

# TECHNICAL DATA SHEET

## SAFETY LIGHT CURTAIN SENSOR Emitter and Receiver QM series



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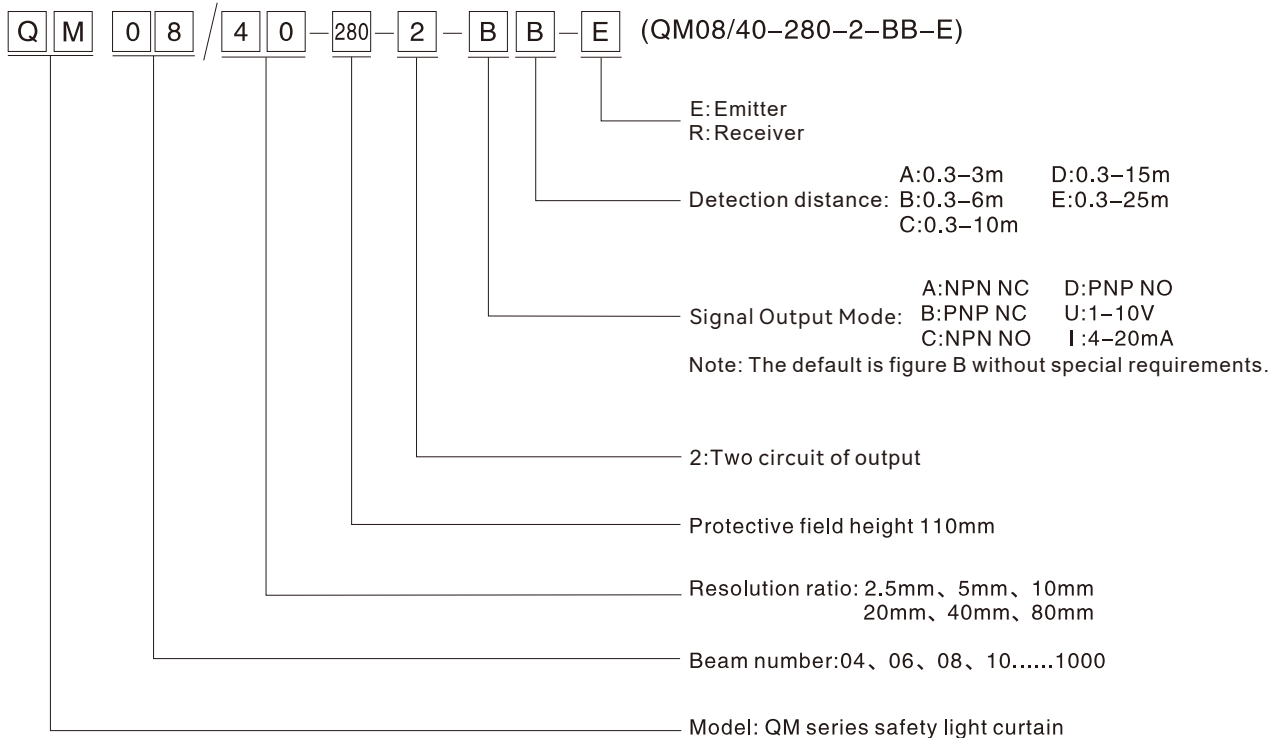


GB/T 19001-2016

## 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.

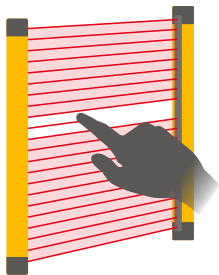
## The specifications of QE type safety light curtain are as follows:



## Resolution ratio

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

### Finger protection



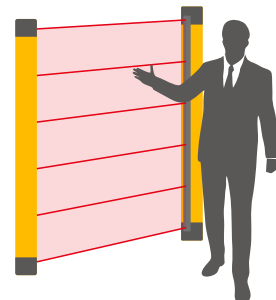
Detection capability  
**2.5/5/10/20mm**  
diameter

### Hand protection



Detection capability  
**40mm**  
diameter

### Arm/body protection



Detection capability  
**80mm**  
diameter

## Technical data

### Basic data of Receiver and Emitter

Standard packaging	
Product model	<b>QM series</b>
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	2.5mm, 5mm, 10mm, 20mm, 40mm, 80mm
Check the accuracy	3.75mm, 6.5mm, 15mm, 25mm, 45mm, 85mm
Number of beams	04、06、08、10.....1000
Overall dimension	36mm*36mm*L, L is the length of emitter and receiver.
Detection distance	30-3000mm、30-6000mm、30-10000mm、30-15000mm、30-25000mm
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

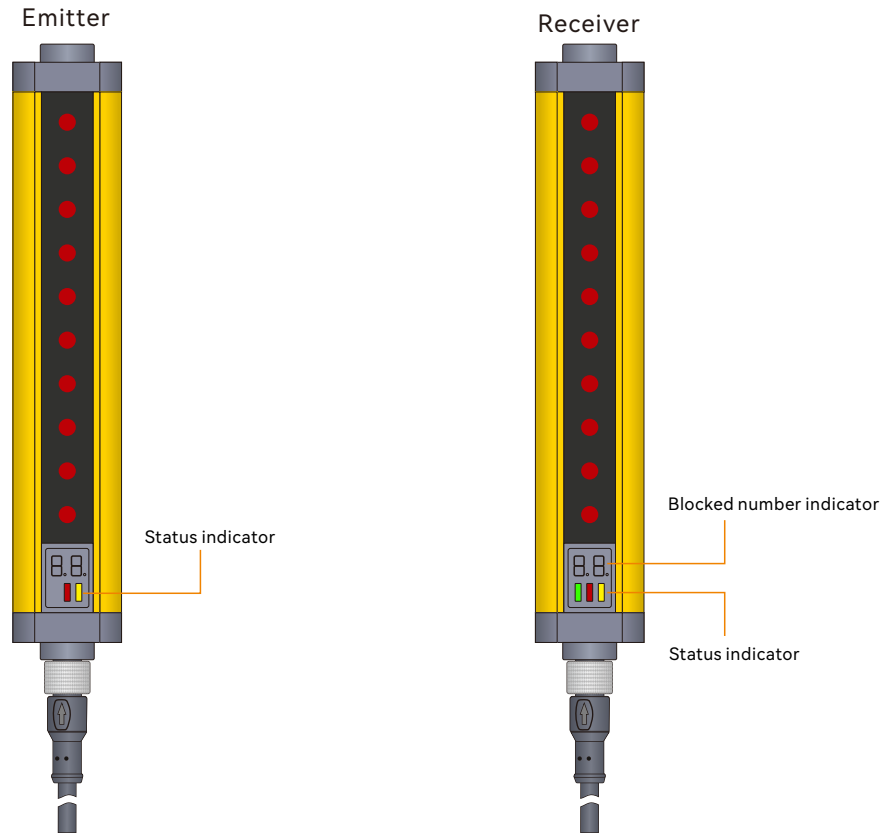
Performance data	
Protection circuit	Short circuit protection Overvoltage protection
Supply voltage	24VDC, -20...20%
Maximum current consumption	150mA
Fuse	2A half time interval






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/HS221214
UL	No. 4790783741.1-S
GB/T	No. HIC180327 GB/T 19001-2016 idt ISO 9001:2015



