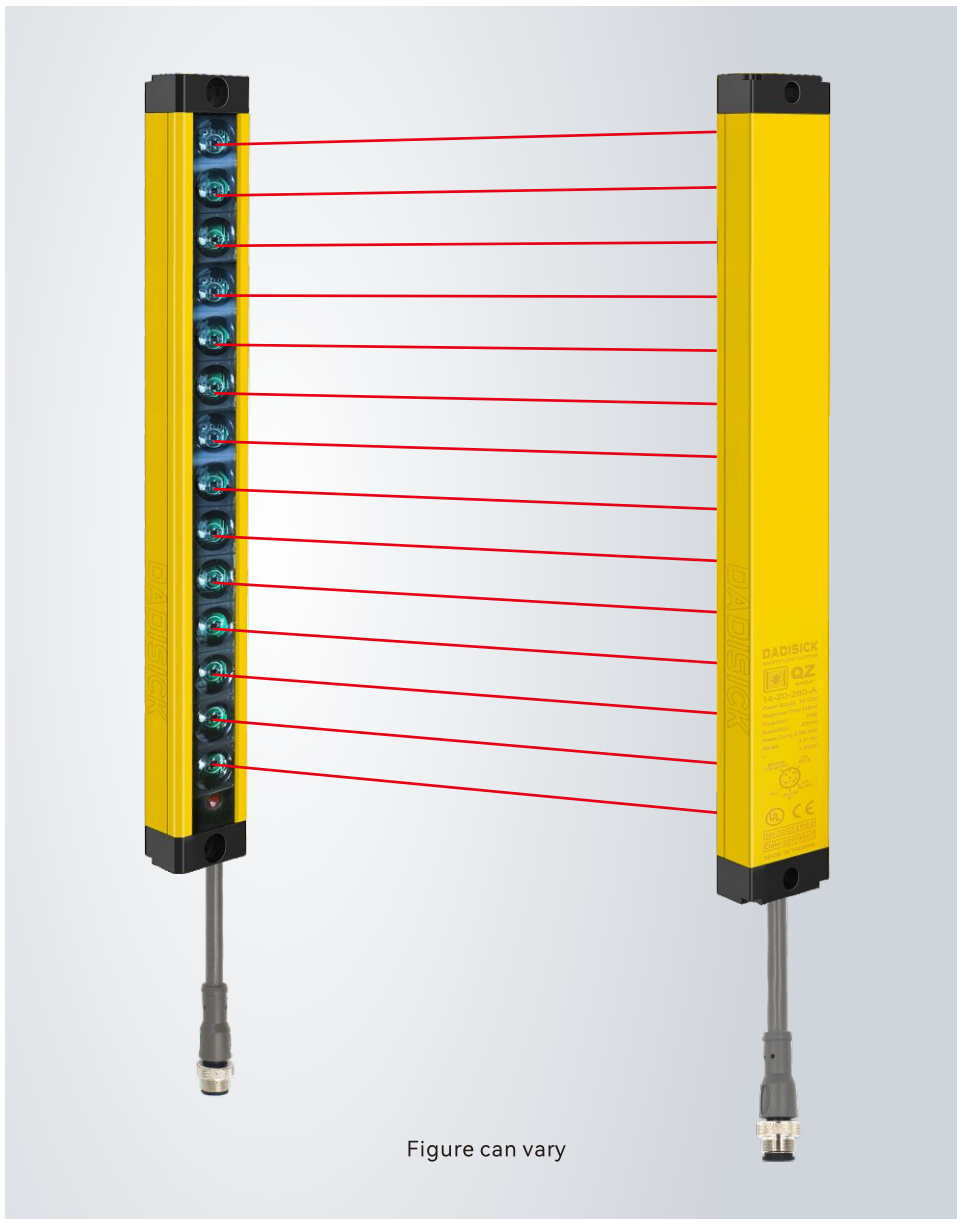


TECHNICAL DATA SHEET

SAFETY LIGHT CURTAIN SENSOR Emitter and Receiver **QZ series**



Contents

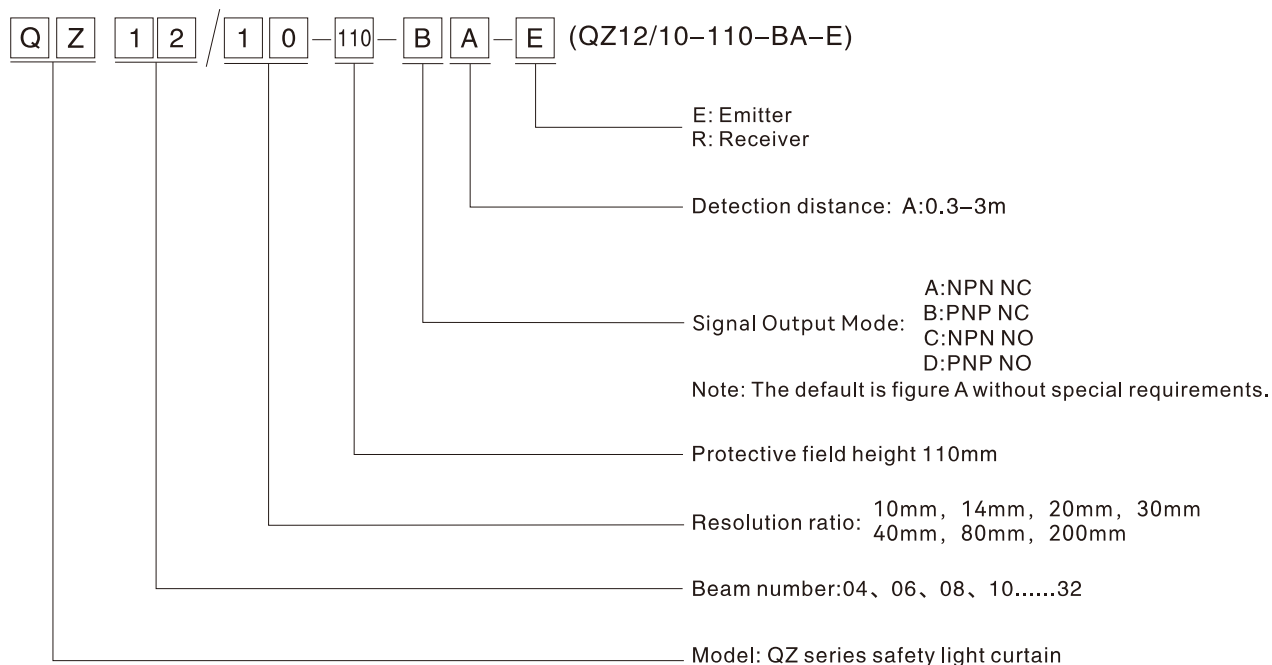
- Product application
- Resolution ratio
- Technical data
- Operation and display
- Dimensioned drawings
- Electrical connection
- Wiring diagram
- Accessories

**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.

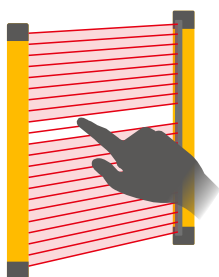
The specifications of QZ type safety light curtain are as follows:



Resolution ratio

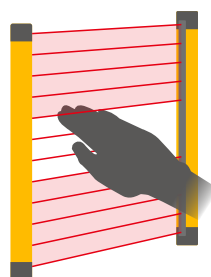
Depending on the usage environment and requirements, it is important to choose the appropriate beam spacing

Finger protection



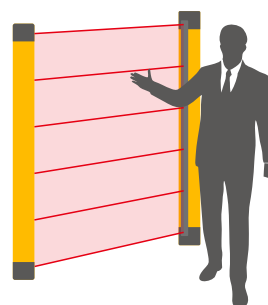
Detection capability
10/14/20mm
diameter

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	QZ series
Standard configuration	One receiver, one emitter, 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, 14mm, 20mm, 30mm, 40mm, 80mm, 200mm
Check the accuracy	18mm, 22mm, 28mm, 38mm, 48mm, 88mm, 200mm
Number of beams	04、06、08、10.....32
Overall dimension	17.2mm*30mm*L, L is the length of emitter and receiver.
Detection distance	30-3000mm
Response time	≤15ms

