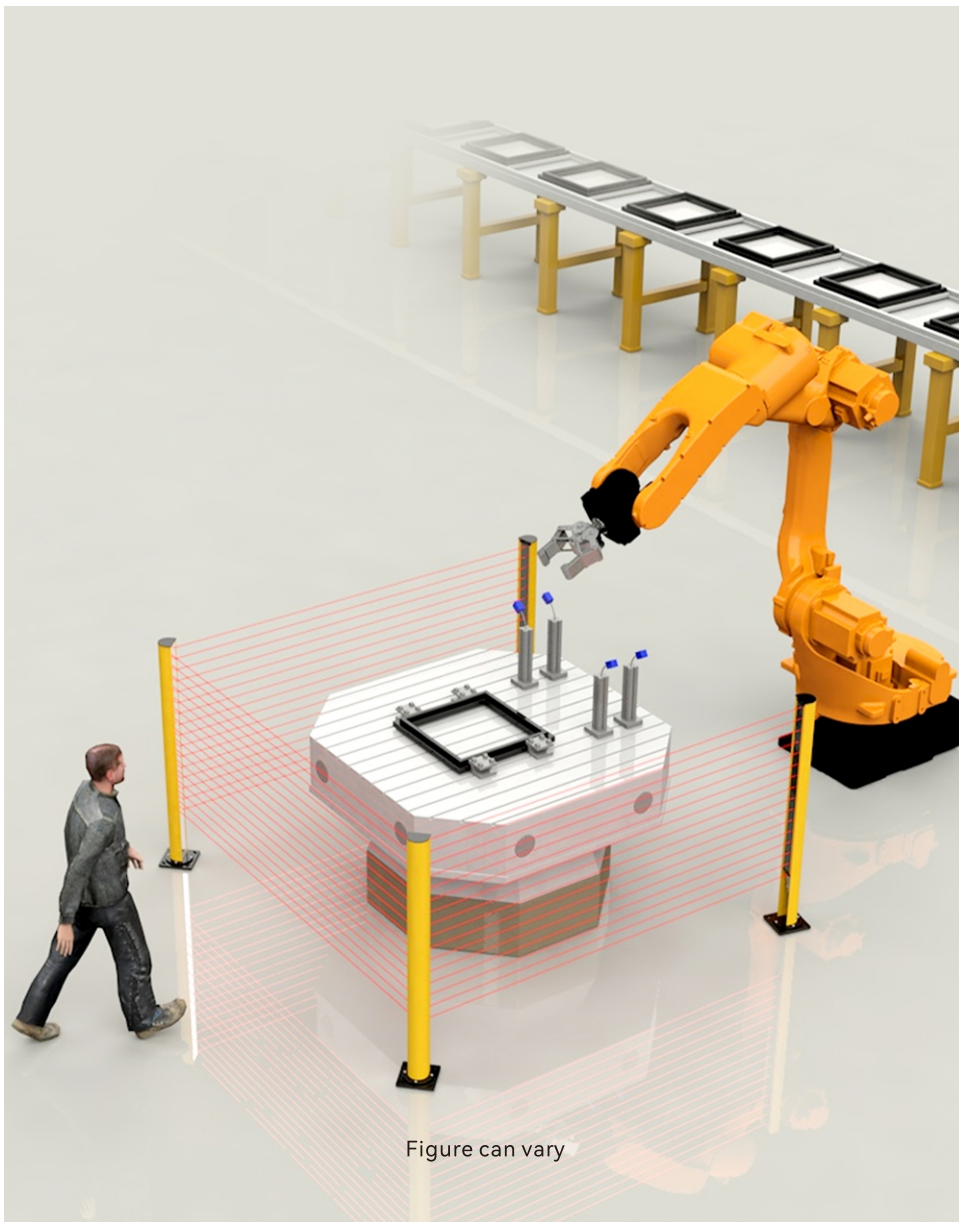


TECHNICAL DATA SHEET

SAFETY LIGHT CURTAIN FOR REGIONAL PROTECTION WITH FLOOR STAND COLUMNS AND MIRROR DK-QSA series



Contents

- Product application
- Resolution ratio
- Product selection
- Technical data
- Operation and display
- Dimensioned drawings
- Electrical connection
- Wiring diagram
- Outline size



Solutions

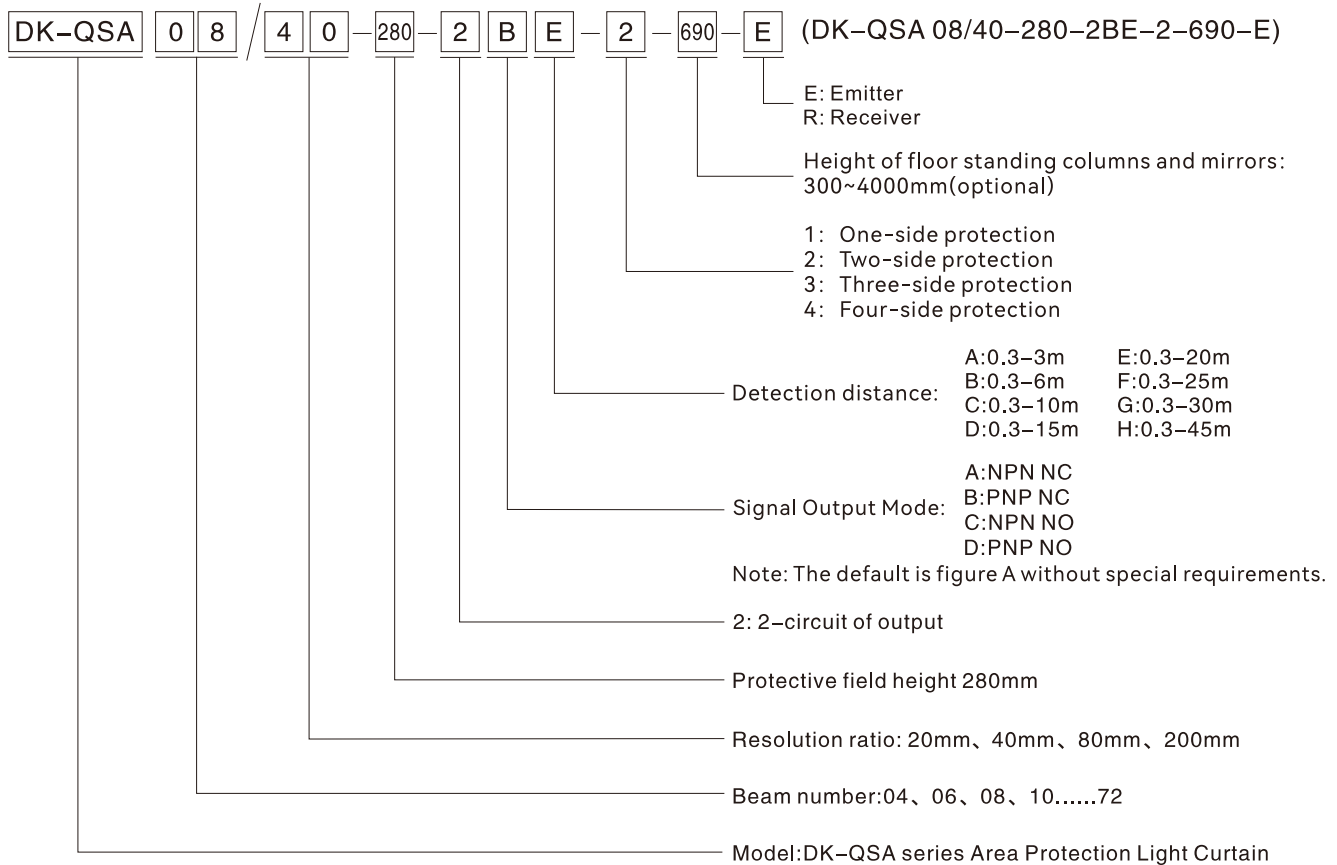


GB/T 19001-2016

Product application

- A. Light curtain can achieve full protection for the slider can be stopped at any position on the press machine.
- B. The light curtain can only achieve upper dead point protection if the slider can not be stopped at any position on the press machine.
- C. Realize the regional protection for the industry manipulator, injection molding machines, packaging equipment, automation equipment, assembly wires and other dangerous work area.
- D. Used to detect and alarm object.

