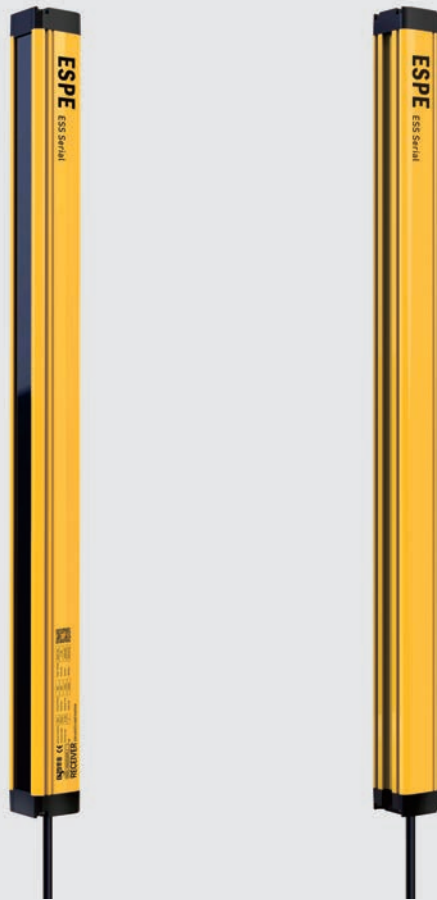


ESS Series

Compact Safety Light Curtain



Product Introduction

ESS series safety light curtain comply with safety standard EN IEC61496-1/-2 (type 2), and with 25mm*25mm compact size. Curtain assist 10m long sensing distance. With wire-syn and optical-syn as option by switching wire connection. Perfect self-diagnosis, power reverse protection, undervoltage protection, output short-circuit protection and overload protection to ensure good safety performance.

Product Feature

- Comply with EN IEC61496-1/-2 safety standard;
- 25mm*25mm compact size;
- Wire-syn and optical-syn as optional;
- Sensing distance up to 10m;
- Small blind zone to ensure full protection;
- Dual loop redundancy output to improve safety level;
- Great self-diagnosis and cross-diagnosis, overvoltage undervoltage detection, overcurrent monitor;
- Strong anti-electromagnetic interference;
- Side and end cover installation method as option.

