Built-in Power Supply Photoelectric Sensor

# E3JM/E3JK

# Two Models Contribute to Overall Cost Reduction

E3JM Terminal Block Models

• Easy to wire and adjust.

# E3JK Pre-wired Models

• Slim body is economically priced and full of functions.

٨	Be sure to read Safety Precautions on
<u>/!\</u>	Be sure to read Safety Precautions on page 10.



For the most recent information on models that have been certified for safety standards, refer to your OMRON website.

# **Ordering Information**

# Sensors (Refer to *Dimensions* on page 12.)

E3JM										Red light Infrared light			
Sensing method	Appearance	Connection method	Sen	Sensing distance		Operation mode	Output configuration	Functions	Model				
										E3JM-10M4-N			
										Emitter: E3JM-10L-N			
								Polov		Receiver: E3JM-10DM4-N			
Through-								Relay		E3JM-10M4T-N			
beam									Timer	Emitter: E3JM-10L-N			
(Emitter +			L							Receiver: E3JM-10DM4T-N			
Receiver) *	Ŭ Ŭ				10 m	m	Light-ON	DC SSR		E3JM-10S4-N			
										Emitter: E3JM-10L-N			
						11				Receiver: E3JM-10DS4-N			
						Terminal					Dark-ON	DC 33h	
		block					(switch		Timer	Emitter: E3JM-10L-N			
							selectable)			Receiver: E3JM-10DS4T-N			
Retro-								Polov		E3JM-R4M4			
reflective								Relay	Timer	E3JM-R4M4T			
with MSR					4 m	4 m		<b>DO 000</b>		E3JM-R4S4			
function	E39-R1 (provided)							DC SSR	Timer	E3JM-R4S4T			
								Delay		E3JM-DS70M4			
Diffuse-								Relay	Timer	E3JM-DS70M4T			
reflective			700	mm				DC SSR		E3JM-DS70S4			
	<b>.</b>							DC 35R	Timer	E3JM-DS70S4T			

\* Through-beam Sensors are sold in sets that include both the Emitter and Receiver.

#### E3JK

Sensing method	Appearance	Connection method	Sen	Sensing distance		Opera	Operation mode		Model								
Through-						Light-ON		Relay	E3JK-5M1-N 2M								
beam						Dark-ON		Tieldy	E3JK-5M2-N 2M								
(Emitter + Receiver) *1					5 m	Light-ON Dark-ON	Both selectable	DC SSR	E3JK-5S3-N 2M								
Detre veflee					*2	Light-ON		Relay	E3JK-R2M1 2M								
			2.5 n		m	Dark-ON		nelay	E3JK-R2M2 2M								
function		Pre-wired		(3 n	n)	Light-ON Dark-ON	Both selectable	DC SSR	E3JK-R2S3 2M								
Datas and a	F20 D1	(2 m)	(2 m)	(2 m)	(2 m)	(2 m)	(2 m)	(2 m)	(2 m)	(2 m)			*2	Light-ON		Relay	E3JK-R4M1 2M
Retro-reflec- tive without	E39-R1 (provided)					4 m		Dark-ON		nelay	E3JK-R4M2 2M						
MSR function				(5 m)	Light-ON Dark-ON	Both selectable	DC SSR	E3JK-R4S3 2M									
						Light-ON		Relay	E3JK-DS30M1 2M								
Diffuse- reflective	°					Dark-ON		пеіау	E3JK-DS30M2 2M								
	<u>}_</u> ]≁		<b>_</b> 300 m	1111		Light-ON Dark-ON	Both selectable	DC SSR	E3JK-DS30S3 2M								

Note: UL-listed models have the -US suffix. The model number for an E3JM Through-beam Sensor ends in "-US" (and not in "-N"). (Example: E3JM-10M4-US). The model number for an E3JK Through-beam Sensor has "-US" after "-N". (Example: E3JK-5M1-N-US 2M). Tightening nuts, washers, and rubber bushings are not provided with these models. Change: Shape of the E3JM conduit socket

Note, however, that DC-type E3JK SSR Output Models are not UL-listed.

\*1. Through-beam Sensors are sold in sets that include both the Emitter and Receiver.

\*2. Values in parentheses indicate the sensing distance when using E39-R2 Reflectors.

## Accessories (Order Separately)

Slit (A Slit is not provided with the Sensor for through-beam. Order a Slit separately if required.) (Refer to Dimensions on page 12.)

Slit width	Sensing distance		Minimum detect- able object (reference value)	Model	Quantity	Remarks	
1 mm ~ 20 mm	E3JM-10□4(T)-N	1.2 m	1-mm dia.	E39-S39	1 Slit each for the Emitter and Receiver (2 Slits total)	(Seal-type long slit) Can be used with the E3JM-10⊡4(T)-N	
1 mm × 20 mm	E3JK-5□□-N	0.7 m	r-min ula.			and E3JK-5 Models.	