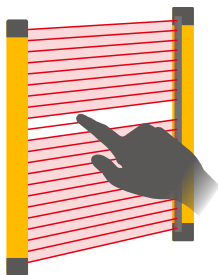
The specifications of DK-QSA type safety light curtain are as follows:



Resolution ratio

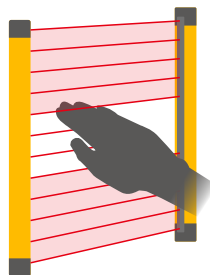
Depending on the usage environment and requirements, it is important to choose the appropriate beam spacing

Finger protection



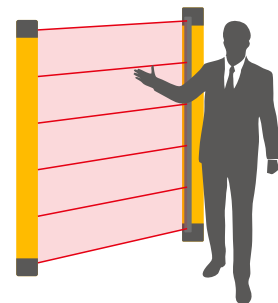
Detection capability
20mm
diameter

Hand protection



Detection capability
40mm
diameter

Arm/body protection



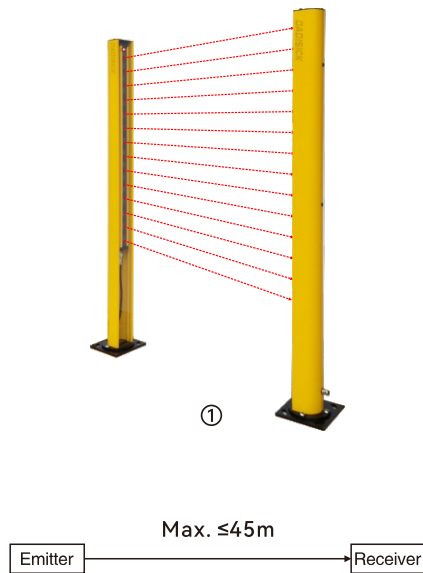
Detection capability
80/200mm
diameter

Product selection

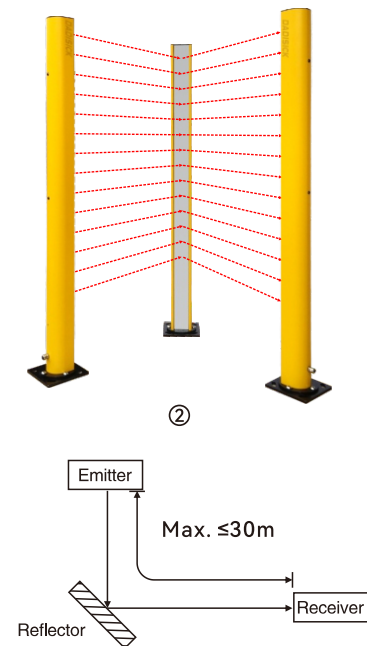
DK-QSA series photoelectric protection devices use mirrors to change the transmission direction of light to form 2-sided, 3-sided or 4-sided protection areas.

Detection distance optional: A:0.3-3m,B:0.3-6m,C:0.3-10m,D:0.3-15m,E:0.3-20m,F:0.3-25m,G:0.3-30m,H:0.3-45m.

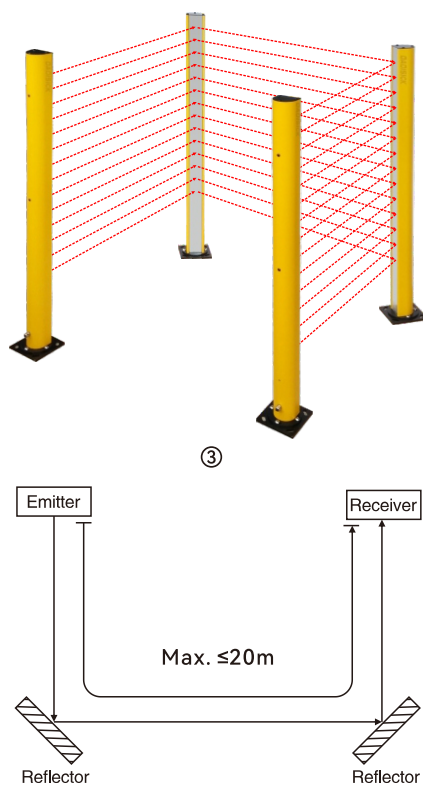
1. One-sided Long-distance Safety Protection



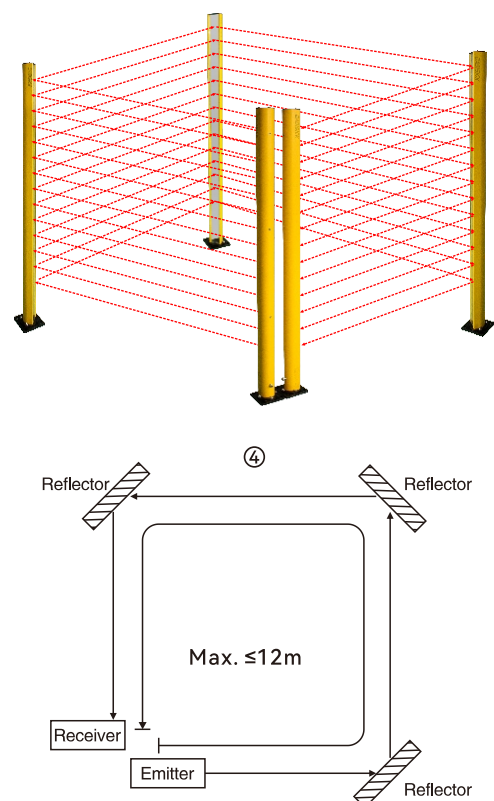
2. Two-sided Regional Safety Protection



3. Three-sided Regional Safety Protection



4. Four-sided Regional Safety Protection



Product description

Ultra long distance area protection, equipped with visible laser locators, can effectively and quickly locate, solve the problem of difficult installation and lighting for ultra long distance and multi sided protection, and greatly save debugging time.



The emitter is equipped with a visible laser assisted positioning indicator

(Order separately)

Technical data

Basic data	
Floor stand columns model	QSA-01
Shell material	Aluminium alloy
Mounting material	Iron plate 10mm
Disc material	Iron plate 6mm
Top cover material	Iron plate 2mm
Column height	30~4000mm optional
Front screen	Acrylic 2mm

Basic data	
Mirror columns model	QSA-02
Shell material	Aluminium alloy
Mounting material	Iron plate 10mm
Disc material	Iron plate 6mm
Top cover material	Iron plate 2mm
Mirror height	30~4000mm optional
Mirror material	Glass 4mm

Basic data of Receiver and Emitter

Standard packaging	
Product model	DK-QSA series
Standard configuration	Emitter and Receiver, columns and reflectors, cables, and installation accessories
Light curtain form	Infrared radiation type
Application	Standard industrial environment

Features	
Resolution ratio	20mm, 40mm, 80mm, 200mm
Check the accuracy	28mm, 48mm, 88mm, 208mm
Number of beams	04、06、08、10.....72
Overall dimension	51mm*35mm*L, L is the length of emitter and receiver.
Detection distance	A:0.3-3m,B:0.3-6m,C:0.3-10m,D:0.3-15m,E:0.3-20m,F:0.3-25m,G:0.3-30m,H:0.3-45m
Response time	≤15ms

Synchronization	Line synchronization
Consumption current	≤200mA
Output mode	2-circuit of PNP, with current of 500mA and voltage below 1.5V, polarity, short circuit and over-cutting protection
Output status	ON (receiving indicator green light)
Indicator light	Transmitter: power indicator light (red); receiver: output indicator light on (green), blackout (red)
Wavelength	850nm
Type of light	Infrared light (NIR), invisible
Function	Automatic reset

