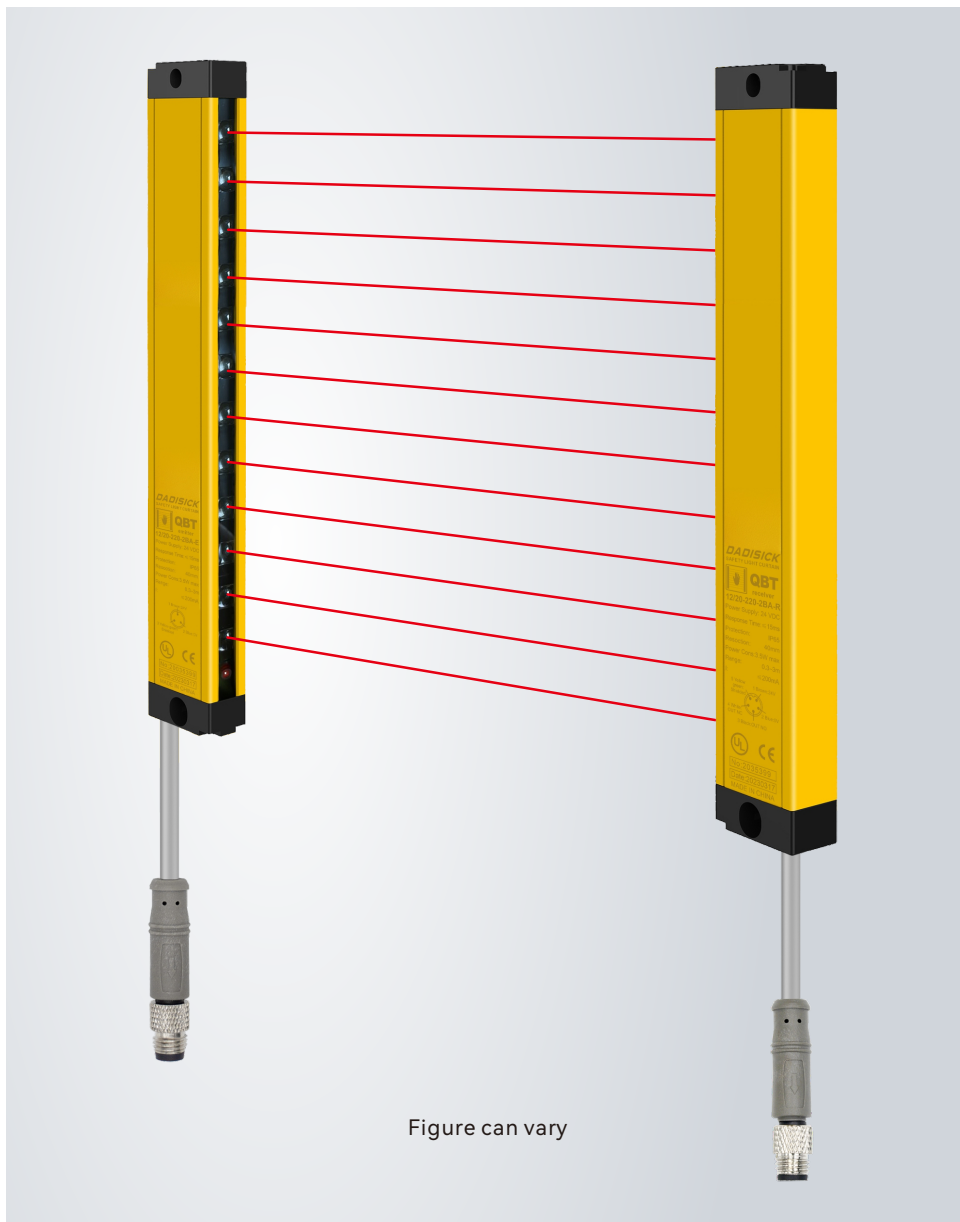


# TECHNICAL DATA SHEET

## SAFETY LIGHT CURTAIN SENSOR Emitter and Receiver QBT series



### Contents

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

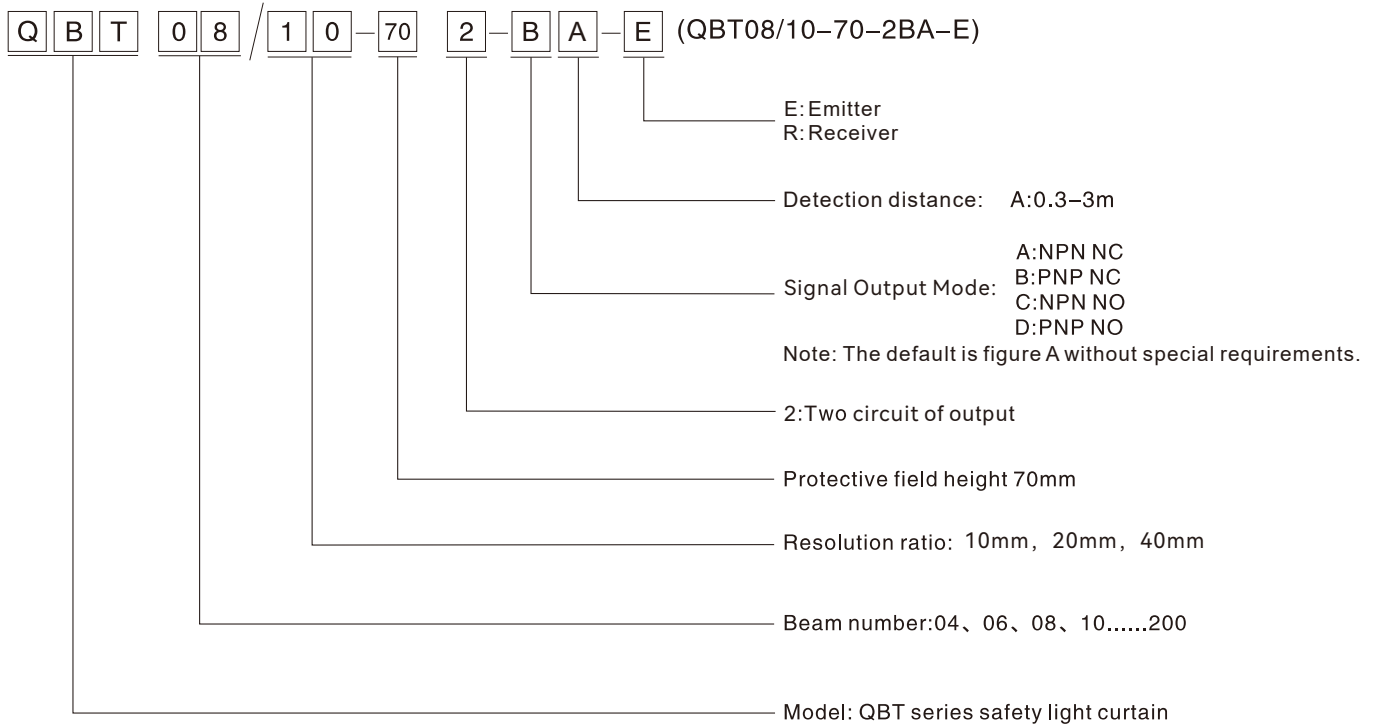


GB/T 19001-2016

## 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.

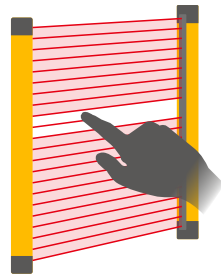
## The specifications of QBT type safety light curtain are as follows:



## Resolution ratio

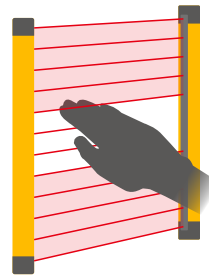
Depending on the usage environment and requirements, it is important to choose the appropriate beam spacing

### Finger protection



Detection capability  
10/20mm  
diameter

### Hand protection



Detection capability  
40mm  
diameter

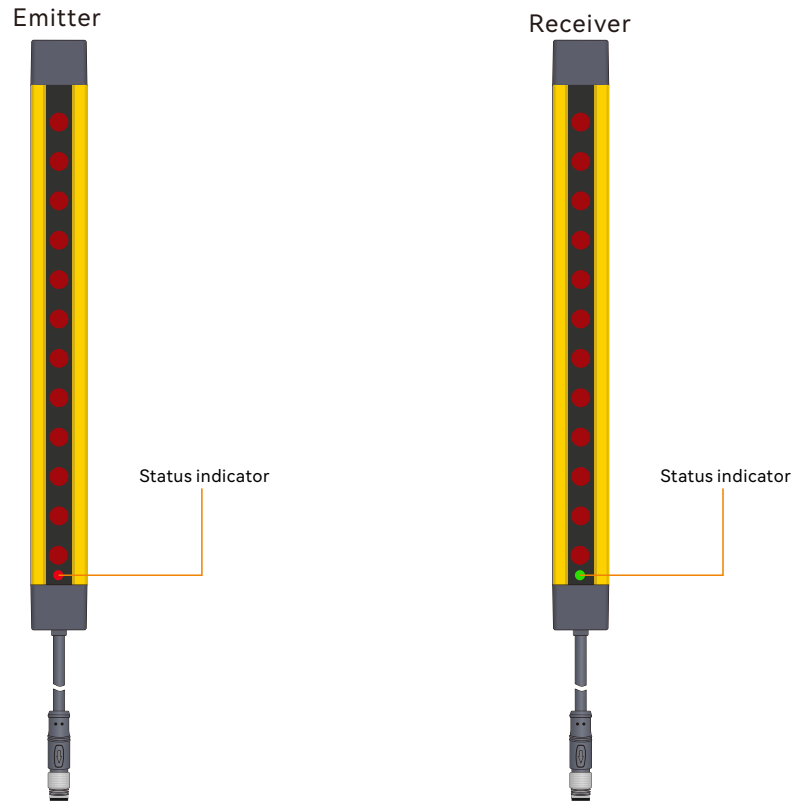
## Technical data






### Basic data of Receiver and Emitter

<b>Standard packaging</b>	
Product model	<b>QBT series</b>
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
<b>Features</b>	
Resolution ratio	10mm, 20mm, 40mm
Check the accuracy	18mm, 28mm, 48mm
Number of beams	04、06、08、10.....200
Overall dimension	15mm*30mm*L, L is the length of emitter and receiver.
Detection distance	30-3000mm
Response time	≤15ms
<b>Synchronization</b>	
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
<b>Mechanical data</b>	
Housing material	Metal
Metal shell	Aluminium
Lens front screen material	Acrylic
Upper and lower cover materials	ABS reinforced nylon PA66+30% GF
<b>Performance data</b>	
Protection circuit	Short circuit protection Overvoltage protection
Supply voltage	24VDC, -20...20%
Maximum current consumption	150mA
Fuse	2A half time interval
<b>Environmental data</b>	
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 3, WHITE OSSD1
Switching element	Transistor PNP
Safety switch output 2	Connection pin 4, BLACK 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

