



# BLPS LASER SAFETY PROTECTIVE DEVICE

# BLPS Laser Safety Protective Device

GB/T 19436.1/IEC 61496-1 ( Type 4 )

GB/T 19436.2/IEC 61496-2 ( Type 4 )

ISO 13849-1 ( PL e )

## Product introduction

BLPS Laser Safety Protective Device the Type 4 AOPD that is designed and developed for the personal safety protection of hydraulic bending machine. Its dynamic detection technology has passed the TUV functional Type 4 assessment and won the national invention patents.

The product has fully reached the international advanced level of similar products.

The BLPLaser Safety Protective Device provides a protective near the upper die tip on the bending machine, so as to provide operators with effective safety protection in the arms and fingers near the upper die tip zone. It takes into account the operator' s safety and machine productivity, so it is the most effective solution currently.

## Product components

It is composed of transmitter, receiver, controller, transmission cable, signal cable and power cable.

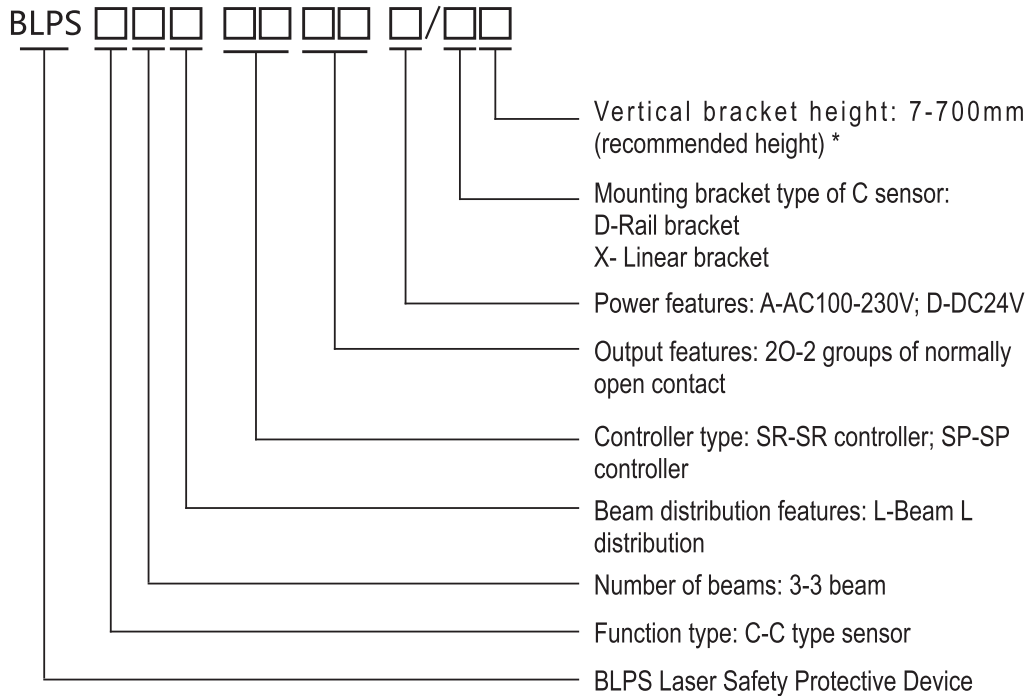
## Product Features

- As a Class 1 laser product, it is safe to human eyes;
- L-type protection beam is set up near the upper die tip on the bending machine, and the beam should move in parallel to the upper die tip;
- It provides a complete functional design to meet the safety protection requirements of bending machine for processing parts in different shapes;
- It has a independent controller system, which is also applicable to the bending machine without editing ability;
- Its has a high anti-electromagnetic interference, light interference ability.

