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# Panasonic

NEW

Amplifier built-in

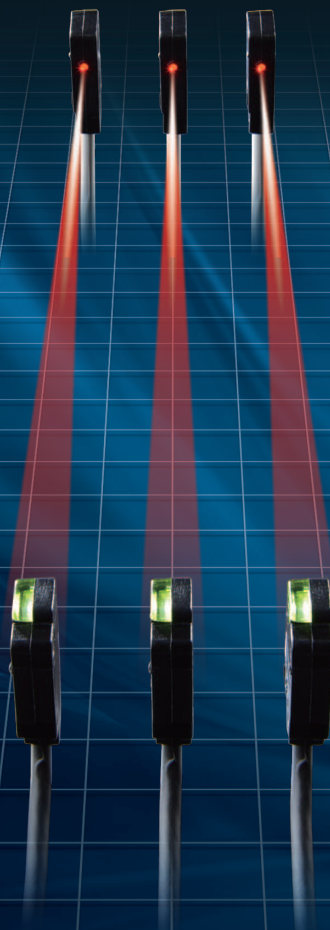
## Ultra-slim Photoelectric Sensor

Thru-beam · Narrow-beam type **EX-10S** □



## More Extensive Applications

Introducing narrow-beam type models for the **EX-10** series of ultra-slim photoelectric sensors



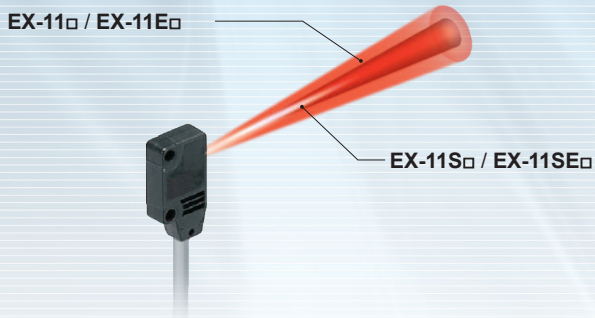
# About half the light diffusion of previous models

## Three advantages of narrow-beam sensors

### Advantage 1

#### Alleviates interference without slits, allowing close-spaced installation

With about half the light diffusion of previous models, narrow-beam models can be placed twice as closely together-without the added cost of purchasing and installing slits.

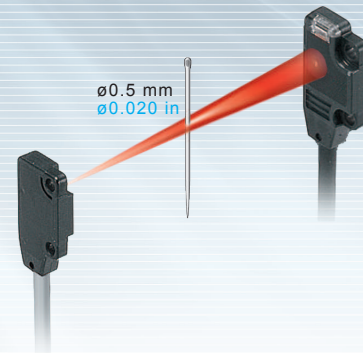


### Advantage 2

#### Detects minute objects with a diameter of just 0.5 mm 0.020 in, without slits

EX-11S□

With about half the light diffusion of previous models, narrow-beam models can detect minute objects with a diameter of just 0.5 mm 0.020 in, without slits. These models provide a reasonably-priced solution for applications requiring detection of minute objects.

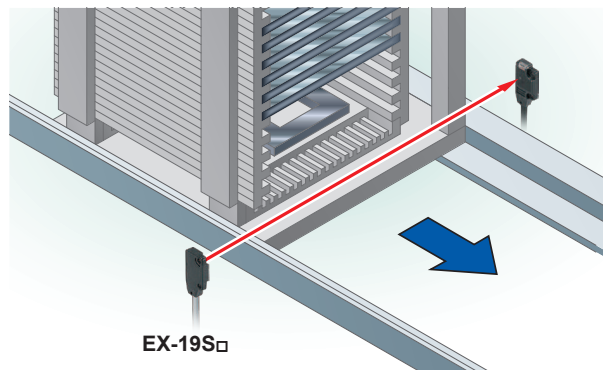


### Advantage 3

#### Long-range sensing at 1 m 3.281 ft with a narrow-beam

EX-19S□

Narrow-beam models deliver long-range sensing at 1 m 3.281 ft.



#### Smallest body, just 3.5 mm 0.138 in thick

It can be mounted in a very small space as its size is just W10 × H14.5 × D3.5 mm W0.394 × H0.571 × D0.138 in (front sensing type).



#### Wide variation

Available in a total of five types, including flat sensing and side sensing types. Choose the model that best suits the available installation space.

