

TECHNICAL DATA SHEET

SAFETY LIGHT CURTAIN SENSOR Emitter and Receiver DK-QT series

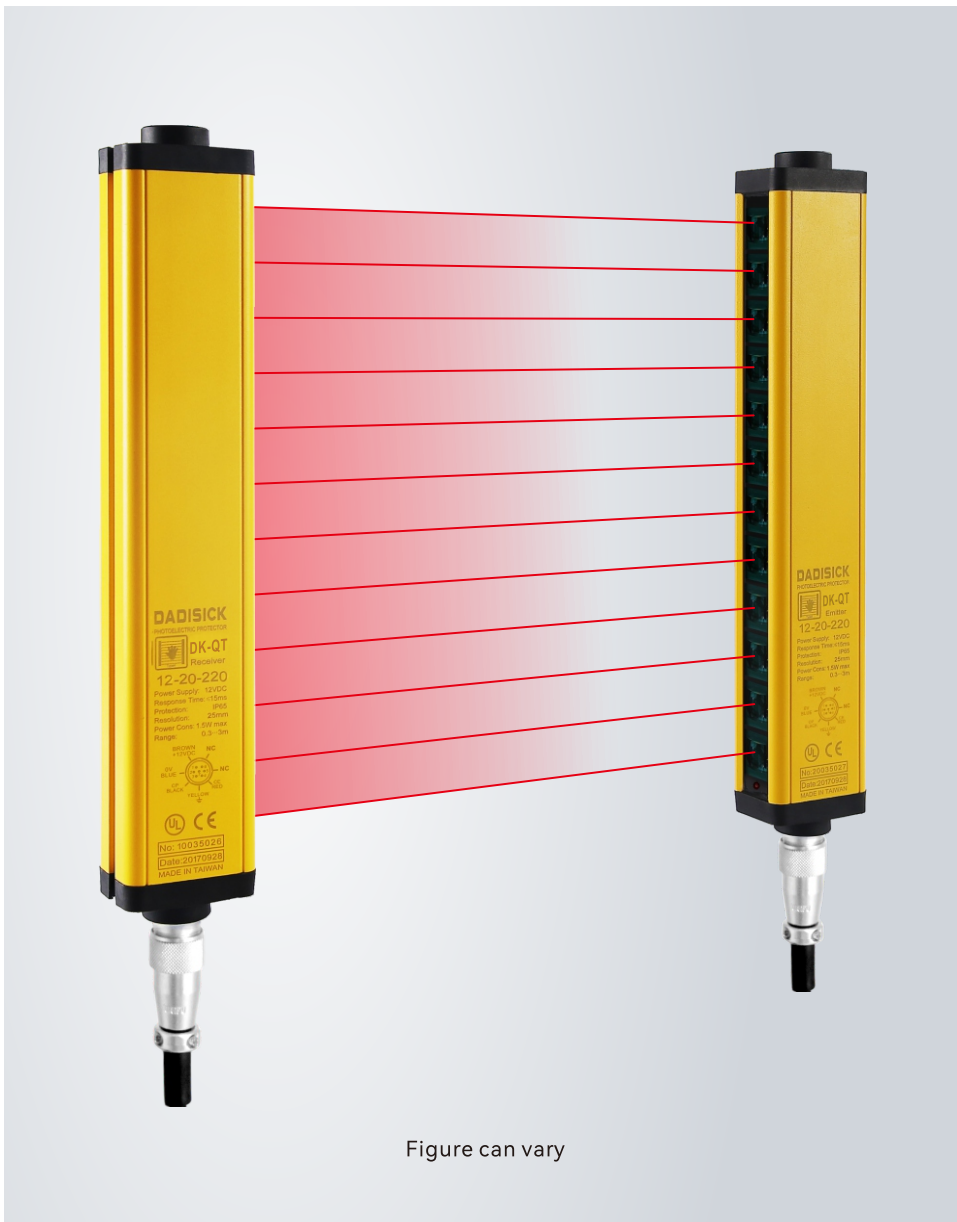


Figure can vary

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Solutions

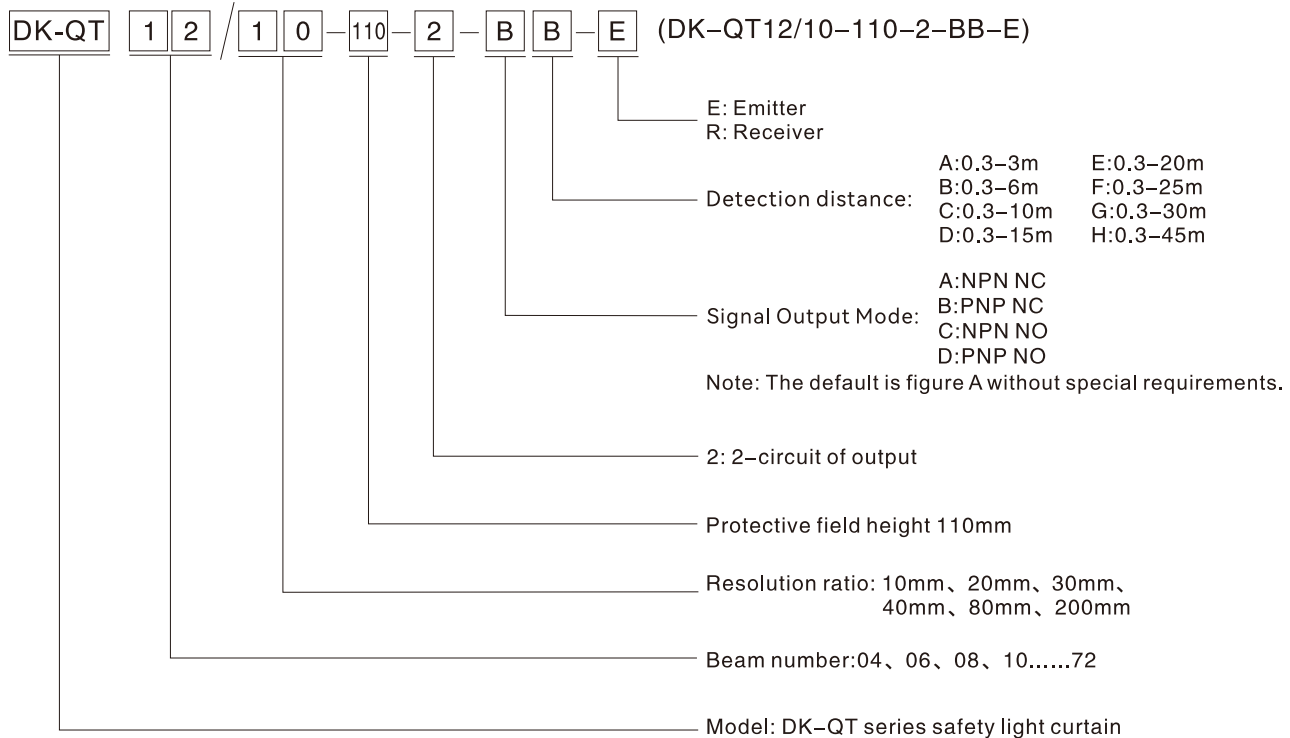


GB/T 19001-2016

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.

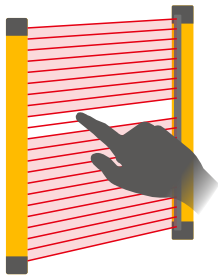
The specifications of DK-QT type safety light curtain are as follows:



Resolution ratio

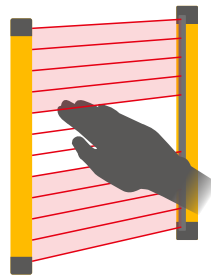
Depending on the usage environment and requirements, it is important to choose the appropriate beam spacing

Finger protection



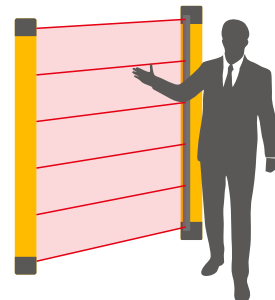
Detection capability
10mm
diameter

Hand protection



Detection capability
20/30/40mm
diameter

Arm/body protection



Detection capability
80/200mm
diameter

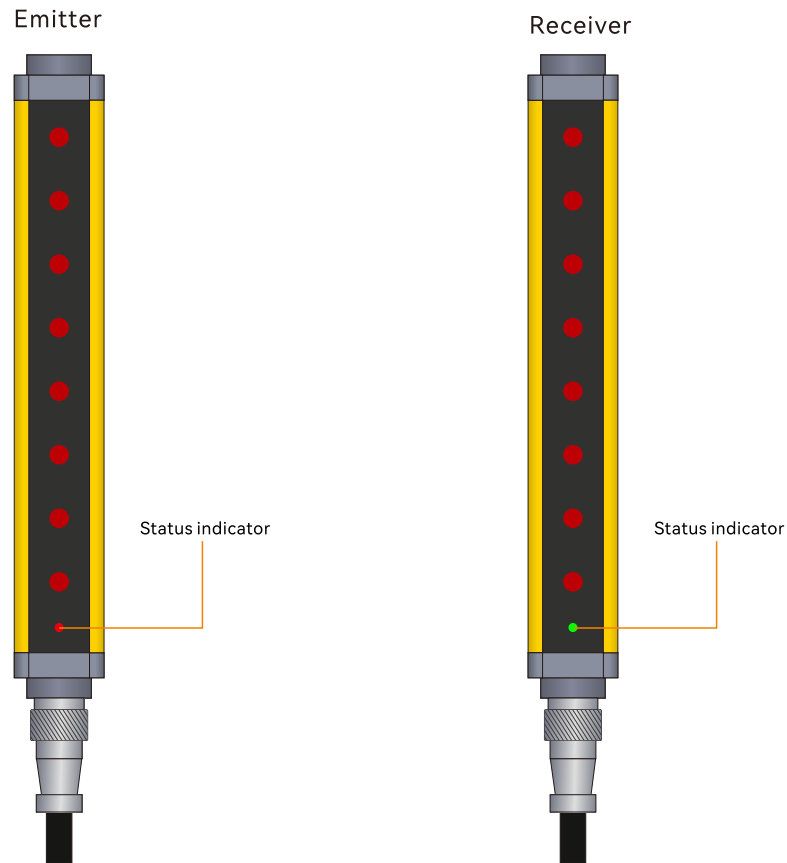
Technical data






Basic data of Receiver and Emitter

Standard packaging	
Product model	DK-QT 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	51mm*35mm*L, L is the length of emitter and receiver.
Detection distance	30-6000mm (Default 30-6000mm, customer service can be contacted to customize 30-45000mm.)
Response time	≤15ms
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

