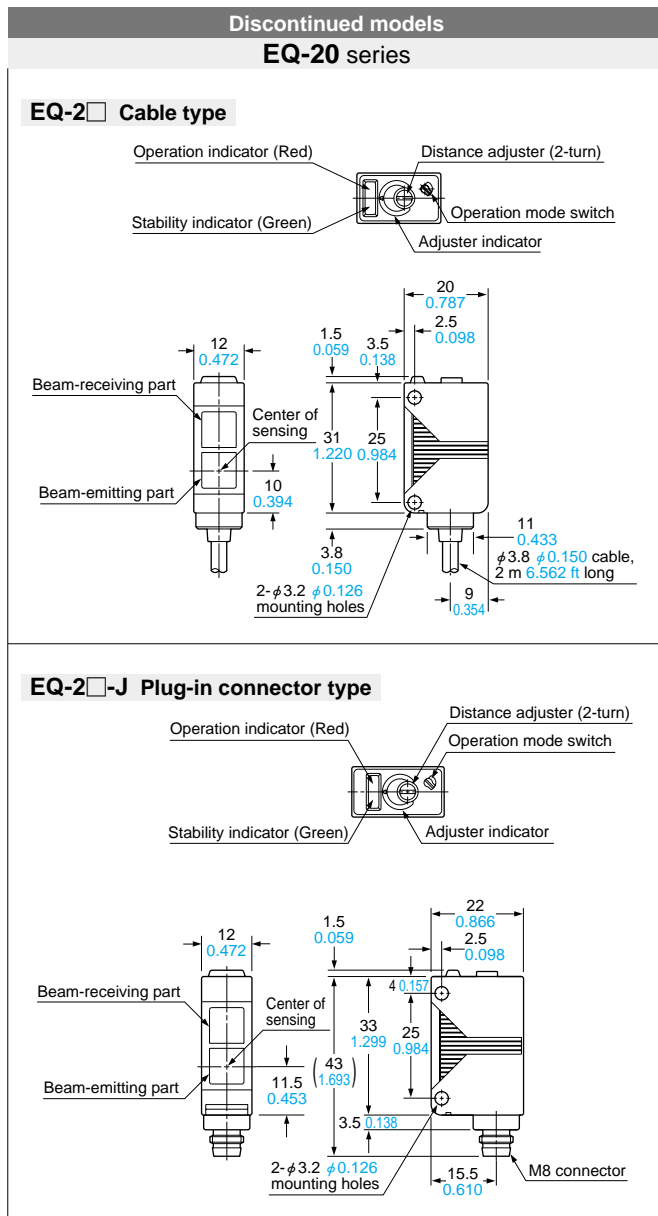
Discontinued models		Recommended replacements		Main points of difference from discontinued models
• Adjustable range and reflective type		• Adjustable range reflective type		
Model No.	Sensing range	Model No.	Sensing range	
EQ-22	0 to 40 mm 0 to 1.575 in	→ CX-443	2 to 50 mm 0.079 to 1.969 in	• The recommended replacements have 2 mm 0.079 in blind sectors. Notes: 1) The EQ-22-C5 has a 5 m 16.404 ft cable. It is recommended that you use the CX-443 with a 2 m 6.562 ft cable. 2) Use the CN-24A-C□ (straight type) or CN-24AL-C□ (elbow type) cable as the connection cable.
EQ-22-C5	0 to 40 mm 0 to 1.575 in	→ CX-443 (Note 1)	—	
EQ-22-J	0 to 40 mm 0 to 1.575 in	→ CX-443-Z (Note 2)	2 to 50 mm 0.079 to 1.969 in	
EQ-22-PN	0 to 40 mm 0 to 1.575 in	→ CX-443-P	2 to 50 mm 0.079 to 1.969 in	
EQ-22-PN-J	0 to 40 mm 0 to 1.575 in	→ CX-443-P-Z (Note 2)	2 to 50 mm 0.079 to 1.969 in	
Model No.	Sensing range	Model No.	Sensing range	
EQ-23	0 to 100 mm 0 to 3.937 in	→ CX-444	15 to 100 mm 0.591 to 3.937 in	• The recommended replacements have 15 mm 0.591 in blind sectors. Notes: 1) The EQ-23-C5 has a 5 m 16.404 ft cable. It is recommended that you use the CX-444 with a 2 m 6.562 ft cable. 2) Use the CN-24A-C□ (straight type) or CN-24AL-C□ (elbow type) cable as the connection cable.
EQ-23-C5	0 to 100 mm 0 to 3.937 in	→ CX-444 (Note 1)	—	
EQ-23-J	0 to 100 mm 0 to 3.937 in	→ CX-444-Z (Note 2)	15 to 100 mm 0.591 to 3.937 in	
EQ-23-PN	0 to 100 mm 0 to 3.937 in	→ CX-444-P	15 to 100 mm 0.591 to 3.937 in	
EQ-23-PN-J	0 to 100 mm 0 to 3.937 in	→ CX-444-P-Z (Note 2)	15 to 100 mm 0.591 to 3.937 in	
Model No.	Sensing range	Model No.	Sensing range	
EQ-24	0 to 200 mm 0 to 7.874 in	→ CX-442	20 to 300 mm 0.787 to 11.811 in	• Sensing range 300 mm 11.811 in . • The recommended replacements have 20 mm 0.787 in blind sectors. Notes: 1) The EQ-24-C5 has a 5 m 16.404 ft cable. It is recommended that you use the CX-442 with a 2 m 6.562 ft cable. 2) Use the CN-24A-C□ (straight type) or CN-24AL-C□ (elbow type) cable as the connection cable.
EQ-24-C5	0 to 200 mm 0 to 7.874 in	→ CX-442 (Note 1)	20 to 300 mm 0.787 to 11.811 in	
EQ-24-J	0 to 200 mm 0 to 7.874 in	→ CX-442-Z (Note 2)	20 to 300 mm 0.787 to 11.811 in	
EQ-24-PN	0 to 200 mm 0 to 7.874 in	→ CX-442-P	20 to 300 mm 0.787 to 11.811 in	
EQ-24-PN-J	0 to 200 mm 0 to 7.874 in	→ CX-442-P-Z (Note 2)	20 to 300 mm 0.787 to 11.811 in	

