ESA Series

Punching Machine Use Safety Light Curtain

Product Introduction

ESA series is mainly used for safety protection for stamping machinery, which adopt controller to monitor and output signal of light curtains. ESA series supports AV110-220V, AC380V voltage and output relay signal. ESA series is designed according to EU safety standard, whose main components are imported. Good self-diagnosis, easy to operation, and strong anti-vibration ability make ESA series can work in different hazardous equipment, and well protect operators from accident.

Product Feature

- AC110V-220V, AC380V wide voltage for stamping machinery;
- Controller reliably monitor signal of light curtain by pulse detection method, which effectively ensure that mistake signal will not be triggered when short circuit;
- Good performance to against electromagnetic interference of different machine motor;
- Anti-shock circuit and strong aluminum alloy enclosure well against vibration;
- Wire-syn good to against light interference;
- Controller output signal by relay isolation output mode, and the external control signal is completely isolated form internal circuit of barriers;
- Plug connecting between curtain & controller make wire connection easily and quickly;
- Multiple brackets for various environment mounting;
- One controller can work with more sets of safety light curtain for multi-faced protection;
- Long sensing distance up to 20m;

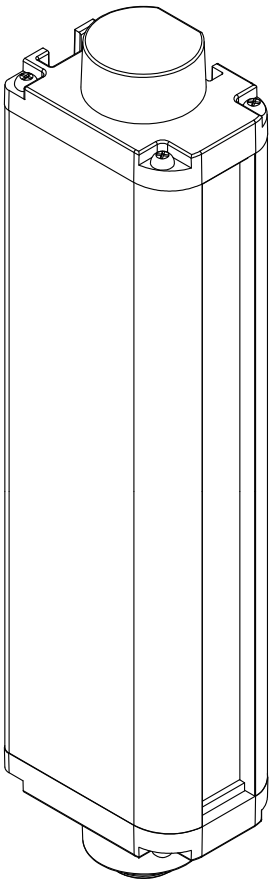
Product Parameter

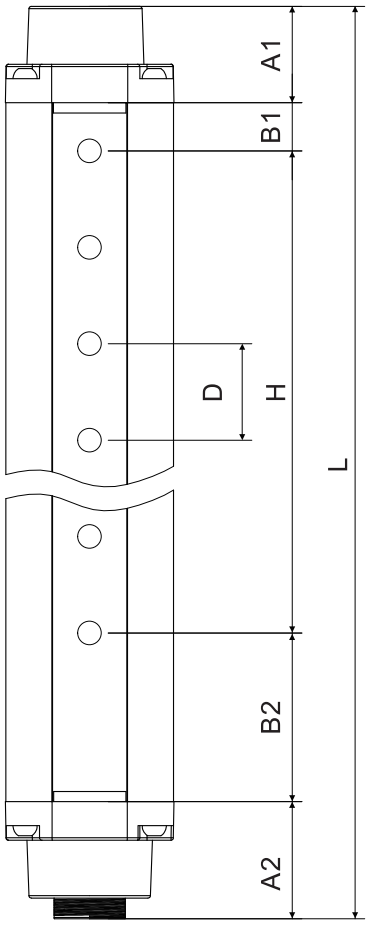
Controller Electric Parameter		
Power Supply	AC110V~220V 50/60Hz, AC380V	
Capacity	<15W	
Output	Relay contact output	
Contact Capacity	5A, AC250V/DC30V Resistive load	
Relay lifespan	Mechanical lif≥10 million times, electrical life is depend on the connected load, can be changed;	
Response Time	≤20ms	
Ambient Temperature	-10~55℃ No freezing	
Ambient Humidity	20℃, RH≤85%	
Insulation Resistance	≥100MΩ	
Protection Rate	P controller: IP54;	Q controller: IP20
Light Curtain Electric Parameter		
Beam Space	10mm, 20mm, 40mm	
Resolution	20mm, 30mm, 50mm	
Beams	10mm: 8,12,16,...320	
	20mm: 4, 6, 8,...160	
	40mm: 4, 6, 8,...122	
Protective Height	Protective height H=(N-1)*beam space, (N is beams)	
Light Wavelength	940nm	
Sensing Distance	0.1~0.5m, 0.1~2m, 0.1~5m, 0.1~10m, 0.1~20m, 0.1~30m (Remark: please let us know when with reflectivity)	
Sensing Method	Through beam	
Synchronization	Wire-syn	
Against Optical Interference	10000 Lux (angle>5°)	
Enclosure Material	Aluminum alloy	
Sectional Size	35*50mm	
Protection Rate	IP65	
Vibration Resistance	Frequency 10Hz-55Hz, amplitude 0.35±0.05mm, 20 times each in X, Y and Z direction.	