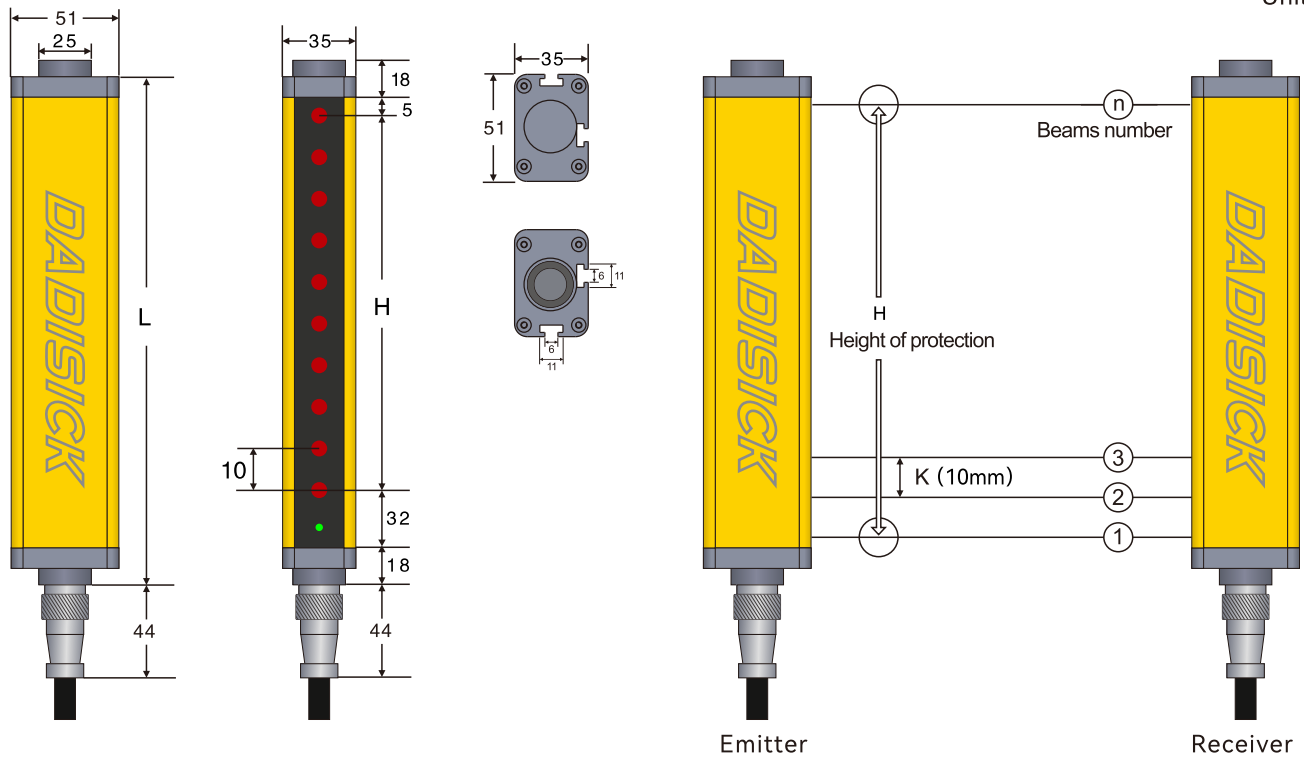


Normal operation of light curtain	LED Indicator status	Explain
Emitter	 Red, always on	Turns on the power
	 Receiver and emitter are red	Receiver and Emitter are not aligned
Receiver	 Green	All light paths are connected
	 Red	Light path shading
	 Lights flashing	Interference or overstep detection range

Dimensioned drawings

1. DK-QT 10mm series

Unit: mm



Remarks

L: Total length of light screen

H: Height of protected area

K: Resolution ratio

n: Beams number

$$L = 18 + 5 + H + 32 + 18$$

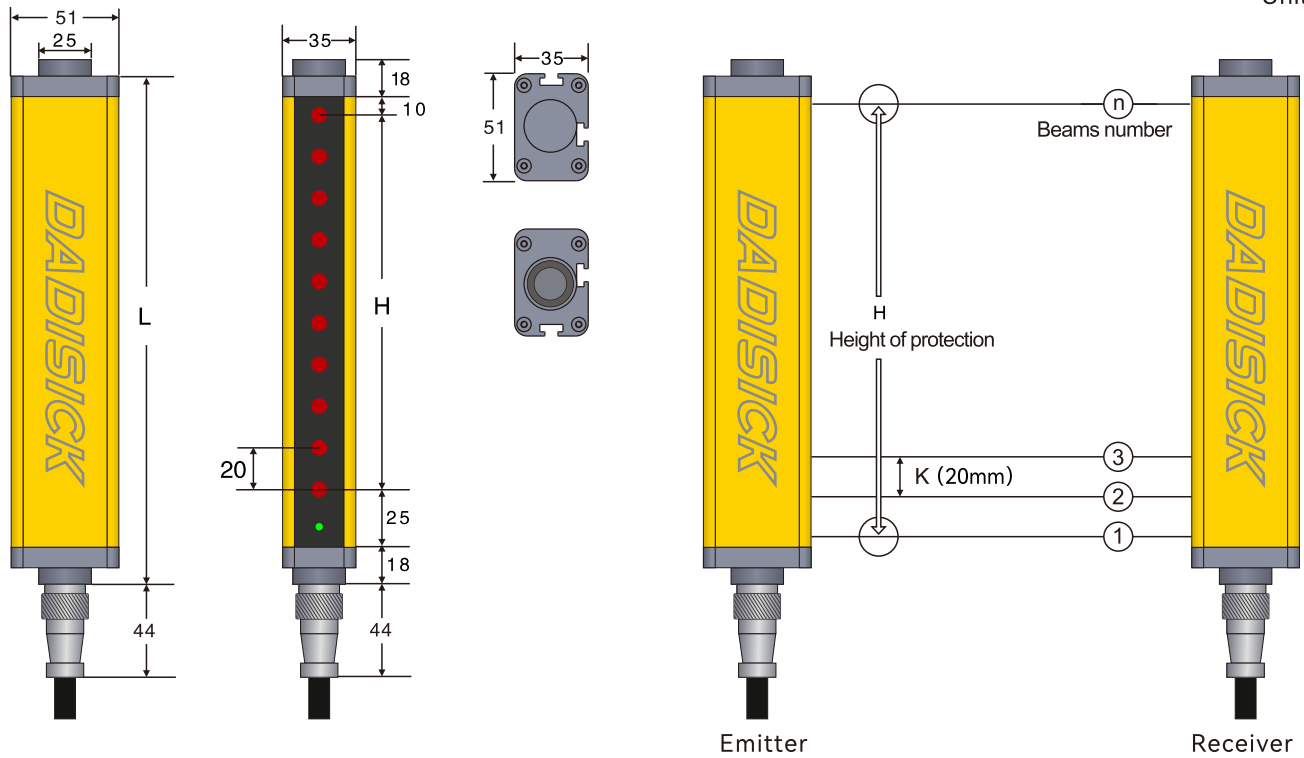
$$H = (n - 1) * 10$$

DK-QT 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	183	DK-QT12/10-110	2	PNP	0.3-6m
	14	130	203	DK-QT14/10-130	2	PNP	0.3-6m
	16	150	223	DK-QT16/10-150	2	PNP	0.3-6m
	18	170	243	DK-QT18/10-170	2	PNP	0.3-6m
	20	190	263	DK-QT20/10-190	2	PNP	0.3-6m
	22	210	283	DK-QT22/10-210	2	PNP	0.3-6m
	24	230	303	DK-QT24/10-230	2	PNP	0.3-6m
	26	250	323	DK-QT26/10-250	2	PNP	0.3-6m
	28	270	343	DK-QT28/10-270	2	PNP	0.3-6m
	30	290	363	DK-QT30/10-290	2	PNP	0.3-6m
	32	310	383	DK-QT32/10-310	2	PNP	0.3-6m
	34	330	403	DK-QT34/10-330	2	PNP	0.3-6m
	36	350	423	DK-QT36/10-350	2	PNP	0.3-6m
	38	370	443	DK-QT38/10-370	2	PNP	0.3-6m
	40	390	463	DK-QT40/10-390	2	PNP	0.3-6m
	42	410	483	DK-QT42/10-410	2	PNP	0.3-6m
	44	430	503	DK-QT44/10-430	2	PNP	0.3-6m
	46	450	523	DK-QT46/10-450	2	PNP	0.3-6m
	48	470	543	DK-QT48/10-470	2	PNP	0.3-6m
	50	490	563	DK-QT50/10-490	2	PNP	0.3-6m
52	510	583	DK-QT52/10-510	2	PNP	0.3-6m	
54	530	603	DK-QT54/10-530	2	PNP	0.3-6m	
56	550	623	DK-QT56/10-550	2	PNP	0.3-6m	
58	570	643	DK-QT58/10-570	2	PNP	0.3-6m	
60	590	663	DK-QT60/10-590	2	PNP	0.3-6m	
62	610	683	DK-QT62/10-610	2	PNP	0.3-6m	
64	630	703	DK-QT64/10-630	2	PNP	0.3-6m	
66	650	723	DK-QT66/10-650	2	PNP	0.3-6m	
68	670	743	DK-QT68/10-670	2	PNP	0.3-6m	
70	690	763	DK-QT70/10-690	2	PNP	0.3-6m	

