

TECHNICAL DATA SHEET

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



Figure can vary

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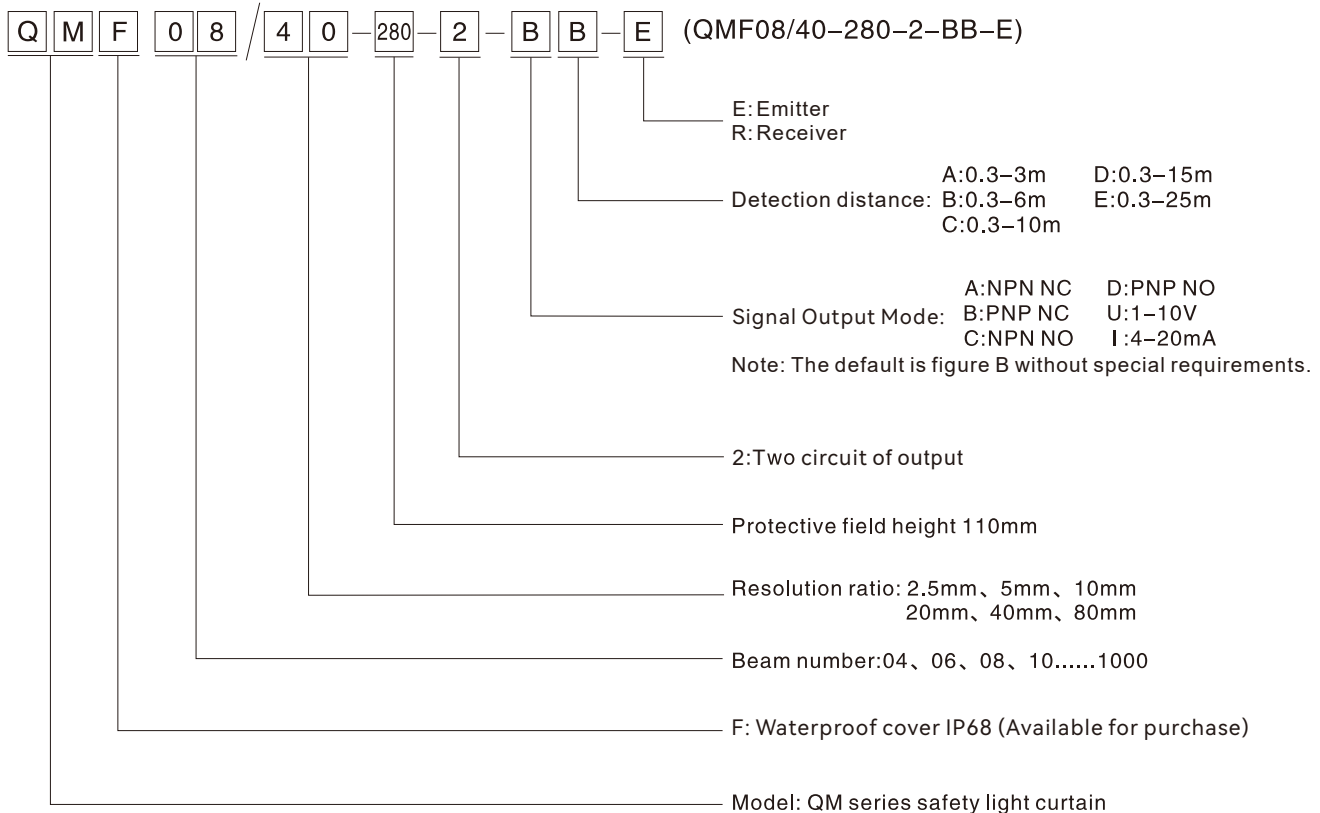


GB/T 19001-2016

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.

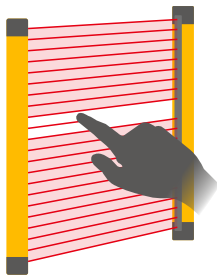
The specifications of QE type safety light curtain are as follows:



Resolution ratio

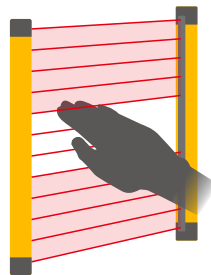
Depending on the usage environment and requirements, it is important to choose the appropriate beam spacing

Finger protection



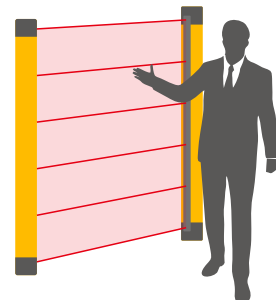
Detection capability
2.5/5/10/20mm
diameter

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	QMF 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	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	Φ50mm*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

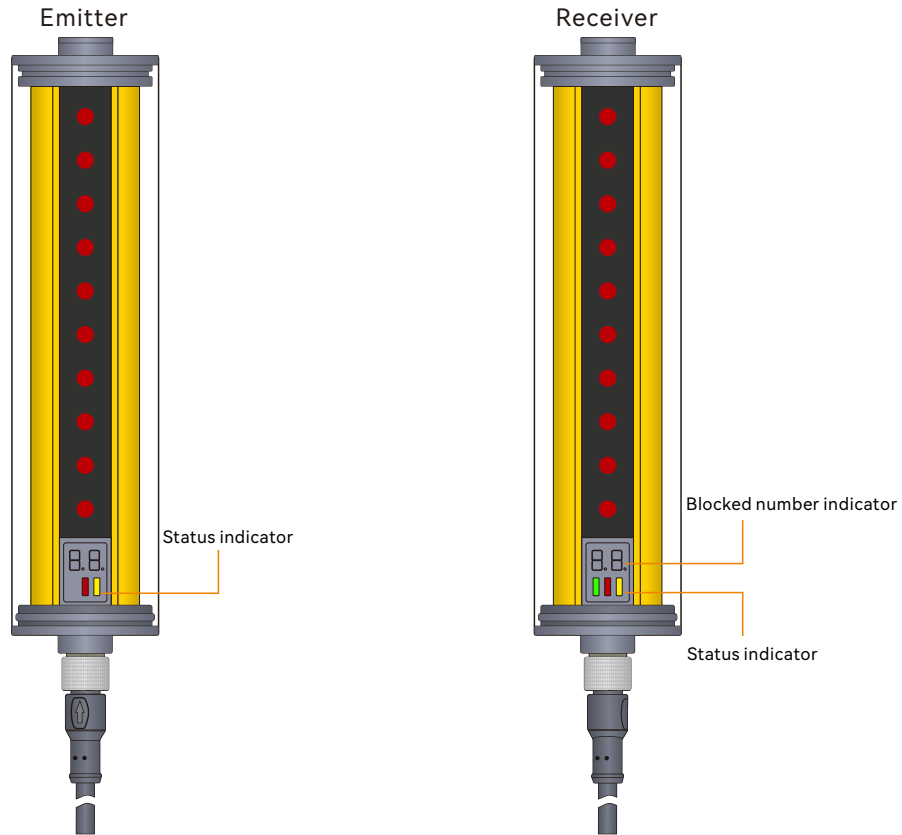
Mechanical data	
Housing material	Metal
Metal shell	Aluminium
Lens front screen material	Acrylic
Upper and lower cover materials	ABS reinforced nylon PA66+30% GF






