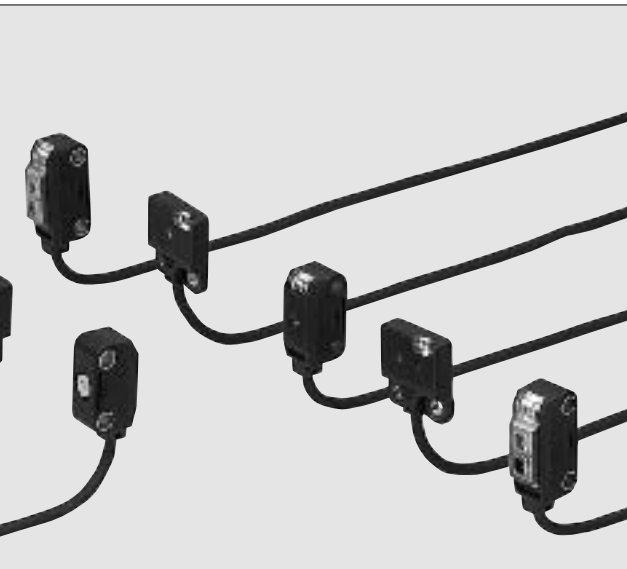


EX-20 SERIES

Miniature-sized and still mountable with M3 screws

Amplifier Built-in

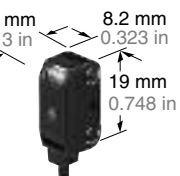


Miniature-sized and still mountable with M3 screws



... by using single chip optical IC

...ceiving photodiode and the ...sion circuit have been ... a single chip optical IC (full ... nce, in spite of its miniature ... a performance and reliability ... qual to or better than the ... product.



... sensitivity adjuster even in this size

... incorporates a sensitivity ... ote of its miniature size. It is ... when you need fine ... Further, the receiver of the ... side sensing type sensor ... an operation mode switch ... ange the output operation.



... color indicator

... color indicator (orange, green ... en incorporated in all types.

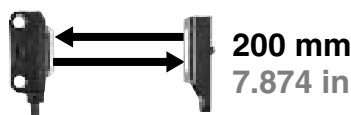
Long sensing range

The EX-20 series achieves long distance sensing [thru-beam type: 2 m 6.562 ft, retro-reflective type: 200 mm 7.874 in (when using the attached reflector), diffuse reflective type: 160 mm 6.299 in], despite its miniature size. Hence, it is usable even on a wide conveyor.

Thru-beam type



Retroreflective type

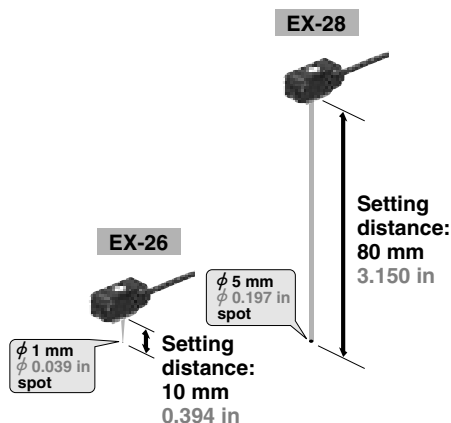


Diffuse reflective type



Clear beam spot using red LED dot light source

The emission area of a dot light source is smaller than that of a conventional LED flat light source, and it is possible to design a high power, narrow beam. Since a red LED dot light source is used, the red beam spot is clear even at a far place, so that alignment and confirmation of sensing position is easy. Further, since the thru-beam type, too, incorporates a visible narrow beam, it can also reliably detect small parts, such as, chip components, lead frames, etc.



Waterproof

The sensor can be hosed down because of its IP67 construction. Further, the

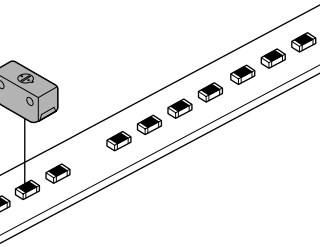
Globally usable

PNP output type, which is much in demand in Europe, is also available.

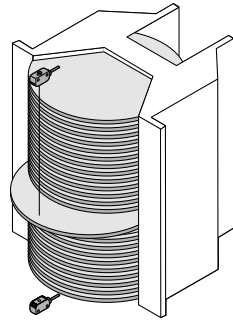
EX-20

APPLICATIONS

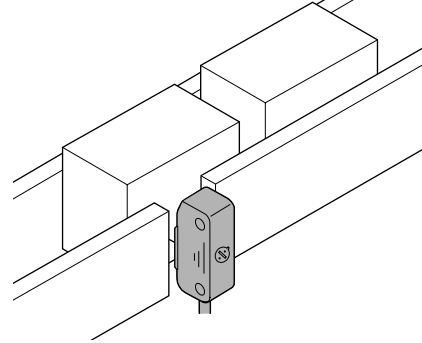
Sensing chip components



Checking protrusion of wafer



Sensing objects from an opening



Options for suitable mounting

Through-hole type, side sensing type and front sensing type sensors are available. Select the type according to the place of mounting.

Through-hole type



(With sensitivity adjuster)

Front sensing type



(Without sensitivity adjuster)

Mounting section reinforced

The mounting section is reinforced with M3 screws. In addition, metal inserts have been provided in the mounting holes so that the mounting section is not damaged even in case of over-tightening.

Through-hole type



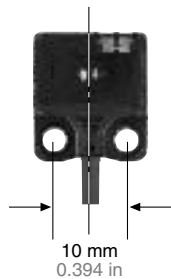
Front sensing type



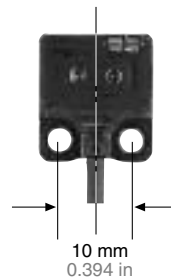
Identical size

Front sensing type of thru-beam type and diffuse reflective type sensors have identical appearance. Moreover, since the mounting holes are symmetrical with respect to the beam axis center, the design becomes easy.

Thru-beam type



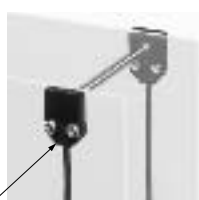
Diffuse reflective type



Mounting spacer for front sensing type is available

Mounting of the front sensing type is possible from the rear side by using the mounting spacer.

