

Printed Circuit Board Sensor

E3S-LS3

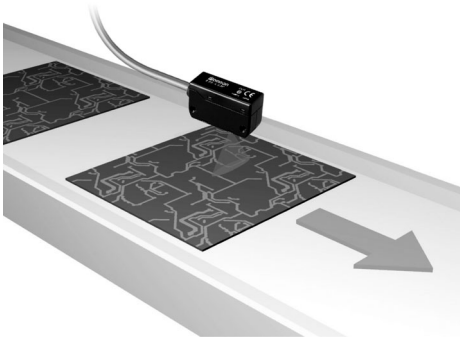
Printed circuit board sensor capable of stable detection without being affected by holes or notches.

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

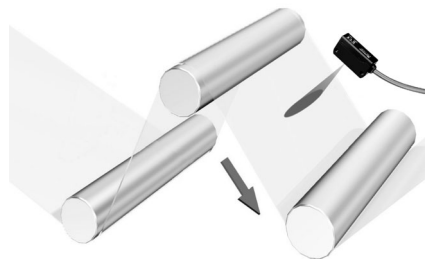


Applications

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					
		Without			E3S-LS3P-M3J					
		With			E3S-LS3PT-M3J					
		Pre-wired (2 m)			Pre-wired M8 4-pin connector (0.3 m)	Pre-wired (2 m)		 10 to 60 mm	Without	E3S-LS3PW
									With	E3S-LS3PWT
	Pre-wired M8 3-pin connector (0.3 m)	Pre-wired M8 4-pin connector (0.3 m)	Pre-wired M8 3-pin connector (0.3 m)	 10 to 60 mm	Without	E3S-LS3PW-M5J				
					With	E3S-LS3PWT-M5J				
	Pre-wired M8 4-pin connector (0.3 m)	Pre-wired M8 4-pin connector (0.3 m)	Pre-wired M8 4-pin connector (0.3 m)	 10 to 60 mm	Without	E3S-LS3PW-M3J				
					With	E3S-LS3PWT-M3J				

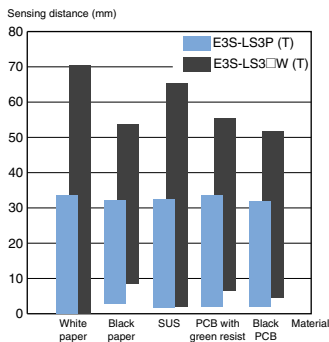
* Using 80 x 80 mm white art paper

Rating/performance

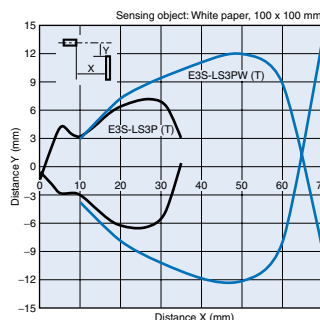
Sensor type		Limited reflective			
Item	Model	E3S-LS3□	E3S-LS3PT	E3S-LS3□W	E3S-LS3PWT
Sensing	White art paper	20 to 35 mm		10 to 60 mm	
	Black paper *	20 to 30 mm		15 to 50 mm	
Light source (wave length)	Red LED (660 nm)				
Power supply voltage	12 to 24 VDC±10%, ripple (p-p) 10% max.				
Current consumption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

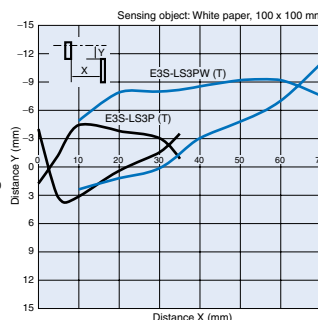
Sensing Distance vs. Materials



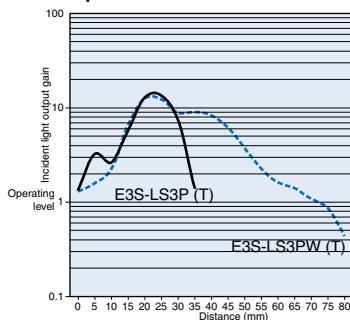
Operating Range (Left and Right)



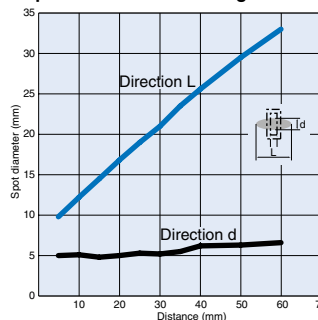
Operating Range (Up and Down)



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 Interrupted</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) ON</p> <p>Output transistor OFF</p>	
E3S-LS3PT E3S-LS3PWT		<p>Incident light No Incident light</p> <p>Operation indicator (orange) ON</p> <p>Output transistor OFF</p> <p>T: Off-delay timer (0.1 to 1.0 s)</p>	