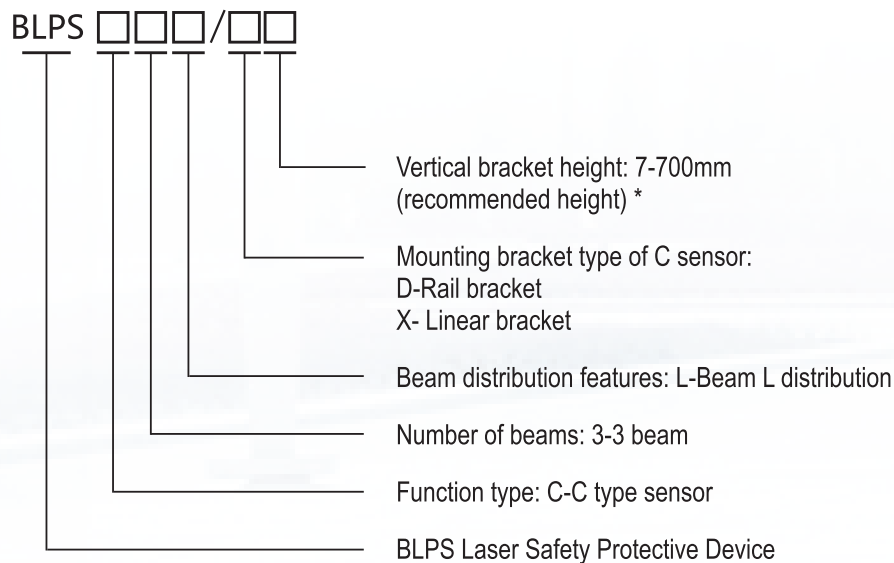
The sensor can be used alone with the bending machine system. 3 laser beams corresponds to 6 OSSD outputs, and each laser beam can provide two ways of independent safety output, and the output form is PNP.

It is in ON state during light transmitting to output a high level; during light shading, it is in OFF state to output a low level. After removing the light shading object, OSSD will automatically enter the ON state.

## Specifications model

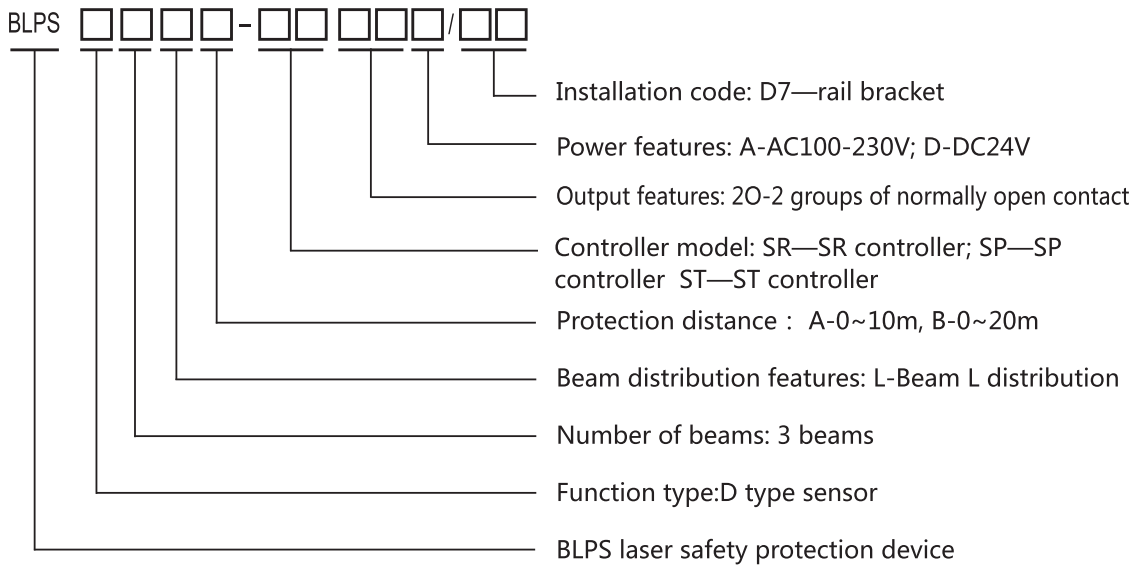


\*For special lengths, please contact the local dealer. The customized length should be increased or decreased at the tolerance of 60mm based on 700mm, such as 820, 760, 640, 580, 520mm.