#### EX-11S□ / EX-11SE□

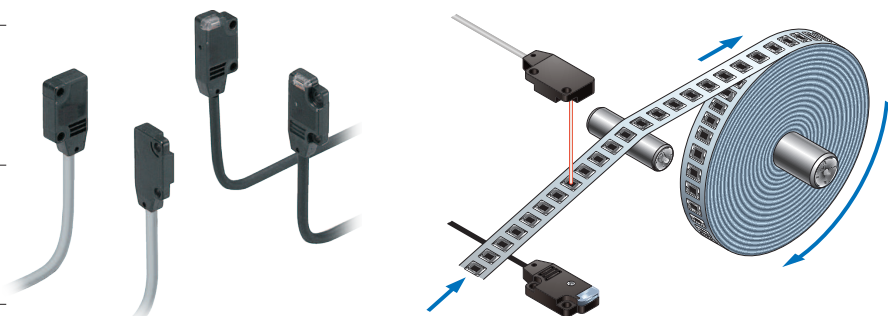
- Sensing range : 150 mm 5.906 in
- Min. sensing object  
Front sensing :  $\varnothing$ 0.5 mm  $\varnothing$ 0.020 in  
Side sensing :  $\varnothing$ 1.0 mm  $\varnothing$ 0.039 in

#### EX-13S□ / EX-13SE□

- Sensing range : 500 mm 19.685 in
- Min. sensing object  
Front sensing :  $\varnothing$ 1.0 mm  $\varnothing$ 0.039 in  
Side sensing :  $\varnothing$ 2.0 mm  $\varnothing$ 0.079 in

#### EX-19S□

- Sensing range : 1 m 3.281 ft
- Min. sensing object  
Front sensing :  $\varnothing$ 2.0 mm  $\varnothing$ 0.079 in



#### High-speed response time: 0.5 ms

The sensor is suitable for detecting small and high-speed traveling objects.

## SPECIFICATIONS

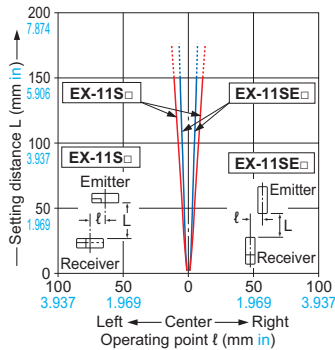
Item	Model No. (Note 2)	Type	Thru-beam · Narrow-beam				
			Front sensing	Side sensing	Front sensing	Side sensing	Front sensing
			Light-ON	<b>EX-11SA(-PN)</b>	<b>EX-11SEA(-PN)</b>	<b>EX-13SA(-PN)</b>	<b>EX-13SEA(-PN)</b>
Dark-ON	<b>EX-11SB(-PN)</b>	<b>EX-11SEB(-PN)</b>	<b>EX-13SB(-PN)</b>	<b>EX-13SEB(-PN)</b>	<b>EX-19SB(-PN)</b>		
Sensing range		150 mm <b>5.906 in</b>		500 mm <b>19.685 in</b>		1 m <b>3.281 ft</b>	
Min. sensing object		ø0.5 mm <b>ø0.020 in</b> opaque object	ø1.0 mm <b>ø0.039 in</b> opaque object	ø1.0 mm <b>ø0.039 in</b> opaque object	ø2.0 mm <b>ø0.079 in</b> opaque object	ø2.0 mm <b>ø0.079 in</b> opaque object	
Repeatability (perpendicular to sensing axis)		0.05 mm <b>0.002 in</b> or less					
Supply voltage		12 to 24 V DC ±10 % Ripple P-P 10 % or less					
Current consumption		Emitter: 10 mA or less, Receiver: 10 mA or less					
Output		<NPN output type> NPN open-collector transistor • Maximum sink current: 50 mA		<PNP output type> PNP open-collector transistor • Maximum source current: 50 mA			
Response time		0.5 ms or less					
Operation indicator		Orange LED (lights up when the output is ON)					
Stability indicator		Green LED (lights up under stable light received condition or stable dark condition)					
Protection		IP67 (IEC)					
Ambient temperature		-25 to +55 °C <b>-13 to +131 °F</b> (No dew condensation or icing allowed), Storage: -30 to +70 °C <b>-22 to +158 °F</b>					
Cable		0.1 mm <sup>2</sup> 3-core (thru-beam type emitter: 2-core) cabtyre cable, 2 m <b>6.562 ft</b> long					
Weight		Net weight (each emitter and receiver): 20 g approx., Gross weight: 50 g approx.					
Accessories		Mounting screws: 1 set					

**NOTE:** Please note that **MS-EX10**-□ sensor mounting brackets designed for standard-beam models cannot be used with narrow-beam models.

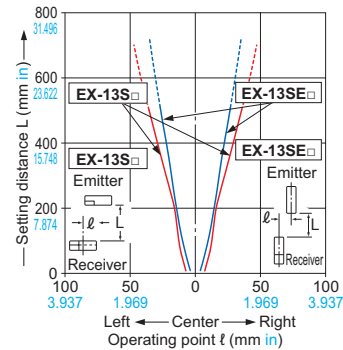
- Notes: 1) Where measurement conditions have not been specified precisely, the conditions used were an ambient temperature of +23 °C **+73.4 °F**.  
 2) Model Nos. having the suffix "**-PN**" are PNP output type.  
 3) Standard-beam type **EX-11(E)**□ / **EX-13(E)**□ / **EX-19(E)**□ are also available.