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

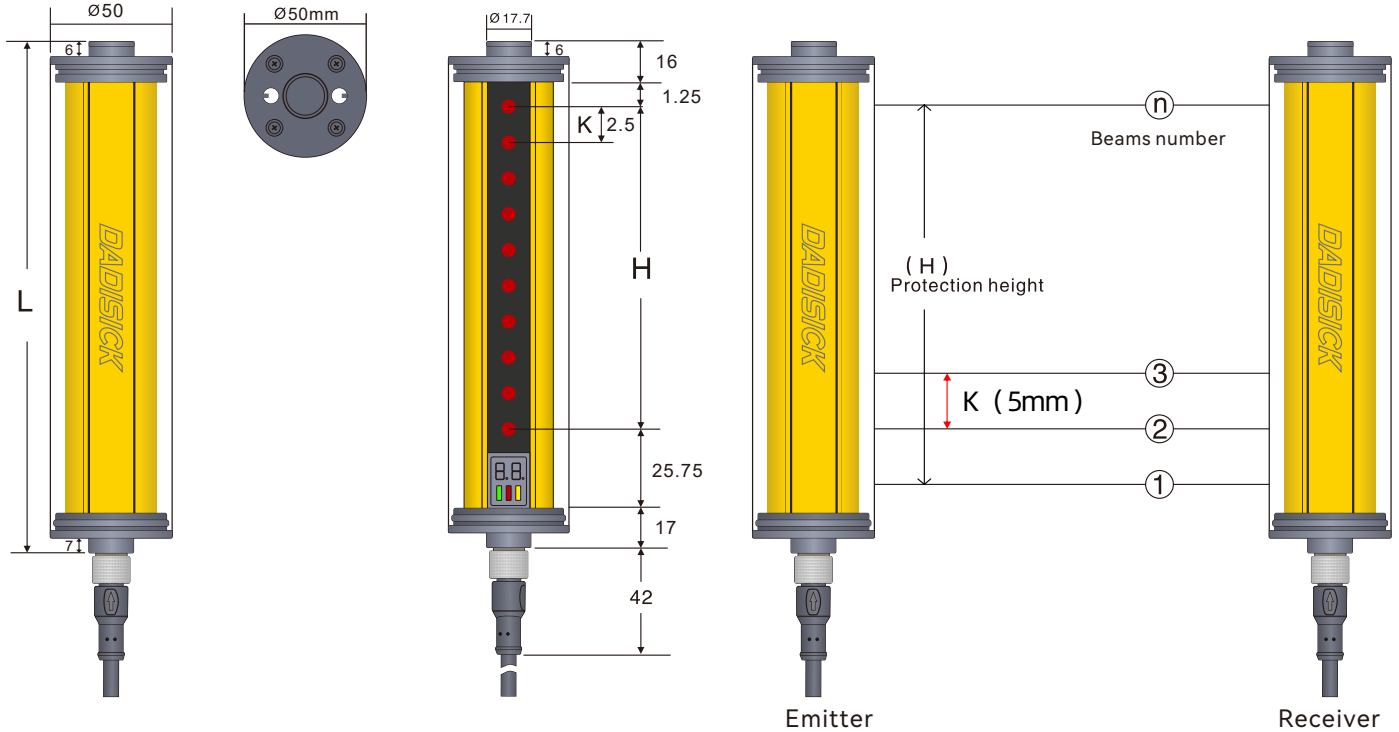


Status indicator	LED status Indicator	Explain
Emitter	 Red and Yellow, always on	Turns on the power
Receiver	 Red, always on	Turns on the power
	 Green and Red	All light paths are connected
	 Red and Yellow	The light is blocked or misaligned
	 Lights flashing	Interference or overstep detection range

Dimensioned drawings

1. QMF 2.5mm series

Unit: mm



Remarks

L: Total length of light screen
 $L = 16 + 1.25 + H + 25.75 + 17$

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

K: Resolution ratio

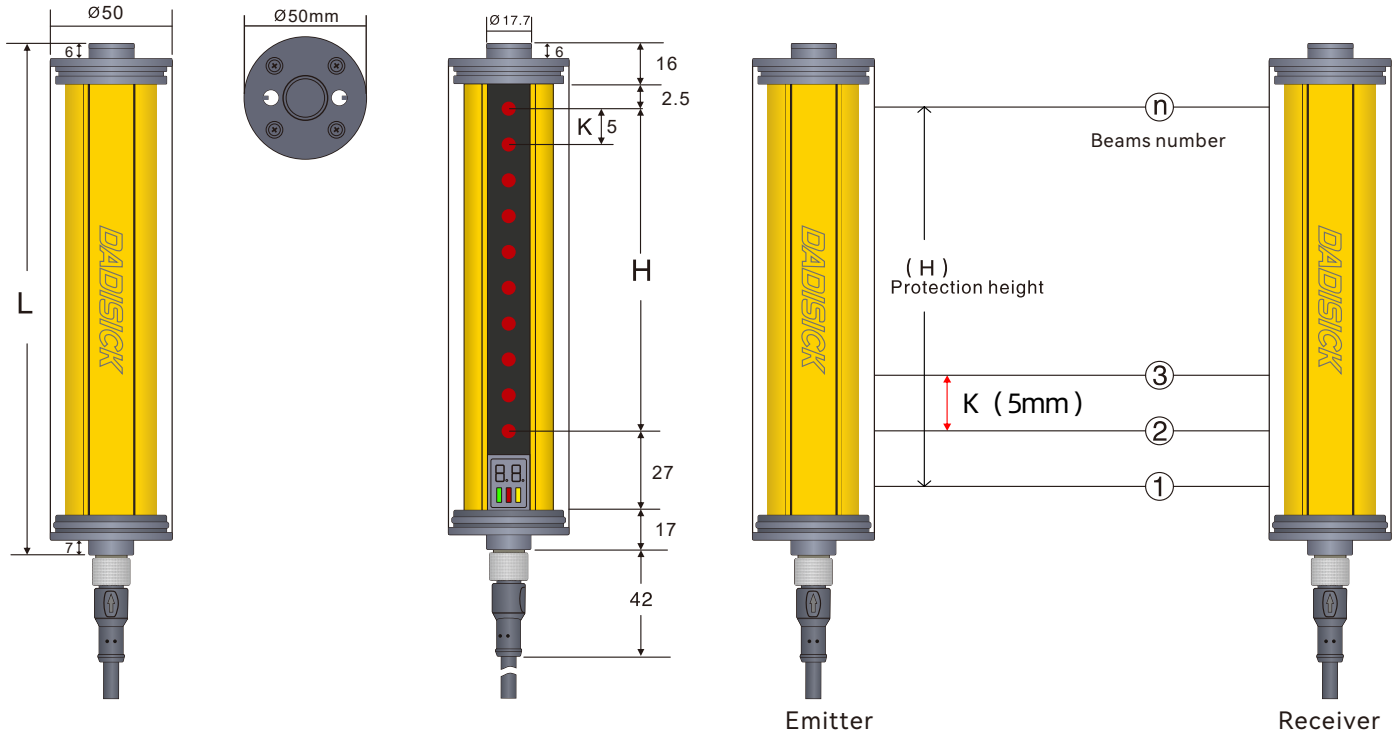
n: Beams number

QMF 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	137.5	QMF32/2.5-77.5	2	PNP	0.3-3m
	40	97.5	157.5	QMF40/2.5-97.5	2	PNP	0.3-3m
	48	117.5	177.5	QMF48/2.5-117.5	2	PNP	0.3-3m
	56	137.5	197.5	QMF56/2.5-137.5	2	PNP	0.3-3m
	64	157.5	217.5	QMF64/2.5-157.5	2	PNP	0.3-3m
	72	177.5	237.5	QMF72/2.5-177.5	2	PNP	0.3-3m
	80	197.5	257.5	QMF80/2.5-197.5	2	PNP	0.3-3m
	88	217.5	277.5	QMF88/2.5-217.5	2	PNP	0.3-3m
	96	237.5	297.5	QMF96/2.5-237.5	2	PNP	0.3-3m
	104	257.5	317.5	QMF104/2.5-257.5	2	PNP	0.3-3m
	112	277.5	337.5	QMF112/2.5-277.5	2	PNP	0.3-3m
	120	297.5	357.5	QMF120/2.5-297.5	2	PNP	0.3-3m
	128	317.5	377.5	QMF128/2.5-317.5	2	PNP	0.3-3m
	136	337.5	397.5	QMF136/2.5-337.5	2	PNP	0.3-3m
	144	357.5	417.5	QMF144/2.5-357.5	2	PNP	0.3-3m
	152	377.5	437.5	QMF152/2.5-377.5	2	PNP	0.3-3m
	160	397.5	457.5	QMF160/2.5-397.5	2	PNP	0.3-3m
	168	417.5	477.5	QMF168/2.5-417.5	2	PNP	0.3-3m
	176	437.5	497.5	QMF176/2.5-437.5	2	PNP	0.3-3m
	184	457.5	517.5	QMF184/2.5-457.5	2	PNP	0.3-3m
	192	477.5	537.5	QMF192/2.5-477.5	2	PNP	0.3-3m
	200	497.5	557.5	QMF200/2.5-497.5	2	PNP	0.3-3m
	208	517.5	577.5	QMF208/2.5-517.5	2	PNP	0.3-3m
	216	537.5	597.5	QMF216/2.5-537.5	2	PNP	0.3-3m
224	557.5	617.5	QMF224/2.5-557.5	2	PNP	0.3-3m	
232	577.5	637.5	QMF232/2.5-577.5	2	PNP	0.3-3m	
240	597.5	657.5	QMF240/2.5-597.5	2	PNP	0.3-3m	
248	617.5	677.5	QMF248/2.5-617.5	2	PNP	0.3-3m	
...	...	...	...	...	2	PNP	0.3-3m
304	757.5	817.5	QMF304/2.5-757.5	2	PNP	0.3-3m	
312	777.5	837.5	QMF312/2.5-777.5	2	PNP	0.3-3m	
320	797.5	857.5	QMF320/2.5-797.5	2	PNP	0.3-3m	