Safety Light Curtain

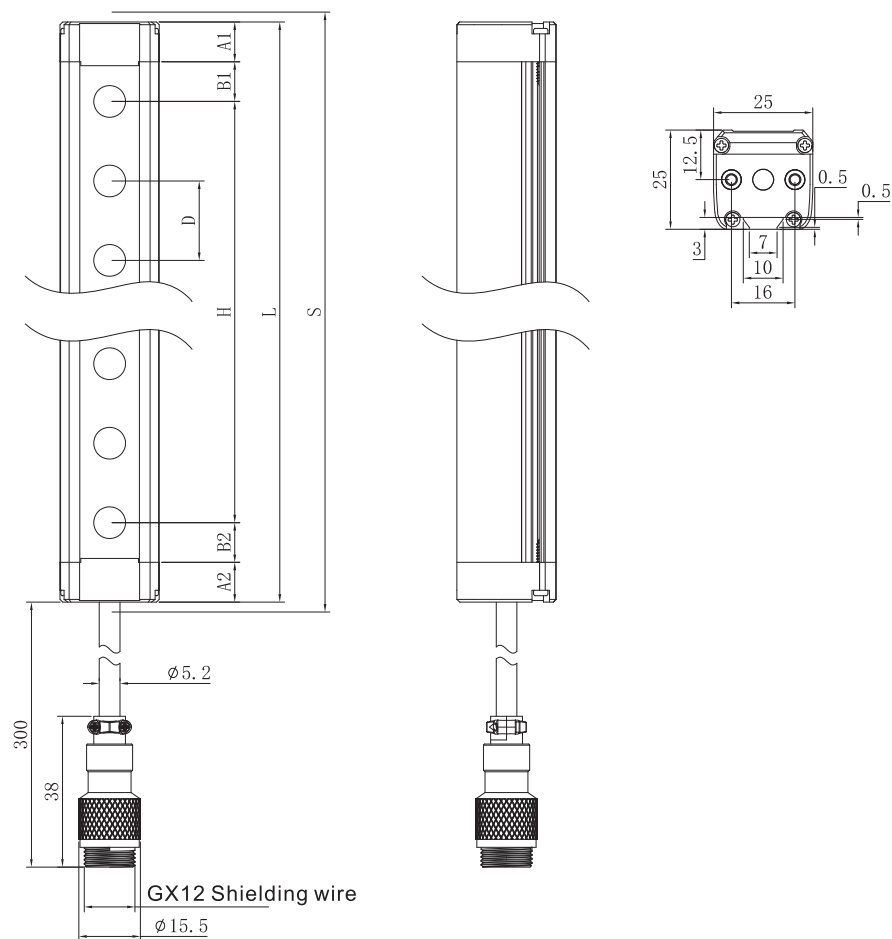
Product Parameter

Safety Standard	Type 2 (IEC 61496-1/-2) Cat. 2, PL c (ISO 13849-1)
Power Supply	DC24V±20%
Capacity	<5W
Beam Space	10mm, 20mm, 40mm
Resolution	15mm, 25mm, 45mm
Beams	10mm: 8, 12, 16, 20.....200
	20mm: 4, 6, 8, 10.....100
	40mm: 4, 6, 8, 10.....50
Protection Height	$S = N \times \text{beams space} + \text{resolution}$, (N is beams).
Light Wavelength	940nm
Response Time	Response time $\leq 2 \times (N \times 0.1 + 1.2)$ ms
Safety Output (OSSD)	PNP or NPN Load current ≤ 200 mA, residual voltage ≤ 1 V (except for voltage drop caused by cable extension) and leakage current ≤ 1 mA.
Protective Circuit	Overvoltage protection, power supply reverse protection and overcurrent protection.
Sensing Distance	0.1-2m, 0.1-5m, 0.5-10m (Remark: If any light reflecting, please let us know.)
Against Optical Interference	10000 Lux (angle>5°)
Sensing Method	Thru-beam
Synchronization	Optical-syn or Wire-syn
Enclosure Material	Aluminum alloy
Enclosure Protection Rate	IP65
Sectional Size	25*25mm
Vibration Resistance	Frequency 10Hz-55Hz, amplitude 0.35 ± 0.05 mm, 20 times each X, Y and Z direction.
Shock Resistance	15g, 6ms pulse each of X, Y and Z, 100 times on each direction of a axial, total 600 times
Ambient Operating Temperature	-10°C~55°C (no freezing)
Storage Temperature	-30°C~70°C (no freezing)
Ambient Operating Humidity	When temperature 20°C, the humidity max. 85%

Model Selection (e.g.: ESS1620NL-2)

Product Series	Beams	Beam Space	Output	Bracket	Sensing Distance
ESS	16	20	N	L	2
	04, 06, 10...	10mm 20mm 40mm	N: NPN*2 P: PNP*2	L: side mounting bracket LD: LD end mounting	2: 0.1-2m 5: 0.1-5m 10: 0.5-10m

Product Size



A1: Up cover
 A2: Bottom cover
 D: Beam space
 H: Detection height
 S: Protection height
 L: Total height

A1= 10mm, A2=10mm
 When D=10mm, B1=5mm, B2=5 mm
 When D=20mm, B1=10mm, B2=10 mm
 When D=40mm, B1=10mm, B2=30 mm

 H is detection height: $H = (\text{beams} - 1) * \text{beam space}$
 S is protection height: $S = \text{beams} * \text{beam space} + \text{resolution}$
 L is total height: $L = A1 + A2 + B1 + B2 + H$