## PARALLEL DEVIATIONS (TYPICAL)

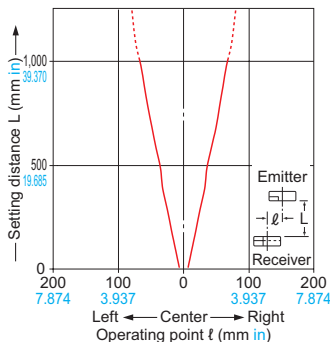
**EX-11S□ / EX-11SE□**



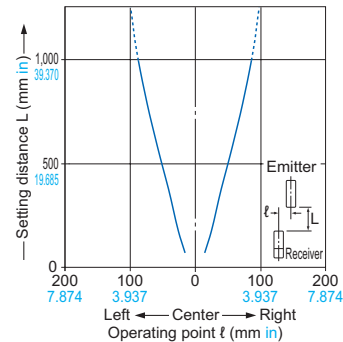
**EX-13S□ / EX-13SE□**



**EX-19S□**



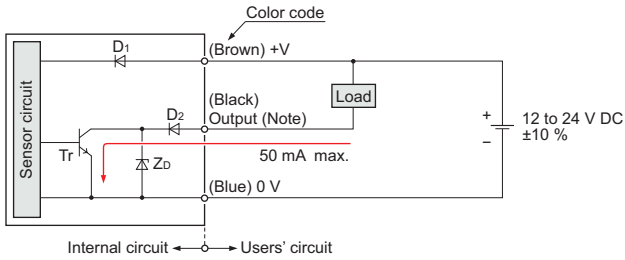
**EX-19E□ (Additional standard-beam type model)**



Sensing range : 1 m **3.281 ft**  
 Min. sensing object : ø2.0 mm **ø0.079 in** opaque object

## I/O CIRCUIT DIAGRAMS

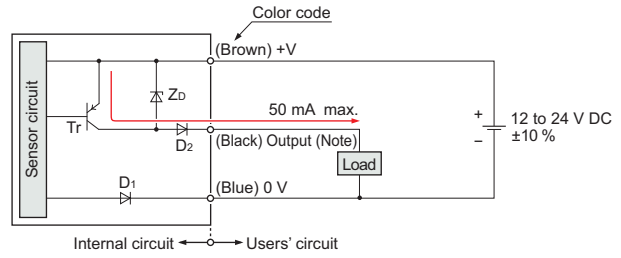
### NPN output type



Note: The emitter does not incorporate the output.

Symbols ... D1: Reverse supply polarity protection diode  
D2: Reverse output polarity protection diode  
Zd: Surge absorption zener diode  
Tr: NPN output transistor

### PNP output type



Note: The emitter does not incorporate the output.

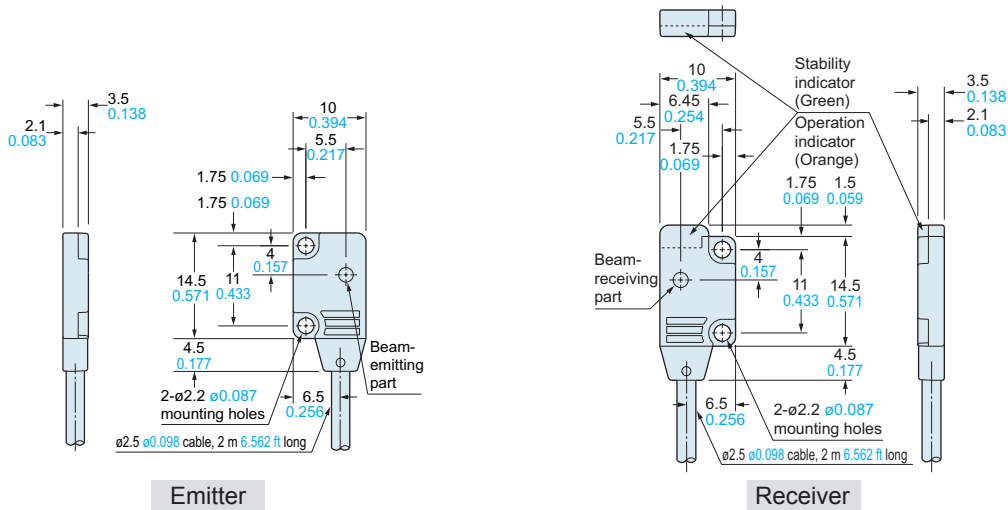
Symbols ... D1: Reverse supply polarity protection diode  
D2: Reverse output polarity protection diode  
Zd: Surge absorption zener diode  
Tr: PNP output transistor

## DIMENSIONS (Unit: mm in)

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

### EX-11S□ / EX-13S□ / EX-19S□

Sensor



### EX-11SE□ / EX-13SE□ / EX-19E□

Sensor

