Printed Circuit Board Sensor

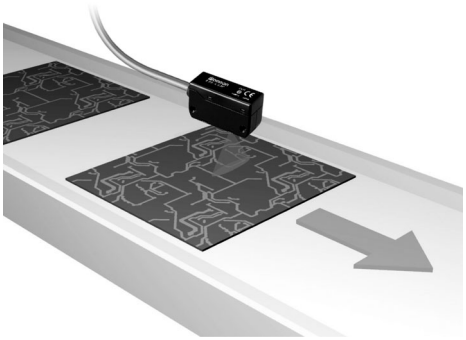
E3S-LS3

Printed circuit board sensor capable of stable detection without being affected by holes or notches.

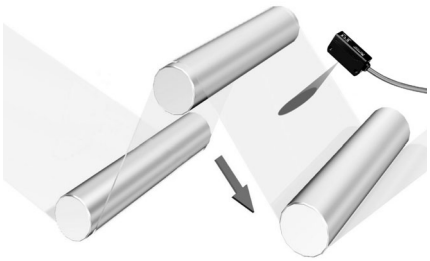
- Suitable for incorporation in devices (E3S-LS3□).
- Wide range is suitable for component boards with high or irregularly shaped components (E3S-LS3□W).

Applications

Detecting for PCBs



Transparent Film Sheet Detection



Detection for Wafer-cassette Mounting

Ordering Information

Red light

Sensor type	Shape	Connection method	Detection distance *	Timer function	Model	Output
Limited reflective		Pre-wired (2 m)	20 to 35 mm	Without	E3S-LS3N	NPN Light ON
			10 to 60 mm		E3S-LS3NW	
		Pre-wired (2 m)	20 to 35 mm	Without	E3S-LS3P	PNP Light ON
				With	E3S-LS3PT	
		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	
				With	E3S-LS3PWT	
		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	

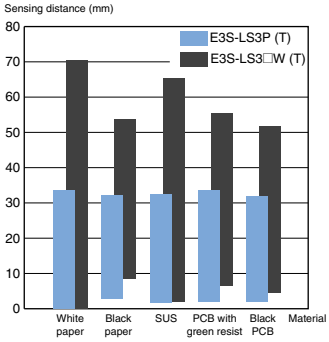
* Using 80 x 80 mm white art paper

Rating/performance

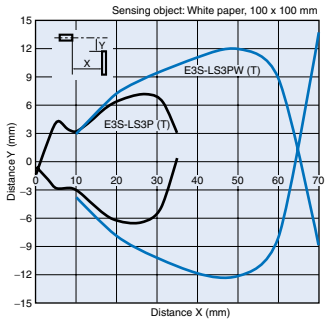
Item \ Sensor type / Model		Limited reflective			
		E3S-LS3□	E3S-LS3PT	E3S-LS3□W	E3S-LS3PWT
Sensing	White art paper	20 to 35 mm		10 to 60 mm	
	Black paper *	20 to 30 mm		15 to 50 mm	
Light source (wave length)		Red LED (660 nm)			
Power supply voltage		12 to 24 VDC±10%, ripple (p-p) 10% max.			
Current consumption		25 mA max.			
Control output		Load power supply voltage: 24 VDC max.; Load current: 100 mA max., Residual voltage: 2 V max.; Operating mode: Light ON			
Response time		1 ms max. for operation and reset respectively			
Timer function		Available with E3S-LS3P(W)T models only. Time range: 0.1 to 1.0 s (adjustable)			
Ambient illuminance		Receiver side: Incandescent lamp: 5,000 lux max.			
Ambient temperature		Operating: -10 to 55°C (with no icing or condensation)			
Ambient humidity		Operating:35% to 85% (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		10 to 55 Hz with a 1.5-mm double amplitude for 2 hrs each in X, Y and Z directions			
Shock resistance		500 m/s^2, 3 times each in X, Y and Z directions			
Protective structure		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,			

Characteristic data (typical)

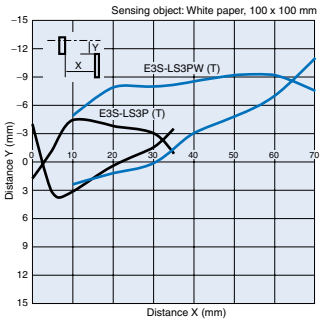
Sensing Distance vs. Materials



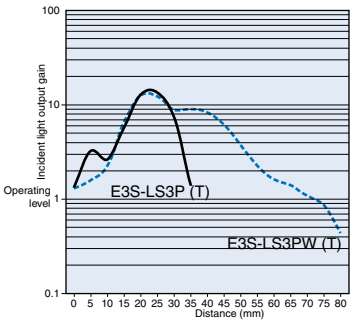
Operating Range (Left and Right)