Mounting spacer

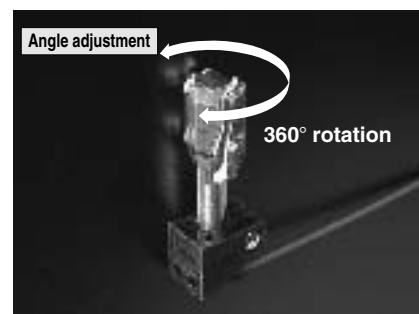
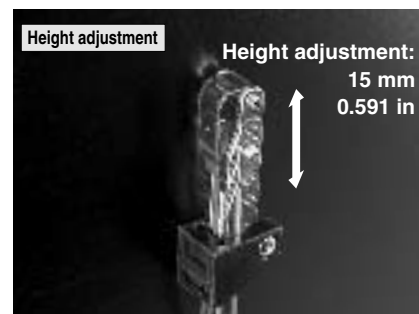


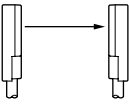

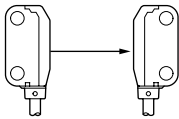

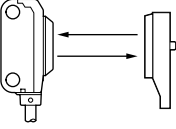
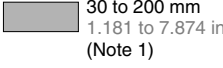
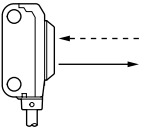
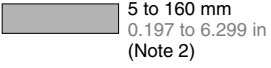
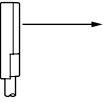
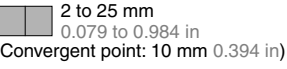
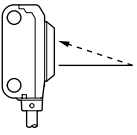
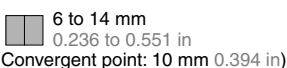
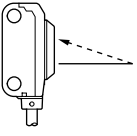
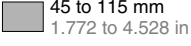
Slit mask is available

φ0.5 mm φ0.020 in round slit mask and 0.5 × 3 mm 0.020 × 0.118 in rectangular slit mask are available for both side

Universal sensor mounting bracket is available

Universal sensor mounting bracket (for thru-beam side sensing type EX-23□ only) which can freely adjust the height and the angle of the sensor is available.



Appearance	Sensing range	Model No.	Output	Output operation
		EX-21A	NPN open-collector transistor	Light-ON
		EX-21A-PN	PNP open-collector transistor	
		EX-21B	NPN open-collector transistor	Dark-ON
		EX-21B-PN	PNP open-collector transistor	
		EX-23	NPN open-collector transistor	Switchable either Light-ON or Dark-ON
		EX-23-PN	PNP open-collector transistor	
		EX-29A	NPN open-collector transistor	Light-ON
		EX-29A-PN	PNP open-collector transistor	
		EX-29B	NPN open-collector transistor	Dark-ON
		EX-29B-PN	PNP open-collector transistor	
		EX-22A	NPN open-collector transistor	Light-ON
		EX-22A-PN	PNP open-collector transistor	
		EX-22B	NPN open-collector transistor	Dark-ON
		EX-22B-PN	PNP open-collector transistor	
		EX-24A	NPN open-collector transistor	Light-ON
		EX-24A-PN	PNP open-collector transistor	
		EX-24B	NPN open-collector transistor	Dark-ON
		EX-24B-PN	PNP open-collector transistor	
		EX-26A	NPN open-collector transistor	Light-ON
		EX-26A-PN	PNP open-collector transistor	
		EX-26B	NPN open-collector transistor	Dark-ON
		EX-26B-PN	PNP open-collector transistor	
		EX-28A	NPN open-collector transistor	Light-ON
		EX-28A-PN	PNP open-collector transistor	
		EX-28B	NPN open-collector transistor	Dark-ON
		EX-28B-PN	PNP open-collector transistor	

Mounting bracket is not supplied with the sensor. Please select from the range of optional sensor mounting brackets (four types).

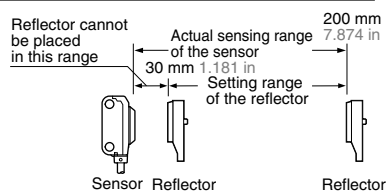
The sensing range of the retroreflective type sensor is specified for the **RF-200** sensor.

However, the sensing range is the possible setting range for the reflector.

The sensor can detect an object less than 30 mm 1.181 in away.

However, if the reflector is set 100 mm 3.937 in or less away, the sensing object should be opaque.

Please be careful of using this product at a sensing range of 50 mm 1.969 in or less, take note that the sensitivity adjustment range becomes extremely narrow.



EX-20

REFLECTOR GUIDE

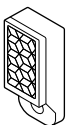
Without reflector type and 5 m 16.404 ft cable length type

Without reflector type and 5 m 16.404 ft cable length type (standard: 2 m 6.562 ft) are also available.

Model Nos.

Type		Standard	Without reflector type	5 m 16.404 ft cable length type	Without reflector & 5 m 16.404 ft cable length type
Front sensing		EX-21A	_____	EX-21A-C5	_____
		EX-21B	_____	EX-21B-C5	_____
Side sensing		EX-23	_____	EX-23-C5	_____
Side sensing		EX-29A	EX-29A-Y	EX-29A-C5	EX-29A-Y-C5
		EX-29B	EX-29B-Y	EX-29B-C5	EX-29B-Y-C5
Side sensing		EX-22A	_____	EX-22A-C5	_____
		EX-22B	_____	EX-22B-C5	_____
Diffused beam type	Front sensing	EX-24A	_____	EX-24A-C5	_____
		EX-24B	_____	EX-24B-C5	_____
Small spot beam type	Side sensing	EX-26A	_____	EX-26A-C5	_____
		EX-26B	_____	EX-26B-C5	_____
Long distance spot beam type	Side sensing	EX-28A	_____	EX-28A-C5	_____
		EX-28B	_____	EX-28B-C5	_____
Front sensing		EX-21A-PN	_____	_____	_____
		EX-21B-PN	_____	_____	_____
Side sensing		EX-23-PN	_____	_____	_____
Side sensing		EX-29A-PN	EX-29A-PN-Y	_____	_____
		EX-29B-PN	EX-29B-PN-Y	_____	_____
Side sensing		EX-22A-PN	_____	_____	_____
		EX-22B-PN	_____	_____	_____
Diffused beam type	Front sensing	EX-24A-PN	_____	_____	_____
		EX-24B-PN	_____	_____	_____
Small spot beam type	Side sensing	EX-26A-PN	_____	_____	_____
		EX-26B-PN	_____	_____	_____
Long distance spot beam type	Side sensing	EX-28A-PN	_____	_____	_____
		EX-28B-PN	_____	_____	_____

Without reflector)