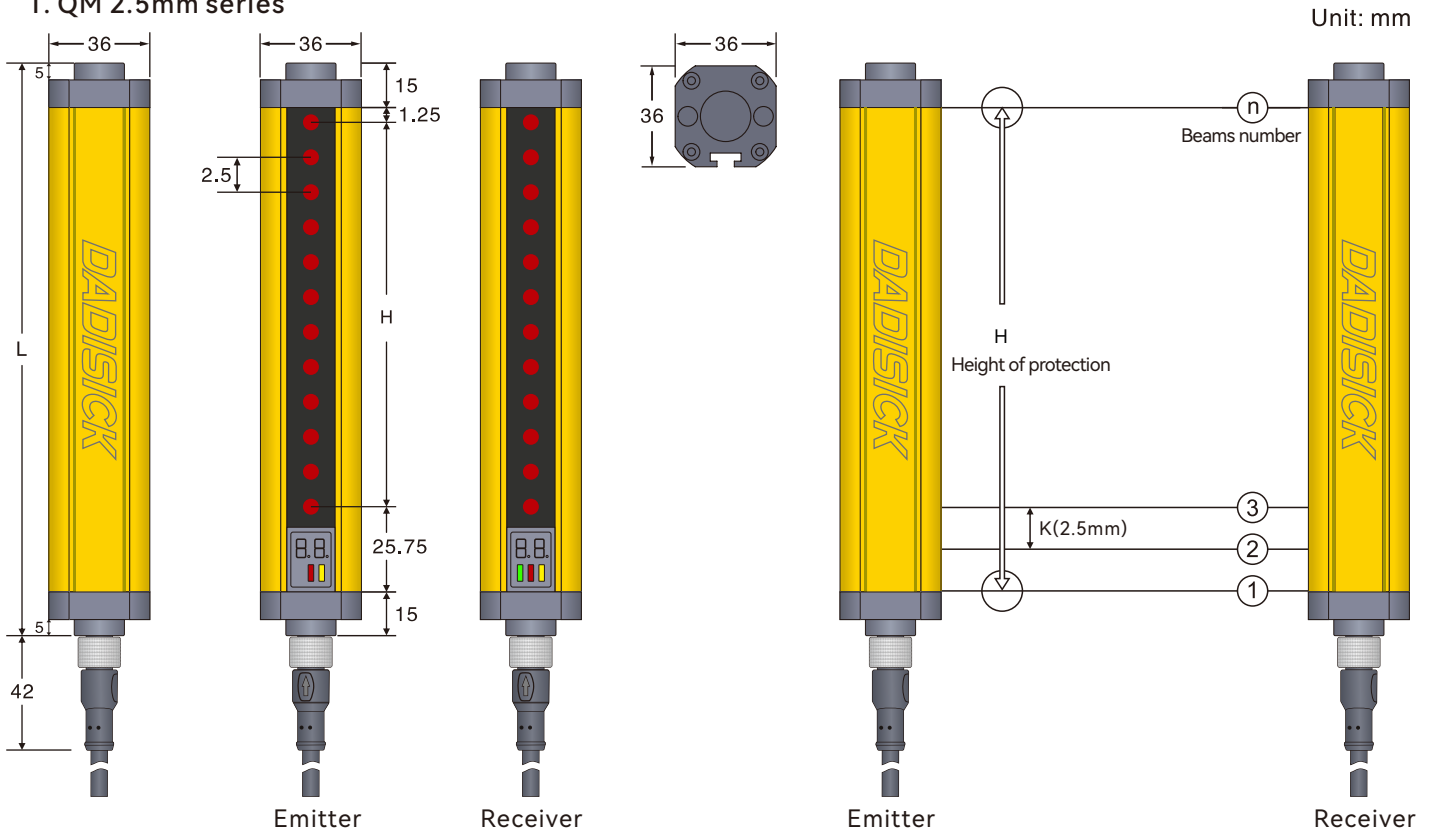
## Operation and display



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

## Dimensioned drawings

### 1. QM 2.5mm series



#### Remarks

L: Total length of light screen  
 $L = 15 + 1.25 + H + 25.75 + 15$

H: Height of protected area  
 $H = (n - 1) * 2.5$

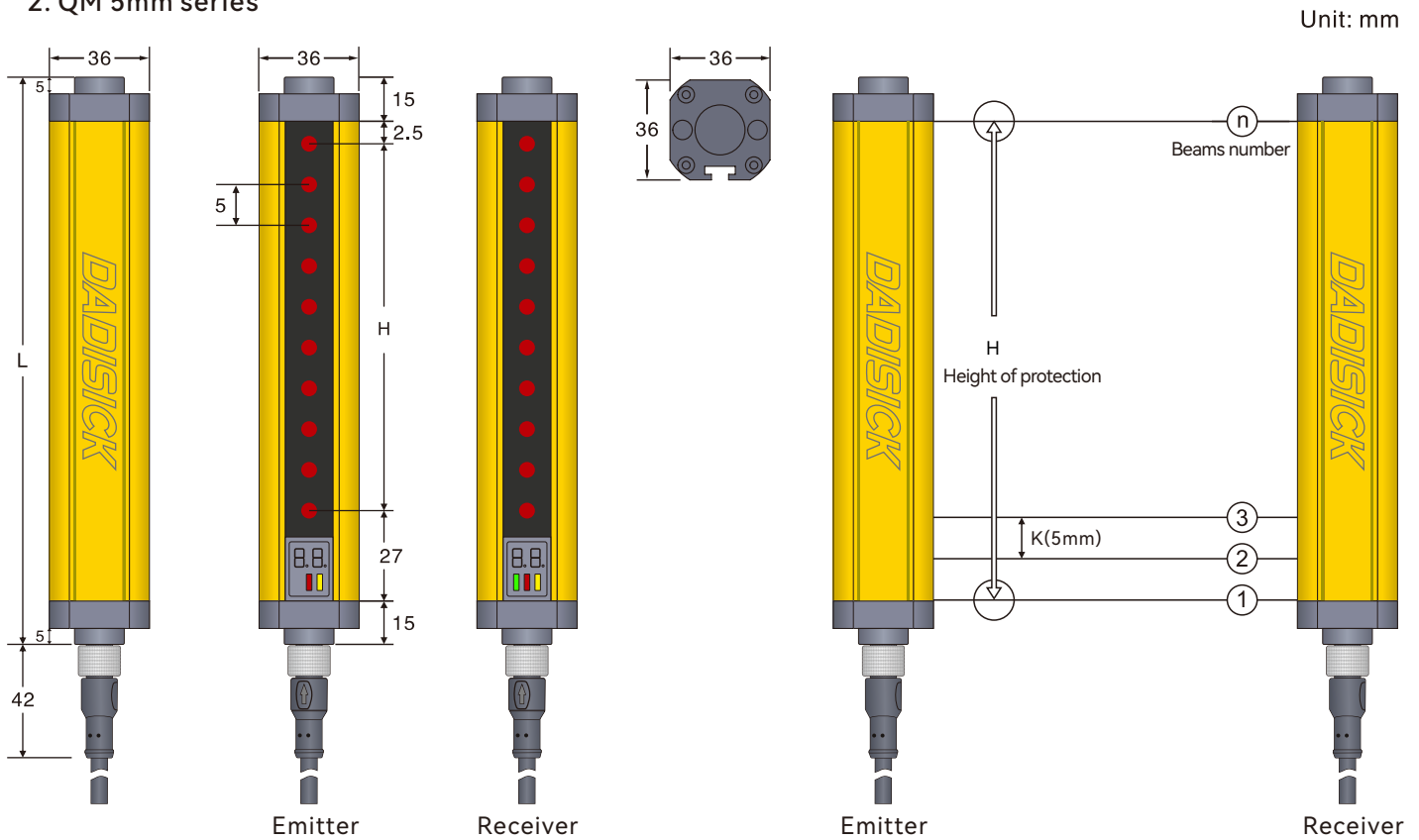
K: Resolution ratio

n: Beams number

### QM 2.5mm specification list

Resolution	Light beam	Protection height (H)	Total height (L)	Product model	Signal output mode		Detection range
					Two outputs	PNP output	
2.5mm (K)	32	77.5	134.5	QM32/2.5-77.5	2	PNP	0.3-3m
	40	97.5	154.5	QM40/2.5-97.5	2	PNP	0.3-3m
	48	117.5	174.5	QM48/2.5-117.5	2	PNP	0.3-3m
	56	137.5	194.5	QM56/2.5-137.5	2	PNP	0.3-3m
	64	157.5	214.5	QM64/2.5-157.5	2	PNP	0.3-3m
	72	177.5	234.5	QM72/2.5-177.5	2	PNP	0.3-3m
	80	197.5	254.5	QM80/2.5-197.5	2	PNP	0.3-3m
	88	217.5	274.5	QM88/2.5-217.5	2	PNP	0.3-3m
	96	237.5	294.5	QM96/2.5-237.5	2	PNP	0.3-3m
	104	257.5	314.5	QM104/2.5-257.5	2	PNP	0.3-3m
	112	277.5	334.5	QM112/2.5-277.5	2	PNP	0.3-3m
	120	297.5	354.5	QM120/2.5-297.5	2	PNP	0.3-3m
	128	317.5	374.5	QM128/2.5-317.5	2	PNP	0.3-3m
	136	337.5	394.5	QM136/2.5-337.5	2	PNP	0.3-3m
	144	357.5	414.5	QM144/2.5-357.5	2	PNP	0.3-3m
	152	377.5	434.5	QM152/2.5-377.5	2	PNP	0.3-3m
	160	397.5	454.5	QM160/2.5-397.5	2	PNP	0.3-3m
	168	417.5	474.5	QM168/2.5-417.5	2	PNP	0.3-3m
	176	437.5	494.5	QM176/2.5-437.5	2	PNP	0.3-3m
	184	457.5	514.5	QM184/2.5-457.5	2	PNP	0.3-3m
	192	477.5	534.5	QM192/2.5-477.5	2	PNP	0.3-3m
	200	497.5	554.5	QM200/2.5-497.5	2	PNP	0.3-3m
	208	517.5	574.5	QM208/2.5-517.5	2	PNP	0.3-3m
	216	537.5	594.5	QM216/2.5-537.5	2	PNP	0.3-3m
224	557.5	614.5	QM224/2.5-557.5	2	PNP	0.3-3m	
232	577.5	634.5	QM232/2.5-577.5	2	PNP	0.3-3m	
240	597.5	654.5	QM240/2.5-597.5	2	PNP	0.3-3m	
248	617.5	674.5	QM248/2.5-617.5	2	PNP	0.3-3m	
...	...	...	...	...	2	PNP	0.3-3m
304	757.5	814.5	QM304/2.5-757.5	2	PNP	0.3-3m	
312	777.5	834.5	QM312/2.5-777.5	2	PNP	0.3-3m	
320	797.5	854.5	QM320/2.5-797.5	2	PNP	0.3-3m	