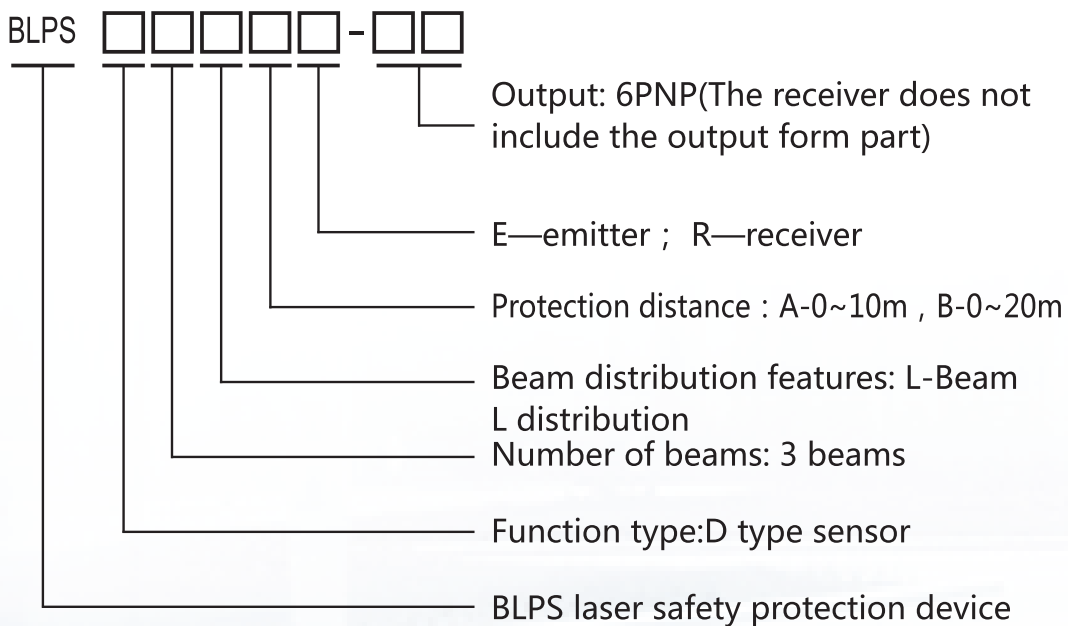
\*For special lengths, please contact the local dealer. The customized length should be increased or decreased at the tolerance of 60mm based on 700mm, such as 820, 760, 640, 580, 520mm.

## Specifications model



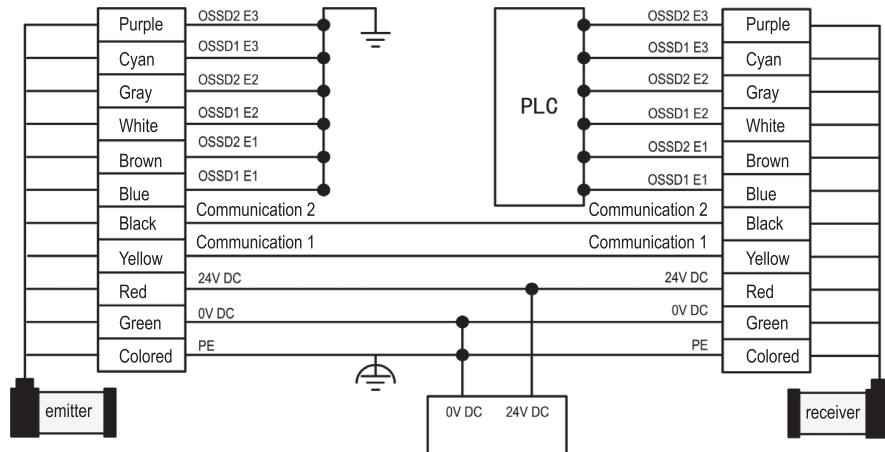
\* ST controller only supports DC24V power supply