2. DK-QT 20mm series

Unit: mm



Remarks

L: Total length of light screen

H: Height of protected area

K: Resolution ratio

n: Beams number

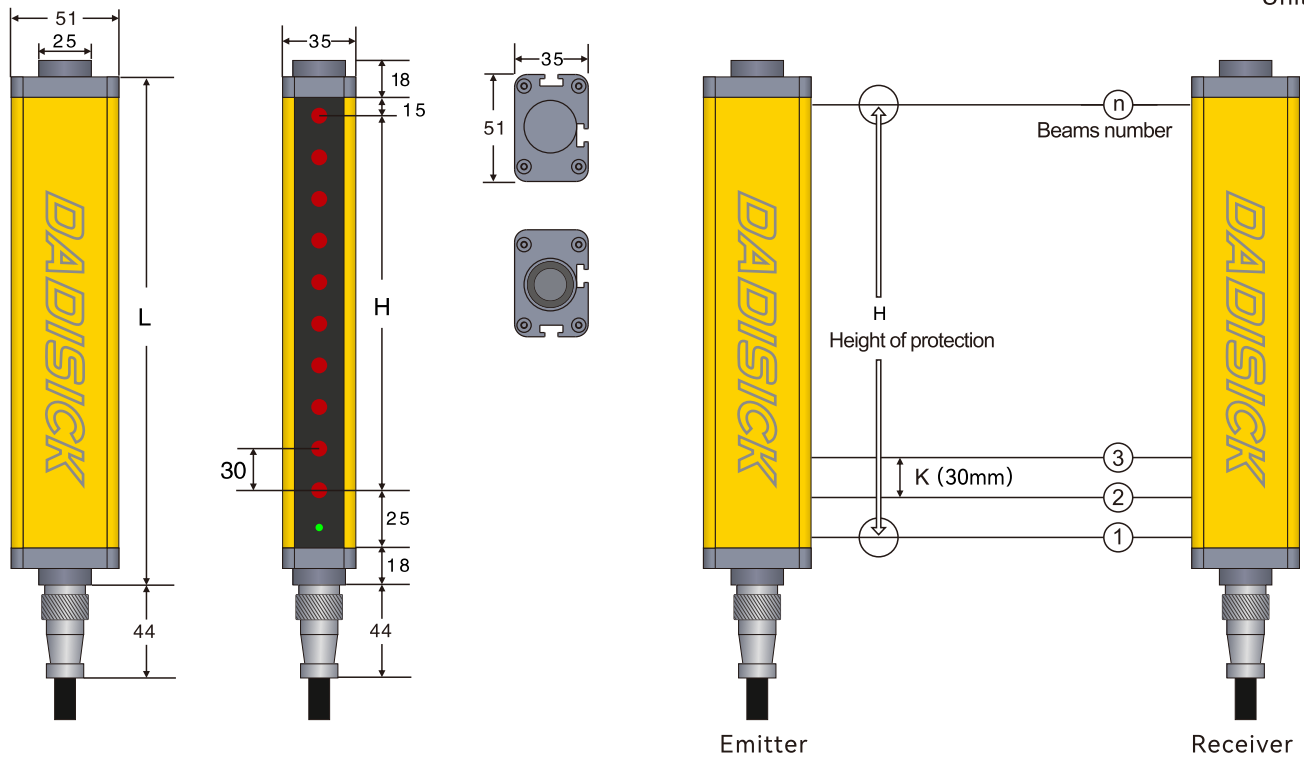
 $L = 18 + 10 + H + 25 + 18$ $H = (n - 1) * 20$

DK-QT 20mm specification list

Resolution	Light beam	Protection height (H)	Total height (L)	Product model	Signal output mode		Detection range
					Two outputs	PNP output	
20mm (K)	6	100	171	DK-QT06/20-100	2	PNP	0.3-6m
	8	140	211	DK-QT08/20-140	2	PNP	0.3-6m
	10	180	251	DK-QT10/20-180	2	PNP	0.3-6m
	12	220	291	DK-QT12/20-220	2	PNP	0.3-6m
	14	260	331	DK-QT14/20-260	2	PNP	0.3-6m
	16	300	371	DK-QT16/20-300	2	PNP	0.3-6m
	18	340	411	DK-QT18/20-340	2	PNP	0.3-6m
	20	380	451	DK-QT20/20-380	2	PNP	0.3-6m
	22	420	491	DK-QT22/20-420	2	PNP	0.3-6m
	24	460	531	DK-QT24/20-460	2	PNP	0.3-6m
	26	500	571	DK-QT26/20-500	2	PNP	0.3-6m
	28	540	611	DK-QT28/20-540	2	PNP	0.3-6m
	30	580	651	DK-QT30/20-580	2	PNP	0.3-6m
	32	620	691	DK-QT32/20-620	2	PNP	0.3-6m
	34	660	731	DK-QT34/20-660	2	PNP	0.3-6m
	36	700	771	DK-QT36/20-700	2	PNP	0.3-6m
	38	740	811	DK-QT38/20-740	2	PNP	0.3-6m
	40	780	851	DK-QT40/20-780	2	PNP	0.3-6m
	42	820	891	DK-QT42/20-820	2	PNP	0.3-6m
	44	860	931	DK-QT44/20-860	2	PNP	0.3-6m
	46	900	971	DK-QT46/20-900	2	PNP	0.3-6m
	48	940	1011	DK-QT48/20-940	2	PNP	0.3-6m
	50	980	1051	DK-QT50/20-980	2	PNP	0.3-6m
	52	1020	1091	DK-QT52/20-1020	2	PNP	0.3-6m
	54	1060	1131	DK-QT54/20-1060	2	PNP	0.3-6m
	56	1100	1171	DK-QT56/20-1100	2	PNP	0.3-6m
	58	1140	1211	DK-QT58/20-1140	2	PNP	0.3-6m
	60	1180	1251	DK-QT60/20-1180	2	PNP	0.3-6m
62	1220	1291	DK-QT62/20-1220	2	PNP	0.3-6m	
64	1260	1331	DK-QT64/20-1260	2	PNP	0.3-6m	
66	1300	1371	DK-QT66/20-1300	2	PNP	0.3-6m	
68	1340	1411	DK-QT68/20-1340	2	PNP	0.3-6m	
70	1380	1451	DK-QT70/20-1380	2	PNP	0.3-6m	
72	1420	1491	DK-QT72/20-1420	2	PNP	0.3-6m	

3. DK-QT 30mm series

Unit: mm



Remarks

L: Total length of light screen

H: Height of protected area

K: Resolution ratio

n: Beams number

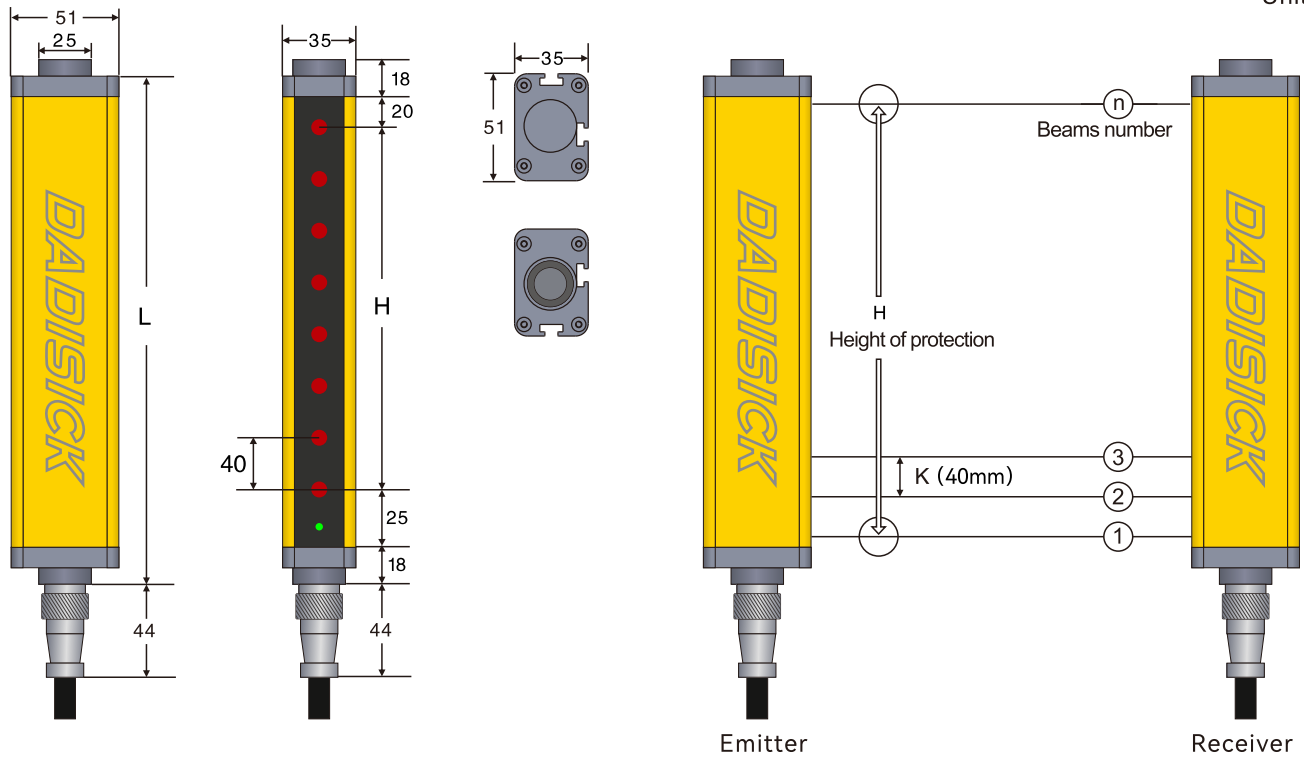
 $L = 18 + 15 + H + 25 + 18$ $H = (n - 1) * 30$

