

EFP Series

No Dead-zone Safety Light Curtain

EFP series is no dead-zone safety light curtain, in accordance with EU type 4 safety standards. Adopting the internal MCU redundancy design, the safety light curtain has periodic self-inspection & mutual check function. Curtain loop is redundant dual output loop to ensure high security.

Product features

- Designed according to EU type 4
- Adopt Self-check and cross-check design: Periodic double cross-check improves security.
- Independent & Redundant dual loop: In case of any safety hazards caused by single loop failure
- Wire synchronization technology: Effectively avoid interference of external infrared light



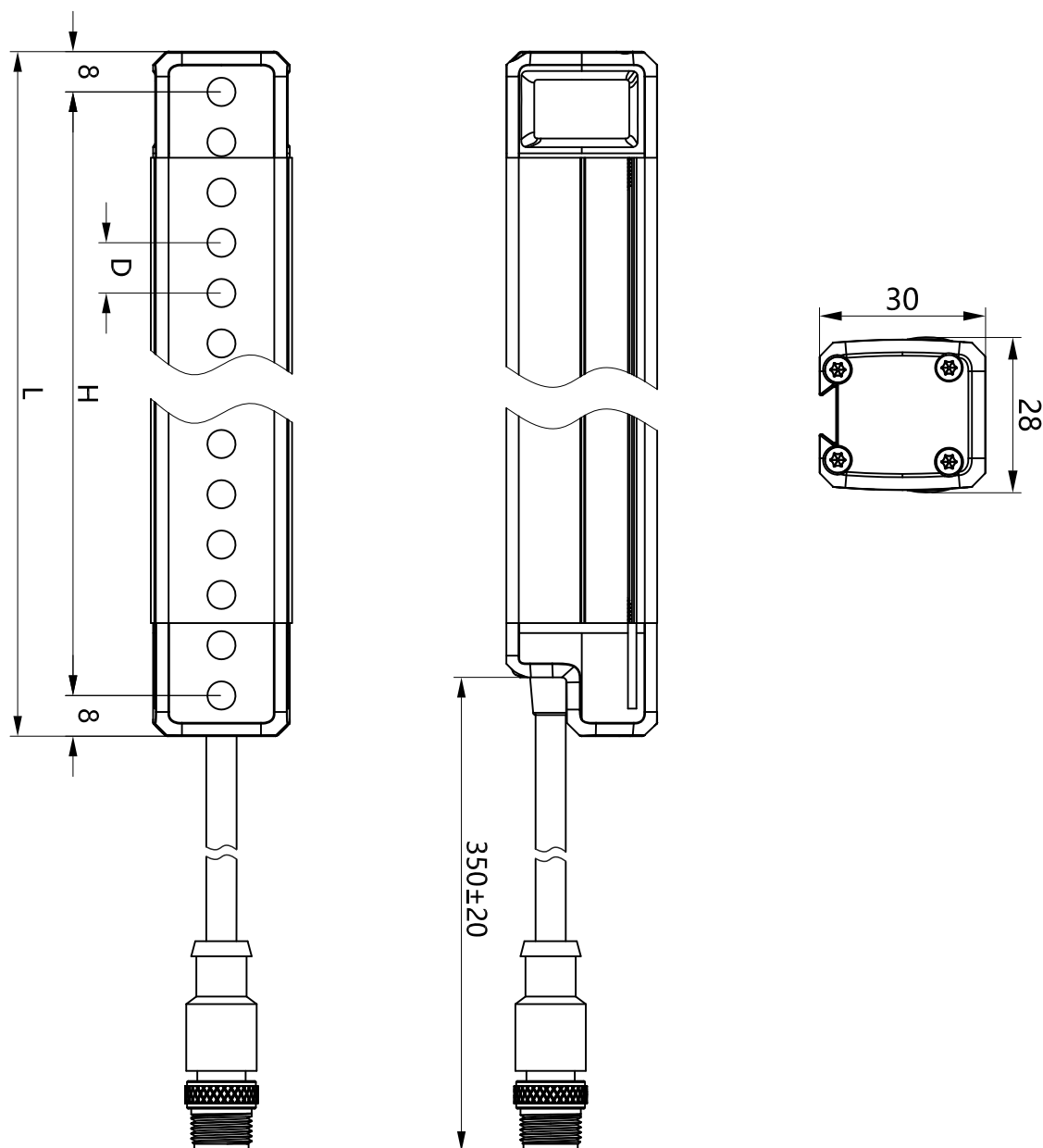
Technical Parameter

Reference standard	EN 61496-1 (Type 4 ESPE) EN 61496-2 (Type 4 ESPE) EN ISO 13849-1 (Type 4, PL e)
Safety level	Type 4
Supply voltage	DC24V±20%
Capacity	<5W
Beam space	10mm,20mm
Resolution	15mm,25mm
Beams	10mm beam space: 16, 20.....160 20mm beam space: 8, 10.....80
Protective height	Protective height = (N-1)*beam gap, N is beam quantity.
Wave length	940nm
Response time	Response time =(N*0.1ms)+0.4ms, N is beam quantity.
Type of output (OSSD)	PNP/NPN semiconductors, current<200mA, residual voltage: 1V max. leakage current: 1 mA max. (Except voltage influenced by lengthen wire).