Safety Light Curtain

ESS Model Selection Table

- Beam space 10mm, resolution 15mm

Beams	Response Time (ms)	Protection Height (mm)	Detection Height (mm)	Total Height (mm)	Model
8	≤4	95	70	100	ESS0810
12	≤4.8	135	110	140	ESS1210
16	≤5.6	175	150	180	ESS1610
20	≤6.4	215	190	220	ESS2010
24	≤7.2	255	230	260	ESS2410
28	≤8	295	270	300	ESS2810
32	≤8.8	335	310	340	ESS3210
36	≤9.6	375	350	380	ESS3610
40	≤10.4	415	390	420	ESS4010
44	≤11.2	455	430	460	ESS4410
48	≤12	495	470	500	ESS4810
52	≤12.8	535	510	540	ESS5210
56	≤13.6	575	550	580	ESS5610
60	≤14.4	615	590	620	ESS6010
64	≤15.2	655	630	660	ESS6410
68	≤16	695	670	700	ESS6810
72	≤16.8	735	710	740	ESS7210
76	≤17.6	775	750	780	ESS7610
80	≤18.4	815	790	820	ESS8010
84	≤19.2	855	830	860	ESS8410
88	≤20	895	870	900	ESS8810
92	≤20.8	935	910	940	ESS9210
96	≤21.6	975	950	980	ESS9610
100	≤22.4	1015	990	1020	ESS10010
104	≤23.2	1055	1030	1060	ESS10410
108	≤24	1095	1070	1100	ESS10810
112	≤24.8	1135	1110	1140	ESS11210
116	≤25.6	1175	1150	1180	ESS11610
120	≤26.4	1215	1190	1220	ESS12010
124	≤27.2	1255	1230	1260	ESS12410
128	≤28	1295	1270	1300	ESS12810
132	≤28.8	1335	1310	1340	ESS13210
.....					
200	≤42.4	2015	1990	2020	ESS20010

Remark: Besides above model, other curtains can be customized.

ESS Model Selection Table

- Beam space 20mm, resolution 25mm

Beams	Response Time (ms)	Protection Height (mm)	Detection Height (mm)	Total Height (mm)	Model
4	≤3.2	105	60	100	ESS0420
6	≤3.6	145	100	140	ESS0620
8	≤4	185	140	180	ESS0820
10	≤4.4	225	180	220	ESS1020
12	≤4.8	265	220	260	ESS1220
14	≤5.2	305	260	300	ESS1420
16	≤5.6	345	300	340	ESS1620
18	≤6	385	340	380	ESS1820
20	≤6.4	425	380	420	ESS2020
22	≤6.8	465	420	460	ESS2220
24	≤7.2	505	460	500	ESS2420
26	≤7.6	545	500	540	ESS2620
28	≤8	585	540	580	ESS2820
30	≤8.4	625	580	620	ESS3020
32	≤8.8	665	620	660	ESS3220
34	≤9.2	705	660	700	ESS3420
36	≤9.6	745	700	740	ESS3620
38	≤10	785	740	780	ESS3820
40	≤10.4	825	780	820	ESS4020
42	≤10.8	865	820	860	ESS4220
44	≤11.2	905	860	900	ESS4420
46	≤11.6	945	900	940	ESS4620
48	≤12	985	940	980	ESS4820
50	≤12.4	1025	980	1020	ESS5020
52	≤12.8	1065	1020	1060	ESS5220
54	≤13.2	1105	1060	1100	ESS5420
56	≤13.6	1145	1100	1140	ESS5620
58	≤14	1185	1140	1180	ESS5820
60	≤14.4	1225	1180	1220	ESS6020
62	≤14.8	1265	1220	1260	ESS6220
64	≤15.2	1305	1260	1300	ESS6420
66	≤15.6	1345	1300	1340	ESS6620
.....					
100	≤22.4	2025	1980	2020	ESS10020

Remark: Besides above model, other curtains can be customized.