2. QMF 5mm series

Unit: mm



Remarks

L: Total length of light screen
 $L = 16 + 2.5 + H + 27 + 17$

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

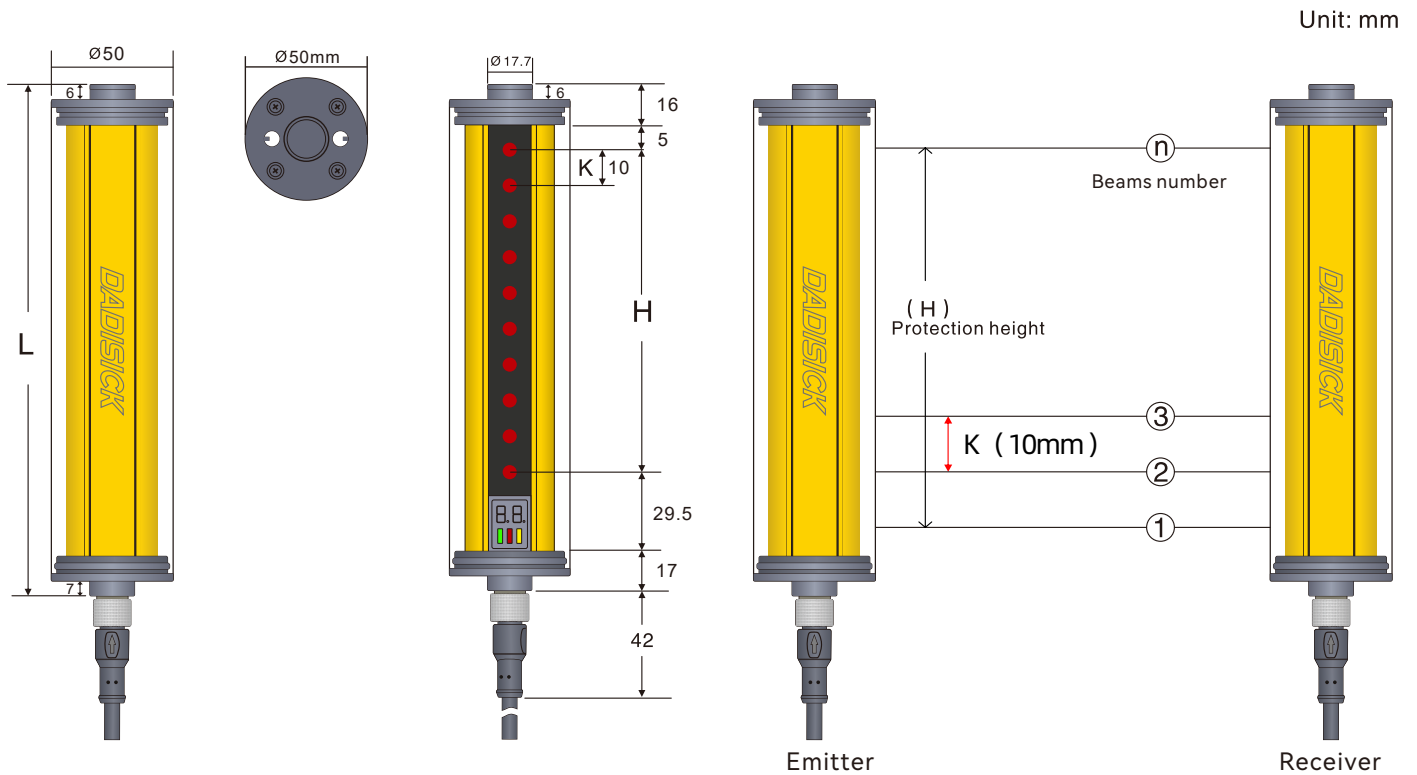
K: Resolution ratio

n: Beams number

QMF 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	137.5	QMF16/5-75	2	PNP	0.3-3m
	24	115	177.5	QMF24/5-115	2	PNP	0.3-3m
	32	155	217.5	QMF32/5-155	2	PNP	0.3-3m
	40	195	257.5	QMF40/5-195	2	PNP	0.3-3m
	48	235	297.5	QMF48/5-235	2	PNP	0.3-3m
	56	275	337.5	QMF56/5-275	2	PNP	0.3-3m
	64	315	377.5	QMF64/5-315	2	PNP	0.3-3m
	72	355	417.5	QMF72/5-355	2	PNP	0.3-3m
	80	395	457.5	QMF80/5-395	2	PNP	0.3-3m
	88	435	497.5	QMF88/5-435	2	PNP	0.3-3m
	96	475	537.5	QMF96/5-475	2	PNP	0.3-3m
	104	515	577.5	QMF104/5-515	2	PNP	0.3-3m
	112	555	617.5	QMF112/5-555	2	PNP	0.3-3m
	120	595	657.5	QMF120/5-595	2	PNP	0.3-3m
	128	635	697.5	QMF128/5-635	2	PNP	0.3-3m
	136	675	737.5	QMF136/5-675	2	PNP	0.3-3m
	144	715	777.5	QMF144/5-715	2	PNP	0.3-3m
	152	755	817.5	QMF152/5-755	2	PNP	0.3-3m
	160	795	857.5	QMF160/5-795	2	PNP	0.3-3m
	168	835	897.5	QMF168/5-835	2	PNP	0.3-3m
	176	875	937.5	QMF176/5-875	2	PNP	0.3-3m
	184	915	977.5	QMF184/5-915	2	PNP	0.3-3m
	192	955	1017.5	QMF192/5-955	2	PNP	0.3-3m
	200	995	1057.5	QMF200/5-995	2	PNP	0.3-3m
208	1035	1097.5	QMF208/5-1035	2	PNP	0.3-3m	
216	1075	1137.5	QMF216/5-1075	2	PNP	0.3-3m	
224	1115	1177.5	QMF224/5-1115	2	PNP	0.3-3m	
232	1155	1217.5	QMF232/5-1155	2	PNP	0.3-3m	
...	...	...	...	...	2	PNP	0.3-3m
304	1515	1577.5	QMF304/5-1515	2	PNP	0.3-3m	
312	1555	1617.5	QMF312/5-1555	2	PNP	0.3-3m	
320	1595	1657.5	QMF320/5-1595	2	PNP	0.3-3m	