#### **Reflectors** (A Reflector is required for Retroreflective Sensors.) A Reflector is provided with the E39-R1 Sensor. For other Sensors, order a Reflector separately if required. (Refer to Dimensions on E39-L/E39-S/E39-R.)

Name	Sensir	Model	Quantity	Remarks	
	E3JM-R4□4(T)	4 m		1	Provided with the E3JM-R4_4(T) Provided with the E3JK-R2_ Provided with the E3JK-R4_
Reflectors	E3JK-R2	2.5 m	E39-R1		
	E3JK-R4	4 m			

Note: Refer to Reflectors on E39-L/F39-L/E39-S/E39-R for details.

#### **Mounting Bracket**

Some Mounting Brackets are provided with the Sensor. Order other Mounting Brackets separately if required. (Refer to E39-L/E39-S/E39-R)

Appearance	Model	Quantity	Remarks
	E39-L53	1	Provided with the E3JM.
and the second sec	E39-L40	1	Provided with the E3JK.
	E39-L51	1	Mounting Bracket designed for changing from he E3A-M, E3A2, E3A3, OA-5, or OA-5N to the E3JM.

Note: 1. When using a Through-beam Sensor, order one Connector for the Receiver and one for the Emitter. 2. Refer to *Mounting Brackets* on *E39-L/E39-S/E39-R* for details.

# **Ratings and Specifications**

# E3JM

	Sensing method	Through-beam model	Retro-reflective model (with MSR function)	Diffuse-reflective model			
ltem	Model	E3JM-10□4(T)-N	E3JM-R4□4(T)	E3JM-DS70□4(T)			
Sensing distand	e	10 m	4 m (When using E39-R1)	White paper ( $200 \times 200$ mm): 700 mm			
Standard sensir	ng object	Opaque: 14.8-mm dia. min.	Opaque: 75-mm dia. min.				
Differential trave	el			20% max. of sensing distance			
Directional angl	e	Both Emitter and Receiver $3^{\circ}$ to $20^{\circ}$	$1^{\circ}$ to $5^{\circ}$				
_ight source (w	avelength)	Infrared LED (950 nm)	Red LED (660 nm)	Infrared LED (950 nm)			
Power supply v	oltage	12 to 240 VDC±10%, ripple (p-p): <sup>-</sup> 24 to 240 VAC±10%, 50/60 Hz	10% max.				
Power con-	DC	3 W max. (Emitter 1.5 W max. Receiver 1.5 W max.)	2 W max.				
sumption	AC	3 W max. (Emitter 1.5 W max. Receiver 1.5 W max.) 2 W max.					
Control output		Relay output (E3JM-□□M4 (T) mo DC SSR output (E3JM-□□S4 (T) r Light-ON/Dark-ON selectable					
Life .	Mechanical	50,000,000 times min. (switching fi	requency: 18,000 times/h)				
expectancy relay output)	Electrical	100,000 times min. (switching freq	uency: 1,800 times/h)				
	Relay output	(E3JM-DM4 (T) models) Operate or reset: 30 ms max.					
Response time	DC SSR output	(E3JM-DS4 (T) models) Operate	e or reset: 5 ms max.				
Sensitivity adju	stment			One-turn adjuster			
Timer function *	•	ON-delay/OFF-delay/One-shot delay switch selectable Delay time: 0.1 to 5 s (adjustable), only for E3JM-04T					
Ambient illumin (Receiver side)	ation	Incandescent lamp: 3,000 lx max.					
Ambient temper	rature range	Operating: -25°C to 55°C, Storage: -30°C to 70°C (with no icing or condensation)					
Ambient humidi	ity range	Operating: 45% to 85% (with no condensation), Storage: 35% to 95% (with no condensation)					
nsulation resist	tance	20 MΩ min. at 500 VDC					
Dielectric streng	gth	2,000 VAC, 50/60 Hz for 1 min.					
Vibration	Destruction	10 to 55 Hz, 1.5-mm double amplitude for 2 hours each in X, Y, and Z directions					
resistance	Malfunction	10 to 55 Hz, 1.5-mm double amplit	tude for 2 hours each in X, Y, and	Z directions			
Shock	Destruction	500 m/s <sup>2</sup> 3 times each in X, Y, and Z directions					
resistance	Malfunction	100 m/s <sup>2</sup> 3 times each in X, Y, and Z directions					
Degree of prote	ction	IEC 60529: IP66					
Connection met	thod	Terminal block					
Neight (packed	state)	Approx. 270 g Approx. 160 g					
	Case	ABS (Acrylonitril Butadiene Styren	e)				
	Lens	Methacrylic resin					
Material	Cover	Polycarbonate					
	Mounting Bracket	Iron					
				e set of cable connection nuts (exc			

\* The timer cannot be disabled for models with timer functions (E3JM-0-4T).

