DADISICK®

TECHNICAL DATA SHEET

SAFETY LIGHT CURTAIN SENSOR
Emitter and Receiver
DK-QCE series

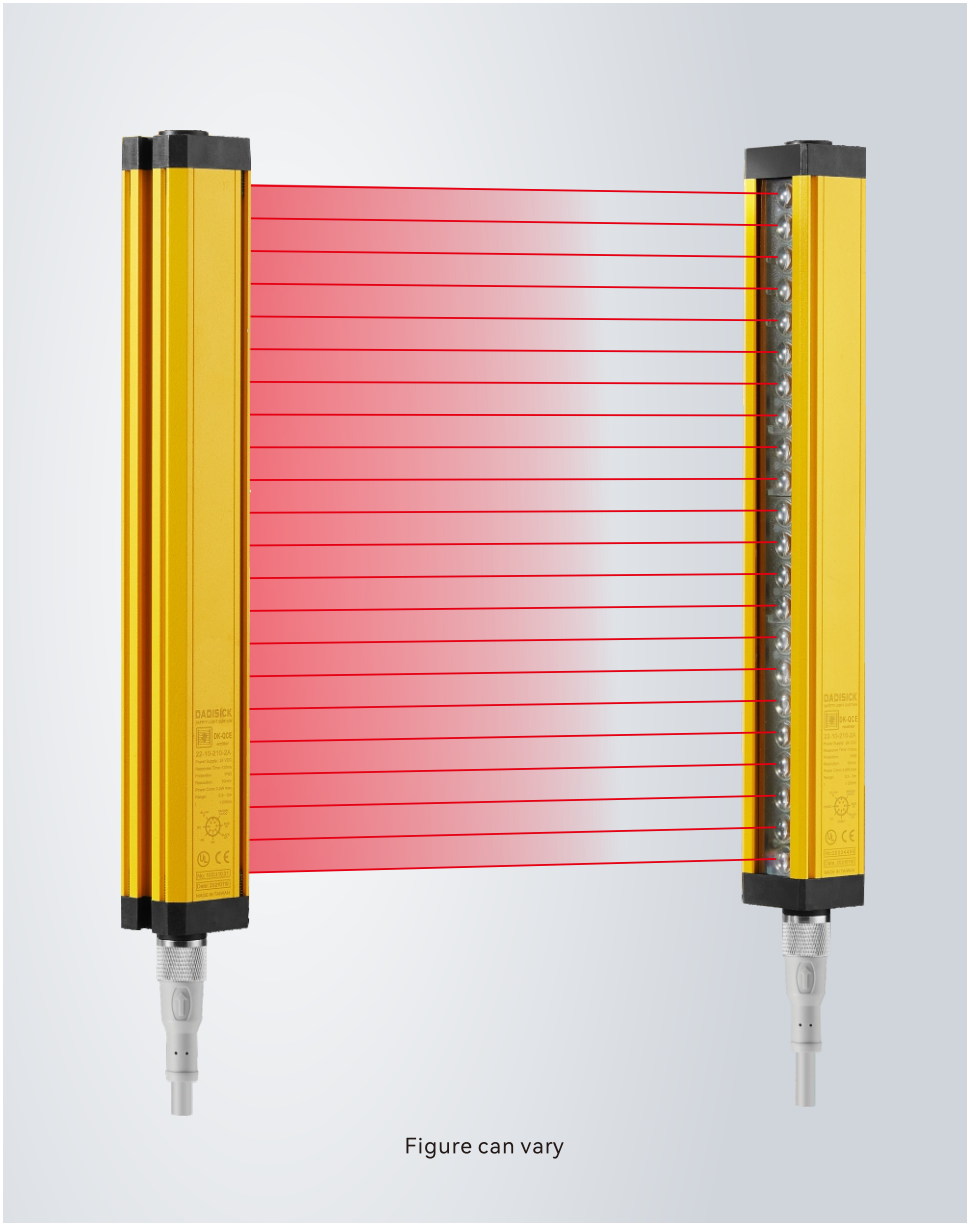

Figure can vary

Contents

GB/T 19001-2016

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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-QCE type safety light curtain are as follows:

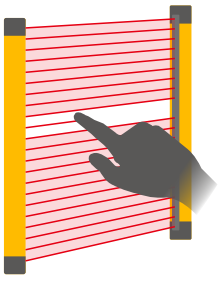
DK-QCE 12/10-110-2-BB-E (DK-QCE12/10-110-2-BB-E)

- E: Emitter
  R: Receiver
- Detection distance: A:0.3-3m
  B:0.3-6m
- Signal Output Mode: A:NPN NC
  B:PNP NC
  C:NPN NO
  D:PNP NO
  Note: The default is figure A without special requirements.
- 2: 2-circuit of output
- Protective field height 110mm
- Resolution ratio: 10mm、20mm、30mm
  40mm、80mm、200mm
- Beam number:04、06、08、10.....72
- Model: DK-QCE series safety light curtain

Resolution ratio

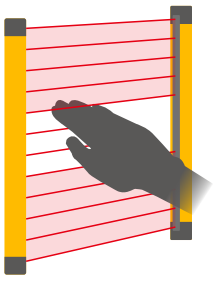
Depending on the usage environment and requirements, it is important to choose the appropriate beam spacing

Finger protection



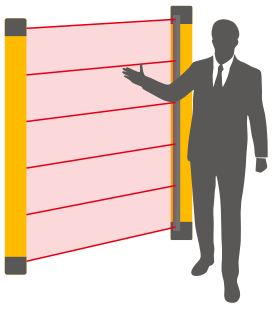
Detection capability
10/14/20mm
diameter

Hand protection



Detection capability
30/40mm
diameter

Arm/body protection



Detection capability
80/200mm
diameter

Technical data

Basic data of Receiver and Emitter

Standard packaging	
Product model	**DK-QCE series**
Standard configuration	One receiver, one transmitter, two data lines, one right-angle rack, and one t-shaped screw
Light curtain form	Infrared radiation type
Application	Standard industrial environment

Features	
Resolution ratio	10mm，20mm，30mm，40mm，80mm，200mm
Check the accuracy	18mm，28mm，38mm，48mm，88mm，208mm
Number of beams	04、06、08、10.....72
Overall dimension	30mm*30mm*L，L is the length of emitter and receiver.
Detection distance	30-6000mm
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

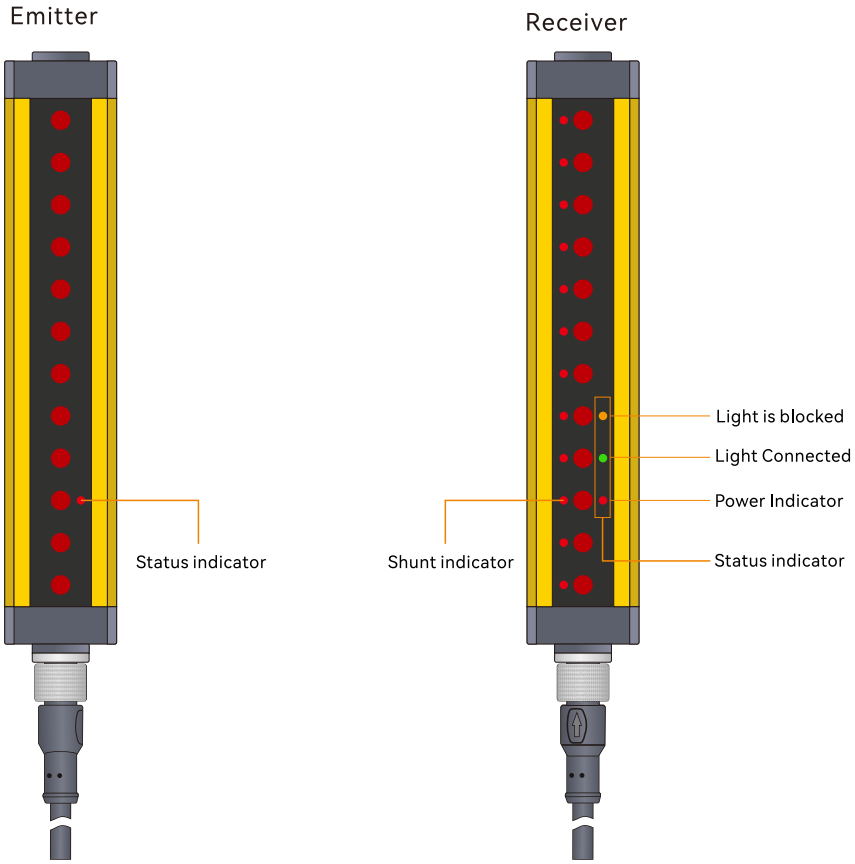
Performance data	
Protection circuit	Short circuit protection Overvoltage protection
Supply voltage	24VDC,-20...20%
Maximum current consumption	150mA
Fuse	2A half time interval

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 ℃ (but not frozen), storage temperature: - 25 -+55 ℃
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