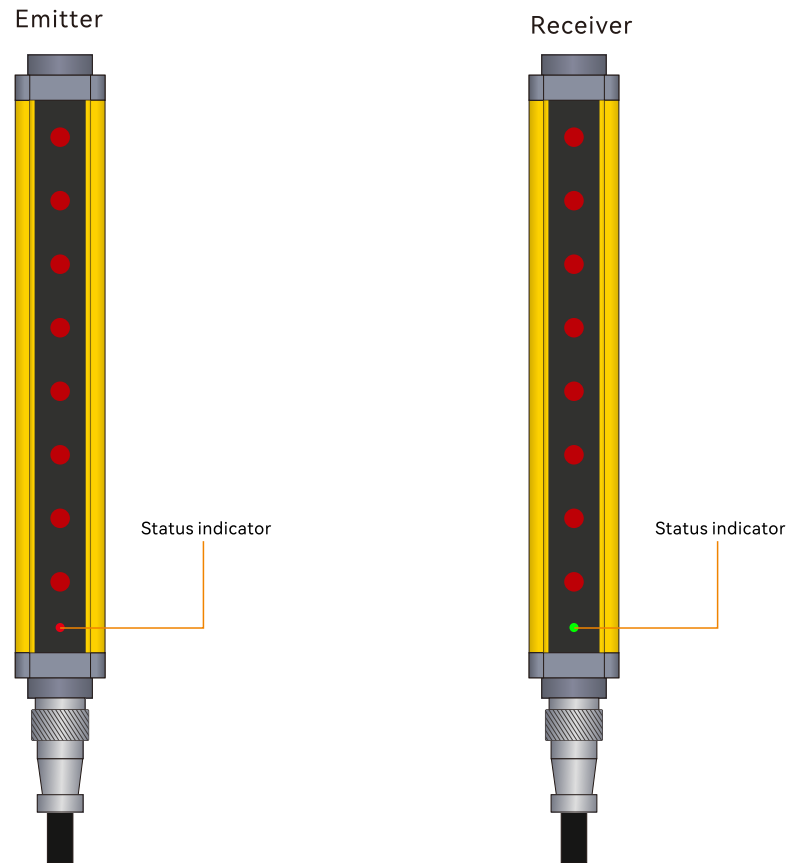
Mechanical data	
Housing material	Metal
Metal shell	Aluminium
Lens front screen material	Acrylic
Upper and lower cover materials	ABS reinforced nylon PA66+30% GF






Performance data	
Protection circuit	Short circuit protection Overvoltage protection
Supply voltage	24VDC,-20...20%
Maximum current consumption	150mA
Fuse	2A half time interval

Environmental data	
Protection grade	IP65
Resistance to ambient light	Incandescent light: illumination of light-receiving surface 3000Lx; Sunlight: illumination of light-receiving surface 10000Lx
Ambient temperature	Working temperature: - 10~+40 °C (but not frozen), storage temperature: - 25 ~+55 °C
Ambient humidity	Working time: 35~85% RH, saving time: 35~95% RH

Output	
Number of safe output circuits (OSSD)	2-circuit
Type	Safety circuit output circuit OSSD
Minimum switch voltage high	18V
Minimum switch voltage low	2.5V
Typical switching voltage	22.5V
Voltage type	DC
Maximum current load	380mA
Load inductance	two thousand
Load capacity	zero point three
Maximum residual current	0.2mA
Typical residual current	0.002MA
Voltage drop	1.5V
Safety switch output 1	Connection pin 4, WHITE OSSD1
Switching element	Transistor PNP
Safety switch output 2	Connection pin 5, GREEN OSSD2
Switching element	Transistor PNP
Certificate	
CE TÜV	No.E8A 104143 0001 Rev.00
ROHS certification	No.BSTDG180811032001CC
CE TYPE 4	No.ICR Polska/VC/HS221222
UL	No. 4790783741.1-S
ISO	No. HIC180327 GB/T 19001-2016 / ISO 9001:2015

Operation and display

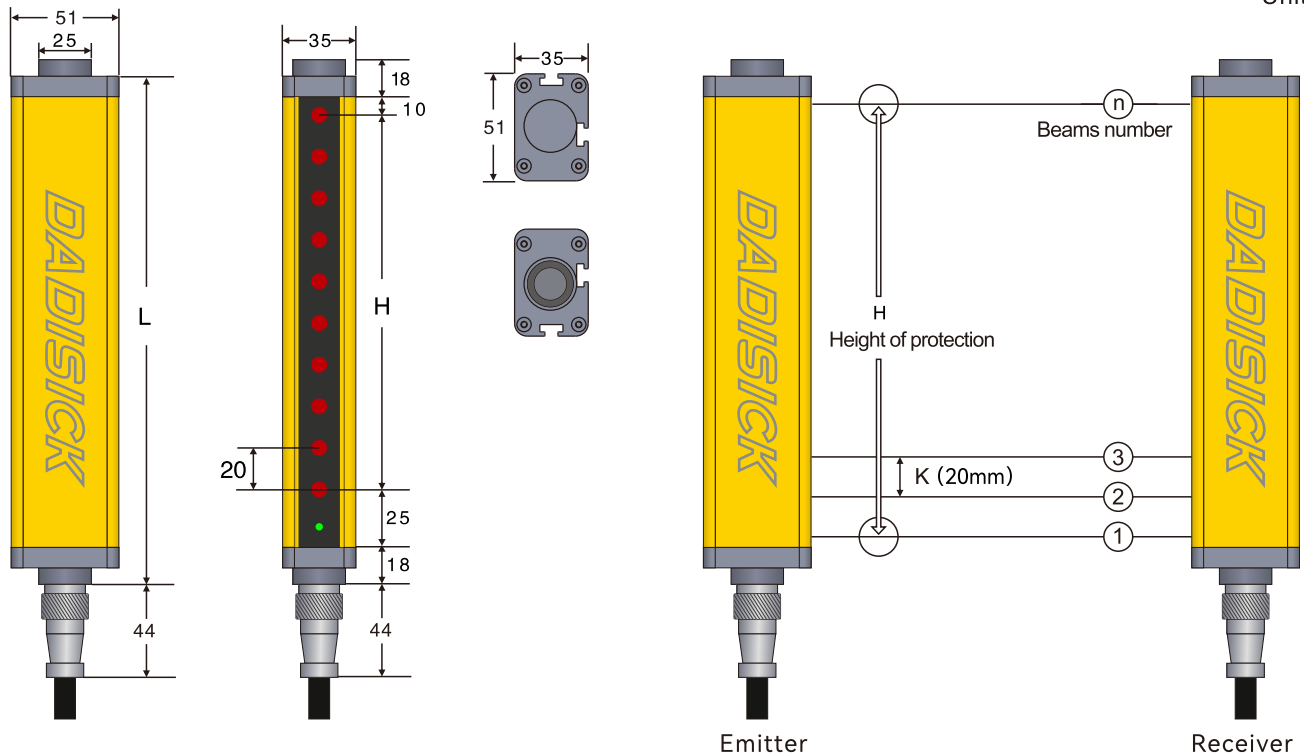


Normal operation of light curtain	LED Indicator status	Explain
Emitter	 Red, always on	Turns on the power
	 Receiver and emitter are red	Receiver and Emitter are not aligned
Receiver	 Green	All light paths are connected
	 Red	Light path shading
	 Lights flashing	Interference or overstep detection range

Dimensioned drawings

1. DK-QSA 20mm series

Unit: mm



Remarks

L: Total length of light screen

H: Height of protected area

K: Resolution ratio

n: Beams number

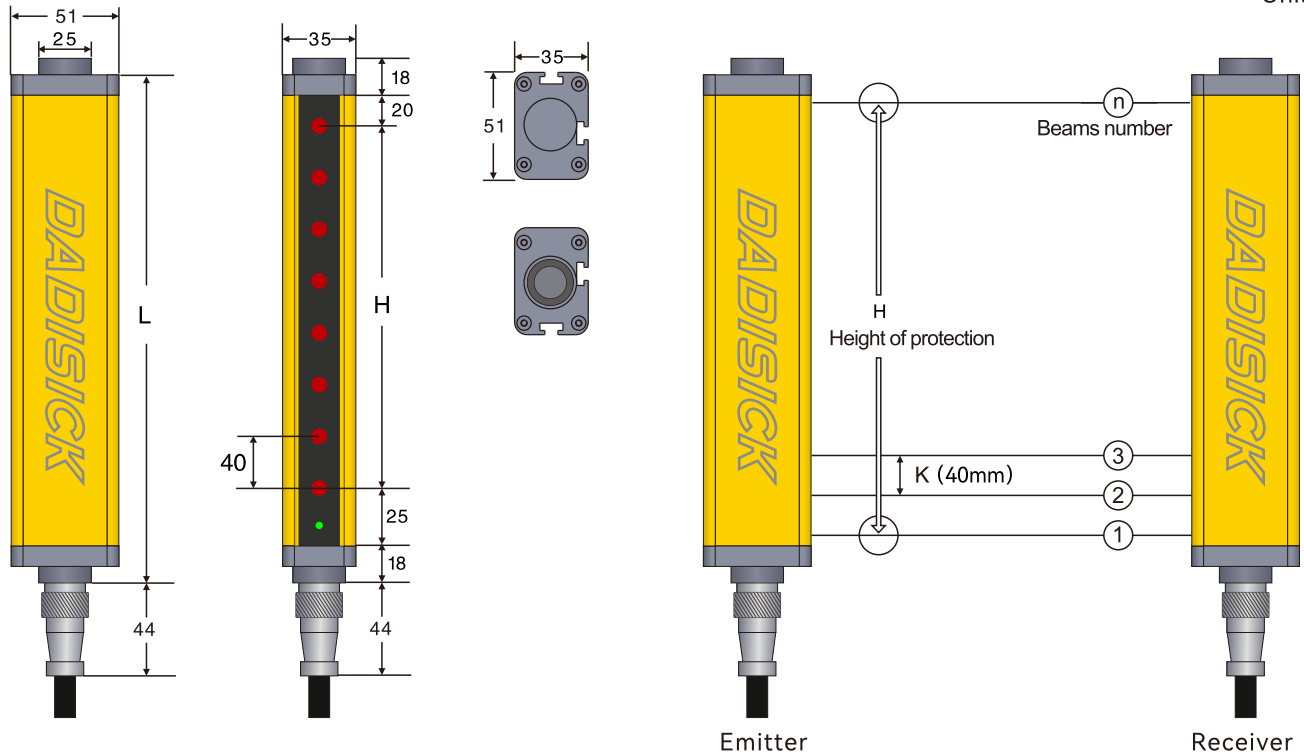
 $L = 18 + 10 + H + 25 + 18$
 $H = (n - 1) * 20$