## E3JK

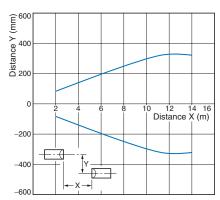
	ing method	Through-b	eam model		ctive model R function)		ctive model SR function)	Diffuse-refle	ective model	
Item	Model	E3JK -5M⊡-N	E3JK -5S3-N	E3JK -R2M□	E3JK -R2S3	E3JK -R4M⊡	E3JK -R4S3	E3JK -DS30M⊡	E3JK -DS30S3	
Sensing	distance	5 m		2.5 m (When using E39-R1) 4 m (When using E39-				R1) White paper (100 × 100 mm): 300 mm		
Standard object	l sensing	Opaque: 14.8-r	nm dia. min.	Opaque: 75-mr	n dia. min.					
Different	ial travel			-				20% max. of se	ensing distance	
Direction	al angle	Both Emitter an 20°	d Receiver 3° to	1° to 5°				-		
Light sou (wavelen		Infrared LED (9	50 nm)	Red LED (660	nm)			Infrared LED (9	950 nm)	
Power su voltage	upply	12 to 240 VDC 24 to 240 VAC	±10%, ripple (p-p ±10%, 50/60 Hz	): 10% max.						
Power con-	DC	3 W max. (Em max. Receiver		2 W max.						
sump- tion	AC	3 W max. (Em max. Receiver		2 W max.						
Control c	output	Relay output SPDT, 250 VAC, 3 A max. (cos\u00f5 = 1) 5 VDC, 10 mA min.	DC SSR out- put, Negative: common 48 VDC, 100 mA max. Leakage cur- rent: 0.1 mA max. With load short-circuit protection	Relay output SPDT, 250 VAC, 3 A max. (cos = 1) 5 VDC, 10 mA min.	DC SSR out- put, Negative: common 48 VDC, 100 mA max. Leakage cur- rent: 0.1 mA max. With load short-circuit protection	Relay output SPDT, 250 VAC, 3 A max. (cos = 1) 5 VDC, 10 mA min.	DC SSR out- put, Nega- tive: common 48 VDC, 100 mA max. Leakage cur- rent: 0.1 mA max. With load short-circuit protection	Relay output SPDT, 250 VAC, 3 A max. (cos $\phi$ = 1) 5 VDC, 10 mA min.	DC SSR out- put, Negative: common 48 VDC, 100 mA max. Leakage cur- rent: 0.1 mA max. With load short-circuit protection	
Life ex- pectan-	Mechani- cal	50,000,000 time	es min. (switchin	g frequency: 18,	000 times/h)				<u> </u>	
cy (relay output)	Electrical	100,000 times i	nin. (switching fi	requency: 1,800	times/h)					
Respons	e time	30 ms max.	10 ms max.	30 ms max.	5 ms max.	30 ms max.	5 ms max.	30 ms max.	5 ms max.	
Sensitivity adjustment								One-turn adjuster		
Ambient illumina- tion (Receiver side)										
Ambient temperat	ure range	Operating: -25	°C to 55°C, Stora	age: –30°C to 70	°C (with no icing	or condensatior	ו)			
Ambient humidity		Operating: 45%	to 85% (with no	condensation),	Storage: 35% to	95% (with no co	ondensation)			
Insulatio resistanc		20 M $\Omega$ min. at $\xi$	20 MQ min_at 500 V/DC							
Dielectric	c strength	1,500 VAC, 50/60 Hz for 1 min.								
	-	1,500 VAC, 50/	60 Hz for 1 min.							
Vibra-	Destruc- tion			plitude for 2 hou	rs each in X, Y,	and Z directions				
Vibra- tion re-	tion Malfunc- tion	10 to 55 Hz, 1.	5-mm double am	•	rs each in X, Y, i rs each in X, Y, i					
Vibra- tion re- sistance	tion Malfunc-	10 to 55 Hz, 1.9 10 to 55 Hz, 1.9 500 m/s <sup>2</sup> 3 time	5-mm double am 5-mm double am es each in X, Y, a	plitude for 2 hou and Z directions	rs each in X, Y, a	and Z directions				
Vibra- tion re- sistance Shock resis-	tion Malfunc- tion Destruc-	10 to 55 Hz, 1.8	5-mm double am 5-mm double am	plitude for 2 hou			500 m/s <sup>2</sup> 3 times each in X, Y, and Z di- rections	100 m/s <sup>2</sup> 3 times each in X, Y, and Z di- rections	500 m/s² 3 times each in X, Y, and Z di rections	
Vibra- tion re- sistance Shock resis- tance Degree o	tion Malfunc- tion Destruc- tion Malfunc- tion	10 to 55 Hz, 1.9 10 to 55 Hz, 1.9 500 m/s <sup>2</sup> 3 time 100 m/s <sup>2</sup> 3 times each in X, Y, and Z di-	5-mm double am 5-mm double am es each in X, Y, a 500 m/s <sup>2</sup> 3 times each in X, Y, and Z di- rections	plitude for 2 hou and Z directions 100 m/s <sup>2</sup> 3 times each in X, Y, and Z di-	rs each in X, Y, s 500 m/s <sup>2</sup> 3 times each in X, Y, and Z di-	and Z directions 100 m/s <sup>2</sup> 3 times each in X, Y, and Z di-	times each in X, Y, and Z di-	times each in X, Y, and Z di-	times each in X, Y, and Z di	