Safety Light Curtain

ESS Model Selection Table

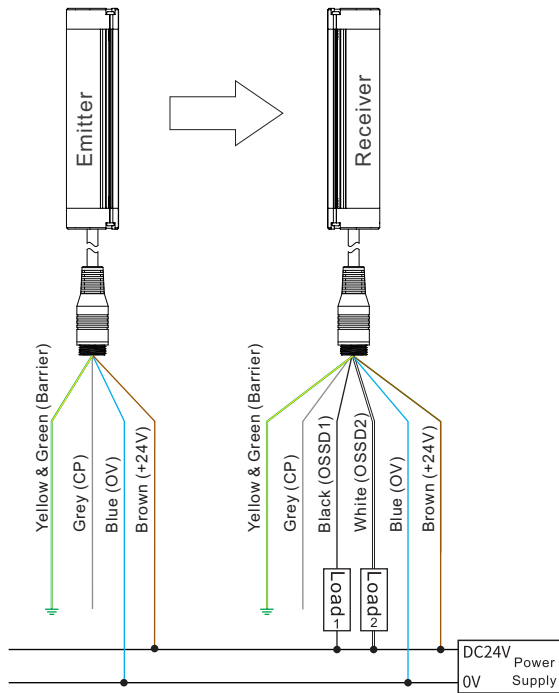
- Beam space 40mm, resolution 45mm

[illegible]

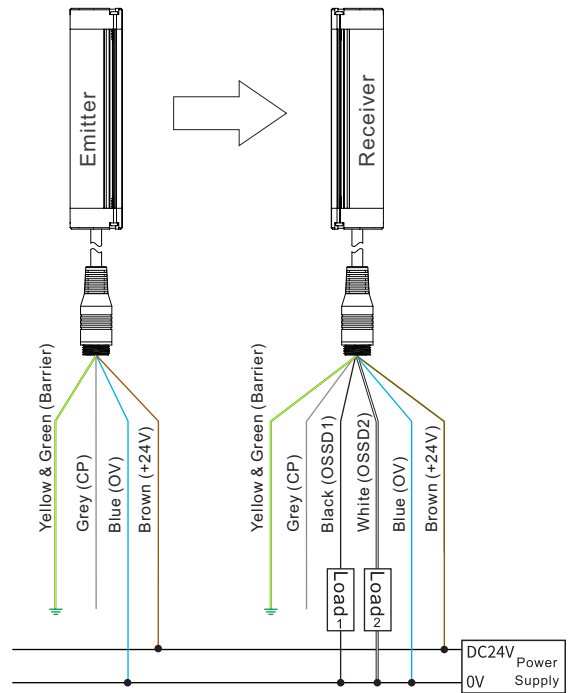
Remark: Besides above model, other curtains can be customized.

Wire Diagram

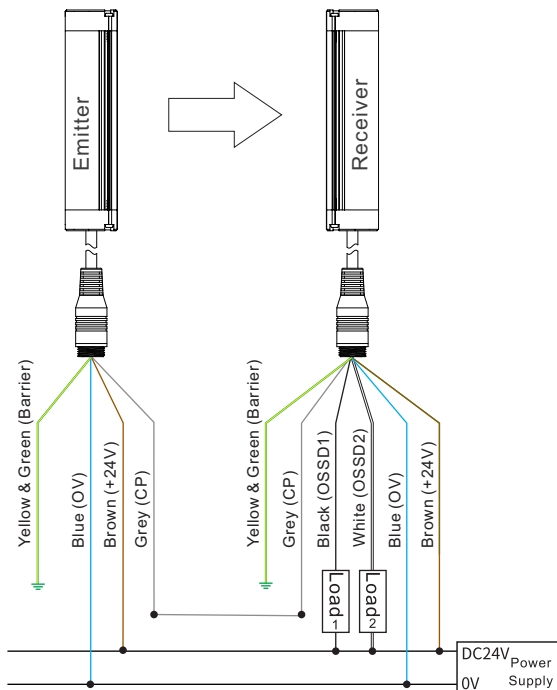
Optical-syn (NPN)