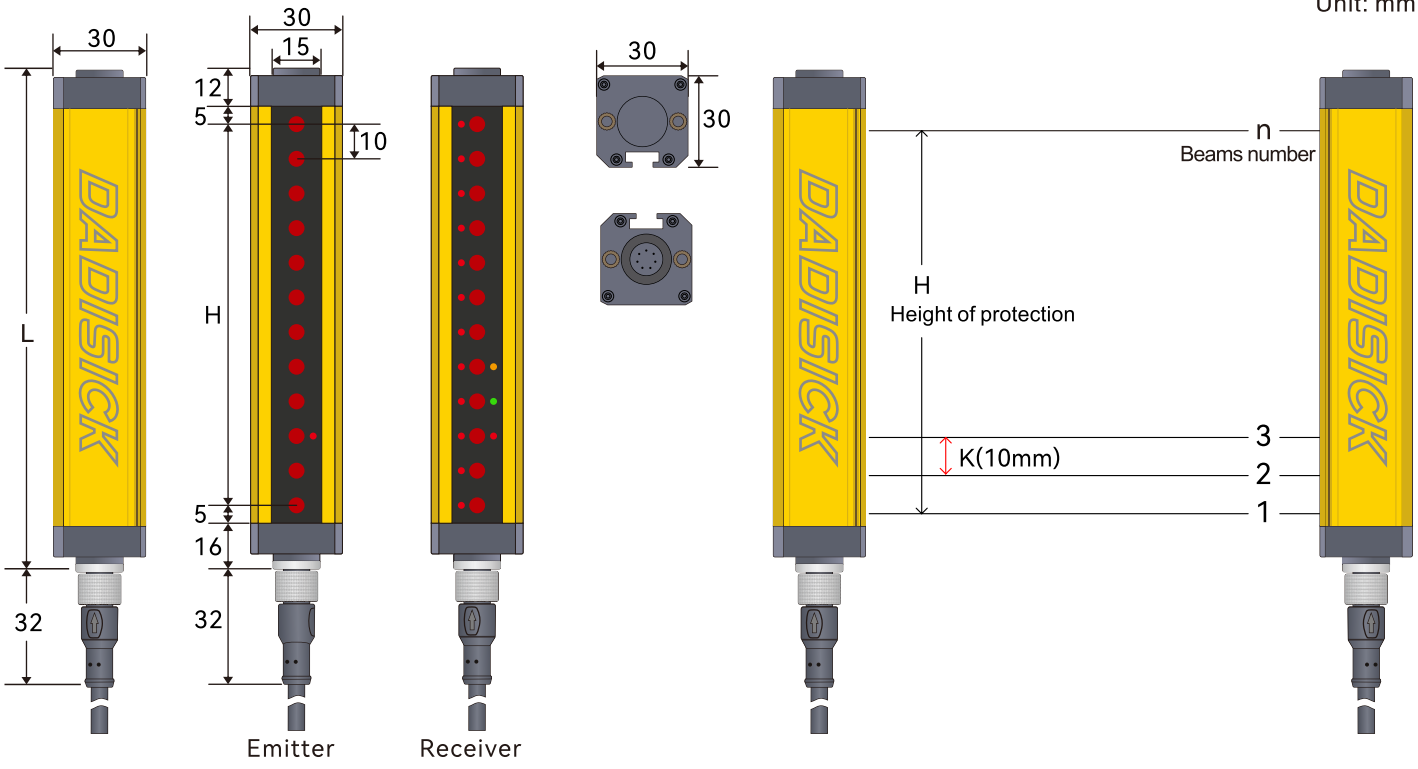
Status indicator	LED status Indicator	Explain
Emitter	Red, always on	Turns on the power
Receiver	Red, always on	Turns on the power
	Green	All light paths are connected
	Yellow	The light is blocked or misaligned
	Lights flashing	Interference or overstep detection range

Shunt indicator	LED shunt Indicator	Explain
Receiver	Red light up	The light is blocked or misaligned
	Red light out	The light paths are connected

Dimensioned drawings

1. DK-QCE 10mm series

Unit: mm



Remarks

L:Total length of light screen　　H:Height of protected area　　K:Resolution ratio　　n:Beams number

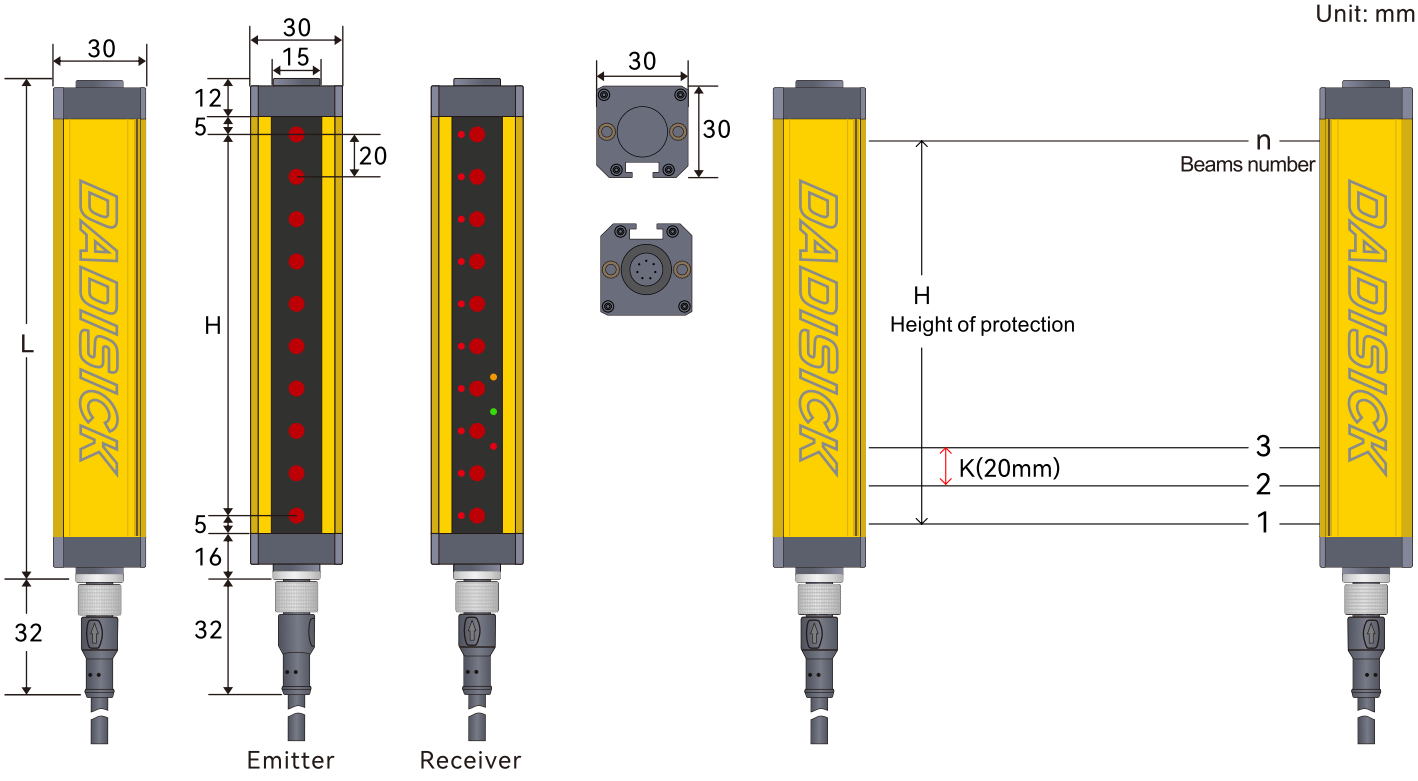
L=12+5+H+5+16　　H= (n−1) * 10

DK-QCE 10mm specification list

Resolution	Light beam	Protection height (H)	Total height (L)	Product model	Signal output mode		Detection range
					Two outputs	PNP output	
10mm (K)	12	110	148	DK-QCE12/10-110	2	PNP	0.3-6m
	14	130	168	DK-QCE14/10-130	2	PNP	0.3-6m
	16	150	188	DK-QCE16/10-150	2	PNP	0.3-6m
	18	170	208	DK-QCE18/10-170	2	PNP	0.3-6m
	20	190	228	DK-QCE20/10-190	2	PNP	0.3-6m
	22	210	248	DK-QCE22/10-210	2	PNP	0.3-6m
	24	230	268	DK-QCE24/10-230	2	PNP	0.3-6m
	26	250	288	DK-QCE26/10-250	2	PNP	0.3-6m
	28	270	308	DK-QCE28/10-270	2	PNP	0.3-6m
	30	290	328	DK-QCE30/10-290	2	PNP	0.3-6m
	32	310	348	DK-QCE32/10-310	2	PNP	0.3-6m
	34	330	368	DK-QCE34/10-330	2	PNP	0.3-6m
	36	350	388	DK-QCE36/10-350	2	PNP	0.3-6m
	38	370	408	DK-QCE38/10-370	2	PNP	0.3-6m
	40	390	428	DK-QCE40/10-390	2	PNP	0.3-6m
	42	410	448	DK-QCE42/10-410	2	PNP	0.3-6m
	44	430	468	DK-QCE44/10-430	2	PNP	0.3-6m
	46	450	488	DK-QCE46/10-450	2	PNP	0.3-6m
	48	470	508	DK-QCE48/10-470	2	PNP	0.3-6m
	50	490	528	DK-QCE50/10-490	2	PNP	0.3-6m
	52	510	548	DK-QCE52/10-510	2	PNP	0.3-6m
	54	530	568	DK-QCE54/10-530	2	PNP	0.3-6m
	56	550	588	DK-QCE56/10-550	2	PNP	0.3-6m
	58	570	608	DK-QCE58/10-570	2	PNP	0.3-6m
	60	590	628	DK-QCE60/10-590	2	PNP	0.3-6m
	62	610	648	DK-QCE62/10-610	2	PNP	0.3-6m
	64	630	668	DK-QCE64/10-630	2	PNP	0.3-6m
	66	650	688	DK-QCE66/10-650	2	PNP	0.3-6m
	68	670	708	DK-QCE68/10-670	2	PNP	0.3-6m
	70	690	728	DK-QCE70/10-690	2	PNP	0.3-6m