## 2. QM 5mm series



## Remarks

L: Total length of light screen  
 $L = 15 + 2.5 + H + 27 + 15$

H: Height of protected area  
 $H = (n - 1) * 5$

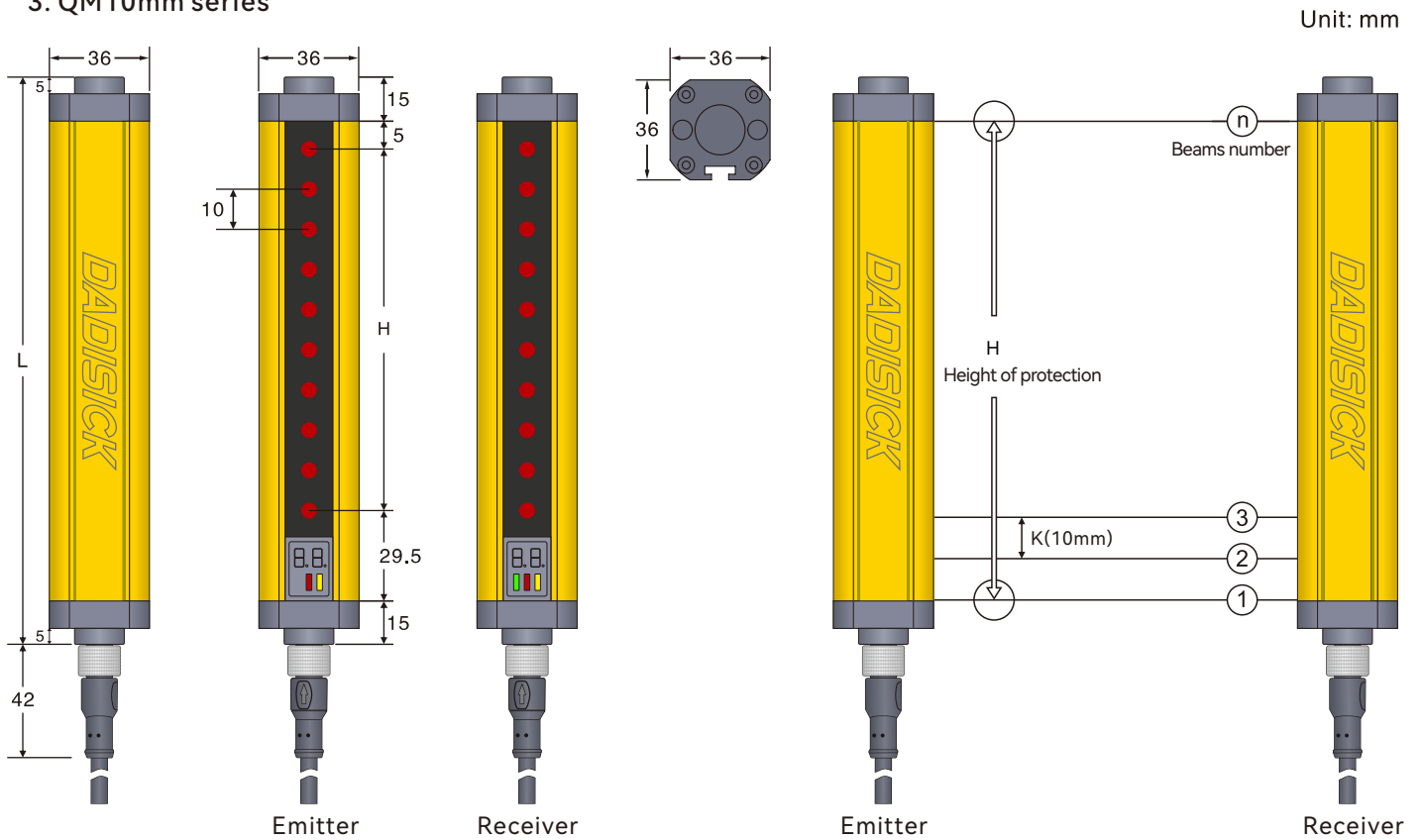
K: Resolution ratio

n: Beams number

## QM 5mm specification list

Resolution	Light beam	Protection height (H)	Total height (L)	Product model	Signal output mode		Detection range
					Two outputs	PNP output	
5mm (K)	16	75	134.5	QM16/5-75	2	PNP	0.3-3m
	24	115	174.5	QM24/5-115	2	PNP	0.3-3m
	32	155	214.5	QM32/5-155	2	PNP	0.3-3m
	40	195	254.5	QM40/5-195	2	PNP	0.3-3m
	48	235	294.5	QM48/5-235	2	PNP	0.3-3m
	56	275	334.5	QM56/5-275	2	PNP	0.3-3m
	64	315	374.5	QM64/5-315	2	PNP	0.3-3m
	72	355	414.5	QM72/5-355	2	PNP	0.3-3m
	80	395	454.5	QM80/5-395	2	PNP	0.3-3m
	88	435	494.5	QM88/5-435	2	PNP	0.3-3m
	96	475	534.5	QM96/5-475	2	PNP	0.3-3m
	104	515	574.5	QM104/5-515	2	PNP	0.3-3m
	112	555	614.5	QM112/5-555	2	PNP	0.3-3m
	120	595	654.5	QM120/5-595	2	PNP	0.3-3m
	128	635	694.5	QM128/5-635	2	PNP	0.3-3m
	136	675	734.5	QM136/5-675	2	PNP	0.3-3m
	144	715	774.5	QM144/5-715	2	PNP	0.3-3m
	152	755	814.5	QM152/5-755	2	PNP	0.3-3m
	160	795	854.5	QM160/5-795	2	PNP	0.3-3m
	168	835	894.5	QM168/5-835	2	PNP	0.3-3m
	176	875	934.5	QM176/5-875	2	PNP	0.3-3m
	184	915	974.5	QM184/5-915	2	PNP	0.3-3m
	192	955	1014.5	QM192/5-955	2	PNP	0.3-3m
	200	995	1054.5	QM200/5-995	2	PNP	0.3-3m
	208	1035	1094.5	QM208/5-1035	2	PNP	0.3-3m
	216	1075	1134.5	QM216/5-1075	2	PNP	0.3-3m
224	1115	1174.5	QM224/5-1115	2	PNP	0.3-3m	
232	1155	1214.5	QM232/5-1155	2	PNP	0.3-3m	
...	...	...	...	...	2	PNP	0.3-3m
304	1515	1574.5	QM304/5-1515	2	PNP	0.3-3m	
312	1555	1614.5	QM312/5-1555	2	PNP	0.3-3m	
320	1595	1654.5	QM320/5-1595	2	PNP	0.3-3m	

## 3. QM10mm series



## Remarks

L: Total length of light screen  
 $L = 15 + 5 + H + 29.5 + 15$

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

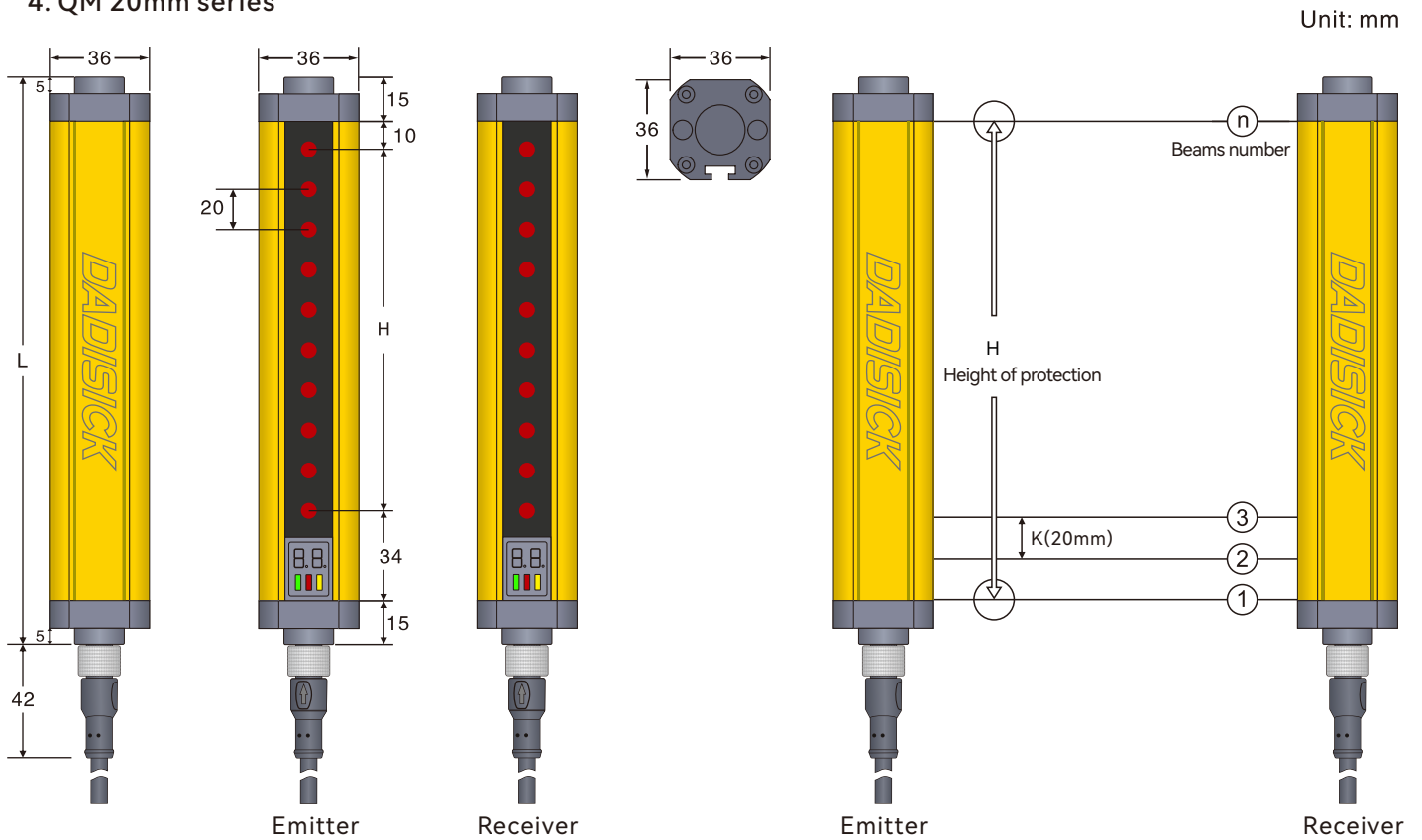
K: Resolution ratio

n: Beams number

## QM 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)	8	70	134.5	QM08/10-70	2	PNP	0.3-6m
	10	90	154.5	QM10/10-90	2	PNP	0.3-6m
	12	110	174.5	QM12/10-110	2	PNP	0.3-6m
	14	130	194.5	QM14/10-140	2	PNP	0.3-6m
	16	150	214.5	QM16/10-150	2	PNP	0.3-6m
	18	170	234.5	QM18/10-170	2	PNP	0.3-6m
	20	190	254.5	QM20/10-190	2	PNP	0.3-6m
	22	210	274.5	QM22/10-210	2	PNP	0.3-6m
	24	230	294.5	QM24/10-230	2	PNP	0.3-6m
	26	250	314.5	QM26/10-250	2	PNP	0.3-6m
	28	270	334.5	QM28/10-270	2	PNP	0.3-6m
	30	290	354.5	QM30/10-290	2	PNP	0.3-6m
	32	310	374.5	QM32/10-310	2	PNP	0.3-6m
	34	330	394.5	QM34/10-330	2	PNP	0.3-6m
	36	350	414.5	QM36/10-350	2	PNP	0.3-6m
	38	370	434.5	QM38/10-370	2	PNP	0.3-6m
	40	390	454.5	QM40/10-390	2	PNP	0.3-6m
	42	410	474.5	QM42/10-410	2	PNP	0.3-6m
	44	430	494.5	QM44/10-430	2	PNP	0.3-6m
	46	450	514.5	QM46/10-450	2	PNP	0.3-6m
	48	470	534.5	QM48/10-470	2	PNP	0.3-6m
	50	490	554.5	QM50/10-490	2	PNP	0.3-6m
	52	510	574.5	QM52/10-510	2	PNP	0.3-6m
	54	530	594.5	QM54/10-530	2	PNP	0.3-6m
56	550	614.5	QM56/10-550	2	PNP	0.3-6m	
58	570	634.5	QM58/10-570	2	PNP	0.3-6m	
60	590	654.5	QM60/10-590	2	PNP	0.3-6m	
62	610	674.5	QM62/10-610	2	PNP	0.3-6m	
...	...	...	...	...	2	PNP	0.3-6m
396	3950	4014.5	4014.5	QM396/10-3950	2	PNP	0.3-6m
398	3970	4034.5	4034.5	QM398/10-3970	2	PNP	0.3-6m
400	3990	4054.5	4054.5	QM400/10-3990	2	PNP	0.3-6m