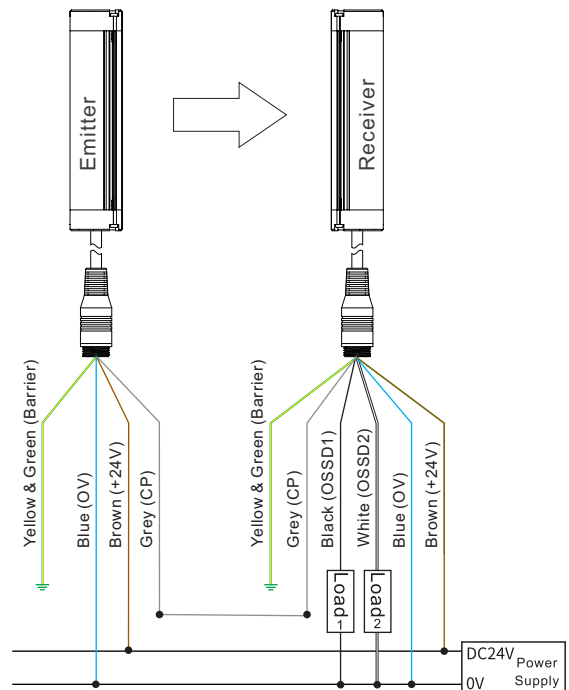
Optical-syn (PNP)



Wire-syn (NPN)

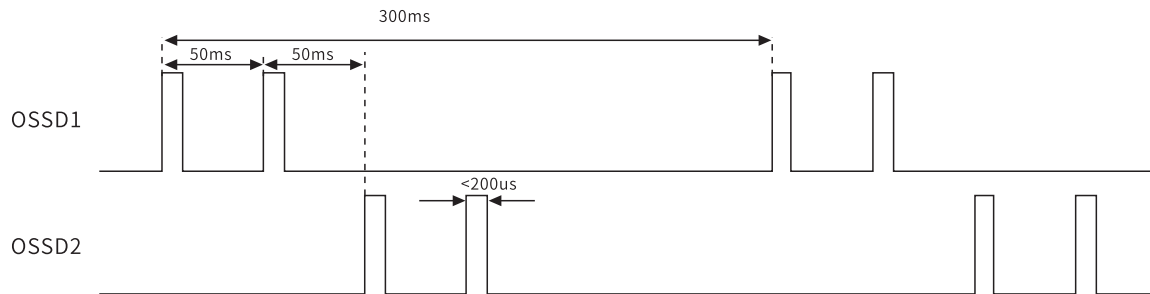


Wire-syn (PNP)

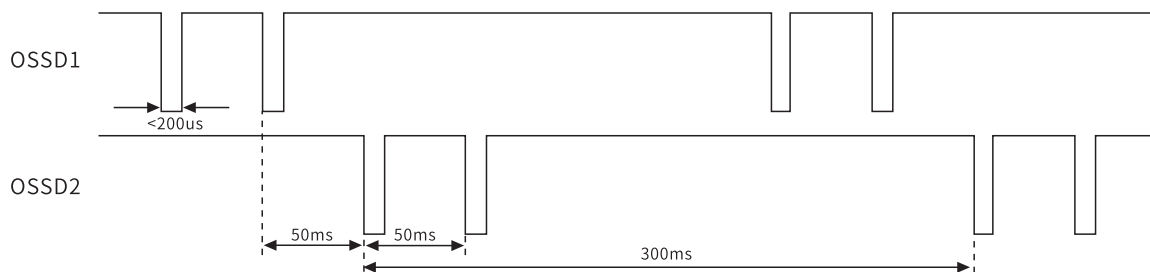


Safety Light Curtain

NPN output timing chart



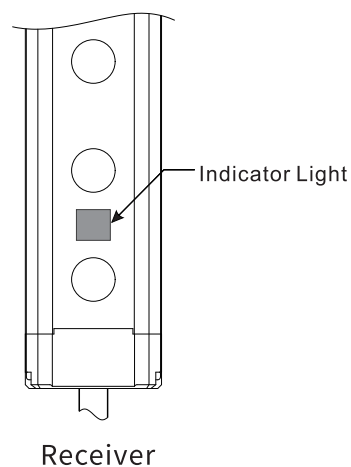
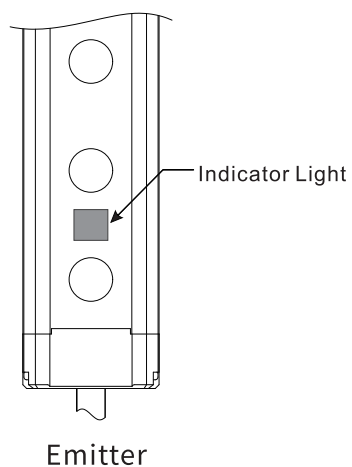
PNP output timing chart



