

## INSTRUCTION MANUAL

Ultra-slim Type Photoelectric Sensor **Amplifier Built-in**

**EX-15□, EX-17□**

Thank you very much for using SUNX sensors. Please read this Instruction Manual carefully and thoroughly for the correct and optimum use of this sensor. Kindly keep this manual in a convenient place for quick reference.



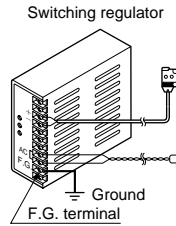
This product is not a safety sensor. Its use is not intended or designed to protect life and prevent body injury or property damage from dangerous parts of machinery. It is a normal object detection sensor.

### 1 SPECIFICATIONS

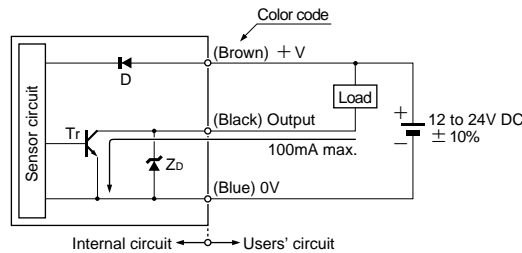
Item	Model No.	Type			
		Thru-beam	With operation mode switch on bifurcation	Front sensing	Side sensing
Sensing range		EX-15	EX-15E	EX-17	EX-17E
Min. sensing object		φ 1mm opaque object (Setting distance between emitter and receiver: 150mm)	φ 2mm opaque object (Setting distance between emitter and receiver: 500mm)		
Repeatability (Perpendicular to sensing axis)		0.05mm or less			
Supply voltage		12 to 24V DC ±10% Ripple P-P10% or less			
Current consumption		30mA or less			
Output		NPN open-collector transistor · Maximum sink current: 100mA · Applied voltage: 30V DC or less (between output and 0V) · Residual voltage: 1.5V or less (at 100mA sink current) 0.4V or less (at 16mA sink current)			
Short-circuit protection		Incorporated			
Response time		0.5ms or less			
Operation indicator		Orange LED (lights up when the output is ON), located on the bifurcation			
Incident beam indicator		Red LED (lights up under light received condition), located on the receiver			
Stability indicator		Green LED (lights up under stable light received condition or stable dark condition), located on the receiver			
Protection		IP67 (IEC)			
Ambient temperature		-25 to +55°C (No dew condensation or icing allowed) Storage: -30 to +70°C			
Ambient humidity		35 to 85% RH, Storage: 35 to 85% RH			
Emitting element		Red LED (modulated)			
Material		Enclosure: Polyethylene terephthalate Lens: Polyacrylate, Bifurcation: Polyacrylate			
Cable		0.2mm <sup>2</sup> 3-core cable, 2m long (beyond bifurcation; from emitter/receiver to bifurcation: 0.5m long)			
Weight		55g approx.			
Accessories		Mounting screws: 2 sets, Adjusting screwdriver: 1 No.			

### 2 CAUTIONS

- Make sure to carry out wiring in the power supply off condition.
- 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 the product, connect the frame ground (F.G.) terminal of the equipment to an actual ground.
- Do not use during the initial transient time (100ms) after the power supply is switched on.
- Extension up to total 100m is possible with a 0.3mm<sup>2</sup>, or more, cable.
- Do not run the wires together with high-voltage lines or power lines or put them in the same raceway. This can cause a malfunction due to induction.
- Take care that the sensor is not directly exposed to fluorescent light from a rapid-starter lamp or a high frequency lighting device, as it may affect the sensing performance.
- Avoid dust, dirt, and steam.
- Take care that the sensor does not come in direct contact with water, oil, grease or organic solvents, such as, thinner, etc.



