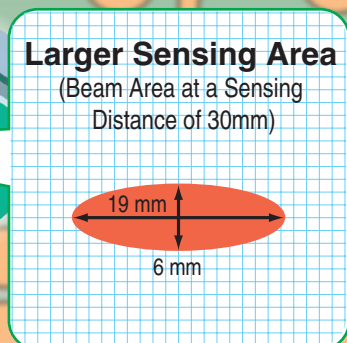
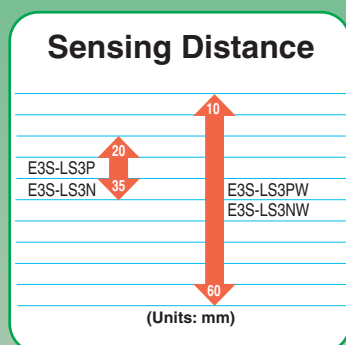


E3S-LS3P/-LS3PW E3S-LS3N/-LS3NW

PCB Sensors

OMRON



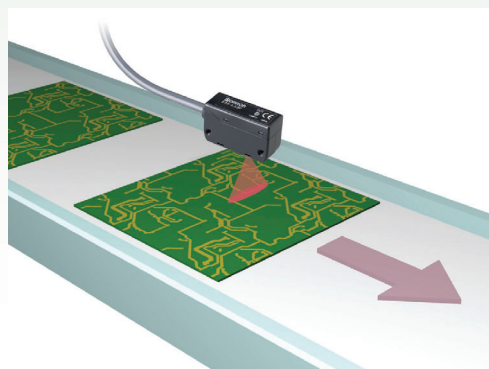
STABLE DETECTION!

NOT AFFECTED BY HOLES OR NOTCHES

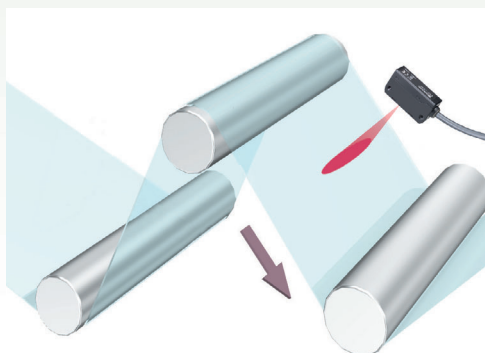
Larger spot.
Handles colors, holes, and notches.
Easier to use.
And provides more-consistent detection.

Application Examples

Detecting for PCBs



Transparent Film Sheet Detection



Detection for Wafercassette Mounting



<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.

Ordering Information

■ Sensor

 Red light

Sensing method	Appearance	Connection method	Sensing distance (See note.)	Timer function	Model	
					PNP output	NPN output
Limited reflective		Pre-wired (2 m)	 20 to 35 mm	Without	E3S-LS3P	E3S-LS3N
				With	E3S-LS3PT	E3S-LS3NT
		Pre-wired M8 3-pin connector (0.3 m)		Without	E3S-LS3P-M5J	---
				With	E3S-LS3PT-M5J	---
		Pre-wired M8 4-pin connector (0.3 m)		Without	E3S-LS3P-M3J	---
				With	E3S-LS3PT-M3J	---
		Pre-wired (2 m)	 10 to 60 mm	Without	E3S-LS3PW	E3S-LS3NW
				With	E3S-LS3PWT	E3S-LS3NWT
		Pre-wired M8 3-pin connector (0.3 m)		Without	E3S-LS3PW-M5J	---
				With	E3S-LS3PWT-M5J	---
		Pre-wired M8 4-pin connector (0.3 m)		Without	E3S-LS3PW-M3J	---
				With	E3S-LS3PWT-M3J	---

Note: For white paper: 80×80 mm.

Specifications

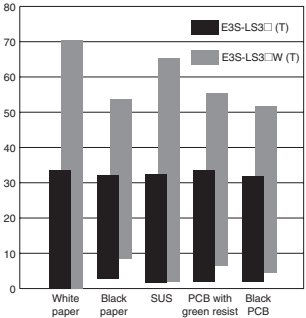
■ Ratings/Characteristics

Item		Model	E3S-LS3P	E3S-LS3PW	E3S-LS3N	E3S-LS3NW
		E3S-LS3PT	E3S-LS3PWT	E3S-LS3NT	E3S-LS3NWT	
Sensing distance	White paper (See note.)	20 to 35 mm	10 to 60 mm	20 to 35 mm	10 to 60 mm	
	Black paper (See note.)	20 to 30 mm	15 to 50 mm	20 to 30 mm	15 to 50 mm	
Light source (wavelength)		Red LED (660 nm)				
Power supply voltage		12 to 24 VDC±10%, ripple (p-p) 10% max.				
Current consumption		25 mA max.				
Control output		PNP open collector output Residual voltage: 2 V max.		NPN open collector output Residual voltage: 1 V max.		
		Load power supply voltage: 24 VDC max., Load current: 100 mA max., Operating mode: Light ON				
Response time		1 ms max. for operation and reset respectively				
Timer function (E3S-LS3□□T)		Time range: 0.1 to 1.0 s (adjustable)				
Ambient illumination		Receiver side: Incandescent lamp: 5,000 lux max.				
Ambient temperature		Operating: −10 to 55°C (with no icing or condensation) Storage: −25 to 70°C (with no icing or condensation)				
Ambient humidity		Operating: 35% to 85% (with no condensation) Storage: 35% to 95% (with no condensation)				
Insulation resistance		20 MΩ min. (at 500 VDC) between charged parts and the case				
Dielectric strength		1,000 VAC at 50/60 Hz for 1 minute between charged parts and the case				
Vibration resistance (destruction)		10 to 55 Hz with a 1.5-mm double amplitude for 2 hrs each in X, Y, and Z directions				
Shock resistance (destruction)		500 m/s ² , 3 times each in X, Y, and Z directions				
Degree of protection		IEC60529 IP40				
Connection method		Pre-wired (standard length: 2 m)/Pre-wired M8 connector (standard length: 0.3 m)				
Indicators		Operation indicator (orange)				
Weight (packed state)		Pre-wired models: Approx. 80 g; Pre-wired M8 connector: Approx. 45 g				
Material	Case	ABS				
	Lens	Acrylic				
Accessories		Instruction sheet, M3 screws, screwdriver for timer adjustment (only models with timer function)				