DK-QT 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	166	DK-QT04/30-90	2	PNP	0.3-6m
	6	150	226	DK-QT06/30-150	2	PNP	0.3-6m
	8	210	286	DK-QT8/30-210	2	PNP	0.3-6m
	10	270	346	DK-QT10/30-270	2	PNP	0.3-6m
	12	330	406	DK-QT12/30-330	2	PNP	0.3-6m
	14	390	466	DK-QT14/30-390	2	PNP	0.3-6m
	16	450	526	DK-QT16/30-450	2	PNP	0.3-6m
	18	510	586	DK-QT18/30-510	2	PNP	0.3-6m
	20	570	646	DK-QT20/30-570	2	PNP	0.3-6m
	22	630	706	DK-QT22/30-630	2	PNP	0.3-6m
	24	690	766	DK-QT24/30-690	2	PNP	0.3-6m
	26	750	826	DK-QT26/30-750	2	PNP	0.3-6m
	28	810	886	DK-QT28/30-810	2	PNP	0.3-6m
	30	870	946	DK-QT30/30-870	2	PNP	0.3-6m
	32	930	1006	DK-QT32/30-930	2	PNP	0.3-6m
	34	990	1066	DK-QT34/30-990	2	PNP	0.3-6m
	36	1050	1126	DK-QT36/30-1050	2	PNP	0.3-6m
	38	1110	1186	DK-QT38/30-1110	2	PNP	0.3-6m
	40	1170	1246	DK-QT40/30-1170	2	PNP	0.3-6m
	42	1230	1306	DK-QT42/30-1230	2	PNP	0.3-6m
	44	1290	1366	DK-QT44/30-1290	2	PNP	0.3-6m
	46	1350	1426	DK-QT46/30-1350	2	PNP	0.3-6m
	48	1410	1486	DK-QT48/30-1410	2	PNP	0.3-6m
	50	1470	1546	DK-QT50/30-1470	2	PNP	0.3-6m
52	1530	1606	DK-QT52/30-1530	2	PNP	0.3-6m	
54	1590	1666	DK-QT54/30-1590	2	PNP	0.3-6m	
56	1650	1726	DK-QT56/30-1650	2	PNP	0.3-6m	
58	1710	1786	DK-QT58/30-1710	2	PNP	0.3-6m	
60	1770	1846	DK-QT60/30-1770	2	PNP	0.3-6m	
62	1830	1906	DK-QT62/30-1830	2	PNP	0.3-6m	
64	1890	1966	DK-QT64/30-1890	2	PNP	0.3-6m	
66	1950	2026	DK-QT66/30-1950	2	PNP	0.3-6m	
68	2010	2086	DK-QT68/30-2010	2	PNP	0.3-6m	
70	2070	2146	DK-QT70/30-2070	2	PNP	0.3-6m	
72	2130	2206	DK-QT72/30-2130	2	PNP	0.3-6m	

4. DK-QT 40mm series

Unit: mm



Remarks

L: Total length of light screen

H: Height of protected area

K: Resolution ratio

n: Beams number

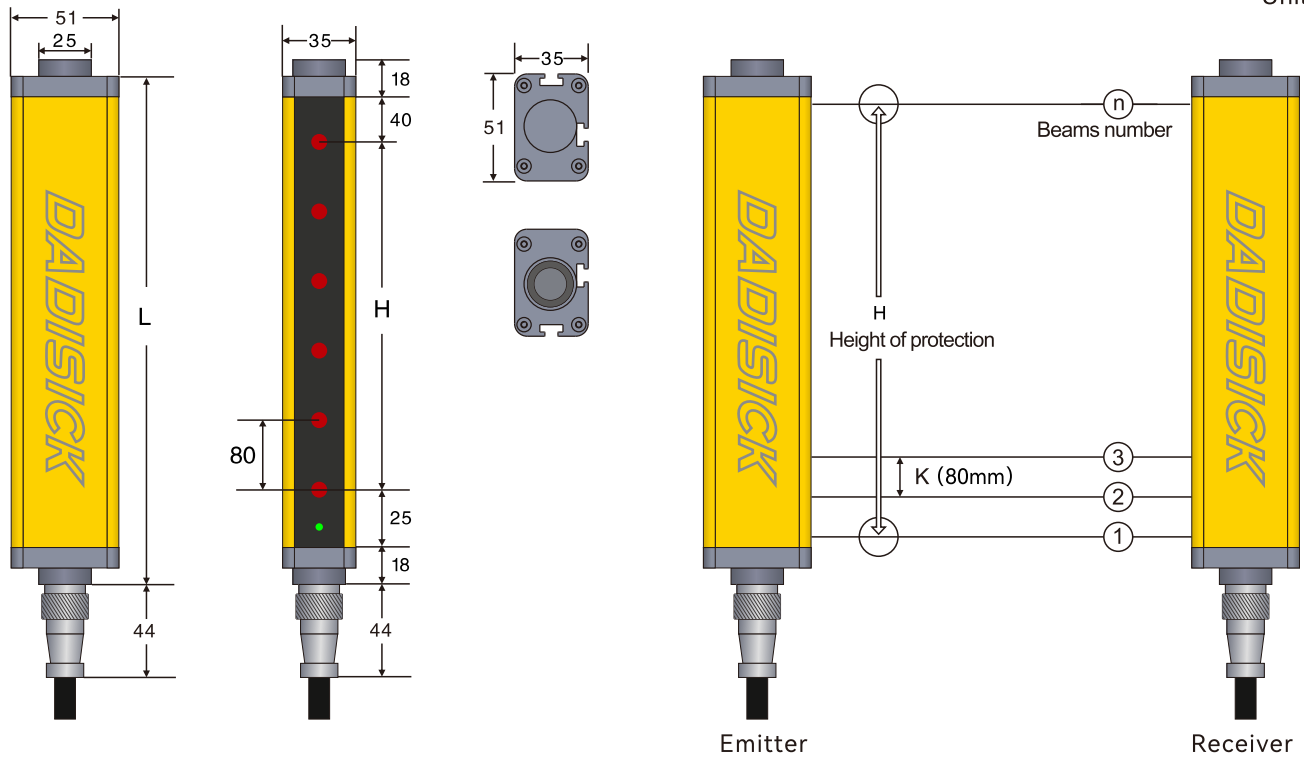
 $L = 18 + 20 + H + 25 + 18$ $H = (n - 1) * 40$

DK-QT 40mm specification list

Resolution	Light beam	Protection height (H)	Total height (L)	Product model	Signal output mode		Detection range
					Two outputs	PNP output	
40mm (K)	4	120	201	DK-QT04/40-120	2	PNP	0.3-6m
	6	200	281	DK-QT06/40-200	2	PNP	0.3-6m
	8	280	361	DK-QT08/40-280	2	PNP	0.3-6m
	10	360	441	DK-QT10/40-360	2	PNP	0.3-6m
	12	440	521	DK-QT12/40-440	2	PNP	0.3-6m
	14	520	601	DK-QT14/40-520	2	PNP	0.3-6m
	16	600	681	DK-QT16/40-600	2	PNP	0.3-6m
	18	680	761	DK-QT18/40-680	2	PNP	0.3-6m
	20	760	841	DK-QT20/40-760	2	PNP	0.3-6m
	22	840	921	DK-QT22/40-840	2	PNP	0.3-6m
	24	920	1001	DK-QT24/40-920	2	PNP	0.3-6m
	26	1000	1081	DK-QT26/40-1000	2	PNP	0.3-6m
	28	1080	1161	DK-QT28/40-1080	2	PNP	0.3-6m
	30	1160	1241	DK-QT30/40-1160	2	PNP	0.3-6m
	32	1240	1321	DK-QT32/40-1240	2	PNP	0.3-6m
	34	1320	1401	DK-QT34/40-1320	2	PNP	0.3-6m
	36	1400	1481	DK-QT36/40-1400	2	PNP	0.3-6m
	38	1480	1561	DK-QT38/40-1480	2	PNP	0.3-6m
	40	1560	1641	DK-QT40/40-1560	2	PNP	0.3-6m
	42	1640	1721	DK-QT42/40-1640	2	PNP	0.3-6m
	44	1720	1801	DK-QT44/40-1720	2	PNP	0.3-6m
	46	1800	1881	DK-QT46/40-1800	2	PNP	0.3-6m
	48	1880	1961	DK-QT48/40-1880	2	PNP	0.3-6m
	50	1960	2041	DK-QT50/40-1960	2	PNP	0.3-6m
	52	2040	2121	DK-QT52/40-2040	2	PNP	0.3-6m
	54	2120	2201	DK-QT54/40-2120	2	PNP	0.3-6m
	56	2200	2281	DK-QT56/40-2200	2	PNP	0.3-6m
	58	2280	2361	DK-QT58/40-2280	2	PNP	0.3-6m
60	2360	2441	DK-QT60/40-2360	2	PNP	0.3-6m	
62	2440	2521	DK-QT62/40-2440	2	PNP	0.3-6m	
64	2520	2601	DK-QT64/40-2520	2	PNP	0.3-6m	
66	2600	2681	DK-QT66/40-2600	2	PNP	0.3-6m	
68	2680	2761	DK-QT68/40-2680	2	PNP	0.3-6m	
70	2760	2841	DK-QT70/40-2760	2	PNP	0.3-6m	
72	2840	2921	DK-QT72/40-2840	2	PNP	0.3-6m	