## 4. QM 20mm series



## Remarks

L: Total length of light screen

H: Height of protected area

K: Resolution ratio

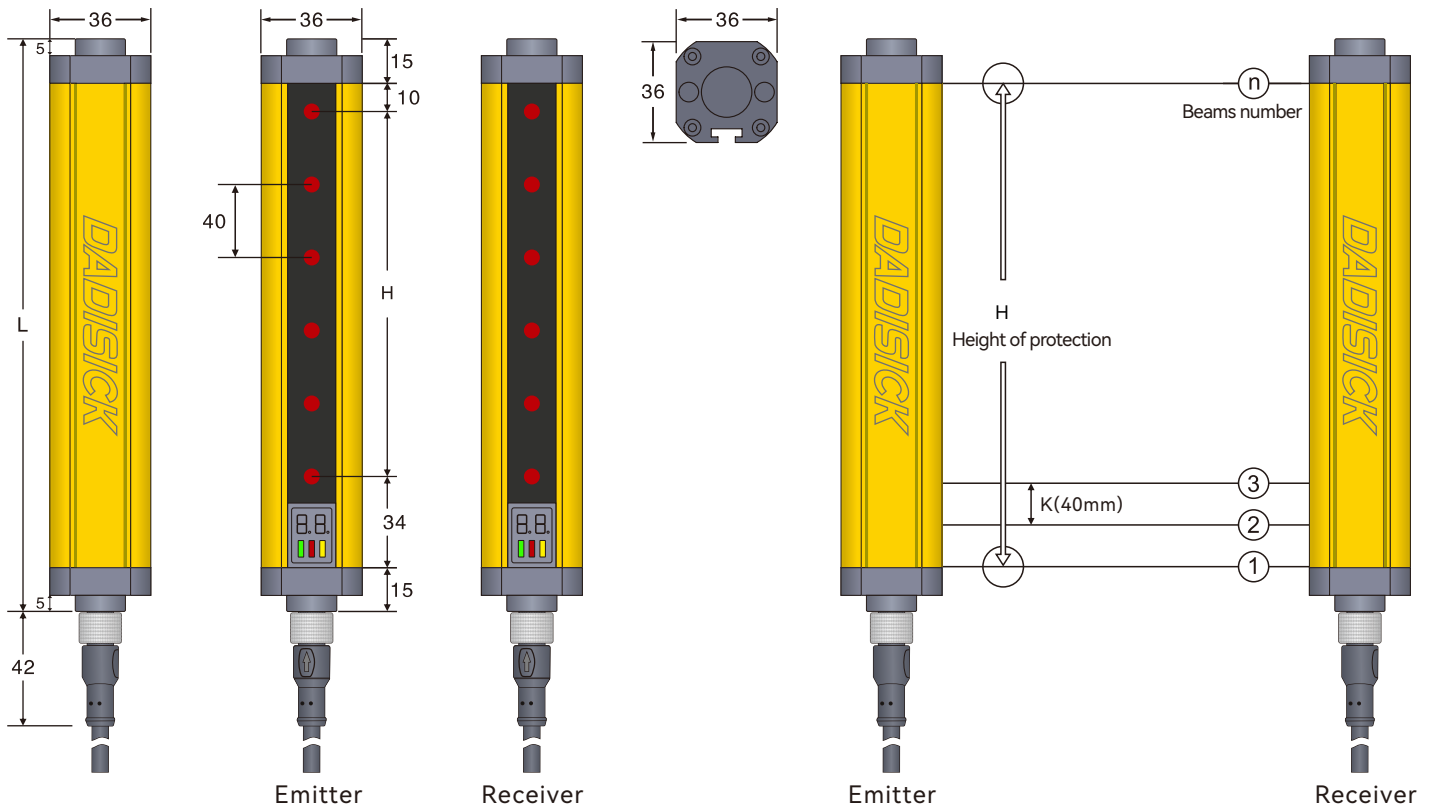
n: Beams number

 $L = 15 + 10 + H + 34 + 15$  $H = (n - 1) * 20$ 

## QM 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)	4	60	134	QM04/20-60	2	PNP	0.3-6m
	6	100	174	QM06/20-100	2	PNP	0.3-6m
	8	140	214	QM08/20-140	2	PNP	0.3-6m
	10	180	254	QM10/20-180	2	PNP	0.3-6m
	12	220	294	QM12/20-220	2	PNP	0.3-6m
	14	260	334	QM14/20-260	2	PNP	0.3-6m
	16	300	374	QM16/20-300	2	PNP	0.3-6m
	18	340	414	QM18/20-340	2	PNP	0.3-6m
	20	380	454	QM20/20-380	2	PNP	0.3-6m
	22	420	494	QM22/20-420	2	PNP	0.3-6m
	24	460	534	QM24/20-460	2	PNP	0.3-6m
	26	500	574	QM26/20-500	2	PNP	0.3-6m
	28	540	614	QM28/20-540	2	PNP	0.3-6m
	30	580	654	QM30/20-580	2	PNP	0.3-6m
	32	620	694	QM32/20-620	2	PNP	0.3-6m
	34	660	734	QM34/20-660	2	PNP	0.3-6m
	36	700	774	QM36/20-700	2	PNP	0.3-6m
	38	740	814	QM38/20-740	2	PNP	0.3-6m
	40	780	854	QM40/20-780	2	PNP	0.3-6m
	42	820	894	QM42/20-820	2	PNP	0.3-6m
44	860	934	QM44/20-860	2	PNP	0.3-6m	
46	900	974	QM46/20-900	2	PNP	0.3-6m	
48	940	1014	QM48/20-940	2	PNP	0.3-6m	
50	980	1054	QM50/20-980	2	PNP	0.3-6m	
52	1020	1094	QM52/20-1020	2	PNP	0.3-6m	
54	1060	1134	QM54/20-1060	2	PNP	0.3-6m	
56	1100	1174	QM56/20-1100	2	PNP	0.3-6m	
58	1140	1214	QM58/20-1140	2	PNP	0.3-6m	
60	1180	1254	QM60/20-1180	2	PNP	0.3-6m	
62	1220	1294	QM62/20-1220	2	PNP	0.3-6m	
64	1260	1334	QM64/20-1260	2	PNP	0.3-6m	
...	...	...	...	...	2	PNP	0.3-6m
196	3900	3974	QM196/20-3900	2	PNP	0.3-6m	
198	3940	4014	QM198/20-3940	2	PNP	0.3-6m	
200	3980	4054	QM200/20-3980	2	PNP	0.3-6m	

