

ESA series

AC220V safety light curtain

ESA safety light curtain is mainly used for safety protection for stamping machinery, which adopt controller to monitor and output signal of safety light curtain. Power supply is AC110-220V, AC380V, output relay signal. It is designed according to EU standard, the main component is imported from abroad, and pass national safety standard GB4584-2007. It have advantage in perfect self-inspection, easy installation, strong shock resistance, various installation method. ESA series is powerful for different high-risk equipment, and can protect the safety of operators and equipment in harsh environments.

Option of controller



P type external controller



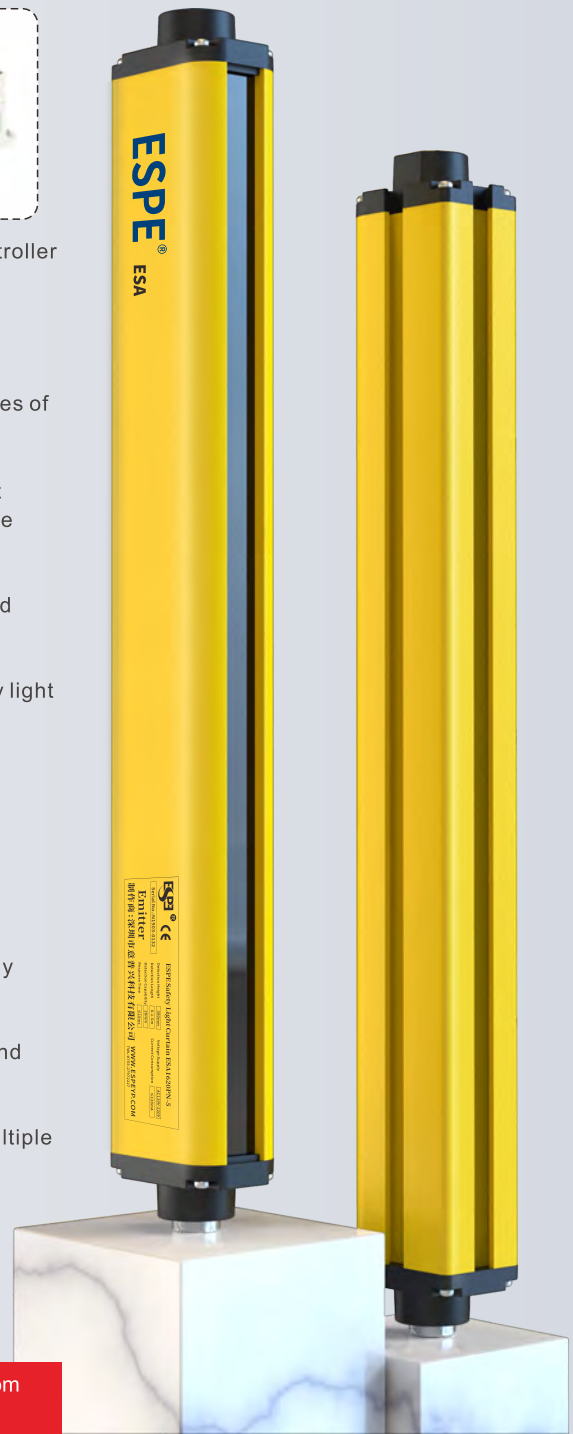
X type external controller



Q type inside controller

Product features

- Wide voltage is suitable for machine with different power supply ranges of AC110 ~220V and AC380V;
- Ultra-reliable to monitor signal, cause controller monitors safety light curtain signal by pulse detection method, which can effectively ensure that mistake signal will not be triggered when short circuit.
- Great ability in anti-electromagnetic interference can effectively avoid influence by electromagnetic of machine motors.
- Anti-shock circuit and strong aluminum alloy enclosure ensure safety light curtain resist vibration.
- ESA is designed with wire synchronization technology, and good performance in light interference.
- Relay output signal, controller output signal by relay isolation output mode, and the external control signal is completely isolated from the internal circuit of barriers.
- Simple wire connection. Plug cable make safety light curtain is quickly connected with controller, which is easy for installation.
- Multiple brackets ensure safety light curtain can be installed easily and suitable for many different application environments
- One controller can work with multiple set of safety light curtain for multiple faceted protection.
- Long sensing distance is up to 20 meters.



