

TECHNICAL DATA SHEET

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

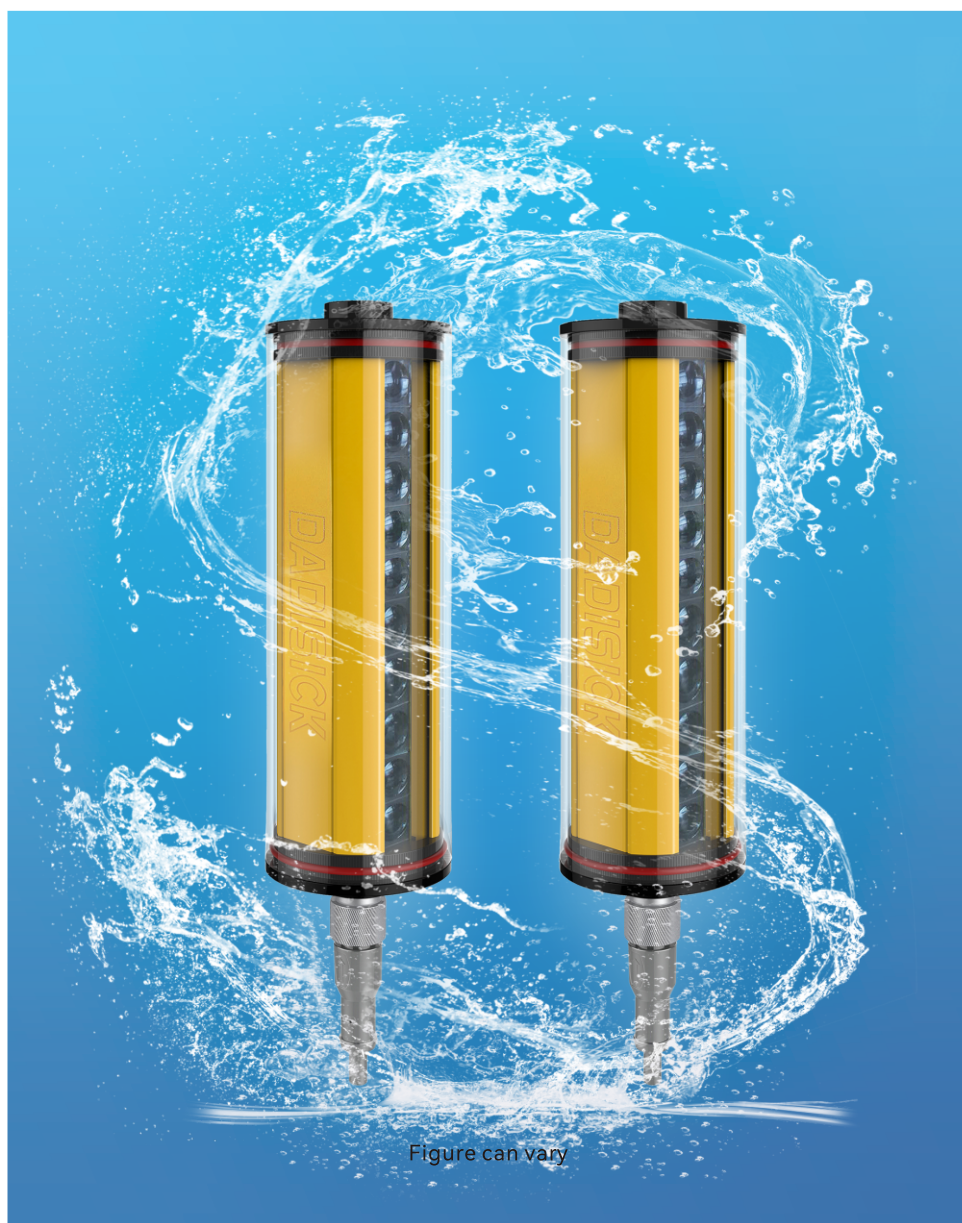


Figure can vary

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Solutions

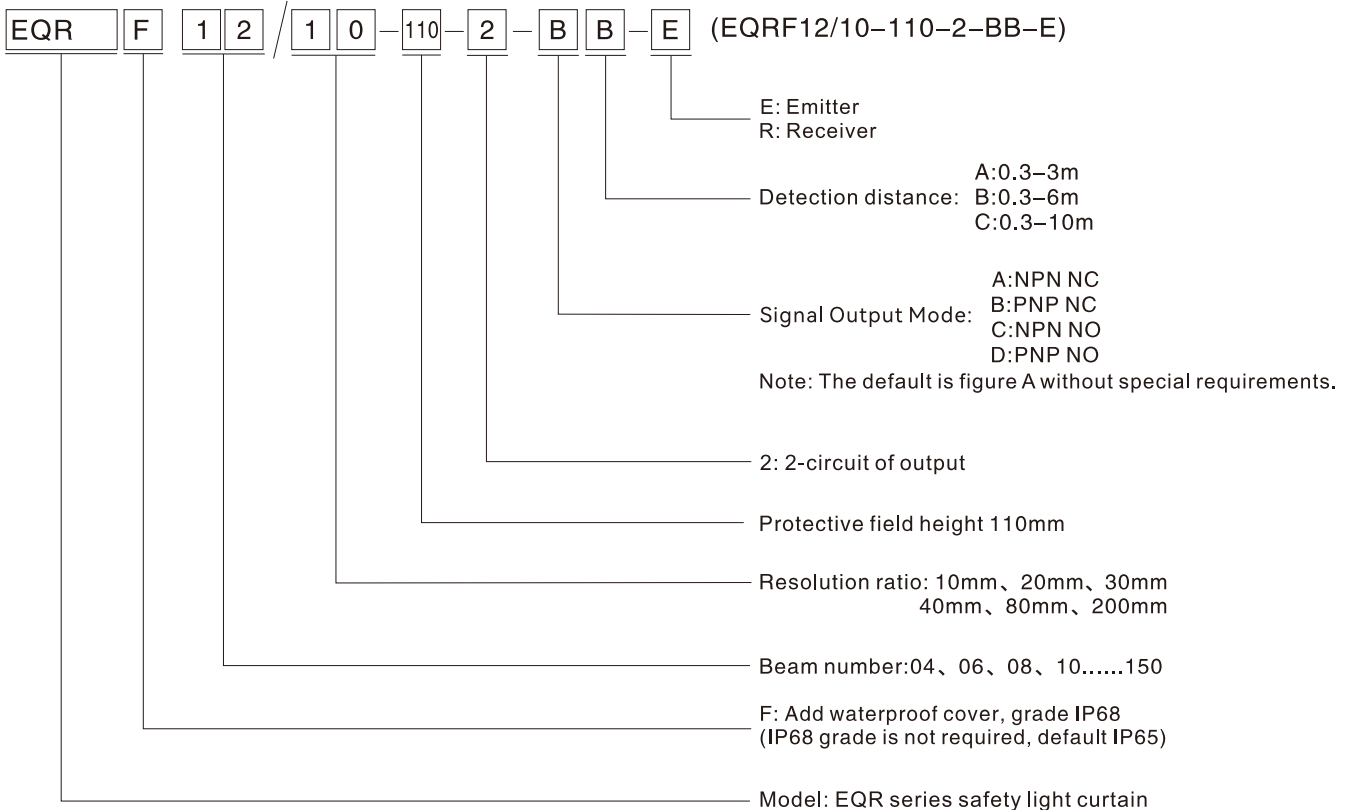


GB/T 19001-2016

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.

