

SE4D Series

Key features

The IDEC SE4D Light Curtains are easy to install and use specialized technology to ensure there are no dead zones around the units. Their features increase safety, reduce downtime and improve productivity.

- Cascading with no dead zone
- Built-in muting function
- Built-in EDM function
- Fixed and floating blanking function
- Fast and Unified response time of 14ms
- Supports both PNP and NPN outputs in a single model
- Beam Axis Adjustment function
- Type 4 Hand protection
- Category 4, PLe, SIL3
- IP67 Degree of Protection



Part Numbers

Shape	Minimum Sensing Object	Sensing Distance (Note 2) (Effective Distance)	No. of Beams	Sensing Length (mm)	Part Number (Note 3)
<p>Diagram labels: Beam No. (n), 5mm, Sensing Length, Beam pitch 20mm, 5mm, ø25mm, 0.3 to 9m, 0.3 to 7m.</p>			12	230	SE4D-H12
			16	310	SE4D-H16
			20	390	SE4D-H20
			24	470	SE4D-H24
			28	550	SE4D-H28
			32	630	SE4D-H32
			36	710	SE4D-H36
			40	790	SE4D-H40
			48	950	SE4D-H48
			56	1,110	SE4D-H56
			64	1,270	SE4D-H64
			72	1,430	SE4D-H72
			80	1,590	SE4D-H80
			88	1,750	SE4D-H88
			96	1,910	SE4D-H96

1. Package quantity is 1 set (emitter/receiver). Mounting brackets and bottom cap cables are not included with the light curtain. Purchase a mounting bracket and bottom cap cable separately.

2. The sensing distance is the possible setting distance between the emitter and the receiver.

3. The light curtain with "E" in the part number (indicated on the nameplate) is the emitter. The light curtain with "D" in the part number (indicated on the nameplate) is the receiver.

Example for SE4D-H12: Emitter = SE4D-H12E, Receiver = SE4D-H12D

Accessories

Item	Description	Cable Length	Weight	Part Number	Remarks
	8-pin Bottom Cap Cable	3m	370g approx.	SE9Z-CCB3	Standard cable Cable diameter: ø6mm Cable color: Emitter - Gray, Receiver - Gray with black line Minimum bending diameter: R6 mm
		7m	820g approx.	SE9Z-CCB7	
		10m	1,160g approx.	SE9Z-CCB10	
		15m	1,710g approx.	SE9Z-CCB15	
	12-pin Bottom Cap Cable	3m	420g approx.	SE9Z-CCB3-MU	Used for muting function Cable diameter: ø6mm Cable color: Emitter - Gray, Receiver - Gray with black line Minimum bending diameter: R6 mm
		7m	930g approx.	SE9Z-CCB7-MU	
	Cable for Series Connection	0.5m	95g approx.	SE9Z-CSL05	Used for connecting the light curtains in series. Cable color: Gray (for emitter and receiver) Minimum bending diameter: R6 mm

Each pkg contains 2 cables.

Overview

XW Series E-Stops

Interlock Switches

Enabling Switches

Safety Control

Light Curtains

AS-Interface Safety at Work

Overview

XW Series E-Stops

Interlock Switches


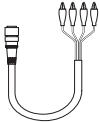
Enabling Switches

Safety Control

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AS-Interface Safety at Work

Controller

Name and Shape	Part Number
Controller (adapter cable, 2 pcs, included) 	SE9Z-HC
Cable for Connecting Controller 	SE9Z-WNC1

The controller is used for setting optional functions.
The cable is used for connecting the controller and the light curtain. Order the cable when purchasing the controller

Mounting Brackets

Item	Part Number	Remarks
Standard Mounting Bracket	SE9Z-SED-1	Mounting bracket for easy adjustment of the beam axis. Includes 2 hexagon socket head screws (M5) or 1 hexagon socket head screw (M8). The light curtain can be rotated 360 degrees. Material: Zinc diecast
M8 Mounting Bracket	SE9Z-SED-1-T	Mounting bracket for easy adjustment of the beam axis. The light curtain can be rotated 360 degrees. Material: Zinc diecast
Dead Space Mounting Bracket	SE9Z-SED-3	Mounting bracket that eliminates dead space. Material: Zinc diecast

