OMRON

Built-in Power Supply Photoelectric Sensor E3JK <NEW>

Long-distance Photoelectric Sensor That Supports AC/DC Power Supplies

- Long sensing distance that is approximately 8 times that of our conventional model (for the Through-beam and Diffuse-reflective models). (Through-beam: 40 m, Retro-reflective: 7 m, and Diffuse-reflective: 2.5 m.)
- Improved visibility:
 - A red LED that makes the spot visible.
 - Large indicators that can be seen even from a distance.
- Improved operability. (Enlarged sensitivity adjuster and operation selector)
- Freely selectable power supply input (24 to 240 VDC, 24 to 240 VAC).

(Additional types added to the DC type lineup.)

Refer to the Safety Precautions on page 12.



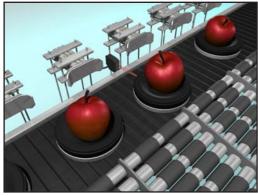
For the most recent information on models that have been certified for safety standards, refer to your OMRON website.

Applications

Elevator cage detection



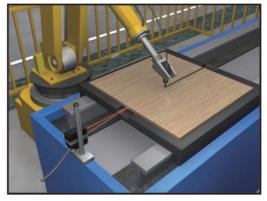
Pallet detection for agricultural produce conveyors







Workpiece detection for woodworking machines



E3JK

Ordering Information

Sensors

Red light

Sensors without Brackets or Reflectors

Power supply voltage	Sensing method	Appearance	Sensing distance	Output configu- ration	Model
	Through-beam *1 (Emitter + Receiver)	$\square \rightarrow \square$	5 m	-	E3JK-TR11 2M E3JK-TR12 2M
AC/DC power	Retro-reflective without MSR function		(When using E39-R1) (When using E39-R1) (When using E39-R2)		E3JK-RR11 2M
supply selectable type	Retro-reflective with MSR function	*3	*3 6 m [100 mm] (When using E39-R1) 10 m [100 mm] (When using E39-R2)	Relay	E3JK-RR12 2M
	Diffuse-reflective		2.5 m	-	E3JK-DR11 2M E3JK-DR12 2M
	Through-beam *1 (Emitter + Receiver)		40 m	NPN PNP NPN PNP	E3JK-TN11 2M E3JK-TP11 2M E3JK-TN12 2M E3JK-TP12 2M
DC	Retro-reflective without MSR function		7 m [100 mm] (When using E39-R1) 11 m [100 mm] (When using E39-R2)	NPN PNP	E3JK-RN11 2M E3JK-RP11 2M
	Retro-reflective with MSR function		*3 6 m [100 mm] (When using E39-R1) 10 m [100 mm] (When using E20	NPN PNP	E3JK-RN12 2M E3JK-RP12 2M
	Diffuse-reflective		(When using E39-R2)	NPN PNP NPN	E3JK-DN11 2M E3JK-DP11 2M E3JK-DN12 2M

*1. Through-beam Sensors are sold in sets that include both the Emitter and Receiver.
*2. A Reflector is not included. Purchase a Reflector separately to match the intended use of the Sensor.
*3. Values in parentheses indicate the minimum required distances between the Sensors and Reflectors.

Red light

Sensors

Sensors with Brackets and Reflectors (The model numbers contain ("-C.")

Power supply voltage	Sensing method	Appearance	Sensing distance	Output configu- ration	Model
	Through-beam *1 (Emitter + Receiv- er)		40m	-	E3JK-TR11-C 2M E3JK-TR12-C 2M
AC/DC power supply select- able	Retro-reflective without MSR func- tion		7m *2 [100mm] (When using E39-R1) 11m [100mm] (When using E39-R2)	-	E3JK-RR11-C 2M
	Retro-reflective with MSR function		*2 6m [100mm] (When using E39-R1) 10m [100mm] (When using E39-R2)	Relay	E3JK-RR12-C 2M
			2.5m		E3JK-DR11-C 2M
	Diffuse-reflective	→	300mm		E3JK-DR12-C 2M

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

*2. Values in parentheses indicate the minimum required distances between the Sensors and Reflectors.

Accessories (Order Separately)

Reflectors (A Reflector is required for Retro-reflective Sensors.) [Refer to Dimensions on page 14.] The E39-R1 is enclosed with Sensors with model numbers that contain "-C."

Name	Sensing distar	nce (rated value)	Model	Quantity
	E3JK-R 11 7 m [100 mm] *		- E39-R1	1
Reflectors	E3JK-R□12	6 m [100 mm] *	- L39-K1	I
	E3JK-R□11	9 m [100 mm] *	- E39-R1S	1
	E3JK-R 12	7 m [100 mm] *	- E39-K13	•
	E3JK-R□11	11 m [100 mm] *	E39-R2	1
	E3JK -R12	10 m [100 mm] *	- E39-KZ	I

Note: Refer to Engineering Data on page 9 for details.

*Values in parentheses indicate the minimum required distances between the Sensors and Reflectors.

Mounting Bracket [Refer to Dimensions on page 14.]

A Mounting Bracket is enclosed with Sensors with model numbers that contain "-C."

Appearance	Model	Quantity
June -	E39-L40	1

Note: 1. When using a Through-beam Sensor, order one Mounting Bracket for the Receiver and one for the Emitter.
2. For details, refer to *Mounting Brackets* on E39-L/E39-S/E39-R which can be accessed from your OMRON website.