5. DK-QT 80mm series

Unit: mm



Remarks

L: Total length of light screen

H: Height of protected area

K: Resolution ratio

n: Beams number

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

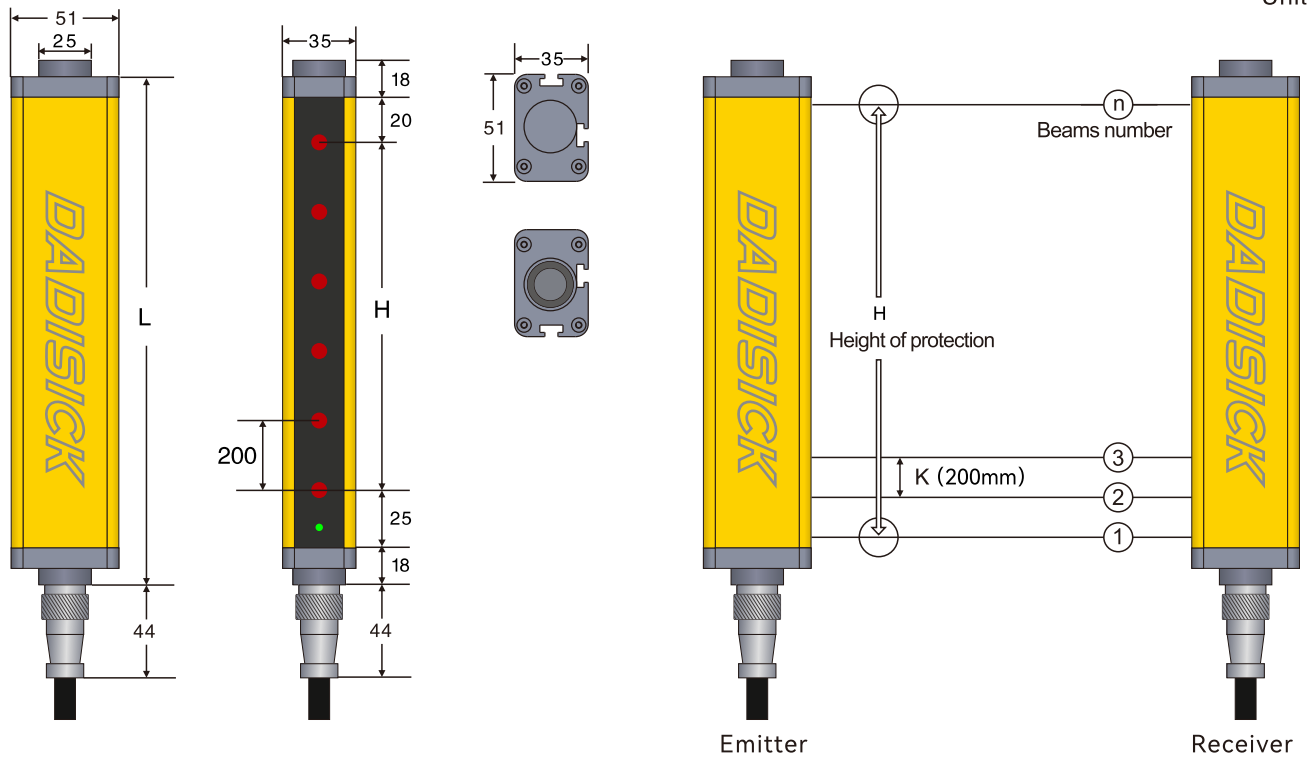
$$H = (n - 1) * 80$$

DK-QT 80mm specification list

Resolution	Light beam	Protection height (H)	Total height (L)	Product model	Signal output mode		Detection range
					Two outputs	PNP output	
80mm (K)	4	240	341	DK-QT04/80-240	2	PNP	0.3-6m
	6	400	501	DK-QT06/80-400	2	PNP	0.3-6m
	8	560	661	DK-QT08/80-560	2	PNP	0.3-6m
	10	720	821	DK-QT10/80-720	2	PNP	0.3-6m
	12	880	981	DK-QT12/80-880	2	PNP	0.3-6m
	14	1040	1141	DK-QT14/80-1040	2	PNP	0.3-6m
	16	1200	1301	DK-QT16/80-1200	2	PNP	0.3-6m
	18	1360	1461	DK-QT18/80-1360	2	PNP	0.3-6m
	20	1520	1621	DK-QT20/80-1520	2	PNP	0.3-6m
	22	1680	1781	DK-QT22/80-1680	2	PNP	0.3-6m
	24	1840	1941	DK-QT24/80-1840	2	PNP	0.3-6m
	26	2000	2101	DK-QT26/80-2000	2	PNP	0.3-6m
	28	2160	2261	DK-QT28/80-2160	2	PNP	0.3-6m
	30	2320	2421	DK-QT30/80-2320	2	PNP	0.3-6m
	32	2480	2581	DK-QT32/80-2480	2	PNP	0.3-6m
	34	2640	2741	DK-QT34/80-2640	2	PNP	0.3-6m
	36	2800	2901	DK-QT36/80-2800	2	PNP	0.3-6m
38	2960	3061	DK-QT38/80-2960	2	PNP	0.3-6m	
40	3120	3221	DK-QT40/80-3120	2	PNP	0.3-6m	

6. DK-QT 200mm series

Unit: mm



Remarks

L: Total length of light screen

H: Height of protected area

K: Resolution ratio

n: Beams number

$$L = 18 + 20 + H + 25 + 18$$

$$H = (n - 1) * 200$$

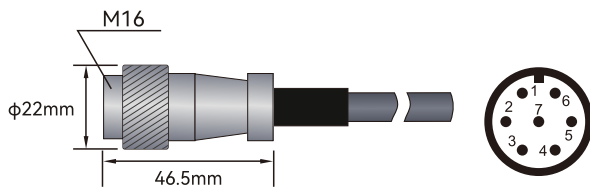
DK-QT 200mm specification list

Resolution	Light beam	Protection height (H)	Total height (L)	Product model	Signal output mode		Detection range
					Two outputs	PNP output	
200mm (K)	4	600	681	DK-QT04/200-600	2	PNP	0.3-6m
	6	1000	1081	DK-QT06/200-1000	2	PNP	0.3-6m
	8	1400	1481	DK-QT08/200-1400	2	PNP	0.3-6m
	10	1800	1881	DK-QT10/200-1800	2	PNP	0.3-6m
	12	2200	2281	DK-QT12/200-2200	2	PNP	0.3-6m
	14	2600	2681	DK-QT14/200-2600	2	PNP	0.3-6m
	16	3000	3081	DK-QT16/200-3000	2	PNP	0.3-6m
	18	3400	3481	DK-QT18/200-3400	2	PNP	0.3-6m

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:



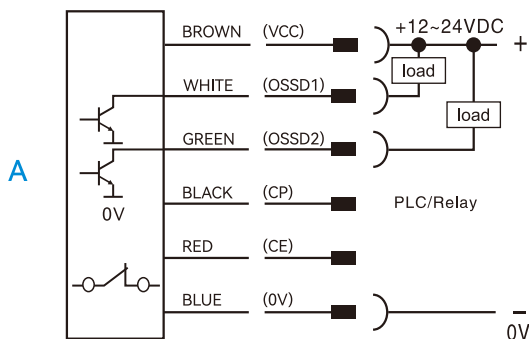
7-pin M16 cable connector straight
3m waterproof cable

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

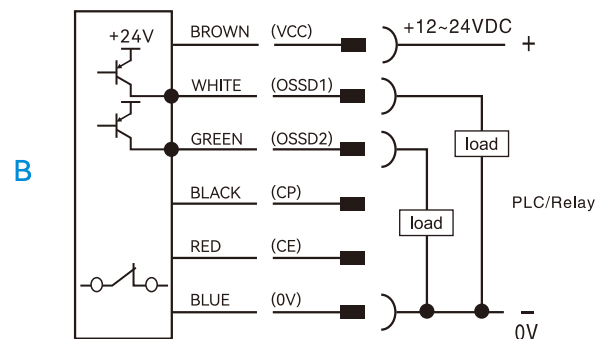
Receiver Wiring diagram		
Pin number	Line color	Name
1	BROWN	24V DC
2	BLUE	0V
3	BLACK	CP
4	RED	CE
5	WHITE	OSSD1
6	GREEN	OSSD2
7	YELLOW	Ground wire