DK-QSA 20mm specification list

Resolution	Light beam	Protection height (H)	Total height (L)	Product model	Height of columns and mirrors (300~4000mm optional)
20mm (K)	6	100	171	DK-QSA06/20-100	500
	8	140	211	DK-QSA08/20-140	540
	10	180	251	DK-QSA10/20-180	580
	12	220	291	DK-QSA12/20-220	620
	14	260	331	DK-QSA14/20-260	660
	16	300	371	DK-QSA16/20-300	700
	18	340	411	DK-QSA18/20-340	740
	20	380	451	DK-QSA20/20-380	780
	22	420	491	DK-QSA22/20-420	820
	24	460	531	DK-QSA24/20-460	860
	26	500	571	DK-QSA26/20-500	900
	28	540	611	DK-QSA28/20-540	940
	30	580	651	DK-QSA30/20-580	980
	32	620	691	DK-QSA32/20-620	1020
	34	660	731	DK-QSA34/20-660	1060
	36	700	771	DK-QSA36/20-700	1100
	38	740	811	DK-QSA38/20-740	1140
	40	780	851	DK-QSA40/20-780	1180
	42	820	891	DK-QSA42/20-820	1220
	44	860	931	DK-QSA44/20-860	1260
	46	900	971	DK-QSA46/20-900	1300
	48	940	1011	DK-QSA48/20-940	1340
	50	980	1051	DK-QSA50/20-980	1380
	52	1020	1091	DK-QSA52/20-1020	1420
	54	1060	1131	DK-QSA54/20-1060	1460
	56	1100	1171	DK-QSA56/20-1100	1500
	58	1140	1211	DK-QSA58/20-1140	1540
	60	1180	1251	DK-QSA60/20-1180	1580
	62	1220	1291	DK-QSA62/20-1220	1620
	64	1260	1331	DK-QSA64/20-1260	1660
	66	1300	1371	DK-QSA66/20-1300	1700
	68	1340	1411	DK-QSA68/20-1340	1740
70	1380	1451	DK-QSA70/20-1380	1780	
72	1420	1491	DK-QSA72/20-1420	1820	

2. DK-QSA 40mm series

Unit: mm



Remarks

L: Total length of light screen

H: Height of protected area

K: Resolution ratio

n: Beams number

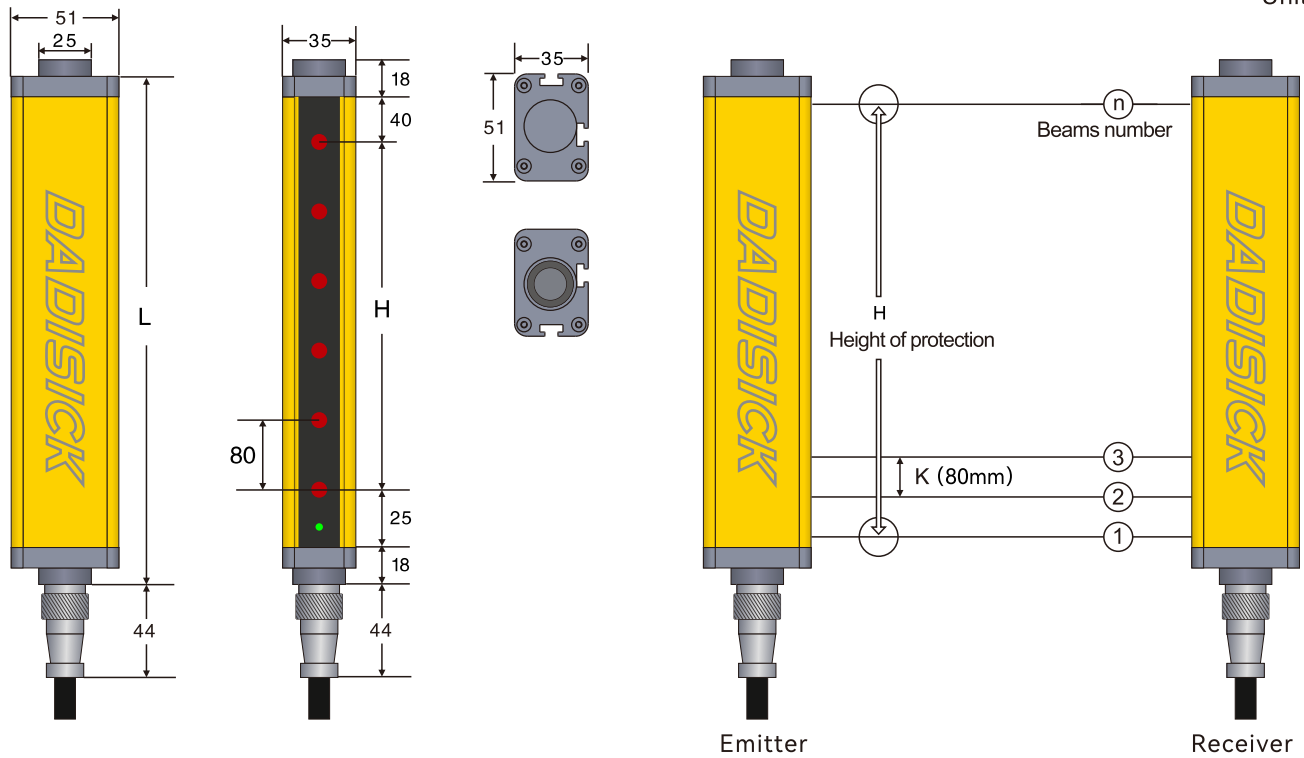
 $L = 18 + 20 + H + 25 + 18$ $H = (n - 1) * 40$

DK-QSA 40mm specification list

Resolution	Light beam	Protection height (H)	Total height (L)	Product model	Height of columns and mirrors (300~4000mm optional)
40mm (K)	4	120	201	DK-QSA04/40-120	530
	6	200	281	DK-QSA06/40-200	610
	8	280	361	DK-QSA08/40-280	690
	10	360	441	DK-QSA10/40-360	770
	12	440	521	DK-QSA12/40-440	850
	14	520	601	DK-QSA14/40-520	930
	16	600	681	DK-QSA16/40-600	1010
	18	680	761	DK-QSA18/40-680	1090
	20	760	841	DK-QSA20/40-760	1170
	22	840	921	DK-QSA22/40-840	1250
	24	920	1001	DK-QSA24/40-920	1330
	26	1000	1081	DK-QSA26/40-1000	1410
	28	1080	1161	DK-QSA28/40-1080	1490
	30	1160	1241	DK-QSA30/40-1160	1570
	32	1240	1321	DK-QSA32/40-1240	1650
	34	1320	1401	DK-QSA34/40-1320	1730
	36	1400	1481	DK-QSA36/40-1400	1810
	38	1480	1561	DK-QSA38/40-1480	1890
	40	1560	1641	DK-QSA40/40-1560	1970
	42	1640	1721	DK-QSA42/40-1640	2050
	44	1720	1801	DK-QSA44/40-1720	2130
	46	1800	1881	DK-QSA46/40-1800	2210
	48	1880	1961	DK-QSA48/40-1880	2290
	50	1960	2041	DK-QSA50/40-1960	2370
	52	2040	2121	DK-QSA52/40-2040	2450
	54	2120	2201	DK-QSA54/40-2120	2530
	56	2200	2281	DK-QSA56/40-2200	2610
	58	2280	2361	DK-QSA58/40-2280	2690
	60	2360	2441	DK-QSA60/40-2360	2770
	62	2440	2521	DK-QSA62/40-2440	2850
	64	2520	2601	DK-QSA64/40-2520	2930
	66	2600	2681	DK-QSA66/40-2600	3010
68	2680	2761	DK-QSA68/40-2680	3090	
70	2760	2841	DK-QSA70/40-2760	3170	
72	2840	2921	DK-QSA72/40-2840	3250	