2. DK-QCE 20mm series

Unit: mm



Remarks

L:Total length of light screen
L=12+5+H+5+16

H:Height of protected area
H= (n–1) * 20

K:Resolution ratio

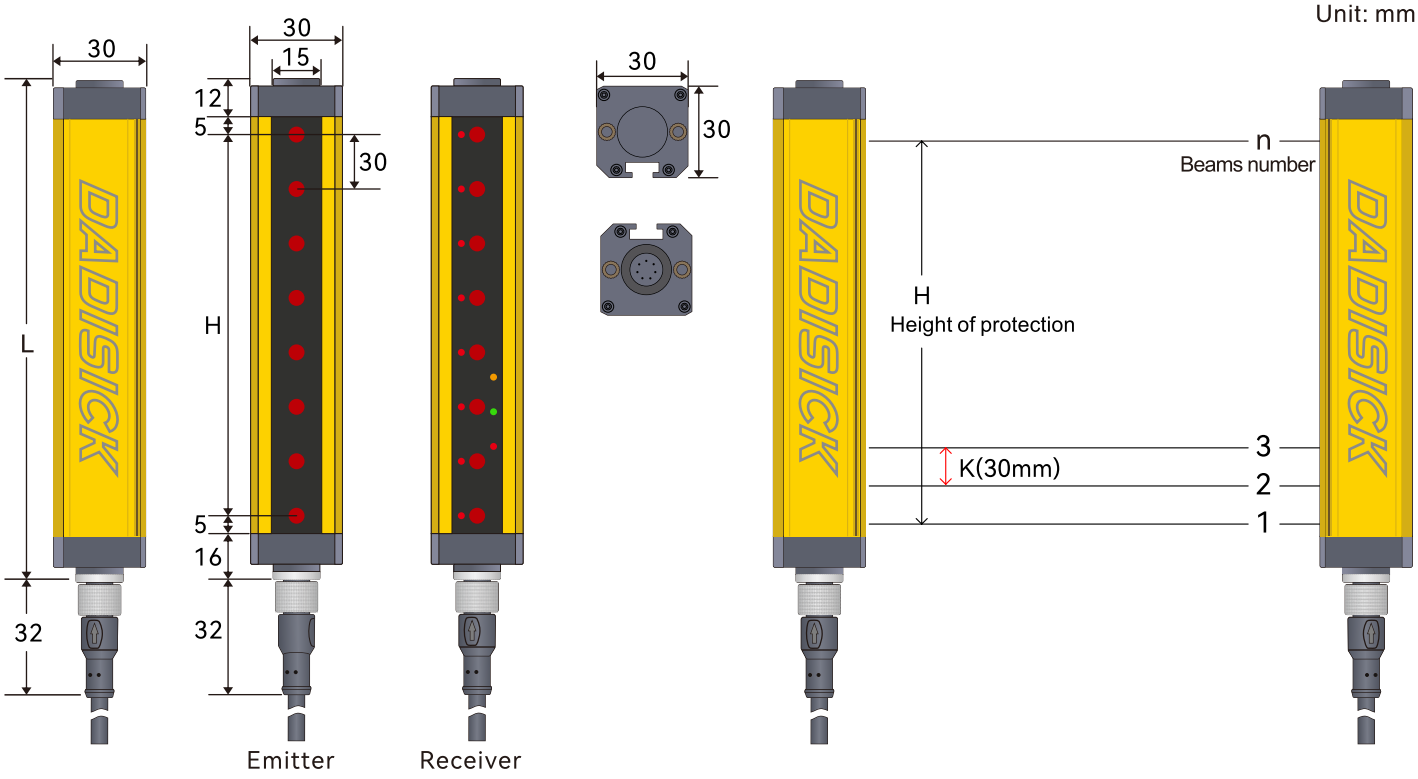
n:Beams number

DK-QCE 20mm specification list

Resolution	Light beam	Protection height (H)	Total height (L)	Product model	Signal output mode		Detection distance
					Two outputs	PNP output	
20mm (K)	6	100	138	DK–QCE06/20–100	2	PNP	0.3–6m
	8	140	178	DK–QCE08/20–140	2	PNP	0.3–6m
	10	180	218	DK–QCE10/20–180	2	PNP	0.3–6m
	12	220	258	DK–QCE12/20–220	2	PNP	0.3–6m
	14	260	298	DK–QCE14/20–260	2	PNP	0.3–6m
	16	300	338	DK–QCE16/20–300	2	PNP	0.3–6m
	18	340	378	DK–QCE18/20–340	2	PNP	0.3–6m
	20	380	418	DK–QCE20/20–380	2	PNP	0.3–6m
	22	420	458	DK–QCE22/20–420	2	PNP	0.3–6m
	24	460	498	DK–QCE24/20–460	2	PNP	0.3–6m
	26	500	538	DK–QCE26/20–500	2	PNP	0.3–6m
	28	540	578	DK–QCE28/20–540	2	PNP	0.3–6m
	30	580	618	DK–QCE30/20–580	2	PNP	0.3–6m
	32	620	658	DK–QCE32/20–620	2	PNP	0.3–6m
	34	660	698	DK–QCE34/20–660	2	PNP	0.3–6m
	36	700	738	DK–QCE36/20–700	2	PNP	0.3–6m
	38	740	778	DK–QCE38/20–740	2	PNP	0.3–6m
	40	780	818	DK–QCE40/20–780	2	PNP	0.3–6m
	42	820	858	DK–QCE42/20–820	2	PNP	0.3–6m
	44	860	898	DK–QCE44/20–860	2	PNP	0.3–6m
	46	900	938	DK–QCE46/20–900	2	PNP	0.3–6m
	48	940	978	DK–QCE48/20–940	2	PNP	0.3–6m
	50	980	1018	DK–QCE50/20–980	2	PNP	0.3–6m
	52	1020	1058	DK–QCE52/20–1020	2	PNP	0.3–6m
	54	1060	1098	DK–QCE54/20–1060	2	PNP	0.3–6m
	56	1100	1138	DK–QCE56/20–1100	2	PNP	0.3–6m
	58	1140	1178	DK–QCE58/20–1140	2	PNP	0.3–6m
	60	1180	1218	DK–QCE60/20–1180	2	PNP	0.3–6m
	62	1220	1258	DK–QCE62/20–1220	2	PNP	0.3–6m
	64	1260	1298	DK–QCE64/20–1260	2	PNP	0.3–6m
	66	1300	1338	DK–QCE66/20–1300	2	PNP	0.3–6m
	68	1340	1378	DK–QCE68/20–1340	2	PNP	0.3–6m
	70	1380	1418	DK–QCE70/20–1380	2	PNP	0.3–6m
	72	1420	1458	DK–QCE72/20–1420	2	PNP	0.3–6m