3. QMF10mm series



Remarks

L: Total length of light screen

H: Height of protected area

K: Resolution ratio

n: Beams number

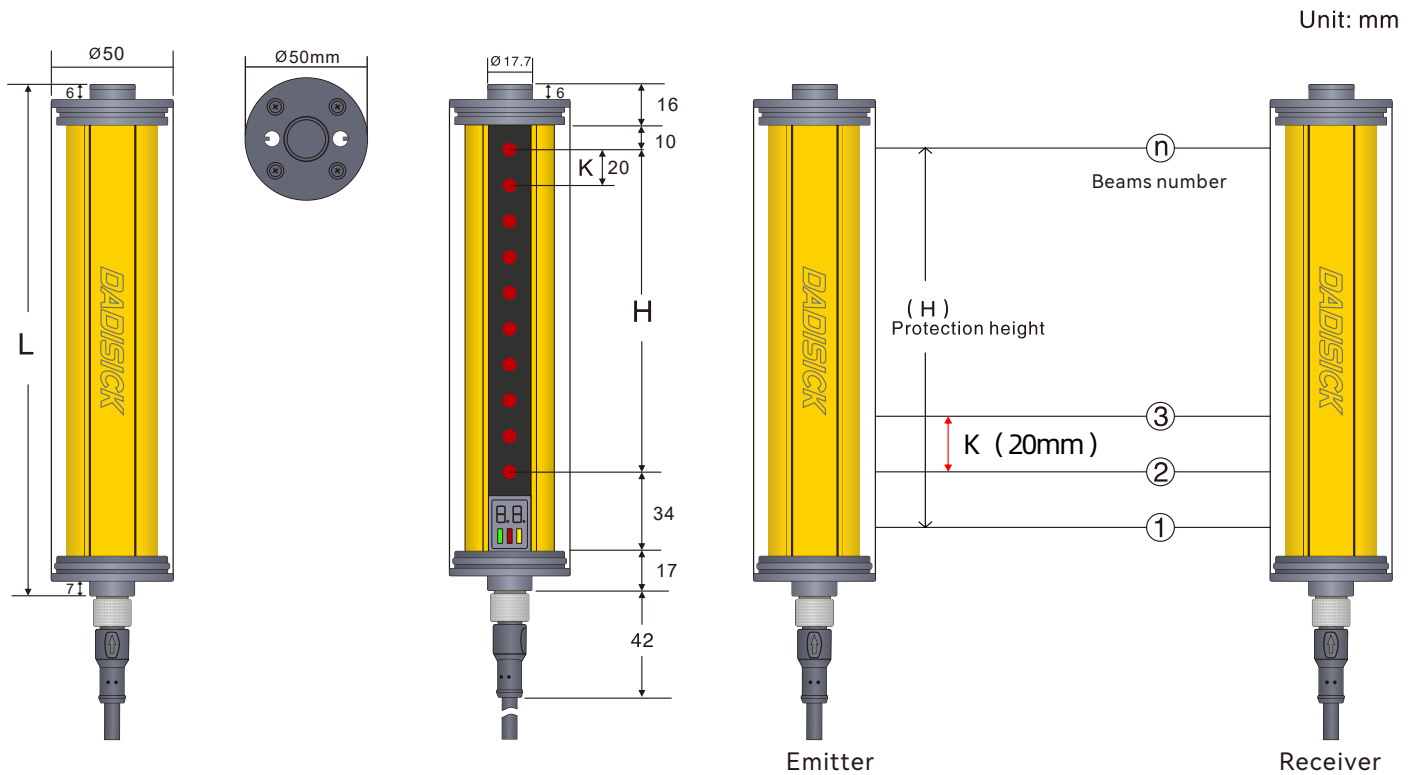
L=16+5+H+29.5+17

H= (n-1) * 10

QMF 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	137.5	QMF08/10-70	2	PNP	0.3-6m
	10	90	157.5	QMF10/10-90	2	PNP	0.3-6m
	12	110	177.5	QMF12/10-110	2	PNP	0.3-6m
	14	130	197.5	QMF14/10-140	2	PNP	0.3-6m
	16	150	217.5	QMF16/10-150	2	PNP	0.3-6m
	18	170	237.5	QMF18/10-170	2	PNP	0.3-6m
	20	190	257.5	QMF20/10-190	2	PNP	0.3-6m
	22	210	277.5	QMF22/10-210	2	PNP	0.3-6m
	24	230	297.5	QMF24/10-230	2	PNP	0.3-6m
	26	250	317.5	QMF26/10-250	2	PNP	0.3-6m
	28	270	337.5	QMF28/10-270	2	PNP	0.3-6m
	30	290	357.5	QMF30/10-290	2	PNP	0.3-6m
	32	310	377.5	QMF32/10-310	2	PNP	0.3-6m
	34	330	397.5	QMF34/10-330	2	PNP	0.3-6m
	36	350	417.5	QMF36/10-350	2	PNP	0.3-6m
	38	370	437.5	QMF38/10-370	2	PNP	0.3-6m
	40	390	457.5	QMF40/10-390	2	PNP	0.3-6m
	42	410	477.5	QMF42/10-410	2	PNP	0.3-6m
	44	430	497.5	QMF44/10-430	2	PNP	0.3-6m
	46	450	517.5	QMF46/10-450	2	PNP	0.3-6m
	48	470	537.5	QMF48/10-470	2	PNP	0.3-6m
	50	490	557.5	QMF50/10-490	2	PNP	0.3-6m
	52	510	577.5	QMF52/10-510	2	PNP	0.3-6m
	54	530	597.5	QMF54/10-530	2	PNP	0.3-6m
	56	550	617.5	QMF56/10-550	2	PNP	0.3-6m
	58	570	637.5	QMF58/10-570	2	PNP	0.3-6m
60	590	657.5	QMF60/10-590	2	PNP	0.3-6m	
62	610	677.5	QMF62/10-610	2	PNP	0.3-6m	
...	...	...	...	...	2	PNP	0.3-6m
296	2950	714.5	QMF66/10-650	2	PNP	0.3-6m	
298	2970	734.5	QMF68/10-670	2	PNP	0.3-6m	
300	2990	754.5	QMF70/10-690	2	PNP	0.3-6m	

4. QMF 20mm series



Remarks

L: Total length of light screen
 $L = 16 + 10 + H + 34 + 17$

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

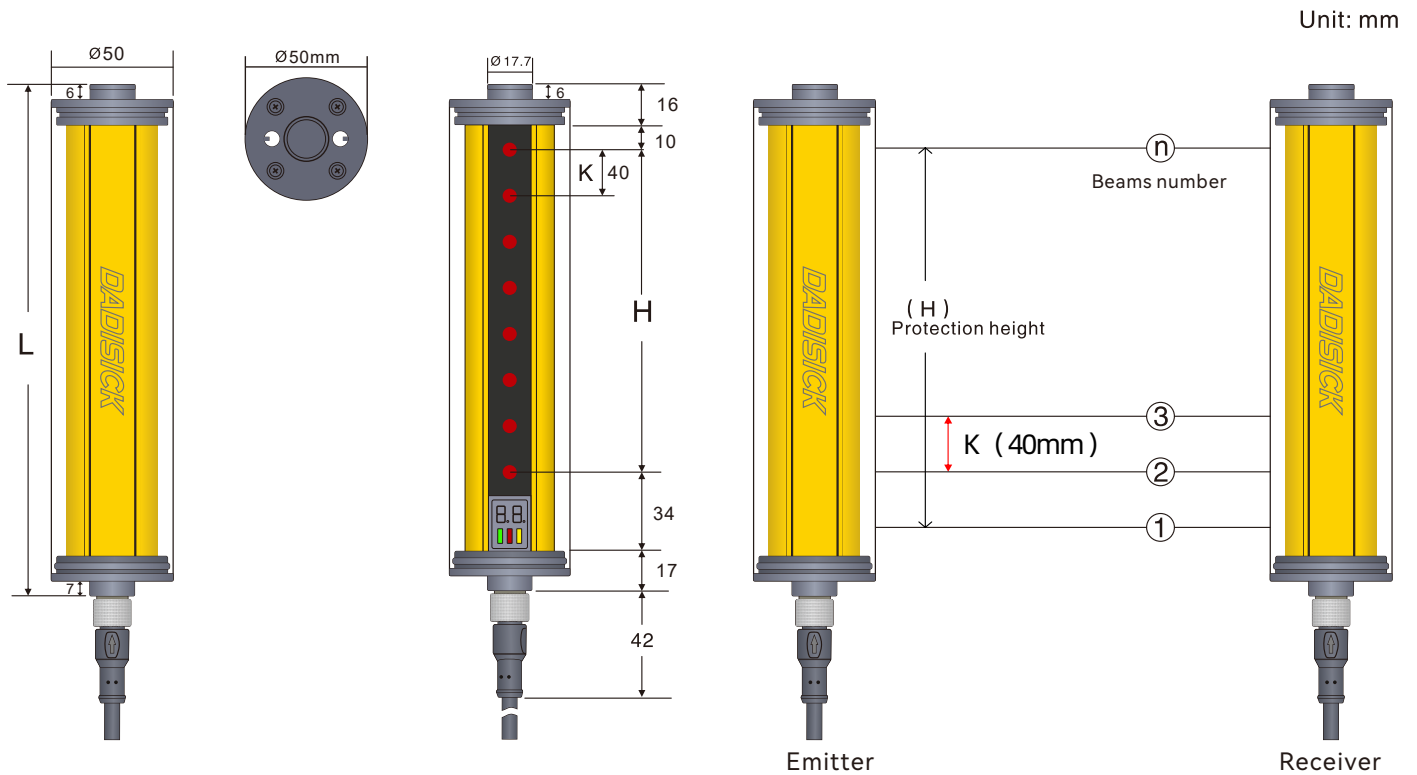
K: Resolution ratio

n: Beams number

QMF 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	137	QMF04/20-60	2	PNP	0.3-6m
	6	100	177	QMF06/20-100	2	PNP	0.3-6m
	8	140	217	QMF08/20-140	2	PNP	0.3-6m
	10	180	257	QMF10/20-180	2	PNP	0.3-6m
	12	220	297	QMF12/20-220	2	PNP	0.3-6m
	14	260	337	QMF14/20-260	2	PNP	0.3-6m
	16	300	377	QMF16/20-300	2	PNP	0.3-6m
	18	340	417	QMF18/20-340	2	PNP	0.3-6m
	20	380	457	QMF20/20-380	2	PNP	0.3-6m
	22	420	497	QMF22/20-420	2	PNP	0.3-6m
	24	460	537	QMF24/20-460	2	PNP	0.3-6m
	26	500	577	QMF26/20-500	2	PNP	0.3-6m
	28	540	617	QMF28/20-540	2	PNP	0.3-6m
	30	580	657	QMF30/20-580	2	PNP	0.3-6m
	32	620	697	QMF32/20-620	2	PNP	0.3-6m
	34	660	737	QMF34/20-660	2	PNP	0.3-6m
	36	700	777	QMF36/20-700	2	PNP	0.3-6m
	38	740	817	QMF38/20-740	2	PNP	0.3-6m
	40	780	857	QMF40/20-780	2	PNP	0.3-6m
	42	820	897	QMF42/20-820	2	PNP	0.3-6m
	44	860	937	QMF44/20-860	2	PNP	0.3-6m
	46	900	977	QMF46/20-900	2	PNP	0.3-6m
	48	940	1017	QMF48/20-940	2	PNP	0.3-6m
	50	980	1057	QMF50/20-980	2	PNP	0.3-6m
	52	1020	1097	QMF52/20-1020	2	PNP	0.3-6m
	54	1060	1137	QMF54/20-1060	2	PNP	0.3-6m
	56	1100	1177	QMF56/20-1100	2	PNP	0.3-6m
	58	1140	1217	QMF58/20-1140	2	PNP	0.3-6m
60	1180	1257	QMF60/20-1180	2	PNP	0.3-6m	
62	1220	1297	QMF62/20-1220	2	PNP	0.3-6m	
64	1260	1337	QMF64/20-1260	2	PNP	0.3-6m	
66	1300	1377	QMF66/20-1300	2	PNP	0.3-6m	
68	1340	1417	QMF68/20-1340	2	PNP	0.3-6m	
70	1380	1457	QMF70/20-1380	2	PNP	0.3-6m	
72	1420	1497	QMF72/20-1420	2	PNP	0.3-6m	