Synchronization	
Consumption current	≤200mA
Output mode	1-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

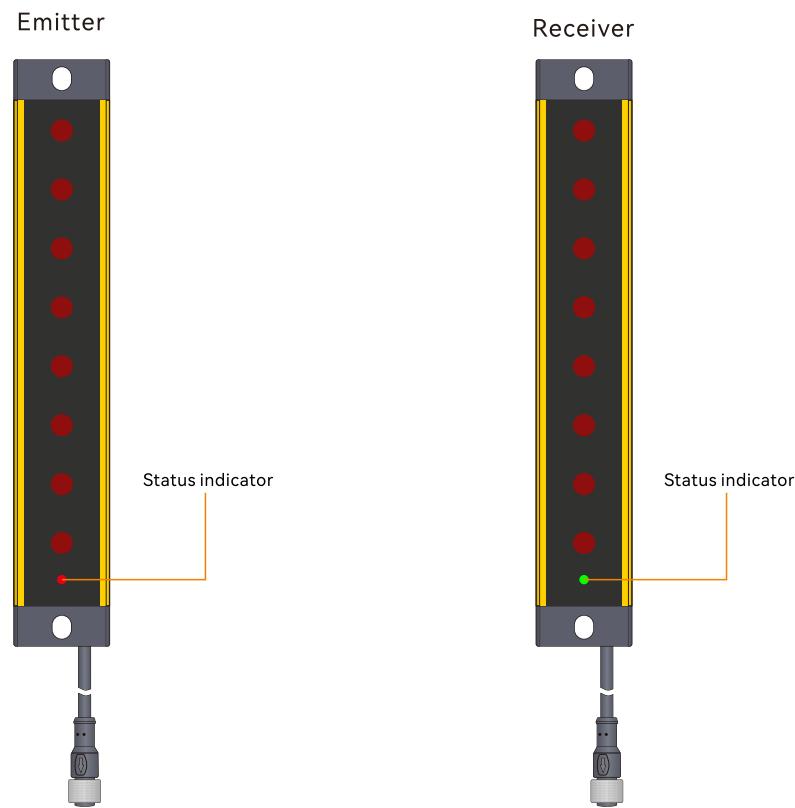
Performance data	
Protection circuit	Short circuit protection Overvoltage protection
Supply voltage	24VDC, -20...20%
Maximum current consumption	150mA
Fuse	2A half time interval

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)	1-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	Connection pin 4, WHITE OSSD
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

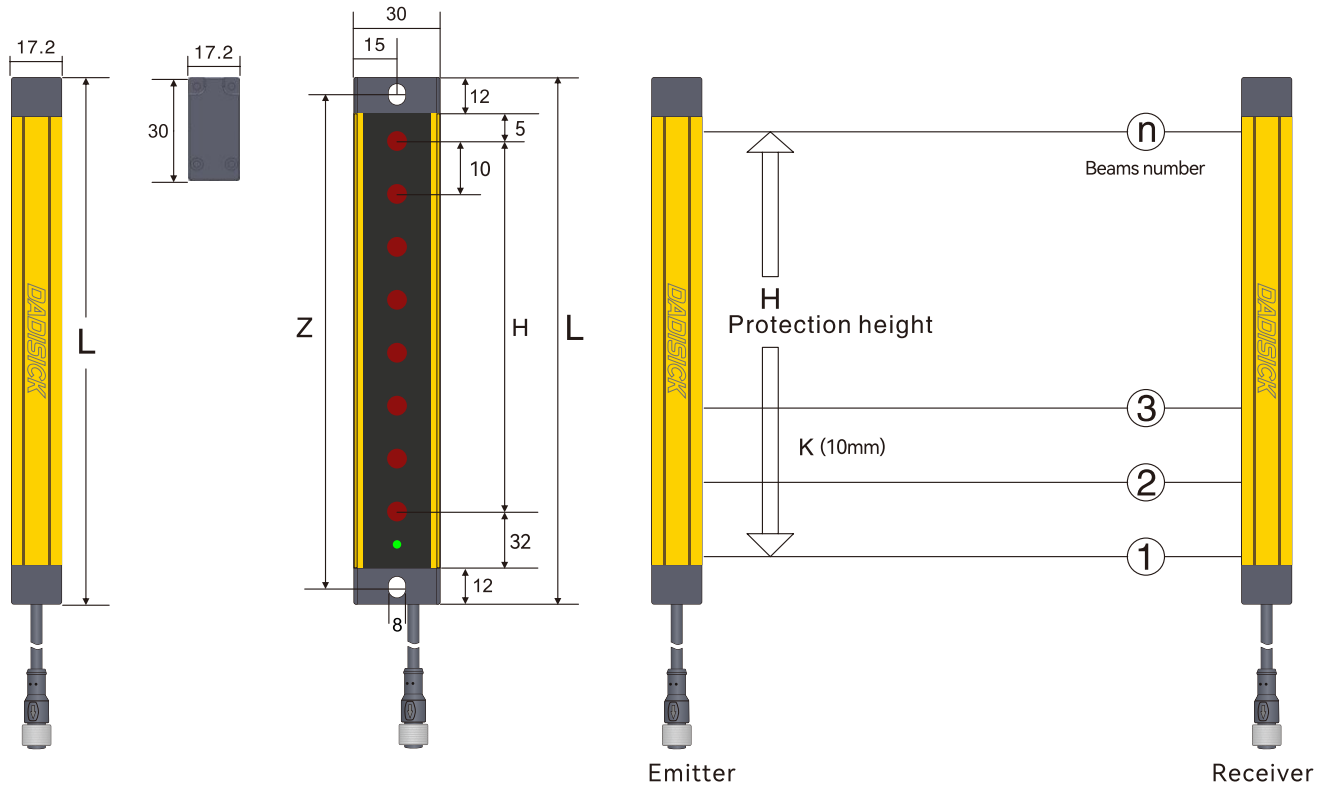


Normal operation of light curtain	LED Indicator status		Explain
Emitter		Red, always on	Turns on the power
		Receiver and emitter are red	Receiver and Emitter are not aligned
Receiver		Green	All light paths are connected
		Red	Light path shading
		Lights flashing	Interference or overstep detection range