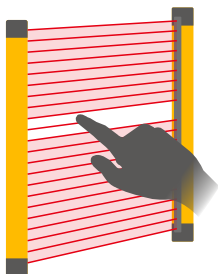
The specifications of EQR type safety light curtain are as follows:



Resolution ratio

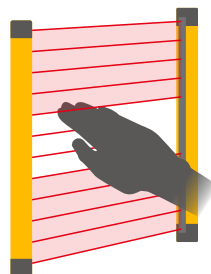
Depending on the usage environment and requirements, it is important to choose the appropriate beam spacing

Finger protection



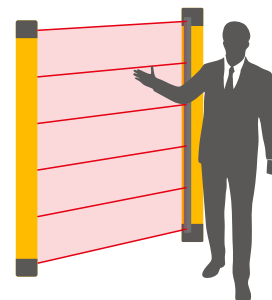
Detection capability
10/14/20mm
diameter

Hand protection



Detection capability
30/40mm
diameter

Arm/body protection



Detection capability
80/200mm
diameter

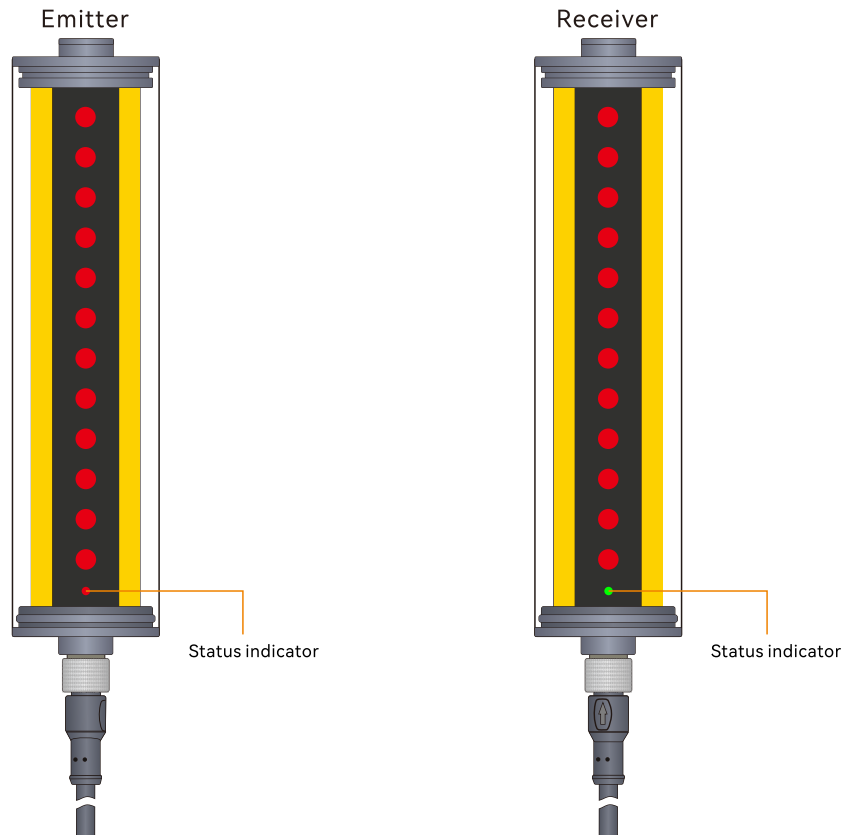
Technical data






Basic data of Receiver and Emitter

Standard packaging	
Product model	EQRF 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
Check the accuracy	18mm, 28mm, 38mm, 48mm, 88mm
Number of beams	04、06、08、10.....150
Overall dimension	φ50mm*L, L is the length of emitter and receiver.
Detection distance	30-6000mm
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	IP68
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