5. QMF 40mm series



Remarks

L: Total length of light screen
 $L = 16 + 10 + H + 34 + 17$

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

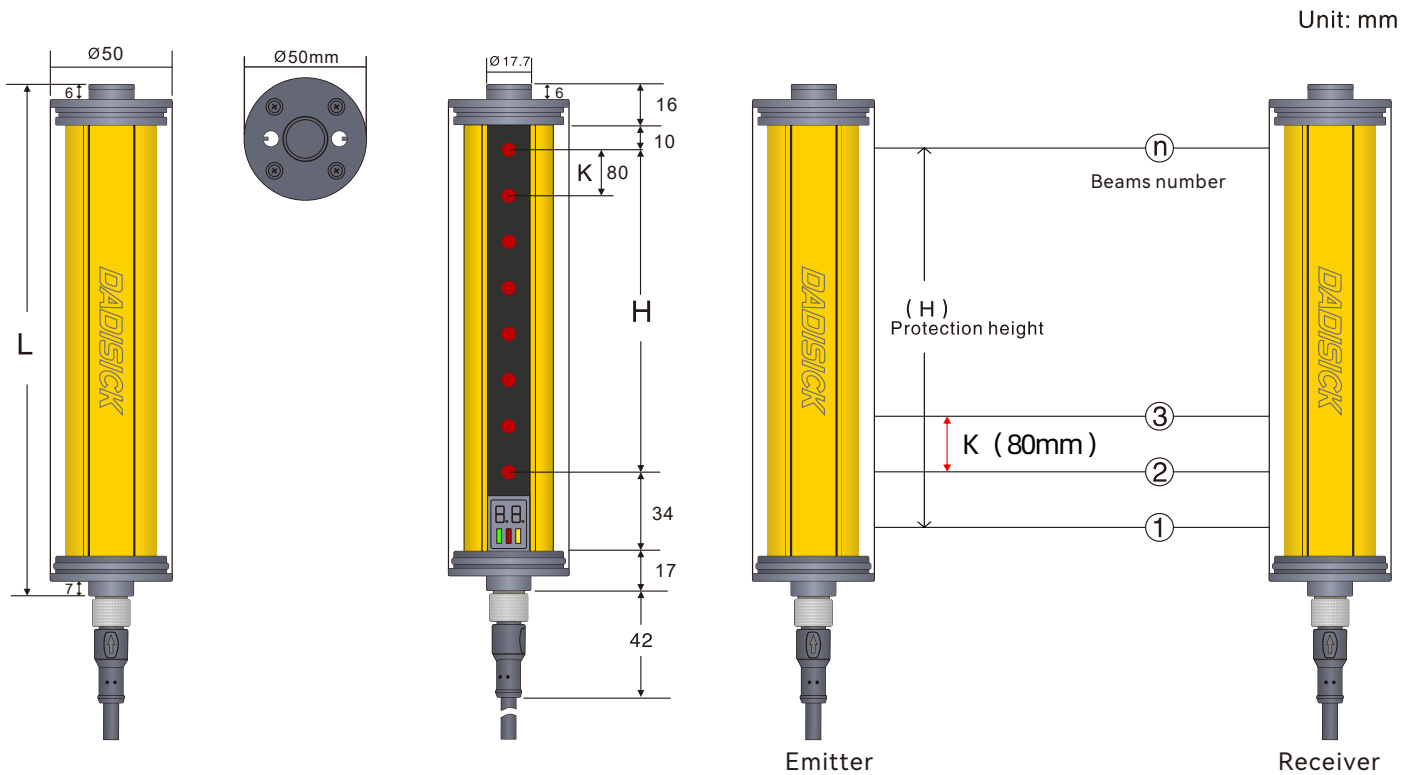
K: Resolution ratio

n: Beams number

QMF 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	197	QMF04/40-120	2	PNP	0.3-6m
	6	200	277	QMF06/40-200	2	PNP	0.3-6m
	8	280	357	QMF08/40-280	2	PNP	0.3-6m
	10	360	437	QMF10/40-360	2	PNP	0.3-6m
	12	440	517	QMF12/40-440	2	PNP	0.3-6m
	14	520	597	QMF14/40-520	2	PNP	0.3-6m
	16	600	677	QMF16/40-600	2	PNP	0.3-6m
	18	680	757	QMF18/40-680	2	PNP	0.3-6m
	20	760	837	QMF20/40-760	2	PNP	0.3-6m
	22	840	917	QMF22/40-840	2	PNP	0.3-6m
	24	920	997	QMF24/40-920	2	PNP	0.3-6m
	26	1000	1077	QMF26/40-1000	2	PNP	0.3-6m
	28	1080	1157	QMF28/40-1080	2	PNP	0.3-6m
	30	1160	1237	QMF30/40-1160	2	PNP	0.3-6m
	32	1240	1317	QMF32/40-1240	2	PNP	0.3-6m
	34	1320	1397	QMF34/40-1320	2	PNP	0.3-6m
	36	1400	1477	QMF36/40-1400	2	PNP	0.3-6m
	38	1480	1557	QMF38/40-1480	2	PNP	0.3-6m
	40	1560	1637	QMF40/40-1560	2	PNP	0.3-6m
	42	1640	1717	QMF42/40-1640	2	PNP	0.3-6m
	44	1720	1797	QMF44/40-1720	2	PNP	0.3-6m
	46	1800	1877	QMF46/40-1800	2	PNP	0.3-6m
	48	1880	1957	QMF48/40-1880	2	PNP	0.3-6m
	50	1960	2037	QMF50/40-1960	2	PNP	0.3-6m
	52	2040	2117	QMF52/40-2040	2	PNP	0.3-6m
	54	2120	2197	QMF54/40-2120	2	PNP	0.3-6m
	56	2200	2277	QMF56/40-2200	2	PNP	0.3-6m
	58	2280	2357	QMF58/40-2280	2	PNP	0.3-6m
60	2360	2437	QMF60/40-2360	2	PNP	0.3-6m	
62	2440	2517	QMF62/40-2440	2	PNP	0.3-6m	
64	2520	2597	QMF64/40-2520	2	PNP	0.3-6m	
66	2600	2677	QMF66/40-2600	2	PNP	0.3-6m	
68	2680	2757	QMF68/40-2680	2	PNP	0.3-6m	
70	2760	2837	QMF70/40-2760	2	PNP	0.3-6m	
72	2840	2917	QMF72/40-2840	2	PNP	0.3-6m	

6. QMF 80mm series



Remarks

L: Total length of light screen
 $L = 16 + 10 + H + 34 + 17$

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

K: Resolution ratio

n: Beams number

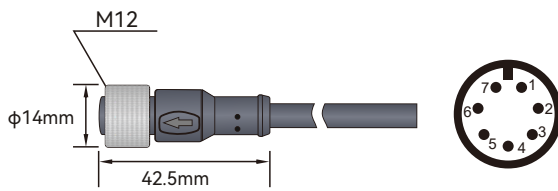
QMF 80mm specification list

Resolution	Light beam	Protection height (H)	Total height (L)	Product model	Signal output mode		Detection range
					Two outputs	PNP output	
80mm (K)	4	240	317	QMF04/80-240	2	PNP	0.3-6m
	6	400	477	QMF06/80-400	2	PNP	0.3-6m
	8	560	637	QMF08/80-560	2	PNP	0.3-6m
	10	720	797	QMF10/80-720	2	PNP	0.3-6m
	12	880	957	QMF12/80-880	2	PNP	0.3-6m
	14	1040	1117	QMF14/80-1040	2	PNP	0.3-6m
	16	1200	1277	QMF16/80-1200	2	PNP	0.3-6m
	18	1360	1437	QMF18/80-1360	2	PNP	0.3-6m
	20	1520	1597	QMF20/80-1520	2	PNP	0.3-6m
	22	1680	1757	QMF22/80-1680	2	PNP	0.3-6m
	24	1840	1917	QMF24/80-1840	2	PNP	0.3-6m
	26	2000	2077	QMF26/80-2000	2	PNP	0.3-6m
	28	2160	2237	QMF28/80-2160	2	PNP	0.3-6m
	30	2320	2397	QMF30/80-2320	2	PNP	0.3-6m
32	2480	2557	QMF32/80-2480	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