Wire Specification

Barrier	Color	Wire Mark	Function	Connection
Emitter	Brown	24V	Positive of power	Connect to 24V of power
	Blue	0V	Negative of power	Connect to 0V of power
	Grey	CP	CP wire	Connect to CP of receiver
	Yellow & Green	PE	Shielding	Grounding
Receiver	Brown	24V	Positive of power	Connect to 24V of power
	Blue	0V	Negative of power	Connect to 0V of power
	Grey	CP	CP wire	Connect to CP of emitter
	Yellow & Green	PE	Shielding wire	Grounding
	Black	OSSD1	Output 1	Safety output 1
	White	OSSD2	Output 2	Safety output 2

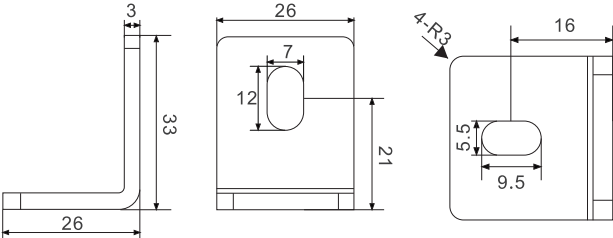
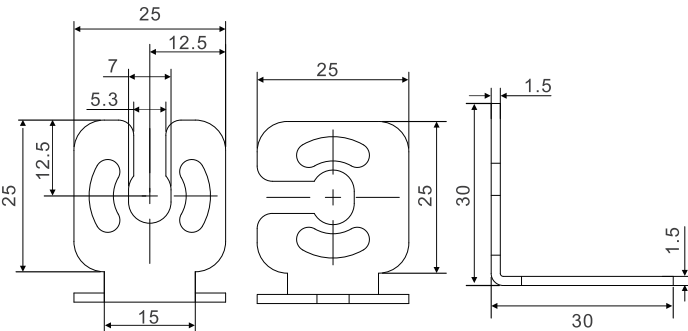
Indicator Light



Working Status		Emitter Indicator			Receiver Indicator		
		Priority	Red	Green	Priority	Red	Green
Normal	OSSD ON	/	OFF	Steady ON	/	OFF	Steady ON
	OSSD OFF	/	OFF	Steady ON	/	Steady ON	OFF
Abnormal	Overvoltage	0	2Hz blink	OFF	0	2Hz blink	OFF
	Undervoltage	1	1Hz blink	OFF	1	1Hz blink	OFF
	Output overload	/	/	/	2	Red and green light 2Hz blink alternatively	
	Short-circuit	/	/	/	3	Red and green light 1Hz blink alternatively	
	End board detection	2	Steady ON	2Hz blink	4	Steady ON	2Hz blink
	EEPROM	3	Steady ON	1Hz blink	5	Steady ON	1Hz blink
	CP Error	/	/	/	6	OFF	2Hz blink
	CP disconnect when wire-syn	4	OFF	1Hz blink	7	OFF	1Hz blink

Safety Light Curtain

Option of Bracket

Picture	Name	Accessories	Size
	L side mounting	L26 bracket (4pcs) ESM-M5 slider (4pcs) M6 pad (4pcs) M6 spring washer (4pcs) M6*16 screw (4pcs) M5*6 screw (4pcs)	
	LD end mounting	End mounting bracket (4pcs) M6*16 screw (4pcs) M6 pad (4pcs) M6 spring washer (4pcs) M3*6 screw (8pcs)	

Application