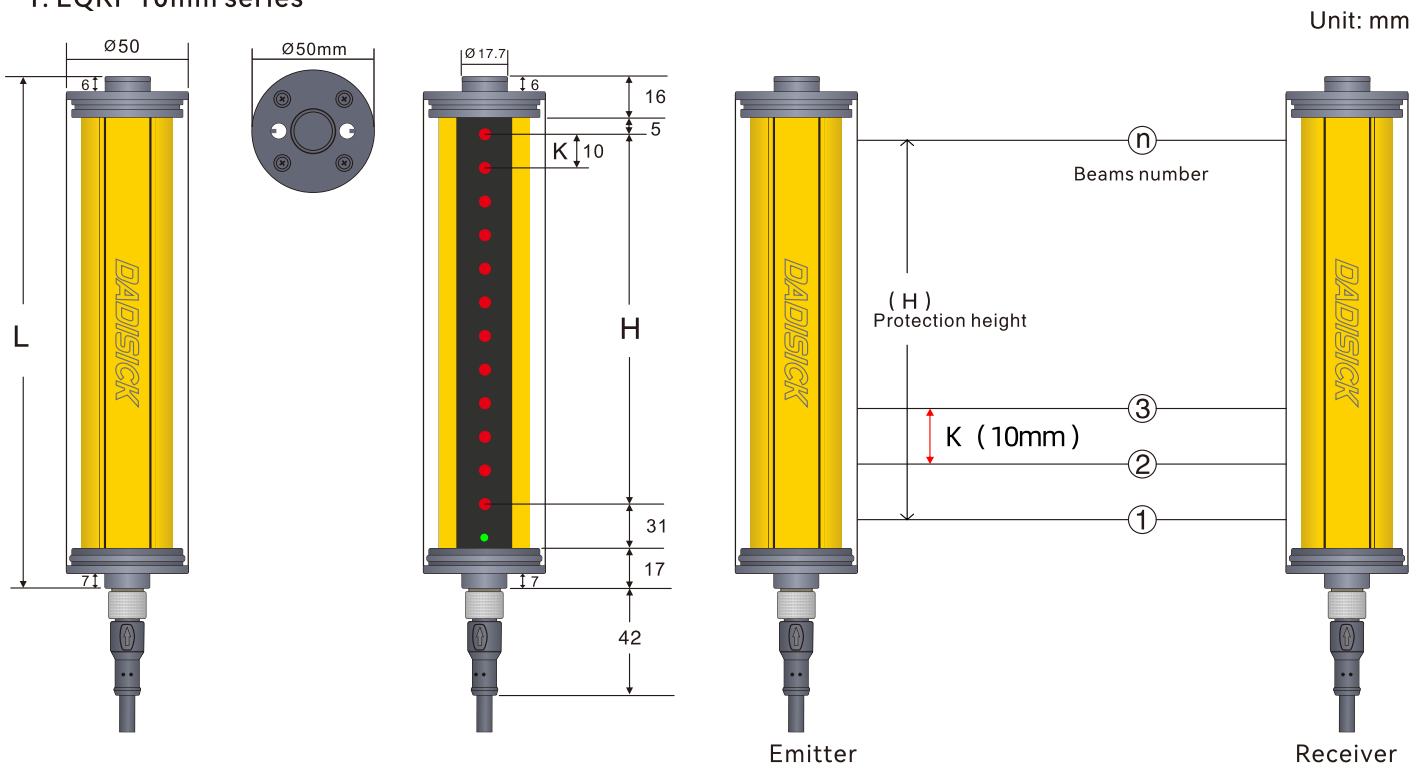
Operation and display



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. EQRF 10mm series



Remarks

L: Total length of light screen

H: Height of protected area

K: Resolution ratio

n: Beams number

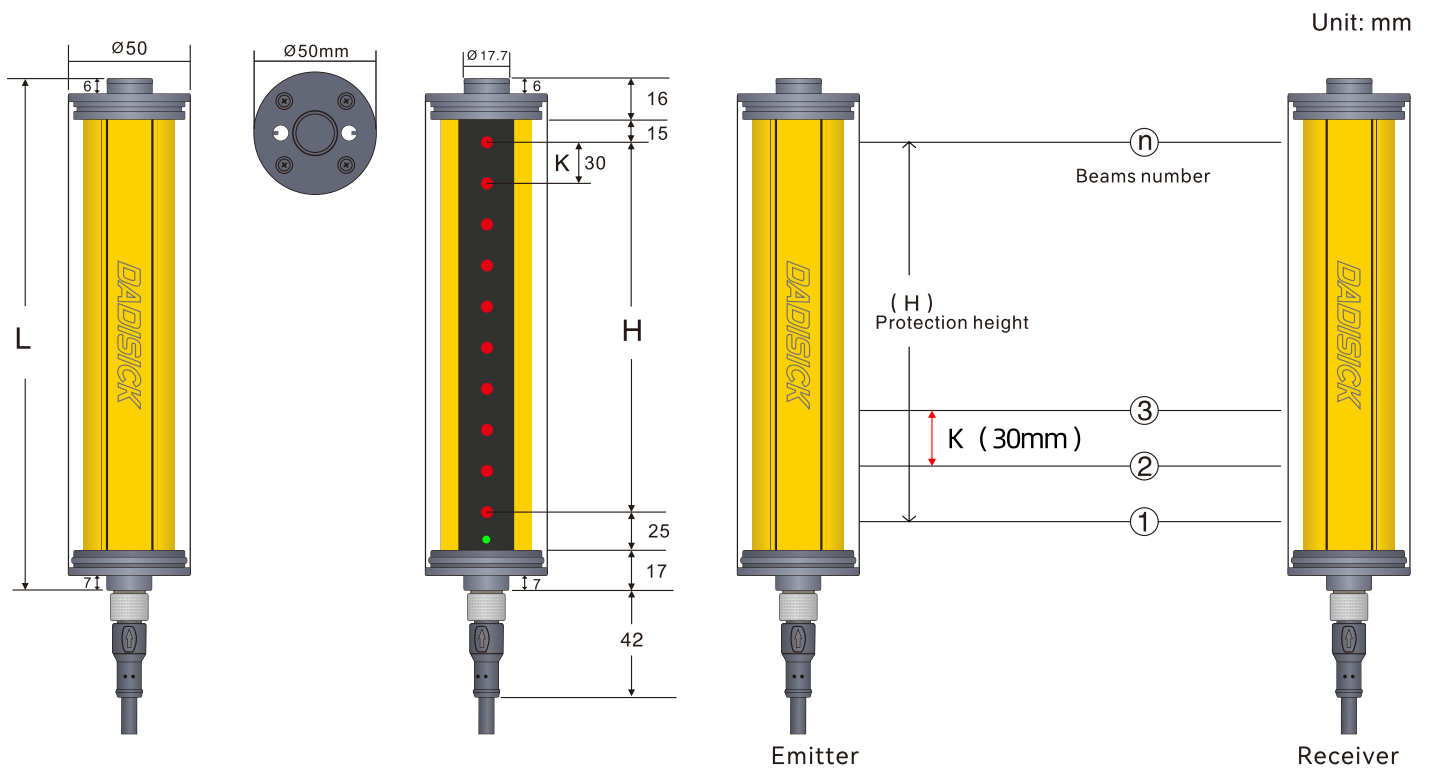
$$L = 16 + 5 + H + 31 + 17$$

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

EQRF 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)	6	50	119	EQRF06/10-50	2	PNP	0.3-6m
	8	70	139	EQRF08/10-70	2	PNP	0.3-6m
	10	90	159	EQRF10/10-90	2	PNP	0.3-6m
	12	110	179	EQRF12/10-110	2	PNP	0.3-6m
	14	130	199	EQRF14/10-130	2	PNP	0.3-6m
	16	150	219	EQRF16/10-150	2	PNP	0.3-6m
	18	170	239	EQRF18/10-170	2	PNP	0.3-6m
	20	190	259	EQRF20/10-190	2	PNP	0.3-6m
	22	210	279	EQRF22/10-210	2	PNP	0.3-6m
	24	230	299	EQRF24/10-230	2	PNP	0.3-6m
	26	250	319	EQRF26/10-250	2	PNP	0.3-6m
	28	270	339	EQRF28/10-270	2	PNP	0.3-6m
	30	290	359	EQRF30/10-290	2	PNP	0.3-6m
	32	310	379	EQRF32/10-310	2	PNP	0.3-6m
	34	330	399	EQRF34/10-330	2	PNP	0.3-6m
	36	350	419	EQRF36/10-350	2	PNP	0.3-6m
	38	370	439	EQRF38/10-370	2	PNP	0.3-6m
	40	390	459	EQRF40/10-390	2	PNP	0.3-6m
	42	410	479	EQRF42/10-410	2	PNP	0.3-6m
	44	430	499	EQRF44/10-430	2	PNP	0.3-6m
46	450	519	EQRF46/10-450	2	PNP	0.3-6m	
48	470	539	EQRF48/10-470	2	PNP	0.3-6m	
50	490	559	EQRF50/10-490	2	PNP	0.3-6m	
52	510	579	EQRF52/10-510	2	PNP	0.3-6m	
...	...	...	...	...	2	PNP	0.3-6m
146	1450	1519	EQRF56/10-1450	2	PNP	0.3-6m	
148	1470	1539	EQRF58/10-1470	2	PNP	0.3-6m	
150	1490	1559	EQRF60/10-1490	2	PNP	0.3-6m	