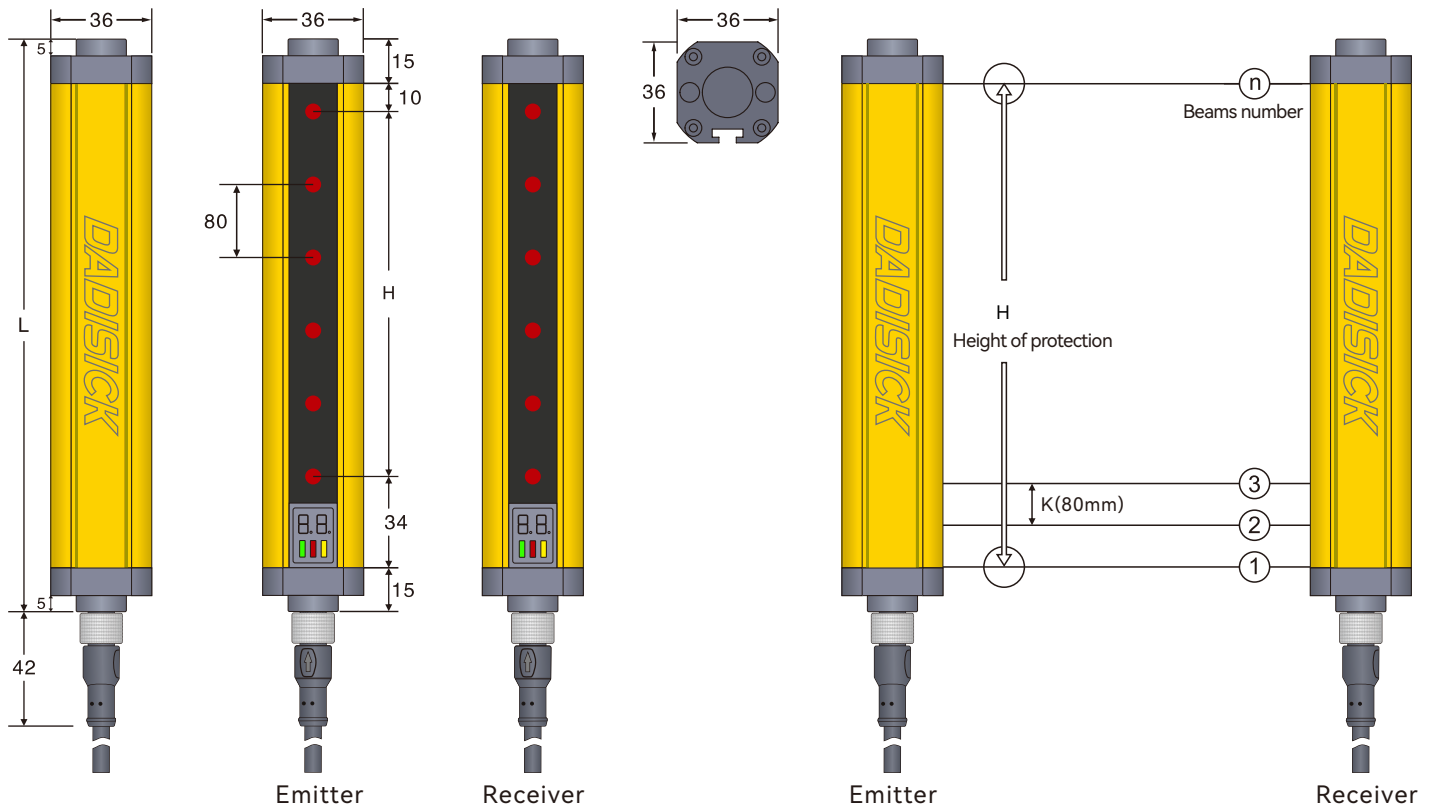
## 5. QM 40mm series



## QM 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	194	QM04/40-120	2	PNP	0.3-6m
	6	200	274	QM06/40-200	2	PNP	0.3-6m
	8	280	354	QM08/40-280	2	PNP	0.3-6m
	10	360	434	QM10/40-360	2	PNP	0.3-6m
	12	440	514	QM12/40-440	2	PNP	0.3-6m
	14	520	594	QM14/40-520	2	PNP	0.3-6m
	16	600	674	QM16/40-600	2	PNP	0.3-6m
	18	680	754	QM18/40-680	2	PNP	0.3-6m
	20	760	834	QM20/40-760	2	PNP	0.3-6m
	22	840	914	QM22/40-840	2	PNP	0.3-6m
	24	920	994	QM24/40-920	2	PNP	0.3-6m
	26	1000	1074	QM26/40-1000	2	PNP	0.3-6m
	28	1080	1154	QM28/40-1080	2	PNP	0.3-6m
	30	1160	1234	QM30/40-1160	2	PNP	0.3-6m
	32	1240	1314	QM32/40-1240	2	PNP	0.3-6m
	34	1320	1394	QM34/40-1320	2	PNP	0.3-6m
	36	1400	1474	QM36/40-1400	2	PNP	0.3-6m
	38	1480	1554	QM38/40-1480	2	PNP	0.3-6m
	40	1560	1634	QM40/40-1560	2	PNP	0.3-6m
	42	1640	1714	QM42/40-1640	2	PNP	0.3-6m
	44	1720	1794	QM44/40-1720	2	PNP	0.3-6m
	46	1800	1874	QM46/40-1800	2	PNP	0.3-6m
	48	1880	1954	QM48/40-1880	2	PNP	0.3-6m
	50	1960	2034	QM50/40-1960	2	PNP	0.3-6m
	52	2040	2114	QM52/40-2040	2	PNP	0.3-6m
	54	2120	2194	QM54/40-2120	2	PNP	0.3-6m
56	2200	2274	QM56/40-2200	2	PNP	0.3-6m	
58	2280	2354	QM58/40-2280	2	PNP	0.3-6m	
60	2360	2434	QM60/40-2360	2	PNP	0.3-6m	
62	2440	2514	QM62/40-2440	2	PNP	0.3-6m	
64	2520	2594	QM64/40-2520	2	PNP	0.3-6m	
...	...	...	...	...	2	PNP	0.3-6m
96	3800	3874	QM96/40-3800	2	PNP	0.3-6m	
98	3880	3954	QM98/40-3880	2	PNP	0.3-6m	
100	3960	4034	QM100/40-3960	2	PNP	0.3-6m	

## 6. QM 80mm series



## Remarks

L: Total length of light screen  
 $L = 15 + 10 + H + 34 + 15$

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

K: Resolution ratio

n: Beams number

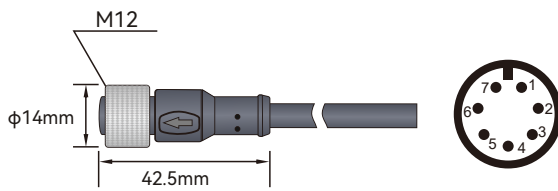
## QM 80mm specification list

Resolution	Light beam	Protection height (H)	Total height (L)	Product model	Signal output mode		Detection range
					Two outputs	PNP output	
80mm (K)	4	240	314	QM04/80-240	2	PNP	0.3-6m
	6	400	474	QM06/80-400	2	PNP	0.3-6m
	8	560	634	QM08/80-560	2	PNP	0.3-6m
	10	720	794	QM10/80-720	2	PNP	0.3-6m
	12	880	954	QM12/80-880	2	PNP	0.3-6m
	14	1040	1114	QM14/80-1040	2	PNP	0.3-6m
	16	1200	1274	QM16/80-1200	2	PNP	0.3-6m
	18	1360	1434	QM18/80-1360	2	PNP	0.3-6m
	20	1520	1594	QM20/80-1520	2	PNP	0.3-6m
	22	1680	1754	QM22/80-1680	2	PNP	0.3-6m
	24	1840	1914	QM24/80-1840	2	PNP	0.3-6m
	26	2000	2074	QM26/80-2000	2	PNP	0.3-6m
	28	2160	2234	QM28/80-2160	2	PNP	0.3-6m
	30	2320	2394	QM30/80-2320	2	PNP	0.3-6m
	32	2480	2554	QM32/80-2480	2	PNP	0.3-6m
	34	2640	2714	QM34/80-2640	2	PNP	0.3-6m
	36	2800	2874	QM36/80-2800	2	PNP	0.3-6m
	38	2960	3034	QM38/80-2960	2	PNP	0.3-6m
	40	3120	3194	QM40/80-3120	2	PNP	0.3-6m
	42	3280	3354	QM42/80-3280	2	PNP	0.3-6m
44	3440	3514	QM44/80-3440	2	PNP	0.3-6m	
46	3600	3674	QM46/80-3600	2	PNP	0.3-6m	
48	3760	3834	QM48/80-3760	2	PNP	0.3-6m	
50	3920	3994	QM50/80-3920	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 <sup>2</sup>
Maximum link cable	100m
Maximum allowable cable load	4.9A
Cable material	PVC

### Cable description:



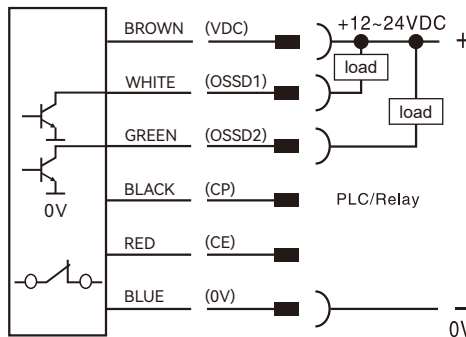
7-pin M12 cable connector straight  
3m waterproof cable

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

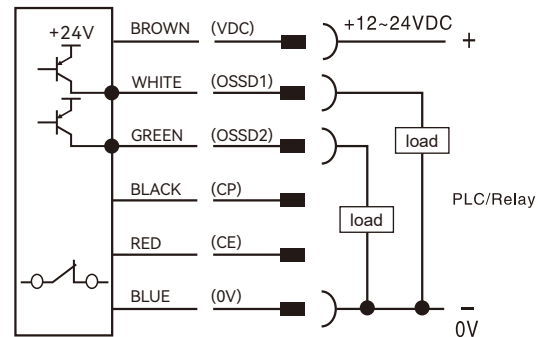
### 1. QM signal output selection (actual output of transistor working normally)