Protective circuit	Overload voltage protection, power supply reverse polarity protection, over current protection.
Sensing distance	0.1~2m, 0.1~5m (remark: If have light reflection, please let us know)
Anti-optical interference	10000Lux
Sensing method	Through-beam type
Synchronization	Wire synchronization
Enclosure material	Aluminum alloy
Enclosure rating	IP65
Housing cross- section	30*28mm
Vibration resistance	10 Hz ~55 Hz, amplitude 0.35±0.05mm, 20 times each in X, Y, Z direction
Ambient operating temperature	-10°C~55°C (no freezing)
Storage temperature	-30°C~70°C (no freezing)
Ambient operating humidity	When temperature is 20°C, humidity max 85%

Explanation of model (For example:EFP1620NEL-2)

EFP	16	20	N	E	L	—	2
▼	▼	▼	▼	▼	▼		▼
Model	Beams	Beam space	Output	Function	Brackets		Sensing distance
EFP series	08、10、12.....	10mm 20mm	N: NPN*2 P: PNP*2	No EDM& manual reset function E: With EDM function R: With manual reset A: With EDM & manual reset	L: Side-mounting bracket		2: 0.1~2M 5: 0.5~5M

Size of product



D: Beam space

H: Protective height

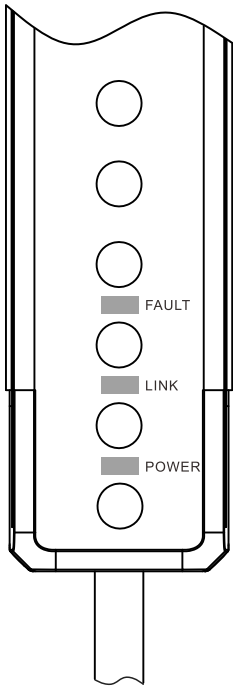
L: Total height

$L = \text{upper \& bottom cover} + \text{upper \& bottom dead zone} + \text{protective height}$

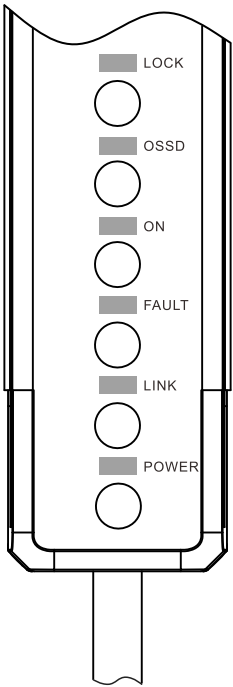
$H = (\text{Beams} - 1) \times \text{beam space}$