Technical parameters

Controller parameters

Power supply	AC110V~220V 50/60Hz, AC380V	
Capacity	<15W	
Output type	Relay contact output	
Contact capacity	5A, AC250V/DC30V(Resistive load)	
Lifespan of relay	mechanical endurance, electrical life is related to the connected load, and can be changed	
Response time	≤20ms	
Ambient temperature	-10~55°C (without freezing)	
Ambient humidity	20°C, RH≤85%	
Insulation resistance	≥100MΩ	
Safety rating	P type external controller: IP54	Q type inside controller: IP20

Safety light curtain parameter

Beam space	10mm, 20mm, 40mm
Resolution	20mm, 30mm, 40mm
Beams	10mm: 8, 12, 16……320 20mm: 4, 6, 8……160 40mm: 4, 6, 8……122
Protective height	Protective height=(N-1)*beam gap, N is beam quantity.
Wave length	940nm
Sensing distance	0.1-30m (Reflective environment, please contact us)
Sensing method	Through beam
Synchronization	Wire synchronization
Anti-optical interference	10000Lux(I >5°)
Enclosure material	Aluminum alloy
Housing cross-section	35*50mm
Enclosure rating	IP65
Vibration resistance	10Hz...55Hz, double amplitude each inX, Y and Z directions for 20 times.

Explanation of model selection (For example: ESA1620PM-5)

ESA	16	20	P	N	-	5
▼	▼	▼	▼	▼		▼
Model	Beams	Beam space	Output method	Brackets		Sensing distance
ESA series	04,06,08, 10,12……	10mm 20mm 40mm	P type controller Q type controller X type controller	N: aluminum rotary brackets J: reinforce brackets L1: side-mounting brackets JZ: shock-absorbing brackets		05: 0.1~0.5M 2: 0.1~2M 5: 0.1~5M 10: 0.1~10M 20: 0.1~20M 30: 0.1~30M