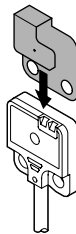


Model No.	Description
OS-EX20-05 (Slit size φ0.5 mm 0.020 in)	Slit on one side • Sensing range: 200 mm 7.874 in • Min. sensing object: φ2.6 mm φ0.102 in
	Slit on both sides • Sensing range: 40 mm 1.575 in • Min. sensing object: φ0.5 mm φ0.020 in
OS-EX20E-05 (Slit size φ0.5 mm 0.020 in)	Slit on one side • Sensing range: 350 mm 13.780 in • Min. sensing object: φ3 mm φ0.118 in
	Slit on both sides • Sensing range: 70 mm 2.756 in • Min. sensing object: φ0.5 mm φ0.020 in
OS-EX20-05 × 3 (Slit size 0.5 × 3 mm 0.020 × 0.118 in)	Slit on one side • Sensing range: 600 mm 23.622 in • Min. sensing object: φ2.6 mm φ0.102 in
	Slit on both sides • Sensing range: 300 mm 11.811 in • Min. sensing object: 0.5 × 3 mm 0.020 × 0.118 in
OS-EX20E-05 × 3 (Slit size 0.5 × 3 mm 0.020 × 0.118 in)	Slit on one side • Sensing range: 800 mm 31.496 in • Min. sensing object: φ3 mm φ0.118 in
	Slit on both sides • Sensing range: 400 mm 15.748 in • Min. sensing object: 0.5 × 3 mm 0.020 × 0.118 in
RF-210	• Sensing range: 50 to 400 mm 1.969 to 15.748 in • Min. sensing object: φ30 mm φ1.181 in
MS-RF21-1	Protective mounting bracket for RF-210 It protects the reflector from damage and maintains alignment.
RF-11	• Ambient temperature: -25 to +50 °C -13 to +122 °F • Ambient humidity: 35 to 85 % RH Notes: i) Keep the tape free from stress. If it is pressed too much, its capability may deteriorate. ii) Do not cut the tape. It will deteriorate the sensing performance.
RF-12	• Sensing range: 60 to 280 mm 2.362 to 11.024 in
MS-EX20-1	Back angled mounting bracket for front sensing type sensor (The thru-beam type sensor needs two brackets.)
MS-EX20-2	Foot angled mounting bracket for side sensing type sensor (The thru-beam type sensor needs two brackets.)
MS-EX20-3	L-shaped mounting bracket for front sensing type sensor (The thru-beam type sensor needs two brackets.)
MS-EX20-4	Back angled mounting bracket for side sensing type sensor (The thru-beam type sensor needs two brackets.)
MS-EX20-5	It can adjust the height and the angle of the sensor. (Two brackets are needed.)
MS-EX20-FS	It is used when mounting the front sensing type from the rear side. (One set consists of 10 pcs.)
CHX-SC2	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.

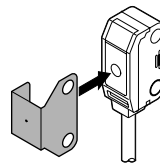
Round slit mask

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

• OS-EX20-05



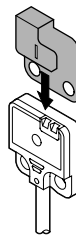
• OS-EX20E-05



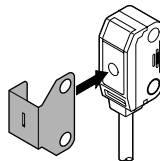
Rectangular slit mask

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

• OS-EX20-05 × 3

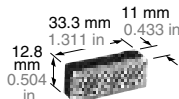


• OS-EX20E-05 × 3



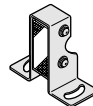
Reflector

• RF-210



Reflector mounting bracket

• MS-RF21-1



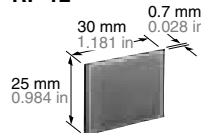
Two M3 (length 12 mm 0.472 in) screws with washers are attached.

Reflective tape

• RF-11

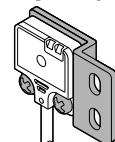


• RF-12

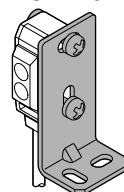


Sensor mounting bracket

• MS-EX20-1



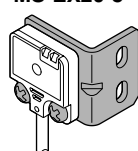
• MS-EX20-2



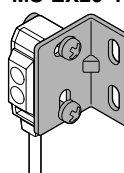
Material: Stainless steel (SUS304)
Two M3 (length 5 mm 0.197 in) pan head screws [stainless steel (SUS304)] are attached.

Material: Stainless steel (SUS304)
Two M3 (length 14 mm 0.551 in) screws with washers [stainless steel (SUS304)] are attached.

• MS-EX20-3



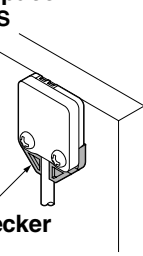
• MS-EX20-4



Material: Stainless steel (SUS304)
Two M3 (length 5 mm 0.197 in) pan head screws [stainless steel (SUS304)] are attached.

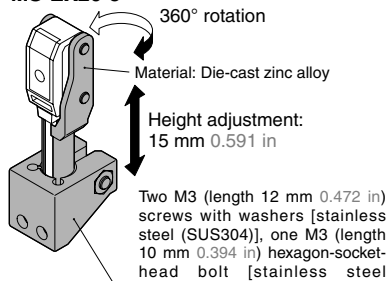
Material: Stainless steel (SUS304)
Two M3 (length 14 mm 0.551 in) screws with washers [stainless steel (SUS304)] are attached.