specification model of complete machine of D-type sensor



specification model of D type sensor

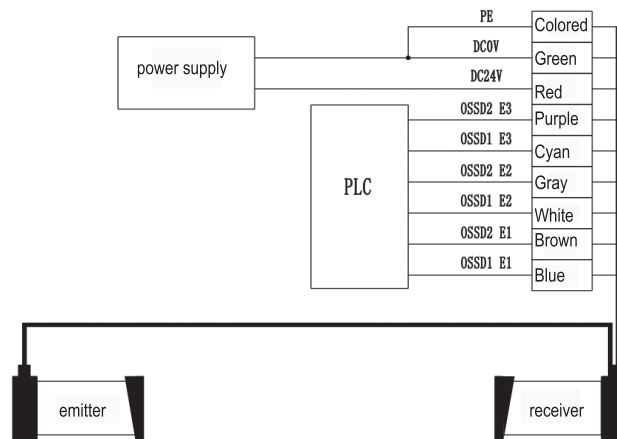
## Typical wiring diagram



## Technical parameters

Safety level	Type 4 (IEC61496) ; PLe (ISO13849)	
Standards	2006/42/EC (Mechanical Safety Command); 2004/108/EC (EMC Command); IEC61496-1 ; IEC61496-2; ISO13849-1	
Optical characteristics		
Detection light source	Class 1 laser, wavelength of 635nm	
Detection distance	0~20m	
EAA	1.5mrad	
Environmental characteristics		
Environment temperature	Operating	-10°C~55°C (No frost or fog)
	Storage	-40°C~70°C
Environment humidity	Operating	35%RH~85%RH
	Storage	35%RH~95%RH
Light interference resistance	Incandescent lamp	3000 Lux
	Fluorescent lamp	3000 Lux
	Sun light source	10000 Lux
EMC	EMS	Meet the requirements for Level 4 safety light curtain in GB/T19436-1 and GB4584-2007
	EMI	Meet the requirements for the electromagnetic radiation at the industrial site in EN61326-1 and EN55011
Vibration resistance	Frequency: 10Hz ~ 55Hz; amplitude: 0.35 ± 0.05 mm; number of scans: three axes, 20 times per axis	
Shock resistance	Acceleration: 10g; pulse duration: 16 ms; number of collisions: three axes, 1000 ± 10 times per axis	
Protection level	IP65	
Dimensions	170×92×90mm	
Electrical characteristics		
Power supply	DC10.8V~26.4V	
Power consumption	≤5W	
Consumption current	Emitter	≤50mA
	Receiver	≤100mA (without load)
Response time	≤8ms	
Safety output (OSSD)	PNP output; each beam of detection light can output two ways of control singles; in ON state, load current ≤50mA, output voltage ≥Vcc-3V; in OFF state, leakage current ≤1mA, residual voltage ≤1V.	