#### NPN NC



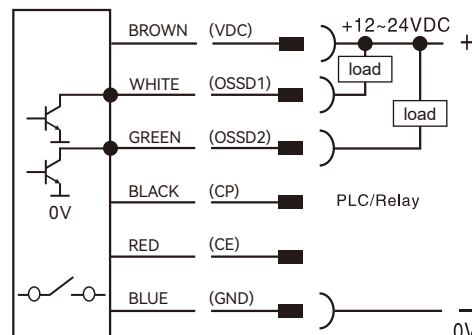
A

#### PNP NC



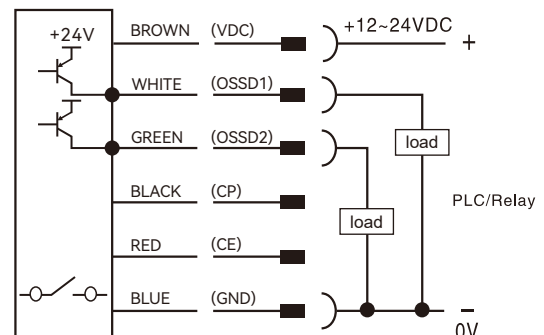
B

#### NPN NO



C

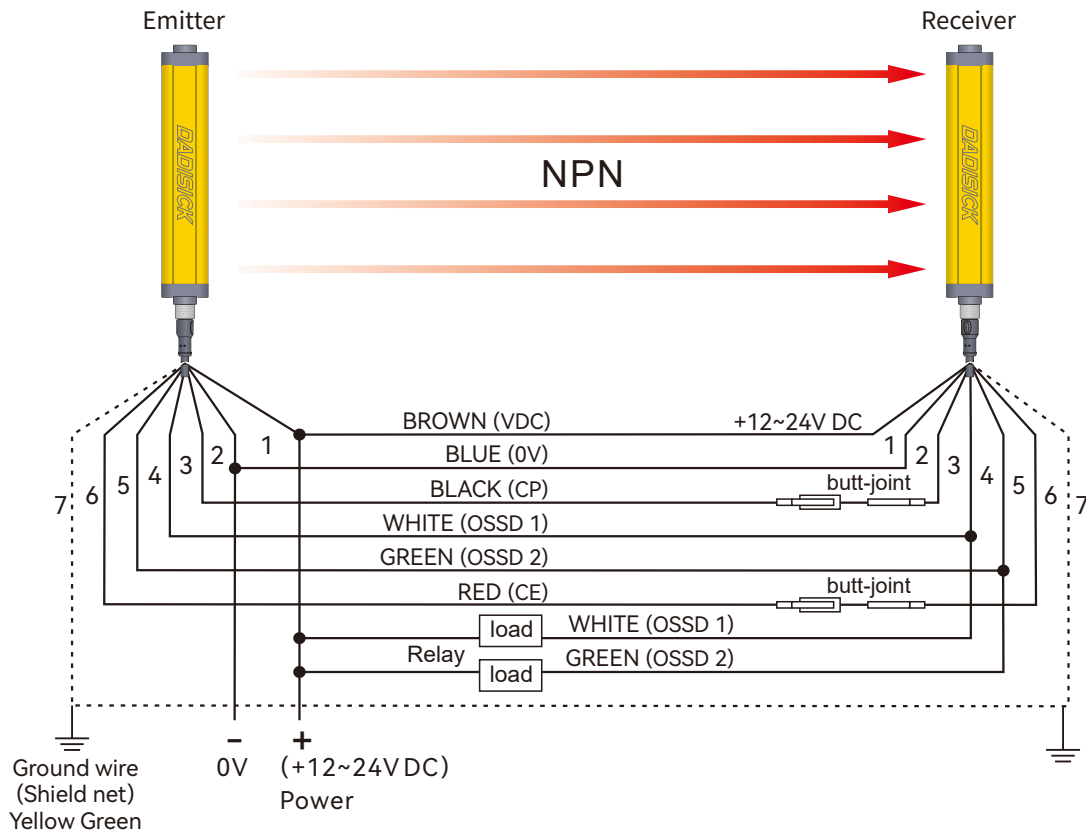
#### PNP NO



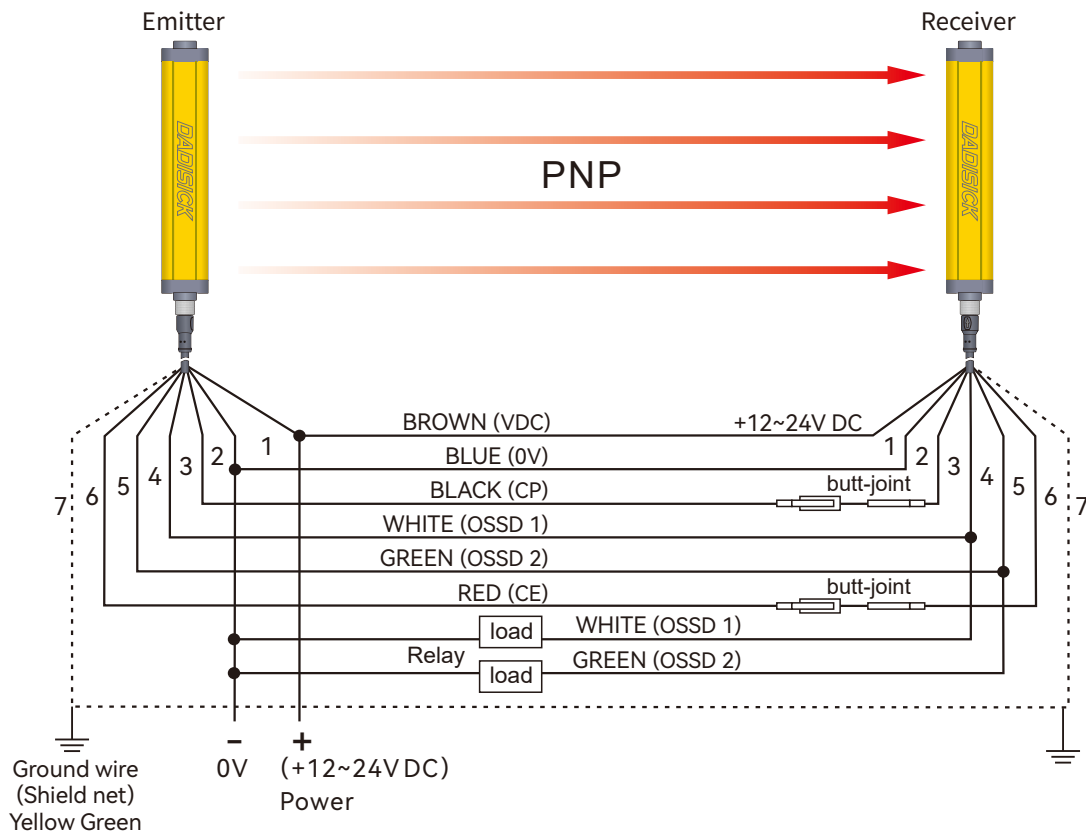
D








## 2. NPN output wiring diagram



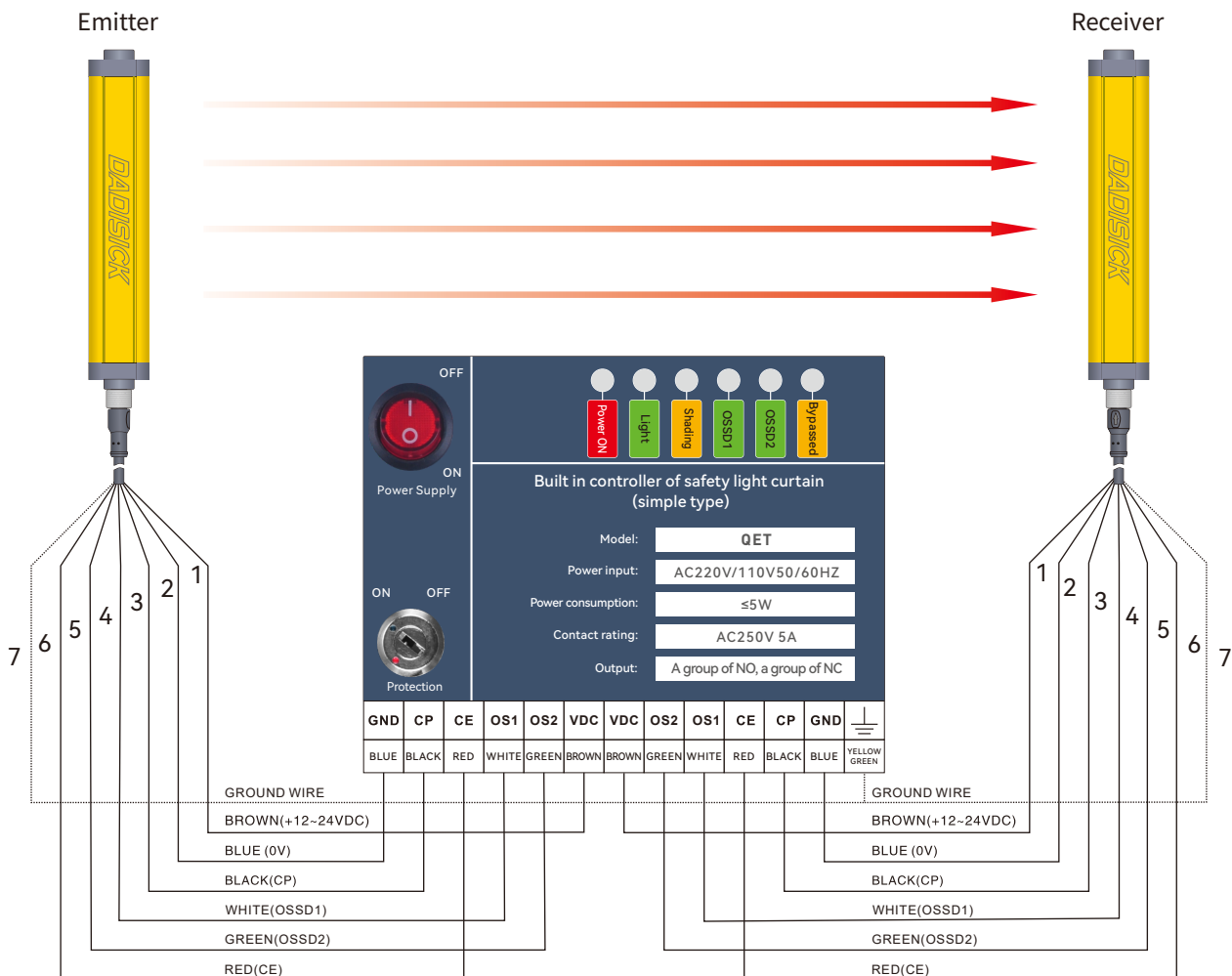
## 3. PNP output wiring diagram



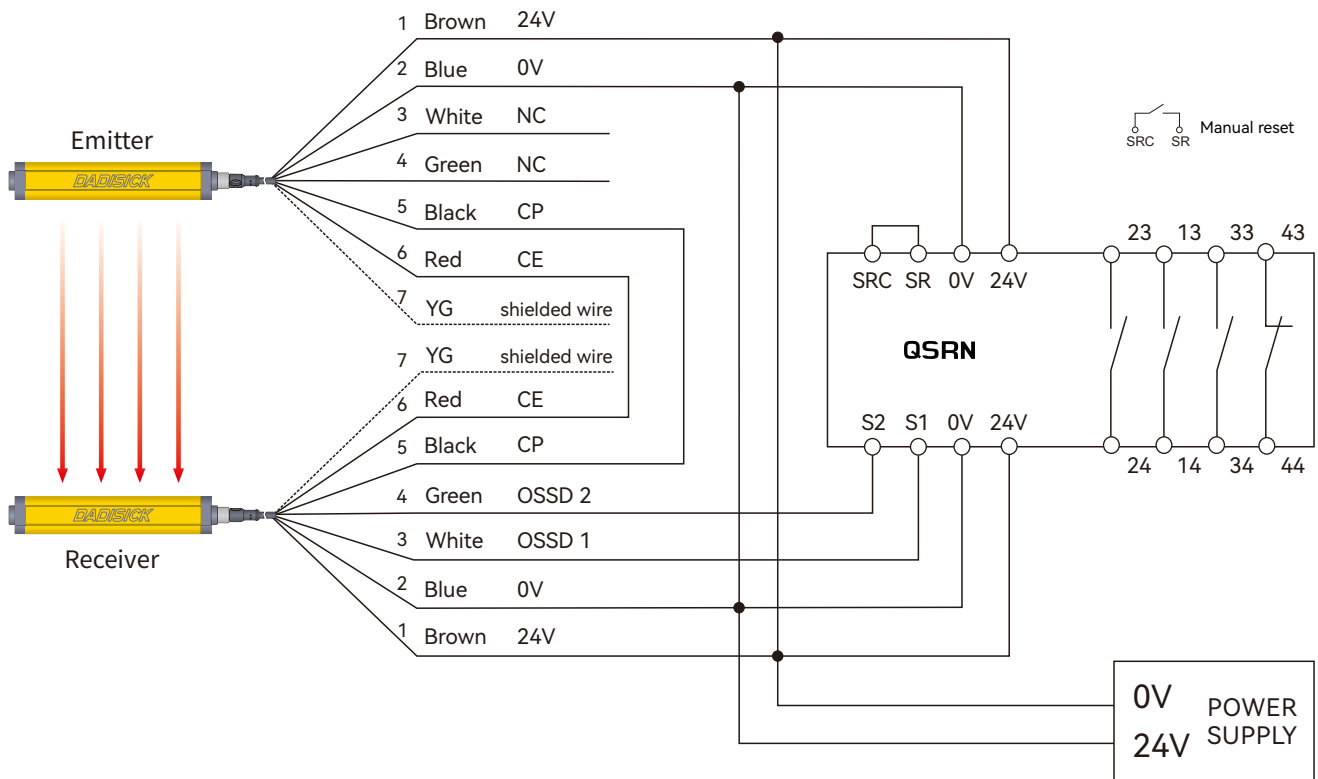
#### 4. Selection of safety light curtain controller

Name	Order separately	Model	Descriptions
Built-in controller		QET	Used to monitor the signal processing of QM series light curtain, and output one group of NO and one group of NC.
Safety relay		QSRN	QSRN 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	Ter-A	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 QM series light curtain.

