Ratings and Specifications

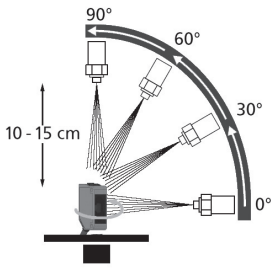
Item \ Model	Sensing method	Retro-reflective (with MSR function)			
	NPN output	E3S-DBN□1	E3S-DBN□1T	E3S-DBN□2	E3S-DBN□2T
	PNP output	E3S-DBP□1	E3S-DBP□1T	E3S-DBP□2	E3S-DBP□2T
Sensing distance		0 to 3.5 m (with E39-R8)		0 to 0.5 m (with E39-R21)	
Spot diameter (reference value)*1		6-mm dia. (at sensing distance of 250 mm)		2.5-mm dia. (at sensing distance of 200 mm)	
Light source (wavelength)		Red LED (624 nm)			
Power supply voltage		10 to 30 VDC, including 10% ripple (p-p)			
Power consumption		720 mW max. (current consumption: 30 mA max. at power supply voltage of 24 VDC)			
Control output		Load power supply voltage: 30 VDC max., Load current: 100 mA max. (Residual voltage: 2 V max.) Open-collector output (NPN/PNP output depending on model.)			
Indicators		Light indicator (orange) and stability indicator (green)			
Protection circuits		Reversed power supply polarity protection, output short-circuit protection, reversed output polarity protection, and mutual interference prevention			
Response time		Operate or reset: 0.5 ms max.			
Sensitivity adjustment		Smart Teaching	Eleven-turn adjuster	Smart Teaching	Eleven-turn adjuster
Smart Teaching lock function		Provided.	---	Provided.	---
Automatic compensation (AC[3])		Provided (OFF by default).	---	Provided (OFF by default).	---
Ambient illumination		(Receiver side) Incandescent lamp: 3,000 lx max., Sunlight: 10,000 lx max.			
Ambient temperature range		Operating: –25 to 60°C, Storage: –40 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		1,000 VAC at 50/60 Hz for 1 minute			
Vibration resistance		Destruction: 10 to 55 Hz with double amplitude of 1.5 mm for 2 hours 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*2		IEC IP67, DIN 40050-9 IP69K			
Connection method		Pre-wired cable (standard cable length: 2 m) Connector (M12, 4 pins) Pre-wired connector (standard cable length: 0.3 m/M12, 4 pins)			
Weight (packed state/Sensor only)	**Pre-wired models**	Approx. 80 g/approx. 60 g			
	Models with connector	Approx. 60 g/approx. 40 g			
	Models with pre-wired connector	Approx. 180 g/approx. 160 g			
Materials	**Case**	Polybutylene terephthalate (PBT)/ABS			
	Lens	Methacrylic resin (PMMA)			
	Indicators	Methacrylic resin (PMMA)			
	Sensitivity adjuster and Threshold adjuster	Polyester elastomer			
	Cable	Polyvinyl chloride (PVC)			
Accessories		Instruction manual			

***1.** Refer to *Emission Spot Diameter vs. Distance* in *Engineering Data (Reference Value)* on page 4 for details.

***2.** IP69K Degree of Protection Specification

IP69K is a protection standard against high temperature and high-pressure water defined in the German standard DIN 40050, Part 9. The test piece is sprayed with water at 80°C at a water pressure of 80 to 100 BAR using a specified nozzle shape at a rate of 14 to 16 liters/min.

The distance between the test piece and nozzle is 10 to 15 cm, and water is sprayed horizontally for 30 seconds each at 0°, 30°, 60°, and 90° while rotating the test piece on a horizontal plane.

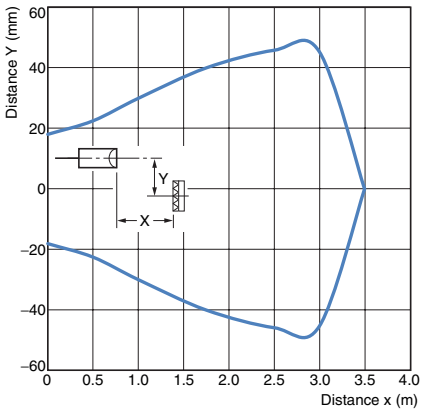


E3S-DB

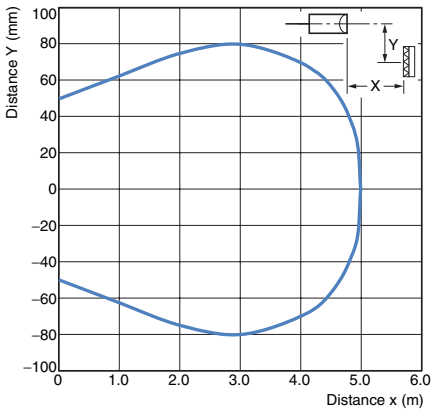
Engineering Data (Reference Value)

Parallel Operating Range

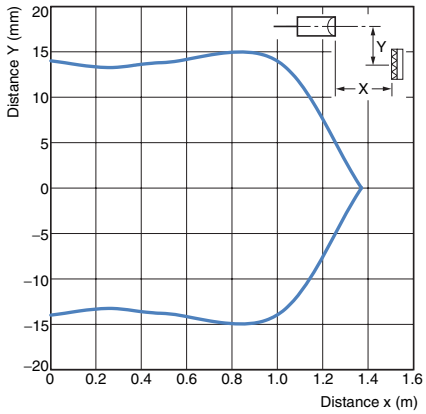
E3S-DB□□1(T) + E39-R1S (Reflector)



E3S-DB□□1(T) + E39-R8 (Reflector)

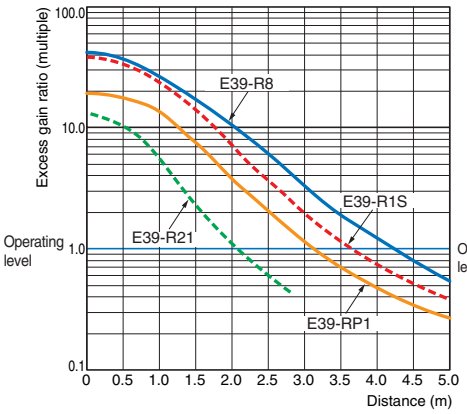


E3S-DB□□2(T) + E39-R21 (Reflector)

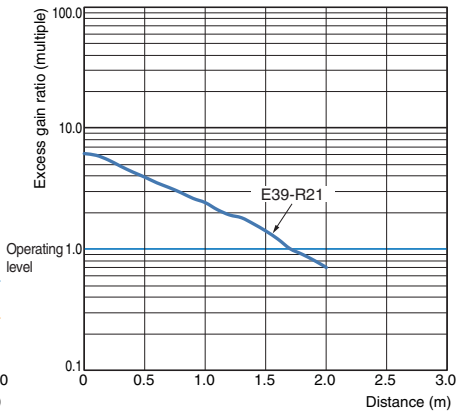


Excess Gain vs. Distance

E3S-DB□□1(T) + Reflector

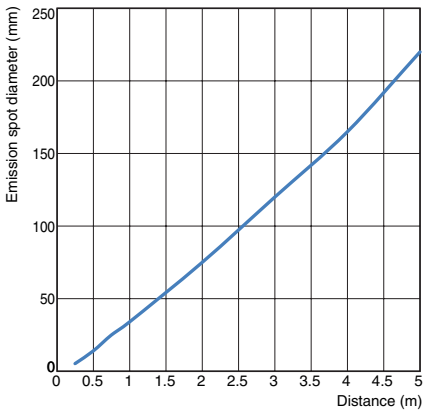


E3S-DB□□2(T) + E39-R21 (Reflector)

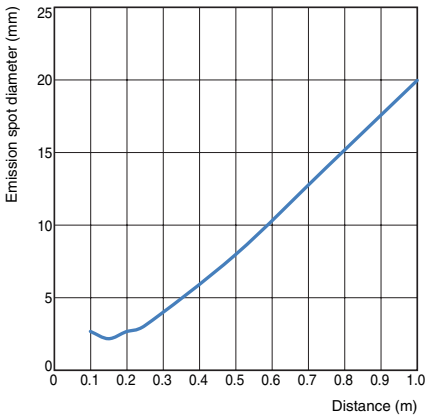


Emission Spot Diameter vs. Distance

E3S-DB□□1(T)



E3S-DB□□2(T)



Note: These values were measured at maximum sensitivity.