3. DK-QCE 30mm series

Unit: mm



Remarks

L:Total length of light screen
L=12+5+H+5+16

H:Height of protected area
H= (n–1) * 30

K:Resolution ratio

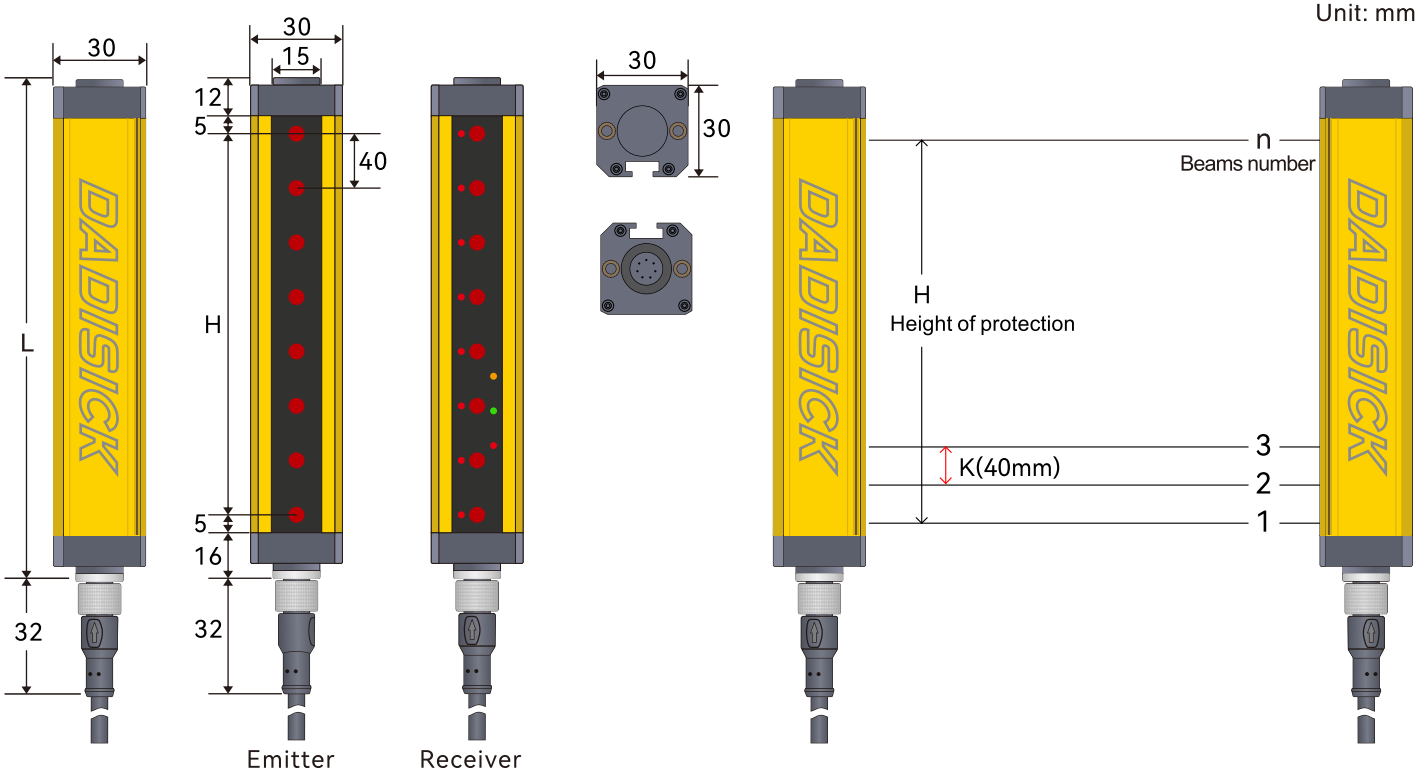
n:Beams number

DK-QCE 30mm specification list

Resolution	Light beam	Protection height (H)	Total height (L)	Product model	Signal output mode		Detection distance
					Two outputs	PNP output	
30mm (K)	4	90	128	DK–QCE04/30–90	2	PNP	0.3–6m
	6	150	188	DK–QCE06/30–150	2	PNP	0.3–6m
	8	210	248	DK–QCE8/30–210	2	PNP	0.3–6m
	10	270	308	DK–QCE10/30–270	2	PNP	0.3–6m
	12	330	368	DK–QCE12/30–330	2	PNP	0.3–6m
	14	390	428	DK–QCE14/30–390	2	PNP	0.3–6m
	16	450	488	DK–QCE16/30–450	2	PNP	0.3–6m
	18	510	548	DK–QCE18/30–510	2	PNP	0.3–6m
	20	570	608	DK–QCE20/30–570	2	PNP	0.3–6m
	22	630	668	DK–QCE22/30–630	2	PNP	0.3–6m
	24	690	728	DK–QCE24/30–690	2	PNP	0.3–6m
	26	750	788	DK–QCE26/30–750	2	PNP	0.3–6m
	28	810	848	DK–QCE28/30–810	2	PNP	0.3–6m
	30	870	908	DK–QCE30/30–870	2	PNP	0.3–6m
	32	930	968	DK–QCE32/30–930	2	PNP	0.3–6m
	34	990	1028	DK–QCE34/30–990	2	PNP	0.3–6m
	36	1050	1088	DK–QCE36/30–1050	2	PNP	0.3–6m
	38	1110	1148	DK–QCE38/30–1110	2	PNP	0.3–6m
	40	1170	1208	DK–QCE40/30–1170	2	PNP	0.3–6m
	42	1230	1268	DK–QCE42/30–1230	2	PNP	0.3–6m
	44	1290	1328	DK–QCE44/30–1290	2	PNP	0.3–6m
	46	1350	1388	DK–QCE46/30–1350	2	PNP	0.3–6m
	48	1410	1448	DK–QCE48/30–1410	2	PNP	0.3–6m
	50	1470	1508	DK–QCE50/30–1470	2	PNP	0.3–6m
	52	1530	1568	DK–QCE52/30–1530	2	PNP	0.3–6m
	54	1590	1628	DK–QCE54/30–1590	2	PNP	0.3–6m
	56	1650	1688	DK–QCE56/30–1650	2	PNP	0.3–6m
	58	1710	1748	DK–QCE58/30–1710	2	PNP	0.3–6m
	60	1770	1808	DK–QCE60/30–1770	2	PNP	0.3–6m
	62	1830	1868	DK–QCE62/30–1830	2	PNP	0.3–6m
	64	1890	1928	DK–QCE64/30–1890	2	PNP	0.3–6m
	66	1950	1988	DK–QCE66/30–1950	2	PNP	0.3–6m
	68	2010	2048	DK–QCE68/30–2010	2	PNP	0.3–6m
	70	2070	2108	DK–QCE70/30–2070	2	PNP	0.3–6m
	72	2130	2168	DK–QCE72/30–2130	2	PNP	0.3–6m

4. DK-QCE 40mm series

Unit: mm



Remarks

L:Total length of light screen
L=12+5+H+5+16

H:Height of protected area
H= (n−1) * 40

K:Resolution ratio

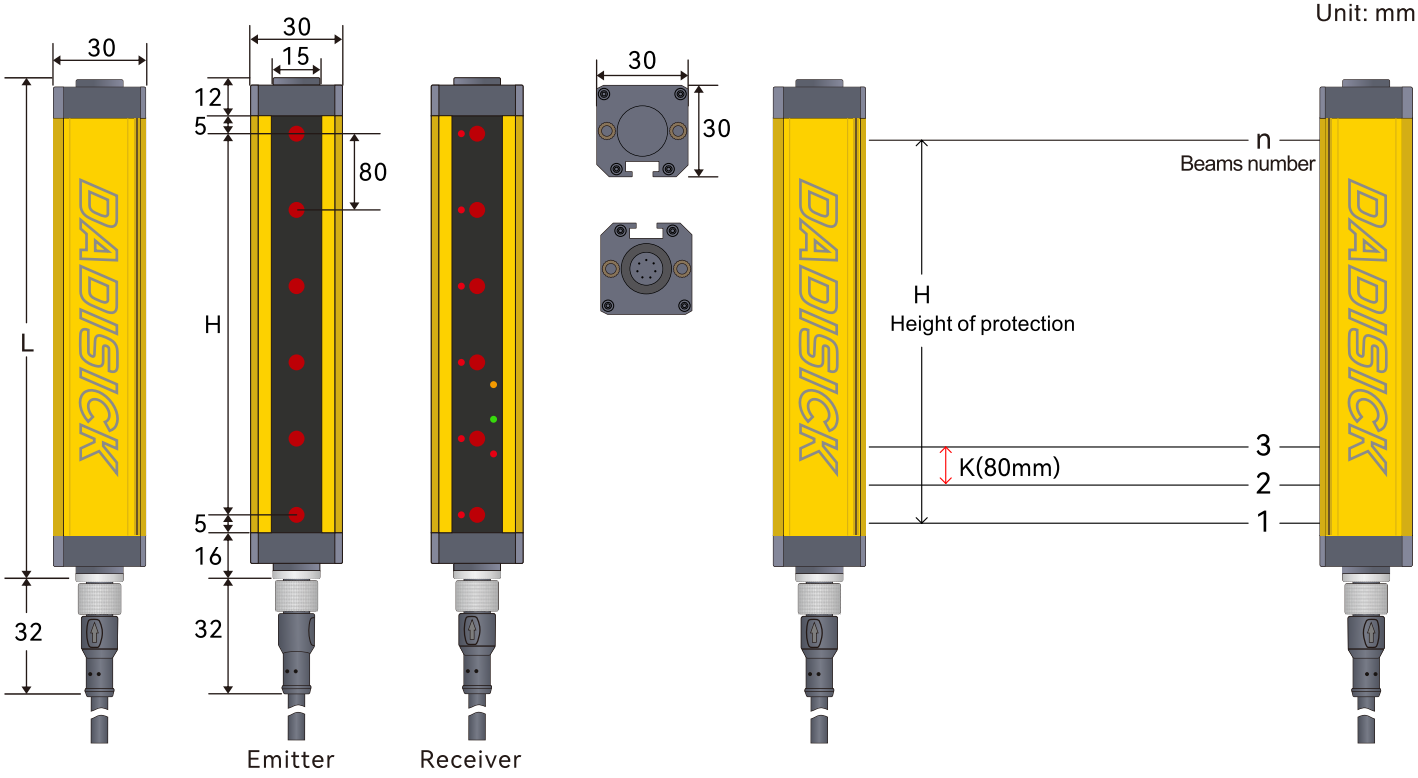
n:Beams number

DK-QCE 40mm specification list

Resolution	Light beam	Protection height (H)	Total height (L)	Product model	Signal output mode		Detection distance
					Two outputs	PNP output	
40mm (K)	4	120	158	DK-QCE04/40-120	2	PNP	0.3-6m
	6	200	238	DK-QCE06/40-200	2	PNP	0.3-6m
	8	280	318	DK-QCE08/40-280	2	PNP	0.3-6m
	10	360	398	DK-QCE10/40-360	2	PNP	0.3-6m
	12	440	478	DK-QCE12/40-440	2	PNP	0.3-6m
	14	520	558	DK-QCE14/40-520	2	PNP	0.3-6m
	16	600	638	DK-QCE16/40-600	2	PNP	0.3-6m
	18	680	718	DK-QCE18/40-680	2	PNP	0.3-6m
	20	760	798	DK-QCE20/40-760	2	PNP	0.3-6m
	22	840	878	DK-QCE22/40-840	2	PNP	0.3-6m
	24	920	958	DK-QCE24/40-920	2	PNP	0.3-6m
	26	1000	1038	DK-QCE26/40-1000	2	PNP	0.3-6m
	28	1080	1118	DK-QCE28/40-1080	2	PNP	0.3-6m
	30	1160	1198	DK-QCE30/40-1160	2	PNP	0.3-6m
	32	1240	1278	DK-QCE32/40-1240	2	PNP	0.3-6m
	34	1320	1358	DK-QCE34/40-1320	2	PNP	0.3-6m
	36	1400	1438	DK-QCE36/40-1400	2	PNP	0.3-6m
	38	1480	1518	DK-QCE38/40-1480	2	PNP	0.3-6m
	40	1560	1598	DK-QCE40/40-1560	2	PNP	0.3-6m
	42	1640	1678	DK-QCE42/40-1640	2	PNP	0.3-6m
	44	1720	1758	DK-QCE44/40-1720	2	PNP	0.3-6m
	46	1800	1838	DK-QCE46/40-1800	2	PNP	0.3-6m
	48	1880	1918	DK-QCE48/40-1880	2	PNP	0.3-6m
	50	1960	1998	DK-QCE50/40-1960	2	PNP	0.3-6m
	52	2040	2078	DK-QCE52/40-2040	2	PNP	0.3-6m
	54	2120	2158	DK-QCE54/40-2120	2	PNP	0.3-6m
	56	2200	2238	DK-QCE56/40-2200	2	PNP	0.3-6m
	58	2280	2318	DK-QCE58/40-2280	2	PNP	0.3-6m
	60	2360	2398	DK-QCE60/40-2360	2	PNP	0.3-6m
	62	2440	2478	DK-QCE62/40-2440	2	PNP	0.3-6m
	64	2520	2558	DK-QCE64/40-2520	2	PNP	0.3-6m
	66	2600	2638	DK-QCE66/40-2600	2	PNP	0.3-6m
	68	2680	2718	DK-QCE68/40-2680	2	PNP	0.3-6m
	70	2760	2798	DK-QCE70/40-2760	2	PNP	0.3-6m
	72	2840	2878	DK-QCE72/40-2840	2	PNP	0.3-6m