Cable description:



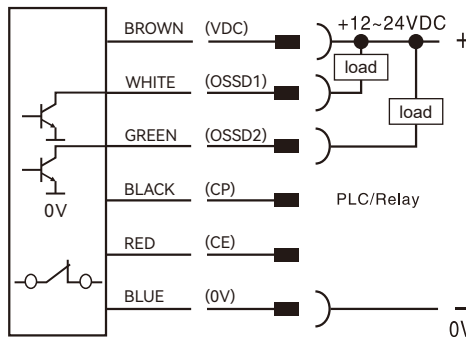
7-pin M12 cable connector straight
3m waterproof cable

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

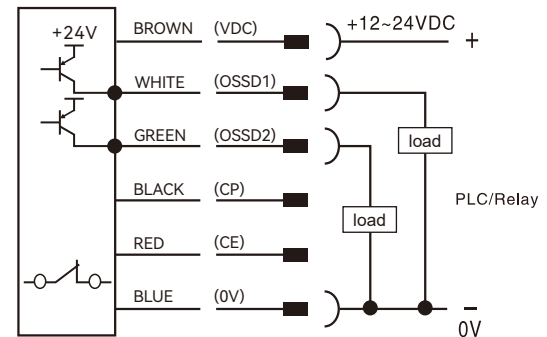
1. QMF signal output selection (actual output of transistor working normally)