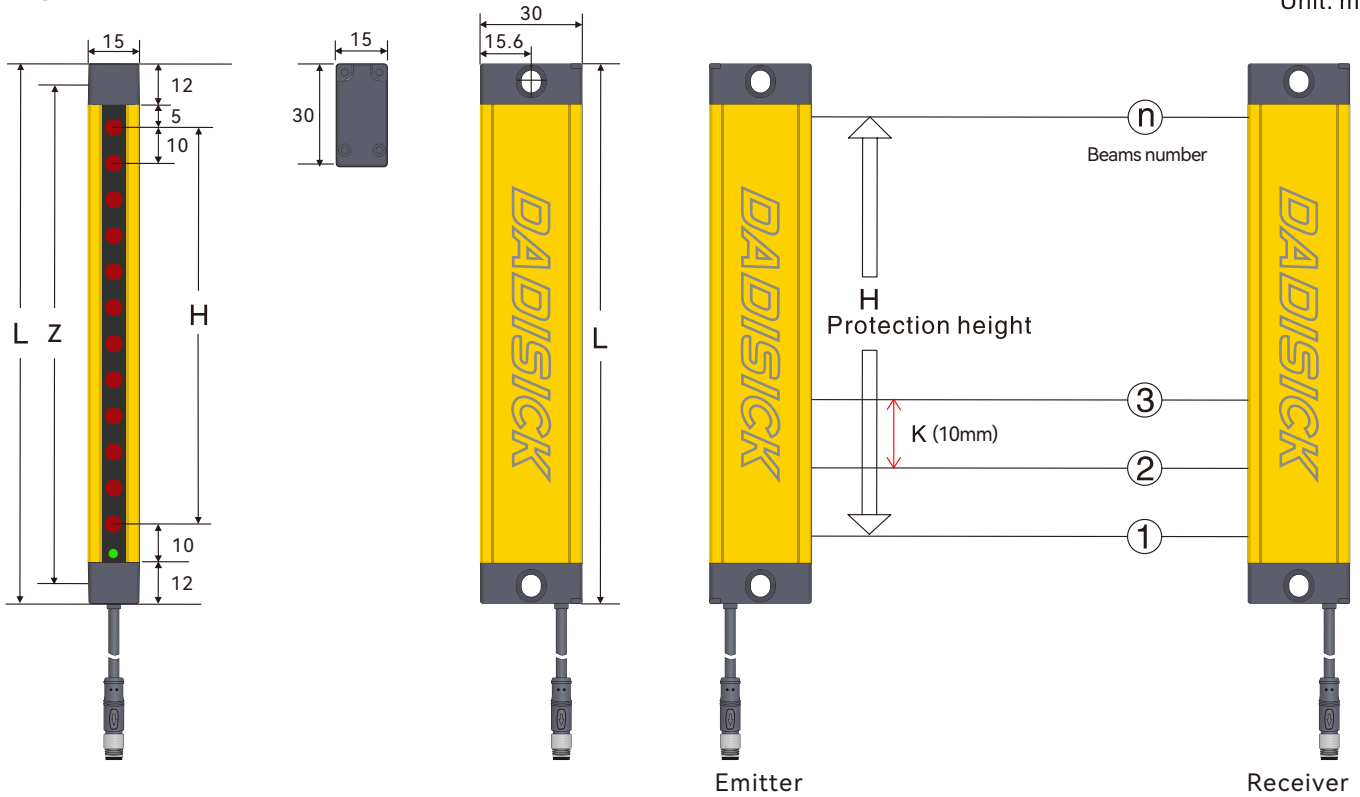


Normal operation of light curtain	LED Indicator status	Explain
Emitter	 Red, always on	Turns on the power
	 Receiver and emitter are red	Receiver and Emitter are not aligned
Receiver	 Green	All light paths are connected
	 Red	Light path shading
	 Lights flashing	Interference or overstep detection range

## Dimensioned drawings

### 1. QBT 10mm series

Unit: mm



#### Remarks

L: Total length of light screen  
 $L = 12 + 5 + H + 10 + 12$

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

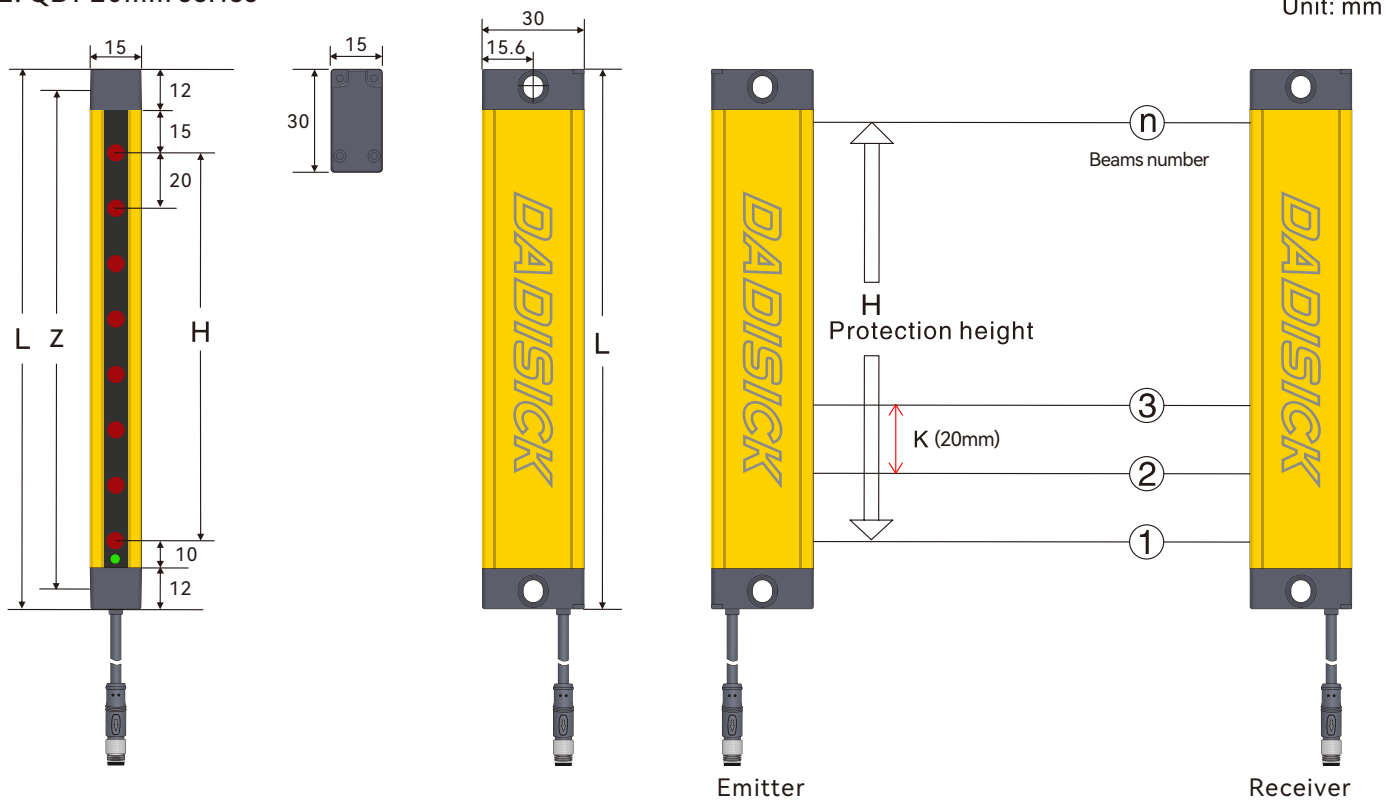
K: Resolution ratio  
 $Z = L - 11\text{mm}$

Z: Fixed hole center distance  
 n: Beams number

### QBT 10mm specification list

Resolution	Light beam	Protection height (H)	Total height (L)	Product model	Signal output mode		Detection range
					Outputs	PNP output	
10mm (K)	8	70	109	QBT08/10-70	2	PNP	0.3-3m
	10	90	129	QBT10/10-90	2	PNP	0.3-3m
	12	110	149	QBT12/10-110	2	PNP	0.3-3m
	14	130	169	QBT14/10-130	2	PNP	0.3-3m
	16	150	189	QBT16/10-150	2	PNP	0.3-3m
	18	170	209	QBT18/10-170	2	PNP	0.3-3m
	20	190	229	QBT20/10-190	2	PNP	0.3-3m
	22	210	249	QBT22/10-210	2	PNP	0.3-3m
	24	230	269	QBT24/10-230	2	PNP	0.3-3m
	26	250	289	QBT26/10-250	2	PNP	0.3-3m
	28	270	309	QBT28/10-270	2	PNP	0.3-3m
	30	290	329	QBT30/10-290	2	PNP	0.3-3m
	32	310	349	QBT32/10-310	2	PNP	0.3-3m
	34	330	369	QBT34/10-330	2	PNP	0.3-3m
	36	350	389	QBT36/10-350	2	PNP	0.3-3m
	38	370	409	QBT38/10-370	2	PNP	0.3-3m
	40	390	429	QBT40/10-390	2	PNP	0.3-3m
	42	410	449	QBT42/10-410	2	PNP	0.3-3m
	44	430	469	QBT44/10-430	2	PNP	0.3-3m
	46	450	489	QBT46/10-450	2	PNP	0.3-3m
48	470	509	QBT48/10-470	2	PNP	0.3-3m	
50	490	529	QBT50/10-490	2	PNP	0.3-3m	
52	510	549	QBT52/10-510	2	PNP	0.3-3m	
...	...	...	...	...	2	PNP	0.3-3m
196	1950	1989	1989	QBT196/10-1950	2	PNP	0.3-3m
198	1970	2009	2009	QBT198/10-1970	2	PNP	0.3-3m
200	1990	2029	2029	QBT200/10-1990	2	PNP	0.3-3m