3. DK-QSA 80mm series

Unit: mm



Remarks

L: Total length of light screen

H: Height of protected area

K: Resolution ratio

n: Beams number

$$L = 18 + 40 + H + 25 + 18$$

$$H = (n - 1) * 80$$

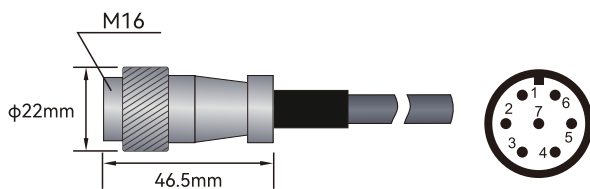
DK-QSA 80mm specification list

Resolution	Light beam	Protection height (H)	Total height (L)	Product model	Height of columns and mirrors (300~4000mm optional)
80mm (K)	4	240	341	DK-QSA04/80-240	670
	6	400	501	DK-QSA06/80-400	830
	8	560	661	DK-QSA08/80-560	990
	10	720	821	DK-QSA10/80-720	1150
	12	880	981	DK-QSA12/80-880	1310
	14	1040	1141	DK-QSA14/80-1040	1470
	16	1200	1301	DK-QSA16/80-1200	1630
	18	1360	1461	DK-QSA18/80-1360	1790
	20	1520	1621	DK-QSA20/80-1520	1950
	22	1680	1781	DK-QSA22/80-1680	2110
	24	1840	1941	DK-QSA24/80-1840	2270
	26	2000	2101	DK-QSA26/80-2000	2430
	28	2160	2261	DK-QSA28/80-2160	2590
	30	2320	2421	DK-QSA30/80-2320	2750
	32	2480	2581	DK-QSA32/80-2480	2910
	34	2640	2741	DK-QSA34/80-2640	3070
	36	2800	2901	DK-QSA36/80-2800	3230
	38	2960	3061	DK-QSA38/80-2960	3390
	40	3120	3221	DK-QSA40/80-3120	3550
	42	3280	3381	DK-QSA42/80-3280	3710
44	3440	3541	DK-QSA44/80-3440	3870	
46	3600	3701	DK-QSA46/80-3600	4030	
48	3760	3861	DK-QSA48/80-3760	4190	
50	3920	4021	DK-QSA50/80-3920	4350	
52	4080	4181	DK-QSA52/80-4080	4510	

Electrical connection

Electrical interface	
Number of interfaces	2 (receiver and transmitter)
Type	M16 connector, 7-pin
Interface metal	Copper nickel plating
Plug material	kirsite
Rated current (A)	5A
Contact DC (AC V)	Φ1*5
working voltage (AC V)	500V
pressurization (AC V)	1500V
contact resistance	5MΩ
insulation resistance	2000MΩ
Allowable typical conductor section	0.25mm ²
Maximum link cable	100M
Maximum allowable carrying current	4.9A
Cable material	PVC
Shielding	shielded

Cable description:

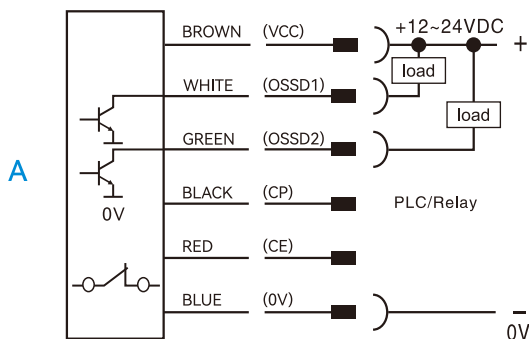


7-pin M16 cable connector straight
3m waterproof cable

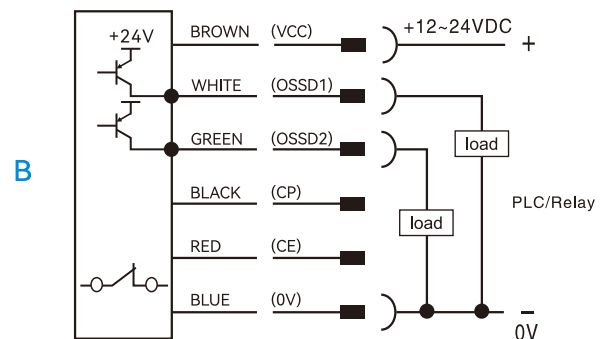
Emitter Wiring diagram			Receiver Wiring diagram		
Pin number	Line color	Name	Pin number	Line color	Name
1	BROWN	24V DC	1	BROWN	24V DC
2	BLUE	0V	2	BLUE	0V
3	BLACK	CP	3	BLACK	CP
4	RED	CE	4	RED	CE
5	WHITE	NC	5	WHITE	OSSD1
6	GREEN	NC	6	GREEN	OSSD2
7	YELLOW	Ground wire	7	YELLOW	Ground wire