Dimensioned drawings

1. QZ 10mm series

Unit: mm



Remarks

L: Total length of light screen
 $L = 12 + 5 + H + 32 + 12$

H: Height of protected area
 $H = (n - 1) \times 10$

K: Resolution ratio
 $Z = L - 11\text{mm}$

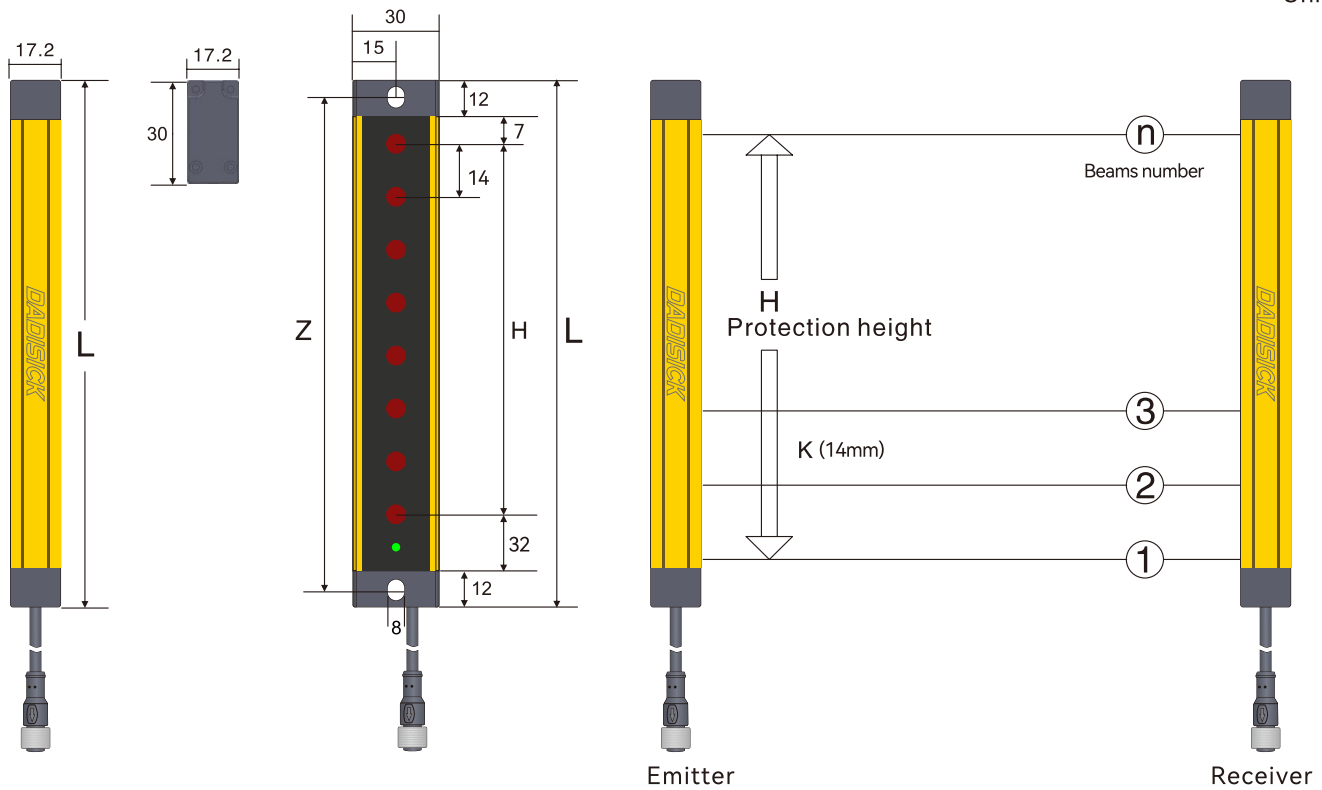
Z: Fixed hole center distance
 n: Beams number

QZ 10mm specification list

Resolution	Light beam	Protection height (H)	Total height (L)	Product model	Signal output mode		Detection range
					Outputs	PNP output	
10mm (K)	6	50	111	QZ06/10-50	1	PNP	0.3-3m
	8	70	131	QZ08/10-70	1	PNP	0.3-3m
	10	90	151	QZ10/10-90	1	PNP	0.3-3m
	12	110	171	QZ12/10-110	1	PNP	0.3-3m
	14	130	191	QZ14/10-130	1	PNP	0.3-3m
	16	150	211	QZ16/10-150	1	PNP	0.3-3m
	18	170	231	QZ18/10-170	1	PNP	0.3-3m
	20	190	251	QZ20/10-190	1	PNP	0.3-3m
	22	210	271	QZ22/10-210	1	PNP	0.3-3m
	24	230	291	QZ24/10-230	1	PNP	0.3-3m
	26	250	311	QZ26/10-250	1	PNP	0.3-3m
	28	270	331	QZ28/10-270	1	PNP	0.3-3m
	30	290	351	QZ30/10-290	1	PNP	0.3-3m
	32	310	371	QZ32/10-310	1	PNP	0.3-3m

2. QZ 14mm series

Unit: mm



Remarks

L: Total length of light screen
 $L = 12 + 7 + H + 32 + 12$

H: Height of protected area
 $H = (n - 1) \times 14$

K: Resolution ratio
 $Z = L - 11\text{mm}$

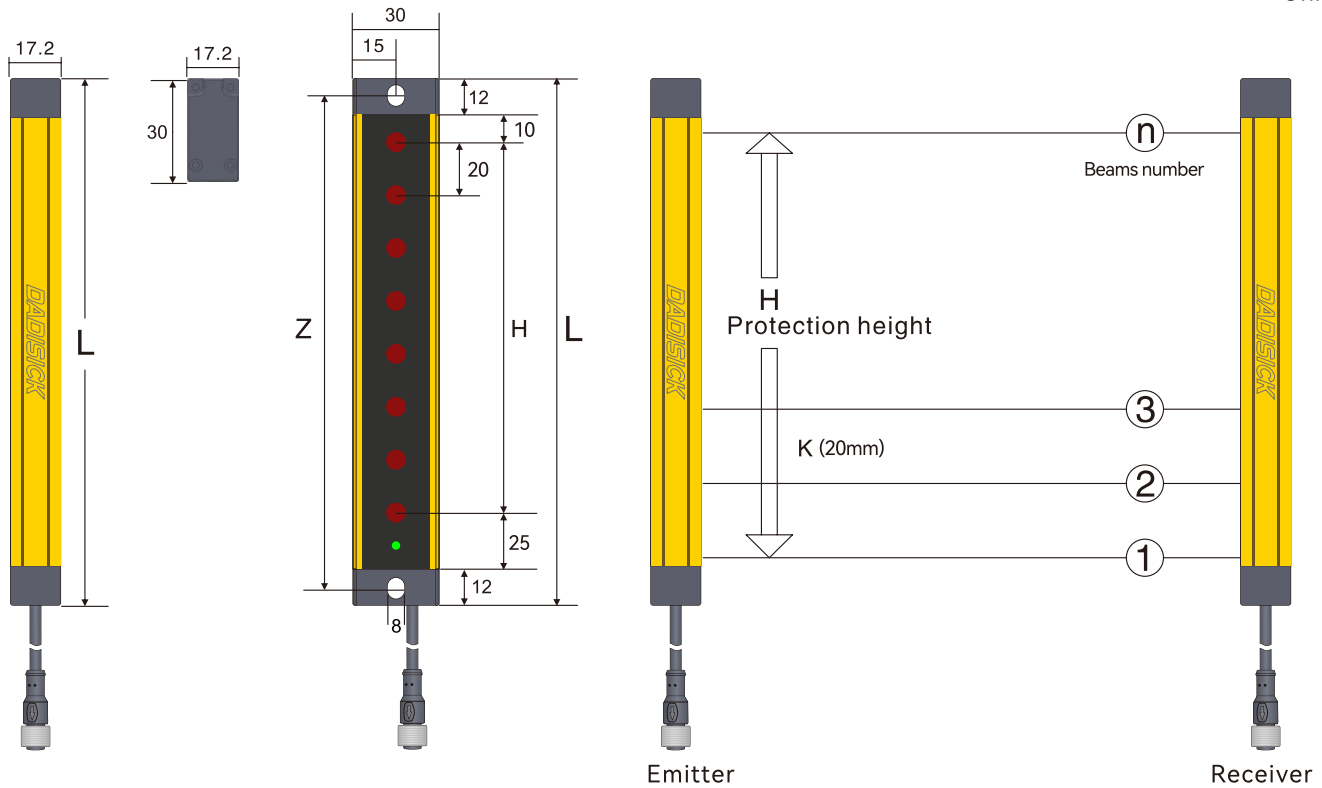
Z: Fixed hole center distance
 n: Beams number

QZ 14mm specification list

Resolution	Light beam	Protection height (H)	Total height (L)	Product model	Signal output mode		Detection range
					Outputs	PNP output	
14mm (K)	6	70	133	QZ06/14-70	1	PNP	0.3-3m
	8	98	161	QZ08/14-98	1	PNP	0.3-3m
	10	126	189	QZ10/14-126	1	PNP	0.3-3m
	12	154	217	QZ12/14-154	1	PNP	0.3-3m
	14	182	245	QZ14/14-182	1	PNP	0.3-3m
	16	210	273	QZ16/14-210	1	PNP	0.3-3m
	18	238	301	QZ18/14-238	1	PNP	0.3-3m
	20	266	329	QZ20/14-266	1	PNP	0.3-3m
	22	294	357	QZ22/14-294	1	PNP	0.3-3m
	24	322	385	QZ24/14-322	1	PNP	0.3-3m
	26	350	413	QZ26/14-350	1	PNP	0.3-3m
	28	378	441	QZ28/14-378	1	PNP	0.3-3m
	30	406	469	QZ30/14-406	1	PNP	0.3-3m
	32	434	497	QZ32/14-434	1	PNP	0.3-3m