EFP Series

ESE Series

ESN Series

ESQC Series

ELG Series

EB13 Series

EB15 Series

ESA Series

ESP Series

EFB Series

ESF Series

ESCL Series

ESCF Series

ESCH Series

ESCC Series

ESR Series

EDL-R1 Series

EPL Series

EPS Series

EPC Series

EPM Series

EPK Series

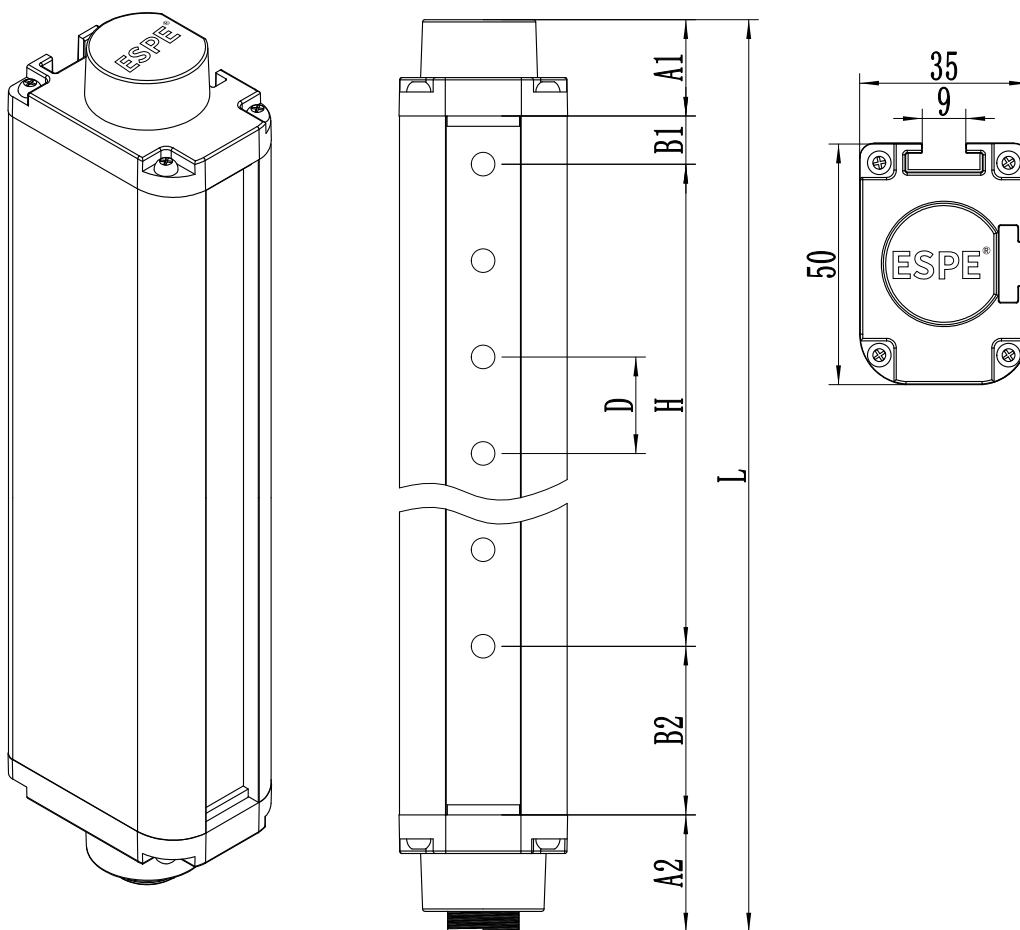
EDS-R Series

EDS-L Series

EMB-M01

F27X Series

Size of Product



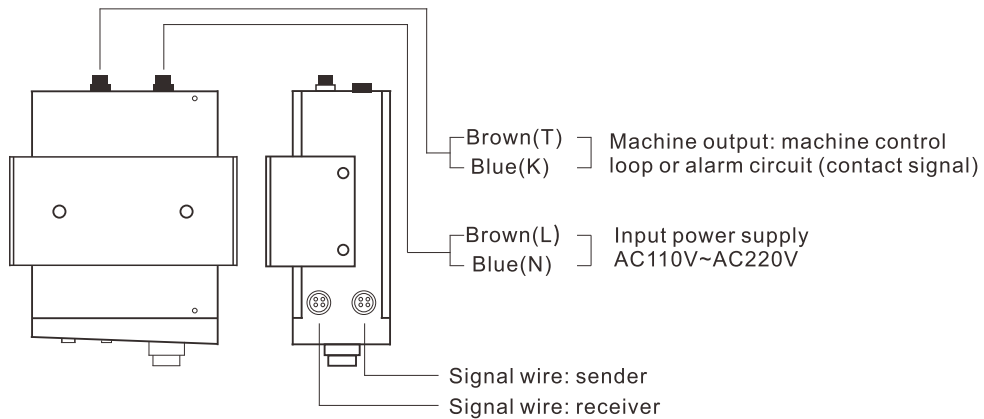
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- EMB-M01
- F27X Series

A1: Upper cover
 A2: Bottom cover
 B1: Upper stop-work range
 B2: Bottom stop-work range
 D: Beam space (10mm/ 20mm/40mm)
 H: Protective height
 L: Total height

A1=20mm; A2=25mm
 When D=10mm, B1=5mm; B2=30mm
 When D=20mm, B1=10mm; B2=35mm
 When D=40mm, B1=10mm; B2=35mm
 H is protective height: $H=(\text{beams}-1)*\text{beam space}$
 L is total height: $L=A1+A2+B1+B2+H$

Wire connection

External controller (P type)



L(brown) and N (blue) is input wire of AC power supply, input voltage AC110V/220V, please check and ensure right wire connection.

T (brown) and K (blue) should be connect with control circuit of machine as below picture showed.