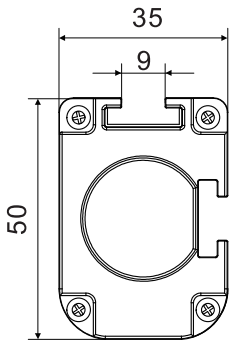
Model Selection (e.g.: ESA1620PN-5)

Product Series	Beams	Beam Space	Controller	Bracket		Sensing Distance
ESA	16	20	P	N	–	5
	04,06, 08...	10mm 20mm 40mm	P: P controller X: X controller Q: Q controller	N: aluminum rotary type J: reinforce type L1: side mounting type JZ: shoch absorbing type		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 (Remark: please let us know when with reflectivity)

Product Size







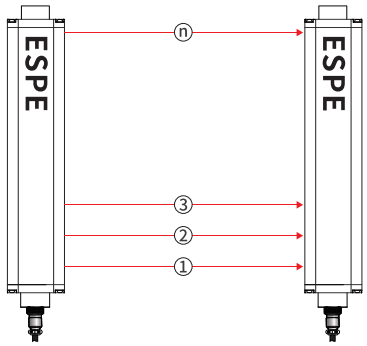
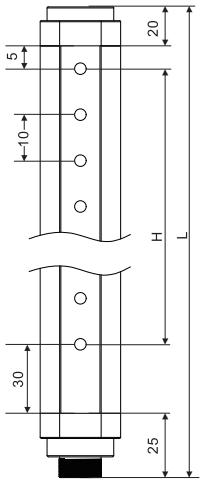
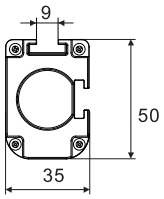
A1: Upper end cover
A2: Lower end cover + aviation terminal
B1: Up blind area
B2: Bottom blind area
D: Beam space (10mm/20mm/40mm)
H: Protection height
L: Total height

A1 is 20mm; A2 is 25mm;
When D=10mm, B1=5mm, B2=30mm
When D=20mm, B1=10mm, B2=35mm
When D=40mm, B1=10mm, B2=35mm

H=(Beams-1)*beam space
L=A1+A2+B1+B2+H

ESA Model Selection Table

- Beam space 10mm, resolution 20mm

Picture	Beams (n)	Protection Height (mm)	Total Height (mm)	Model
	8	70	150	ESA0810
	12	110	190	ESA1210
	16	150	230	ESA1610
	20	190	270	ESA2010
	24	230	310	ESA2410
	28	270	350	ESA2810
	32	310	390	ESA3210
	36	350	430	ESA3610
	40	390	470	ESA4010
	44	430	510	ESA4410
	48	470	550	ESA4810
	52	510	590	ESA5210
	56	550	630	ESA5610
	60	590	670	ESA6010
	64	630	710	ESA6410
	68	670	750	ESA6810
	72	710	790	ESA7210
	76	750	830	ESA7610
	80	790	870	ESA8010
	84	830	910	ESA8410
	88	870	950	ESA8810
Front View	92	910	990	ESA9210
	96	950	1030	ESA9610
	100	990	1070	ESA10010
	104	1030	1110	ESA10410
	108	1070	1150	ESA10810
	112	1110	1190	ESA11210
	116	1150	1230	ESA11610
	120	1190	1270	ESA12010
	124	1230	1310	ESA12410
	128	1270	1350	ESA12810
	.....	.....	.....	.....
	320	3100	3180	ESA32010
Top View				

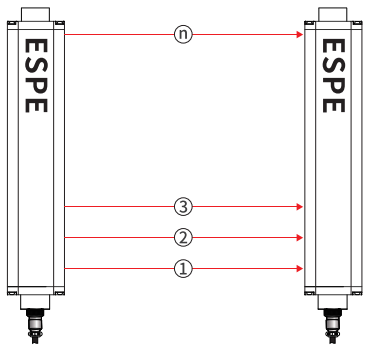
H is protection height=(beams-1)*beam space
L is total height=end covers+ up & bottom blind area + protection height

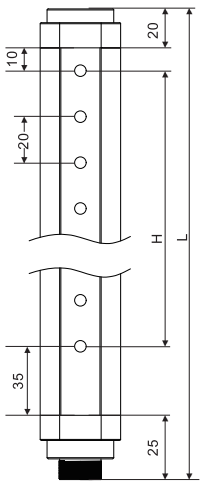
Remark: Beside above models, other light curtains can be customized