5. DK-QCE 80mm series

Unit: mm



Remarks

L:Total length of light screen
L=12+5+H+5+16

H:Height of protected area
H= (n–1) * 80

K:Resolution ratio

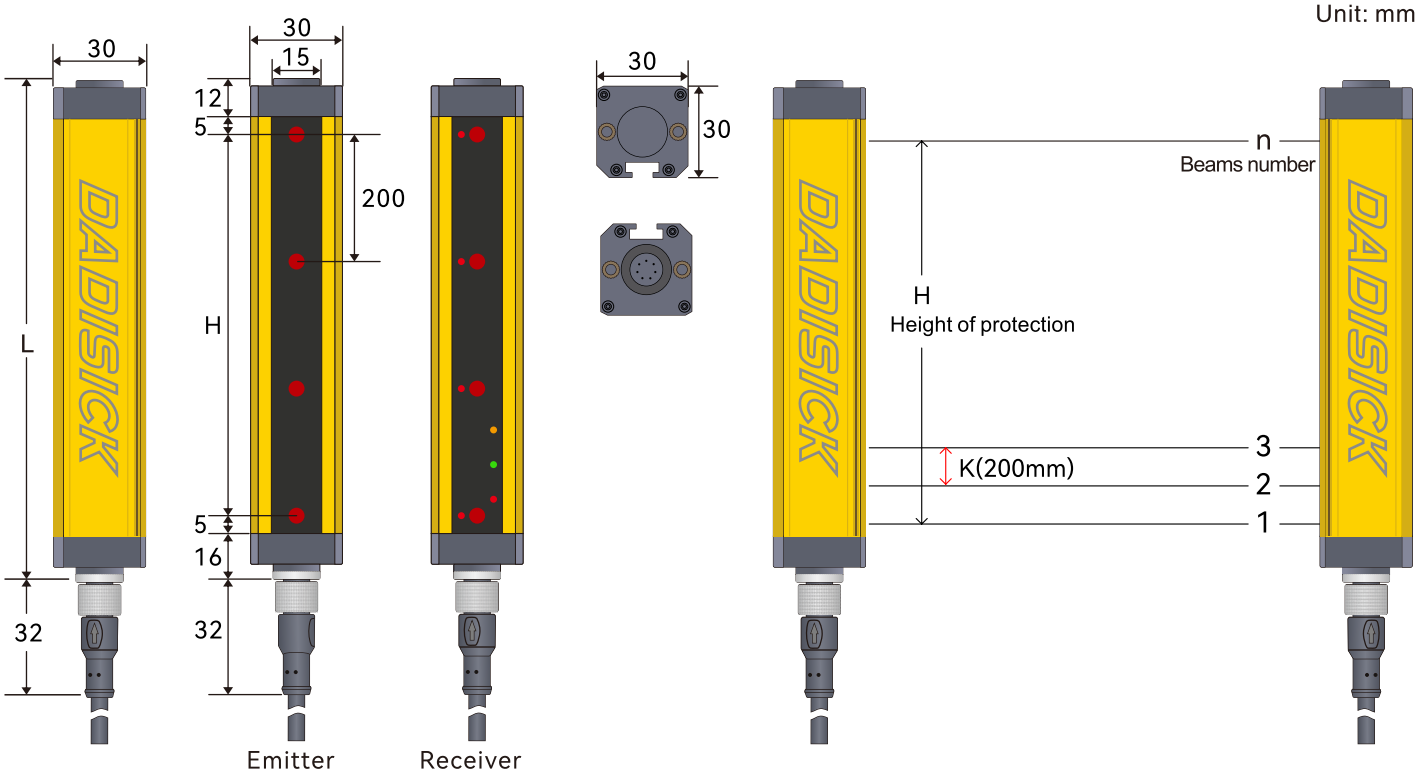
n:Beams number

DK-QCE 80mm specification list

Resolution	Light beam	Protection height (H)	Total height (L)	Product model	Signal output mode		Detection distance
					Two outputs	PNP output	
80mm (K)	4	240	278	DK-QCE04/80-240	2	PNP	0.3–6m
	6	400	438	DK-QCE06/80-400	2	PNP	0.3–6m
	8	560	598	DK-QCE08/80-560	2	PNP	0.3–6m
	10	720	758	DK-QCE10/80-720	2	PNP	0.3–6m
	12	880	918	DK-QCE12/80-880	2	PNP	0.3–6m
	14	1040	1078	DK-QCE14/80-1040	2	PNP	0.3–6m
	16	1200	1238	DK-QCE16/80-1200	2	PNP	0.3–6m
	18	1360	1398	DK-QCE18/80-1360	2	PNP	0.3–6m
	20	1520	1558	DK-QCE20/80-1520	2	PNP	0.3–6m
	22	1680	1718	DK-QCE22/80-1680	2	PNP	0.3–6m
	24	1840	1878	DK-QCE24/80-1840	2	PNP	0.3–6m
	26	2000	2038	DK-QCE26/80-2000	2	PNP	0.3–6m
	28	2160	2198	DK-QCE28/80-2160	2	PNP	0.3–6m
	30	2320	2358	DK-QCE30/80-2320	2	PNP	0.3–6m
	32	2480	2518	DK-QCE32/80-2480	2	PNP	0.3–6m

6. DK-QCE 200mm series

Unit: mm



Remarks

L:Total length of light screen
L=12+5+H+5+16

H:Height of protected area
H= (n–1) * 200

K:Resolution ratio

n:Beams number

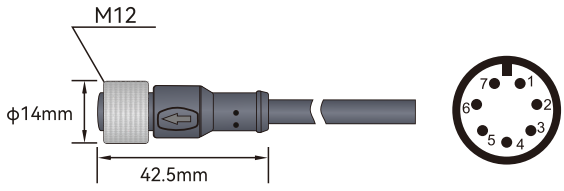
DK-QCE 200mm specification list

Resolution	Light beam	Protection height (H)	Total height (L)	Product model	Signal output mode		Detection distance
					Two outputs	PNP output	
200mm (K)	4	600	638	DK–QCE04/200–600	2	PNP	0.3–6m
	6	1000	1038	DK–QCE06/200–1000	2	PNP	0.3–6m
	8	1400	1438	DK–QCE08/200–1400	2	PNP	0.3–6m
	10	1800	1838	DK–QCE10/200–1800	2	PNP	0.3–6m
	12	2200	2238	DK–QCE12/200–2200	2	PNP	0.3–6m
	14	2600	2638	DK–QCE14/200–2600	2	PNP	0.3–6m
	16	3000	3038	DK–QCE16/200–3000	2	PNP	0.3–6m
	18	3400	3438	DK–QCE18/200–3400	2	PNP	0.3–6m

Electrical connection

Electrical interface	
Number of interfaces	2 (receiver and transmitter)
Type	M12 connector, 7-pin
Interface metal	Copper nickel plating
Plug material	GY384 gray 30P
Allowable typical conductor section	0.25mm ²
Maximum link cable	100m
Maximum allowable cable load	4.9A
Cable material	PVC
Shielding	shielded

Cable description:



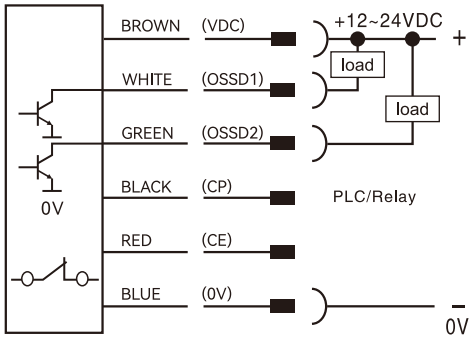
7-pin M12 cable connector straight
3m waterproof cable

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

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

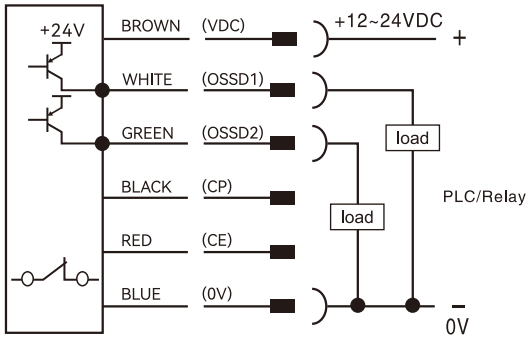
1.DK-QCE signal output selection (actual output of transistor working normally)