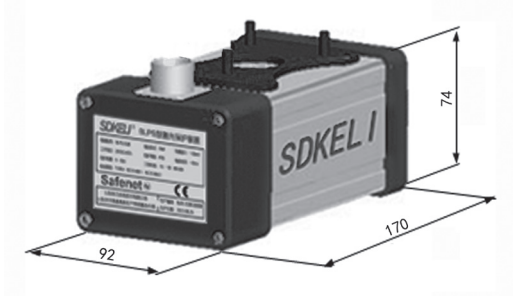
## Typical wiring diagram



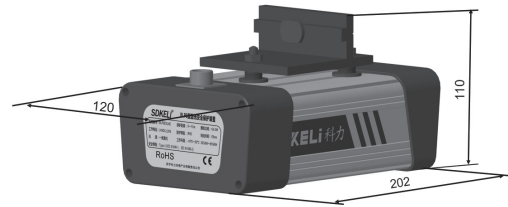
## Technical parameters

Safety level	Type 4 (IEC 61496) PL e (ISO 13849)	
Standards	2006/42/EC (Mechanical Safety Command) ; 2014/30/EU (EMC 指令); IEC 61496-1 ; IEC 61496-2; ISO 13849-1	
Optical characteristics		
Detection light source	Class 1 laser, wavelength of 635nm	
Detection distance	A series: 0~10m	B series: 0~20m
EAA	≤1.5mrad	
Environmental characteristics		
Environment temperature	Operating	-10°C~55°C (No frost or fog)
	Storage	-40°C~70°C
Environment humidity	Operating	35%RH~85%RH
	Storage	35%RH~95%RH
Homologous light interference	The interference light of the emitting element of the same design will not cause dangerous failure of BLPS	
Vibration resistance	Frequency: 10Hz ~ 55Hz; amplitude: 0.35 ± 0.05 mm; number of scans: three axes, 20 times per axis	
Shock resistance	Acceleration: 10g; pulse duration: 16 ms; number of collisions: three axes, 1000 ± 10 times per axis	
Protection level	IP65	
Dimensions	202×120×110mm	
Electrical characteristics		
Power supply	24V DC ±20% (Ripple ±5%)	
Power consumption	≤3.5W	
Consumption current	Emitter	≤20mA
	Receiver	≤100mA(without load))
Response time	≤20ms (whole machine, including controller)	
Safety output (OSSD)	PNP output; each beam of detection light can output two ways of control singles; In ON state, I <sub>out</sub> ≤200mA, V <sub>out</sub> ≥V <sub>cc</sub> -2V In OFF state, I <sub>out</sub> ≤1mA, V <sub>out</sub> ≤2V ON state when the light of protection area is not blocked, OFF state when the light of protection area is blocked.	
Mutual interference prevention function	Avoid light interference algorithm	

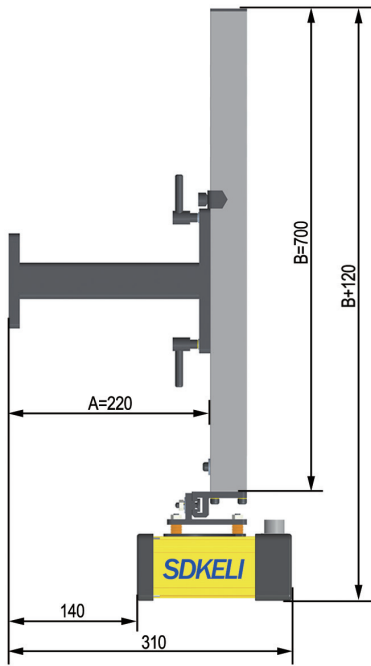
## Installation method



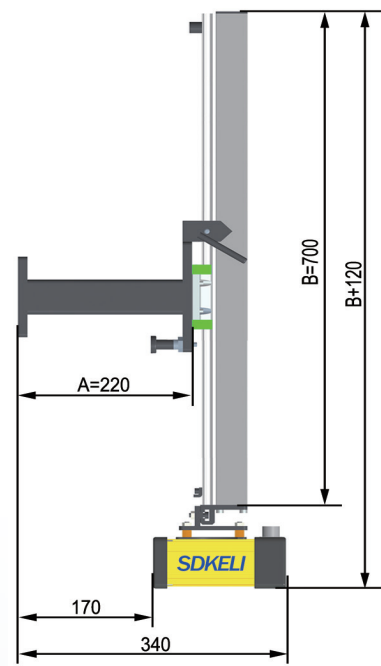
Dimension of C type sensor



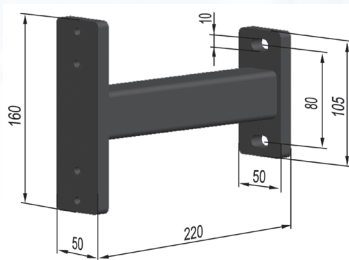
Dimension of D type sensor



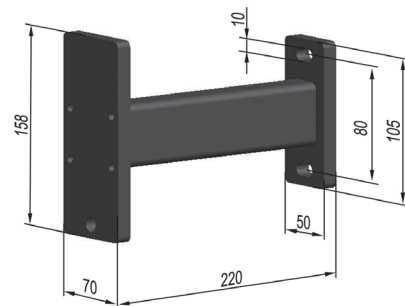
Linear horizontal mounting (X7)



Guide rail horizontal mounting (D7)