Spacer



Universal sensor mounting bracket

• MS-EX20-5



EX-20

IFICATIONS

Type		Thru-beam		Retroreflective	Diffuse reflective	Convergent reflective		Narrow-view reflective
		Front sensing	Side sensing	Side sensing	Side sensing	Diffused beam type	Small spot beam type	Long distance spot beam type
Model No. (Note 1)	Light-ON	EX-21A(-PN)	EX-23(-PN) (Note 2)	EX-29A(-PN)	EX-22A(-PN)	EX-24A(-PN)	EX-26A(-PN)	EX-28A(-PN)
	Dark-ON	EX-21B(-PN)		EX-29B(-PN)	EX-22B(-PN)	EX-24B(-PN)	EX-26B(-PN)	EX-28B(-PN)
Range		1 m 3.281 ft	2 m 6.562 ft	30 to 200 mm 1.181 to 7.874 in (Note 3)	5 to 160 mm 0.197 to 6.299 in (Note 4) with white non-glossy paper (200 X 200 mm) (7.874 X 7.874 in)	2 to 25 mm 0.079 to 0.984 in (Conv. point: 10 mm 0.394 in) with white non-glossy paper (50 X 50 mm) (1.969 X 1.969 in)	6 to 14 mm 0.236 to 0.551 in (Conv. point: 10 mm 0.394 in) with white non-glossy paper (50 x 50 mm 1.969 x 1.969 in), spot diameter ϕ 1 mm ϕ 0.039 in with setting distance 10 mm 0.394 in	45 to 115 mm 1.772 to 4.528 in with white non-glossy paper (100 x 100 mm 3.937 x 3.937 in), spot diameter ϕ 5 mm ϕ 0.197 in with setting distance 80 mm 3.150 in
Object		Min. ϕ 2.6 mm ϕ 0.102 in opaque object (Setting distance between emitter and receiver: 1 m 3.281 ft)	Min. ϕ 3 mm ϕ 0.118 in opaque object (Setting distance between emitter and receiver: 2 m 6.562 ft)	ϕ 15 mm ϕ 0.591 in or more opaque or translucent object (Note 3)	Opaque, translucent or transparent object	Min. ϕ 0.1 mm ϕ 0.004 in copper wire (Setting distance: 10 mm 0.394 in)	Min. ϕ 0.1 mm ϕ 0.004 in copper wire (Setting distance: 10 mm 0.394 in)	Opaque, translucent or transparent object (Min. ϕ 1 mm ϕ 0.039 in copper wire at setting distance 80 mm 3.150 in)
Accuracy (angular to sensing axis)		0.05 mm 0.002 in or less		0.5 mm 0.020 in or less	0.3 mm 0.012 in or less	0.1 mm 0.004 in or less (Setting distance: 10 mm 0.394 in)	0.05 mm 0.002 in or less (Setting distance: 10 mm 0.394 in)	0.3 mm 0.012 in or less
Supply Voltage		12 to 24 V DC \pm 10 % Ripple P-P 10 % or less						
Power Consumption		Emitter: 10 mA or less, Receiver: 15 mA or less		20 mA or less				
Output Category		<NPN output type> NPN open-collector transistor • Maximum sink current: 50 mA • Applied voltage: 30 V DC or less (between output and 0 V) • Residual voltage: 1 V or less (at 50 mA sink current) 0.4 V or less (at 16 mA sink current)			<PNP output type> PNP open-collector transistor • Maximum source current: 50 mA • Applied voltage: 30 V DC or less (between output and + V) • Residual voltage: 1 V or less (at 50 mA source current) 0.4 V or less (at 16 mA source current)			
Output Circuit Protection		DC-12 or DC-13						
Response Time		0.5 ms or less						
Indicator		Orange LED (lights up when the output is ON) (thru-beam type: located on the receiver)						
LED Indicator		Green LED (lights up under stable light received condition or stable dark condition), located on the receiver		Green LED (lights up under stable light received condition or stable dark condition)				
Adjuster		_____	Continuously variable adjuster, located on the emitter	Continuously variable adjuster	_____	Continuously variable adjuster		
Mode Switch		_____	Located on the receiver	_____				
Operating Degree		3 (Industrial environment)						
Protection		IP67 (IEC)						
Operating Temperature		- 25 to + 55 °C - 13 to + 131 °F (No dew condensation or icing allowed), Storage: - 30 to + 70 °C - 22 to + 158 °F						
Operating Humidity		35 to 85 % RH, Storage: 35 to 85 % RH						
Operating Illuminance		Sunlight: 10,000 ℓ x at the light-receiving face, Incandescent light: 3,000 ℓ x at the light-receiving face						
Standards		EN 50081-2, EN 50082-2, EN 60947-5-2						
Electrical Withstandability		1,000 V AC for one min. between all supply terminals connected together and enclosure						
Insulation Resistance		20 M Ω , 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 amplitude (20 G max.) in X, Y and Z directions for two hours each						
Shock Resistance		500 m/s ² acceleration (50 G approx.) in X, Y and Z directions for three times each						
Light Emission		Red LED (modulated)						
Enclosure		Enclosure: Polyethylene terephthalate, Lens: Polyallylate						
Cable		0.1 mm ² 3-core (thru-beam type sensor emitter: 2-core) cabtyre cable, 2 m 6.562 ft long						
Extension		Extension up to total 50 m 164.042 ft is possible with 0.3 mm ² , or more, cable (thru-beam type: both emitter and receiver).						
Weight		Emitter: 20 g approx., Receiver: 20 g approx.		20 g approx.				
Tools		_____	Adjusting screwdriver: 1 pc.	RF-200 (Reflector): 1 pc. Adjusting screwdriver: 1 pc.	Adjusting screwdriver: 1 pc.	_____	Adjusting screwdriver: 1 pc.	

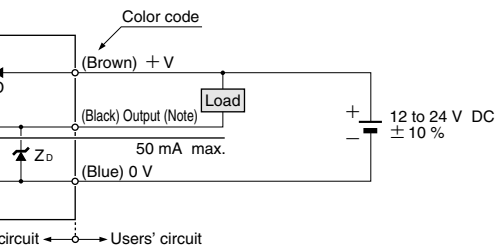
Model Nos. having the suffix '-PN' are PNP output type.

Reflector cannot
Actual sensing range 200 mm
7.874 in

WIRING DIAGRAMS

Output type

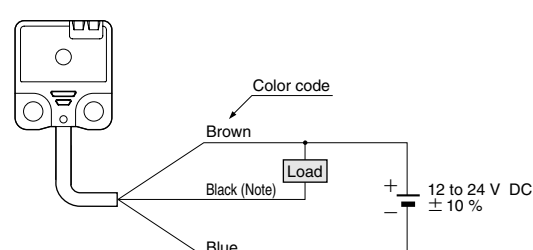
Wiring diagram



Note: The emitter of the thru-beam type sensor does not incorporate the output.

- ⚡: Reverse supply polarity protection diode
- Z_D: Surge absorption zener diode
- : NPN output transistor

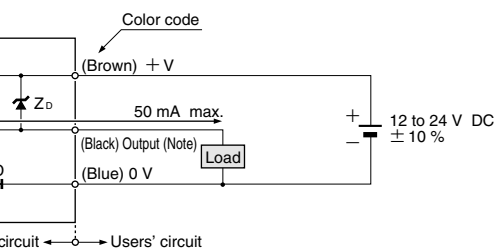
Wiring diagram



Note: The emitter of the thru-beam type sensor does not incorporate the black wire.

Output type

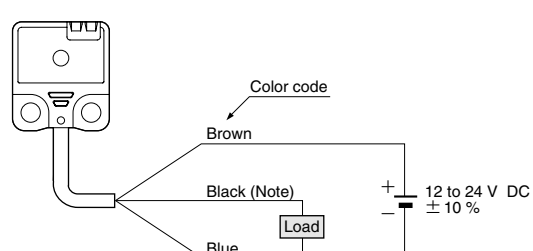
Wiring diagram



Note: The emitter of the thru-beam type sensor does not incorporate the output.

- ⚡: Reverse supply polarity protection diode
- Z_D: Surge absorption zener diode
- : PNP output transistor

Wiring diagram



Note: The emitter of the thru-beam type sensor does not incorporate the black wire.

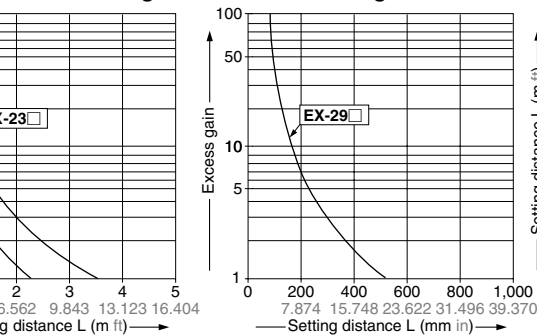
CHARACTERISTICS (TYPICAL)

EX-23 □
EX-22 □

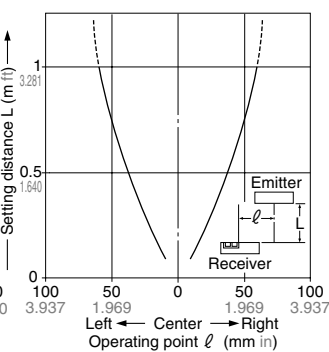
EX-21 □

Thru-beam type

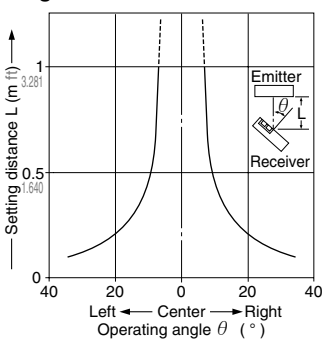
Relationship between setting distance and excess gain



