

Printed Circuit Board Sensor

E3S-LS3

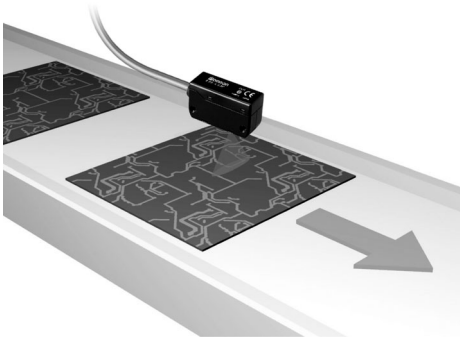
Printed circuit board sensor capable of stable detection without being affected by holes or notches.

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

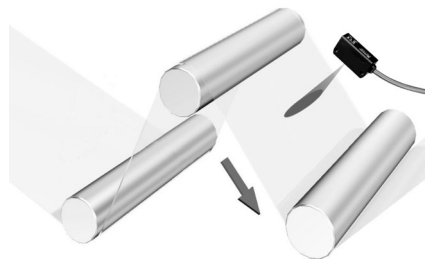


Applications

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)	Pre-wired M8 3-pin connector (0.3 m)	 20 to 35 mm	Without	E3S-LS3P	PNP Light ON	
					With	E3S-LS3PT		
		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)		Pre-wired M8 3-pin connector (0.3 m)	 10 to 60 mm	Without		E3S-LS3PW
						With		E3S-LS3PWT
	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				

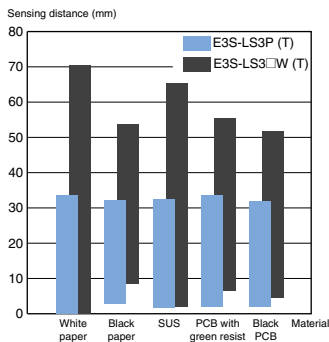
* Using 80 x 80 mm white art paper

Rating/performance

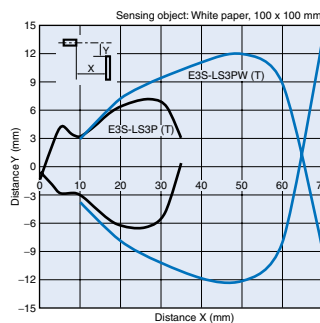
Sensor type		Limited reflective			
Item	Model	E3S-LS3□	E3S-LS3PT	E3S-LS3□W	E3S-LS3PWT
Sensing	White art paper	20 to 35 mm		10 to 60 mm	
	Black paper *	20 to 30 mm		15 to 50 mm	
Light source (wave length)	Red LED (660 nm)				
Power supply voltage	12 to 24 VDC±10%, ripple (p-p) 10% max.				
Current consumption	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)

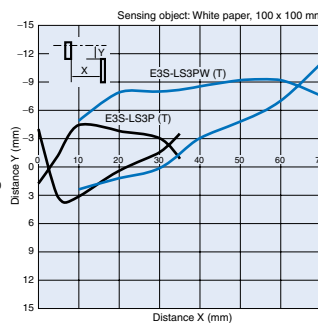
Sensing Distance vs. Materials



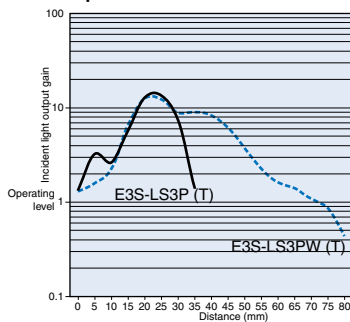
Operating Range (Left and Right)



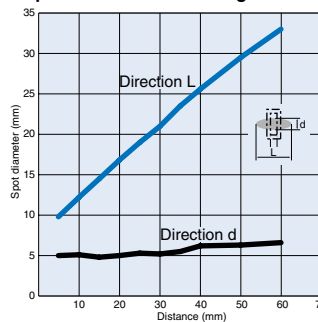
Operating Range (Up and Down)