#### 4.1 Wiring diagram of QET built-in controller

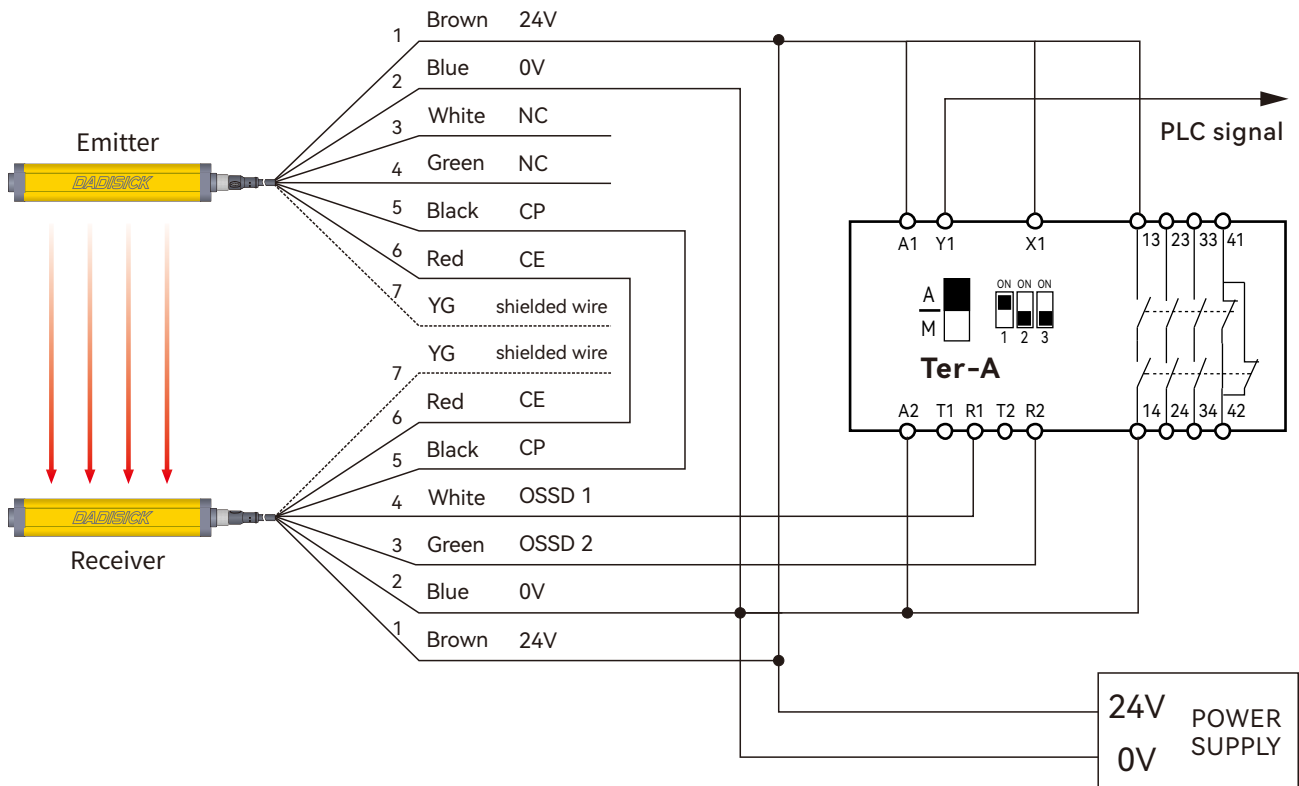


## 4.2 Wiring diagram of QSRN safety relay

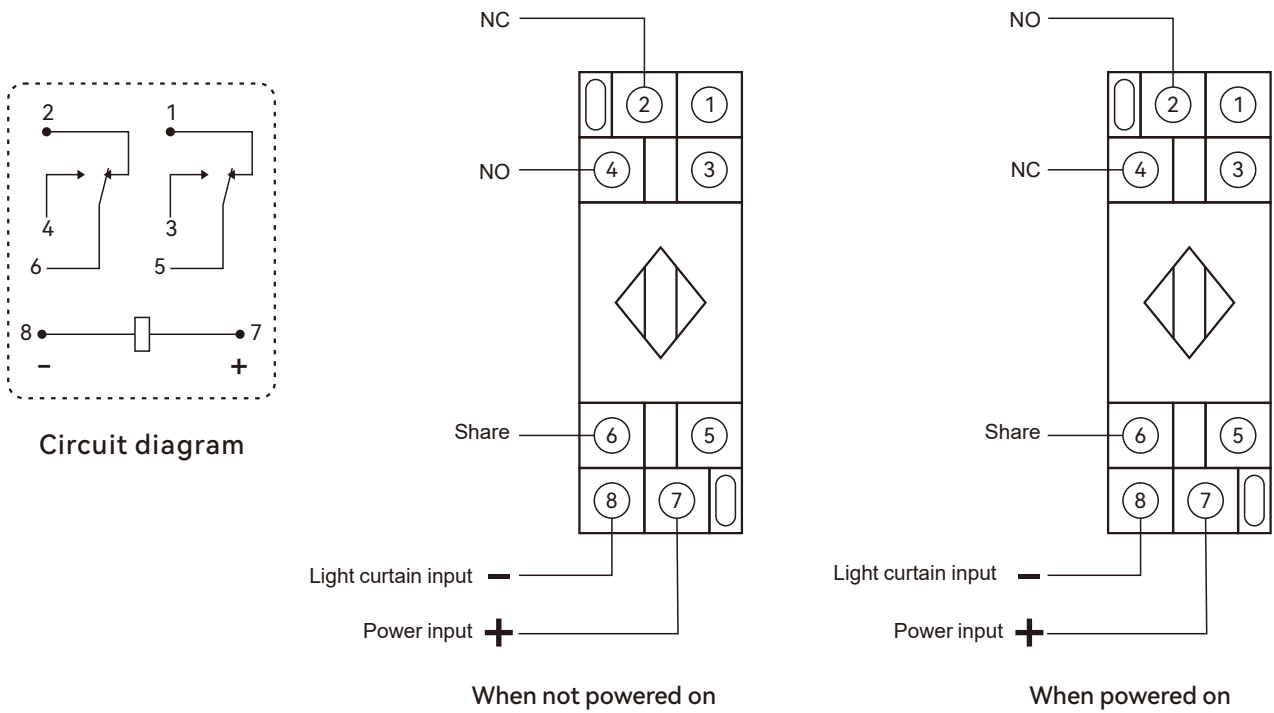


## 4.3 Wiring diagram of Ter-A safety relay

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

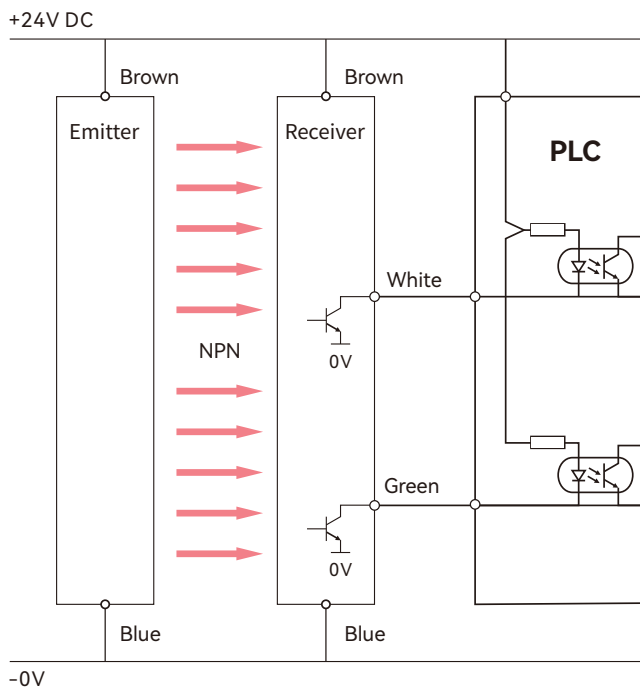


#### 4.4 Wiring diagram of QET-1 light curtain relay

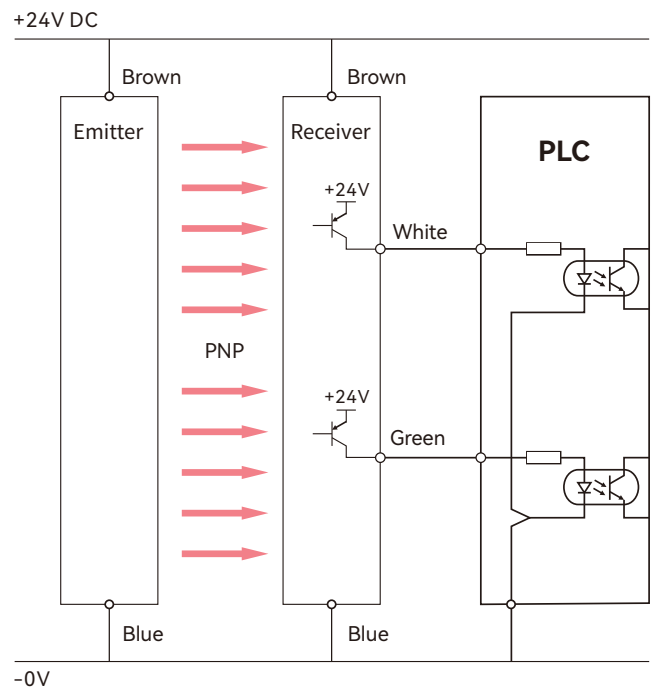


#### 4.5 Wiring between light curtain and PLC and one-chip computer system

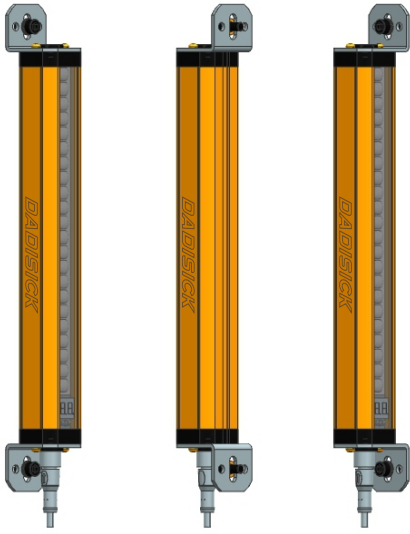
NPN wiring:



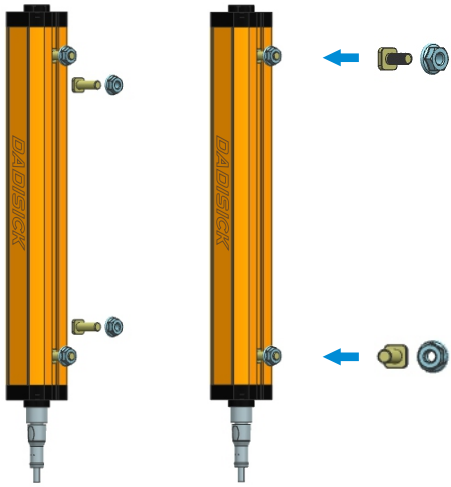
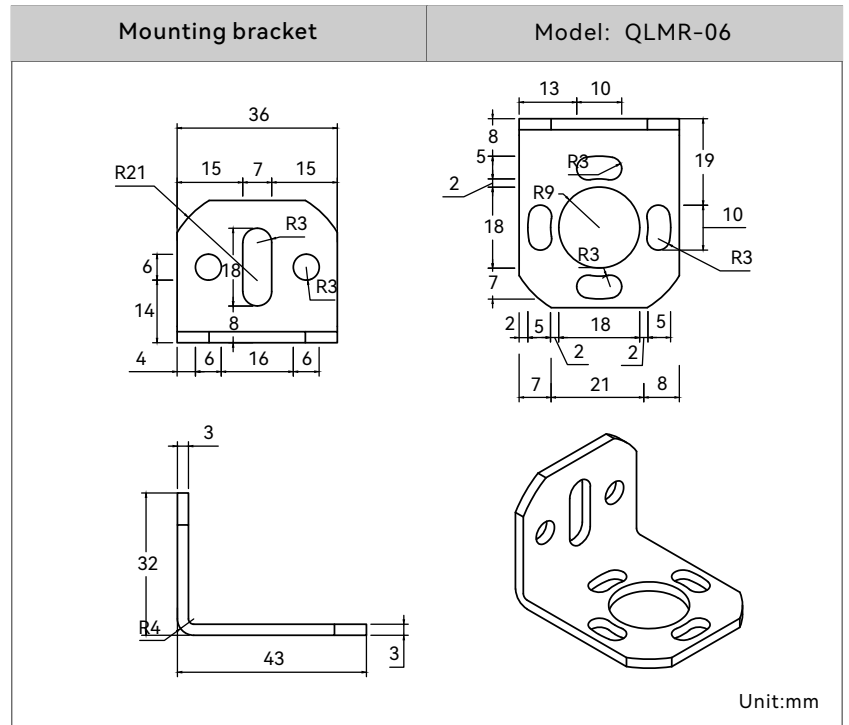
PNP wiring:



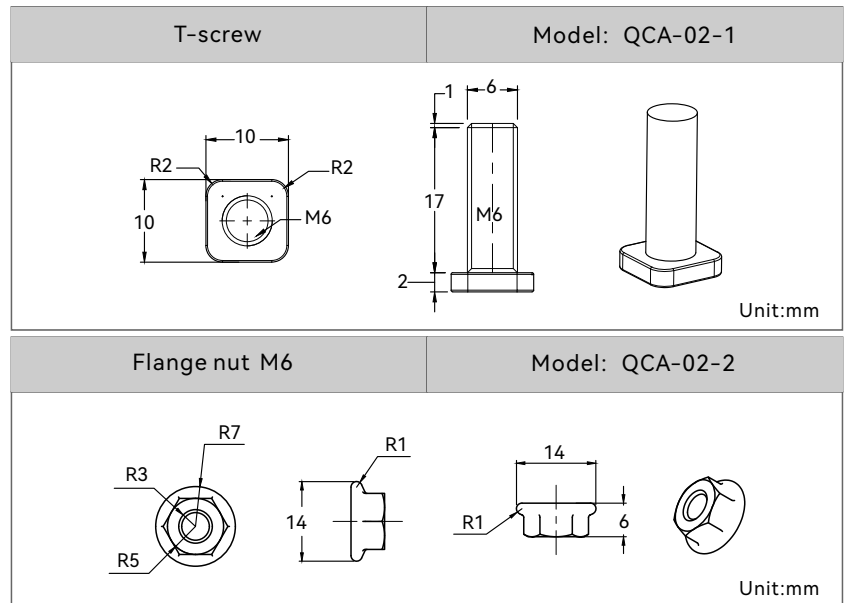
## Accessories

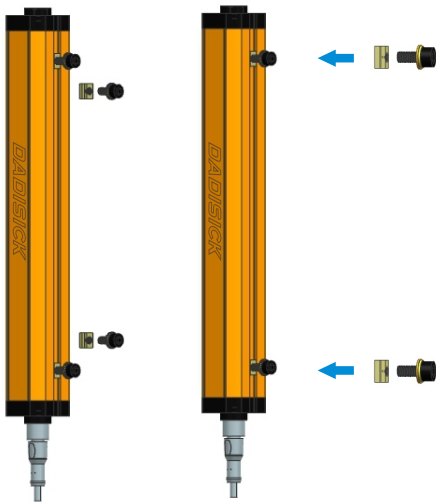


1. Installation of right angle brackets at both ends  
(Original accessories)



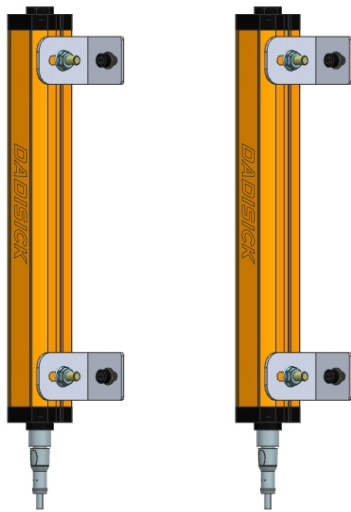
2. Installation method of T-shaped screws on the back  
(Original accessories)





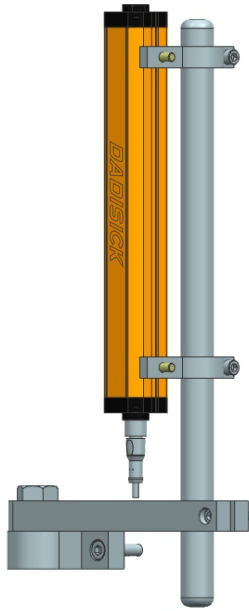
3. Installation method of convex nut  
(Optional accessories)

Raised nut	Model: QCA-03-1
	<p>Unit:mm</p>
M5 screw	Model: QCA-03-2
	<p>Unit:mm</p>



4. Installation method of side right angle bracket  
(Optional accessories)

Side mounting bracket	Model: QCA-05
	<p>Unit:mm</p>



5. Stainless steel bracket installation  
(Order separately)