## 2. QBT 20mm series



## Remarks

$L$ : Total length of light screen  
 $L = 12 + 15 + H + 10 + 12$

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

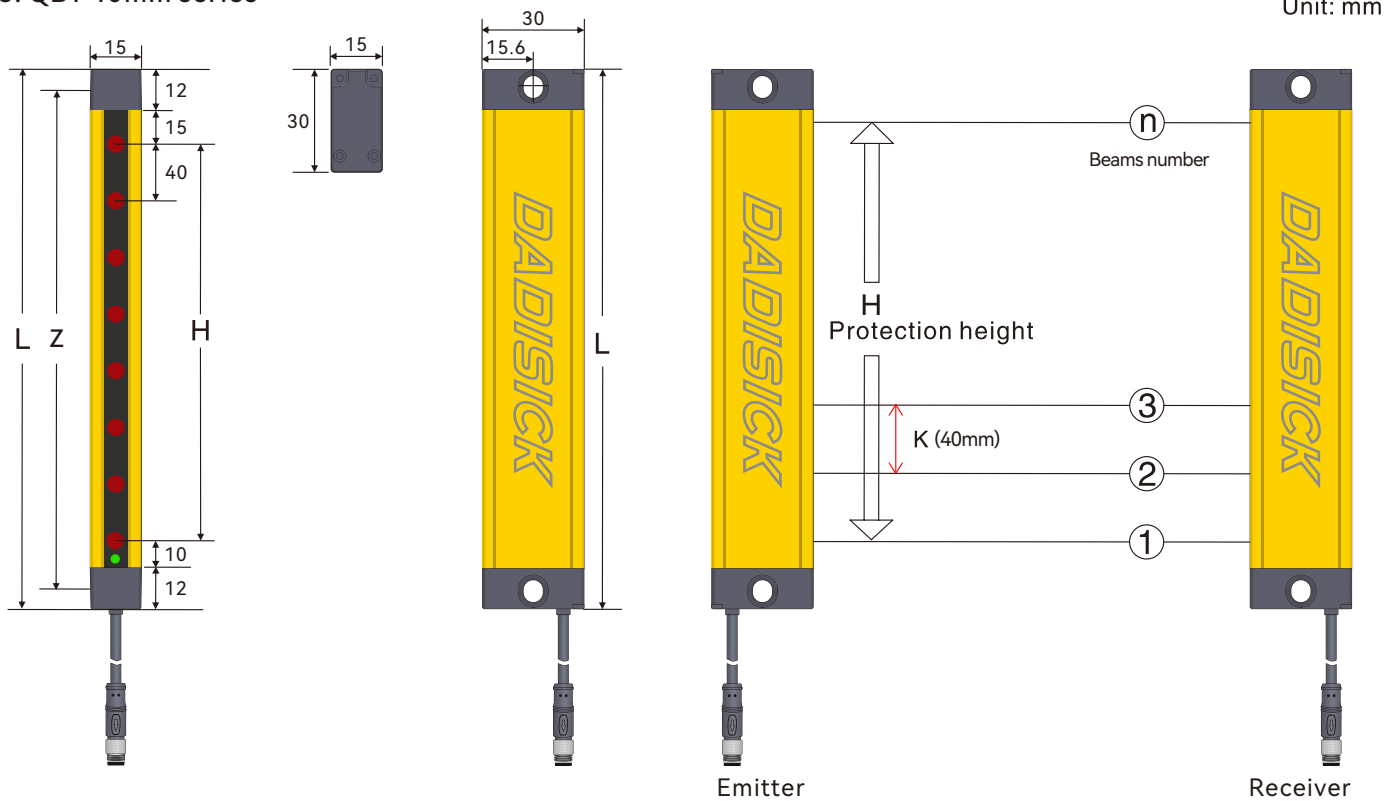
$K$ : Resolution ratio  
 $Z = L - 11\text{mm}$

$Z$ : Fixed hole center distance  
 $n$ : Beams number

## QBT 20mm specification list

Resolution	Light beam	Protection height (H)	Total height (L)	Product model	Signal output mode		Detection range
					Outputs	PNP output	
20mm (K)	6	100	149	QBT06/20-100	2	PNP	0.3-3m
	8	140	189	QBT08/20-140	2	PNP	0.3-3m
	10	180	229	QBT10/20-180	2	PNP	0.3-3m
	12	220	269	QBT12/20-220	2	PNP	0.3-3m
	14	260	309	QBT14/20-260	2	PNP	0.3-3m
	16	300	349	QBT16/20-300	2	PNP	0.3-3m
	18	340	389	QBT18/20-340	2	PNP	0.3-3m
	20	380	429	QBT20/20-380	2	PNP	0.3-3m
	22	420	469	QBT22/20-420	2	PNP	0.3-3m
	24	460	509	QBT24/20-460	2	PNP	0.3-3m
	26	500	549	QBT26/20-500	2	PNP	0.3-3m
	28	540	589	QBT28/20-540	2	PNP	0.3-3m
	30	580	629	QBT30/20-580	2	PNP	0.3-3m
	32	620	669	QBT32/20-620	2	PNP	0.3-3m
	34	660	709	QBT34/20-660	2	PNP	0.3-3m
	36	700	749	QBT36/20-700	2	PNP	0.3-3m
	38	740	789	QBT38/20-740	2	PNP	0.3-3m
	40	780	829	QBT40/20-780	2	PNP	0.3-3m
	42	820	869	QBT42/20-820	2	PNP	0.3-3m
	44	860	909	QBT44/20-860	2	PNP	0.3-3m
46	900	949	QBT46/20-900	2	PNP	0.3-3m	
48	940	989	QBT48/20-940	2	PNP	0.3-3m	
50	980	1029	QBT50/20-980	2	PNP	0.3-3m	
52	1020	1069	QBT52/20-1020	2	PNP	0.3-3m	
...	...	...	...	...	2	PNP	0.3-3m
196	3900	3949	QBT196/20-3900	2	PNP	0.3-3m	
198	3940	3989	QBT198/20-3940	2	PNP	0.3-3m	
200	3980	4029	QBT200/20-3980	2	PNP	0.3-3m	