3. EQRF 30mm series



Remarks

L: Total length of light screen

H: Height of protected area

K: Resolution ratio

n: Beams number

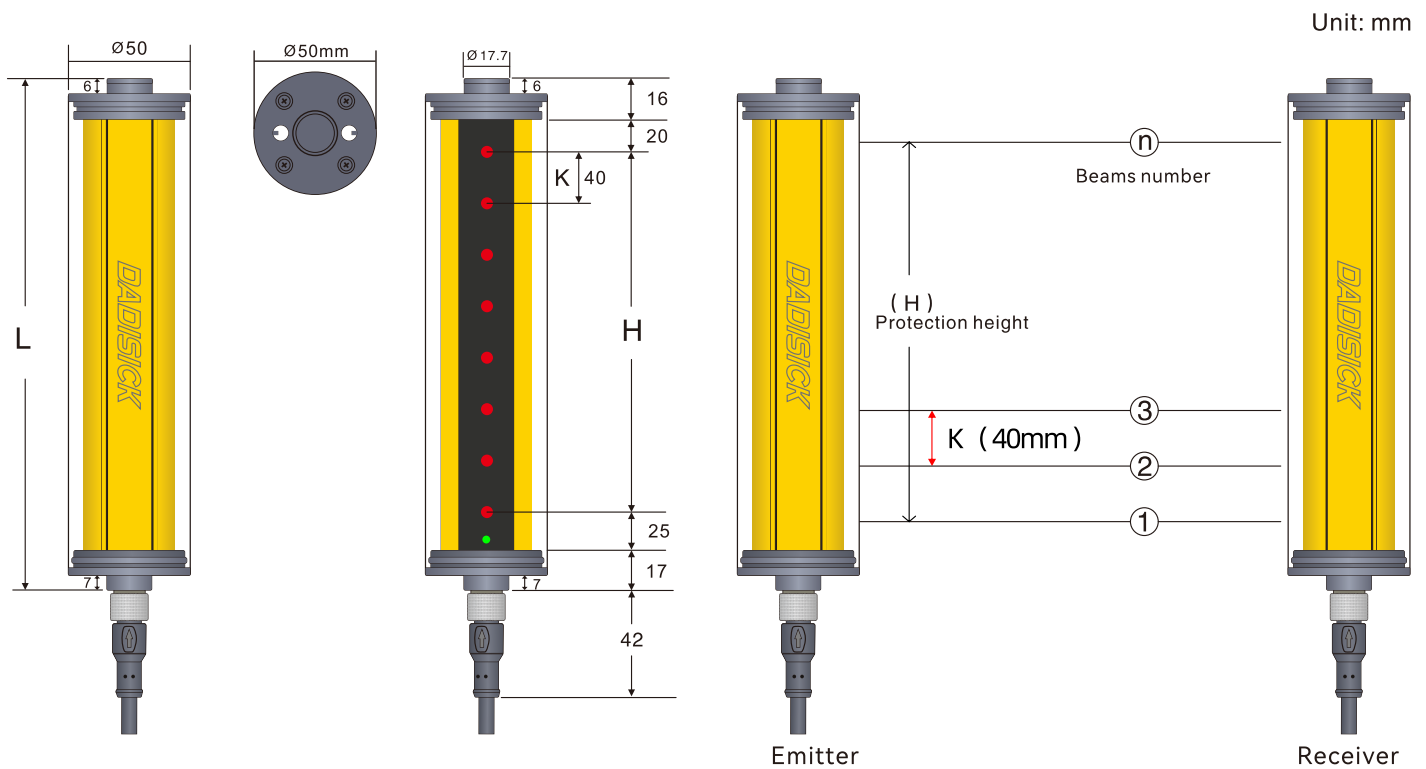
$$L = 16 + 15 + H + 25 + 17$$

$$H = (n - 1) * 30$$

EQRF 30mm specification list

Resolution	Light beam	Protection height (H)	Total height (L)	Product model	Signal output mode		Detection range
					Two outputs	PNP output	
30mm (K)	4	90	163	EQRF04/30-90	2	PNP	0.3-6m
	6	150	223	EQRF06/30-150	2	PNP	0.3-6m
	8	210	283	EQRF08/30-210	2	PNP	0.3-6m
	10	270	343	EQRF10/30-270	2	PNP	0.3-6m
	12	330	403	EQRF12/30-330	2	PNP	0.3-6m
	14	390	463	EQRF14/30-390	2	PNP	0.3-6m
	16	450	523	EQRF16/30-450	2	PNP	0.3-6m
	18	510	583	EQRF18/30-510	2	PNP	0.3-6m
	20	570	643	EQRF20/30-570	2	PNP	0.3-6m
	22	630	703	EQRF22/30-630	2	PNP	0.3-6m
	24	690	763	EQRF24/30-690	2	PNP	0.3-6m
	26	750	823	EQRF26/30-750	2	PNP	0.3-6m
	28	810	883	EQRF28/30-810	2	PNP	0.3-6m
	30	870	943	EQRF30/30-870	2	PNP	0.3-6m
32	930	1003	EQRF32/30-930	2	PNP	0.3-6m	