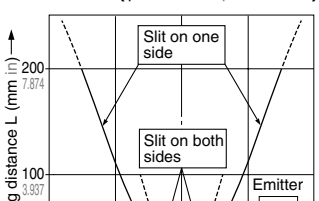
Parallel deviation



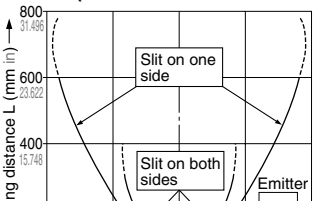
Angular deviation



Parallel deviation with round slit masks (φ0.5 mm φ0.020 in)



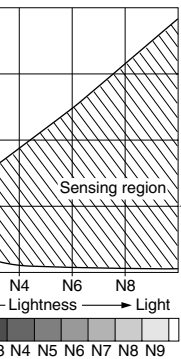
Parallel deviation with rectangular slit masks (0.5 × 3 mm 0.020 × 0.118 in)



CHARACTERISTICS (TYPICAL)

4 Convergent reflective type

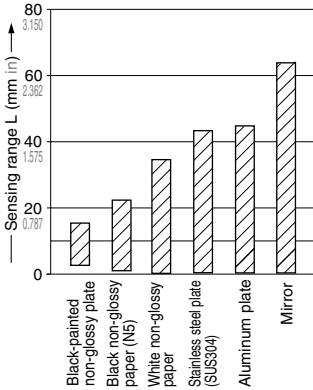
Correlation between lightness and sensing range



The sensing region is represented by oblique lines in the left figure. However, the sensitivity should be set with enough margin because of slight variation in products.

(Lightness shown on the left may differ slightly from the actual object condition.)

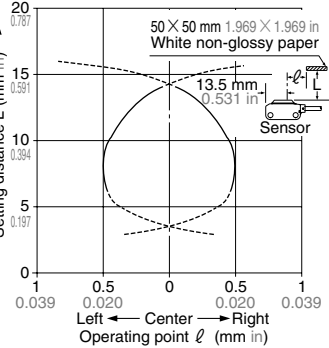
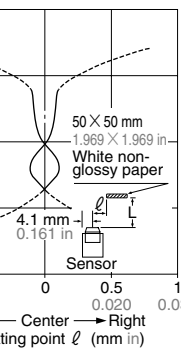
Correlation between material (50 X 50 mm 1.969 X 1.969 in) and sensing range



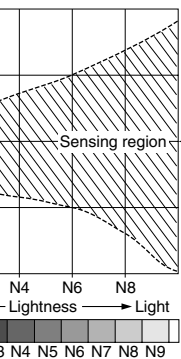
The bars in the graph indicate the sensing range for the respective material. However, there is a slight variation in the sensing range depending on the product. Further, if there is a reflective object (conveyor, etc.) in the background of the sensing object, since it affects the sensing, separate it by more than twice the sensing range shown in the left graph.

6 Convergent reflective type

Left and right) direction • Vertical (up and down) direction



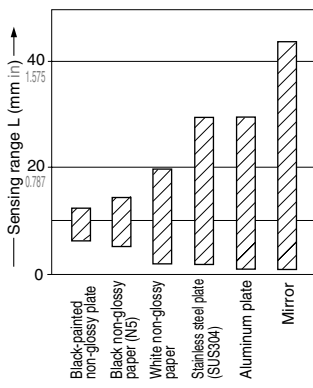
Correlation between lightness and sensing range



The sensing region is represented by oblique lines in the left figure. However, the sensitivity should be set with enough margin because of slight variation in products. (The graph is drawn for the maximum sensitivity setting.)

(Lightness shown on the left may differ slightly from the actual object condition.)

Correlation between material (50 X 50 mm 1.969 X 1.969 in) and sensing range

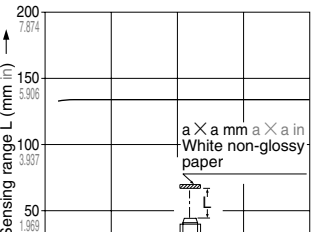
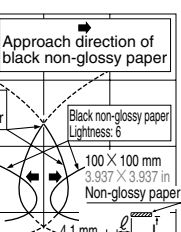


The bars in the graph indicate the sensing range for the respective material. However, there is a slight variation in the sensing range depending on the product. Further, if there is a reflective object (conveyor, etc.) in the background of the sensing object, since it affects the sensing, separate it by more than twice the sensing range shown in the left graph, or adjust the sensitivity adjuster.

(The graph is drawn for the maximum sensitivity setting.)

8 Narrow-view reflective type

Correlation between sensing object size and sensing range



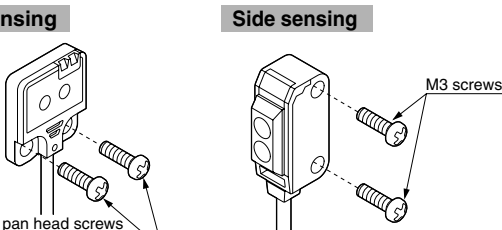
As the sensing object size becomes smaller than the standard size (white non-glossy paper 100 X 100 mm 3.937 X 3.937 in), the sensing range shortens, as shown in the left graph.

EX-20

CAUTIONS FOR PROPER USE

This product is not a safety sensor. Its use is not intended or designed to protect life and prevent body injury or property damage from dangerous parts of machinery. It is a normal object detection sensor.

Using M3 screws. The tightening torque should be 0.5 N·m or less.



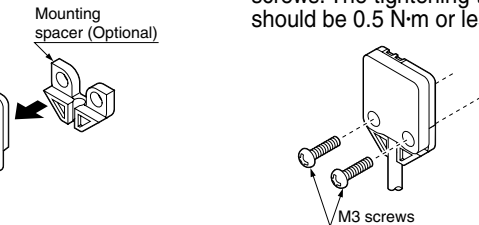
When mounting the front sensing type sensor, use M3 pan head screws without washers, etc.

When mounting the front sensing type from the backside, fit the mounting spacer (MS-EX20-FS) and fix with screws.

Mounting method

When mounting spacer sensor.

② Align the mounting holes of the mounting spacer and the sensor and mount with M3 screws. The tightening torque should be 0.5 N·m or less.



Sensitivity adjustment (side sensing type only)

Sensitivity adjuster	Description
	Turn the sensitivity adjuster fully counterclockwise to the minimum sensitivity position (• mark).
	In the light received condition, turn the sensitivity adjuster slowly clockwise and confirm the point (A) where the sensor enters the 'Light' state operation.
	In the dark condition, turn the sensitivity adjuster further clockwise until the sensor enters the 'Light' state operation and then bring it back to confirm point (B) where the sensor just returns to the 'Dark' state operation. (If the sensor does not enter the 'Light' state operation even when the sensitivity adjuster is turned fully clockwise, this extreme position is point (B).)
	The position at the middle of points (A) and (B) is the optimum sensing position.

Use the attached adjusting screwdriver to turn the adjuster slowly. Turning with excessive strength will damage the adjuster.
In the case of using EX-22 at a sensing distance of 50 mm 1.969 in or less, be careful that the sensitivity adjustment range becomes extremely narrow.