Linear horizontal bracket



Guide rail horizontal bracket

# SR/SP Controller

## Product introduction

SR / SP controller is installed at the upper die slider at the bending machine for easy manual operation. It is used with BLPS sensor

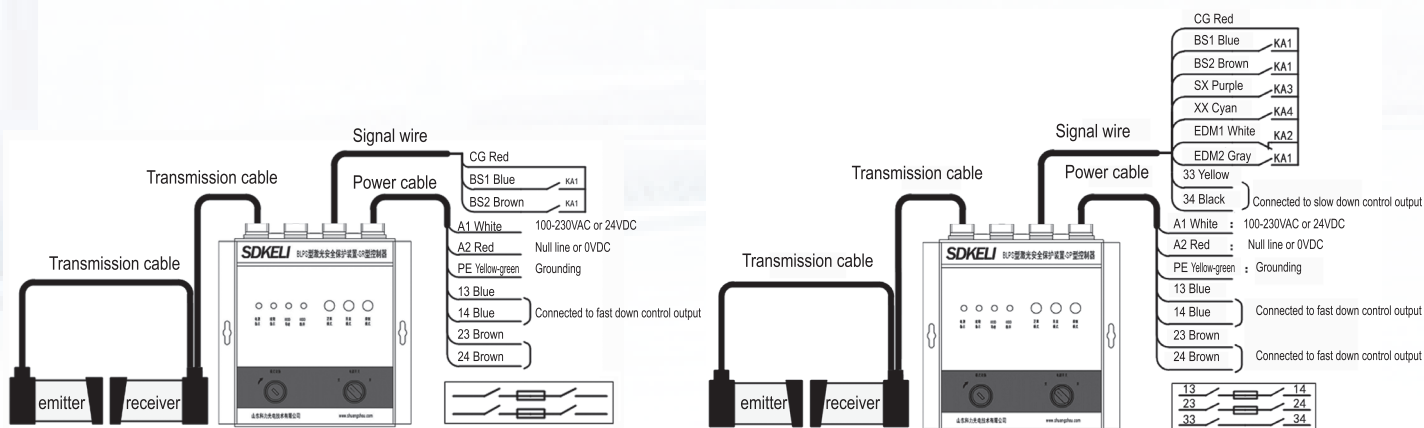
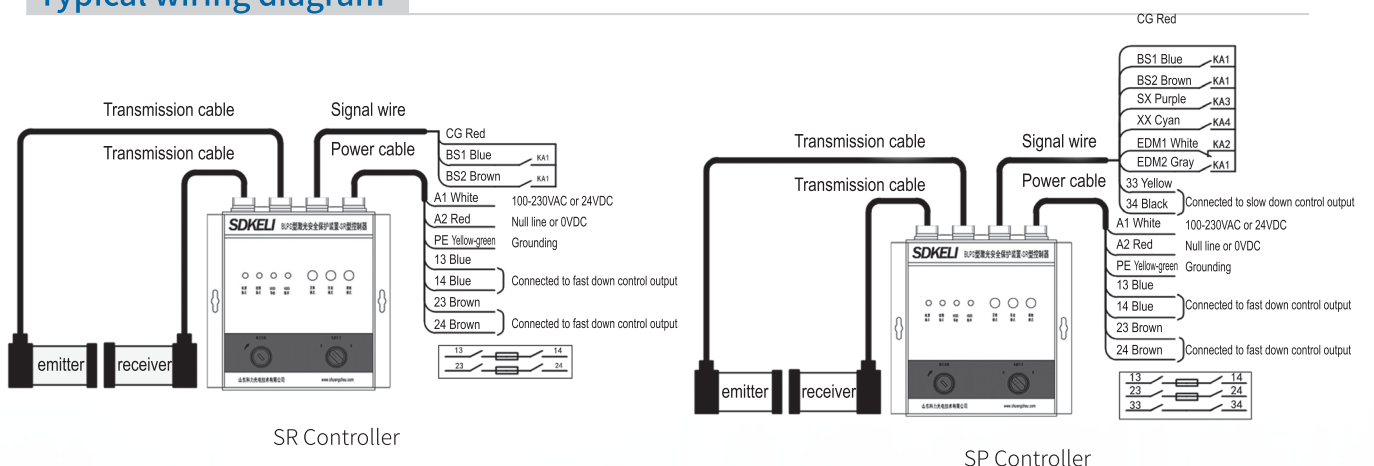
to provide multicircuit relay passive contact output and a variety of operating modes.