Specifications

General Specifications

Applicable standards	IEC/EN 61496-1 (TÜV), IEC 61496-2 (TÜV), IEC 61508-1 to 4 (TÜV), ISO 13849-1 (TÜV), EN ISO 13849-1 (TÜV), EN 50178 (TÜV), EN 55011 (TÜV), EN 61000-6-2 (TÜV), UL 508 (UL), UL 61496-1/2 (UL), UL 1998 (UL), CSA C22.2 No.14 (c-UL), CSA C22.2 No.0.8 (c-UL)	
Minimum Sensing Object	ø25mm (opaque)	
Effective Aperture Angle	When detection distance is more than 3m: within ±2.5° maximum (IEC 61496-2, UL 61496-2)	
Rated Voltage	24V DC ±20% Ripple P-P10% maximum	
Control output (OSSD1/2)	PNP open-collector transistor / NPN open-collector transistor (switching type)	
	PNP Output Maximum source current: 200mA Applied voltage: Same as supply voltage (between control output and +V) Residual voltage: 2.5V max. (source current 200mA, using 15m length cable) Leakage current: 0.1mA max. (includes power off state) Maximum load capacity: 0.22µF (no load to max. output current) Load wiring resistance: 3W max.	NPN Output Maximum sink current: 200mA Applied voltage: Same as supply voltage (between control output and 0V) Residual voltage: 2.5V max. (sink current 200 mA, using 15m length cable) Leakage current: 0.1mA max. (includes power off state) Maximum load capacity: 0.22µF (no load to max. output current) Load wiring resistance: 3W max.
	Operation mode (Output operation)	ON when all beams are received, OFF when one or more beams are interrupted (Note 1, 2) (Also turns OFF at sensor or synchronization error)
	Protection circuit (Short-circuit)	Built-in
Auxiliary output (Non-safety output)	PNP open-collector transistor / NPN open-collector transistor (switching type)	
	PNP Output Maximum source current: 60mA Applied voltage: Same as supply voltage (between auxiliary output and +V) Residual voltage: 2.5V min. (source current 60mA, using 15m length cable)	NPN Output Maximum sink current: 60mA Applied voltage: Same as supply voltage (between auxiliary output and 0V) Residual voltage: 2.5V min. (sink current 60mA, using 15m length cable)
	Operation mode (Output operation)	When OSSDs are ON: OFF, when OSSDs are OFF: ON (factory set) [Operation modes can be changed by using the SE9Z-HC controller (optional).]
	Protection circuit (Short-circuit)	Built-in
Interference Prevention Function	OFF response: 14ms max., ON response: 80 to 90ms	
	Response Time	
	PNP open-collector transistor / NPN open-collector transistor (switching type)	
	OFF response: 34ms max., ON response: 110ms max.	
Emission Halt Function	Built-in	
Interlock Function		
External Device Monitoring Function		
Override Function		
Muting Function		
Optional Functions (Note 4)	Fixed blanking function, Floating blanking function, Auxiliary output switching function, Interlock setting adjust function, External relay monitoring setting adjust function, Muting setting adjust function, Protect function, Emitted light intensity control function	
Degree of Protection	IP65, IP67 (IEC 60529)	
Operating Conditions	Operating temperature: -10 to +55°C (no freezing) Relative humidity: 30 to 85%RH (no condensation) Storage temperature: -25 to +70°C (no freezing) Storage humidity: 30 to 95%RH (no condensation) Pollution Degree: 3	

General Specifications (con't)

Operating Illuminance	Incandescent lamp: 3,500 lux max. at light-receiving surface
Dielectric Strength	1,000V AC, 1 minute between power terminals connected together and enclosure
Insulation Resistance	20MW minimum (500V DC megger) between power terminals connected together and enclosure
Vibration Resistance	Damage limits: 10 to 55Hz, amplitude: 0.75mm 2 hours each in 3 axes
Shock Resistance	Damage limits: 300m/s ² (30G approx.) 3 times each in 3 axes
Light Source	Infrared LED (emission wavelength = 870nm)
Connection	Connector
Material	Enclosure: Aluminum Upper / lower case: Aluminum Sensing surface: PC / Polyester resin Cap: PBT
Accessories	SE9Z-SED-2 (intermediate supporting bracket) (Note 3), SE9Z-TR25 (test rod): 1

1. Does not turn OFF during muting even when the light beam is interrupted.
 2. When the blanking function is enabled, the operation mode changes:

Floating Blanking Function (Min. Sensing Object)			
No setting	Setting		
	1 beam	2 beam	3 beam
ø25mm	ø45mm	ø65mm	ø85mm

3. The number of intermediate supporting brackets that is included differs with each model.
 SE4D-H40/H48/H56 = 1 set, SE4D-H64/H72/H80 = 2 sets, SE4D-H88/H96 = 3 sets
 4. When using the optional functions, the controller is required.