E3JK Ratings and Specifications

	Sensing method		Through-beam			
Item	Model	E3JK-TR11-	E3JK-TN11	E3JK-TP11		
Sensing distar	nce	40 m				
Standard sens	ing object	Opaque: 17-mm dia. min.				
Differential tra	vel		-			
Directional ang	gle	Both Emitter and Receiver 3° min.				
Light source (wavelength)	Red LED (624 nm)				
Power supply voltage		24 to 240 VDC ±10%, ripple (p-p): 10% max. 24 to 240 VAC ±10%, 50/60 Hz	p-p): 10% max. 10 to 30 VDC, including ripple (p-p): 10%			
DC		3 W max. (Emitter 1.5 W max. Receiver 1.5 W max.)	40 mA max. (Emitter 25 mA may	x. Receiver 15 mA max.)		
consumption	AC	3 W max. (Emitter 1.5 W max. Receiver 1.5 W max.)		-		
Control output		Relay output SPDT, 250 VAC, 3 A max. ($\cos\varphi$ = 1), 5 VDC, 10 mA min., Light-ON/Dark-ON selectable	Load power supply voltage: 30 V max., Load current: 100 mA max Residual voltage: 3 V max., open-collector output (NPN/PNP output depending on model), Light-ON/Dark-ON selectable			
Life	Mechanical	50,000,000 times min. (switching frequency: 18,000 times/h)				
expectancy (relay output)	Electrical	100,000 times min. (switching frequency: 1,800 times/h)				
Response time		20 ms max.	1 ms max.			
Sensitivity adjustment		One-turn adjuster Receiver (E3JK-T□□□-D) only				
Ambient illumi (Receiver side)		Incandescent lamp: 3,000 lx max., Sunlight: 11,000 lx max.				
Ambient tempe	erature range	Operating: -25°C to 55°C, Storage: -40°C to 70°C (with no icing or condensation)				
Ambient humi	dity range	Operating: 35% to 85%, Storage: 35% to 95% (with no condensation)				
Insulation resi	stance	20 MΩ min. at 500 VDC				
Dielectric stre	ngth	1,500 VAC, 50/60 Hz for 1 min				
Vibration	Destruction	10 to 55 Hz with a 1.5 mm double amplitude for 2 hours each in X, Y, and Z directions				
resistance	Malfunction	10 to 55 Hz with a 1.5 mm double amplitude for 2 hours each in X, Y, and Z directions				
Shock	Destruction	500 m/s ² for 3 times each in X, Y	, and Z directions			
resistance	Malfunction	100 m/s ² for 3 times each in X, Y, and Z directions	500 m/s ² for 3 times each in X, Y	r, and Z directions		
Degree of prot	ection	IEC 60529 IP64	+			
Connection method		Pre-wired (standard length: 2 m)				
Weight (packed state)		Approx. 350 g	Approx. 300 g			
	Case	ABS (Acrylonitril Butadiene Styre	ne)			
Material	Lens/Display window	Methacrylic resin				
	Adjuster	РОМ				
	Cable	PVC				
Bending radius	s of cable	R18				
Accessories		Instruction manual and Mounting Bracket (E3JK-TR11-C only)				