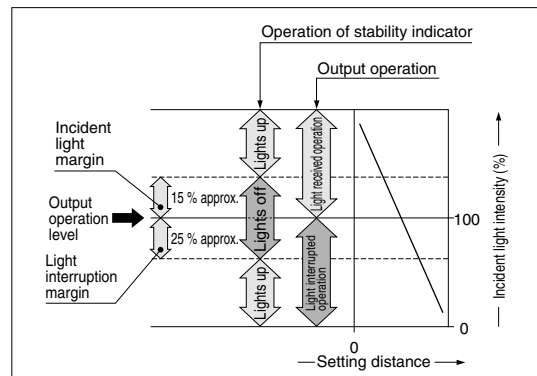
Light-ON mode switch (EX-23 only)

Position	Description
	Light-ON mode is obtained when the operation mode switch (located on the receiver) is turned fully clockwise.

Stability indicator

The stability indicator (green) lights up when the incident light intensity has sufficient margin with respect to the operation level.

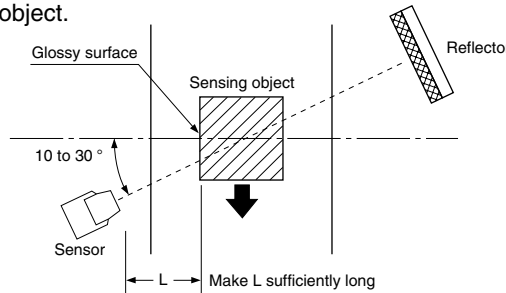
If the incident light intensity level is such that the stability indicator lights up, stable sensing can be done without the light received operation and the light interrupted operation being affected by a change in ambient temperature or supply voltage.



Glossy object sensing [EX-29(-PN)]

Please take care of the following points when detecting materials having a gloss.

- Make L, shown in the diagram, sufficiently long.
- Install at an angle of 10 to 30 degrees to the sensing object.



Wiring

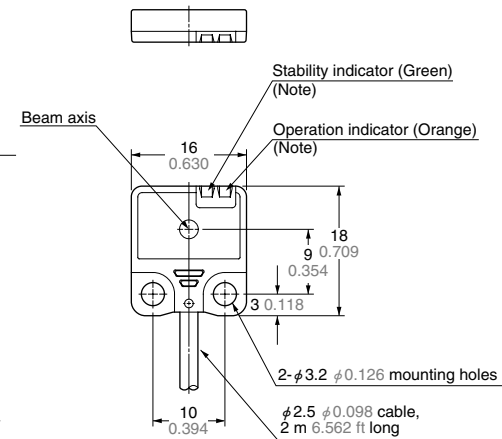
- Make sure that the power supply is off while wiring.
- Verify that the supply voltage variation is within the rating.
- If power is supplied from a commercial switching regulator, ensure that the frame ground (F.G.) terminal of the power supply is connected to an actual ground.
- In case noise generating equipment (switching regulator, inverter motor, etc.) is used in the vicinity of this product, connect the frame ground (F.G.) terminal of the equipment to an actual ground.
- Do not run the wires together with high-voltage lines or power lines or put them in the same raceway. This can cause malfunction due to induction.

Others

- Do not use during the initial transient time (50 ms) after the power supply is switched on.
- If sensors are mounted close together and the ambient temperature is near the maximum rated value, provide for enough heat radiation / ventilation.
- If a reflective object is present in the background, the sensing of EX-28A(-PN) and EX-28B(-PN) may be affected.

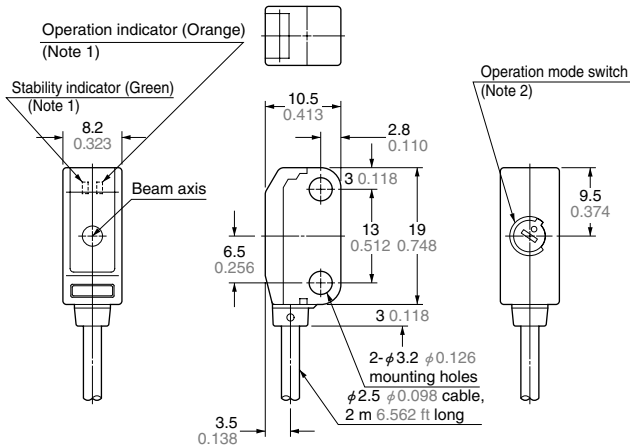
Dimensions (Unit: mm in)

EX-21 Sensor



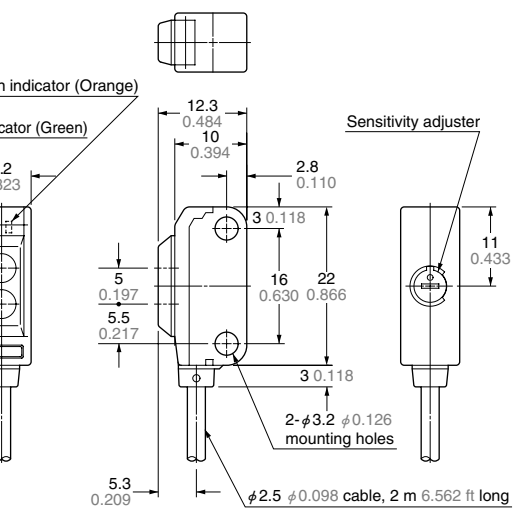
Not incorporated on the emitter.

EX-23 Sensor

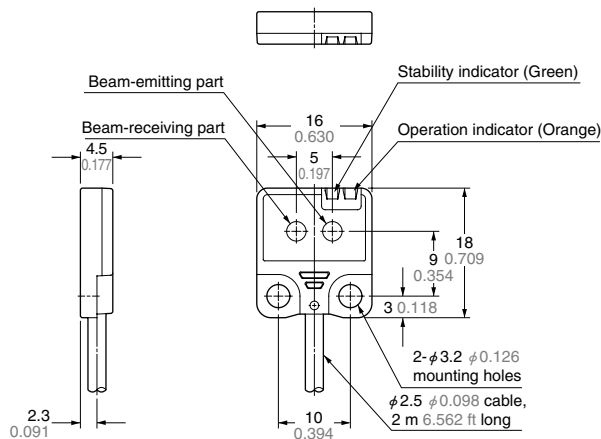


Notes: 1) Not incorporated on the emitter.
2) It is the sensitivity adjuster on the emitter.