Individual Specifications

Part Number	SE4D-H12	SE4D-H16	SE4D-H20	SE4D-H24	SE4D-H28	SE4D-H32
No. of Beams	12	16	20	24	28	32
Sensing Range	0.3 to 9m					
Beam Width	20mm					
Protective Height	230mm	310mm	390mm	470mm	550mm	630mm
Current Consumption	Emitter: 70mA max., Receiver: 95mA max.			Emitter: 80mA max., Receiver: 115mA max.		
PFHd	2.01×10 ⁻⁹	2.21×10 ⁻⁹	2.41×10 ⁻⁹	2.61×10 ⁻⁹	2.81×10 ⁻⁹	3.01×10 ⁻⁹
MTTFd	100 years minimum					
Weight (approx.)	510g	660g	810g	960g	1,110g	1,260g

Part Number	SE4D-H36	SE4D-H40	SE4D-H48	SE4D-H56	SE4D-H64	SE4D-H72
No. of Beams	36	40	48	56	64	72
Sensing Range	0.3 to 9m					0.3 to 7m
Beam Width	20mm					
Protective Height	710mm	790mm	950mm	1,110mm	1,270mm	1,430mm
Current Consumption	Emitter: 80mA max. Receiver: 115mA max.	Emitter: 90mA max. Receiver: 140mA max.		Emitter: 100mA max. Receiver: 160mA max.		Emitter: 110mA max. Receiver: 180mA max.
PFHd	3.21×10 ⁻⁹	3.41×10 ⁻⁹	3.80×10 ⁻⁹	4.20×10 ⁻⁹	4.60×10 ⁻⁹	5.00×10 ⁻⁹
MTTFd	100 years minimum					
Weight (approx.)	1,420g	1,570g	1,870g	2,170g	2,470g	2,770g

Part Number	SE4D-H80	SE4D-H88	SE4D-H96
No. of Beams	80	88	96
Sensing Range	0.3 to 7m		
Beam Width	20mm		
Protective Height	1,590mm	1,750mm	1,910mm
Current Consumption	Emitter: 110mA max. Receiver: 180mA max.		Emitter: 120mA max. Receiver: 200mA max.
PFHd	5.40×10 ⁻⁹	5.80×10 ⁻⁹	6.20×10 ⁻⁹
MTTFd	100 years minimum		
Weight (approx.)	3,070g	3,370g	3,670g

Note: PFHd (Probability of dangerous failure per hour), MTTFd (Mean time to dangerous failure)
 Weight is the (total of emitter and receiver).

Overview

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Enabling Switches

Safety Control

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AS-Interface Safety at Work

Controller

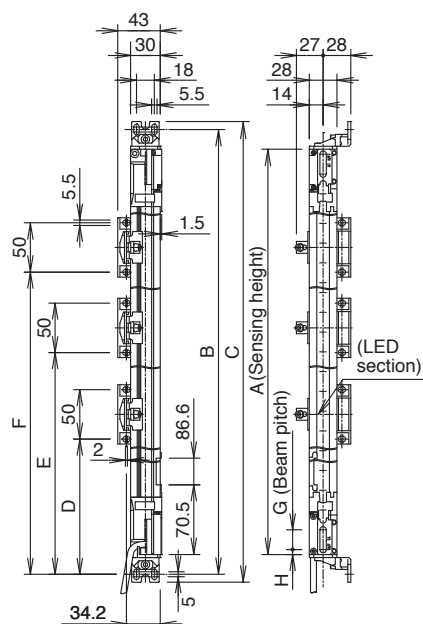
Part Number	SE9Z-HC	
Supply Voltage	24V DC ±10% Ripple P-P10 % or less (common to light curtain power supply)	
Current Consumption	65mA max.	
Communication Method	RS-485 two-way communications (exclusive procedure)	
Digital LED	4-digit red LED display × 2 (selected beams and settings are displayed)	
Functional LED	Green LED × 9 (lights on when set)	
Functions	<div><div><ul style="list-style-type: none">Fixed blanking function (factory setting: disabled)Floating blanking function (factory setting: disabled)Auxiliary output switching function (factory setting: negative logic of OSSD)Emitted light intensity control function (factory setting: disabled)Muting setting adjust function (factory setting: all beam channels enabled, A = B (Note 2), Muting lamp diagnosis function enabled, Muting sensor output operation N.O/N.O)</div><div><ul style="list-style-type: none">Interlock setting adjust function (factory setting: start /restart)External device monitoring setting adjust function (factory setting: enabled, 300ms)Override setting adjust function, Setting detail monitoring functionProtect function (factory setting: disabled) (factory password setting: 0000)Initialization functionCopy function</div></div>	
Operating Conditions	Operating Temperature: −10 to +55°C (no freezing) Operating Humidity: 30 to 85% RH (no condensation) Storage Temperature: −25 to +70°C (no freezing) Storage Humidity: 30 to 85% RH (no condensation)	
Dielectric Strength	1,000V AC, 1 minute between power terminals connected together and enclosure	
Insulation Resistance	20MΩ min. (500V DC megger) between power terminals connected together and enclosure	
Cable	8-core shielded cable, 0.5m 1.640 ft long, with a connector at the end (2 cables)	
Weight (approx.)	200g	
Accessories	Adapter cable: 2	

1. The operating humidity is +20° for conditions that are not specified.
2. To enable the muting function, A or B input order can be specified. The muting function is enabled, at the factory, whether muting A or B is input first.