3. QZ 20mm series

Unit: mm



Remarks

L: Total length of light screen
 $L = 12 + 10 + H + 25 + 12$

H: Height of protected area
 $H = (n - 1) \times 20$

K: Resolution ratio
 $Z = L - 11\text{mm}$

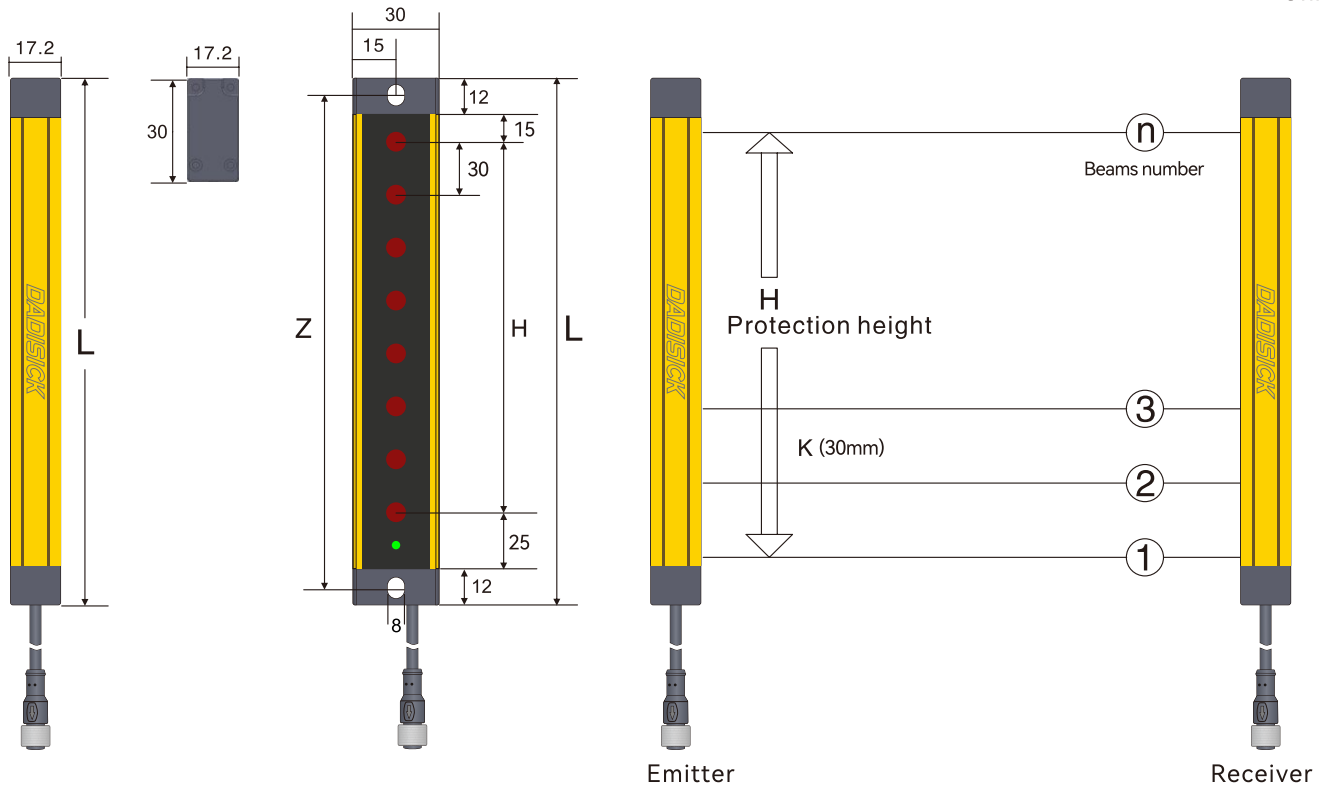
Z: Fixed hole center distance
 n: Beams number

QZ 20mm specification list

Resolution	Light beam	Protection height (H)	Total height (L)	Product model	Signal output mode		Detection range
					Outputs	PNP output	
20mm (K)	4	60	119	QZ04/20-60	1	PNP	0.3-3m
	6	100	159	QZ06/20-100	1	PNP	0.3-3m
	8	140	199	QZ08/20-140	1	PNP	0.3-3m
	10	180	239	QZ10/20-180	1	PNP	0.3-3m
	12	220	279	QZ12/20-220	1	PNP	0.3-3m
	14	260	319	QZ14/20-260	1	PNP	0.3-3m
	16	300	359	QZ16/20-300	1	PNP	0.3-3m
	18	340	399	QZ18/20-340	1	PNP	0.3-3m
	20	380	439	QZ20/20-380	1	PNP	0.3-3m
	22	420	479	QZ22/20-420	1	PNP	0.3-3m
	24	460	519	QZ24/20-460	1	PNP	0.3-3m
	26	500	559	QZ26/20-500	1	PNP	0.3-3m
	28	540	599	QZ28/20-540	1	PNP	0.3-3m
	30	580	639	QZ30/20-580	1	PNP	0.3-3m
	32	620	679	QZ32/20-620	1	PNP	0.3-3m