4. EQRF 40mm series



Remarks

L: Total length of light screen

H: Height of protected area

K: Resolution ratio

n: Beams number

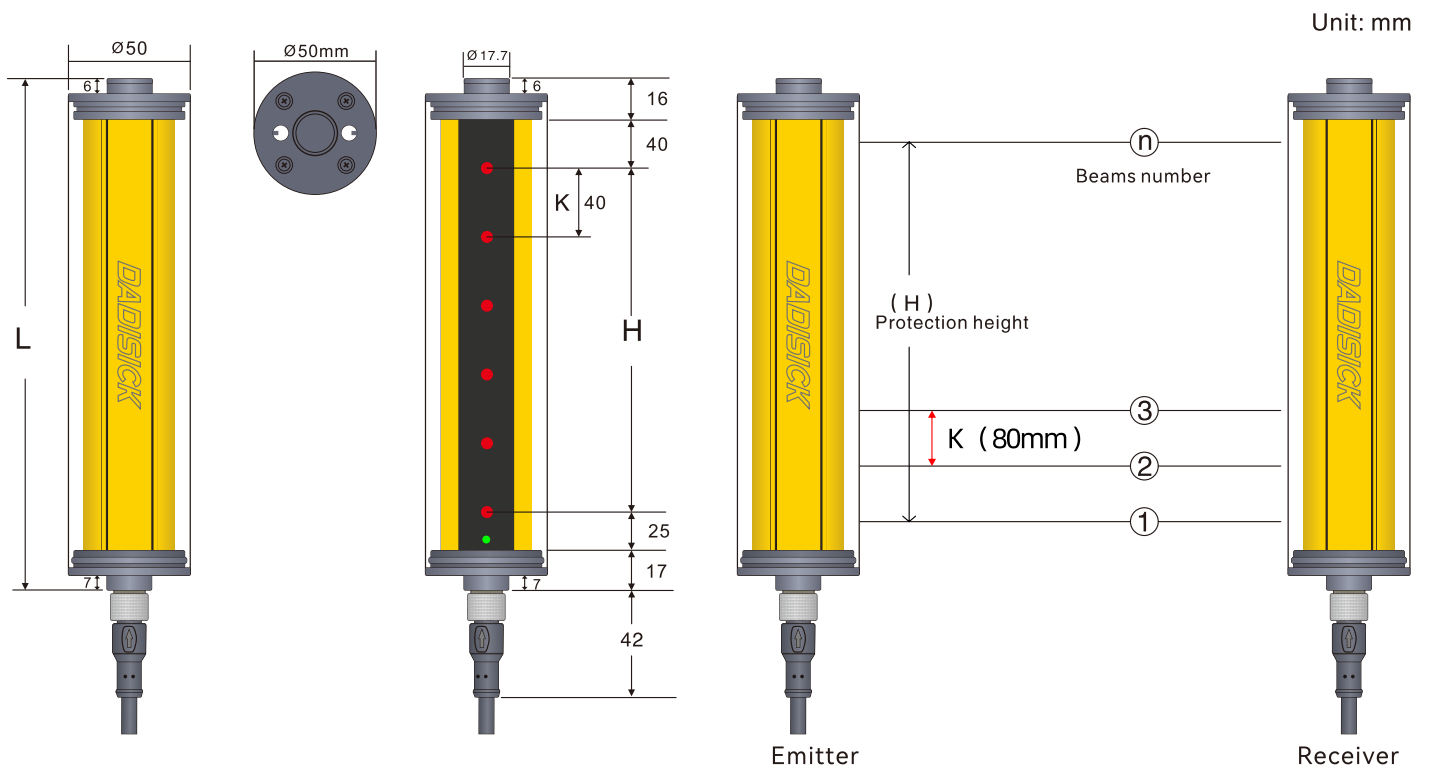
$$L = 16 + 20 + H + 25 + 17$$

$$H = (n - 1) * 40$$

EQRF 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	198	EQRF04/40-120	2	PNP	0.3-6m
	6	200	278	EQRF06/40-200	2	PNP	0.3-6m
	8	280	358	EQRF08/40-280	2	PNP	0.3-6m
	10	360	438	EQRF10/40-360	2	PNP	0.3-6m
	12	440	518	EQRF12/40-440	2	PNP	0.3-6m
	14	520	598	EQRF14/40-520	2	PNP	0.3-6m
	16	600	678	EQRF16/40-600	2	PNP	0.3-6m
	18	680	758	EQRF18/40-680	2	PNP	0.3-6m
	20	760	838	EQRF20/40-760	2	PNP	0.3-6m
	22	840	918	EQRF22/40-840	2	PNP	0.3-6m
	24	920	998	EQRF24/40-920	2	PNP	0.3-6m
	26	1000	1078	EQRF26/40-1000	2	PNP	0.3-6m
	28	1080	1158	EQRF28/40-1080	2	PNP	0.3-6m
	30	1160	1238	EQRF30/40-1160	2	PNP	0.3-6m
	32	1240	1318	EQRF32/40-1240	2	PNP	0.3-6m
	34	1320	1398	EQRF34/40-1320	2	PNP	0.3-6m
	36	1400	1478	EQRF36/40-1400	2	PNP	0.3-6m
	38	1480	1558	EQRF38/40-1480	2	PNP	0.3-6m
	40	1560	1638	EQRF40/40-1560	2	PNP	0.3-6m
	42	1640	1718	EQRF42/40-1640	2	PNP	0.3-6m
44	1720	1798	EQRF44/40-1720	2	PNP	0.3-6m	
46	1800	1878	EQRF46/40-1800	2	PNP	0.3-6m	
48	1880	1958	EQRF48/40-1880	2	PNP	0.3-6m	
50	1960	2038	EQRF50/40-1960	2	PNP	0.3-6m	
...	...	...	...	...	2	PNP	0.3-6m
68	2680	2758	EQRF28/40-2680	2	PNP	0.3-6m	
70	2760	2838	EQRF30/40-2760	2	PNP	0.3-6m	
72	2840	2918	EQRF32/40-2840	2	PNP	0.3-6m	

5. EQRF 80mm series



Remarks

L: Total length of light screen

H: Height of protected area

K: Resolution ratio

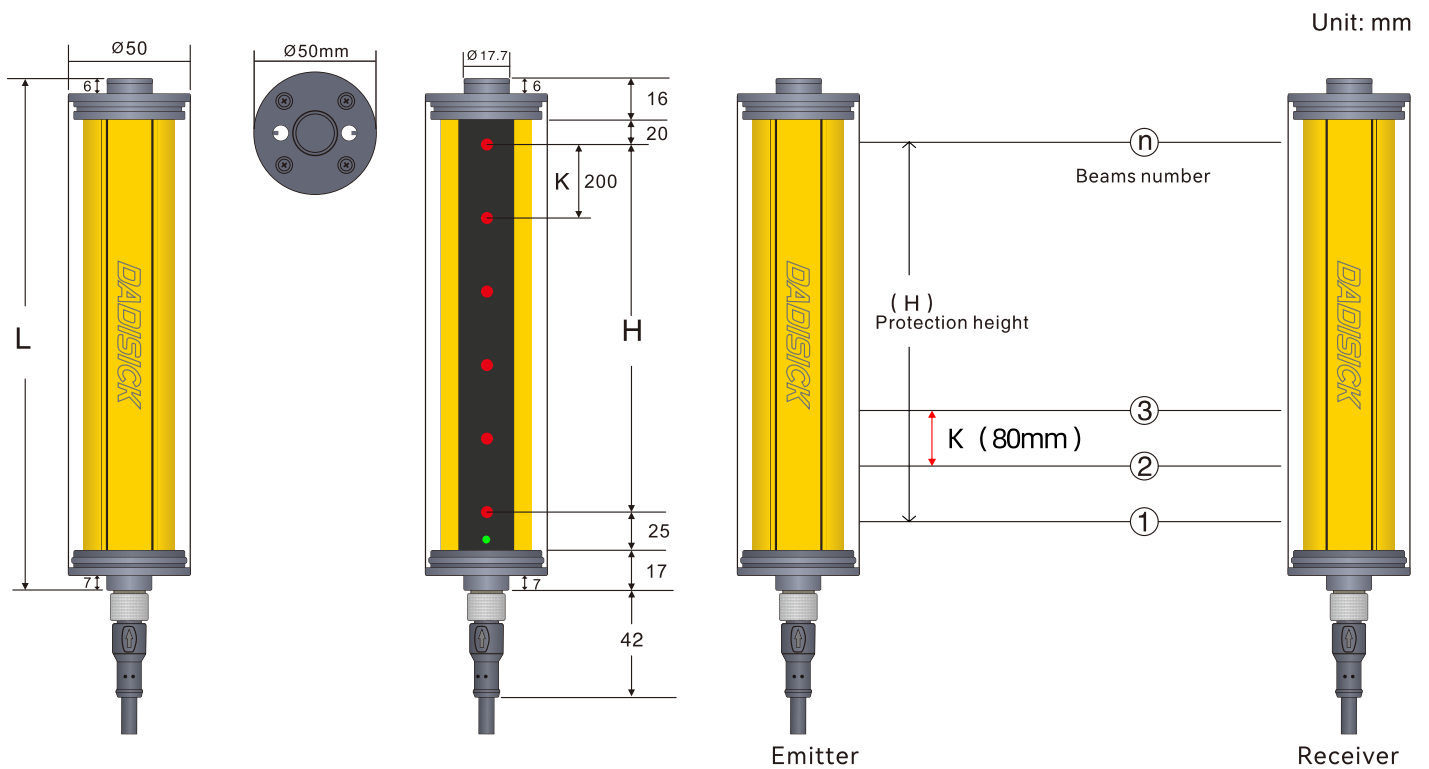
n: Beams number

 $L = 16 + 40 + H + 25 + 17$ $H = (n - 1) * 80$

EQRF 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	338	EQRF04/80-240	2	PNP	0.3-6m
	6	400	498	EQRF06/80-400	2	PNP	0.3-6m
	8	560	658	EQRF08/80-560	2	PNP	0.3-6m
	10	720	818	EQRF10/80-720	2	PNP	0.3-6m
	12	880	978	EQRF12/80-880	2	PNP	0.3-6m
	14	1040	1138	EQRF14/80-1040	2	PNP	0.3-6m
	16	1200	1298	EQRF16/80-1200	2	PNP	0.3-6m
	18	1360	1458	EQRF18/80-1360	2	PNP	0.3-6m
	20	1520	1618	EQRF20/80-1520	2	PNP	0.3-6m
	22	1680	1778	EQRF22/80-1680	2	PNP	0.3-6m
	24	1840	1938	EQRF24/80-1840	2	PNP	0.3-6m
	26	2000	2098	EQRF26/80-2000	2	PNP	0.3-6m
	28	2160	2258	EQRF28/80-2160	2	PNP	0.3-6m
	30	2320	2418	EQRF30/80-2320	2	PNP	0.3-6m
32	2480	2578	EQRF32/80-2480	2	PNP	0.3-6m	