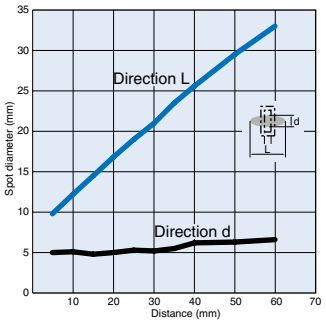
Operating Range (Up and Down)



Output vs. Set Distance

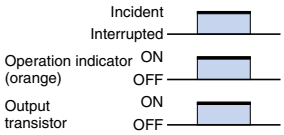
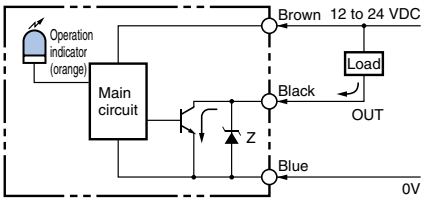
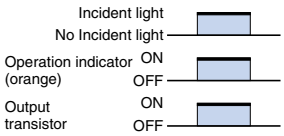
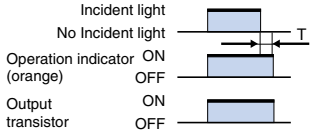


Spot Diameter vs. Sensing Distance



Output Circuit Diagram

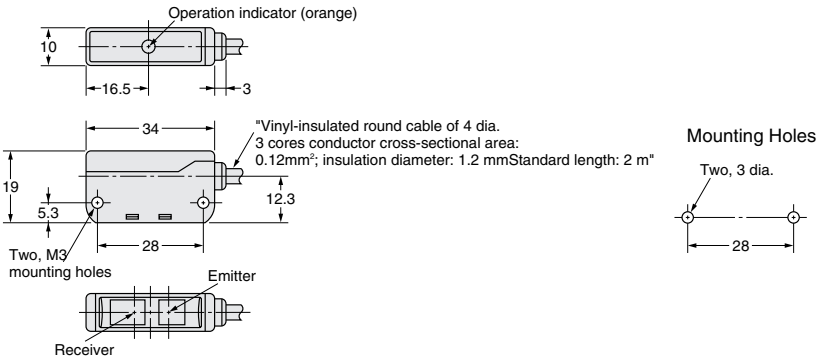
NPN output (PNP output will be available soon)

Model	Operating status of output transistor	Timing chart	Output circuit
E3S-LSN3 E3S-LS3NW	Light ON		
E3S-LS3P E3S-LS3PW			
E3S-LS3PT E3S-LS3PWT		 T: Off-delay timer (0.1 to 1.0 s)	

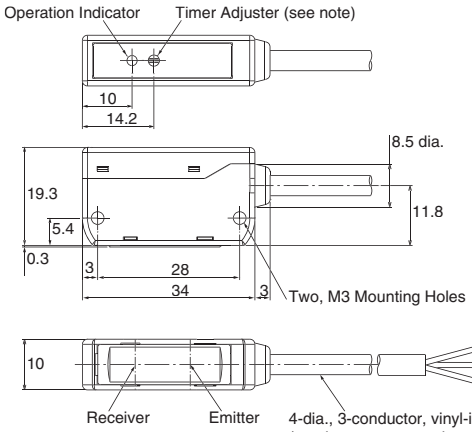
Dimensions (Unit: mm)

Note: All units are in millimeters unless otherwise indicated.

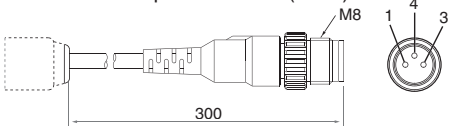
E3S-LS3N
E3S-LS3NW



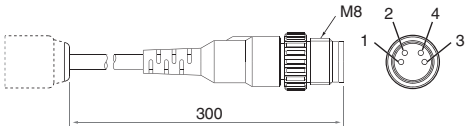
E3S-LS3□(T)(-M5J/-M3J)
E3S-LS3□W(T)(-M5J/-M3J)



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

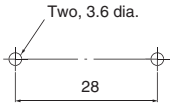


Pre-wired M8 4-pin connector (-M3J)



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-LS3PT and E3S-LS3PWT.

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

Cat. No. E223-E2-01-X In the interest of product improvement, specifications are subject to change without notice.