Safety Light Curtain

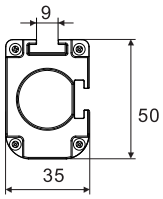
ESA Model Selection Table

- Beam space 20mm, resolution 30mm





Front View



Top View

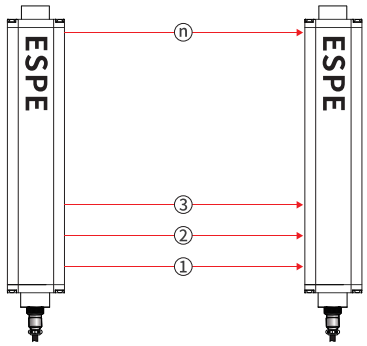
H is protection height=(beams-1)*beam space
L is total height=end covers+ up & bottom blind area + protection height

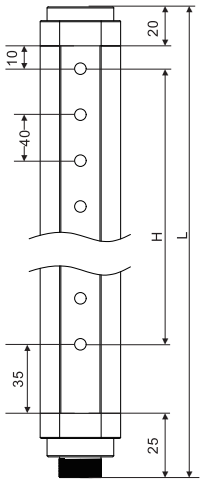
Beams (n)	Protection Height (mm)	Total Height (mm)	Model
4	60	125	ESA0420
6	100	190	ESA0620
8	140	230	ESA0820
10	180	270	ESA1020
12	220	310	ESA1220
14	260	350	ESA1420
16	300	390	ESA1620
18	340	430	ESA1820
20	380	470	ESA2020
22	420	510	ESA2220
24	460	550	ESA2420
26	500	590	ESA2620
28	540	630	ESA2820
30	580	670	ESA3020
32	620	710	ESA3220
34	660	750	ESA3420
36	700	790	ESA3620
38	740	830	ESA3820
40	780	870	ESA4020
42	820	910	ESA4220
44	860	950	ESA4420
46	900	990	ESA4620
48	940	1030	ESA4820
50	980	1070	ESA5020
52	1020	1110	ESA5220
54	1060	1150	ESA5420
56	1100	1190	ESA5620
58	1140	1230	ESA5820
60	1180	1270	ESA6020
62	1220	1310	ESA6220
64	1260	1350	ESA6420
.....	.....	.....	.....
160	3180	3270	ESA16020

Note: When the number of beams is 80, the incremental formula is changed to 4 beams, that is, 80, 84, 88, 160.

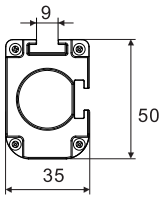
ESA Model Selection Table

- Beam space 40mm, resolution 50mm





Front View



Top View

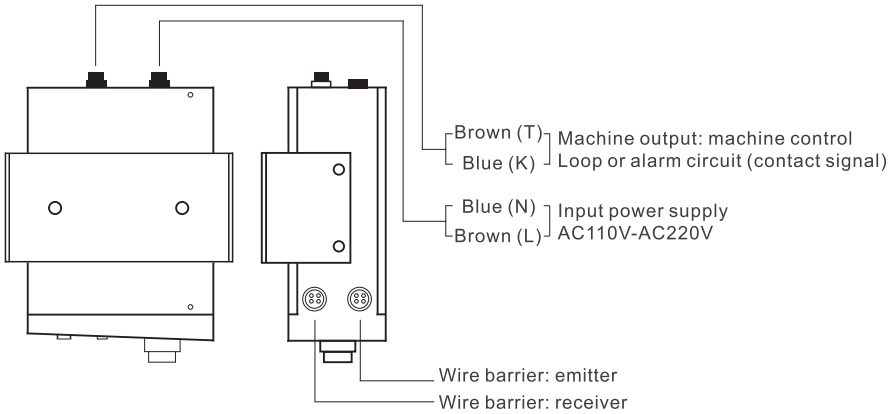
H is protection height=(beams-1)*beam space
L is total height=end covers+ up & bottom blind area + protection height

Picture	Beams (n)	Protection Height (mm)	Total Height (mm)	Model
	4	120	210	ESA0440
	6	200	290	ESA0640
	8	280	370	ESA0840
	10	360	450	ESA1040
	12	440	530	ESA1240
	14	520	610	ESA1440
	16	600	690	ESA1640
	18	680	770	ESA1840
	20	760	850	ESA2040
	22	840	930	ESA2240
	24	920	1010	ESA2440
	26	1000	1090	ESA2640
	28	1080	1170	ESA2840
	30	1160	1250	ESA3040
	32	1240	1330	ESA3240
	34	1320	1410	ESA3440
	36	1400	1490	ESA3640
	38	1480	1570	ESA3840
	40	1560	1650	ESA4040
	42	1640	1730	ESA4240
	44	1720	1810	ESA4440
	46	1800	1890	ESA4640
	48	1880	1970	ESA4840
	50	1960	2050	ESA5040
	52	2040	2130	ESA5240
	54	2120	2210	ESA5440
	56	2200	2290	ESA5640
	58	2280	2370	ESA5840
	60	2360	2450	ESA6040
	62	2440	2530	ESA6240
	64	2520	2610	ESA6440
	.....	.....	.....	.....
	122	4840	4930	ESA12240