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Main points of difference between recommended replacements and discontinued models

Discontinued models		Recommended replacements		Main points of difference from discontinued models
● Mating cable · straight type				
Model No.	Sensing range	Model No.	Sensing range	
CN-24E-C2	—	CN-24A-C2	—	
CN-24E-C5	—	CN-24A-C5	—	
● Mating cable · elbow type				
Model No.	Sensing range	Model No.	Sensing range	
CN-24EL-C2	—	CN-24AL-C2	—	
CN-24EL-C5	—	CN-24AL-C5	—	
● Sensor mounting bracket				
Model No.	Sensing range	Model No.	Sensing range	
MS-EQ2-1	—	MS-CX-3	—	
MS-EQ2-2	—	MS-CX2-1	—	
● Narrow-view slit mask				
Model No.	Sensing range	Model No.	Sensing range	
OS-EQ2-1	—	—	—	● The OS-EQ2-1 is the narrow-view slit mask for the EQ-20 series. No recommended replacements have been made available because of a low degree of market need.

Dimensions (Unit: mm in)



Information of Discontinued Models

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Main rated specifications

Item	Basic model No.	Type	Discontinued models			Recommended replacements		
		NPN output PNP output	EQ-22 EQ-22-PN	EQ-23 EQ-23-PN	EQ-24 EQ-24-PN	CX-443 CX-443-P	CX-444 CX-444-P	CX-442 CX-442-P
Adjustable range			20 to 40 mm 0.787 to 1.575 in	30 to 100 mm 1.181 to 3.937 in	30 to 200 mm 1.181 to 7.874 in	20 to 50 mm 0.787 to 1.969 in	20 to 100 mm 0.787 to 3.973 in	40 to 300 mm 1.575 to 11.811 in
Sensing range (with white non-glossy paper)			0 to 40 mm 0 to 1.575 in	0 to 100 mm 0 to 3.937 in	0 to 200 mm 0 to 7.874 in	2 to 50 mm 0.079 to 1.969 in	15 to 100 mm 0.591 to 3.973 in	20 to 300 mm 0.787 to 11.811 in
Hysteresis			5 % or less of operation distance		20 % or less of operation distance	2 % or less of operation distance		5 % or less of operation distance
Repeatability (perpendicular to sensing axis)			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 \pm 10 % Ripple P-P 10 % or less					
Current consumption			45 mA or less (NPN output type), 50 mA or less (PNP output type)			25 mA or less		
Sensing 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: 1 V or less (at 100 mA sink current) 0.4 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: 1 V or less (at 100 mA source current) 0.4 V or less (at 16 mA source current)		
	Output operation		Switchable either Detection-ON or Detection-OFF					
Response time			1 ms or less					
Distance adjuster			2-turn adjuster with indicator			5-turn mechanical adjuster		
Sensing mode			—			BGS / FGS functions switchable with wiring of sensing mode selection input (Note)		
Protection			IP67 (IEC)					
Ambient temperature			-20 to +55 °C -4 to +131 °F (No dew condensation or icing allowed) Storage: -25 to +70 °C -13 to +158 °F			-25 to +55 °C -13 to +131 °F (No dew condensation or icing allowed) Storage: -30 to +70 °C -22 to +158 °F		
Material			Enclosure: PBT, Lens: Polycarbonate Indicator cover: Polycarbonate			Enclosure: PBT (Polybutylene terephthalate) Front cover, Indicator cover: Polycarbonate		
Cable			0.2 mm ² 4-core oil, heat and cold resistant cabtyre cable, 2 m 6.562 ft long			0.2 mm ² 4-core cabtyre cable, 2 m 6.562 ft long		
Weight			50 g approx.			55 g approx		

Note: Refer to 'Advantages of switching to recommended replacements' for the BGS / FGS functions.

Refer to 'Compact photoelectric sensor **CX-400** series catalog' for details.