## 3. QBT 40mm series



## Remarks

$L$ : Total length of light screen  
 $L = 12 + 15 + H + 10 + 12$

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

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

$Z$ : Fixed hole center distance  
 $n$ : Beams number

## QBT 40mm specification list

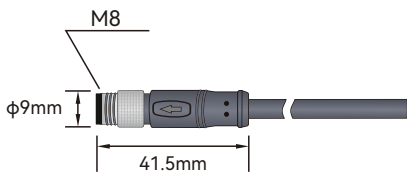
Resolution	Light beam	Protection height (H)	Total height (L)	Product model	Signal output mode		Detection range
					Outputs	PNP output	
40mm (K)	4	120	169	QBT04/40-120	2	PNP	0.3-3m
	6	200	249	QBT06/40-200	2	PNP	0.3-3m
	8	280	329	QBT08/40-280	2	PNP	0.3-3m
	10	360	409	QBT10/40-360	2	PNP	0.3-3m
	12	440	489	QBT12/40-440	2	PNP	0.3-3m
	14	520	569	QBT14/40-520	2	PNP	0.3-3m
	16	600	649	QBT16/40-600	2	PNP	0.3-3m
	18	680	729	QBT18/40-680	2	PNP	0.3-3m
	20	760	809	QBT20/40-760	2	PNP	0.3-3m
	22	840	889	QBT22/40-840	2	PNP	0.3-3m
	24	920	969	QBT24/40-920	2	PNP	0.3-3m
	26	1000	1049	QBT26/40-1000	2	PNP	0.3-3m
	28	1080	1129	QBT28/40-1080	2	PNP	0.3-3m
	30	1160	1209	QBT30/40-1160	2	PNP	0.3-3m
	32	1240	1289	QBT32/40-1240	2	PNP	0.3-3m
	34	1320	1369	QBT34/40-1320	2	PNP	0.3-3m
	36	1400	1449	QBT36/40-1400	2	PNP	0.3-3m
	38	1480	1529	QBT38/40-1480	2	PNP	0.3-3m
	40	1560	1609	QBT40/40-1560	2	PNP	0.3-3m
	42	1640	1689	QBT42/40-1640	2	PNP	0.3-3m
44	1720	1769	QBT44/40-1720	2	PNP	0.3-3m	
46	1800	1849	QBT46/40-1800	2	PNP	0.3-3m	
48	1880	1929	QBT48/40-1880	2	PNP	0.3-3m	
50	1960	2109	QBT50/40-1960	2	PNP	0.3-3m	
...	...	...	...	...	2	PNP	0.3-3m
96	3800	3849	QBT96/40-3800	2	PNP	0.3-3m	
98	3880	3929	QBT98/40-3880	2	PNP	0.3-3m	
100	3960	4009	QBT100/40-3960	2	PNP	0.3-3m	



## Electrical connection

Electrical interface	
Number of interfaces	2 (receiver and emitter)
Type	Emitter with M8 connector 3-pin, Receiver with M8 connector 5-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:



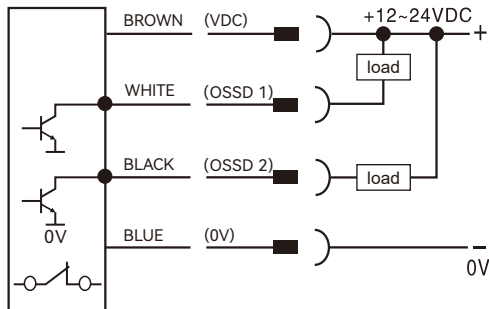
Emitter Wiring diagram		
Pin number	Line color	Name
1	BROWN	24V DC
2	BLUE	0V
-	-	-
3	YELLOW	Ground wire

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

3-pin and 5-pin M8 cable connector straight  
3m waterproof cable

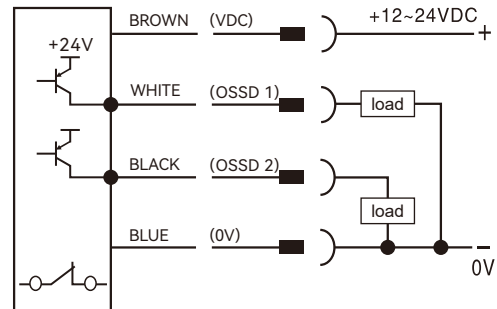
### 1. QBT signal output selection (actual output of transistor working normally)