Safety Light Curtain
ESV Series
EFP Series
ESE Series
ESS Series
ELG Series
EB13 Series
EB15 Series
ESN Series
ESQC Series
ESA Series
ESP Series
EFB Series
ESF Series
Measurement Light Curtain
Safety Interlock Switch
Laser Radar

Wire synchronization



Emitter



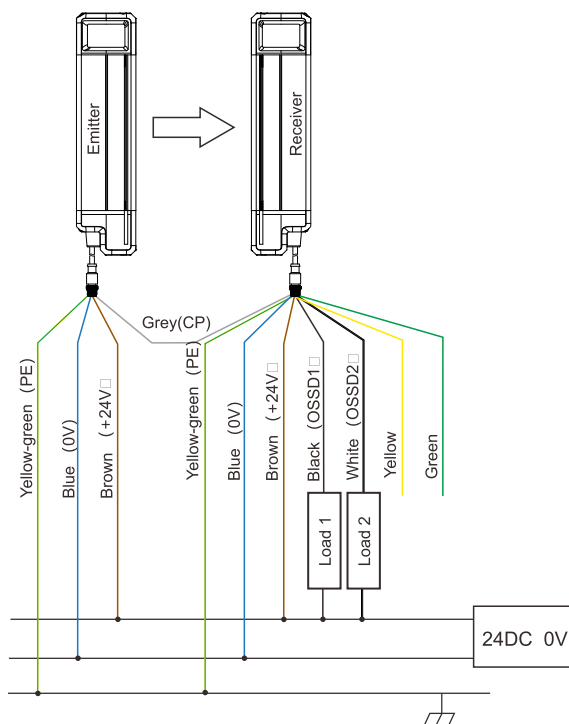
Receiver

Transmitter indicator light specification		
Indicator light	Indicator light status	Function
POWER (green)	Lighted	The power indicator light works normally.
	Turned off	Receiving EEPROM checksum error.
	Flashing at 1Hz	Under voltage.
	Flashing at 2Hz	Over voltage.
LINK (green)	Turned off	Normal operation.
	Flashing at 2Hz	Internal detection abnormal.
FAULT (red)	Lighted	Internal detection abnormal.
	Turned off	Normal operation.
	Flashing at 2Hz	Transmission pulse number detection abnormal / transmission board length detection abnormal

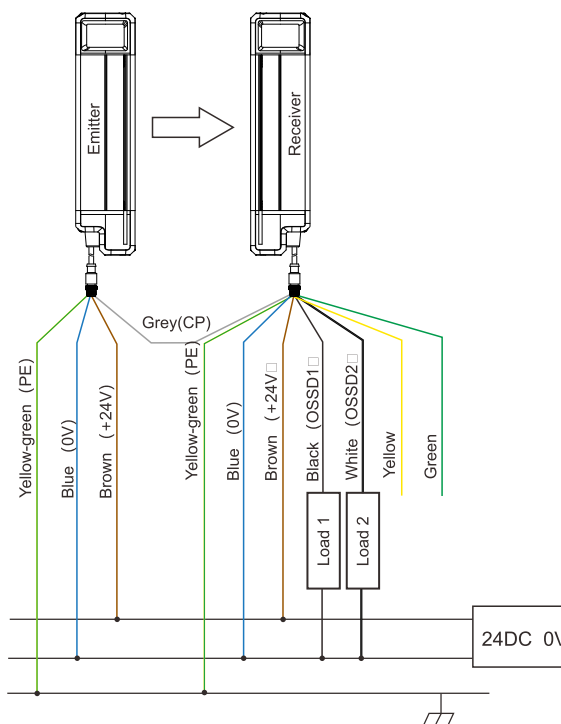
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Indicator light	Indicator light status	Function
POWER (green)	Lighted	Normal operation.
	Turned off	Receiving EEPROM checksum error.
	Flashing at 1Hz	Under voltage.
	Flashing at 2Hz	Over voltage.
LINK (green)	Turned off	Normal operation.
	Flashing at 2Hz	Internal detection abnormal.
FAULT (red)	Lighted	Internal detection abnormal.
	Turned off	Normal operation.
	Flashing at 2Hz	Overload / EDM detection abnormal / receiving board length detection abnormal
ON (green)	Lighted	Light through
	Flashing at 1Hz	EDM failure
	Turned off	Block light
OSSD (red and green)	Green light on	Output open
	Red light on	Output closed
LOCK (Yellow)	Lighted	Waiting for reset
	Flashing at 1Hz	Wiring fault
	Turned off	Normal operation.