NPN NC



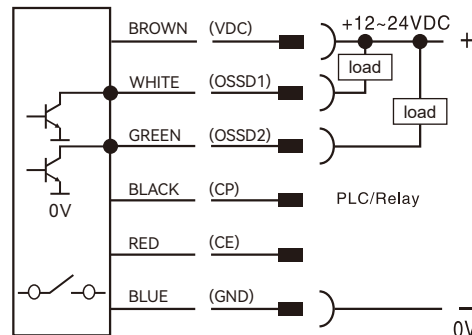
A

PNP NC



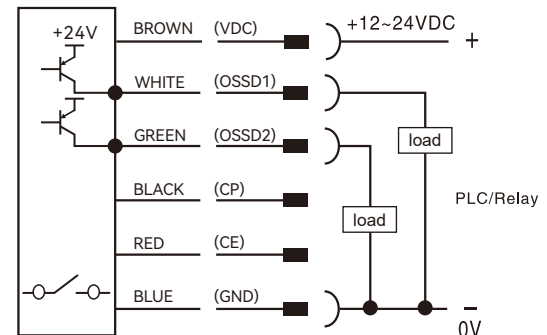
B

NPN NO



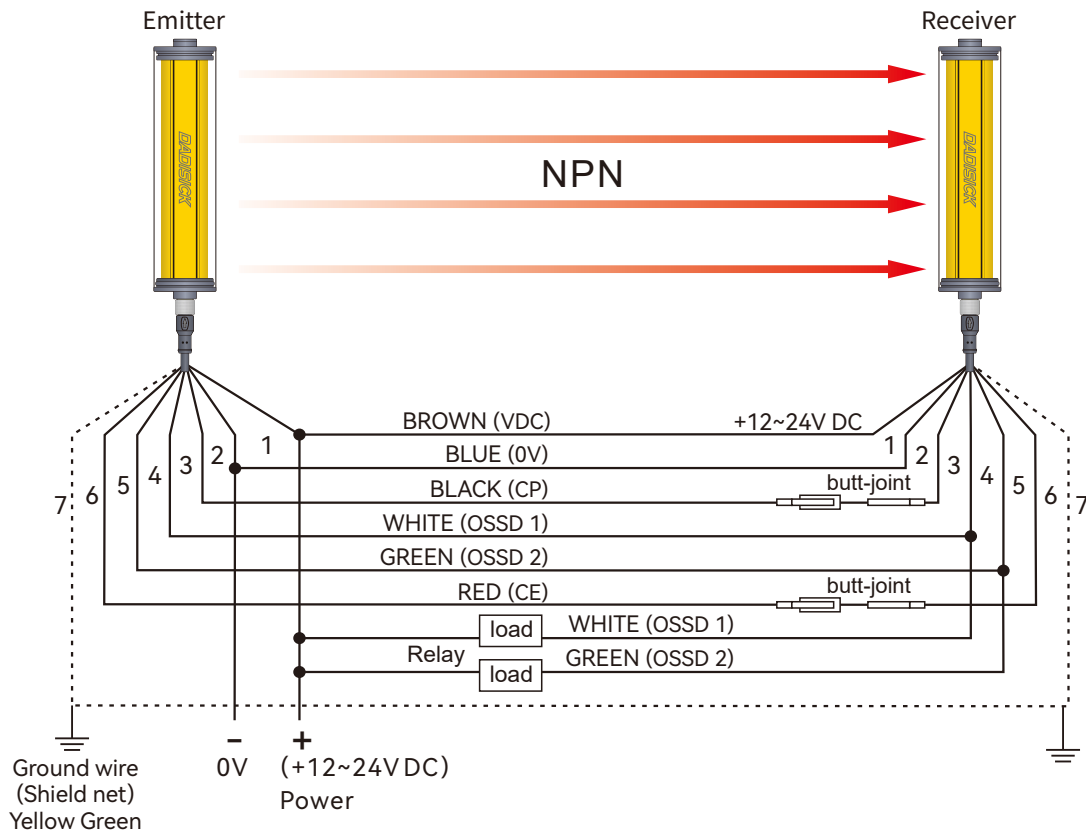
C

PNP NO



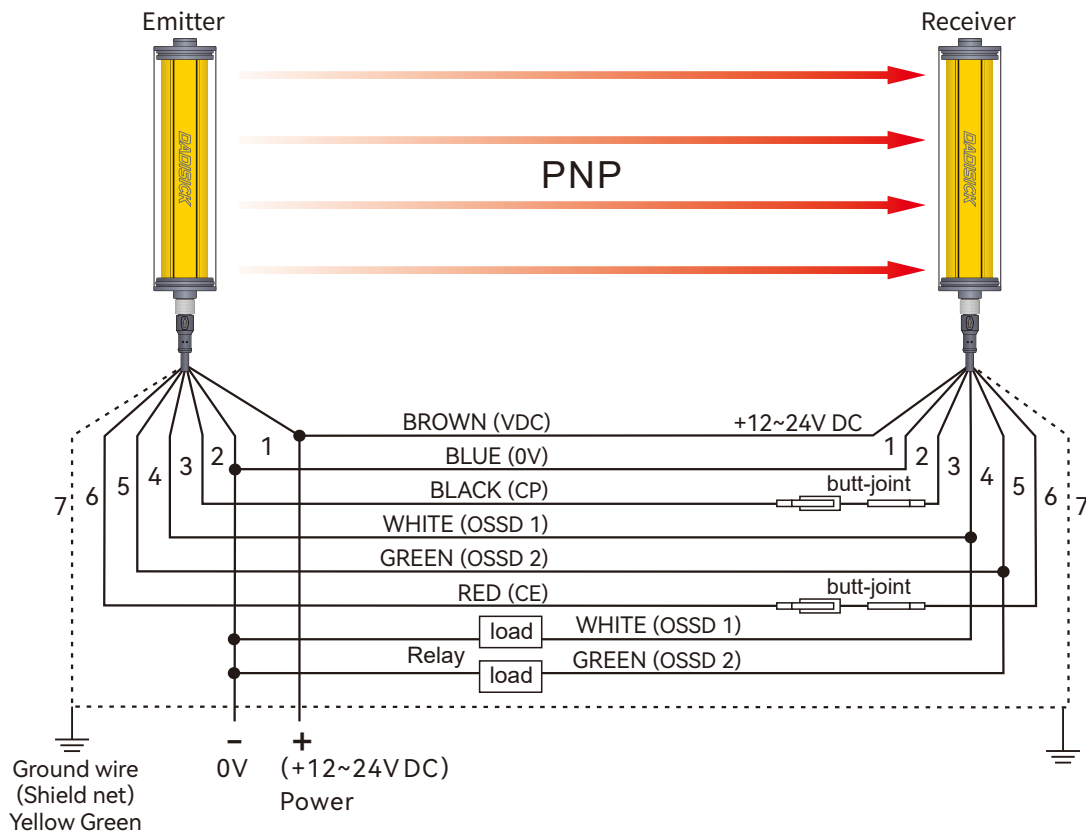
D

2. NPN output wiring diagram








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

3. PNP output wiring diagram

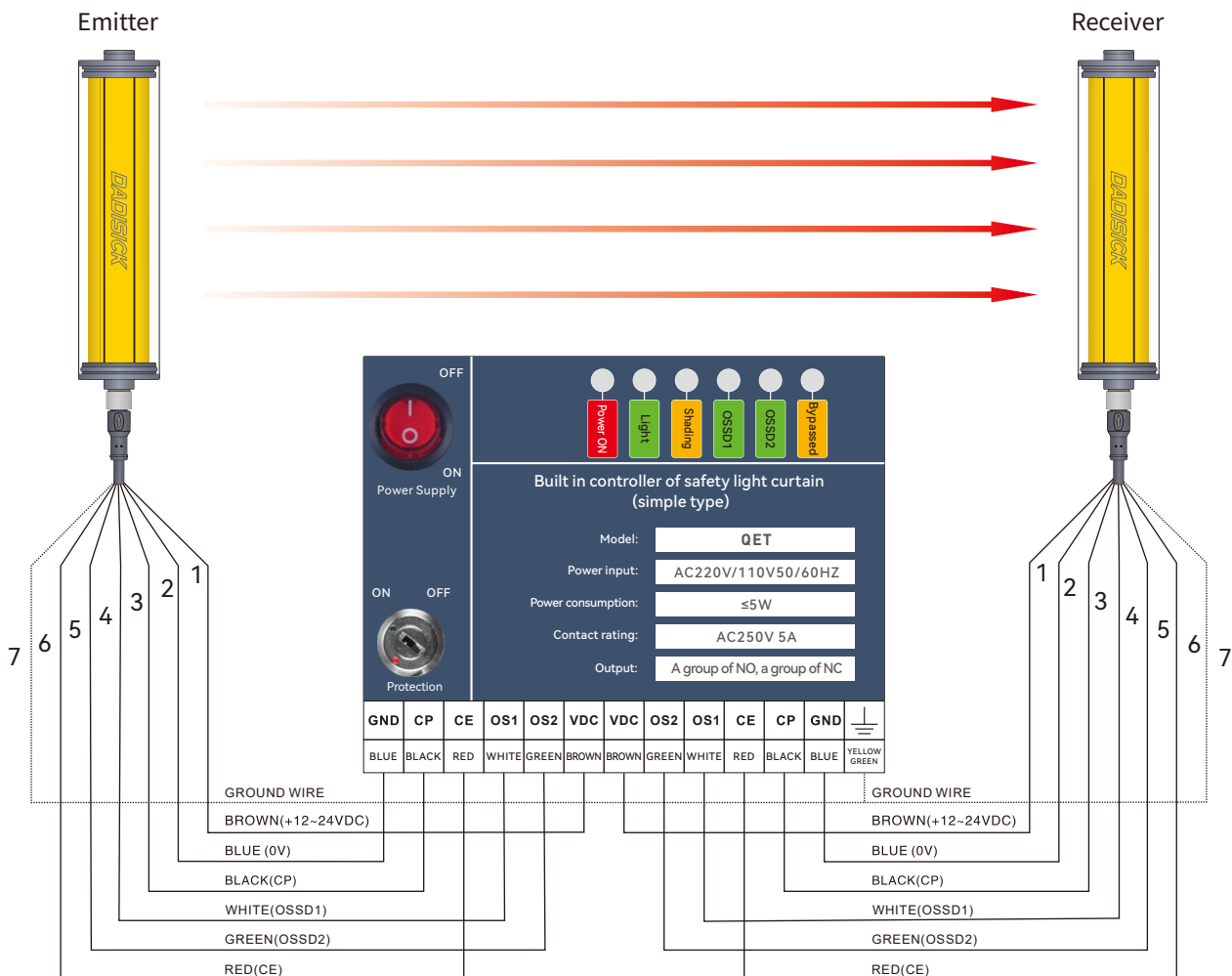


This figure is an example of PNP double output 7-pin wiring.

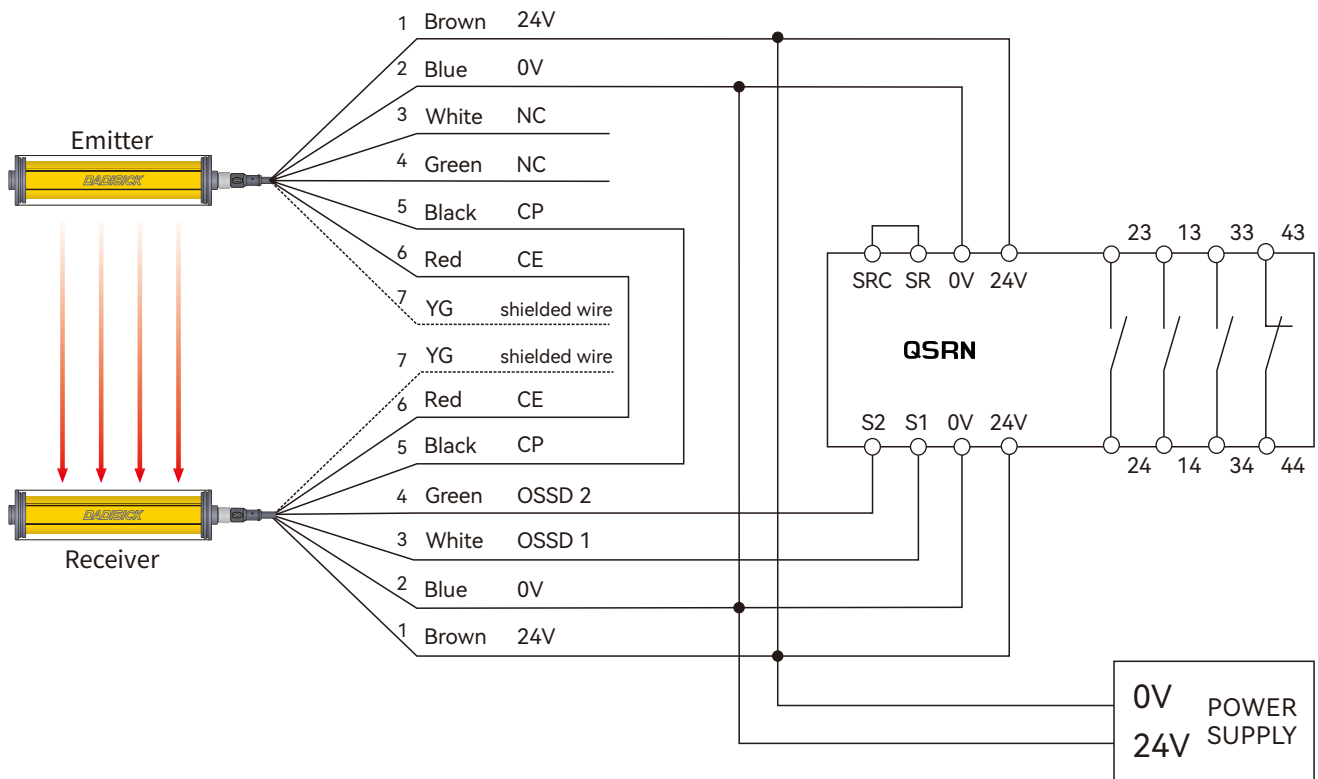
4. Selection of safety light curtain controller