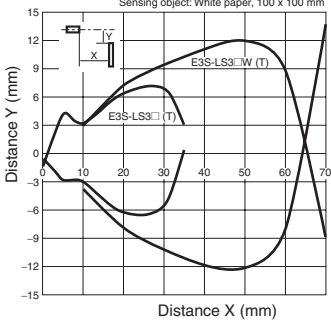
Note: 80×80 mm.

Engineering Data

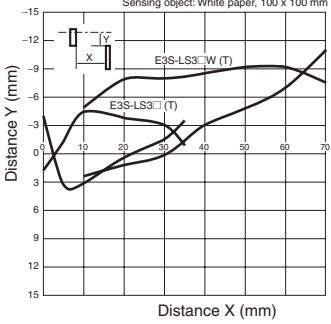
Sensing Distance vs. Materials



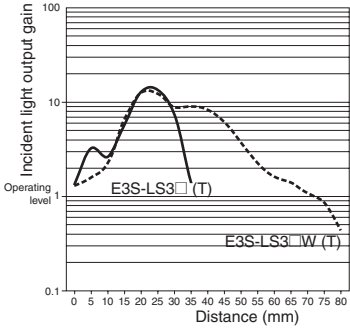
Operating Range (Left and Right)



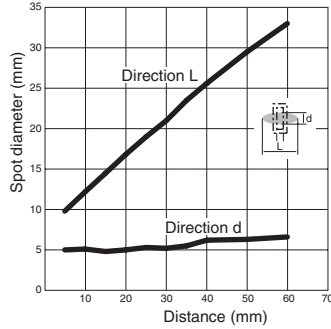
Operating Range (Up and Down)



Output vs. Set Distance



Spot Diameter vs. Sensing Distance



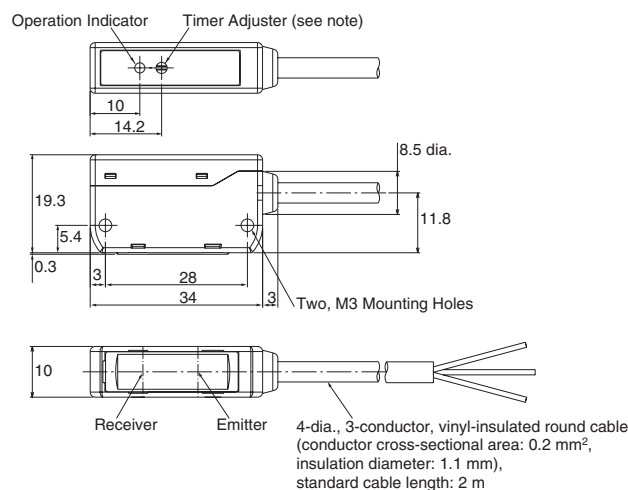
Operation

Model		Output transistor status	Timing chart	Output circuit
PNP	E3S-LS3P E3S-LS3PW	Light ON	Incident light No incident light Operation indicator (orange) ON OFF Output transistor ON OFF	Connector pin arrangement (-M5J) Connector pin arrangement (-M3J)
	E3S-LS3PT E3S-LS3PWT		Incident light No incident light Operation indicator (orange) ON OFF Output transistor ON OFF T: Off-delay timer (0.1 to 1.0 s)	
NPN	E3S-LS3N E3S-LS3NW	Light ON	Incident light No incident light Operation indicator (orange) ON OFF Output transistor ON OFF	Connector pin arrangement (-M5J) Connector pin arrangement (-M3J)
	E3S-LS3NT E3S-LS3NWT		Incident light No incident light Operation indicator (orange) ON OFF Output transistor ON OFF T: Off-delay timer (0.1 to 1.0 s)	

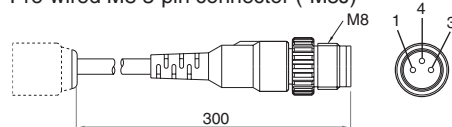
Dimensions

Note: All units are in millimeters unless otherwise indicated.

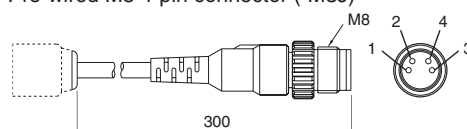
E3S-LS3P(T)(-M5J/-M3J) **E3S-LS3N(T)**
E3S-LS3PW(T)(-M5J/-M3J) **E3S-LS3NW(T)**



Pre-wired M8 3-pin connector (-M5J)

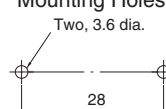


Pre-wired M8 4-pin connector (-M3J)



Terminal number	Specifications	
	-M5J	-M3J
1	+V	+V
2	-	Open
3	0 V	0 V
4	Output	Output

Mounting Holes



Note: The Timer Adjuster is only for the E3S-LS3□□T.

! WARNING

This product is not designed or rated for ensuring safety of persons. Do not use it for such purpose.

This document provides information mainly for selecting suitable models. Please read the document carefully for information that the user must understand and accept before purchase, including information on warranty, limitations of liability, and precautions.

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