According to the characteristics of processing materials, SR / SP controller provides three operating modes: normal mode, folding mode and inhibition mode. In normal mode, it can monitor all detection beams of sensor; in folding mode, it can monitor the beam below the knife edge of die; in inhibition mode, it will not monitor sensor signal.

SP controller can monitor the uplink signal, downlink signal, variable speed signal, normally closed contact of fast down relay, normally open contact of slow down relay, to output two groups of normally open contact OSSD and one group of normally open contact for auxiliary output. This model of controller can fully monitor the bending machine signals to achieve complex functions. SR controller can monitor the variable speed signal to output two groups of normally open contact OSSD. This model can only monitor the variable speed signal, featuring simple wiring and strong adaptability.



## Typical wiring diagram



KA1--Bending machine slow down relay KA2--Bending machine quick down relay

SR controller (D type)

KA1--Bending machine slow down relay KA2--Bending machine quick down relay  
KA3--Bending machine return relay KA4--Bending machine pedal relay

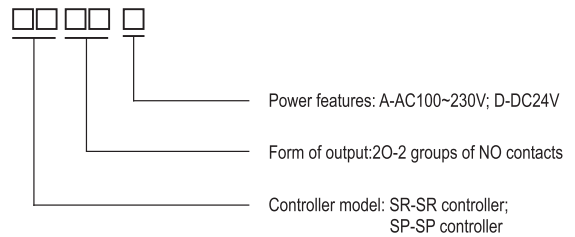
SP controller (D type)

## Technical parameters

— Table37 —

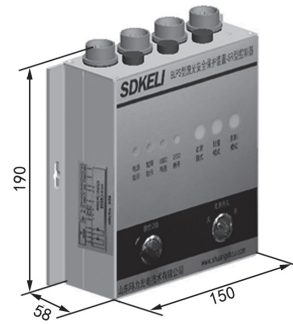
Environmental characteristics		
Environment temperature	Operating	-10°C~55°C (No frost or fog)
	Storage	-40°C~70°C
Environment humidity	Operating	35%RH~85%RH
	Storage	35%RH~95%RH
IP code	IP54	
Dimensions	190×150×58mm	
Electrical characteristics		
Power supply	AC100V ~ 230V±10%, 50/60Hz	DC24V±10%
Power consumption	≤8.5W	
Output form	Relay contact signal	
Output contact capacity	Contact capacity: 5A, 250VAC/5A, 24VDC	
Start time	< 3s	
Detection function	Real-time self-inspection	
Protection circuit	Overvoltage and overcurrent protection; output short-circuit protection	

## Specifications model



## Dimensions

(unit: mm)



## ST Controller

### Product description

The ST type controller is installed on upper die slide of the bending machine where it is convenient to operate.

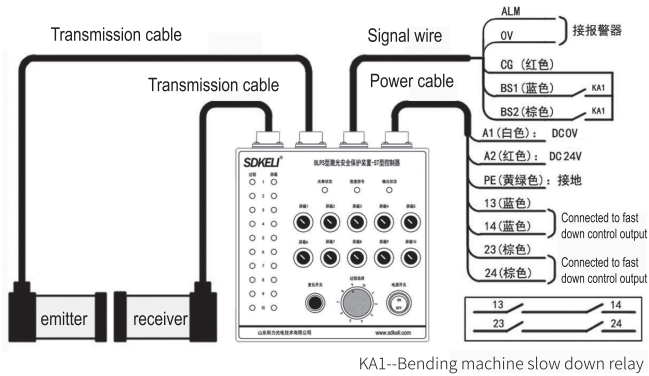
It work with BLPS sensor to provide multiple relay passive contact outputs and a variety of working process selection.