E3JK

ItemModelE3JK-TR12-□E3JK-TN12E3JK-TP12Sensing distance5 mStandard sensing objectOpaque: 17-mm dia. min.Differential travel-Directional angleBoth Emitter and Receiver 3° min.Light source (wavelength)Red LED (624 nm)Power supply voltage:24 to 240 VDC ±10%, ripple (p-p): 10% max. 24 to 240 VAC ±10%, 50/60 HzPower supply voltage3 W max. (Emitter 1.5 W max. 24 to 240 VAC ±10%, 50/60 HzPower consumption3 W max. (Emitter 1.5 W max. 24 to 240 VAC ±10%, 50/60 HzAc3 W max. (Emitter 1.5 W max. Receiver 1.5 W max.)Receiver 1.5 W max.)-Ac3 W max. (Emitter 1.5 W max.)Relay output SPDT, 250 VAC, 10 mA max., Cosφ= 1), 5 VDC, 10 mA min., Light-ON/Dark-ON, 10 model), Light-ON/Dark-ON selectableLife expectancy (relay output YElectrical100,000 times min. (switching frequency: 18,000 times/h)		Sensing method		Through-beam				
Standard sensing object Opque: 17-mm dia. min. Differential travel - Directional angle Both Emitter and Receiver 3° min. Light source (wavelength) Red LED (624 nm) Power supply voltage 24 to 240 VDC ±10%, ripple (p-p): 10% max. 24 to 240 VAC ±11%, 50/60 Hz 10 to 30 VDC, including ripple (p-p): 10% Power supply voltage DC 3 W max. (Emitter 1.5 W max. Receiver 1.5 W max.) 40 mA max. (Emitter 25 mA max. Receiver 15 mA max.) Control output Relay output SPDT, 250 VAC, 10 mA min., Light-ON/Dark-ON selectable 40 mA max. (Emitter 25 mA max. Cad current: 100 mA max., Receiver 1.5 W max.) Elfer Mechanical 50.000,000 times min. (switching frequency: 18,000 times/h) Expectancy (relay output) 100,000 times min. (switching frequency: 1,800 times/h) Response time 20 ms max. 1 ms max. Sonstitivity autiment One-turn adjuster Receiver (C3JK-TI_)-D) only Ambient flumination (Receiver side) Incandescent lamp: 3,000 k max., Sunlight: 11,000 k max. Ambient traperature range Operating: 35% to 55%, Storage: -40°C to 70°C (with no condensation) Ambient flumination resistance 10 to 55 Hz with a 1.5 mm double amplitude for 2 hours each in X, Y, and Z directions Material Mafunction 10 to 55 Hz with a 1.5 mm double amplitude for 2 hours each in X, Y, and Z directions Direction strestance 20 M2 min. at 50	Item	-	E3JK-TR12-	-	E3JK-TP12			
Differential travel - Differential travel Both Emitter and Receiver 3° min. Light source (wavelength) Red LED (624 nm) Power supply voltage 24 to 240 VAC ±10%, 50/60 Hz Power supply voltage 3 W max. (Emitter 1.5 W max. Receiver 1.5 W max.) 40 mA max. (Emitter 25 mA max. Receiver 15 mA max.) Power supply voltage DC 3 W max. (Emitter 1.5 W max. Receiver 1.5 W max.) - Control output Receiver 1.5 W max. Receiver 1.5 W max. - Receiver 1.5 W max. - - Receiver 1.5 W max. - - Control output Receiver 1.5 W max. - Receiver 1.5 W max. - - So max. (convert 1.5 W max.) - - Control output Receiver 1.5 W max. - - Receiver 1.5 W max. Receiver 1.6 Wmax. - - Receiver 1.5 W max. - - - - Control output Receiver 1.5 W max. - - - - Kenstoncal 50.000.000 times min. (switching frequency: 18.000 times/h) - - - - - - -	Sensing distan	ice	5 m					
Directional angle Both Emitter and Receiver 3° min. Light source (wavelength) Red LED (624 nm) Power supply vitage 24 to 240 VDC ±10%, folde 0Hz 24 to 240 VAC ±10%, folde 0Hz 24 to 30 VDC, including ripple (p-p): 10% Power consumption DC 3 W max. (Emitter 1.5 W max.) 40 mA max. (Emitter 25 mA max. Receiver 15 mA max.) AC 3 W max. (Emitter 1.5 W max.) 40 mA max. (Emitter 25 mA max. Receiver 15 mA max.) Control output Relay output SPDT, 250 VAC, 3 A max. (cose= 1), 5 VDC, 10 mA min. Light-ON/Dark-ON selectable Load power supply voltage: 30 V max., open-collector output (NPM/PNP output depending on model), Light-ON/Dark-ON selectable Life expectancy (relay output) Receiver 1 900000 times min. (switching frequency: 18,000 times/h) Response time 20 ms max. 1 ms max. Sensitivity adjuttment One-tum adjuster Receiver (E3/K-TT_D_D) only Ambient temperature range Operating: -25°C to 55°C, Storage: -40°C to 70°C (with no condensation) Mubient humidity range Operating: -25°C to 55°C, Storage: -40°C to 70°C (with no condensation) Insulator resistance 20 MG min. at 500 VDC Um min. at 500 VMC, 50/60 Hz for 1 min Vibration resistance 20 MG min. at 500 VMc 50/60 Hz for 1 min 500	Standard sens	ing object	Opaque: 17-mm dia. min.					
Light source (wwelength) Red LED (624 nm) Power supply voltage: Va 0.24 0 V0C ±10%, 50/60 Hz 10 to 30 VDC, including ripple (p-p): 10% Power consumption DC 3 W max. (Emitter 1.5 W max. Receiver 1.5 W max. Receiver 1.5 W max.) 40 mA max. (Emitter 25 mA max. Receiver 1.5 mA max.) Control output AC 3 W max. (Emitter 1.5 W max. Receiver 1.5 W max. Receiver 1.5 W max.) - Control output Relay output SPDT, 250 VAC, 3 A max. (cose= 1), 5 VDC, 10 mA min., Light-ON/Dark-ON selectable Load power supply voltage: 30 V max., open-collector output (NPN/PNP) output depending on model), Light-ON/Dark-ON selectable Life expectancy (relay output) Mechanical 50,000,000 times min. (switching frequency: 18,000 times/h) Response time 20 ms max. 1 ms max. Receiver i Sit/Yi adjustment One-turn adjuster Receiver (E3JK-TCCCC) to 70°C (with no icing or condensation) Ambient temperature range Operating: 35% to 85%, Storage: -40°C to 70°C (with no icing or condensation) Ambient temperature range Destruction 10 to 55 Hz with a 1.5 mm double amplitude for 2 hours each in X, Y, and Z directions Storage of protection 10 to 55 Hz with a 1.5 mm double amplitude for 2 hours each in X, Y, and Z directions 500 m/s² for 3 times each in X, Y, and Z directions Bustation resistance 20 MQ m/s² for 3 times each in X, Y, and Z directi	Differential trav	vel	_					
Power supply voltage 24 to 240 VDC ±10%, ripple (p-p): 10% max. 24 to 240 VAC ±10%, 50/60 Hz 10 to 30 VDC, including ripple (p-p): 10% Power consumption DC 3 W max. (Emitter 1.5 W max. Receiver 1.5 W max.) 40 mA max. (Emitter 25 mA max. Receiver 15 mA max.) AC 3 W max. (Emitter 1.5 W max. Receiver 1.5 W max.) - Control output S W max. (Cosspe 1.1, 5 VDC, 10 mA min., Light-ON/Dark-ON selectable Load power supply voltage: 30 V max., Load current: 100 mA max., Residual voltage: 3 V max., open-collector output (NPN/PNP output depending on model), Light-ON/Dark-ON selectable Life expectancy (relay output) Mechanical 50,000,000 times min. (switching frequency: 18,000 times/h) Response time 20 ms max. 1 ms max. Receiver side) Incandescent lamp: 3,000 k max., Sunlight: 11,000 k max. Ambient temperature range Operating: -25°C to 55°C, Storage: -30°C to 70°C (with no icing or condensation) Ambient humidity range Operating: 35% to 85%, Storage: -30°C to 70°C (with no icing or condensation) Shock resistance Destruction 10 to 55 Hz with a 1.5 mm double amplitude for 2 hours each in X, Y, and Z directions Shock resistance Destruction 10 to 55 Hz with a 1.5 mm double amplitude for 2 hours each in X, Y, and Z directions Shock resistance Destruction 10 to 55 Hz with a 1.5 mm double amplitude for 2 hours ea	Directional ang	jle	Both Emitter and Receiver 3° min.					
Power supply vitage ipple (p-p): 10% max, 24 to 240 VAC ±10%, 50/60 Hz 10 to 30 VDC, including ripple (p-p): 10% Power consumption DC 3W max. (Emitter 1.5 W max. Receiver 1.5 W max.) 40 mA max. (Emitter 25 mA max. Receiver 15 mA max.) AC 3W max. (Emitter 1.5 W max. Receiver 1.5 W max.) Imple (p-p): 10% Control output Relay output SPDT, 250 VAC, 3 A max. (cosspe 1), 5 VDC, 10 mA min., Light-ON/Dark-ON selectable Load power supply voltage: 30 V max., Load current: 100 mA max., Residual voltage: 3 V max., open-collector output (NPN/PNP output depending on model). Light-ON/Dark-ON selectable Life expectancy (relay output) Mechanical 50,000,000 times min. (switching Tequency: 18,000 times/h) Response tim= 20 ms max. 1 ms max. Readicat receiver (E3-FTILL) 0 not-tum adjuster Receiver (E3-FTILL) 0 not-tum adjuster Receiver (E3-FTILL) Ambient Illimitmation (Receiver side) Operating: -25° Ct o 55°C, Storage: -40°C to 70°C (with no cing or condensation) Ambient temper ter arge Operating: -25° Ct o 55°C, Storage: -40°C to 70°C (with no condensation) Insulation resistance Dom vis for 3 times each in X, Y, and Z directions Notes there ter arge Operating: -25° Ct o 55°C, Storage: -40°C to 70°C (with no condensation) Insulation resistance Dom vis for 3 times each in X, Y, and Z di	Light source (w	vavelength)	Red LED (624 nm)	Red LED (624 nm)				
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AC Receiver 1.5 W max.)				40 mA max. (Emitter 25 mA max	x. Receiver 15 mA max.)			
Control output 3 A max. (cosφ= 1), 5 VDC, 10 m A min., Light-ON/Dark-ON, selectable Cosφ= 10, 5 VDC, 10 m A min., Light-ON/Dark-ON, selectable Cosφ= 10, 5 VDC, 10 m A min., Light-ON/Dark-ON, selectable Residual voltage: 3 V max., open-collector output (NPN/PNP) output depending on model), Light-ON/Dark-ON selectable Life expectancy (relay output) Mechanical 50,000,000 times min. (switching frequency: 18,000 times/h) Residual voltage: 3 V max., open-collector output (NPN/PNP) Response time 20 ms max. 1 ms max. 1 ms max. Sensitivity adJust One-tum adjuster Reciver (USJK-T□□□-D) only Ambient illumination (Receiver side) Incandescent lamp: 3,000 k max., Sunlight: 11,000 k max. Ambient temperature range Operating: -25°C to 55°C, Storage: -40°C to 70°C (with no icing or condensation) Ambient temperature range Operating: 35% to 85%, Storage: 35% to 95% (with no condensation) Ambient temperature range Operating: 35% to 85%, Storage: 35% to 95% (with no condensation) Insulation resistance 20 MΩ min. at 500 VDC Dielectric streyth 1,500 VAC, 50/60 Hz for 1 min Vibration resistance 10 to 55 Hz with a 1.5 mm double amplitude for 2 hours each in X, Y, and Z directions Malfunction 10 to 55 Hz with a 1.5 mm double amplitude for 2 hours each in X, Y, and Z directions Shock resistance Destruction 500 m/s² for 3 times each in X, Y, and Z directions Degree of protection	consumption	AC			-			
expectancy (relay output) Electrical 100,000 times min. (switching frequency: 1,800 times/h) Response time 20 ms max. 1 ms max. Sensitivity adjustment One-turn adjuster Receiver (E3JK-TCC-D) only Ambient illumination (Receiver side) Incandescent lamp: 3,000 lx max., Sunlight: 11,000 lx max. Ambient temperature range Operating: -25°C to 55°C, Storage: -40°C to 70°C (with no icing or condensation) Ambient temperature range Operating: -25°C to 55°C, Storage: -40°C to 70°C (with no icing or condensation) Ambient temperature range Operating: 35% to 85%, Storage: 35% to 95% (with no condensation) Insulation resistance 20 MΩ min. at 500 VDC Dielectric strength 1,500 VAC, 50/60 Hz for 1 min 1 to 55 Hz with a 1.5 mm double amplitude for 2 hours each in X, Y, and Z directions Malfunction 10 to 55 Hz with a 1.5 mm double amplitude for 2 hours each in X, Y, and Z directions Shock resistance Destruction 500 m/s² for 3 times each in X, Y, and Z directions Malfunction 100 m/s² for 3 times each in X, Y, and Z directions Degree of protection IEC 60529 IP64 Connection method Pre-wired (standard length: 2 m) Weight (packet state) Approx. 350 g Approx. 300 g Aprinow ABS (Control output		3 A max. (cosφ= 1), 5 VDC, 10 mA min., Light-ON/Dark-ON	Residual voltage: 3 V max., open-collector output (NPN/PNP				