Wire connection

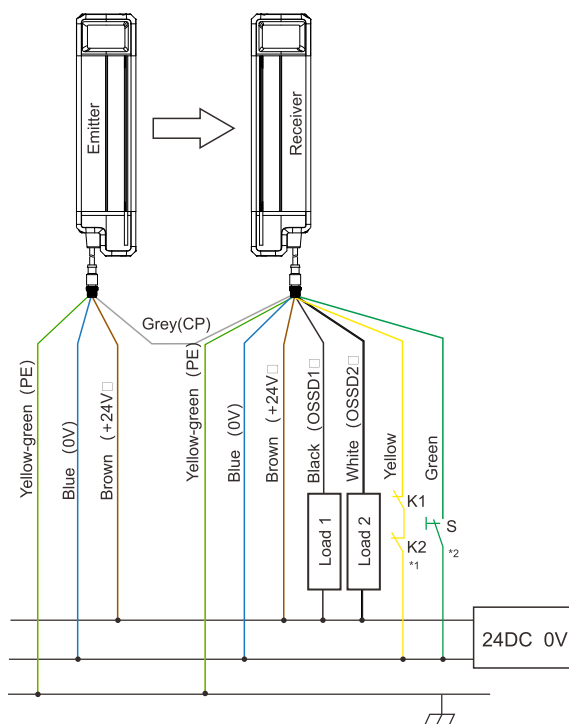
NPN (without EDM & reset)



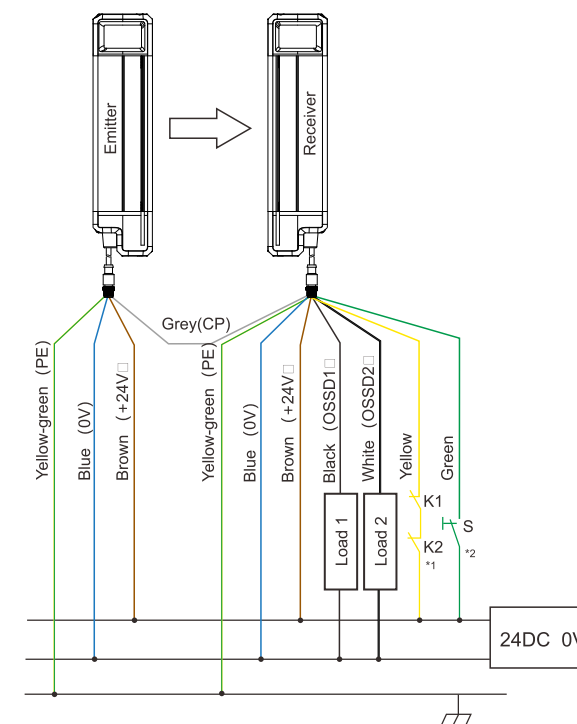
PNP (without EDM & reset)



NPN (with EDM & reset)



PNP (with EDM & reset)



*1 When there is no EDM function, this signal is left unconnected.

*2 When there is no reset function, this signal is left unconnected.

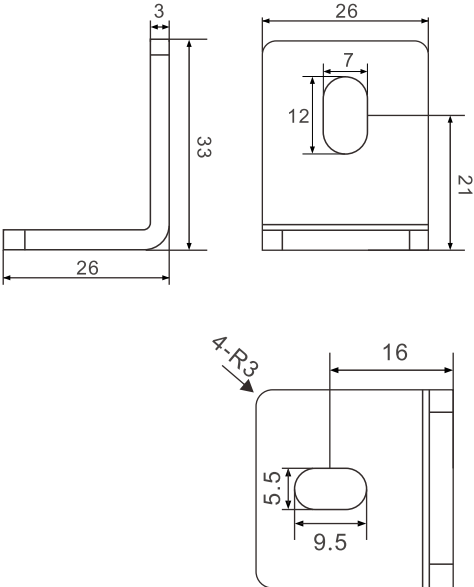
*1 When there is no EDM function, this signal is left unconnected.