Output vs. Set Distance



Spot Diameter vs. Sensing Distance



Output Circuit Diagram

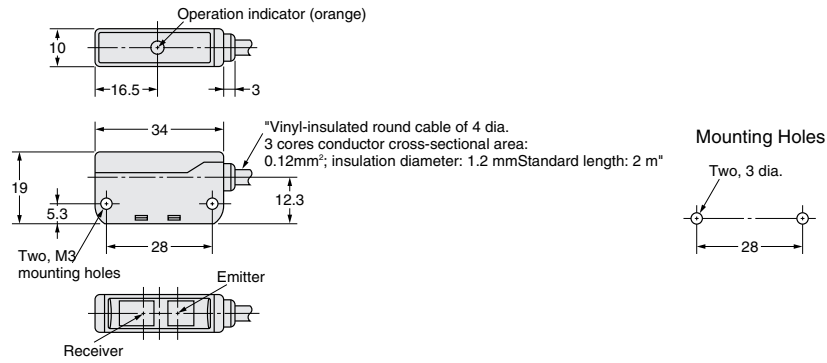
NPN output (PNP output will be available soon)

Model	Operating status of output transistor	Timing chart	Output circuit
E3S-LSN3 E3S-LS3NW	Light ON	<p>Incident light: ON</p> <p>Operation indicator (orange): ON</p> <p>Output transistor: ON</p>	
E3S-LS3P E3S-LS3PW		<p>Incident light: No Incident light</p> <p>Operation indicator (orange): OFF</p> <p>Output transistor: OFF</p>	
E3S-LS3PT E3S-LS3PWT		<p>Incident light: No Incident light</p> <p>Operation indicator (orange): OFF</p> <p>Output transistor: OFF</p> <p>T: Off-delay timer (0.1 to 1.0 s)</p>	

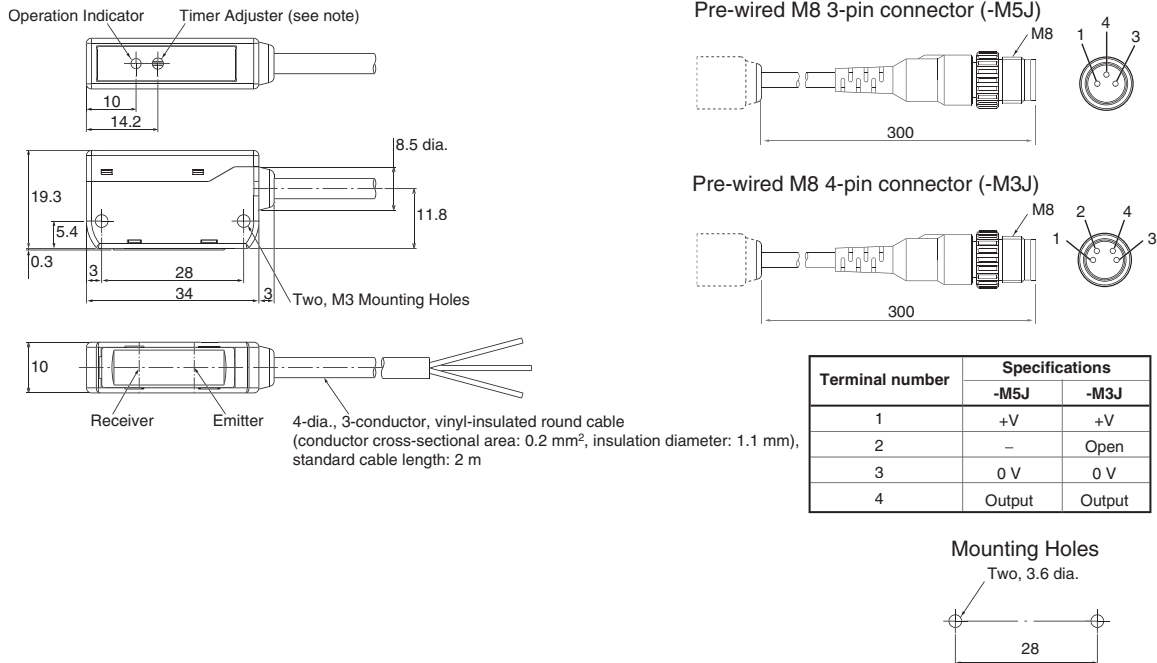
Dimensions (Unit: mm)

Note: All units are in millimeters unless otherwise indicated.

E3S-LS3N
E3S-LS3NW



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



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.