4. QZ 30mm series

Unit: mm



Remarks

L: Total length of light screen

H: Height of protected area

K: Resolution ratio

Z: Fixed hole center distance

 $L = 12 + 15 + H + 25 + 12$ $H = (n - 1) \times 30$ $Z = L - 11\text{mm}$

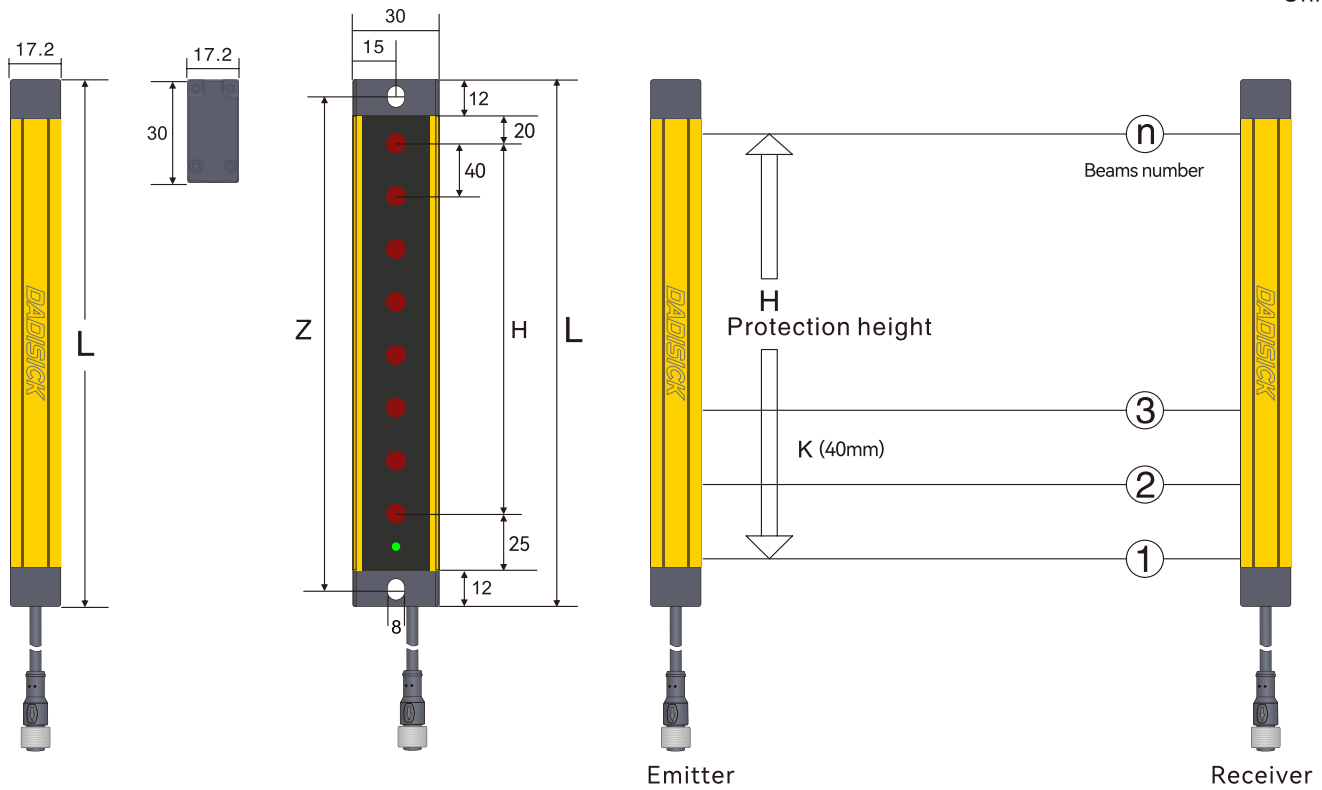
n: Beams number

QZ 30mm specification list

Resolution	Light beam	Protection height (H)	Total height (L)	Product model	Signal output mode		Detection range
					Outputs	PNP output	
30mm (K)	4	90	154	QZ04/30-90	1	PNP	0.3-3m
	6	150	214	QZ06/30-150	1	PNP	0.3-3m
	8	210	274	QZ08/30-210	1	PNP	0.3-3m
	10	270	334	QZ10/30-270	1	PNP	0.3-3m
	12	330	394	QZ12/30-330	1	PNP	0.3-3m
	14	390	454	QZ14/30-390	1	PNP	0.3-3m
	16	450	514	QZ16/30-450	1	PNP	0.3-3m
	18	510	574	QZ18/30-510	1	PNP	0.3-3m
	20	570	634	QZ20/30-570	1	PNP	0.3-3m
	22	630	694	QZ22/30-630	1	PNP	0.3-3m
	24	690	754	QZ24/30-690	1	PNP	0.3-3m
	26	750	814	QZ26/30-750	1	PNP	0.3-3m
	28	810	874	QZ28/30-810	1	PNP	0.3-3m
	30	870	934	QZ30/30-870	1	PNP	0.3-3m
	32	930	994	QZ32/30-930	1	PNP	0.3-3m

5. QZ 40mm series

Unit: mm



Remarks

L: Total length of light screen
 $L = 12 + 20 + H + 25 + 12$

H: Height of protected area
 $H = (n - 1) \times 40$

K: Resolution ratio
 $Z = L - 11\text{mm}$

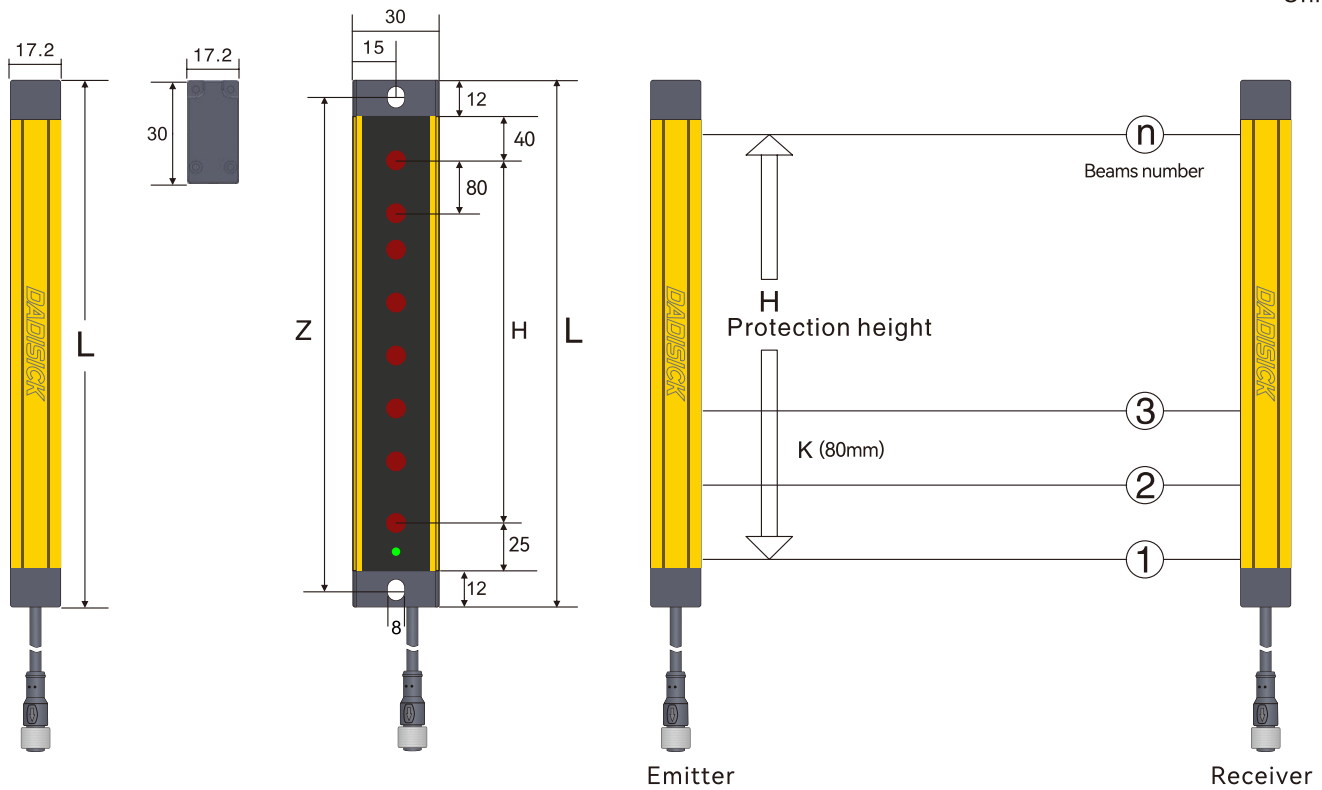
Z: Fixed hole center distance
 n: Beams number

QZ 40mm specification list

Resolution	Light beam	Protection height (H)	Total height (L)	Product model	Signal output mode		Detection range
					Outputs	PNP output	
40mm (K)	4	120	189	QZ04/40-120	1	PNP	0.3-3m
	6	200	269	QZ06/40-200	1	PNP	0.3-3m
	8	280	349	QZ08/40-280	1	PNP	0.3-3m
	10	360	429	QZ10/40-360	1	PNP	0.3-3m
	12	440	509	QZ12/40-440	1	PNP	0.3-3m
	14	520	589	QZ14/40-520	1	PNP	0.3-3m
	16	600	669	QZ16/40-600	1	PNP	0.3-3m
	18	680	749	QZ18/40-680	1	PNP	0.3-3m
	20	760	829	QZ20/40-760	1	PNP	0.3-3m
	22	840	909	QZ22/40-840	1	PNP	0.3-3m
	24	920	989	QZ24/40-920	1	PNP	0.3-3m
	26	1000	1069	QZ26/40-1000	1	PNP	0.3-3m
	28	1080	1149	QZ28/40-1080	1	PNP	0.3-3m
	30	1160	1229	QZ30/40-1160	1	PNP	0.3-3m
	32	1240	1309	QZ32/40-1240	1	PNP	0.3-3m