6. EQRF 200mm series



Remarks

L: Total length of light screen

H: Height of protected area

K: Resolution ratio

n: Beams number

 $L = 16 + 20 + H + 25 + 17$ $H = (n - 1) * 80$

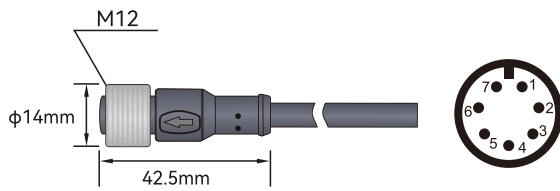
EQRF 200mm specification list

Resolution	Light beam	Protection height (H)	Total height (L)	Product model	Signal output mode		Detection range
					Two outputs	PNP output	
200mm (K)	4	600	678	EQRF04/200-600	2	PNP	0.3-6m
	6	1000	1078	EQRF06/200-1000	2	PNP	0.3-6m
	8	1400	1478	EQRF08/200-1400	2	PNP	0.3-6m
	10	1800	1878	EQRF10/200-1800	2	PNP	0.3-6m
	12	2200	2278	EQRF12/200-2200	2	PNP	0.3-6m
	14	2600	2678	EQRF14/200-2600	2	PNP	0.3-6m
	16	3000	3078	EQRF16/200-3000	2	PNP	0.3-6m
	18	3400	3478	EQRF18/200-3400	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

Cable description:



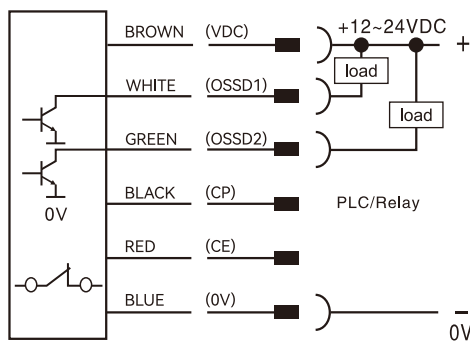
7-pin M12 cable connector straight
3m waterproof cable

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

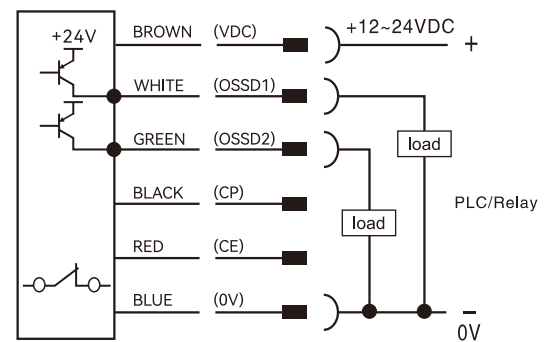
1. EQRf signal output selection (actual output of transistor working normally)