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

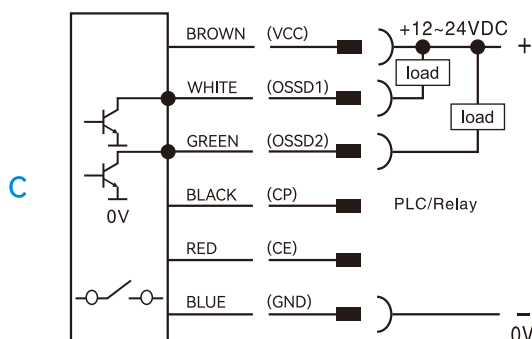
NPN NC



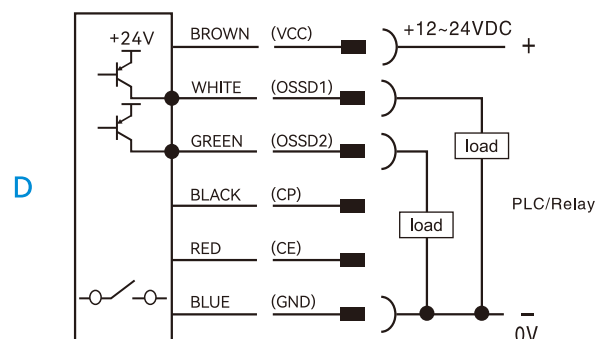
PNP NC



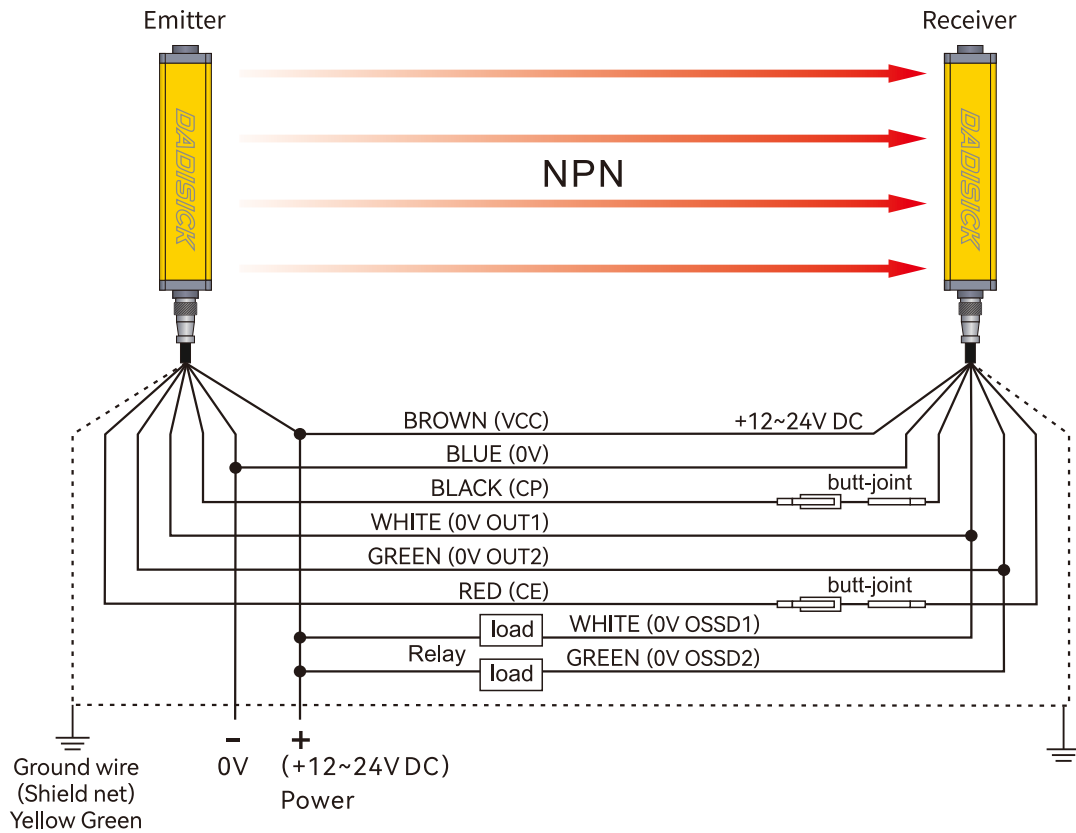
NPN NO



PNP NO

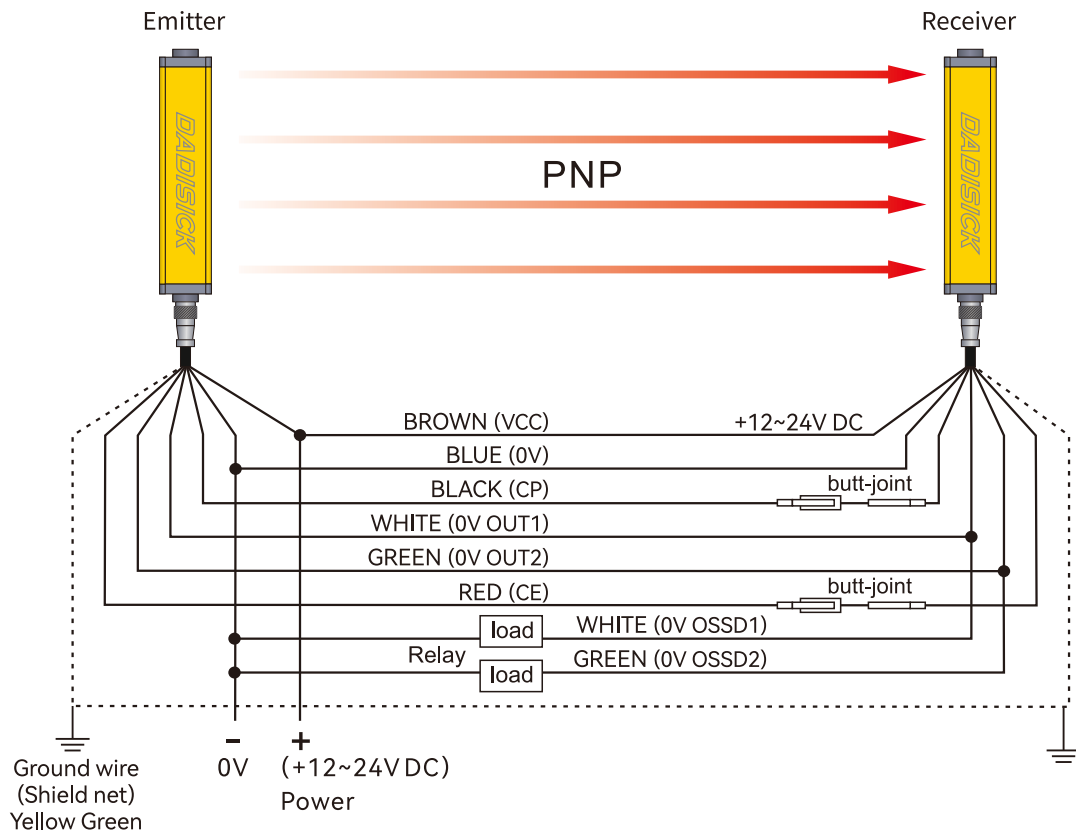


2. NPN output wiring diagram







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

3. PNP output wiring diagram

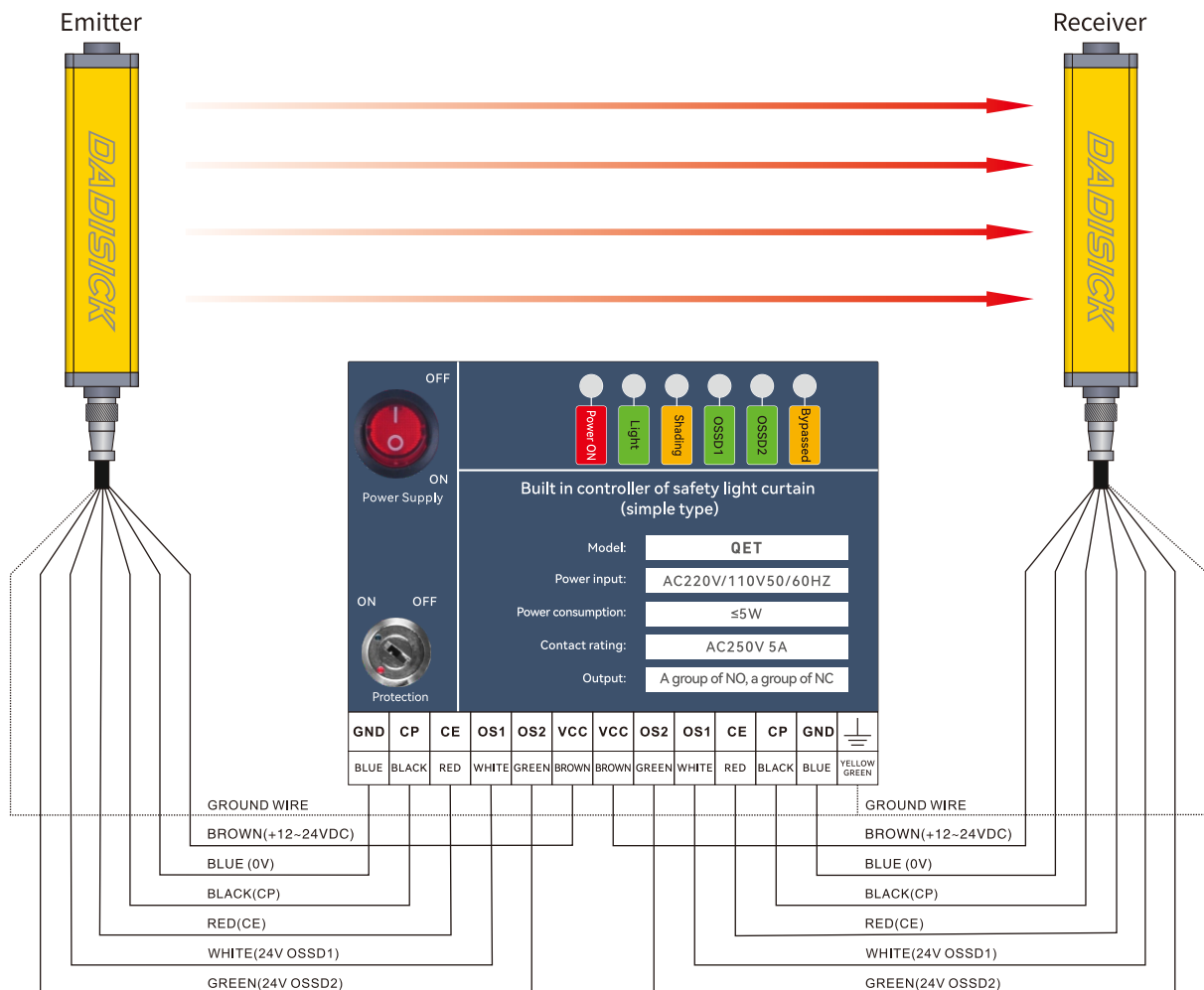


This figure is an example of PNP double output 7-pin wiring.