6. QZ 80mm series

Unit: mm



Remarks

L: Total length of light screen
 $L = 12 + 40 + H + 25 + 12$

H: Height of protected area
 $H = (n - 1) \times 80$

K: Resolution ratio
 $Z = L - 11\text{mm}$

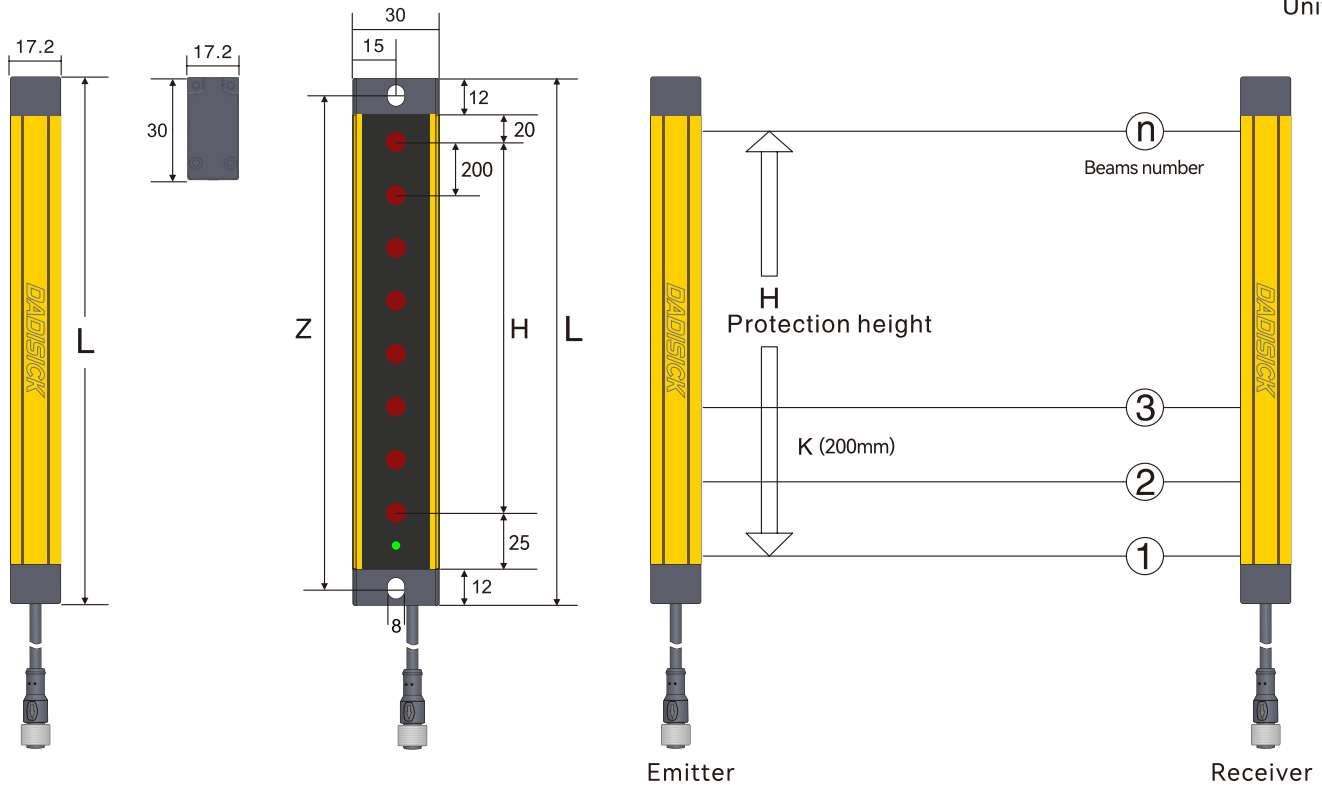
Z: Fixed hole center distance
 n: Beams number

QZ 80mm specification list

Resolution	Light beam	Protection height (H)	Total height (L)	Product model	Signal output mode		Detection range
					Outputs	PNP output	
80mm (K)	4	240	329	QZ04/80-240	1	PNP	0.3-3m
	6	400	489	QZ06/80-400	1	PNP	0.3-3m
	8	560	649	QZ08/80-560	1	PNP	0.3-3m
	10	720	809	QZ10/80-720	1	PNP	0.3-3m
	12	880	969	QZ12/80-880	1	PNP	0.3-3m
	14	1040	1129	QZ14/80-1040	1	PNP	0.3-3m
	16	1200	1289	QZ16/80-1200	1	PNP	0.3-3m
	18	1360	1449	QZ18/80-1360	1	PNP	0.3-3m
	20	1520	1609	QZ20/80-1520	1	PNP	0.3-3m
	22	1680	1769	QZ22/80-1680	1	PNP	0.3-3m
	24	1840	1929	QZ24/80-1840	1	PNP	0.3-3m
	26	2000	2089	QZ26/80-2000	1	PNP	0.3-3m
	28	2160	2249	QZ28/80-2160	1	PNP	0.3-3m
	30	2320	2409	QZ30/80-2320	1	PNP	0.3-3m
	32	2480	2569	QZ32/80-2480	1	PNP	0.3-3m

7. QZ 200mm series

Unit: mm

**Remarks**

L: Total length of light screen
 $L = 12 + 20 + H + 25 + 12$

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

K: Resolution ratio
 $Z = L - 11\text{mm}$

Z: Fixed hole center distance
 n: Beams number

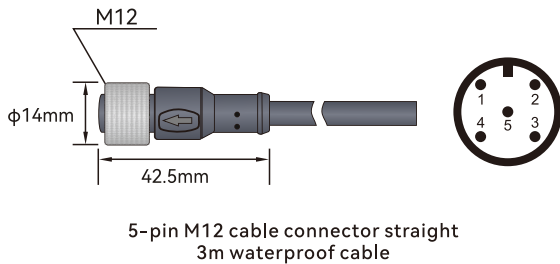
QZ 200mm specification list

Resolution	Light beam	Protection height (H)	Total height (L)	Product model	Signal output mode		Detection distance
					Outputs	PNP output	
200mm (K)	4	600	669	QZ04/200-600	1	PNP	0.3-3m
	6	1000	1069	QZ06/200-1000	1	PNP	0.3-3m
	8	1400	1469	QZ08/200-1400	1	PNP	0.3-3m
	10	1800	1869	QZ10/200-1800	1	PNP	0.3-3m
	12	2200	2269	QZ12/200-2200	1	PNP	0.3-3m
	14	2600	2669	QZ14/200-2600	1	PNP	0.3-3m
	16	3000	3069	QZ16/200-3000	1	PNP	0.3-3m
	18	3400	3469	QZ18/200-3400	1	PNP	0.3-3m

Electrical connection

Electrical interface	
Number of interfaces	2 (receiver and transmitter)
Type	M12 connector, 5-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

Cable description:

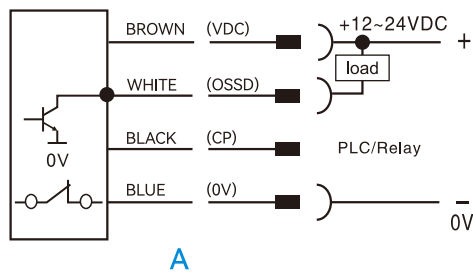


Emitter Wiring diagram		
Pin number	Line color	Name
1	BROWN	24V DC
2	BLUE	0V
3	BLACK	CP
4	WHITE	NC
5	YELLOW	Ground wire

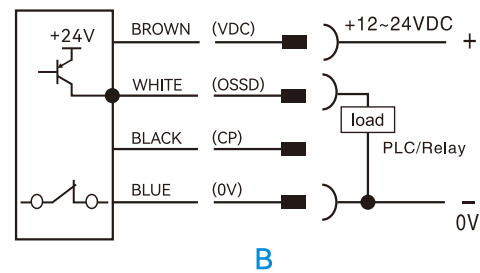
Receiver Wiring diagram		
Pin number	Line color	Name
1	BROWN	24V DC
2	BLUE	0V
3	BLACK	CP
4	WHITE	OSSD
5	YELLOW	Ground wire