Vibra- tion re- sistance Shock resis- tance Degree o protectio	tion Malfunc- tion Destruc- tion Malfunc- tion	10 to 55 Hz, 1.5 10 to 55 Hz, 1.5 500 m/s <sup>2</sup> 3 times 100 m/s <sup>2</sup> 3 times each in X, Y, and Z di- rections IEC 60529 IP64	5-mm double am 5-mm double am es each in X, Y, a 500 m/s <sup>2</sup> 3 times each in X, Y, and Z di- rections	plitude for 2 hou and Z directions 100 m/s <sup>2</sup> 3 times each in X, Y, and Z di- rections	rs each in X, Y, s 500 m/s <sup>2</sup> 3 times each in X, Y, and Z di-	and Z directions 100 m/s <sup>2</sup> 3 times each in X, Y, and Z di-	times each in X, Y, and Z di-	times each in X, Y, and Z di-	times each in X, Y, and Z di	
Vibra- tion re- sistance Shock resis- tance Degree o protectio Connecti Weight	tion Malfunc- tion Destruc- tion Malfunc- tion of m	10 to 55 Hz, 1.5 10 to 55 Hz, 1.5 500 m/s <sup>2</sup> 3 times 100 m/s <sup>2</sup> 3 times each in X, Y, and Z di- rections IEC 60529 IP64	5-mm double am 5-mm double am as each in X, Y, a 500 m/s <sup>2</sup> 3 times each in X, Y, and Z di- rections	plitude for 2 hou and Z directions 100 m/s <sup>2</sup> 3 times each in X, Y, and Z di- rections	rs each in X, Y, s 500 m/s <sup>2</sup> 3 times each in X, Y, and Z di-	and Z directions 100 m/s <sup>2</sup> 3 times each in X, Y, and Z di-	times each in X, Y, and Z di-	times each in X, Y, and Z di-	times each in X, Y, and Z di	
Vibra- tion re- sistance Shock resis- tance Degree o protectio Connecti Weight	tion Malfunc- tion Destruc- tion Malfunc- tion of m	10 to 55 Hz, 1.5 10 to 55 Hz, 1.5 500 m/s <sup>2</sup> 3 times 100 m/s <sup>2</sup> 3 times each in X, Y, and Z di- rections IEC 60529 IP64 Pre-wired (stan Approx. 420 g	5-mm double am 5-mm double am as each in X, Y, a 500 m/s <sup>2</sup> 3 times each in X, Y, and Z di- rections	plitude for 2 hou and Z directions 100 m/s <sup>2</sup> 3 times each in X, Y, and Z di- rections ) Approx. 250 g	rs each in X, Y, s 500 m/s <sup>2</sup> 3 times each in X, Y, and Z di-	and Z directions 100 m/s <sup>2</sup> 3 times each in X, Y, and Z di-	times each in X, Y, and Z di-	times each in X, Y, and Z di-	times each in X, Y, and Z di	
Vibra- tion re- sistance Shock resis- tance Degree o protectio	tion Malfunc- tion Destruc- tion Malfunc- tion on ion method state)	10 to 55 Hz, 1.5 10 to 55 Hz, 1.5 500 m/s <sup>2</sup> 3 times 100 m/s <sup>2</sup> 3 times each in X, Y, and Z di- rections IEC 60529 IP64 Pre-wired (stan Approx. 420 g	5-mm double am 5-mm double am as each in X, Y, a 500 m/s <sup>2</sup> 3 times each in X, Y, and Z di- rections 4 dard length: 2 m ril Butadiene St	plitude for 2 hou and Z directions 100 m/s <sup>2</sup> 3 times each in X, Y, and Z di- rections ) Approx. 250 g	rs each in X, Y, s 500 m/s <sup>2</sup> 3 times each in X, Y, and Z di-	and Z directions 100 m/s <sup>2</sup> 3 times each in X, Y, and Z di-	times each in X, Y, and Z di-	times each in X, Y, and Z di-	times each in X, Y, and Z di	
Vibra- tion re- sistance Shock resis- tance Degree o protectio Connecti Weight (packed s	tion Malfunc- tion Destruc- tion Malfunc- tion on don method state) Case	10 to 55 Hz, 1.4 10 to 55 Hz, 1.4 500 m/s <sup>2</sup> 3 time 100 m/s <sup>2</sup> 3 times each in X, Y, and Z di- rections IEC 60529 IP64 Pre-wired (stan Approx. 420 g ABS (Acrylonit	5-mm double am 5-mm double am as each in X, Y, a 500 m/s <sup>2</sup> 3 times each in X, Y, and Z di- rections 4 dard length: 2 m ril Butadiene St	plitude for 2 hou and Z directions 100 m/s <sup>2</sup> 3 times each in X, Y, and Z di- rections ) Approx. 250 g	rs each in X, Y, s 500 m/s <sup>2</sup> 3 times each in X, Y, and Z di-	and Z directions 100 m/s <sup>2</sup> 3 times each in X, Y, and Z di-	times each in X, Y, and Z di-	times each in X, Y, and Z di-	times each in X, Y, and Z di	

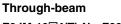
# **Engineering Data (Reference Value)**

#### **Parallel Operating Range**

# Through-beam

E3JM-10\_4(T)-N





Distance Y (mm)

40

20

0

-20

-40

-60

0.5

E3JM-10[4(T)-N + E39-S39 (Optional Slit) E3JM-R4[4(T) + E39-R1 (A Slit is mounted to the Emitter and Receiver.) (Supplied Reflector)

1.5

-F

2.5

Υ D

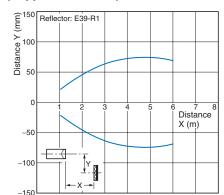
3.5

3

Distance X (m)

Х

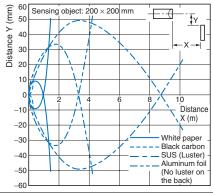
# **Retro-reflective**



#### **Operating Range**

# **Diffuse-reflective**

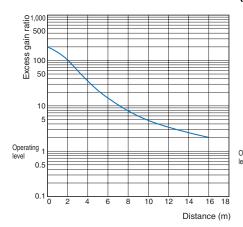
# E3JM-DS70 4(T)



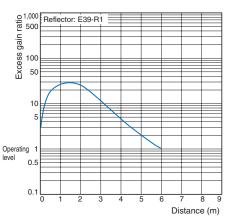
#### **Excess Gain Ratio vs. Set Distance**

## Through-beam

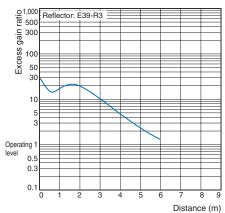
#### E3JM-10 4(T)-N

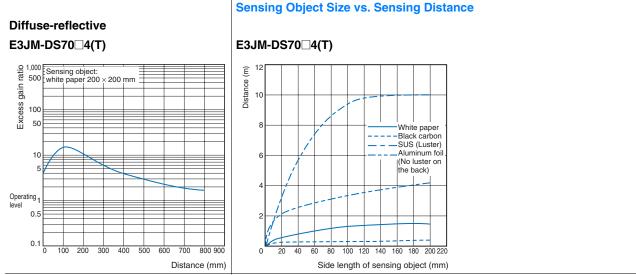


## **Retro-reflective** E3JM-R4□4(T) + E39-R1 (Supplied Reflector)



## E3JM-R4 4(T) + E39-R3 (Optional Reflector)

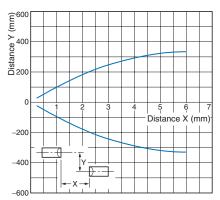




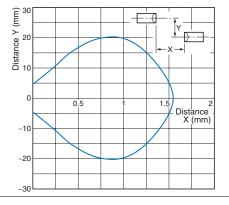
# **Parallel Operating Range**

# Through-beam

E3JK-5

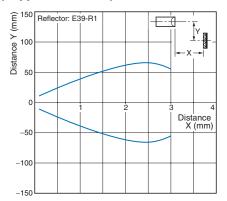


#### E3JK-5 - N + E39-S39 (Optional Slit) (A Slit is mounted to the Emitter and Receiver.)

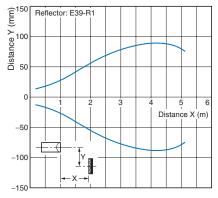


## **Retro-reflective**

E3JK-R2 + E39-R1 (Supplied Reflector)



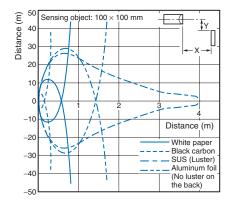
#### E3JK-R4 - + E39-R1 (Supplied Reflector)



## **Operating Range**

# **Diffuse-reflective**

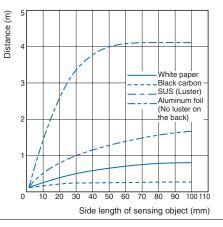
E3JK-DS30



#### Sensing Object Size vs. Sensing Distance

**Diffuse-reflective** 

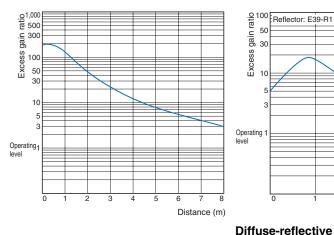




# **Excess Gain Ratio vs. Set Distance**

# Through-beam

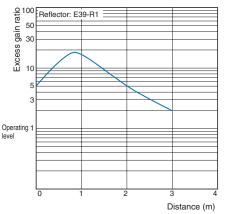
#### E3JK-5



# **Retro-reflective**

E3JK-DS30

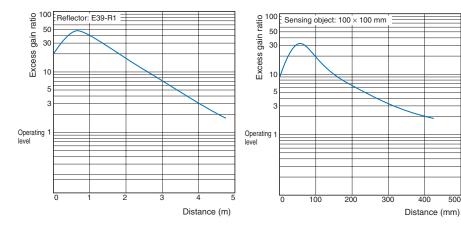
# E3JK-R2 + E39-R1 (Supplied Reflector)



400

500

#### E3JK-R4 + E39-R1 (Supplied Reflector)



# I/O Circuit Diagrams

#### E3JM

#### **Relay Output Models**

Model	Timing chart	Output circuit
E3JM-10M4(T)-N *1 E3JM-R4M4(T) E3JM-DS70M4(T)	Incident light No incident light Indicator (red) *2 OFF L-ON (Ta) OFF D-ON (Ta) OFF Refer to page 10 for information on Sensors with timers (T).	24 to 240 VAC 12 to 240 VDC Photoelectric Sensor main circuit 3 Tb Guilt-in Relay: G6C)

#### **DC SSR Output Models**

Model	Timing chart	Output circuit
E3JM-10S4(T)-N *1 E3JM-R4S4(T) E3JM-DS70S4(T)	Incident light No incident light Indicator ON (red) *2 OFF L-ON (Ta) ON D-ON (Ta) ON OFF D-ON (Ta) OF F Refer to page 10 for information on Sensors with timers (T).	24 to 240 VAC 12 to 240 VDC 12 to 240 VDC 12 to 240 VDC 12 to 240 VDC 14 to

Note: Connect terminal 1 to any polarity and terminal 2 to the power supply because there is no polarity on the Emitter side. \*1. Models numbers for Through-beam Sensors (E3JM-10□4(T)-N) are for sets that include both the Emitter and Receiver.

The model number of the Emitter is always E3JM-10L-N. Add a "D" to get the model number of the Receiver (example: E3JM-10DM4-N). Confirm the model numbers of the Emitter and Receiver in Ordering Information.

\*2. This is the light indicator on Sensors without a timer and the operation indicator on Sensors with a timer.

#### E3JK

#### **Relay Output Models**

Model	Timing chart	Output circuit
E3JK-5M1-N * E3JK-5M2-N *	Incident light	24 to 240 VAC 12 to 240 VDC Brown Power
E3JK-R2M1 E3JK-R2M2 E3JK-R4M1 E3JK-R4M2	No incident light Light indicator (red) OFF L-ON (Ta) ON (E3JK-□□M1) OFF	Sensor main circuit Blue No polarity TC Black Contact output
E3JK-DS30M1 E3JK-DS30M2	D-ON (Ta) (E3JK-□□M2) OFF	(Built-in Relay: G6C)

#### **DC SSR Output Models**

Model	Timing chart	Output circuit
E3JK-5S3-N * E3JK-R2S3 E3JK-R4S3 E3JK-DS30S3	Incident light No incident light Light indicator ON (red) OFF L-ON output OFF D-ON output OFF	24 to 240 VAC 12 to 240 VDC Brown Power No polarity Hue D/ON Black 11 Load Hark Hark Note: The output stage leakage currents are 0.1 mA max., respectively.

Note: Connect the brown cable to any polarity and the blue cable to the power supply because there is no polarity on the Emitter side. \* Models numbers for Through-beam Sensors (E3JK-5 - N 2M) are for sets that include both the Emitter and Receiver.

The model number of the Emitter is always E3JK-5L-N 2M. Add a "D" to get the model number of the Receiver (example: E3JK-5DM1-N 2M). Confirm the model numbers of the Emitter and Receiver in Ordering Information.

# Refer to Warranty and Limitations of Liability.

# 

This product is not designed or rated for ensuring safety of persons either directly or indirectly. Do not use it for such purposes.

#### **Precautions for Correct Use**

Do not use the product in atmospheres or environments that exceed product ratings.

## E3JM

## Designing

#### Operation

Note: The white part of the DIP switch indicates which setting is selected.

	Switch configuration	Switch selection			Timing charts		
Models without timer	MODE 0++1 D·ON □ L-ON ↓ Operation selector	MODE 0++1 D-ON LON LON LON LIght-ON, Relay ON, MODE 0++1 D-ON LON DC output switching element ON D-ON DC output switching element ON		ıt switching ON , Relay ON ıt switching	Incident light No incident light L-ON OFF D-ON OFF		
Models with timer	MODE 0++1 D-ON L-ON 1 TIMER	ON-delay MODE 0++1 D-ON TIMER D-ON SW1 SW2 Both SW1 and SW2 at "0."	OFF-delay MODE 0++1 L-ON TIMER Only SW2 at "1."	One-shot delay MODE 0++1 D-ON TIMER D+1 SW1 SW2 Only SW1 at "1," which overrides either setting of SW2.	ON-delay	OFF-delay	One-shot delay
	umer mode	Note: The operation without a time		e as that for models			

#### **Output Relay Contact**

If E3JM/E3JK is connected to a load with contacts that spark when the load is turned OFF (e.g., a contactor or valve), the normally-closed side may be turned ON before the normally-open side is turned OFF or vice-versa. If both normally-open output and normally-closed output are used simultaneously, apply an surge suppressor to the load.

Refer to OMRON's PCB Relays Catalog (X33) for typical examples of surge suppressors.

## • Wiring

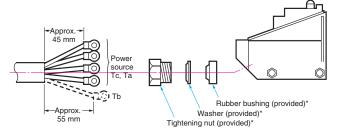
#### **Connecting and Wiring**

- We recommend connecting a cable with a conductor cross-section of 0.3 mm<sup>2</sup> and an outer diameter of 6 to 8 mm.
- Be sure to firmly tighten the cover in order to maintain waterproof and dustproof properties. The screw size of the conduit sockets is shown in the following table.

Model	Conduit socket thread size
E3JM-	PF1/2

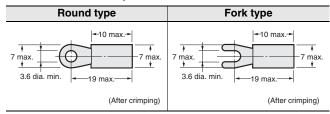
#### **Cable End Treatment**

Adjust the four wires to the same length when the Ta output is to be used only. If both the Ta and Tb outputs are to be used, treat them as shown in the following diagram. **Recommended example** 



\* These parts are not provided with models with a -US suffix.

#### Recommended Crimp Terminal Dimensions (Unit: mm)

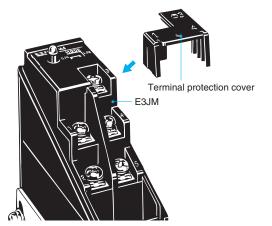


Note: Use terminals with insulation tube (recommended crimp terminal: 1.25 to 3.5).

#### Others

#### **Terminal Protection Cover (Provided)**

The terminal protection cover is designed to improve safety by maintaining the sensitivity properties of the product and by preventing any contact with charged sections while it is being operated with the mode set to the timer mode. Mount the product as shown in the following diagram (mount the Through-beam Model on the Receiver side).



E3JK	
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# Designing

#### **Power Reset Time**

The Sensor is ready to detect within 200 ms after it is turned ON. If the Sensor and load are connected to separate power supplies, be sure to turn ON the Sensor first.

Items Common to			
E3JM and E3JK			

#### • Wiring

#### **Connecting and Wiring DC SSR Output Models**

When using the DC SSR output model, the total of the load current for the Light-ON output (NO) and that for the Dark-ON (NC) should be 100 mA max. If the total exceeds 100 mA, the load short-circuit protection function will be activated (this function will be reset when the power of the Photoelectric Sensor is turned OFF).

#### • Others

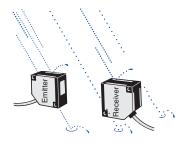
#### **Ambient Conditions (Installation Area)**

The E3JM will malfunction if installed in the following places.

- Places where the E3JM is exposed to a dusty environment.
- Places where corrosive gases are produced.



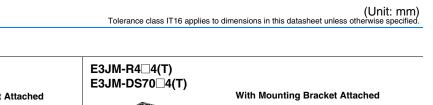
 Places where the E3JM is directly exposed to water, oil, or chemicals.

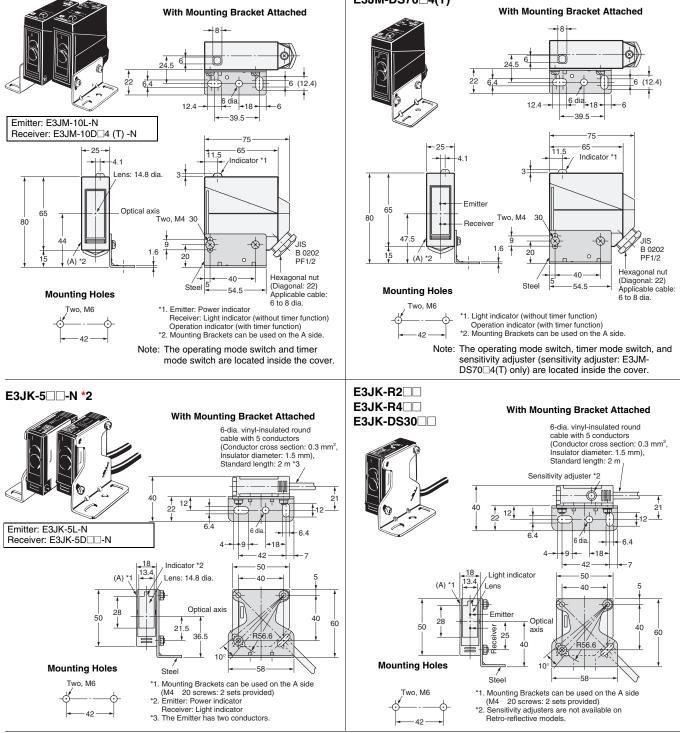


# Dimensions

E3JM-10 4(T)-N \*1

#### Sensors





\*1. Models numbers for Through-beam Sensors (E3JM-10□4(T)-N) are for sets that include both the Emitter and Receiver.