(relay output) Electrical 100,000 times min. (switching frequency: 1,800 times/h) Response time 20 ms max. 1 ms max. Sensitivity adjustment One-turn adjuster Receiver (E3JK-T□□□-D) only Ambient illumination (Receiver side) Incandescent lamp: 3,000 k max., Sunlight: 11,000 k max. Ambient temperature range Operating: -25°C to 55°C, Storage: -40°C to 70°C (with no icing or condensation) Ambient humidity range Operating: 35% to 85%, Storage: 35% to 95% (with no condensation) Insulation resistance 20 MΩ min. at 500 VDC Dielectric stregth 1,500 VAC, 50/60 Hz for 1 min Vibration resistance Destruction 10 to 55 Hz with a 1.5 mm double amplitude for 2 hours each in X, Y, and Z directions Malfunction 10 to 55 Hz with a 1.5 mm double amplitude for 2 hours each in X, Y, and Z directions Shock resistance Destruction 500 m/s² for 3 times each in X, Y, and Z directions Malfunction 100 m/s² for 3 times each in X, Y, and Z directions Degree of protetion IEC 60529 IP64 Connection method Pre-wired (standard length: 2 m) Weight (packet state) Approx. 350 g Approx. 300 g Material Mathacrylic resin Apister Material <t< th=""><th>Life</th><th>Mechanical</th><th colspan="5">50,000,000 times min. (switching frequency: 18,000 times/h)</th></t<>	Life	Mechanical	50,000,000 times min. (switching frequency: 18,000 times/h)					
Sensitivity adjustment One-turn adjuster Receiver (E3JK-T□□□-D) only Ambient illumination (Receiver side) Incandescent lamp: 3,000 lx max., Sunlight: 11,000 lx max. Ambient temperature range Operating: -25°C to 55°C, Storage: -40°C to 70°C (with no icing or condensation) Ambient humidity range Operating: 35% to 85%, Storage: 35% to 95% (with no condensation) Insulation resistance 20 MΩ min. at 500 VDC Dielectric strength 1,500 VAC, 50/60 Hz for 1 min Vibration resistance Destruction Malfunction 10 to 55 Hz with a 1.5 mm double amplitude for 2 hours each in X, Y, and Z directions Shock resistance Destruction Malfunction 10 to 55 Hz with a 1.5 mm double amplitude for 2 hours each in X, Y, and Z directions Bestruction 10 to 55 Hz with a 1.5 mm double amplitude for 2 hours each in X, Y, and Z directions Boestruction 100 m/s² for 3 times each in X, Y, and Z directions Malfunction 100 m/s² for 3 times each in X, Y, and Z directions Degree of protection IEC 60529 IP64 Connection method Pre-wired (standard length: 2 m) Weight (packet state) Approx. 350 g Approx. 300 g Material Case ABS (Acrylonitril Butadiene Styrene) Lens/Dis		Electrical	100,000 times min. (switching frequency: 1,800 times/h)					
Ambient illumination (Receiver side) Incandescent lamp: 3,000 lx max., Sunlight: 11,000 lx max. Ambient temperature range Operating: -25°C to 55°C, Storage: -40°C to 70°C (with no icing or condensation) Ambient humidity range Operating: 35% to 85%, Storage: 35% to 95% (with no condensation) Insulation resistance 20 MΩ min. at 500 VDC Dielectric strength 1,500 VAC, 50/60 Hz for 1 min Vibration resistance Destruction 10 to 55 Hz with a 1.5 mm double amplitude for 2 hours each in X, Y, and Z directions Malfunction 10 to 55 Hz with a 1.5 mm double amplitude for 2 hours each in X, Y, and Z directions Shock resistance Destruction 10 to 55 Hz with a 1.5 mm double amplitude for 2 hours each in X, Y, and Z directions Bestruction 100 m/s² for 3 times each in X, Y, and Z directions 500 m/s² for 3 times each in X, Y, and Z directions Degree of protection IEC 60529 IP64 500 m/s² for 3 times each in X, Y, and Z directions Connection method Pre-wired (standard length: 2 m) Approx. 350 g Weight (packet state) Approx. 350 g Approx. 300 g Material Case ABS (Acrylonitril Butadiene Styrene) Lens/Display window Methacrylic resin Methacrylic resin	Response time		20 ms max.	1 ms max.				
(Receiver side) Incandescent lamp: 3,000 lx max., Sunlight: 11,000 lx max. Ambient temp=rature range Operating: -25°C to 55°C, Storage: -40°C to 70°C (with no icing or condensation) Ambient humidity range Operating: 35% to 85%, Storage: 35% to 95% (with no condensation) Insulation resistance 20 MΩ min. at 500 VDC Dielectric stremeth 1,500 VAC, 50/60 Hz for 1 min Vibration Postruction 10 to 55 Hz with a 1.5 mm double amplitude for 2 hours each in X, Y, and Z directions Malfunction 10 to 55 Hz with a 1.5 mm double amplitude for 2 hours each in X, Y, and Z directions Shock Destruction 500 m/s² for 3 times each in X, Y, and Z directions Begree of protection IEC 60529 IP64 Connection method Pre-wired (standard length: 2 m) Weight (packet state) Approx. 350 g Approx. 300 g Material Case ABS (Acrylonitril Butadiene Styrene) Lens/Display window Methacrylic resin Adjuster POM	Sensitivity adju	ustment	One-turn adjuster Receiver (E3JK-T□□□-D) only					
Ambient humidity range Operating: 35% to 85%, Storage: 35% to 95% (with no condensation) Insulation resistance 20 MΩ min. at 500 VDC Dielectric strength 1,500 VAC, 50/60 Hz for 1 min Vibration resistance Destruction 10 to 55 Hz with a 1.5 mm double amplitude for 2 hours each in X, Y, and Z directions Malfunction 10 to 55 Hz with a 1.5 mm double amplitude for 2 hours each in X, Y, and Z directions Shock resistance Destruction 500 m/s² for 3 times each in X, Y, and Z directions Malfunction 100 m/s² for 3 times each in X, Y, and Z directions Degree of protection IEC 60529 IP64 Connection method Pre-wired (standard length: 2 m) Weight (packet state) Approx. 350 g Approx. 300 g Ags Actrylonitril Butadiene Styrene) Lens/Display window Material Adjuster POM			Incandescent lamp: 3,000 lx max., Sunlight: 11,000 lx max.					
Insulation resistance 20 MΩ min. at 500 VDC Dielectric strength 1,500 VAC, 50/60 Hz for 1 min Vibration resistance Destruction 10 to 55 Hz with a 1.5 mm double amplitude for 2 hours each in X, Y, and Z directions Malfunction 10 to 55 Hz with a 1.5 mm double amplitude for 2 hours each in X, Y, and Z directions Shock resistance Destruction 500 m/s² for 3 times each in X, Y, and Z directions Malfunction 100 m/s² for 3 times each in X, Y, and Z directions Degree of protection IEC 60529 IP64 Connection method Pre-wired (standard length: 2 m) Weight (packed state) Approx. 350 g Approx. 300 g Material Adjuster POM	Ambient tempe	erature range	Operating: -25°C to 55°C, Storage: -40°C to 70°C (with no icing or condensation)					
Dielectric strevel 1,500 VAC, 50/60 Hz for 1 min Vibration resistance Destruction 10 to 55 Hz with a 1.5 mm double amplitude for 2 hours each in X, Y, and Z directions Malfunction 10 to 55 Hz with a 1.5 mm double amplitude for 2 hours each in X, Y, and Z directions Shock resistance Destruction 500 m/s² for 3 times each in X, Y, and Z directions Malfunction 100 m/s² for 3 times each in X, Y, and Z directions Degree of protection IEC 60529 IP64 Connection method Pre-wired (standard length: 2 m) Weight (packet state) Approx. 350 g Approx. 300 g Material Case ABS (Acrylonitril Butadiene Styre) Material Methacrylic resin	Ambient humic	dity range	Operating: 35% to 85%, Storage: 35% to 95% (with no condensation)					
Vibration resistance Destruction 10 to 55 Hz with a 1.5 mm double amplitude for 2 hours each in X, Y, and Z directions Malfunction 10 to 55 Hz with a 1.5 mm double amplitude for 2 hours each in X, Y, and Z directions Bock resistance Destruction 500 m/s² for 3 times each in X, Y, and Z directions Malfunction 100 m/s² for 3 times each in X, Y, and Z directions 500 m/s² for 3 times each in X, Y, and Z directions Degree of protection IEC 60529 IP64 500 m/s² for 3 times each in X, Y, 500 m/s² for 3 times each in X, Y, and Z directions Weight (packed state) Approx. 350 g Approx. 300 g Material Case ABS (Acrylonitril Butadiene Styrene) Methacrylic resin Material POM POM POM	Insulation resis	stance						
Image: mask for the section of the section	Dielectric stren	ngth						
Destruction 500 m/s² for 3 times each in X, Y, and Z directions Malfunction 100 m/s² for 3 times each in X, Y, and Z directions Degree of protection IEC 60529 IP64 Connection method Pre-wired (standard length: 2 m) Weight (packed state) Approx. 350 g Approx. 300 g Lens/Display window Methacrylic resin Adjuster POM	Vibration	Destruction	10 to 55 Hz with a 1.5 mm double amplitude for 2 hours each in X, Y, and Z directions					
Shock resistance Malfunction 100 m/s ² for 3 times each in X, Y, and Z directions 500 m/s ² for 3 times each in X, Y, and Z directions Degree of protection IEC 60529 IP64 Connection method Pre-wired (standard length: 2 m) Weight (packed state) Approx. 350 g Approx. 300 g Case ABS (Acrylonitril Butadiene Styrene) Lens/Display window Methacrylic resin Adjuster POM	resistance	Malfunction	10 to 55 Hz with a 1.5 mm double amplitude for 2 hours each in X, Y, and Z directions					
resistance Malfunction 100 m/s ² for 3 times each in X, Y, and Z directions 500 m/s ² for 3 times each in X, Y, and Z directions Degree of protection IEC 60529 IP64 500 m/s ² for 3 times each in X, Y, and Z directions Connection method Pre-wired (standard length: 2 m) 4pprox. 350 g Weight (packed state) Approx. 350 g Approx. 300 g Material Case ABS (Acrylonitril Butadiene Styrere) Lens/Display window Methacrylic resin Adjuster POM	Shock	Destruction	500 m/s ² for 3 times each in X, Y	, and Z directions				
Connection method Pre-wired (standard length: 2 m) Weight (packed state) Approx. 350 g Approx. 300 g Material Case ABS (Acrylonitril Butadiene Styrene) Lens/Display window Methacrylic resin Adjuster POM		Malfunction		500 m/s ² for 3 times each in X, Y	Y, and Z directions			
Weight (packed state) Approx. 350 g Approx. 300 g Case ABS (Acrylonitril Butadiene Styrene) Material Lens/Display window Methacrylic resin Adjuster POM	Degree of prote	ection	IEC 60529 IP64					
Case ABS (Acrylonitril Butadiene Styrene) Lens/Display window Methacrylic resin Adjuster POM	Connection method		Pre-wired (standard length: 2 m)					
Lens/Display window Methacrylic resin Adjuster POM	Weight (packed	d state)	Approx. 350 g	Approx. 300 g				
Material window Methacrylic resin Adjuster POM		Case	ABS (Acrylonitril Butadiene Styre	ene)				
	Material							
Cable PVC		Adjuster	РОМ					
		Cable	PVC					
Bending radius of cable R18	Bending radius	s of cable	R18					
Accessories Instruction manual and Mounting Bracket (E3JK-TR12-C only)	Accessories		Instruction manual and Mounting	Bracket (E3JK-TR12-C only)				