NPN NC



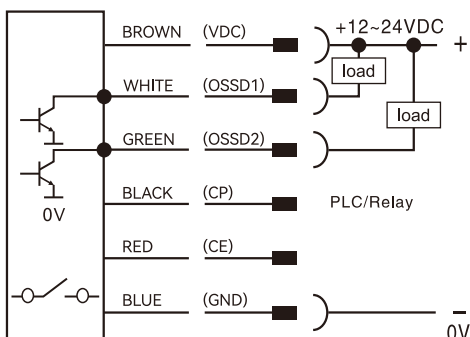
A

PNP NC



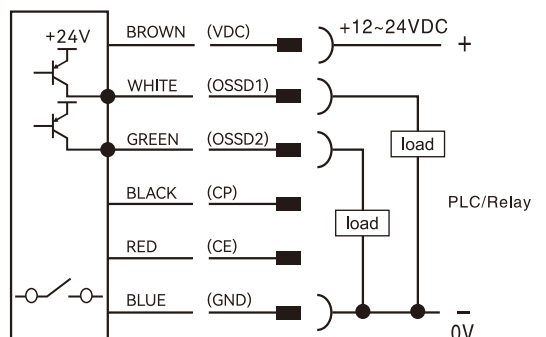
B

NPN NO



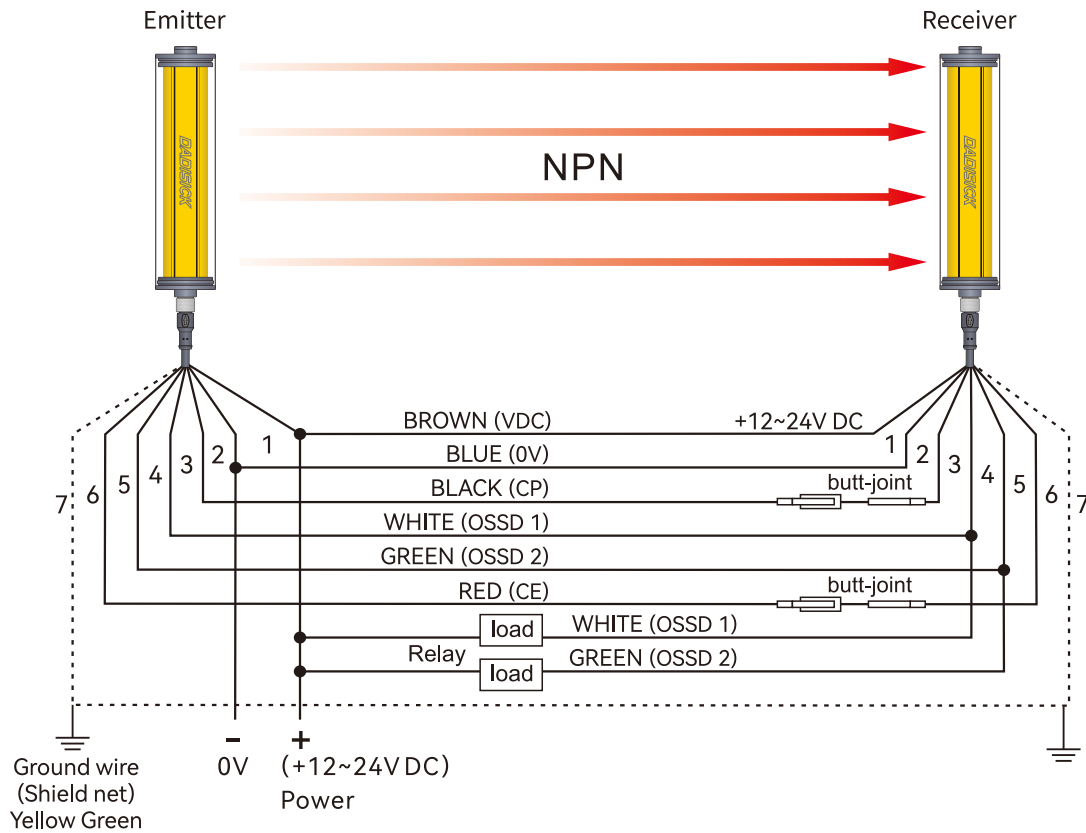
C

PNP NO



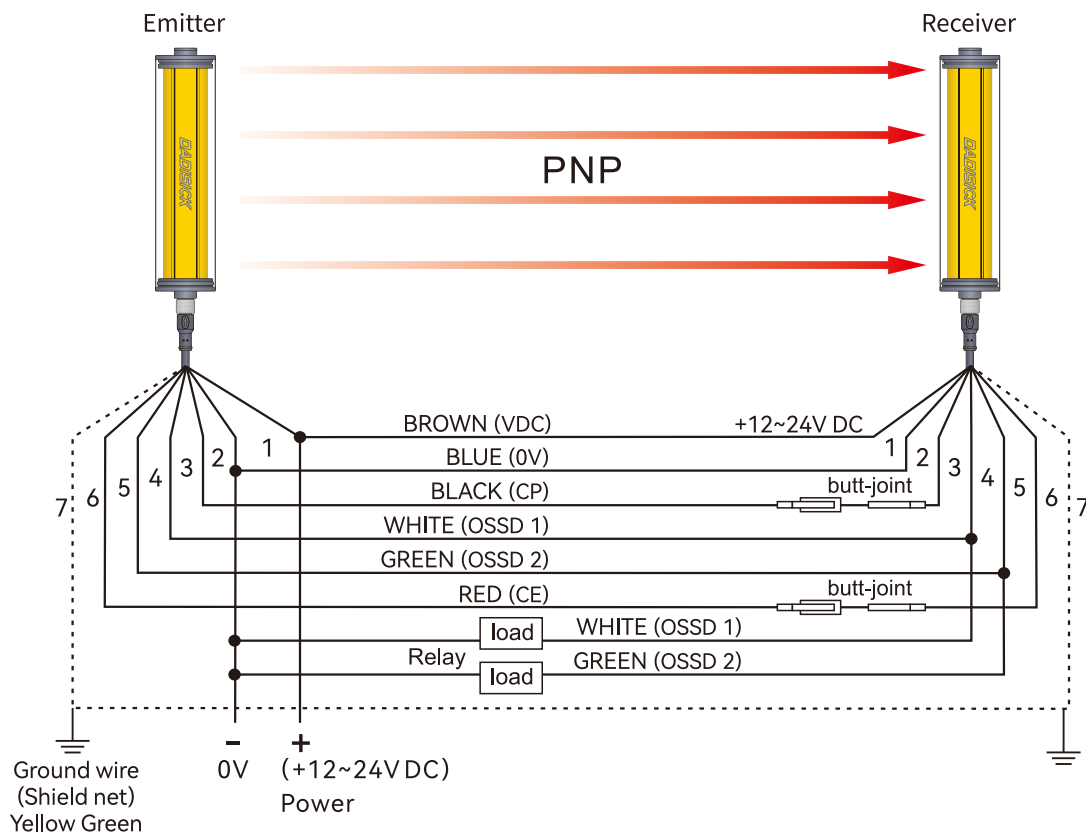
D

2. NPN output wiring diagram





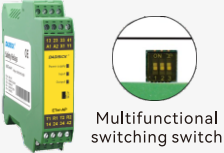

This figure is an example of NPN double output 7-pin wiring.

3. PNP output wiring diagram

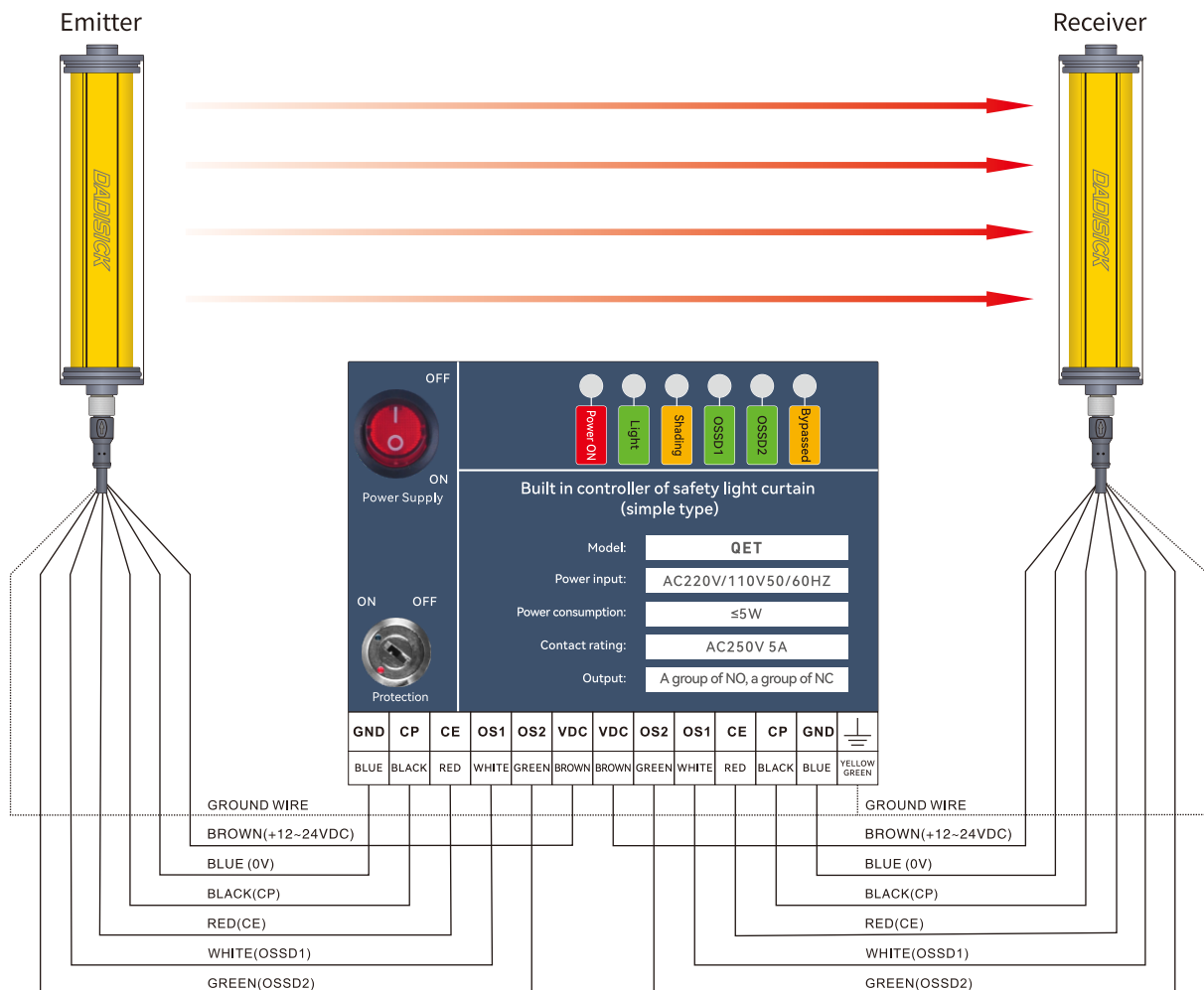


This figure is an example of PNP double output 7-pin wiring.