1. DK-QSA signal output selection (actual output of transistor working normally)

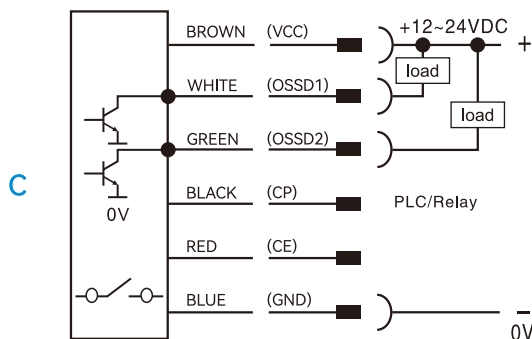
NPN NC



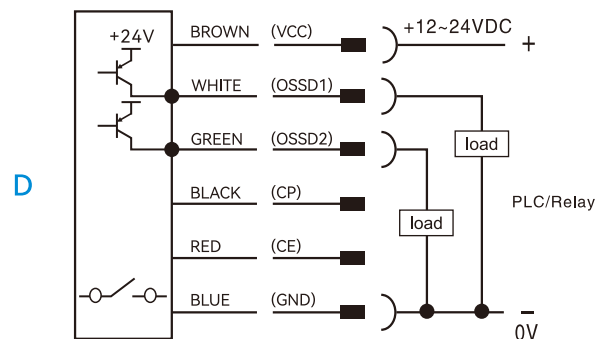
PNP NC



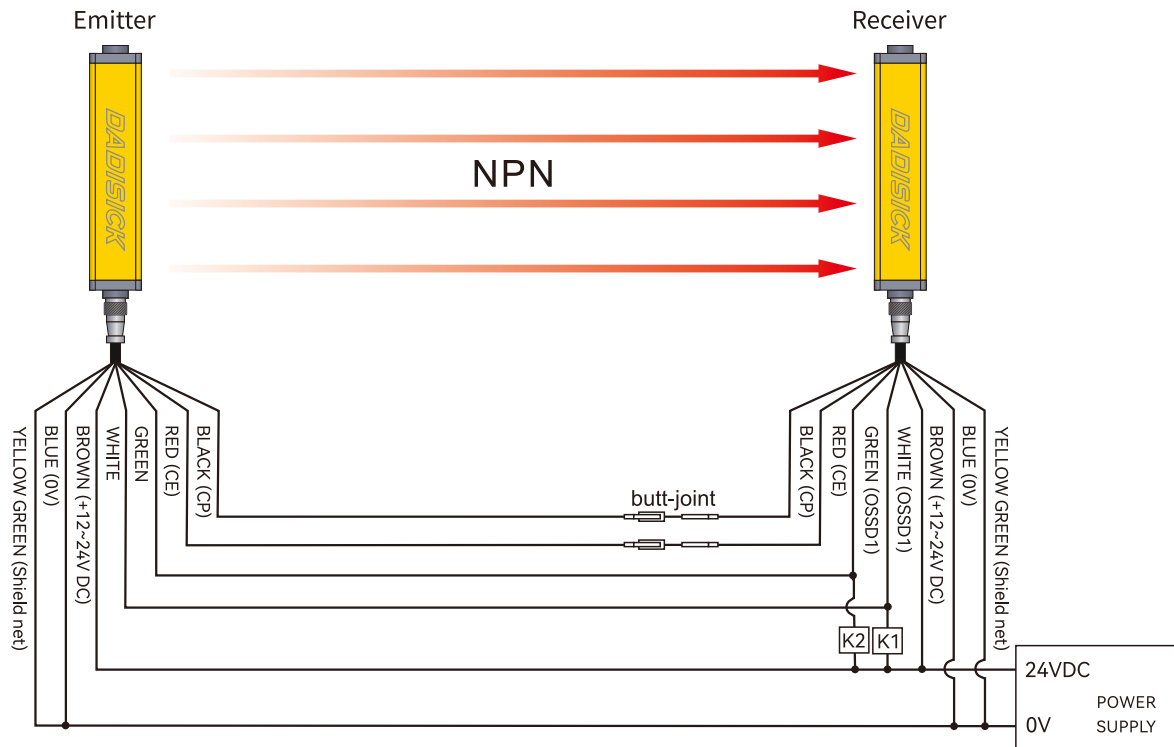
NPN NO



PNP NO

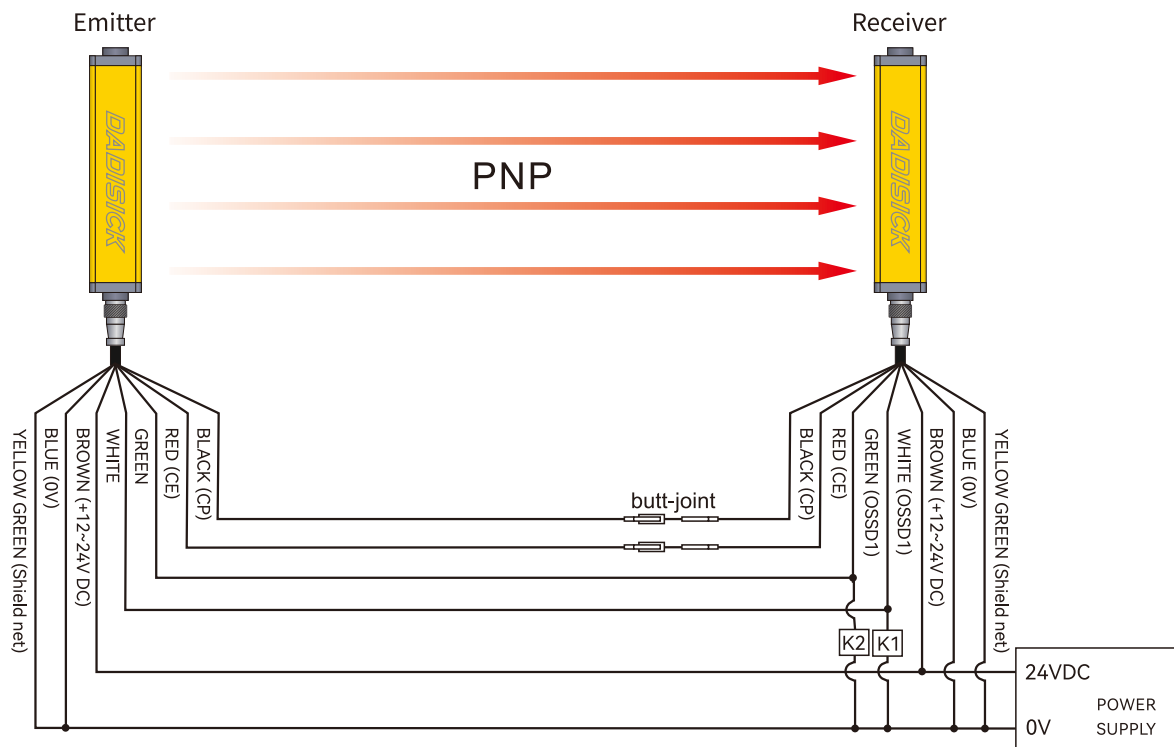


2. NPN output wiring diagram





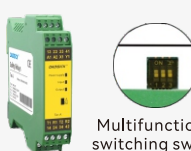

This figure is an example of NPN double output 7-pin wiring.

3. PNP output wiring diagram

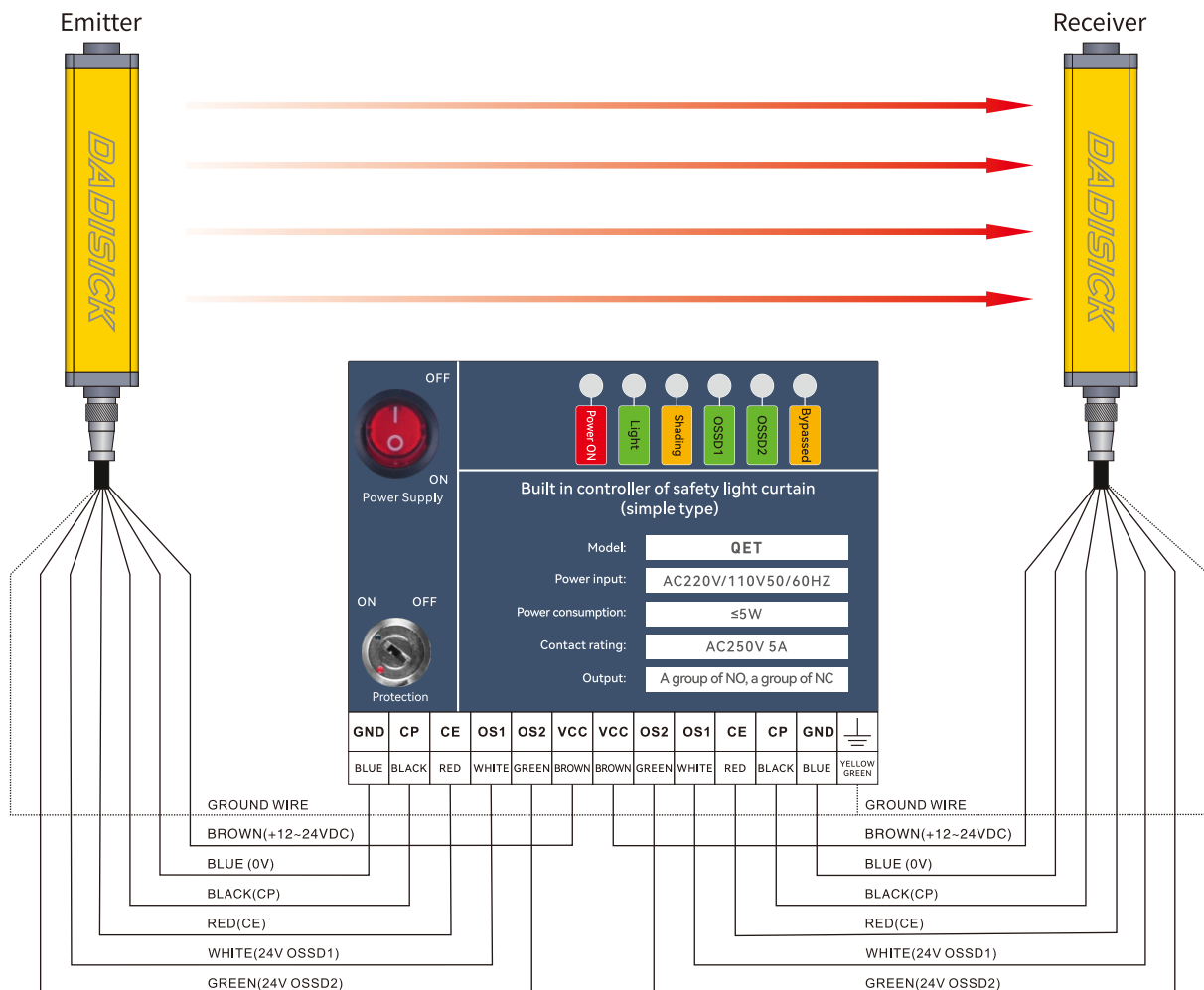


This figure is an example of PNP double output 7-pin wiring.