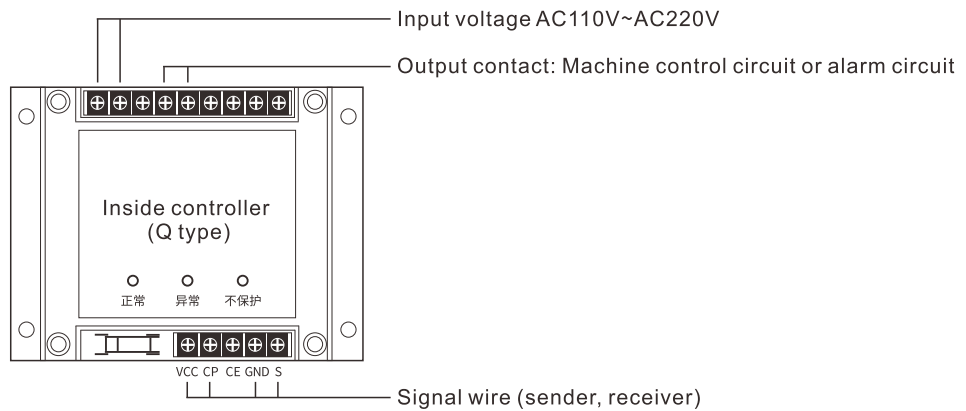
When curtain light pass through normally, and T/K cable is connected, machine work well; When beams is blocked, T/K is disconnected to stop machine operation.



Warning

In order to avoid danger, it must cut off power supply of machine tool before wiring, and operate without any power. Please connect cable strictly as the wire connection of machine tool. (If machine circuit is changed, operators should pay attention to observe the action of electrical appliances inside machine to ensure correct control). Forbid to change circuit of safety light curtain. Rated voltage of controller is AC220V, exorbitant high or low voltage may burn the circuit of safety device.

Q type controller



1.Connection of T, K wire (Return no protection is no need)

2.Connection of T/K (need return no protection), return no protection function is usually achieved by machine itself, no need additional connection. When it need to be achieved by safety light curtain, you can connect wire as below method. A pair of normally open contacts of the cam switch are connected in parallel with T, K.



Warning

When the emergency button of machine is normally open, operators open the cover board of controller, and connect the original T/K wire respectively connect to T1/K2 (Q controller connect directly), and parallel connect with the emergency button of machine (T1,K1 normally open when light on, normally close when light off)

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EMB-M01

F27X Series

Model Selection sheet

● Beam space is 10mm, resolution 20mm

Picture	Beams (n)	Protective height(mm)	Total height (mm)	Model	Size L*W*H(mm)
	08	70	150	ESA0810	35*50*150
	12	110	190	ESA1210	35*50*190
	16	150	230	ESA1610	35*50*230
	20	190	270	ESA2010	35*50*270
	24	230	310	ESA2410	35*50*310
	28	270	350	ESA2810	35*50*350
	32	310	390	ESA3210	35*50*390
	36	350	430	ESA3610	35*50*430
	40	390	470	ESA4010	35*50*470
	44	430	510	ESA4410	35*50*510
	48	470	550	ESA4810	35*50*550
	52	510	590	ESA5210	35*50*590
	56	550	630	ESA5610	35*50*630
	60	590	670	ESA6010	35*50*670
	64	630	710	ESA6410	35*50*710
	<p>Front view</p>	68	670	750	ESA6810
72		710	790	ESA7210	35*50*790
76		750	830	ESA7610	35*50*830
80		790	870	ESA8010	35*50*870
84		830	910	ESA8410	35*50*910
88		870	950	ESA8810	35*50*950
92		910	990	ESA9210	35*50*990
96		950	1030	ESA9610	35*50*1030
100		990	1070	ESA10010	35*50*1070
104		1030	1110	ESA10410	35*50*1110
108		1070	1150	ESA10810	35*50*1150
112		1110	1190	ESA11210	35*50*1190
116		1150	1230	ESA11610	35*50*1230
120		1190	1270	ESA12010	35*50*1270
124		1230	1310	ESA12410	35*50*1310
<p>Top-view</p>		128	1270	1350	ESA12810

	320	3190	3270	ESA32010	35*50*3270

H is protective height:

$$H = (\text{beams} - 1) * \text{beam space}$$

$$L \text{ is total height} = A1 + A2 + B1 + B2 + H$$

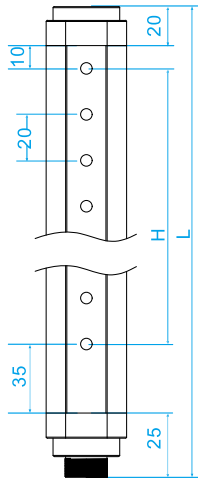
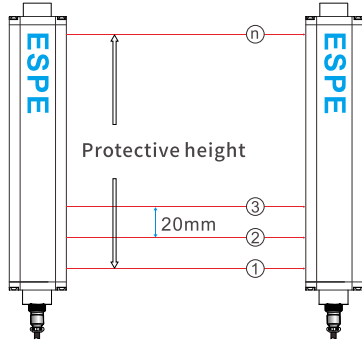
Remark: If your request is out of range of above selection sheet, we can customize according to your request.

Model Selection sheet

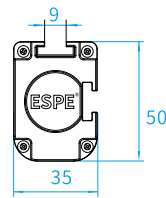
● Beam space is 20mm, resolution 30mm

Picture	Beams (n)	Protective height (mm)	Total height (mm)	Model	Size L*W*H (mm)
	04	60	125	ESA0420	35*50*125
	06	100	190	ESA0620	35*50*190
	08	140	230	ESA0820	35*50*230
	10	180	270	ESA1020	35*50*270
	12	220	310	ESA1220	35*50*310
	14	260	350	ESA1420	35*50*350
	16	300	390	ESA1620	35*50*390
	18	340	430	ESA1820	35*50*430
	20	380	470	ESA2020	35*50*470
	22	420	510	ESA2220	35*50*510
	24	460	550	ESA2420	35*50*550
	26	500	590	ESA2620	35*50*590
	28	540	630	ESA2820	35*50*630
	30	580	670	ESA3020	35*50*670
	32	620	710	ESA3220	35*50*710
	34	660	750	ESA3420	35*50*750
	36	700	790	ESA3620	35*50*790
	38	740	830	ESA3820	35*50*830
	40	780	870	ESA4020	35*50*870
	42	820	910	ESA4220	35*50*910
	44	860	950	ESA4420	35*50*950
	46	900	990	ESA4620	35*50*990
	48	940	1030	ESA4820	35*50*1030
	50	980	1070	ESA5020	35*50*1070
	52	1020	1110	ESA5220	35*50*1110
	54	1060	1150	ESA5420	35*50*1150
	56	1100	1190	ESA5620	35*50*1190
	58	1140	1230	ESA5820	35*50*1230
	60	1180	1270	ESA6020	35*50*1270
	62	1220	1310	ESA6220	35*50*1310
	64	1260	1350	ESA6420	35*50*1350

	160	3180	3270	ESA16020	35*50*3270



Front view



Top-view

H is protective height:

$H = (\text{beams} - 1) * \text{beam space}$

$L \text{ is total height} = A1 + A2 + B1 + B2 + H$

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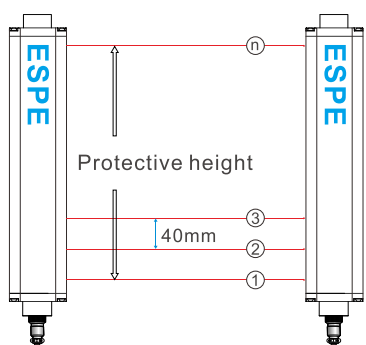
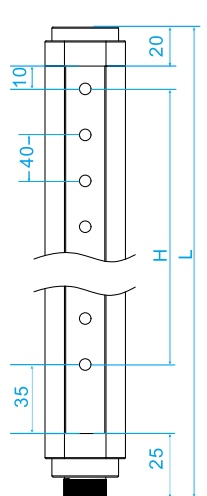
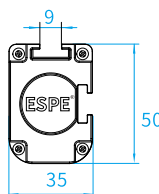
EMB-M01

F27X Series

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Model Selection sheet


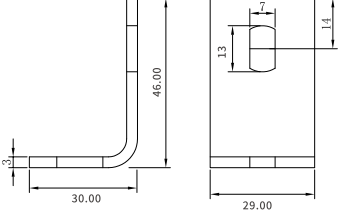

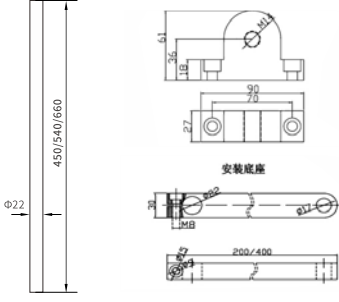

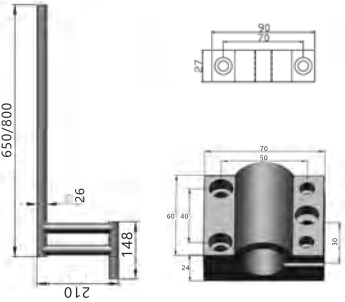

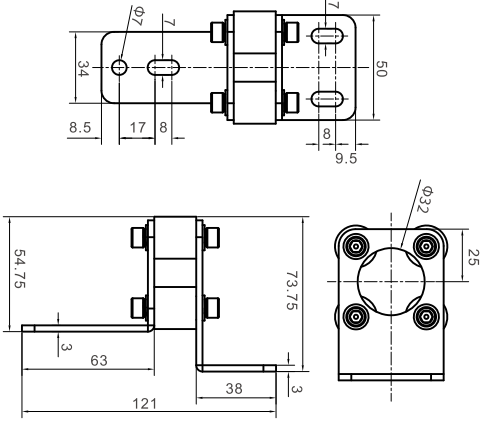
● Beam space is 40mm, resolution 50mm

Picture	Beams (n)	Protective height(mm)	Total height (mm)	Model	Size L*W*H(mm)
   <p>Front view</p> <p>Top-view</p> <p>H is protective height: $H=(beams-1)*beam\ space$ L is total height= $A1+A2+B1+B2+H$</p>	04	120	210	ESA0440	35*50*210
	06	200	290	ESA0640	35*50*290
	08	280	370	ESA0840	35*50*370
	10	360	450	ESA1040	35*50*450
	12	440	530	ESA1240	35*50*530
	14	520	610	ESA1440	35*50*610
	16	600	690	ESA1640	35*50*690
	18	680	770	ESA1840	35*50*770
	20	760	850	ESA2040	35*50*850
	22	840	930	ESA2240	35*50*930
	24	920	1010	ESA2440	35*50*1010
	26	1000	1090	ESA2640	35*50*1090
	28	1080	1170	ESA2840	35*50*1170
	30	1160	1250	ESA3040	35*50*1250
	32	1240	1330	ESA3240	35*50*1330
	34	1320	1410	ESA3440	35*50*1410
	36	1400	1490	ESA3640	35*50*1490
	38	1480	1570	ESA3840	35*50*1570
	40	1560	1650	ESA4040	35*50*1650
	42	1640	1730	ESA4240	35*50*1730
	44	1720	1810	ESA4440	35*50*1810
	46	1800	1890	ESA4640	35*50*1890
	48	1880	1970	ESA4840	35*50*1970
	50	1960	2050	ESA5040	35*50*2050
	52	2040	2130	ESA5240	35*50*2130
	54	2120	2210	ESA5440	35*50*2210
56	2200	2290	ESA5640	35*50*2290	
58	2280	2370	ESA5840	35*50*2370	
60	2360	2450	ESA6040	35*50*2450	
62	2440	2530	ESA6240	35*50*2530	
64	2520	2610	ESA6440	35*50*2610	
.....
122	4840	4930	ESA12240	35*50*4930	