#### NPN NC



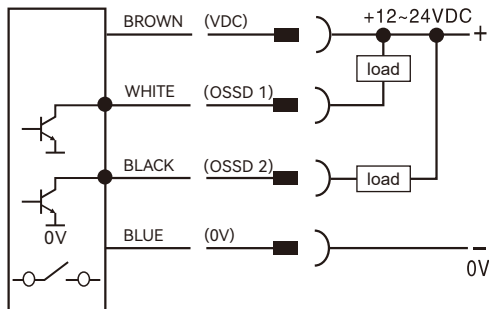
A

#### PNP NC



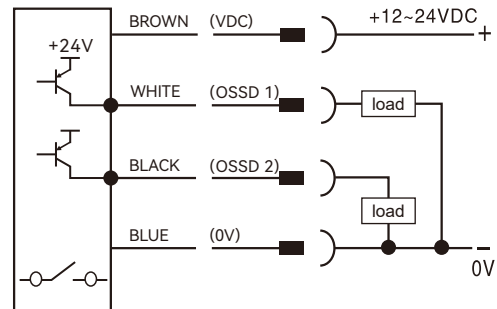
B

#### NPN NO



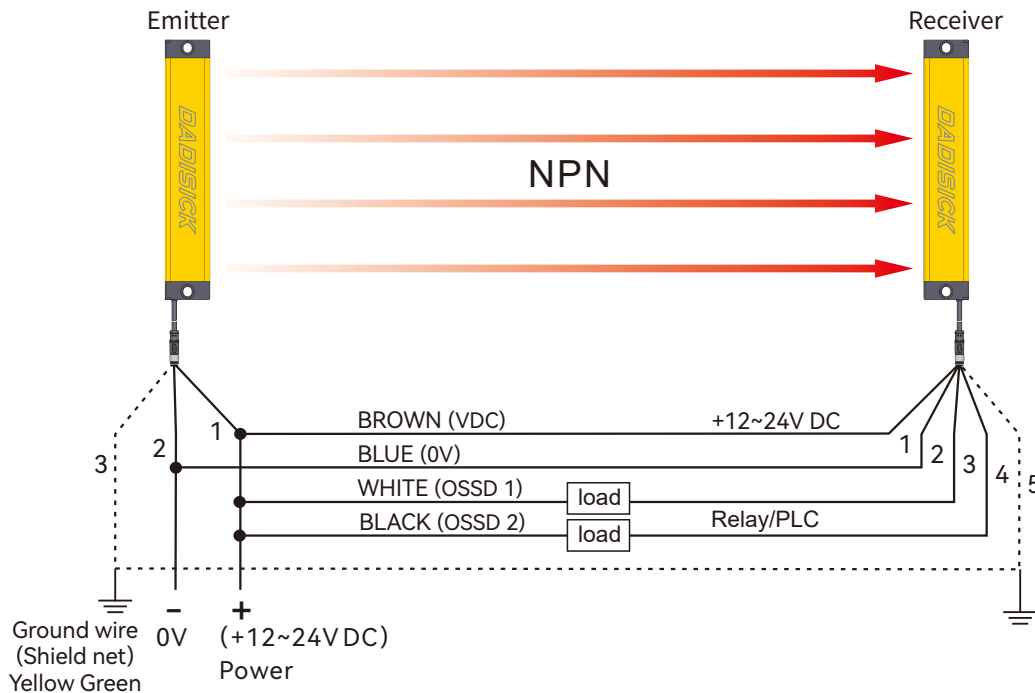
C

#### PNP NO



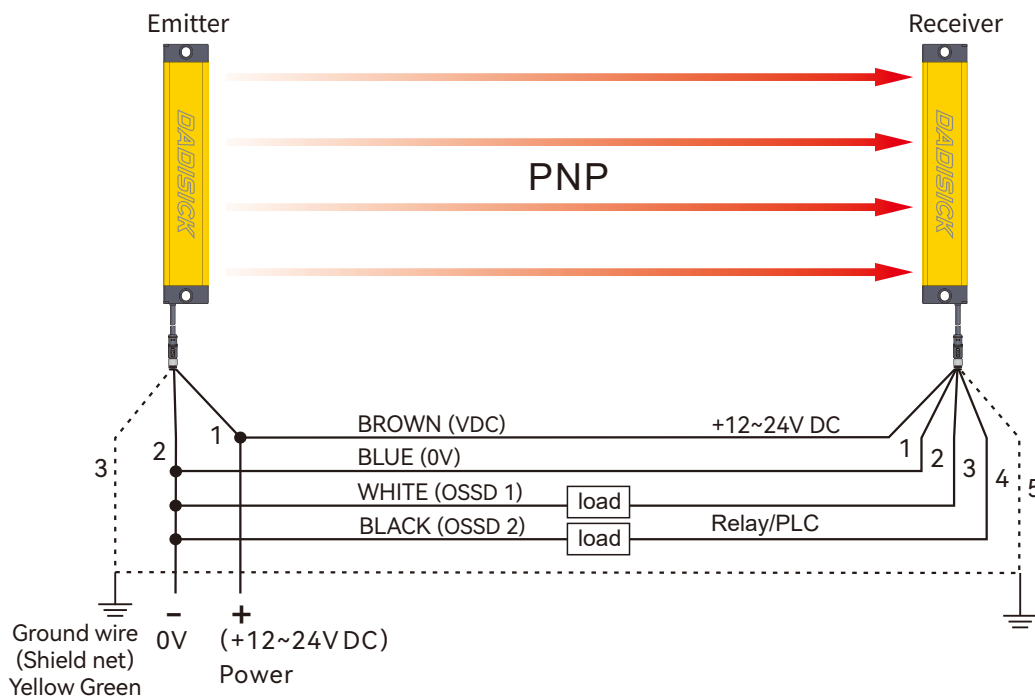
D