*2 When there is no reset function, this signal is left unconnected.

Cable explanation

Light curtain	Cable color	Cable mark	Function	Wiring Explanation
Emitter	Brown	24V	Positive pole	Connect DC power 24V positive pole
	Blue	0V	Negative pole	Connect DC power 0V negative pole
	Grey	CP	Sync cord	Connect receiver CP
	Yellow green	PE	Shielded line	Ground/Connect GND
Receiver	Brown	24V	Positive pole	Connect DC power 24V positive pole
	Blue	0V	Negative pole	Connect DC power 0V negative pole
	Grey	CP	Sync cord	Connect emitter CP
	Yellow green	PE	Shielded line	Ground/Connect GND
	Black	OSSD1	Output signal 1	Connect safety input interface 1
	White	OSSD2	Output signal 2	Connect safety input interface 2
	Yellow	EDM	External device monitoring	Connect external normally closed monitoring contact
	Green	RESET	Reset	Connect reset button

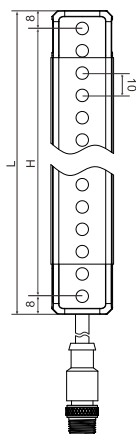
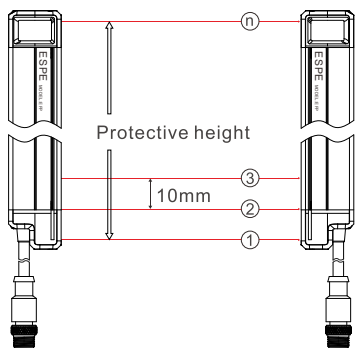
Option for brackets

Picture	Bracket Name	Accessories	Bracket size
	L side-mounting bracket	L brackets (4 pcs) M5 sliding blocks (4pcs) M6 grommet (4 pcs) M6 pad (4 pcs) M6*16 screw (4 pcs) M5*6 screw (4 pcs)	

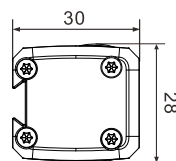
EFP selection sheet

- Beam space 10mm, resolution 15mm

Picture(mm)	Beams (n)	Protective height (mm)	Total height (mm)	Model	SizeL*W*H (mm)
	16	150	166	EFP1610	30*28*166
	20	190	206	EFP2010	30*28*206
	24	230	246	EFP2410	30*28*246
	28	270	286	EFP2810	30*28*286
	32	310	326	EFP3210	30*28*326
	36	350	366	EFP3610	30*28*366
	40	390	406	EFP4010	30*28*406
	44	430	446	EFP4410	30*28*446
	48	470	486	EFP4810	30*28*486
	52	510	526	EFP5210	30*28*526
	56	550	566	EFP5610	30*28*566
	60	590	606	EFP6010	30*28*606
	64	630	646	EFP6410	30*28*646
	68	670	686	EFP6810	30*28*686
	72	710	726	EFP7210	30*28*726
	76	750	766	EFP7610	30*28*766
	80	790	806	EFP8010	30*28*806
	84	830	846	EFP8410	30*28*846
	88	870	886	EFP8810	30*28*886
	92	910	926	EFP9210	30*28*926
	96	950	966	EFP9610	30*28*966
	100	990	1006	EFP10010	30*28*1006
	104	1030	1046	EFP10410	30*28*1046
	108	1070	1086	EFP10810	30*28*1086
	112	1110	1126	EFP11210	30*28*1126
	116	1150	1166	EFP11610	30*28*1166
	120	1190	1206	EFP12010	30*28*1206
	124	1230	1246	EFP12410	30*28*1246
	128	1270	1286	EFP12810	30*28*1286
	132	1310	1326	EFP13210	30*28*1326
	136	1350	1366	EFP13610	30*28*1366
					