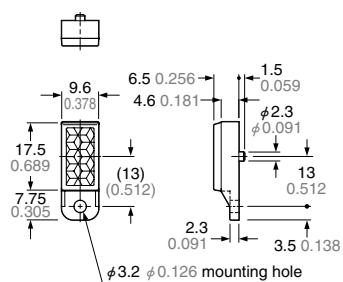
EX-22 Sensor



EX-24 Sensor

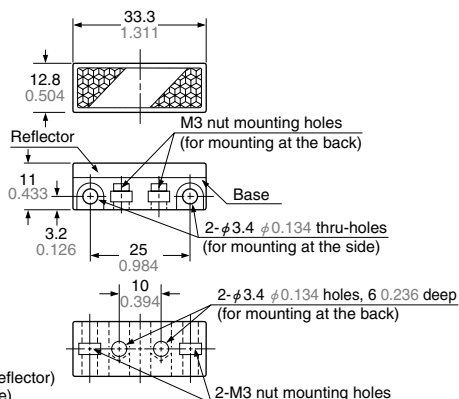


RF-200 Reflector (Accessory for the retroreflective type sensor)



Material: Acrylic (Reflector)
ABS (Base)

RF-210 Reflector (Optional)

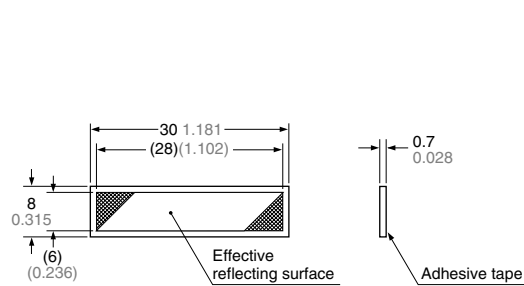


Material: Acrylic (Reflector)
ABS (Base)

EX-20

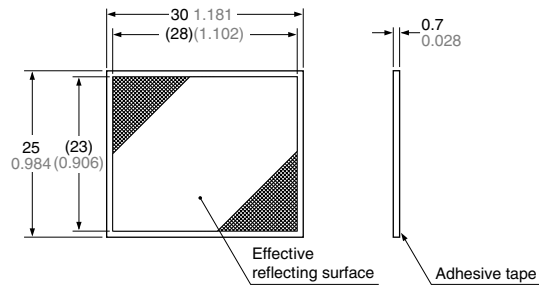
Dimensions (Unit: mm in)

F-11 Reflective tape (Optional)



Material: Acrylic

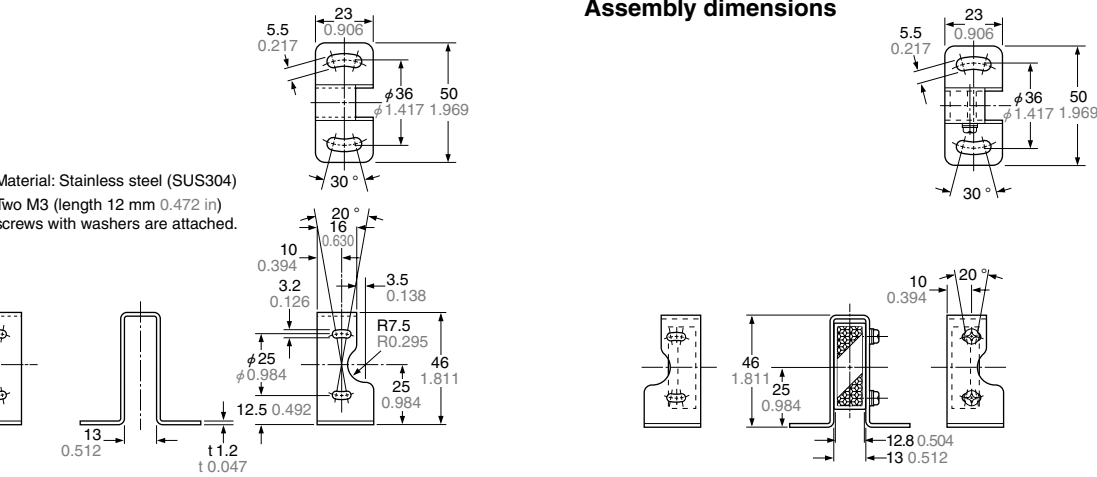
RF-12 Reflective tape (Optional)



Material: Acrylic

RF21-1 Reflector mounting bracket for RF-210 (Optional)

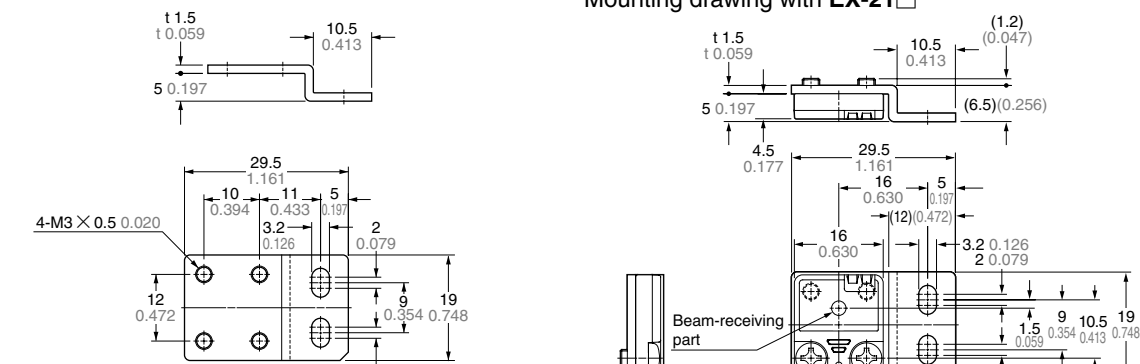
Assembly dimensions



EX20-1 Sensor mounting bracket (Optional)

Assembly dimensions

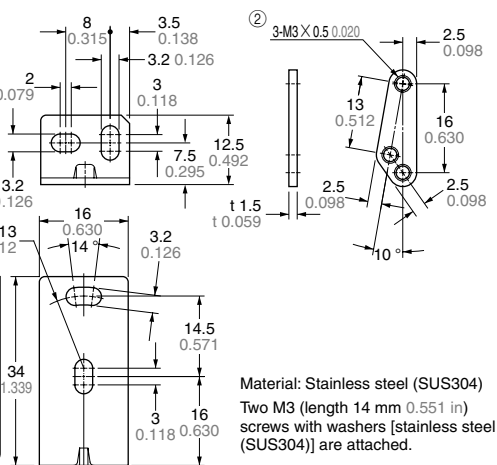
Mounting drawing with EX-21



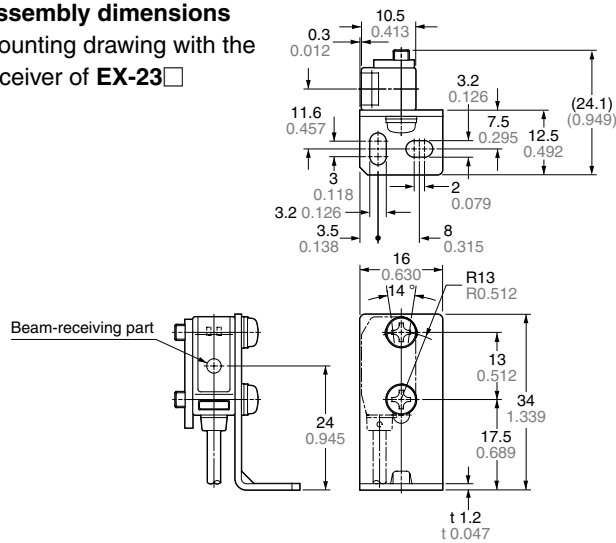
20

Dimensions (Unit: mm in)