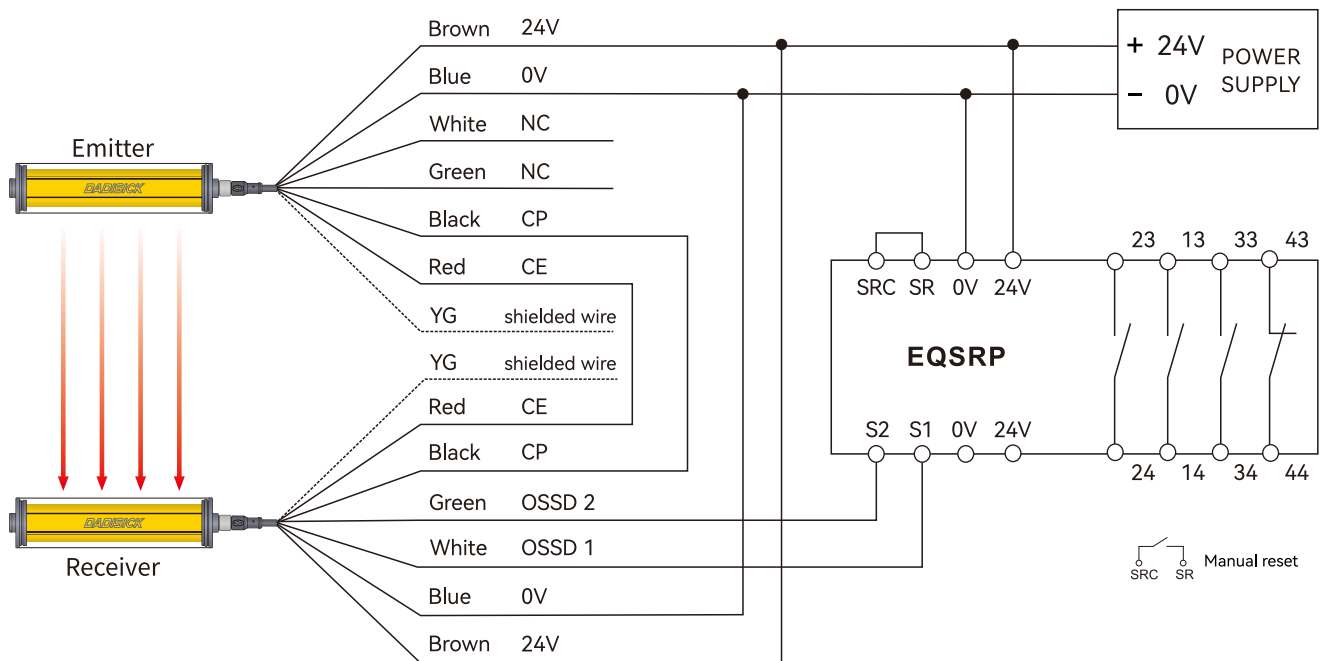
4. Selection of safety light curtain controller

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

4.1 Wiring diagram of QET built-in controller



4.2 Wiring diagram of EQSRP safety relay

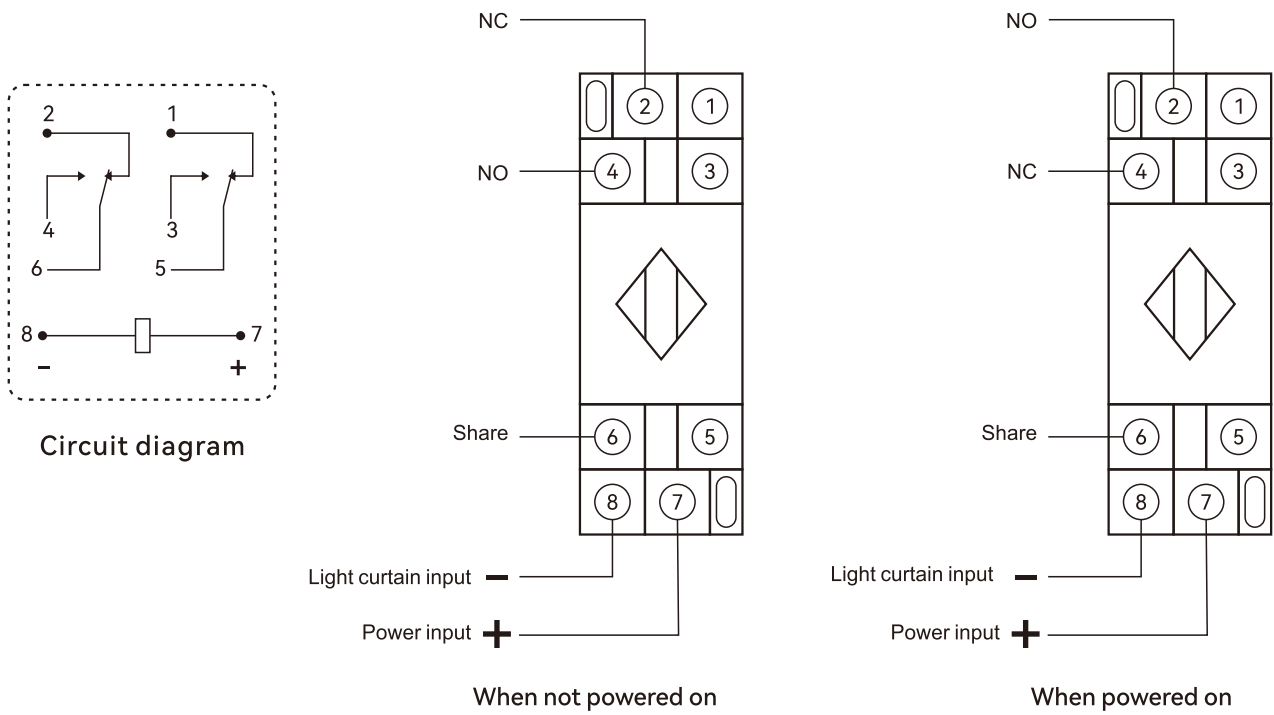


4.3 Wiring diagram of ETer-AP safety relay

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

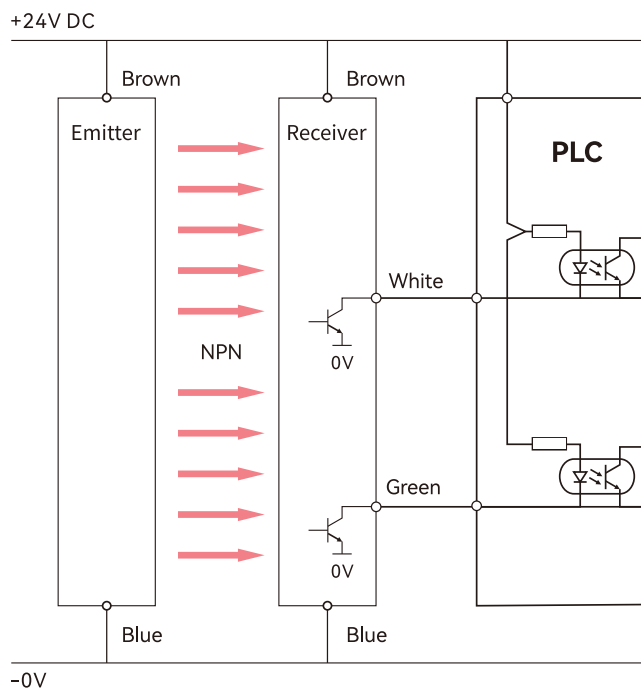


4.4 Wiring diagram of QET-1 light curtain relay



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

NPN wiring:



PNP wiring:

