SDKELI® CE

KS06Q area AOPD

（2022.04）

OPERATION MANUAL

1、Product components

KS06Q area AOPD is a protection system composed of controller, sensor (including emitter and receiver), reflector transmission cable, power cable and accessories.

KS06Q area safety light curtain is a protection system composed of sensor (including emitter and receiver), reflector transmission cable, and accessories.

Beam is given out by the emitter and the received by receiver after being reflected by the reflector. The light that goes through emitter, receiver and reflector constitutes a protection zone.

1.1、Light curtain

The Light curtain is equipped with detection beams, with the minimum beam spacing of 40mm, which can be increased by 40mm in turn. Users can choose reasonably according to the field protection requirements.

The integrated laser collimation system of the light emitter is used to assist the light alignment.

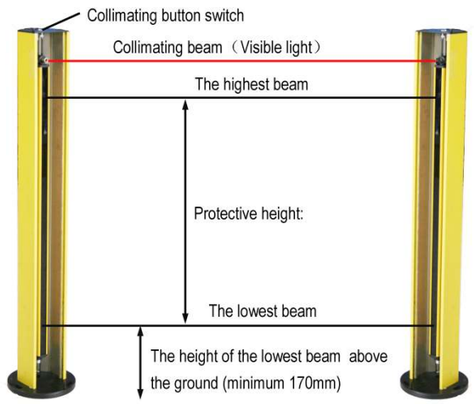


Fig1 Light curtain working principle

1.2、Controller

Controller supplies power for emitter and receiver; processes signals transmitted from receiver;sends out signal through output signal switching device(OSSD), controlling the forced stroke stop circuit or alarm circuit of machine.

CPSII and CQ2 controllers are equipped with collimation switches to turn on the collimating beam of KS06Q light curtain for on-site light debugging. They can provide users with two sets of relay contact signal.

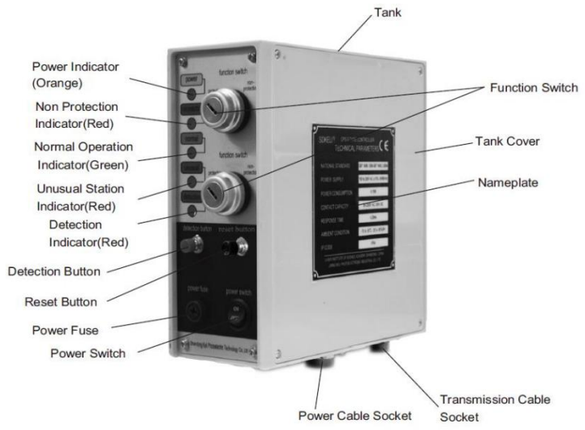


Fig2 CPS Ⅱ Controller

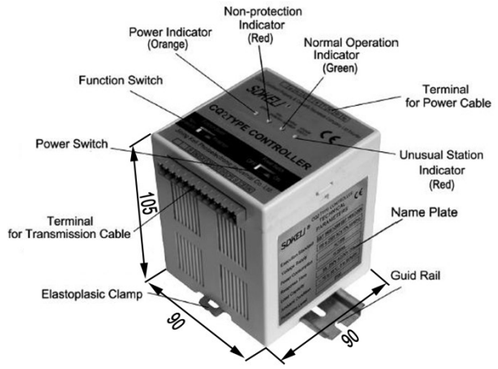


Fig3 CQ2 Controller

Sheet 1.1 The operating state of controllers

Power switch	Function switch	Power indicator (Orange)	Non-protection indicator (Red)	Normal operation indicator(Green)		Unusual station indicator(Red)		Operating state of AOPD
				Un-blocked	Blocked	Un-blocked	Blocked	
ON	Protection	ON	OFF	ON	OFF	OFF	ON	Protection
	Non-protection	ON	ON	OFF	OFF	OFF	OFF	Non-protection
OFF	Protection	OFF	OFF	OFF	OFF	OFF	OFF	Protection
	Non-protection	OFF	OFF	OFF	OFF	OFF	OFF	Protection

1.3、Power cable

The power cable connects AOPD with power supply, transmitting signal sent from controller to electric equipment of machine and other controlled systems. The connection points are shown in the figure below.

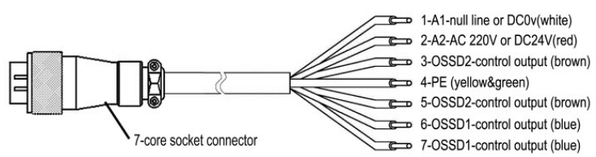


Fig4 Power cable for CPSII

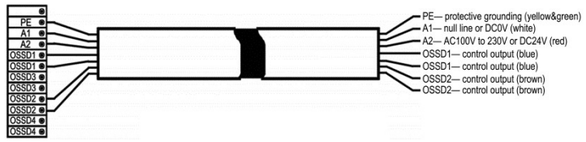
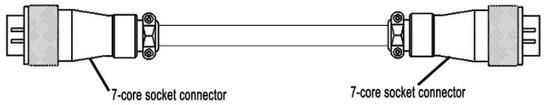


Fig5 Power cable for CQ2

1.4、Transmission cable

The transmission cable is used to connect the controller to emitter and receiver,The connection points are shown in the figure below.



Pin number	1	2	3	4	5	6
Signal label	CP	GND	S	CE	12V	PE
Line color	Yellow	Green	Black	Blue	Red	Yellow/Green

Fig6 Double-end transmission cable for KS06Q area AOPD

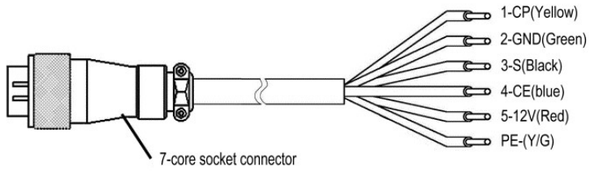


Fig7 Single-end transmission cable for KS06Q area AOPD

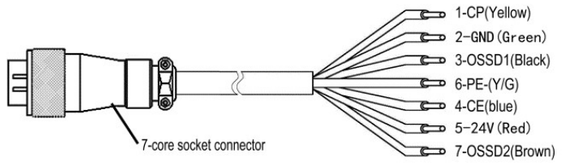
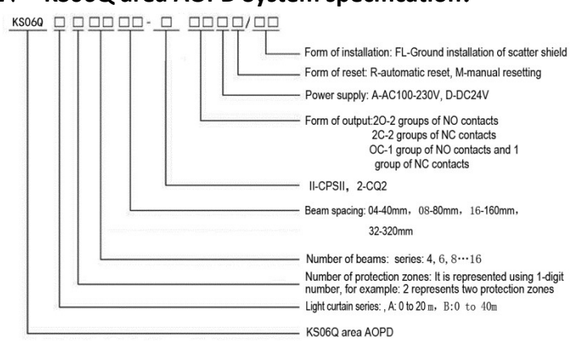


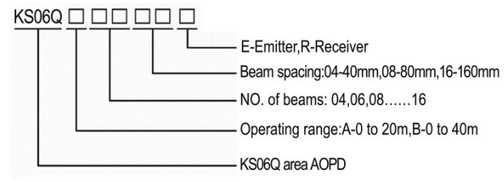
Fig8 Single-end transmission cable for KS06Q area safety light curtain

2、Specifications

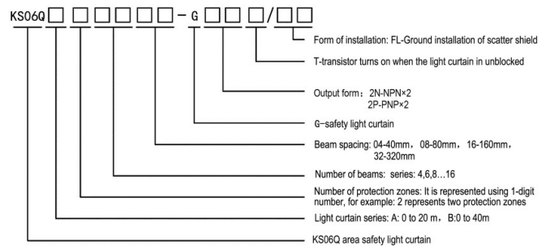
2.1、 KS06Q area AOPD System specification：



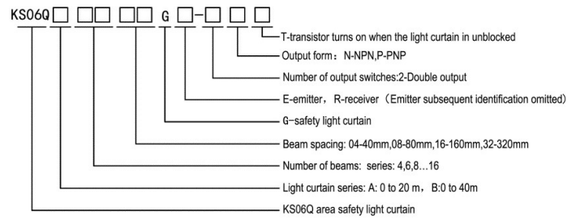
2.2、Emitter/ receiver of the KS06Q area AOPD specification:



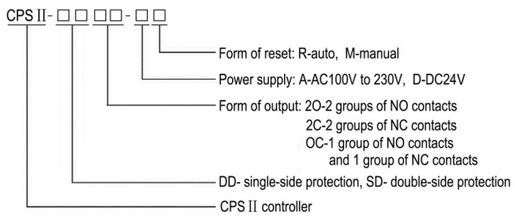
2.3、KS06Q area safety light curtain System specification:



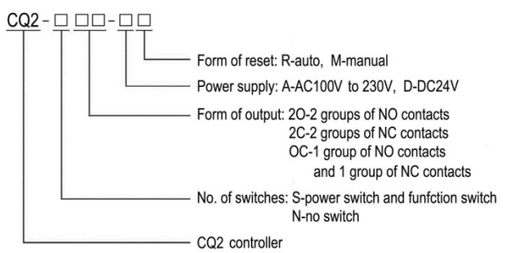
2.4、 Emitter/ receiver of the KS06Q area safety light curtain specification:



2.5、 CPS Ⅱ Controller specification



2.6、 CQ2 Controller specification



3、Technical parameters

Sheet 1.2 Light curtain parameters

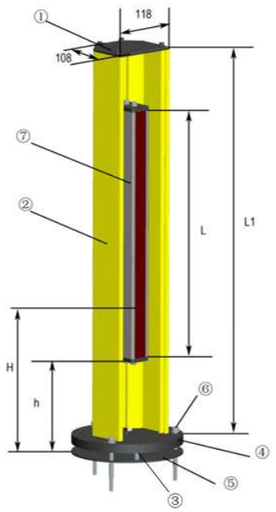
Safety category	Type4（GB/T 19436.1/2）			
Light source	850nmLED			
Beam spacing	40mm	80mm	160mm	320mm
No. of beams	8、10…16	8、10…16	4、5…8	3、4…5
Operating range	KS06QA：single protection zone:20 m; two protection zones:14 m three protection zones: 10 m; four protection zones: 8m			
	KS06QB：single protection zone:40 m; two protection zones:30 m; three protection zones: 20 m; four protection zones: 16m			
Power supply	DC12V（AOPD, provided by the controller）			
	DC24V（Safety light curtain）			
Power consumption	＜15W（entire machine）			
Response time	≤18 ms			
Enclosure rating	IP65			
Operation humidity	35%RH~85%RH			
Operation temperature	-10℃~55℃（non-condensing）			

Sheet 1.3 Controller parameters

Power supply	AC100V~230V±15%，50/60Hz
	DC24V±10%
Output	Relay contact output
Output contact	5A，AC250V/DC30V
Power consumption	＜15W
Operation humidity	35%RH~85%RH
Operation temperature	-10℃~55℃(non-condensing)
Response time	≤18 ms
Dielectric strength	AC1500V, no arcing and flashover in 60s
Performance life	≥1000000 times
Enclosure rating	CPSII：IP54
	CQ2：IP20

4、 INstallation

4.1、Scatter shield column mounting



①—cover plate
②—Floor scatter shield
③—M8×30 inner hexagon cone end set screw
④—Floor column base
⑤—Floor column base plate
⑥—M12×120 expansion bolt，
⑦—light curtain
H：The height of the lowest beam of the light curtain above the ground (minimum 170 mm)；
h：light curtain above ground，h=H-64.5mm；

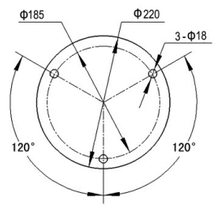


Fig9 Drill size

1. Use M6 × 20 inner hexagon screws to fix the Floor scatter shield ② to the Floor column base④ and tighten the screws.
2. Select the appropriate location, use M12×120 expansion bolt ⑥ to fix Floor column base ④ and Floor column base plate ⑤ to the ground, adjust the direction of the floor bracket and pre-tighten the expansion bolts.
3. Adjust M8×30 inner hexagon cone end set screws ③ to make the bubble in the center of the gradi-enter on the column base.
4. Adjust the Reflector I to make its reflecting surface to the transmission surface of the emitter at an angle of 45 °, then adjust the Reflector II and Reflector III in turn, to make the reflecting surface of Reflector II perpendicular to the reflecting surface of Reflector I and to make the reflecting surface of Reflector III perpendicular to the reflecting surface of Reflector II.
5. Power on light debugging. With the aid of the collimation device, adjust the Emitter, Reflector I,
Reflector II, Reflector III and Receiver initially positioned, to make the collimated light beam emitted by the collimation device being reflected by the three reflectors on the transmission surface of the receiver .
6. Adjust the floor bracket assembled with the receiver until all individual indicators on the receiver turn off and keep the floor bracket in this position, then adjust it lightly to stabilize the light-passing state.
7. Tighten the expansion screws completely.

4.2、Installation of control

4.2.1、Installation of CPS Ⅱ

CPS Ⅱ is installed on the bed support of machine through controller suppor

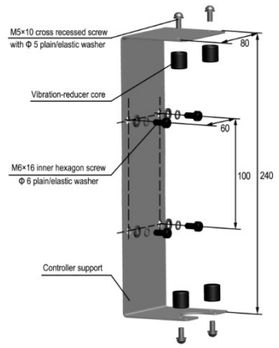


Fig10 Controller support

4.2.2、Installation of CQ2

CQ2 is directly fixed onto the 35mm guide rail inside the control unit of machine

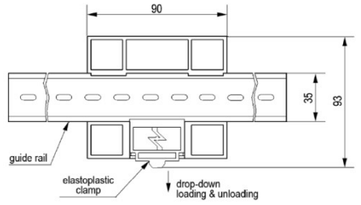


Fig11 CQ2 controller

5、Wiring

5.1、Wiring about CPS Ⅱ

ower cable between controller and the electric equipment of machine is 7-core cable, in which the terminal of controller is connected by 7-core socket connector.

At the time of wiring, connect to AC100 to 230V power supply according to the numerical values marked on the nameplate, or connect to DC24V power supply.

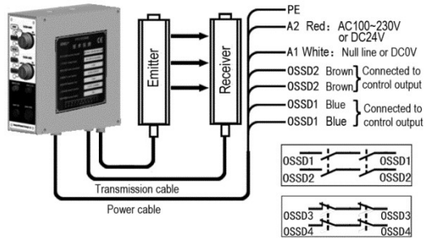


Fig12 CPSII controller wiring diagram

5.2、Wiring about CQ2

The power cable between controller and the electric equipment of machine is 7 -core cable, in which the terminal of controller is connected by 14-core connection terminals.

At the time of wiring, connect to AC100 to 230V or DC24V power supply according to the numerical values marked on the nameplate.

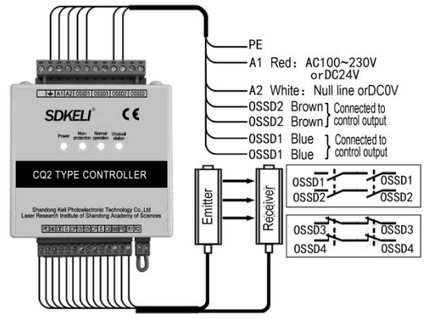


Fig13 CQ2 controller wiring diagram

5.2、Wiring about KS06Q area safety light curtain

Power supply of KS06Q area safety light curtain is DC24V, it can output transistor control signal directly. Wiring about the NPN and PNP output are shown in the following figure.

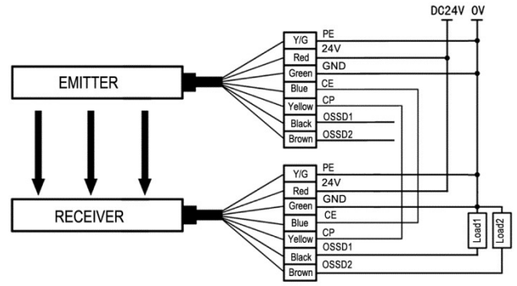


Fig13 PNP output

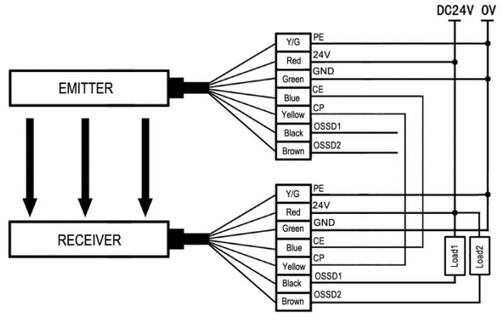


Fig14 NPN output