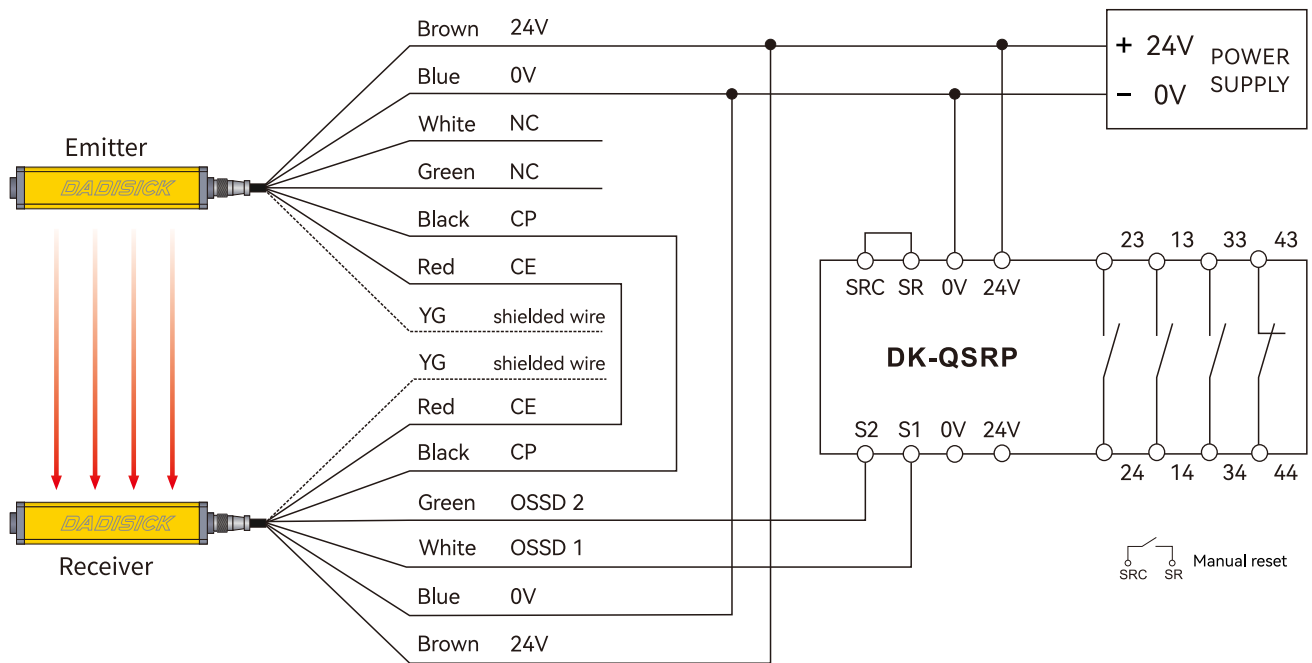
4. Selection of safety light curtain controller

Name	Order separately	Model	Descriptions
Built-in controller		QET	Used to monitor the signal processing of DK-QSA series light curtain, and output one group of NO and one group of NC.
Safety relay		DK-QSRP	DK-QSRP safety relays have three groups of NO and one group of NC, with strong control capabilities. They are suitable for various signal monitoring in industrial places with high safety requirements, including emergency stop signals, safety door opening and closing signals, safety light curtain signals, and two-handed button signals.
Safety relay	 Multifunctional switching switch	DK-Ter-AP	Equipped with a mode switch, it can be used for most safety components, such as light curtains, safety switches, carpet contacts, two handed switches, etc. Automatic/manual reset paddles for quick configuration. Dual channel monitoring circuit, safe and reliable.
Light curtain relay		QET-1	Output conversion between NC and NO for DK-QSA series light curtain.