The model number of the Emitter is always E3JM-10L-N. Add a "D" to get the model number of the Receiver (example: EE3JM-10DM4-N). Confirm the model numbers of the Emitter and Receiver in *Ordering Information*. \*2. Models numbers for Through-beam Sensors (E3JK-5 - N) are for sets that include both the Emitter and Receiver.

The model numbers of the Emitter is always E3JK-5L-N 2M. Add a "D" to get the model number of the Receiver (example: E3JK-5DM1-N 2M). Confirm the model numbers of the Emitter and Receiver in Ordering Information.

## Accessories (Order separately)

Seal-type Long Slit (F E39-S39	Mounting Brackets Refer to E39-L/E39-S/E39-R for details.	
Materials: Polyester 0.1-mm thick		

#### **Read and Understand This Catalog**

Please read and understand this catalog before purchasing the products. Please consult your OMRON representative if you have any questions or comments.

#### Warranty and Limitations of Liability

#### WARRANTY

OMRON's exclusive warranty is that the products are free from defects in materials and workmanship for a period of one year (or other period if specified) from date of sale by OMRON.

OMRON MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, REGARDING NON-INFRINGEMENT, MERCHANTABILITY, OR FITNESS FOR PARTICULAR PURPOSE OF THE PRODUCTS. ANY BUYER OR USER ACKNOWLEDGES THAT THE BUYER OR USER ALONE HAS DETERMINED THAT THE PRODUCTS WILL SUITABLY MEET THE REQUIREMENTS OF THEIR INTENDED USE. OMRON DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED.

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OMRON SHALL NOT BE RESPONSIBLE FOR SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCTS, WHETHER SUCH CLAIM IS BASED ON CONTRACT, WARRANTY, NEGLIGENCE, OR STRICT LIABILITY.

In no event shall the responsibility of OMRON for any act exceed the individual price of the product on which liability is asserted.

IN NO EVENT SHALL OMRON BE RESPONSIBLE FOR WARRANTY, REPAIR, OR OTHER CLAIMS REGARDING THE PRODUCTS UNLESS OMRON'S ANALYSIS CONFIRMS THAT THE PRODUCTS WERE PROPERLY HANDLED, STORED, INSTALLED, AND MAINTAINED AND NOT SUBJECT TO CONTAMINATION, ABUSE, MISUSE, OR INAPPROPRIATE MODIFICATION OR REPAIR.

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OMRON shall not be responsible for conformity with any standards, codes, or regulations that apply to the combination of products in the customer's application or use of the products.

At the customer's request, OMRON will provide applicable third party certification documents identifying ratings and limitations of use that apply to the products. This information by itself is not sufficient for a complete determination of the suitability of the products in combination with the end product, machine, system, or other application or use.

The following are some examples of applications for which particular attention must be given. This is not intended to be an exhaustive list of all possible uses of the products, nor is it intended to imply that the uses listed may be suitable for the products:

- · Outdoor use, uses involving potential chemical contamination or electrical interference, or conditions or uses not described in this catalog.
- Nuclear energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, amusement machines, vehicles, safety equipment, and installations subject to separate industry or government regulations.
- · Systems, machines, and equipment that could present a risk to life or property.

Please know and observe all prohibitions of use applicable to the products.

NEVER USE THE PRODUCTS FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCTS ARE PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

#### **PROGRAMMABLE PRODUCTS**

OMRON shall not be responsible for the user's programming of a programmable product, or any consequence thereof.

#### Disclaimers

#### CHANGE IN SPECIFICATIONS

Product specifications and accessories may be changed at any time based on improvements and other reasons.

It is our practice to change model numbers when published ratings or features are changed, or when significant construction changes are made. However, some specifications of the products may be changed without any notice. When in doubt, special model numbers may be assigned to fix or establish key specifications for your application on your request. Please consult with your OMRON representative at any time to confirm actual specifications of purchased products.

#### **DIMENSIONS AND WEIGHTS**

Dimensions and weights are nominal and are not to be used for manufacturing purposes, even when tolerances are shown.

#### PERFORMANCE DATA

Performance data given in this catalog is provided as a guide for the user in determining suitability and does not constitute a warranty. It may represent the result of OMRON's test conditions, and the users must correlate it to actual application requirements. Actual performance is subject to the OMRON Warranty and Limitations of Liability.

#### ERRORS AND OMISSIONS

The information in this document has been carefully checked and is believed to be accurate; however, no responsibility is assumed for clerical, typographical, or proofreading errors, or omissions.

#### 2012.8

In the interest of product improvement, specifications are subject to change without notice.

#### OMRON Corporation Industrial Automation Company

# **Mouser Electronics**

Authorized Distributor

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Omron:

E39-L40 E39-L53 E3JK-DS30S3 2M E3JK-5S3-N 2M E3JK-R2S3 2M E39-L51 E3JM-10M4-N E3JK-5M1-N-US



Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
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- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

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