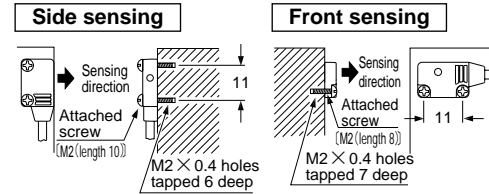
### 3 I/O CIRCUIT DIAGRAM



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

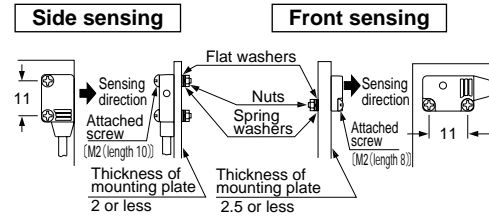
### 4 MOUNTING

- In case of mounting on tapped holes (Unit: mm)



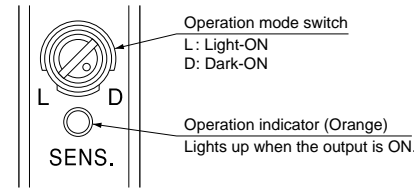
The tightening torque should be 0.2N·m or less.

- In case of using attached screws and nuts (Unit: mm)



The tightening torque should be 0.2N·m or less.

### 5 OPERATION MODE SWITCH



	Light-ON mode is set when the switch is turned fully clockwise (L side).
	Dark-ON mode is set when the switch is turned fully counterclockwise (D side).

### 6 OPTIONAL SENSOR MOUNTING BRACKET

- When mounting the sensor with the optional sensor mounting bracket, use the attached screws and the tightening torque should be 0.2N·m or less.
- Six types of optional sensor mounting brackets are available.

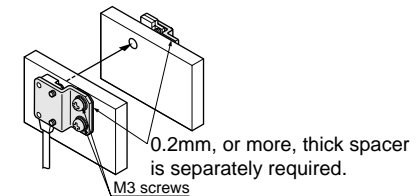
Model No.	Description	Material
MS-EX10-1	Mounting bracket for front sensing type only Two M2 (length 4mm) pan head screws are attached.	Cold rolled carbon steel (SPCC)
MS-EX10-2	Mounting bracket for side sensing type only Two M2 (length 8mm) pan head screws are attached.	
MS-EX10-3	L-shaped mounting bracket Two M2 (length 4mm) pan head screws, and two M2 (length 8mm) pan head screws are attached.	Stainless steel (SUS304)
MS-EX10-11	Mounting bracket for front sensing type only Two M2 (length 4mm) pan head screws (stainless steel) are attached.	
MS-EX10-12	Mounting bracket for side sensing type only Two M2 (length 4mm) pan head screws (stainless steel) are attached.	
MS-EX10-13	L-shaped mounting bracket Two M2 (length 4mm) pan head screws (stainless steel), and two M2 (length 8mm) pan head screws (stainless steel) are attached.	

### 7 OPTIONAL SLIT MASK (EX-17□ only)

- Apply a slit mask when detecting small objects or for increasing the accuracy of sensing position. However, the sensing range is reduced when the slit mask is mounted.

Model No.	Description	Material
OS-EX10-12	Slit mask for front sensing type only (hole diameter: φ1.2mm)	Stainless steel (SUS304)
OS-EX10-15	Slit mask for front sensing type only (hole diameter: φ1.5mm)	
OS-EX10-12	Slit mask for side sensing type only (hole diameter: φ1.2mm)	

- The slit mask should be mounted on the sensor before mounting the sensor.
- If the front sensing type sensor is used along with the slit mask and the optional sensor mounting bracket for the front sensing type, MS-EX10-1 or MS-EX10-11, as shown in the figure below, a 0.2mm, or more, thick spacer is separately required.



**SUNX Limited**

<http://www.sunx.co.jp/>

#### Head Office

2431-1 Ushiyama-cho, Kasugai-shi, Aichi, 486-0901, Japan  
Phone: +81-(0)568-33-7211 FAX: +81-(0)568-33-2631

#### Overseas Sales Dept.

Phone: +81-(0)568-33-7861 FAX: +81-(0)568-33-8591