1. QZ signal output selection (actual output of transistor working normally)

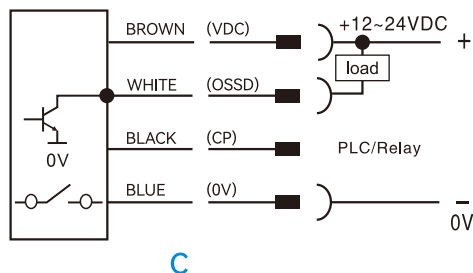
NPN NC



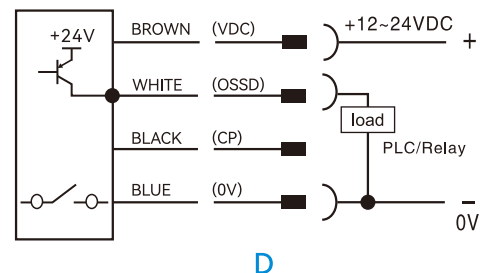
PNP NC



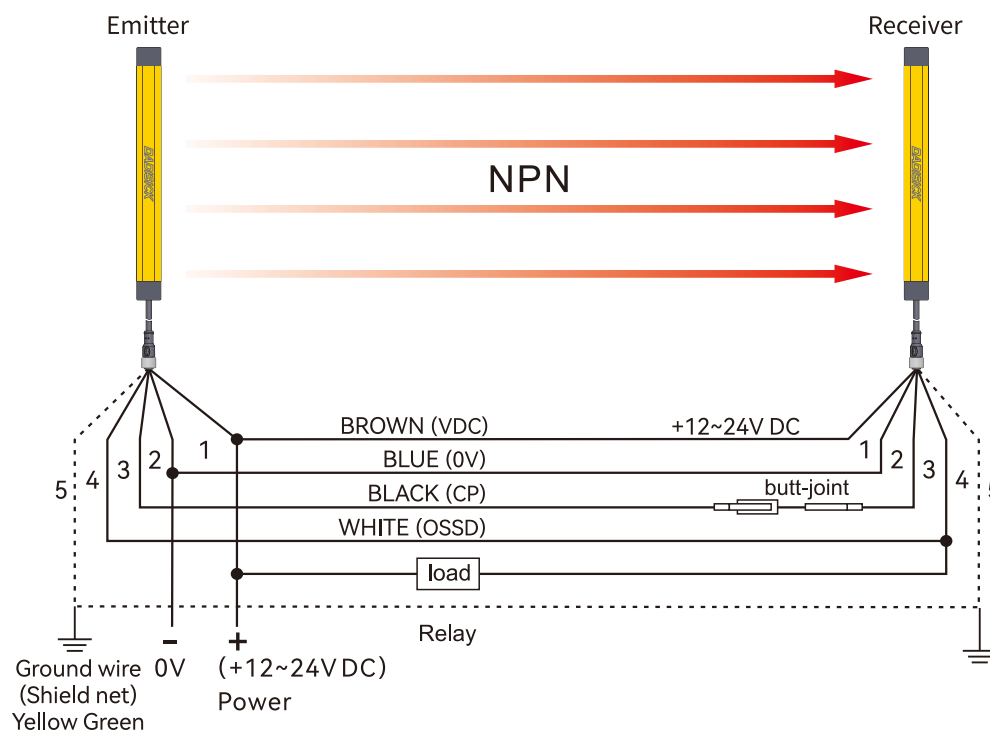
NPN NO



PNP NO

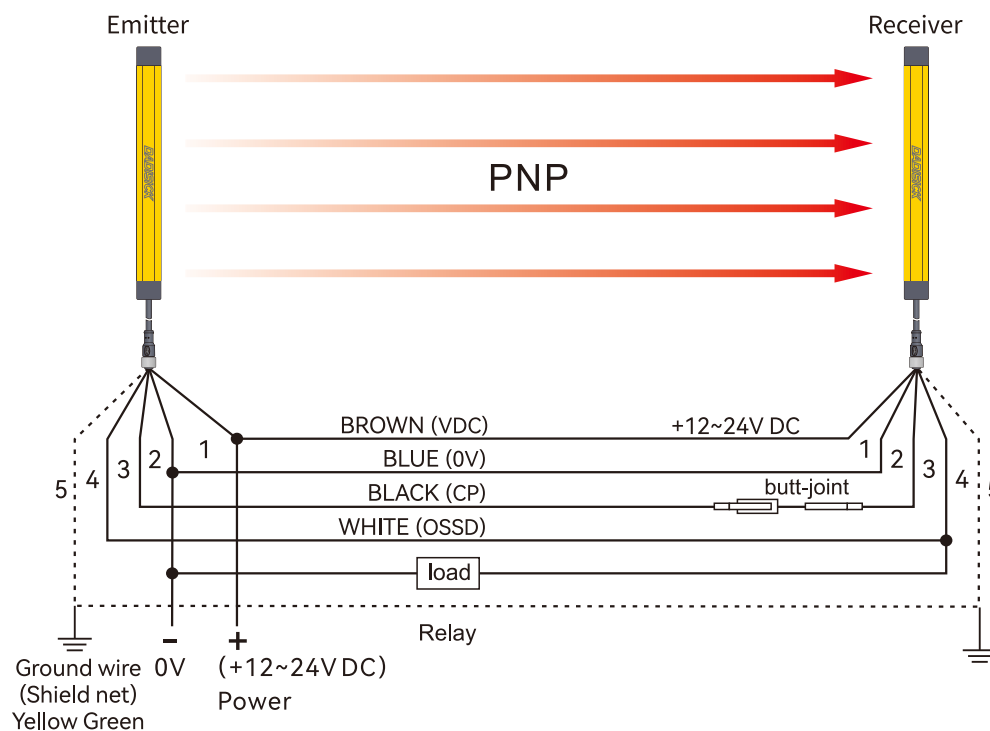


2. NPN output wiring diagram



This figure is an example of NPN double output 5-pin wiring.

3. PNP output wiring diagram

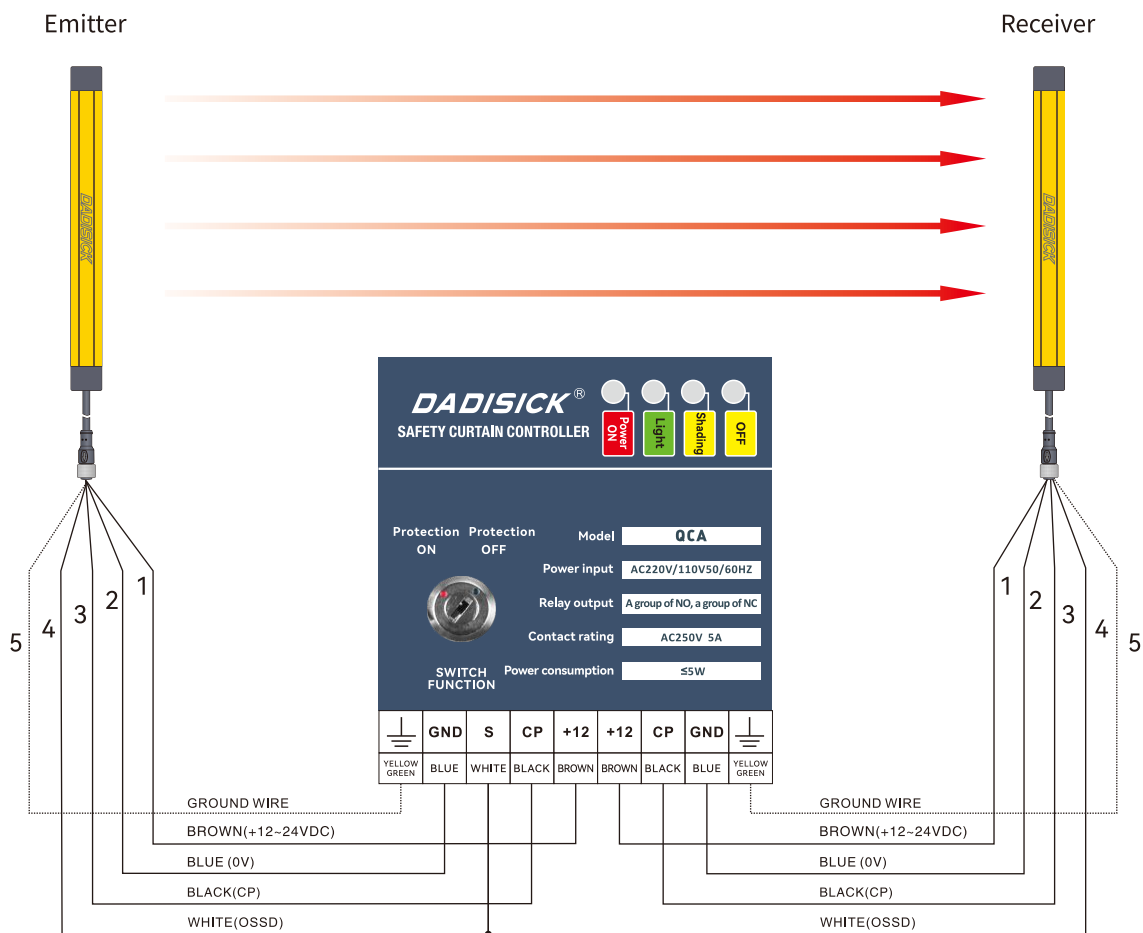


This figure is an example of PNP double output 5-pin wiring.