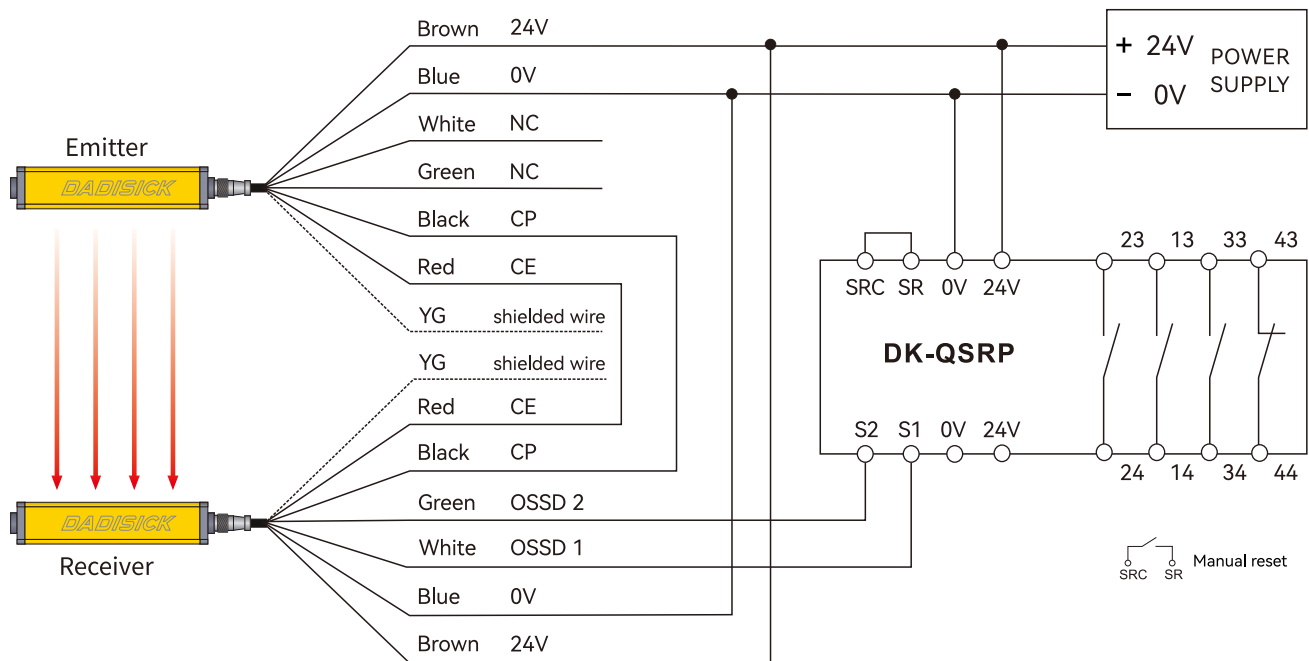
4. Selection of safety light curtain controller

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

4.1 Wiring diagram of QET built-in controller

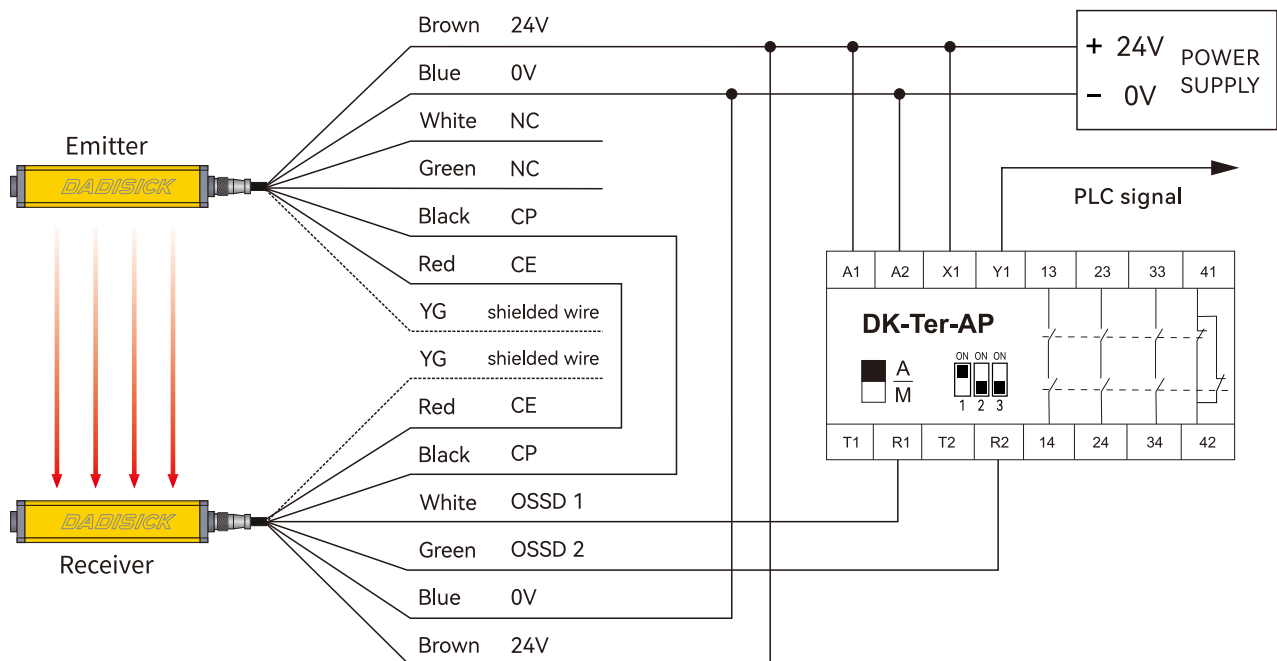


4.2 Wiring diagram of DK-QSRP safety relay

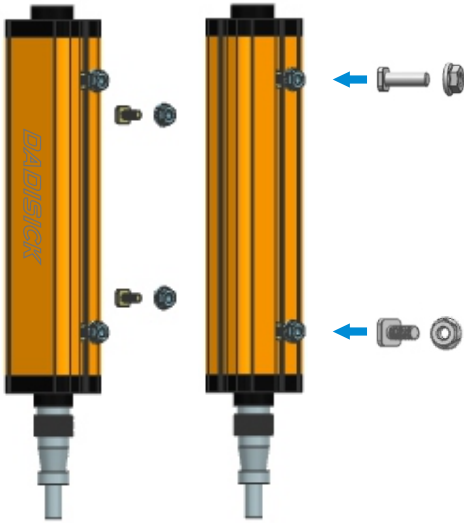


4.3 Wiring diagram of DK-Ter-AP safety relay

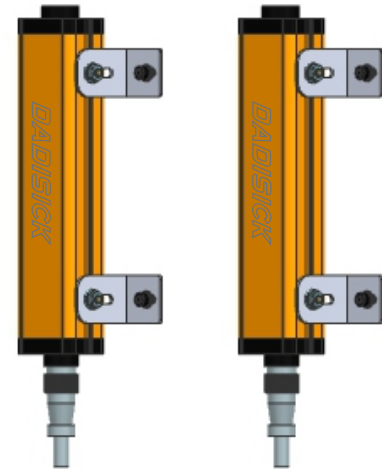
Dual channel light curtain PNP switch safety input, with automatic reset and PLC signal output.



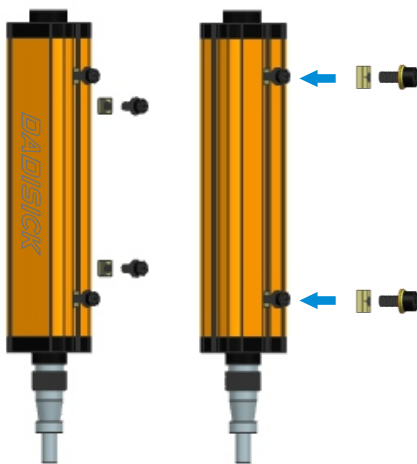
Accessories



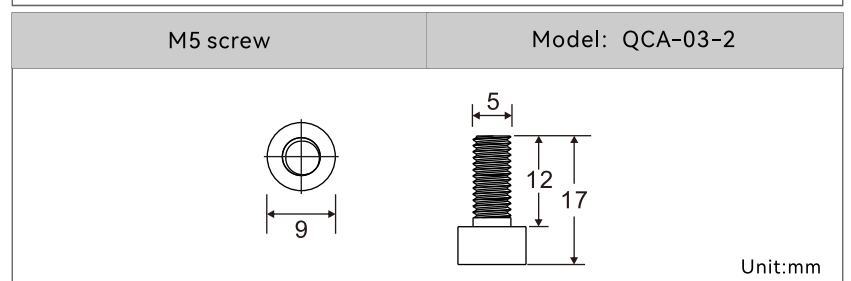
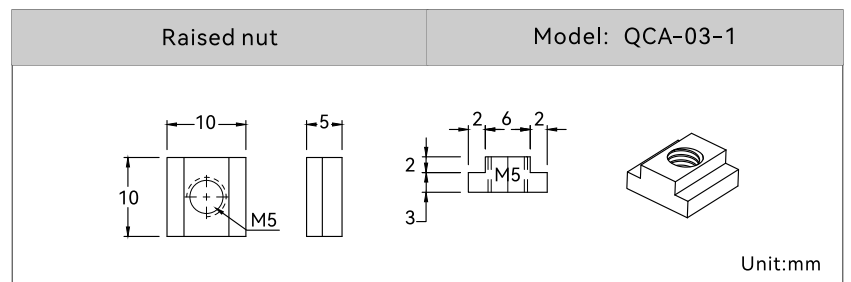
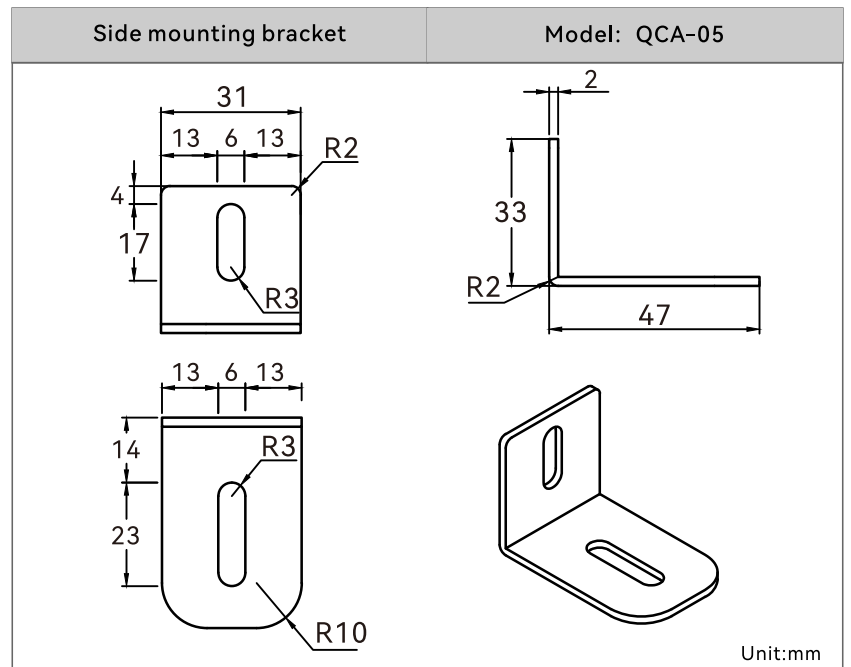
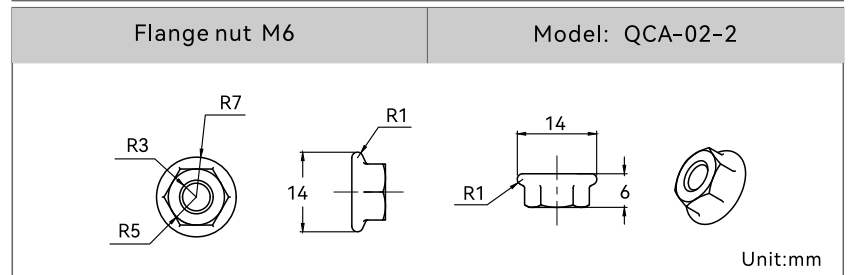
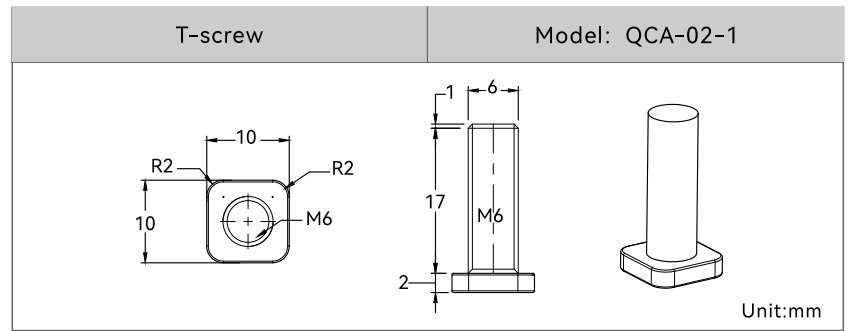
1. Installation method of T-shaped screws on the back
(Original accessories)