Note: When the number of beams is 76, the incremental formula is changed to 4 beams, namely 76, 80, 84, 122.

Wire Diagram

External Controller (P type)

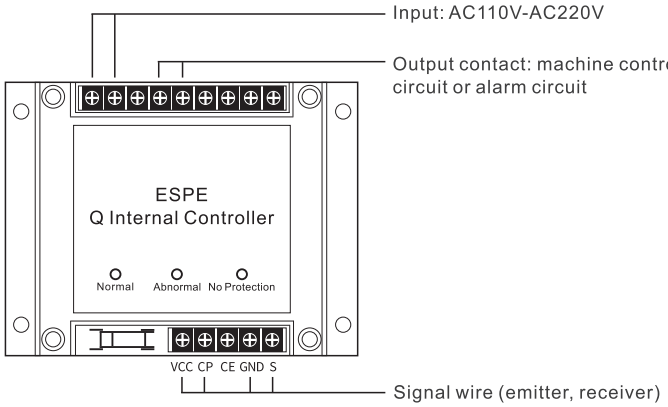


L (brown) and N (blue) is input wire of AC110V/220V, please check and ensure right connection;
T (brown) and K (blue) should be connected with control circuit of machine shown as below.When beams are through, T&K are connected and the machine works well; When beams are blocked, T&K are disconnected to stop the machine.

Notice

In case of any accident, power supply must be cut off before wiring; Wiring should be strictly in accordance with the wiring diagram. (If machine circuit get changed. please pay attention to action of machine internal electrical appliance 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 thel circuit of safety device.

Internal Controller (Q)

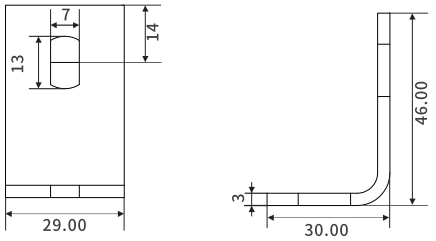
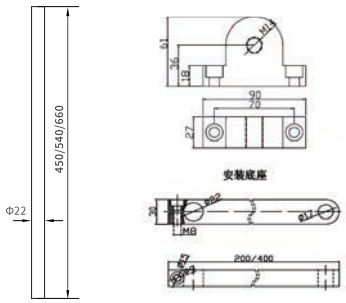
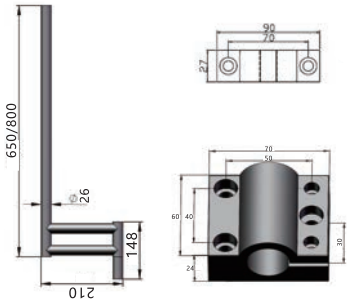
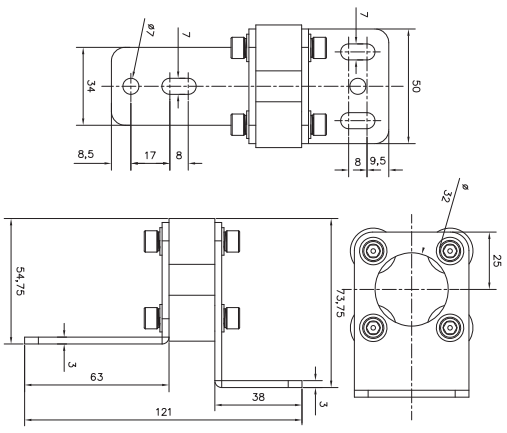


1. Connection of T,K wire, under normal circumstance, Return No Protection no need);
2. Connection of T,K (need Return No Protection),Return No Protection function is usually achieved by machine, no need to connect additionally. When it needs to be achieved by safety light curtain, you can connect wire as below method. A pair of normally open contacts of the cam are connected in parallel with T and K.

Notice

When the emergency stop button Is ON, operators open the cover 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, K2 normally open when light on, normally close when light off).