	Sensing method	Ret	ro-reflective (without MSR fu	nction)		
Item	Model	E3JK-RR11-	E3JK-RN11	E3JK-RP11		
Sensing dista	nce	7 m [100 mm]* (When using E39-R1), 11 m [100 mm]* (When using E39-R2)				
Standard sens	ing object	Opaque: 75-mm dia. min.				
Differential travel			-			
Directional an	gle	1.5° min.				
Light source (wavelength)	Red LED (624 nm)				
Power supply voltage		24 to 240 VDC ±10%, ripple (p-p): 10% max. 24 to 240 VAC ±10%, 50/60 Hz				
Power	DC	2 W max.	30 mA max.			
consumption	AC	2 W max.		-		
Control output		Relay output SPDT, 250 VAC, 3 A max. (cosφ= 1), 5 VDC, 10 mA min., Light-ON/Dark-ON selectable	Load power supply voltage: 30 V max., Load current: 100 mA max Residual voltage: 3 V max., open-collector output (NPN/PNP output depending on model), Light-ON/Dark-ON selectable			
Life Mechanical		50,000,000 times min. (switching frequency: 18,000 times/h)				
expectancy (relay output) Electrical		100,000 times min. (switching frequency: 1,800 times/h)				
Response time		20 ms max.	1 ms max.			
Sensitivity adjustment		One-turn adjuster				
Ambient illumination (Receiver side)		Incandescent lamp: 3,000 lx max., Sunlight: 11,000 lx max.				
Ambient temp	erature range	Operating: -25°C to 55°C, Storage: -40°C to 70°C (with no icing or condensation)				
Ambient humi	dity range	Operating: 35% to 85%, Storage: 35% to 95% (with no condensation)				
Insulation resi	stance	20 MΩ min. at 500 VDC				
Dielectric stre	ngth	1,500 VAC, 50/60 Hz for 1 min				
Vibration	Destruction	10 to 55 Hz with a 1.5 mm double amplitude for 2 hours each in X, Y, and Z directions				
resistance	Malfunction	10 to 55 Hz with a 1.5 mm double amplitude for 2 hours each in X, Y, and Z directions				
Shock	Destruction	500 m/s ² for 3 times each in X, Y, and Z directions				
resistance	Malfunction	100 m/s ² for 3 times each in X, Y, and Z directions	500 m/s ² for 3 times each in λ	ζ, Y, and Z directions		
Degree of prot	ection	IEC 60529 IP64				
Connection method		Pre-wired (standard length: 2 m)				
Weight (packed state)		Approx. 180 g	Approx. 160 g			
Case		ABS (Acrylonitril Butadiene Styrene)				
Material	Lens/Display window	Methacrylic resin				
	Adjuster	POM				
	Cable	PVC				
Bending radiu	s of cable	R18				
Accessories		Instruction manual, Mounting Bra	acket (E3JK-RR11-C only), and	Reflector (E3JK-RR11-C only)		
		I				