## 2. NPN output wiring diagram







This picture is an example of NPN output wiring

## 3. PNP output wiring diagram

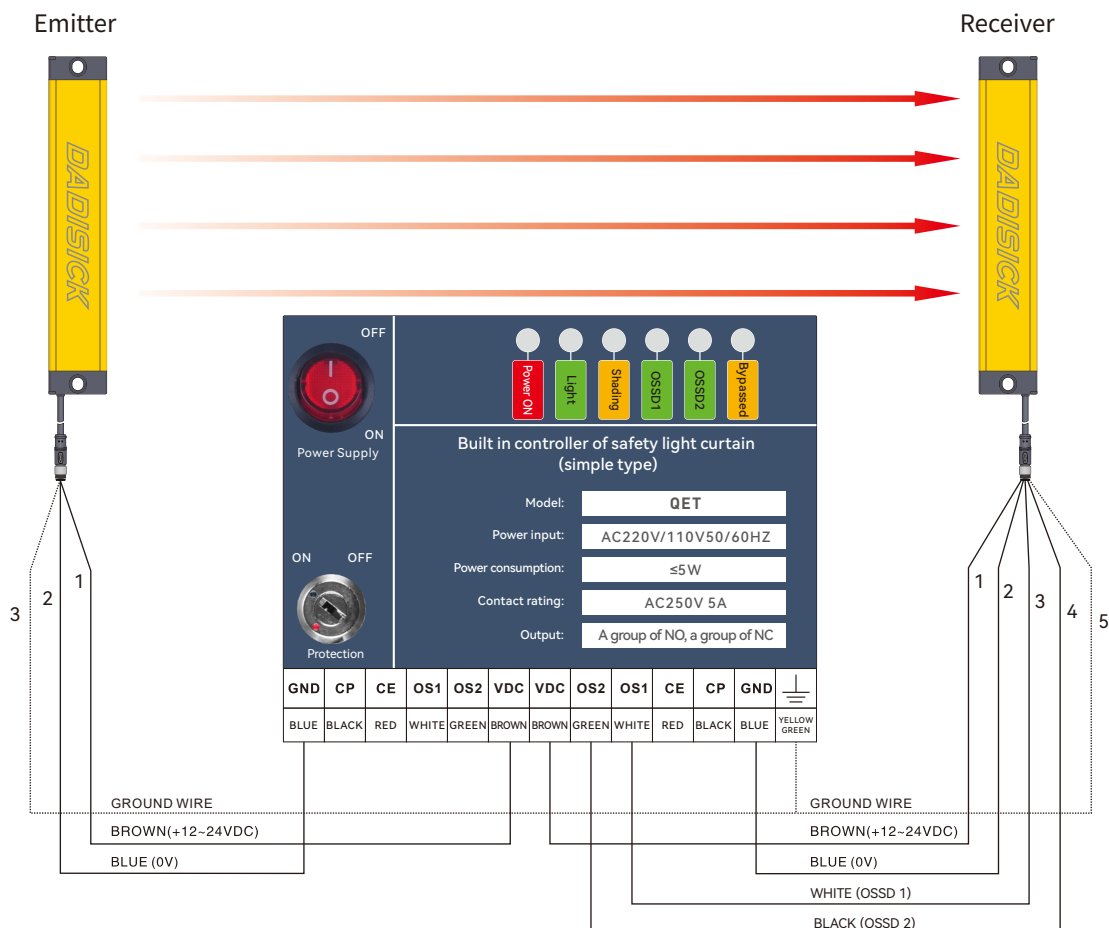


This picture is an example of PNP output wiring

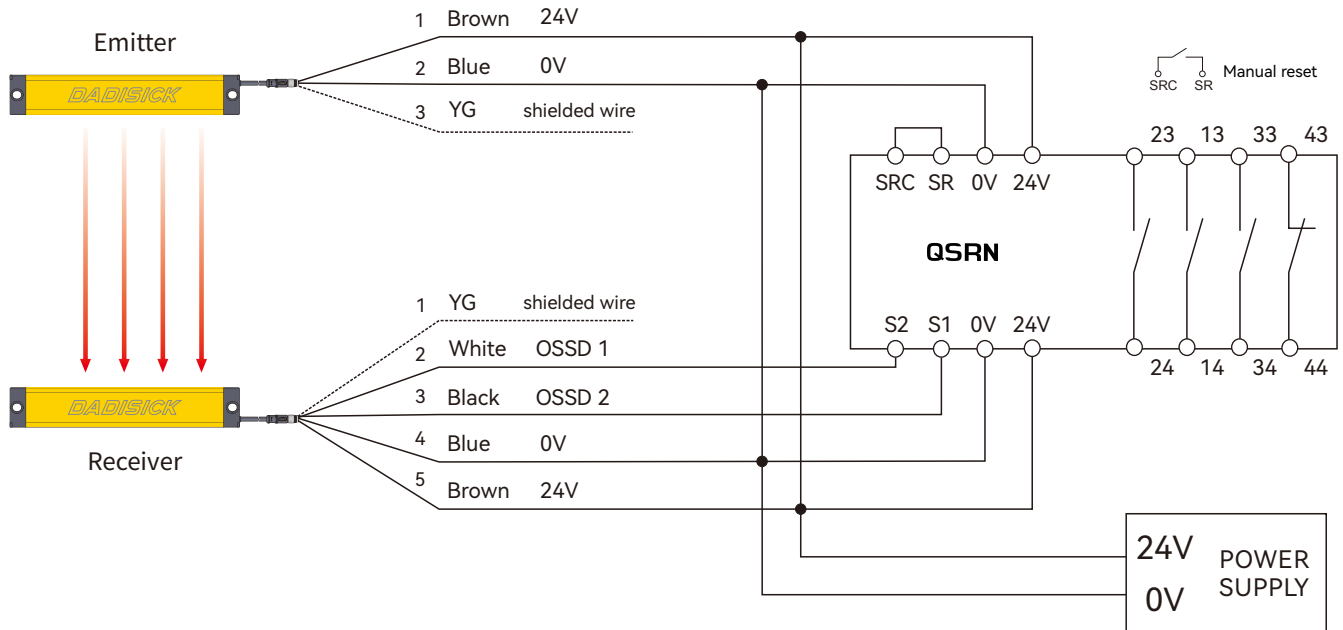
## 4. Selection of safety light curtain controller