	160	1590	1606	EFP16010	30*28*1606



Front view



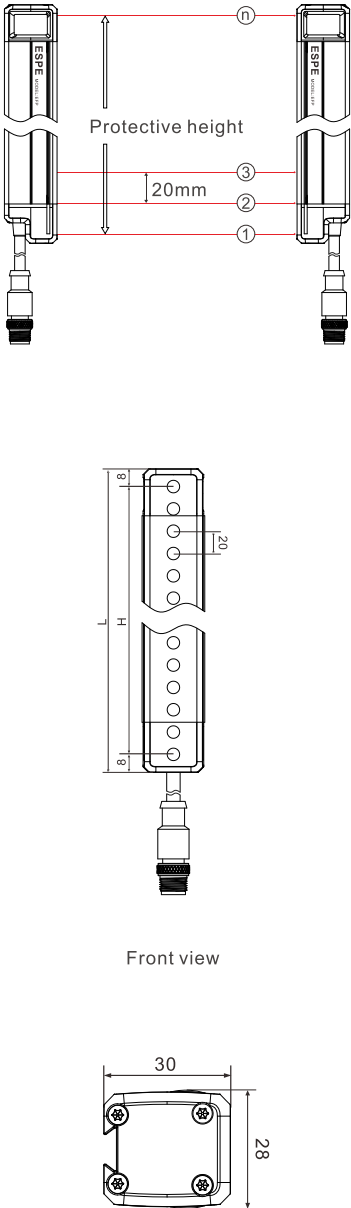
Top view

H is protective height: $H = (\text{beams} - 1) \times \text{beam space}$
L is total height: L = upper and bottom cover + upper and bottom blind spot + protective height

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Measurement Light Curtain
Safety Interlock Switch
Laser Radar

EFP selection sheet

- Beam space 20mm, resolution 25mm

Picture(mm)	Beams (n)	Protective height (mm)	Total height (mm)	Model	Size L*W*H(mm)
 Front view Top view	8	140	156	EFP0820	30*28*156
	10	180	196	EFP1020	30*28*196
	12	220	236	EFP1220	30*28*236
	14	260	276	EFP1420	30*28*276
	16	300	316	EFP1620	30*28*316
	18	340	356	EFP1820	30*28*356
	20	380	396	EFP2020	30*28*396
	22	420	436	EFP2220	30*28*436
	24	460	476	EFP2420	30*28*476
	26	500	516	EFP2620	30*28*516
	28	540	556	EFP2820	30*28*556
	30	580	596	EFP3020	30*28*596
	32	620	636	EFP3220	30*28*636
	34	660	676	EFP3420	30*28*676
	36	700	716	EFP3620	30*28*716
	38	740	756	EFP3820	30*28*756
	40	780	796	EFP4020	30*28*796
	42	820	836	EFP4220	30*28*836
	44	860	876	EFP4420	30*28*876
	46	900	916	EFP4620	30*28*916
	48	940	956	EFP4820	30*28*956
	50	980	996	EFP5020	30*28*996
	52	1020	1036	EFP5220	30*28*1036
	54	1060	1076	EFP5420	30*28*1076
	56	1100	1116	EFP5620	30*28*1116
	58	1140	1156	EFP5820	30*28*1156
	60	1180	1196	EFP6020	30*28*1196
	62	1220	1236	EFP6220	30*28*1236
	64	1260	1276	EFP6420	30*28*1276
	66	1300	1316	EFP6620	30*28*1316
	68	1340	1356	EFP6820	30*28*1356
					
	80	1580	1596	EFP8020	30*28*1596

H is protective height: $H = (\text{beams} - 1) \times \text{beam space}$
 L is total height: L = upper and bottom cover + upper and bottom blind spot + protective height