*Values in parentheses indicate the minimum required distances between the Sensors and Reflectors.

		Retro-reflective (with MSR function)				
Item Model		E3JK-RR12-	E3JK-RN12	E3JK-RP12		
Sensing distan	ice	6 m [100 mm]* (When using E39-R1), 10 m [100 mm]* (When using E39-R2)				
Standard sens	ing object	Opaque: 75-mm dia. min.				
Differential trav	vel	-				
Directional ang	gle	1.5° min.				
Light source (v	wavelength)	Red LED (624 nm)				
Power supply voltage		24 to 240 VDC ±10%, ripple (p-p): 10% max. 24 to 240 VAC ±10%, 50/60 Hz	10 to 30 VDC, including ripple (p-p): 10% O Hz			
Power	DC	2 W max.	30 mA max.			
consumption	AC	2 W max.	-	-		
Control output		Relay output SPDT, 250 VAC, 3 A max. (cosφ= 1), 5 VDC, 10 mA min., Light-ON/Dark-ON selectable	Load power supply voltage: 30 V max., Load current: 100 mA max Residual voltage: 3 V max., open-collector output (NPN/PNP output depending on model), Light-ON/Dark-ON selectable			
Life Mechanical		50,000,000 times min. (switching frequency: 18,000 times/h)				
expectancy (relay output) Electrical		100,000 times min. (switching frequency: 1,800 times/h)				
Response time)	20 ms max.	1 ms max.			
Sensitivity adjustment		One-turn adjuster				
Ambient illumination (Receiver side)		Incandescent lamp: 3,000 lx max., Sunlight: 11,000 lx max.				
Ambient tempe	erature range	Operating: -25°C to 55°C, Storage: -40°C to 70°C (with no icing or condensation)				
Ambient humic	dity range	Operating: 35% to 85%, Storage: 35% to 95% (with no condensation)				
Insulation resis	stance	20 MΩ min. at 500 VDC				
Dielectric stren	ngth	1,500 VAC, 50/60 Hz for 1 min				
Vibration	Destruction	10 to 55 Hz with a 1.5 mm double amplitude for 2 hours each in X, Y, and Z directions				
resistance	Malfunction	10 to 55 Hz with a 1.5 mm double amplitude for 2 hours each in X, Y, and Z directions				
Shock	Destruction	500 m/s ² for 3 times each in X, Y	, and Z directions			
resistance	Malfunction	100 m/s ² for 3 times each in X, Y, and Z directions	500 m/s ² for 3 times each in X, Y,	, and Z directions		
Degree of prote	ection	IEC 60529 IP64	·			
Connection me	ethod	Pre-wired (standard length: 2 m)				
Weight (packed state)		Approx. 180 g	Approx. 160 g			
Case		ABS (Acrylonitril Butadiene Styrene)				
Material	Lens/Display window	Methacrylic resin				
	Adjuster	POM				
	Cable	PVC				
Bending radius	s of cable	R18				
Accessories		Instruction manual, Mounting Bracket (E3JK-RR12-C only), and Reflector (E3JK-RR12-C only)				

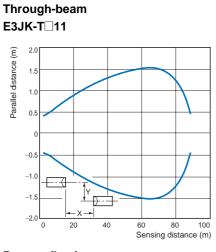
*Values in parentheses indicate the minimum required distances between the Sensors and Reflectors.