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

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

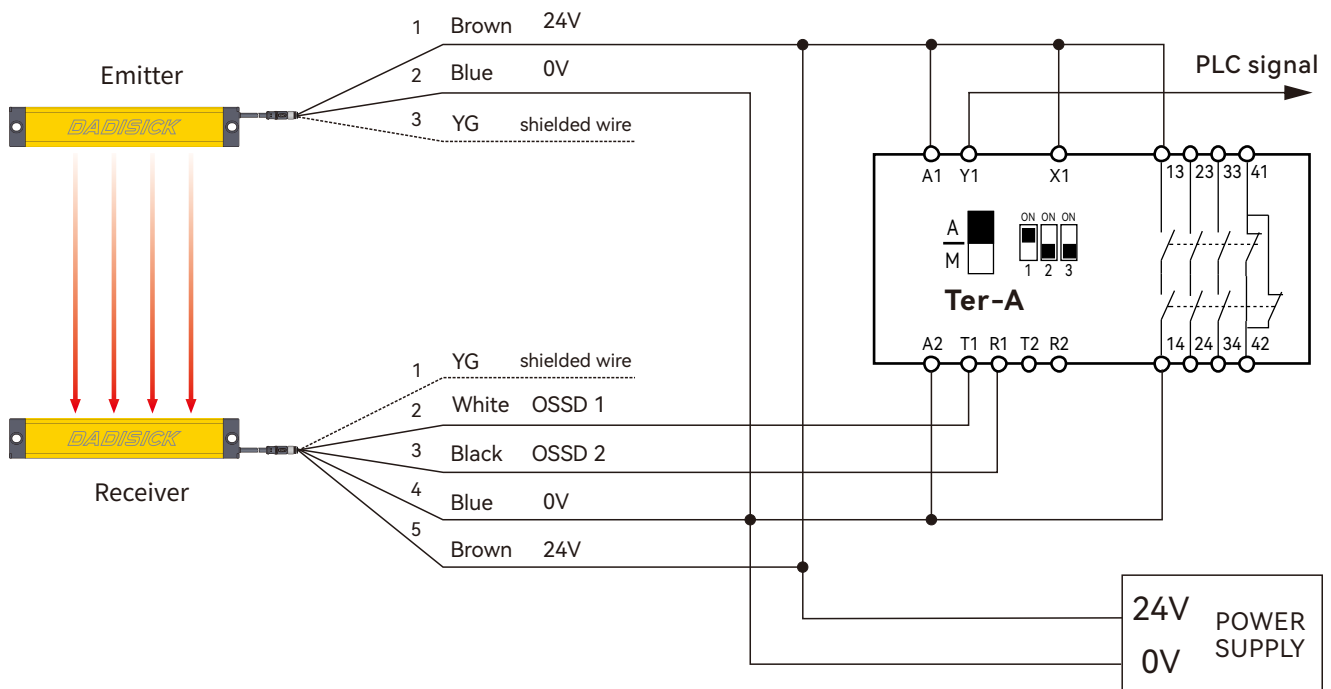


## 4.2 Wiring diagram of QSRN safety relay

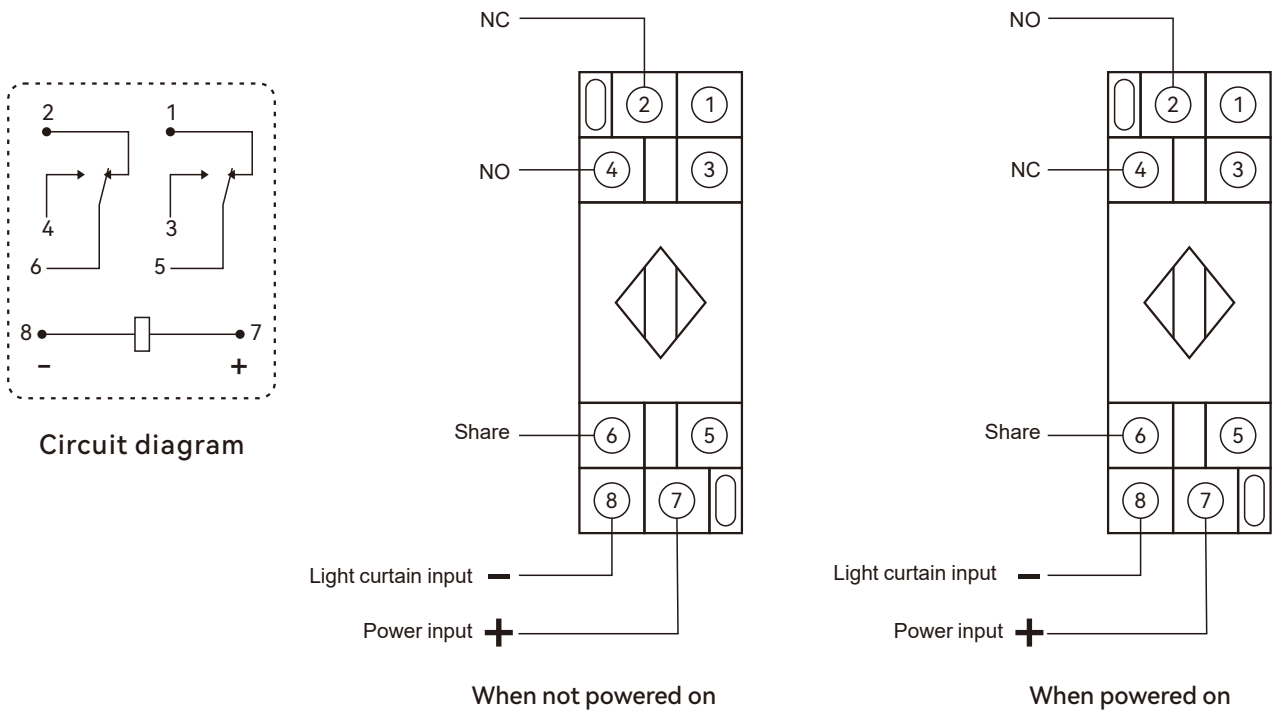


## 4.3 Wiring diagram of Ter-A safety relay

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

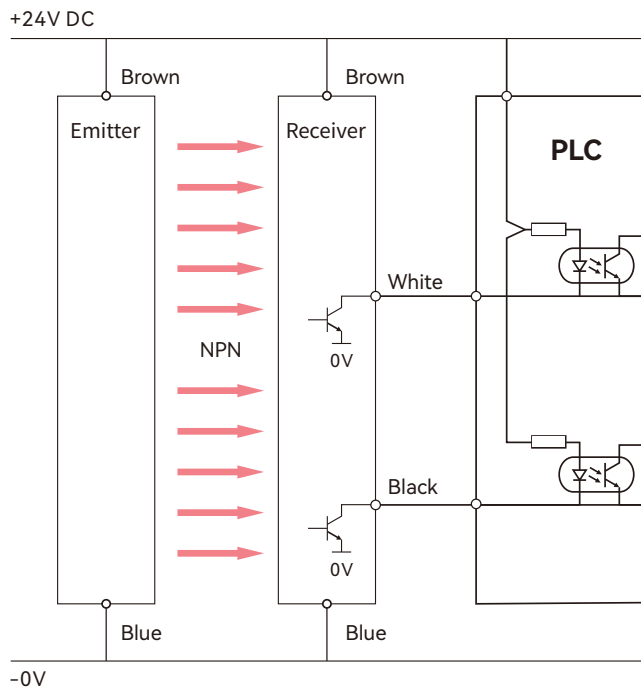


#### 4.4 Wiring diagram of QET-1 light curtain relay

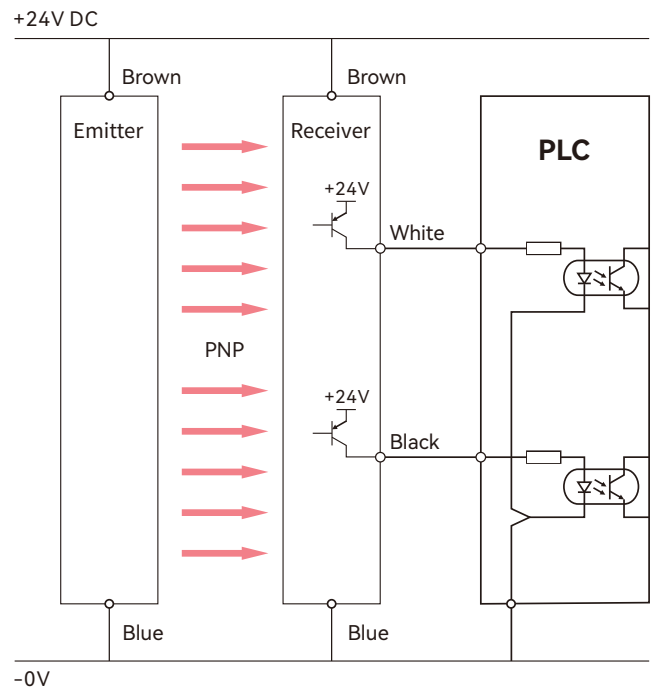


#### 4.5 Wiring between light curtain and PLC and one-chip computer system

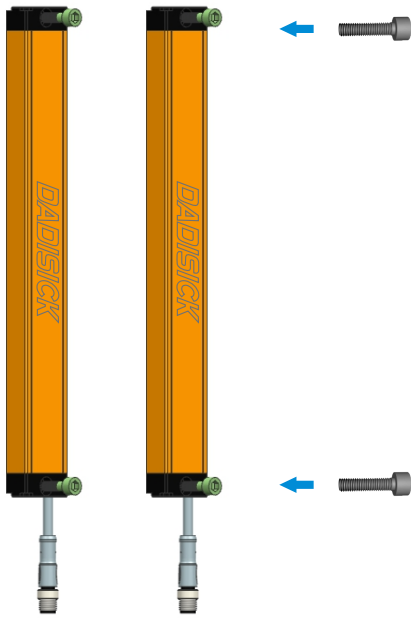
NPN wiring:



PNP wiring:



## Accessories



Installation method for fixing hole screws  
(Original accessories)

Circular screw	Model: QBZ-01
Unit: mm	