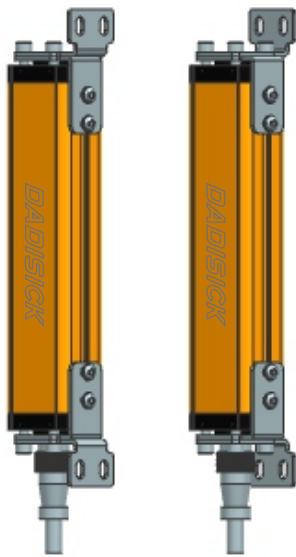


2. Installation method of side right angle bracket
(Original accessories)

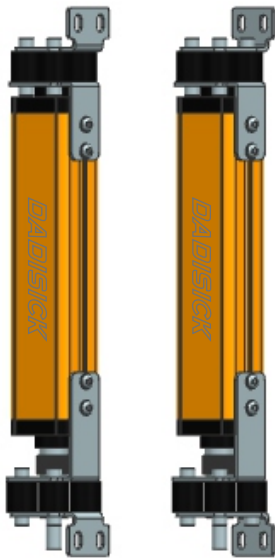


3. Installation method of convex nut
(Optional accessories)





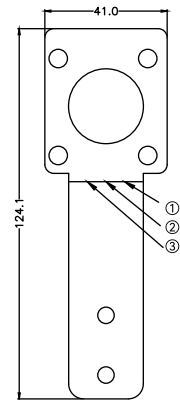
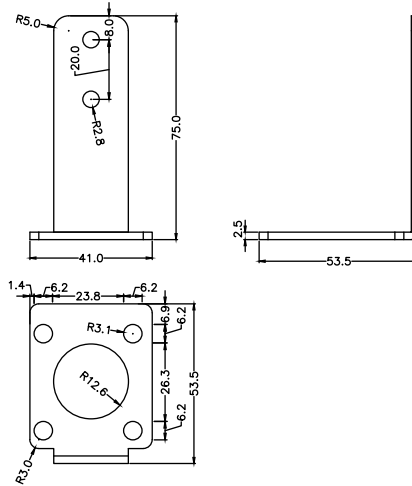
4. Installation method of right angle brackets at both ends
(Order separately)



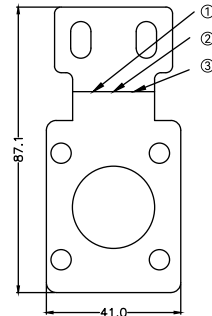
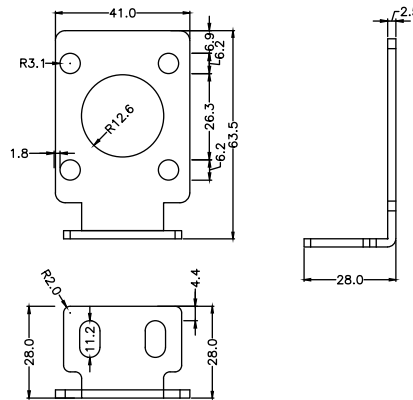
5. Shockproof installation method of right angle brackets at both ends
(Order separately)

Right angle brackets at both ends

Model: QA-02



- ① Bending direction: downward
- ② Bending angle: 90°
- ③ Bending radius: 0.02

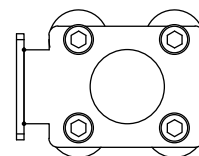
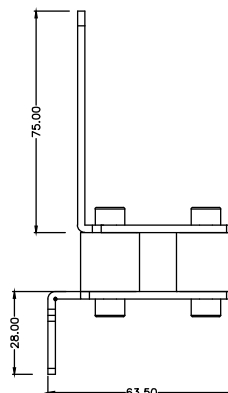
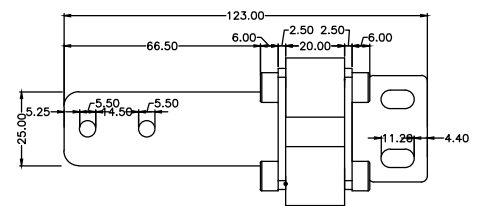
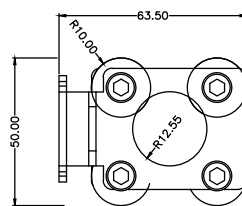


- ① Bending direction: downward
- ② Bending angle: 90°
- ③ Bending radius: 0.02

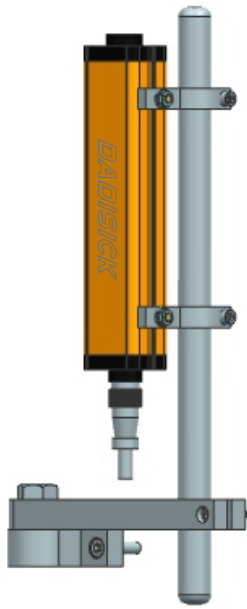
Unit:mm

Shockproof right angle brackets

Model: QA-01



Unit:mm

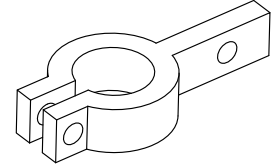
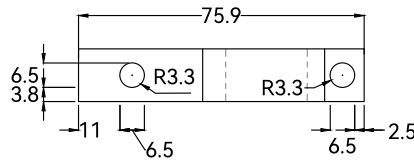
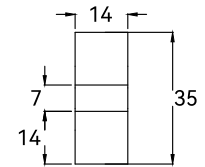
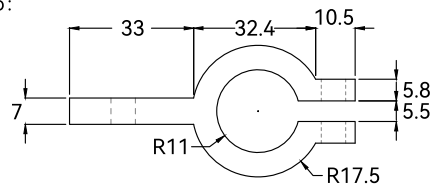


6. Stainless steel bracket installation
(Order separately)

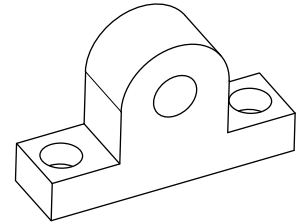
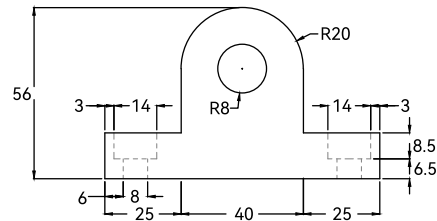
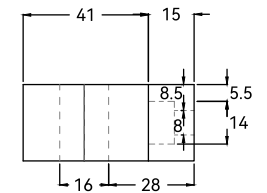
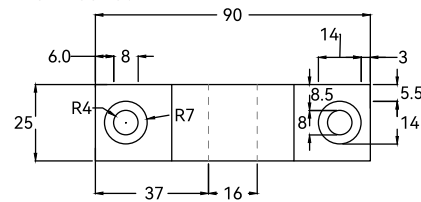
Stainless steel bracket installation

Model: QCA-01

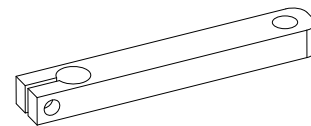
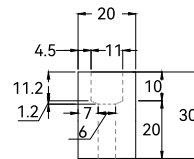
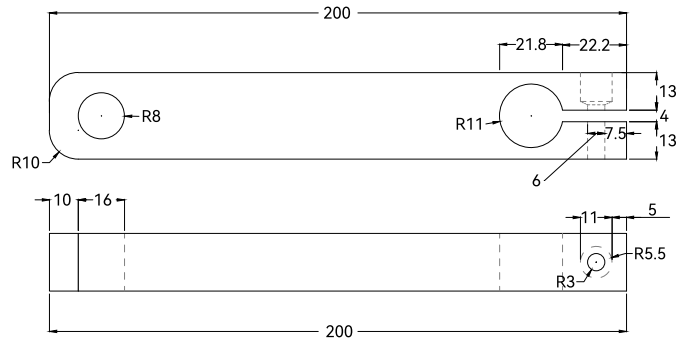
Clip:



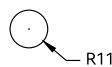
Aluminum round:



Aluminum arm:



Steel pipe:



Length: 400/500/600/700/800/1000 optional



Unit:mm