NPN NC



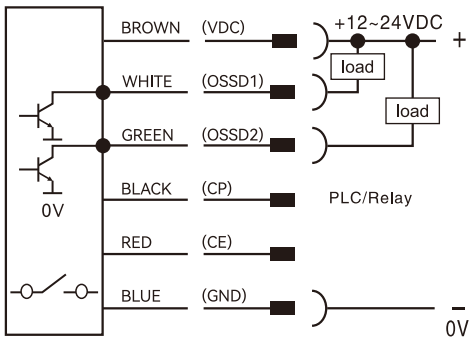
A

PNP NC



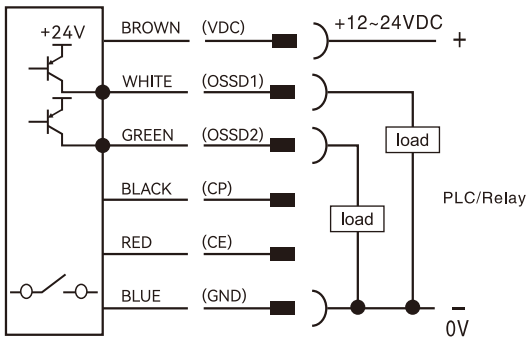
B

NPN NO



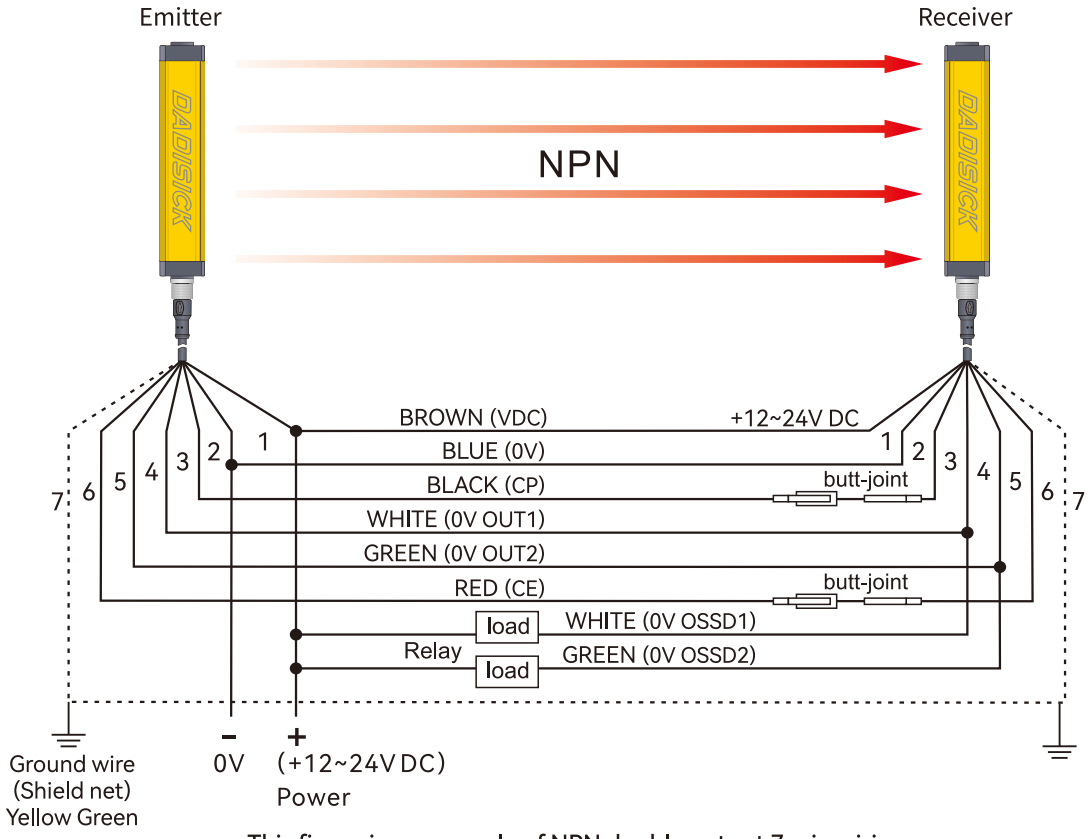
C

PNP NO



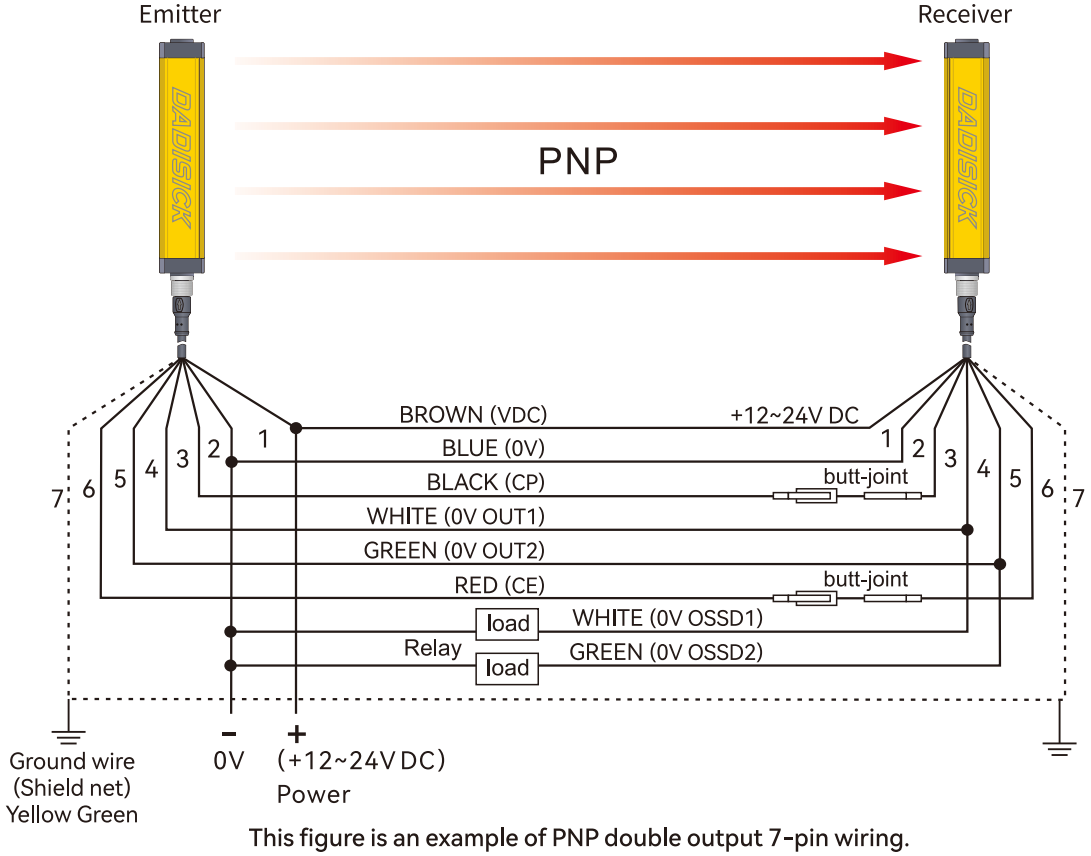
D

2.NPN output wiring diagram



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

3.PNP output wiring diagram

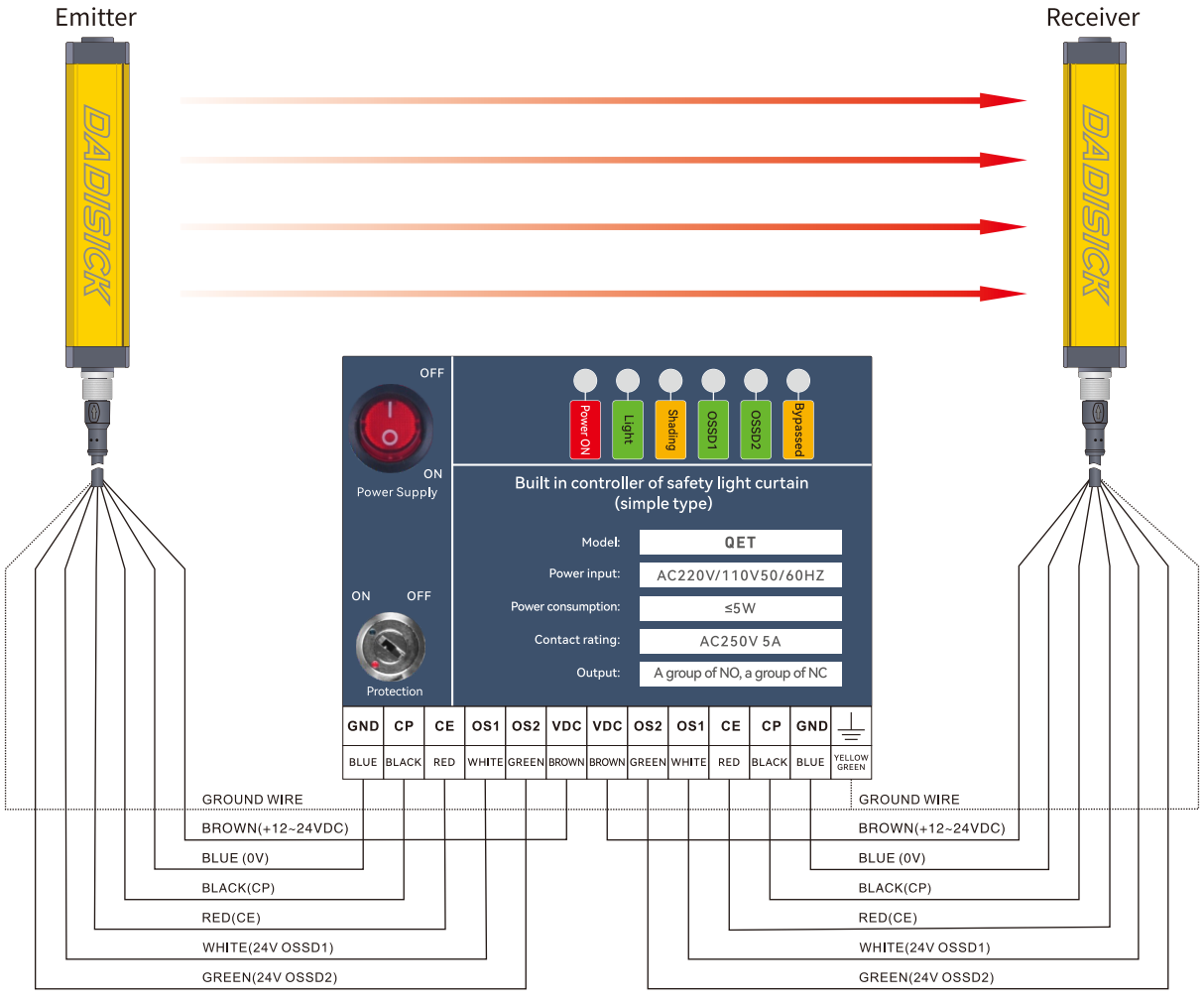


This figure is an example of PNP double output 7-pin wiring.

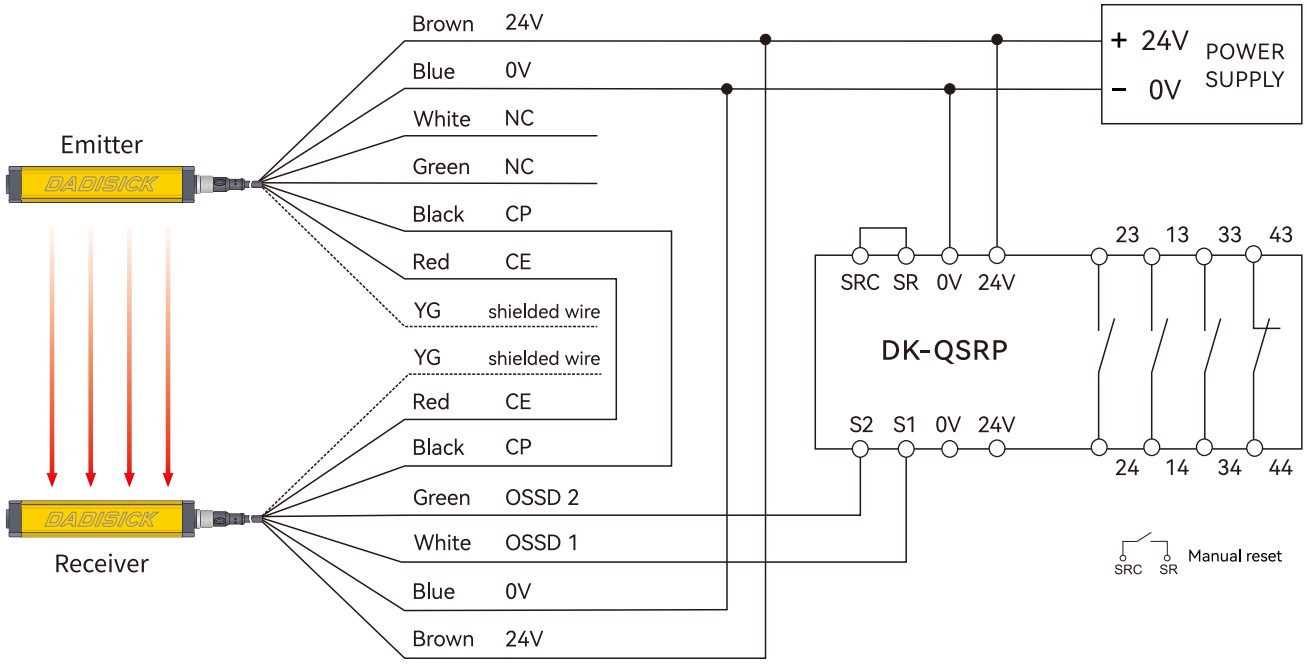
4.Selection of safety light curtain controller

Name	Order separately	Model	Descriptions
Built-in controller		QET	Used to monitor the signal processing of DK-QCE 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-QCE series light curtain.