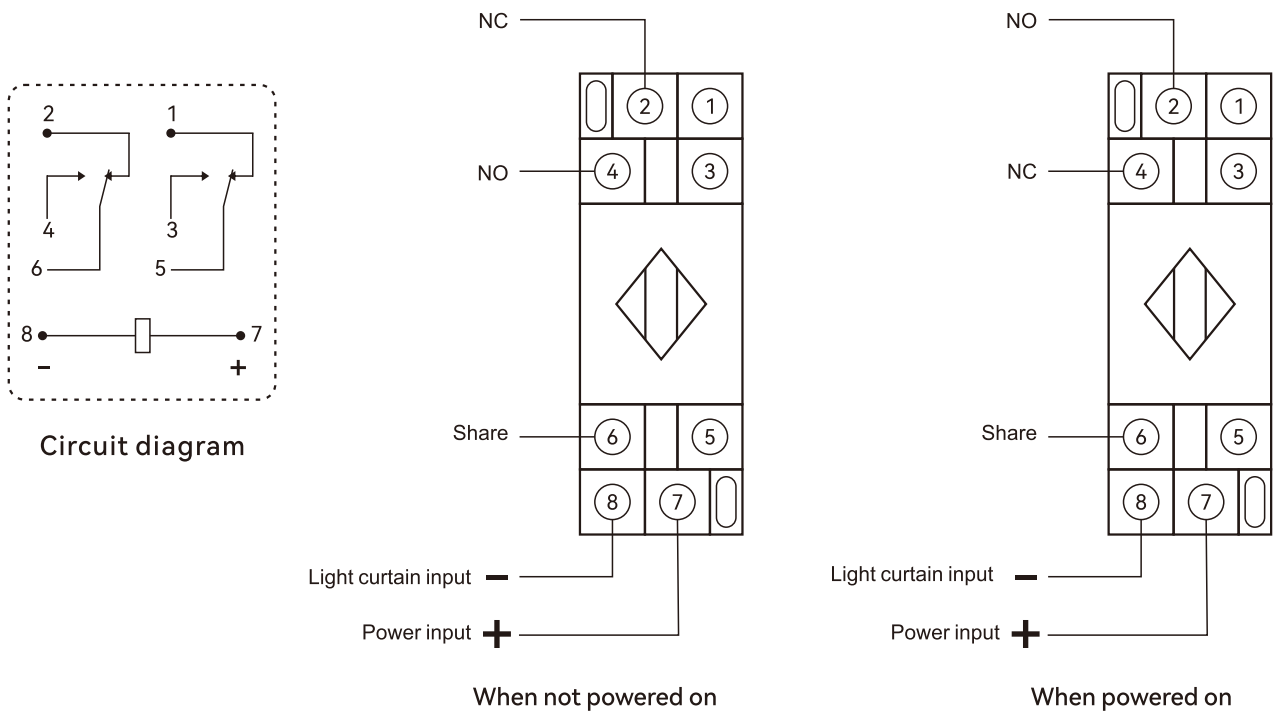
4. Selection of safety light curtain controller

Name	Order separately	Model	Descriptions
Built-in controller		QCA	Used to monitor the signal processing of QZ series light curtain, and output one group of NO and one group of NC.
Light curtain relay		QET-1	Output conversion between NC and NO for QZ series light curtain.

4.1 Wiring diagram of QCA built-in controller

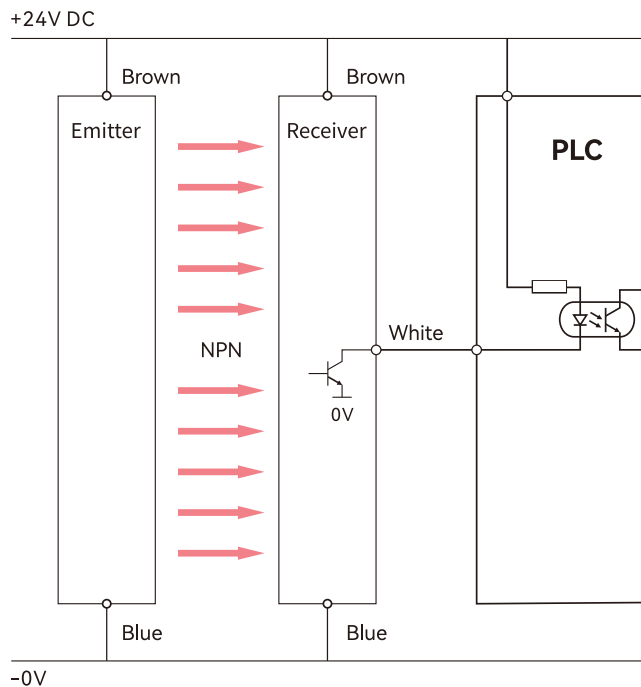


4.2 Wiring diagram of QET-1 light curtain relay

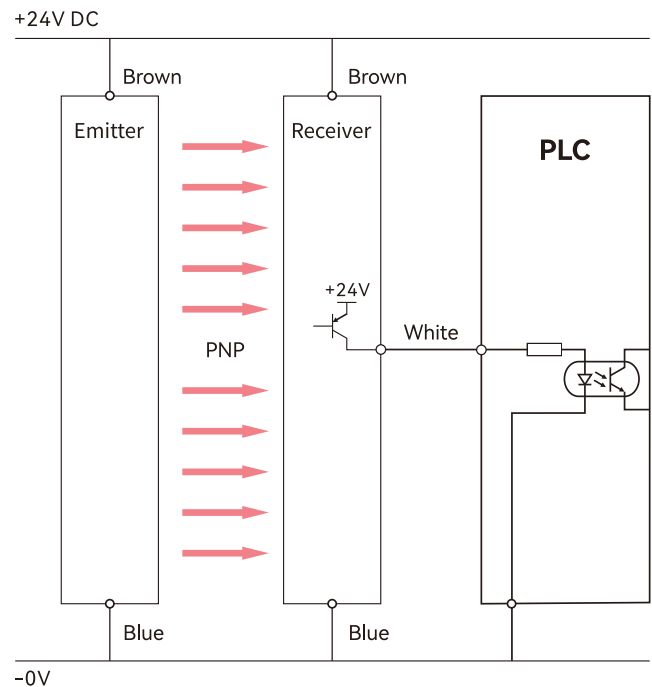


4.3 Wiring between light curtain and PLC and one-chip computer system

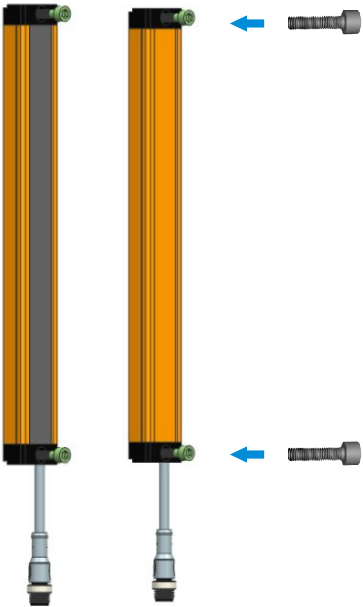
NPN wiring:



PNP wiring:



Accessories



Installation method for fixing hole screws
(Original accessories)