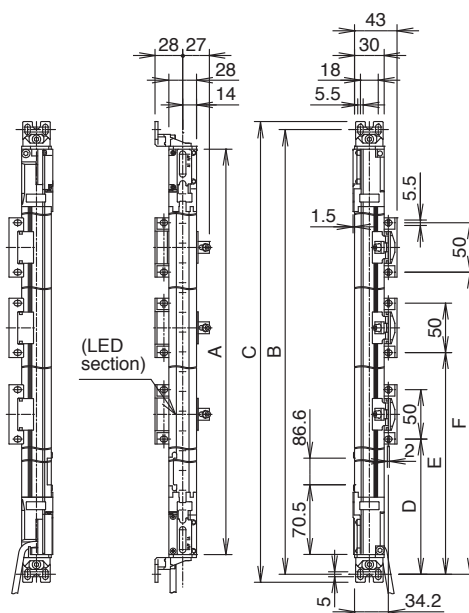
Dimensions

Light Curtains with Standard Mounting Bracket (SE9Z-SED-1) & Intermediate Supporting Bracket Side Mounting (Note 1)

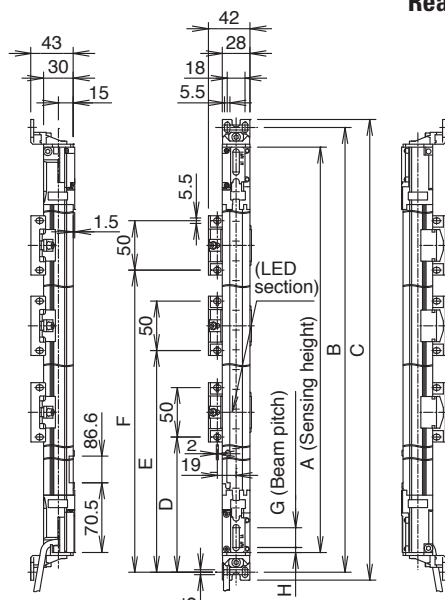
Emitter



Receiver

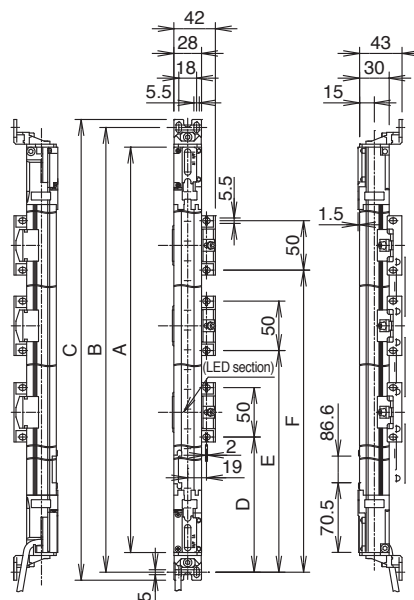


Emitter



Rear Mounting

Receiver



SE4D-H12	230	270	286	-	-	-	20	5
SE4D-H16	310	350	366	-	-	-	20	5
SE4D-H20	390	430	446	-	-	-	20	5
SE4D-H24	470	510	526	-	-	-	20	5
SE4D-H28	550	590	606	-	-	-	20	5
SE4D-H32	630	670	686	-	-	-	20	5
SE4D-H36	710	750	766	-	-	-	20	5
SE4D-H40	790	830	846	390	-	-	20	5
SE4D-H48	950	990	1,006	470	-	-	20	5
SE4D-H56	1,110	1,150	1,166	550	-	-	20	5
SE4D-H64	1,270	1,310	1,326	418	842	-	20	5
SE4D-H72	1,430	1,470	1,486	472	948	-	20	5
SE4D-H80	1,590	1,630	1,646	525	1,055	-	20	5
SE4D-H88	1,750	1,790	1,806	433	870	1,308	20	5
SE4D-H96	1,910	1,950	1,966	473	950	1,428	20	5

1. The intermediate supporting bracket (SE9Z-SED-2) is supplied (for SE4D-H40 to H96).
The number of brackets supplied varies according to the model:
SE4D-H40/H48/H56 = 1 set, SE4D-H64/H72/H80 = 2 sets, SE4D-H88/H96 = 3 sets