Option of Bracket

Picture	Name	Size
	L1 bracket	
	N aluminum rotary bracket	
	J reinforce bracket	
	JZ vibration absorbing bracket	

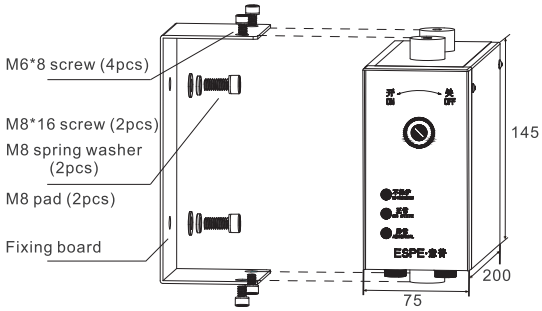
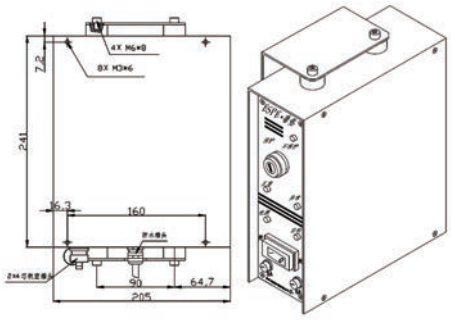
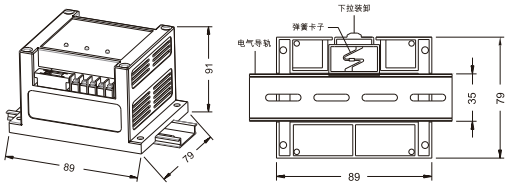
Safety Light Curtain

Option of Bracket

Picture	Name	Accessories
	L1 bracket	L bracket (4pcs) Slider (4pcs) M6 pad (4pcs) + M6 spring washer (4pcs) M6*16 screw (4pcs) M6*8 screw (4pcs)
	N aluminum rotary bracket	Steel pipe (2pcs) (450mm pipe for barrier ≤ 180mm height; 540mm pipe for 180mm< barrier ≤ 300mm height; 660mm pipe for barrier >300mm height) Rotary brackets (2pcs) Bas2pcs) Slider (4pcs) M8 pad (2pcs) +M8 spring washer (2pcs) M8*16 screw (2pcs) M6*8 screw (8pcs) M5 pad (4pcs)+M5 spring washer (4pcs) M5 nut (4pcs) M5*30 screw (4pcs) M16*40 screw (2pcs) M16 pad (2pcs) +M16 spring washer (2pcs) M8*25 screw (4pcs) M8 pad (4pcs)
	J reinforce bracket	Reinforce pipe (2pcs) Base (2pcs) O clip (4pcs) Slider (4pcs) M8 pad (2pcs)+M8 spring washer (10pcs) M8*16 screw (6pcs) M6*8 screw (4pcs) M5 pad (4pcs) + M5 spring washer (4pcs) M5 nut (4pcs) M5*30 screw (4pcs) M8*25 screw (6pcs) M6*12 screw (4pcs)
	JZ vibration absorbing bracket	Assembled bracket (4pcs) Slider (8pcs)M6 pad (8pcs) M6 spring washer (8pcs) M6*16 screw (8pcs) M6*8 screw (8pcs)

Remark: 1. Customers can choose controller and bracket according to requirement, standard equipment is P controller and N bracket;
2. Standard cable length is 2.5m emitter, 3.5m receiver;
3. Customization is welcomed (include cable extending, installation etc.);
4. Voltage can be customized in 380V.

Option of Controller

Picture	Model	Voltage	Size
	P external controller (Standard)	AC110V-220V AC380V customized	
	X external controller (Option)	AC110-220V AC380V customized	
	Q internal controller (Option)	AC110V-220V	

⚠ Remark:

- Please check if light curtain control machine well before working and refer to step 4 to debug.
- Avoid movement of safety light curtain casually;
- The key of controller should be kept by professional engineers;
- Engineers need to adjust the sensing distance and position of light curtain after changing machine model;
- Power Supply should be cut off by professional operators when dissemble and maintain light curtain;
- 100 million times, reaching the service life, or after three years of use, it should be replaced;
- During use, be careful not to let workpieces, tools, wastes and other items collide with the photoelectric protection device.
- Push reset button to re-start machine, if curtains connected with reset button, and machine stop after beam blocked.

Notice

When the photoelectric protection device is not needed, just put the lock switch on the controller in the "off" position.
At this time, the light spot protection device has no protection function, and other safety protection measures should be taken.

Note: It is strictly forbidden to plug in or plug out live plugs.

Safety Light Curtain

Application