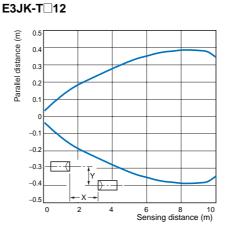
	Sensing method	Diffuse-reflective					
Item	Model	E3JK-DR11-	E3JK-DR12-	E3JK-DN11	E3JK-DP11	E3JK-DN12	E3JK-DP12
Sensing dista	nce	White paper (300 × 300 mm): 2.5 m	White paper (100 × 100 mm): 300 mm			White paper (10 300 mm	0×100 mm):
Standard sens	ing object						
Differential tra	vel	20% max. of ser	nsing distance				
Directional an	gle				_		
Light source (wavelength)	Red LED (624 n	m)				
Power supply	voltage	ripple (p-p): 10%	24 to 240 VDC ±10%, 10 to 30 VDC, including ripple (p-p): 10% 24 to 240 VAC ±10%, 50/60 Hz 10 to 30 VDC, including ripple (p-p): 10%				
Power DC		2 W max.		30 mA max.			
consumption	AC	2 W max.				-	
Control output	t	Relay output SP 3 A max. (cosφ= 10 mA min., Ligl selectable	1), 5 VDC,	5 VDC, Load power supply voltage: 30 V max., Load current: 100 mA ma			(NPN/PNP
Life	Mechanical	50,000,000 times min. (switching frequency: 18,000 times/h)					
expectancy (relay output)	Electrical	100,000 times min. (switching frequency: 1,800 times/h)					
Response time	9	20 ms max. 1 ms max.					
Sensitivity adj	ustment	One-turn adjuster					
Ambient illumi (Receiver side		Incandescent lamp: 3,000 lx max., Sunlight: 11,000 lx max.					
Ambient temp	erature range	Operating: -25°C to 55°C, Storage: -40°C to 70°C (with no icing or condensation)					
Ambient humi	dity range	Operating: 35% to 85%, Storage: 35% to 95% (with no condensation)					
Insulation resi	stance	20 MΩ min. at 500 VDC					
Dielectric stre	ngth	1,500 VAC, 50/6	0 Hz for 1 min				
Vibration	Destruction	10 to 55 Hz with	a 1.5 mm double	e amplitude for 2	hours each in X,	Y, and Z direction	าร
resistance	Malfunction	10 to 55 Hz with	a 1.5 mm double	e amplitude for 2	hours each in X,	Y, and Z direction	าร
Shook	Destruction	500 m/s ² for 3 til	mes each in X, Y	, and Z directions	6		
Shock resistance	Malfunction	100 m/s ² for 3 tin and Z directions		500 m/s ² for 3 ti	mes each in X, Y	, and Z directions	
Degree of prot	ection	IEC 60529 IP64		ł			
Connection m	ethod	Pre-wired (stand	lard length: 2 m)				
Weight (packe	d state)	Approx. 180 g Approx. 160 g					
	Case	ABS (Acrylonitril Butadiene Styrene)					
Material	Lens/Display window	Methacrylic resin					
	Adjuster	РОМ					
	Cable	PVC					
Bending radiu	s of cable	R18					
Accessories		Instruction manual and Mounting Bracket (E3JK-DR1□-C only)					

20

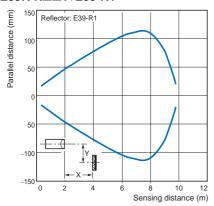
Sensing distance (m)

Parallel Operating Range

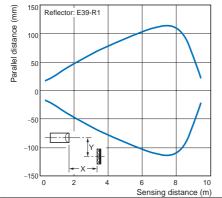


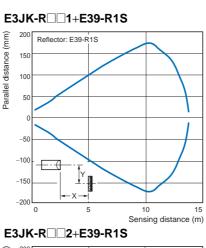


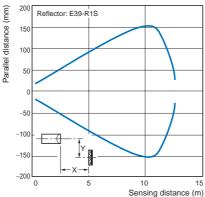
Retro-reflective E3JK-R 1+E39-R1

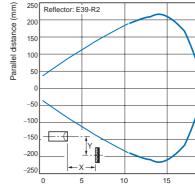


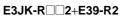
E3JK-R 2+E39-R1



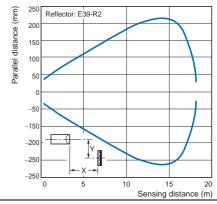








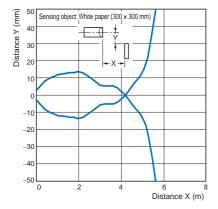
E3JK-R 1+E39-R2



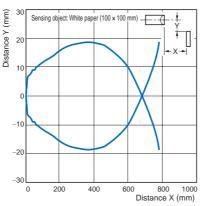
Operating Range

Diffuse-reflective

E3JK-D

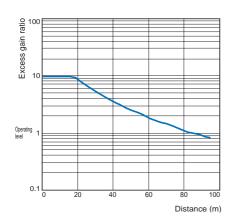


E3JK-D02

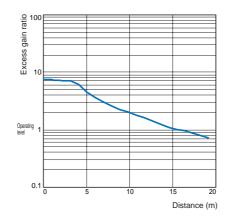


Excess Gain Ratio vs. Set Distance

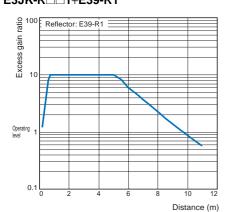
Through-beam E3JK-T⊡11



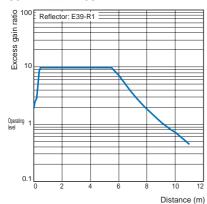
E3JK-TD12



Retro-reflective E3JK-R 1+E39-R1

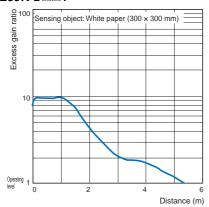


E3JK-R 2+E39-R1

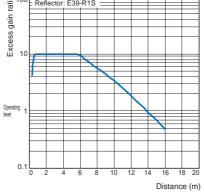


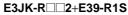
Diffuse-reflective

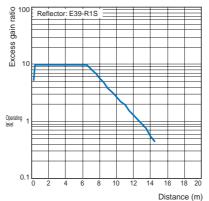
E3JK-D



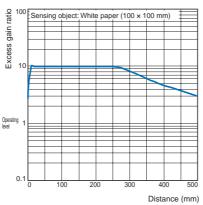
E3JK-R 1+E39-R1S



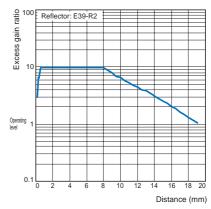




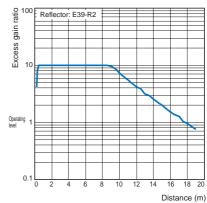
E3JK-D 2



E3JK-R 1+E39-R2



E3JK-R 2+E39-R2



I/O Circuit Diagrams

Relay Output Models

Model	Timing	g chart	Output circuit
WOUEI	Light-ON	Dark-ON	Output circuit
E3JK-TR11-L * E3JK-TR12-L *			Power Indicator (green) Photoelectric Sensor main Circuit Blue
E3JK-TR11-D * E3JK-TR12-D * E3JK-RR11 E3JK-RR12 E3JK-DR11 E3JK-DR12	Incident light No incident light Operation Indicator ON (orange) OFF Relay Operate Relay Reset Output Tc-Ta Conducting Not conducting Output Tc-Tb Not conducting	Incident light No incident light Operation Indicator ON (orange) OFF Relay Operate Output Tc-Ta Conducting Output Tc-Tb Conducting Output Tc-Tb Not conducting	Contact output (SPDT), Stability Indicator (green) Circuit Blue White Gray Ta Gray Tb Stability Indicator Contact output (SPDT), Stability Contact output (SPDT), Stability Contact output (SPDT), Stability Contact output (SPDT), Stability Stability Contact output (SPDT), Stability Stability Contact output (SPDT), Stability Stability Contact output (SPDT), Stability