4.1Wiring diagram of QET built-in controller

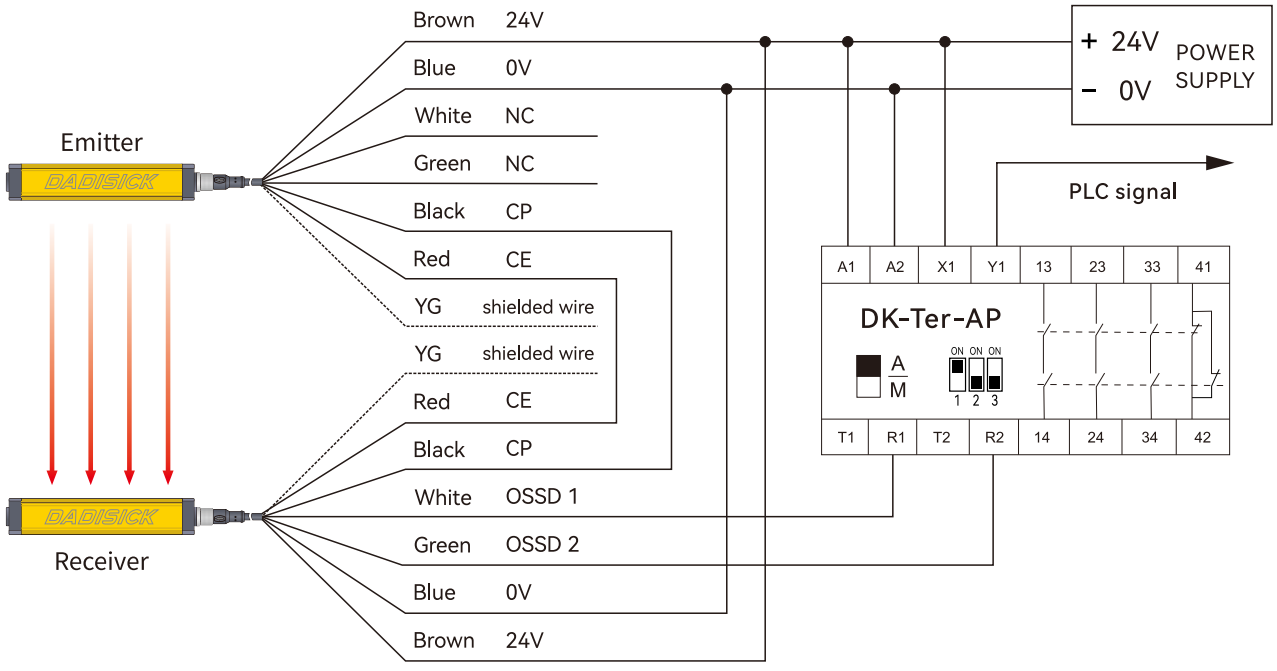


4.2 Wiring diagram of DK-QSRP safety relay

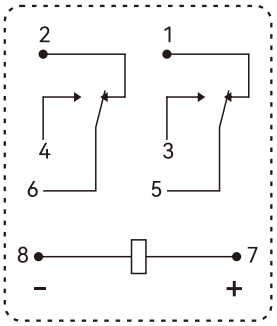


4.3 Wiring diagram of DK-Ter-AP safety relay

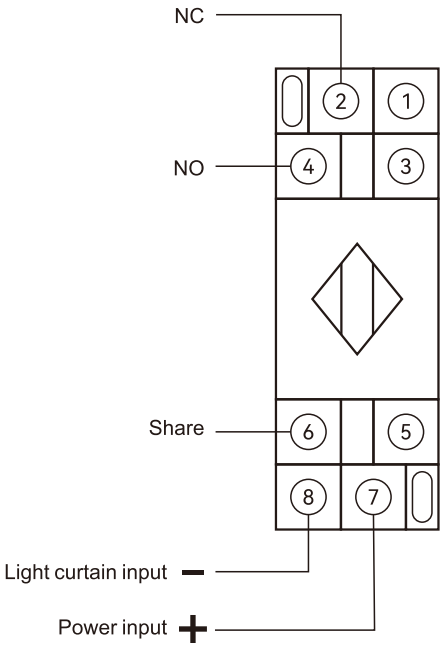
Dual channel light curtain PNP switch safety input, with automatic reset and PLC signal output.



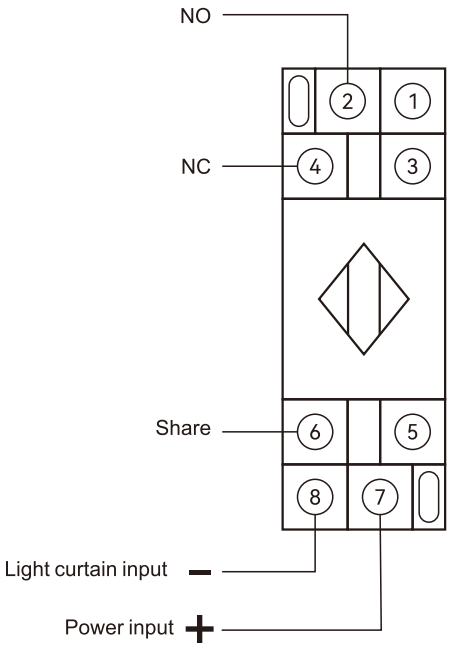
4.4 Wiring diagram of QET-1 light curtain relay



Circuit diagram



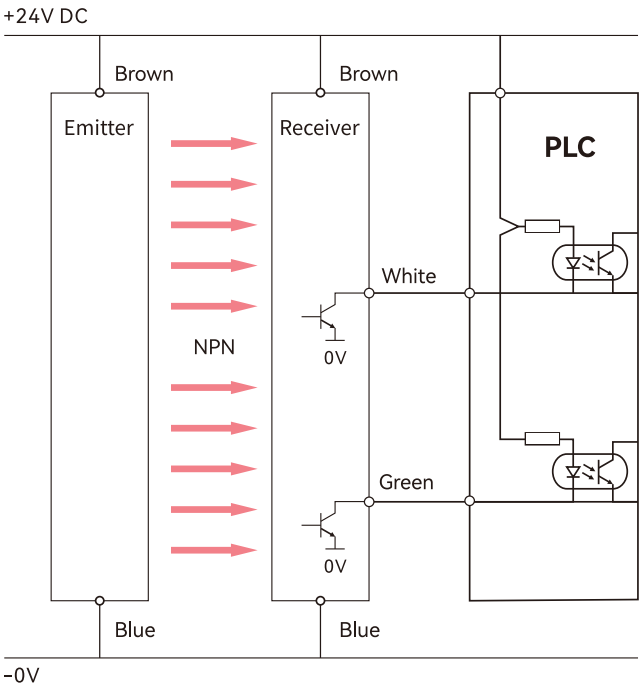
When not powered on



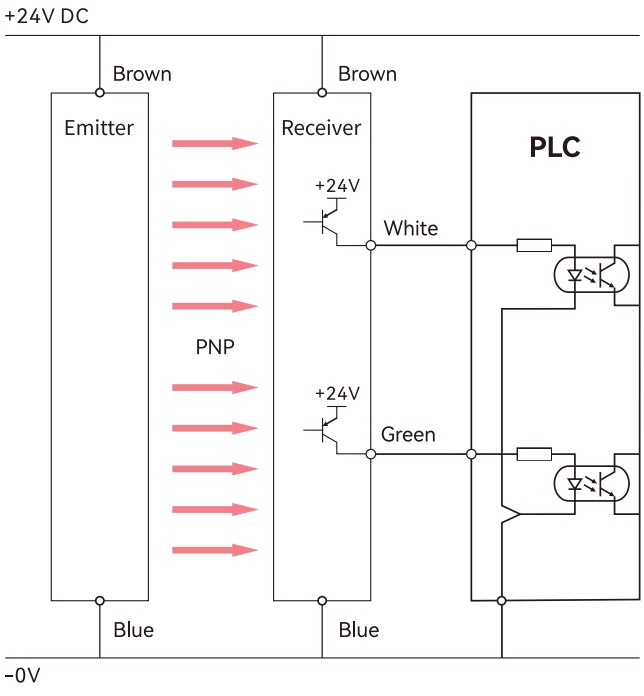
When powered on

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

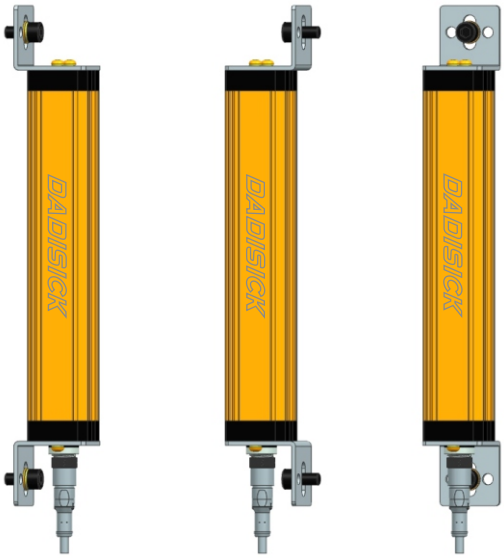
NPN wiring:



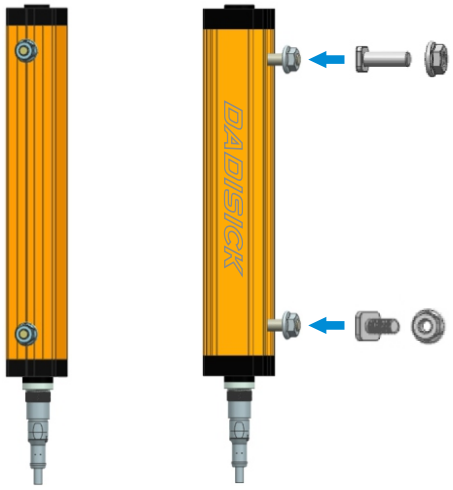
PNP wiring:



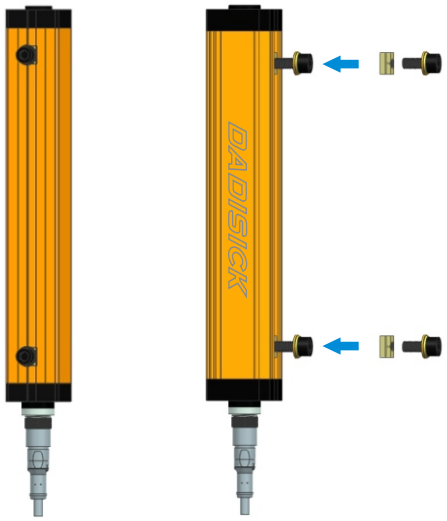
Accessories



1.Installation method of lower right angle bracket
(Original accessories)

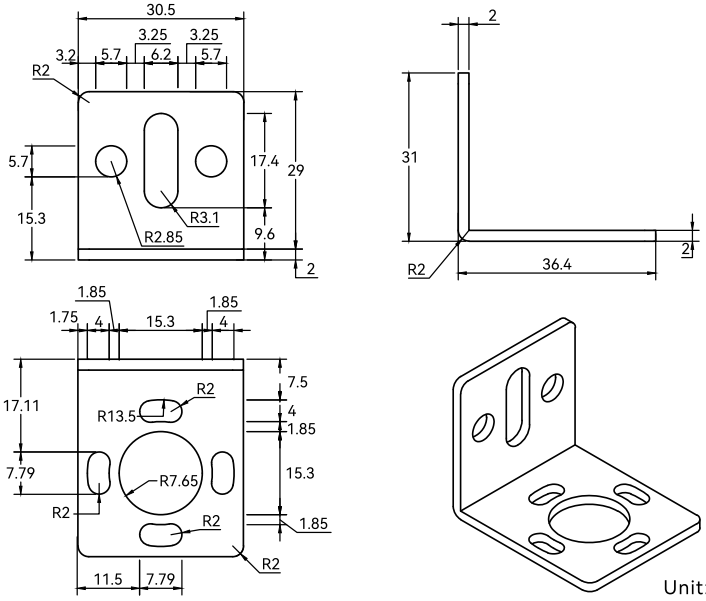


2. T-screw installation method
(Original accessories)



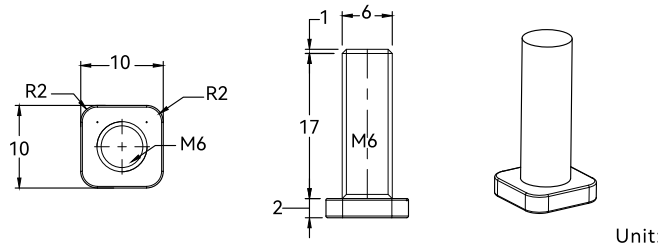
3. Installation method of convex nut
(Optional accessories)

DK-QCE series right angle frame	Model: QCA-04



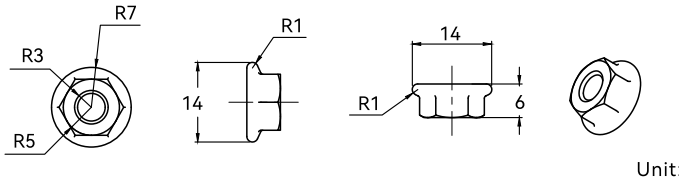
Unit:mm

T-screw	Model: QCA-02-1



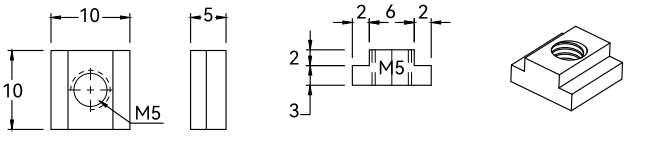
Unit:mm

Flange nut M6	Model: QCA-02-2



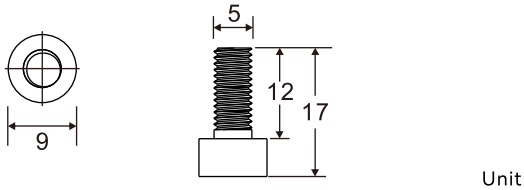
Unit:mm

Raised nut	Model: QCA-03-1

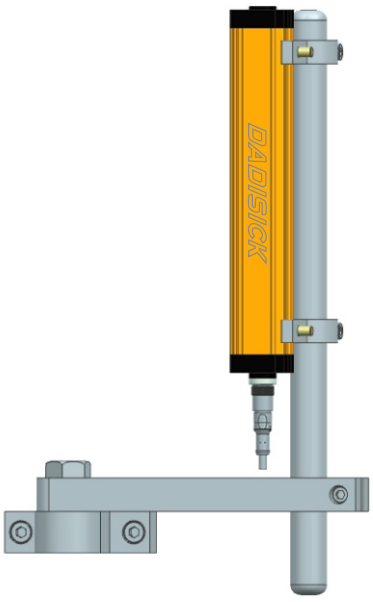


Unit:mm

M5 screw	Model: QCA-03-2



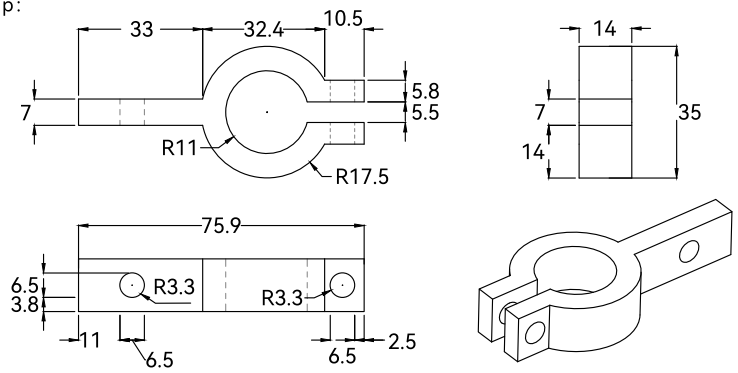
Unit:mm



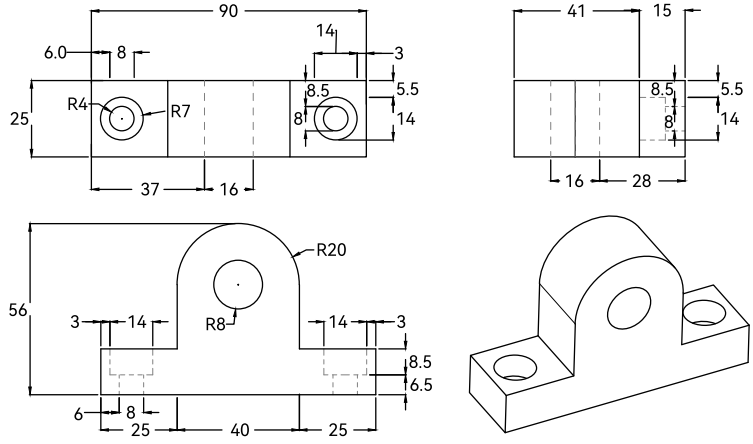
4.Stainless steel bracket installation
(Order separately)

Stainless steel bracket installation	Model: QCA-01

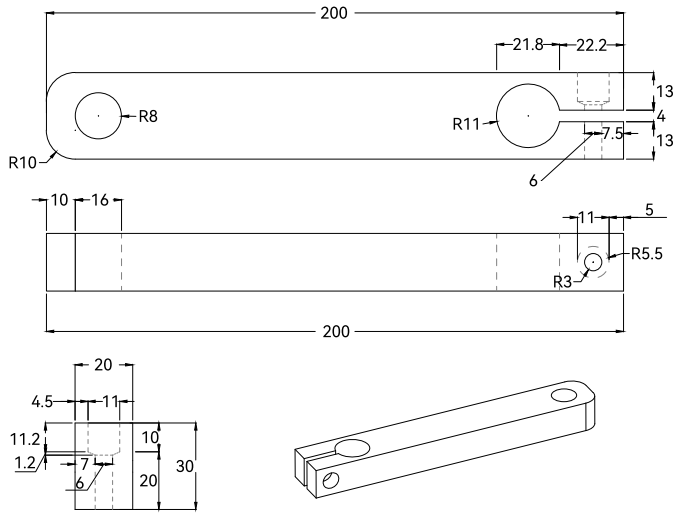
Clip:



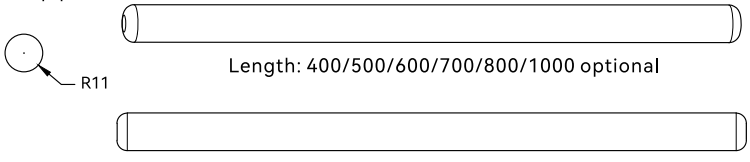
Aluminum round:



Aluminum arm:



Steel pipe:



Unit:mm