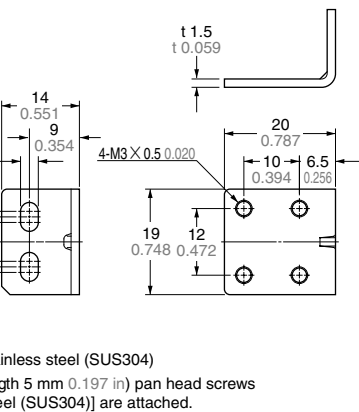
20-2 Sensor mounting bracket (Optional)



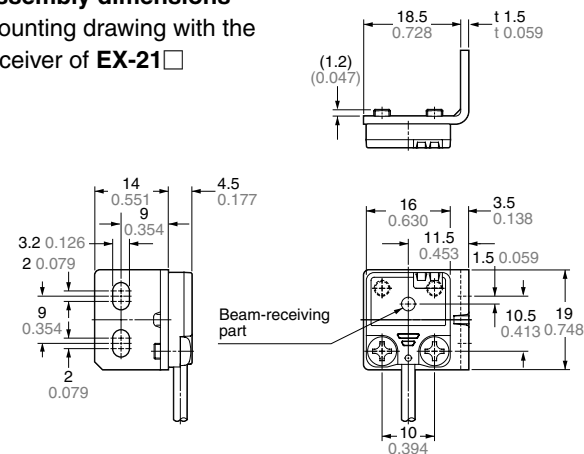
Assembly dimensions Mounting drawing with the receiver of EX-23



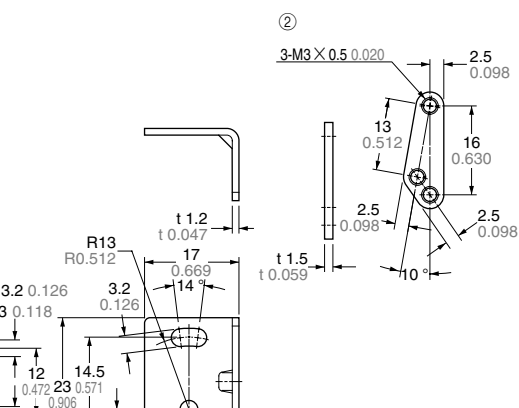
20-3 Sensor mounting bracket (Optional)



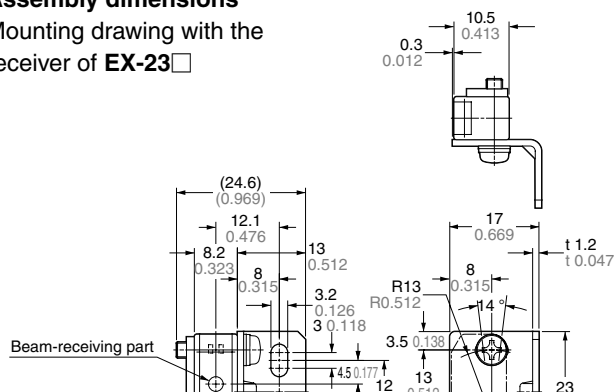
Assembly dimensions Mounting drawing with the receiver of EX-21



20-4 Sensor mounting bracket (Optional)



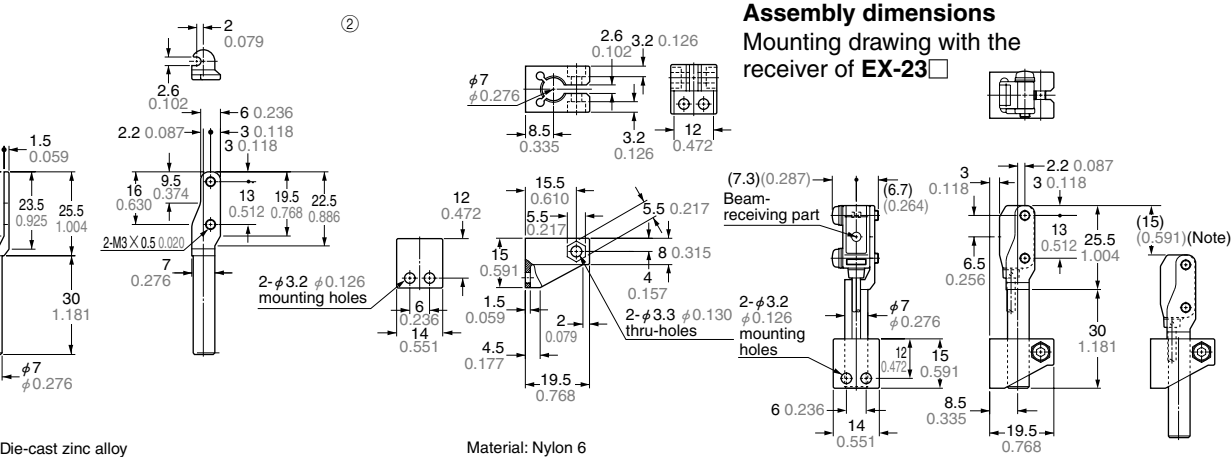
Assembly dimensions Mounting drawing with the receiver of EX-23



EX-20

ENSIONS (Unit: mm in)

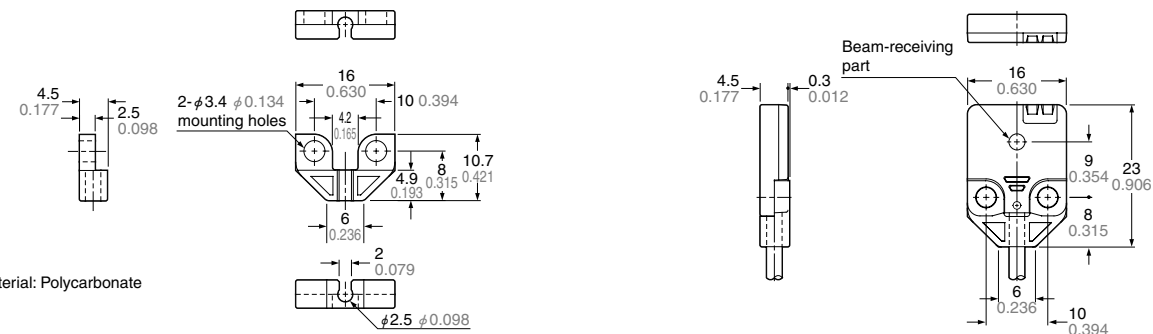
EX20-5 Universal sensor mounting bracket (Optional)



Die-cast zinc alloy
length 12 mm 0.472 in) screws with washers [stainless steel (SUS304)], one M3 (length 10 mm 0.394 in) hexagonal bolt [stainless steel (SUS304)], and one M3 hexagon less steel (SUS304) are attached.

EX20-FS Mounting spacer (Optional)

Assembly dimensions
Mounting drawing with the receiver of EX-21



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