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

4.1 Wiring diagram of QET built-in controller

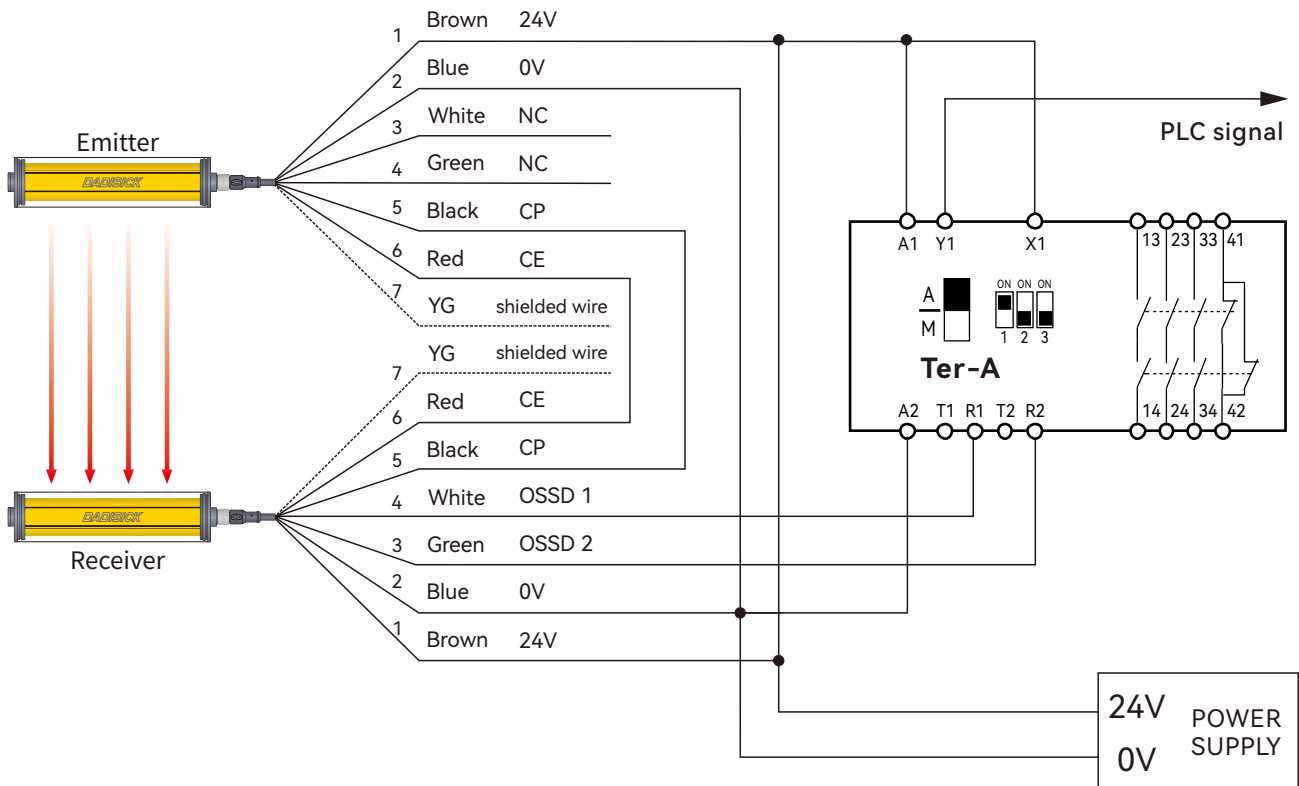


4.2 Wiring diagram of QSRN safety relay

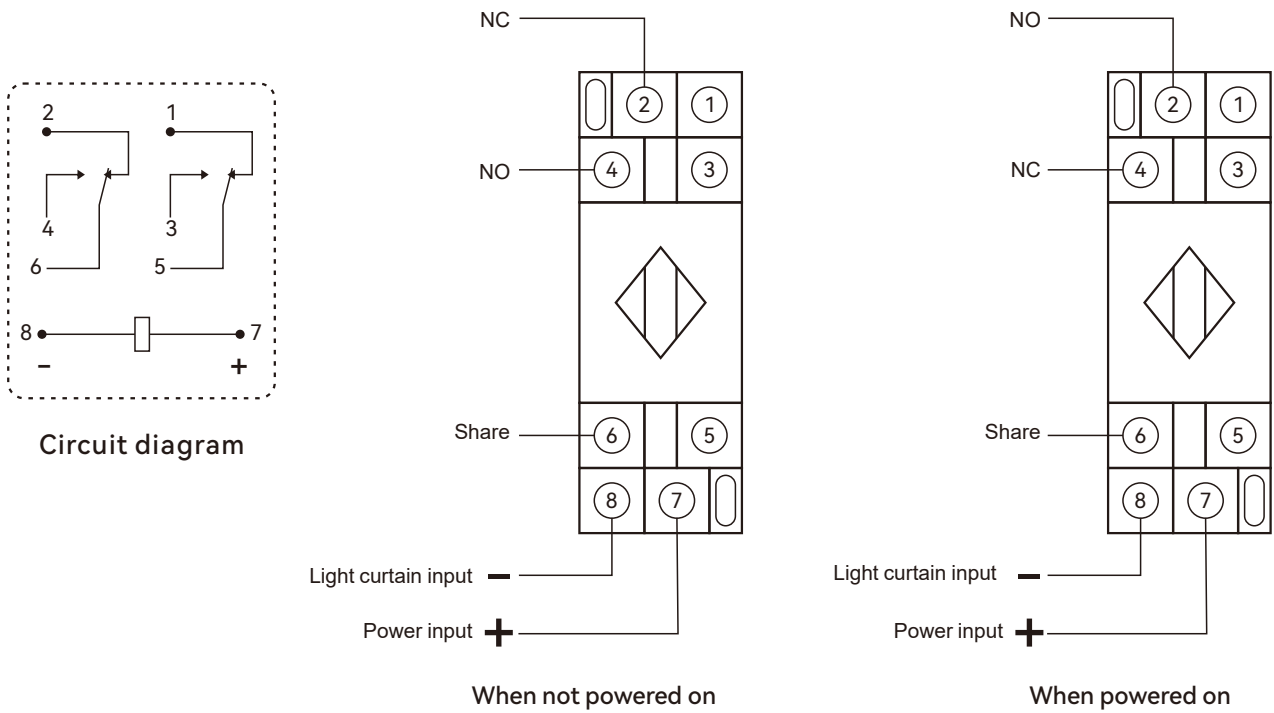


4.3 Wiring diagram of Ter-A safety relay

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

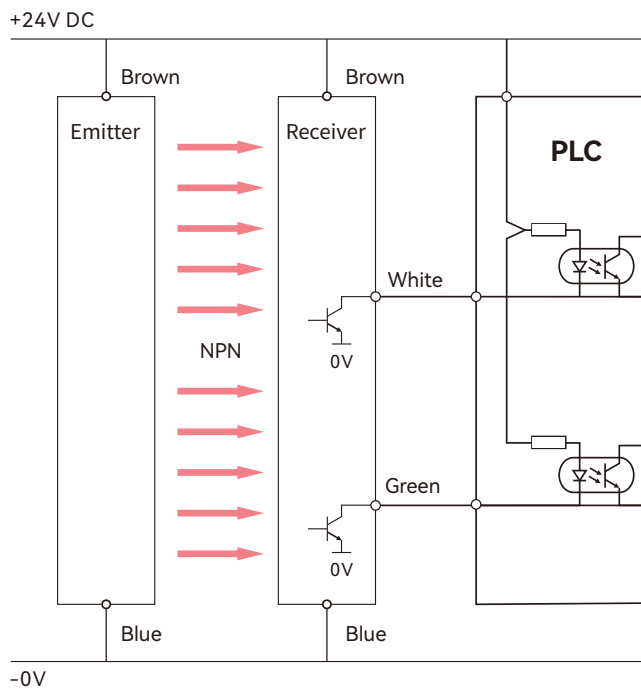


4.4 Wiring diagram of QET-1 light curtain relay

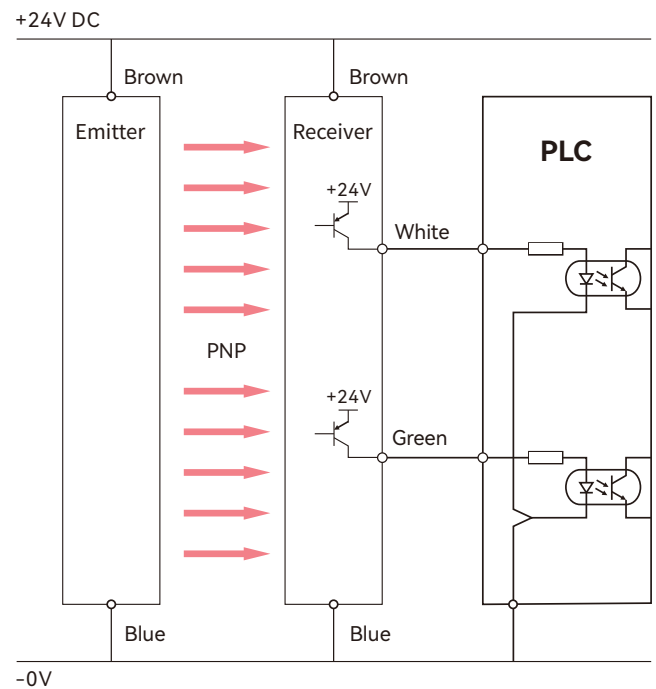


4.5 Wiring between light curtain and PLC and one-chip computer system

NPN wiring:



PNP wiring:



Accessories

Metal angled fixing bracket installation method
(Original accessories)