4.1 Wiring diagram of QET built-in controller

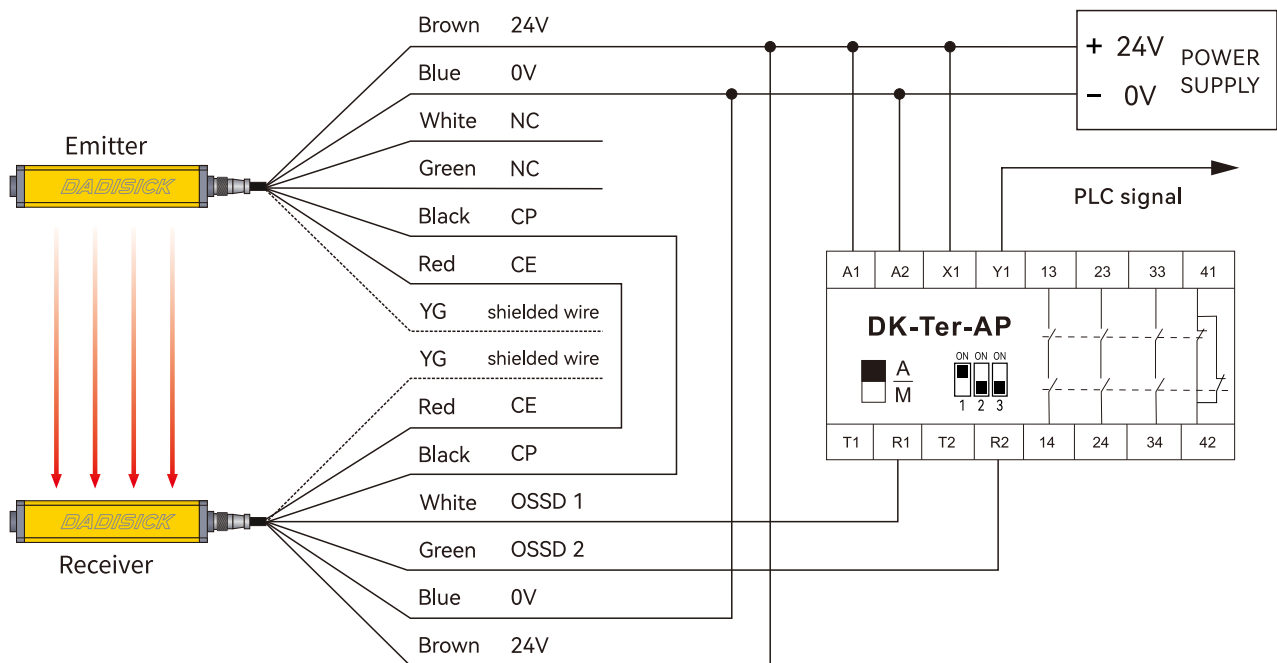


4.2 Wiring diagram of DK-QSRP safety relay

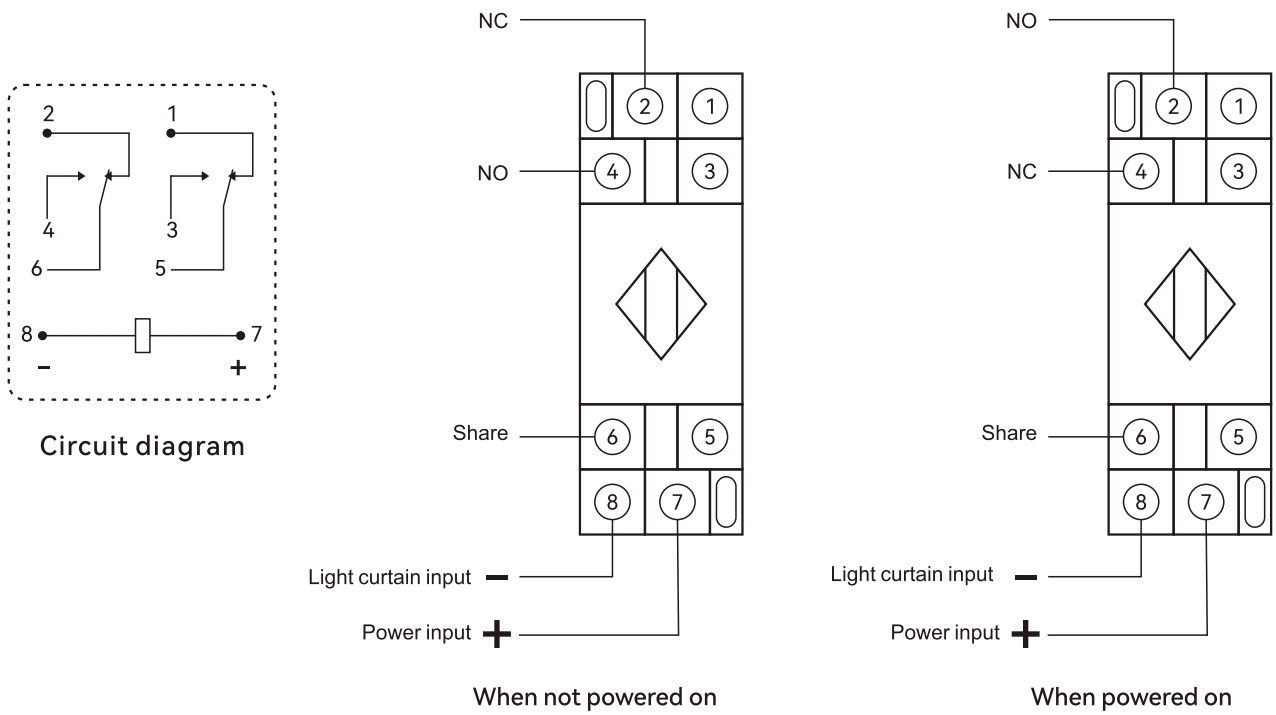


4.3 Wiring diagram of DK-Ter-AP safety relay

Dual channel light curtain PNP switch safety input, with automatic reset and PLC signal output.

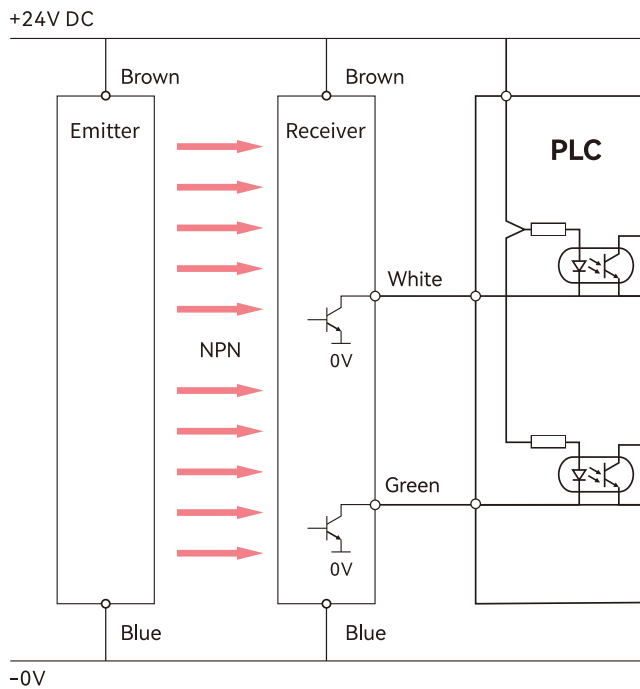


4.4 Wiring diagram of QET-1 light curtain relay

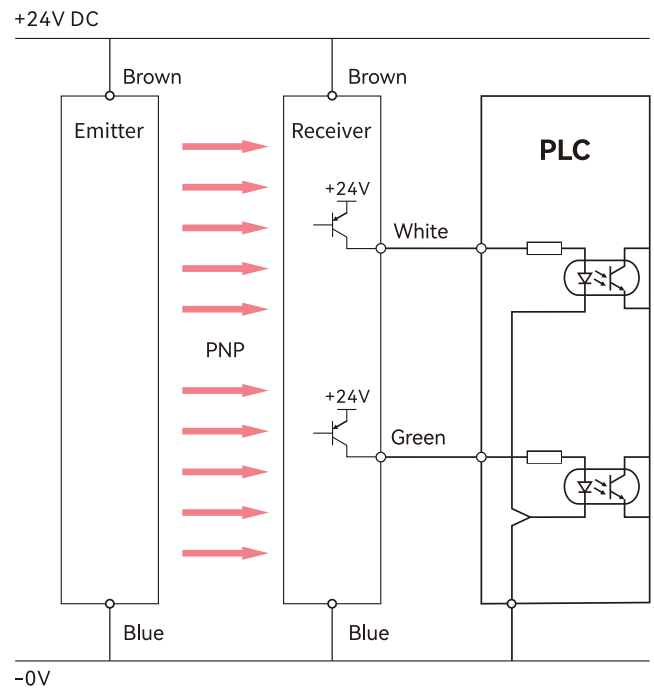


4.5 Wiring between light curtain and PLC and one-chip computer system


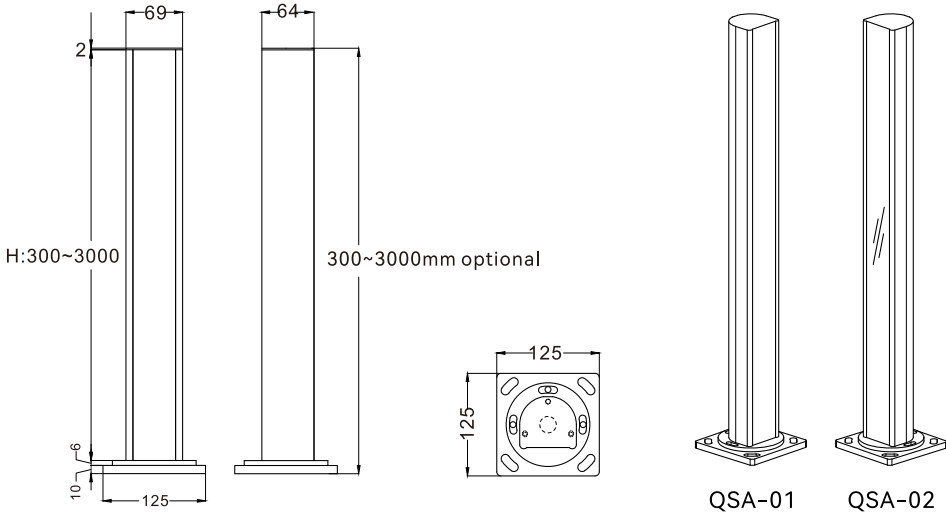

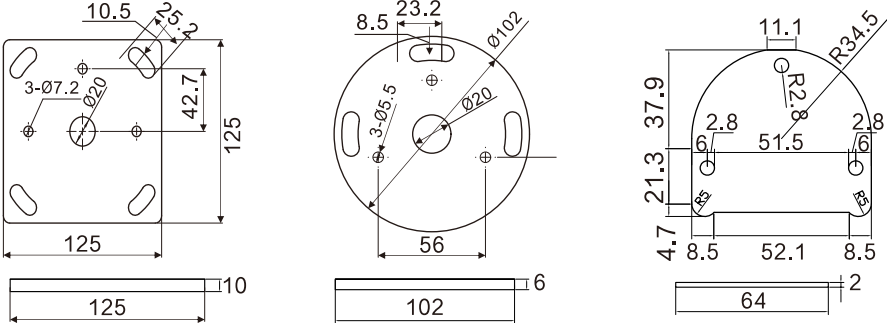
NPN wiring:



PNP wiring:

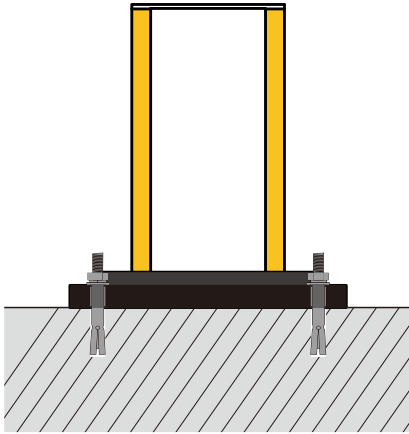


Outline size

Columns appearance	Columns dimension (unit : mm)
 <p data-bbox="185 933 384 993">QSA-01 (Order separately)</p>	 <p data-bbox="1185 778 1417 804">QSA-01 QSA-02</p>
Mounting dimension (unit : mm)	
 <p data-bbox="185 1806 384 1867">QSA-02 (Order separately)</p>	
Details Picture	
	

Accessories

The equipment column can support independent installation of multiple beam safety gratings and safety light curtains on the ground, used for installing multiple side entrance and exit protective devices.



Concrete floor fixing expansion screws
(Original accessories)