Due to the differences in the bending process of different workpieces, the bending process shading the sensor The state is uncertain. When a workpiece needs to be bent from the beginning of the flat plate to the final shape When multiple processes are required for bending, the ST-type controller can be based on the number of bending processes of the workpiece, Divide different working processes, each process controls the sensor independently (normal / screen Shield), for the process where the sensor cannot be used normally due to the shading of the workpiece, in Set the shield in advance during the work process, so that you can without restarting the controller, The successful completion of all procedures not only ensures safe production, but also improves production efficiency.

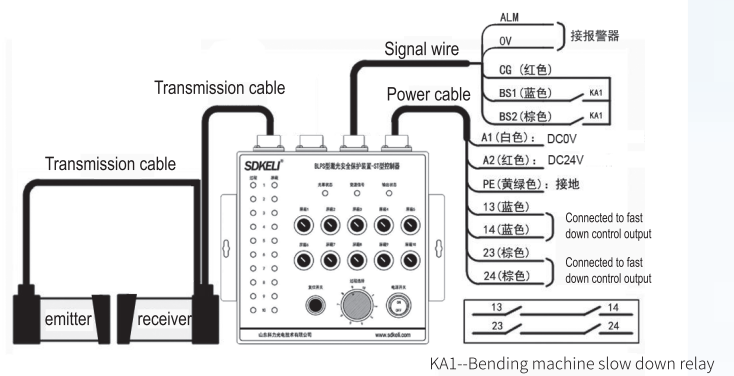
The ST controller is equipped with an alarm light, when the muting function is selected, the corresponding muting indicator light On, when in the muting function, the alarm light is on and accompanied by a buzzer. ST type controller is compatible with SR, SP type controller, only need to replace the signal line, you can Complete replacement



## Typical wiring diagram



ST Controller (C)



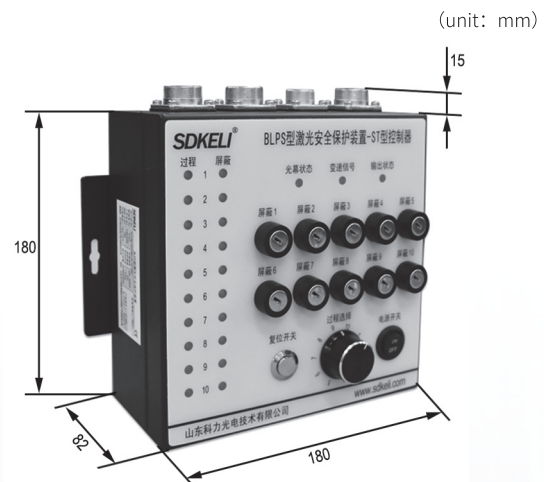
ST controller (D)

## Technical parameters

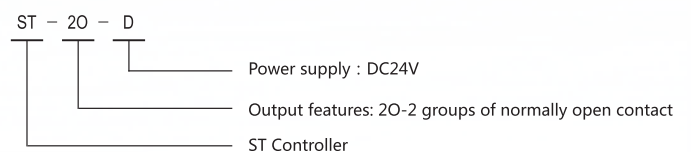
— Table15 —

Power supply		DC24V±10% (Ripple±5%)
Whole machine power consumption		≤15W
Output form	OSSD1/ OSSD2	Two-way relay normally open contact (main control output)
	ALARM	PNP Alarm Output
Output capacity		Contacts 5A, 250V AC /5A, DC24V
Input signal form		Relay passive contact
Response time		≤20ms
Environment temperature	Operating	-10°C~55°C (No frost or fog)
	Storage	-30°C~70°C
Environment humidity	Operating	35%~85%RH
	Storage	35%~95%RH
IP code		IP54
Insulation resistance		>100MΩ
Dielectric strength		AC1500V, 60S no breakdown or flashover
Relay life		≥1 million times
Dimensions		195×180×82mm

## Dimensions



## Specifications model



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