DC SSR Output Models

	Timing chart		Output circuit
Model	Light-ON	Dark-ON	Output circuit
E3JK-TN11-L * E3JK-TP11-L * E3JK-TN12-L * E3JK-TP12-L *			Power Indicator (green) Photoelectric Bensor Circuit Blue 0V
E3JK-RN11 E3JK-RN12 E3JK-DN11	Incident light No incident light Operation Indicator ON (orange) OFF Output ON Utput OFF Load Operate (e.g., relay) Reset	Incident light No incident light Operation Indicator (orange) OUtput transistor OFF Load (e.g., relay)	Operation Indicator (orange) Indicator (green) Photoelectric Black Black Uoad 10 to 30 VDC Load 10 mA max.
E3JK-RP11 E3JK-RP12 E3JK-DP11	Incident light No incident light Operation Indicator ON (orange) OFF Output ON Utransistor OFF Load Operate Load Operate (e.g., relay) Reset	Incident light No incident light Operation Indicator ON (orange) OFF Output ON Load Operate Load Operate (e.g., relay)	Operation Indicator (orange) Indicator (green) Indicator (green) Indicator Black Black Black Black Blue OV

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. *For the Through-beam Sensor, the Emitter is listed as E3JK-T□11-L, E3JK-T□12-L and the Receiver is listed as E3JK-T□11-D, E3JK-T□12-D in the table. Confirm the models to order in "Ordering Information."

E3JK

Safety Precautions

Refer to Warranty and Limitations of Liability.

<u> WARNING</u>

This product is not designed or rated for ensuring safety of persons either directly or indirectly.

Do not use it for such purposes.

<u> C</u>aution

Do not wire the product incorrectly. Do not use this product with a damaged case or cable.



Do not disassemble, repair, or modify this product.



. Doing so may lead to explosion, fire, or product failure.

Precautions for Safe Use

The following precautions must be observed to ensure safe operation of the Sensor.

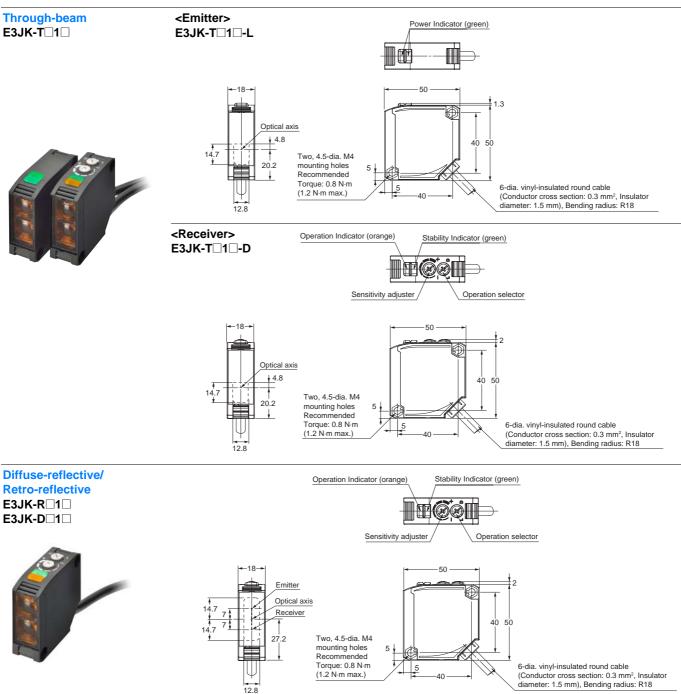
- 1. Do not use the Sensor in environments subject to flammable, explosive or corrosive gases.
- Do not use this product in an environment in which oil or chemicals are present.
- 3. Do not use this product under water, in the rain, or outdoors.
- 4. Do not use this product under conditions that exceed or in an environment that exceeds the ratings.
- 5. When using an AC power supply, do not use a power supply that includes high frequencies (such as an inverter).
- 6. Do not use this product in a location subject to direct sunlight.
- 7. Do not use this product in a location in which the product will be subject to direct vibrations or impacts.
- 8. Do not use thinner, alcohol, or other organic solvents with this product.
- 9. When disposing of the Sensor, treat it as industrial waste.

Precautions for Correct Use

- If the product is wired to high-voltage power lines and power lines in the same pipe or the same duct, the product may malfunction or be damaged due to induction. Therefore, in principle, perform these two types of wiring separately or use shielded cords.
- Do not apply excessive force to the cables.
- When using a commercially available switching regulator, be sure to install an FG (frame ground terminal).
- The time between the product being turned ON and sensing being possible is 100 ms, so wait at least 100 ms after turning the product ON before using it. If the load and the product are connected to different power supplies, be sure to turn the product ON first.
- An output pulse may be generated when the product is turned OFF, so we recommend turning the load or the load line OFF first.

Dimensions





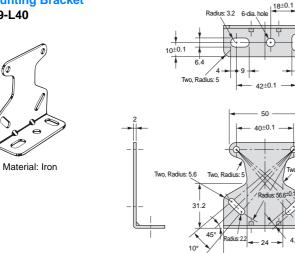
E39-L40

60

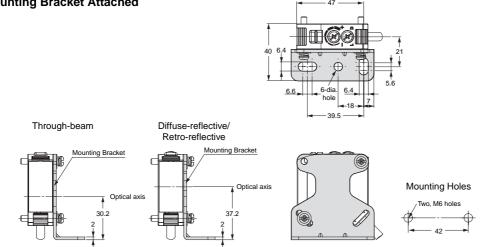
Accessories

Mounting Bracket (Order separately)

Mounting Bracket







Radius: 3.2

64

Two, Radius: 5

Two, 4.4-dia. hole

Radius: 2.2

60°

21.9

60

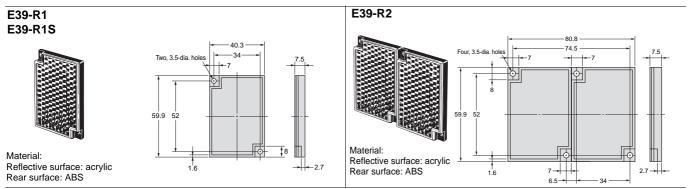
Radius: 5

4.4

58

12 22

Reflector (Order separately)



Terms and Conditions Agreement

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.

Warranties.

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