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- F27X Series

Option of brackets

Installation picture	Bracket Name	Brackets Size
	<p>L1 side-mounting brackets</p>	
	<p>N shape aluminum rotary bracket</p>	
	<p>J type reinforce bracket</p>	
	<p>JZ shock-absorbing bracket</p>	

Option for brackets

Installation picture	Bracket Name	Accessories
	L1 back/ side mounting	<ol style="list-style-type: none"> 1. L brackets (4pcs) 2. Sliding pot (4pcs) 3. M6 grommet (4pcs)+M6 pad (4pcs) 4. M6*16 screw (4pcs) 5. M6*8 screw (4pcs)
	N type aluminum rotary bracket	<ol style="list-style-type: none"> 1. Steel pipe (2 pcs) (450mm pipe is suitable for safety light curtain ≤180mm; 550mm pipe is suitable for safety light curtain >180mm but ≤300mm; 660mm pipe suitable for safety light curtain >300mm) 2. Rotary brackets (2 pcs); 3. Base (2 pcs); 4. Sliding pot (4 pcs); 5. M8 pad 2pcs + M8 grommet (2pcs); 6. M8 screw (2pcs); 7. M6*8 screw (2pcs); 8. M5 pad (4pcs)+ M5 grommet (4pcs) 9. M5 screw nut (4pcs); 10. M5*30 screw (4pcs) 11. M40*40 screw(2pcs); 12. M40 pad(2pcs)+M40 grommet(2pcs) 13. M8*25 screw (4pcs); 14. M8 pad (4pcs)
	J type Reinforce bracket	<ol style="list-style-type: none"> 1. Reinforce pipe (2pcs); 2. Base (2pcs); 3. Otype (4pcs); 4. Sliding pot (4pcs); 5. M8 grommet (2pcs)+M8 pad (10pcs); 6. M8*16 screw (6pcs); 7. M6*8 screw (4pcs); 8. M5 pad (4pcs)+ M5 grommet (4pcs) 9. M5 screw (4pcs); 10. M5*30 screw (4pcs) 11. M8*25 screw (6pcs); 12. M8*12 screw (4pcs)
	JZ shock-absorbing bracket	<ol style="list-style-type: none"> 1. Bracket body (4pcs) 2. Slide block (8 pcs) 3. M6 grommet (8 pcs) 4. M6 pad(8 pcs) 5. M6*16 screw (8 pcs) 6. M6*8 screw (8 pcs)



Warning

1. Customer can choose brackets and controller according to their request, Standard controller of ESA model is P type external controller, N type brackets;
2. Standard length 2.5m emitter, 3.5m receiver;
3. Can customize according to request (include lengthen wire, or change brackets etc)
4. Voltage 380V can be customized

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Controller option

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Picture	Name	Voltage	Size picture of brackets
	P type external controller (standard)	AC110V-220V (AC380V can be customized)	
	X controller (option)	AC110V-220V (AC380V can be customized)	
	Q type inside controller (option)	AC110-220V	

Remark

- ◆ Before working, please check if safety light curtains control the machine well, please refer to step 4 to debug.
- ◆ Avoid movement of safety light curtain casually;
- ◆ The key of controller should be kept by professional engineers;
- ◆ After changing machine model, the distance and position of safety light curtain should debug by professional engineers.
- ◆ Dismounting or maintenance of safety light curtain should be operate by professional operators after cutting off power supply.
- ◆ Lifespan of build-in relay of controller is above 10 million times, after 3 years, please change it.
- ◆ During operation, please don't let work piece , tool, waste material etc tough safety light curtain to avoid damage.
- ◆ For safety light curtain with re-start function, when machine stop caused by beam blocked. After restoring normal light-on, please remember to press "re-start button" to ensure machine start to work again.



Warning

When stop to use safety light curtain, you can just keep the key of controller on "off" position. Then the safety light curtain will stop work, other safety protection measures should be taken.

Remark: Forbid to plug and un-plug when power-on.

Application case



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