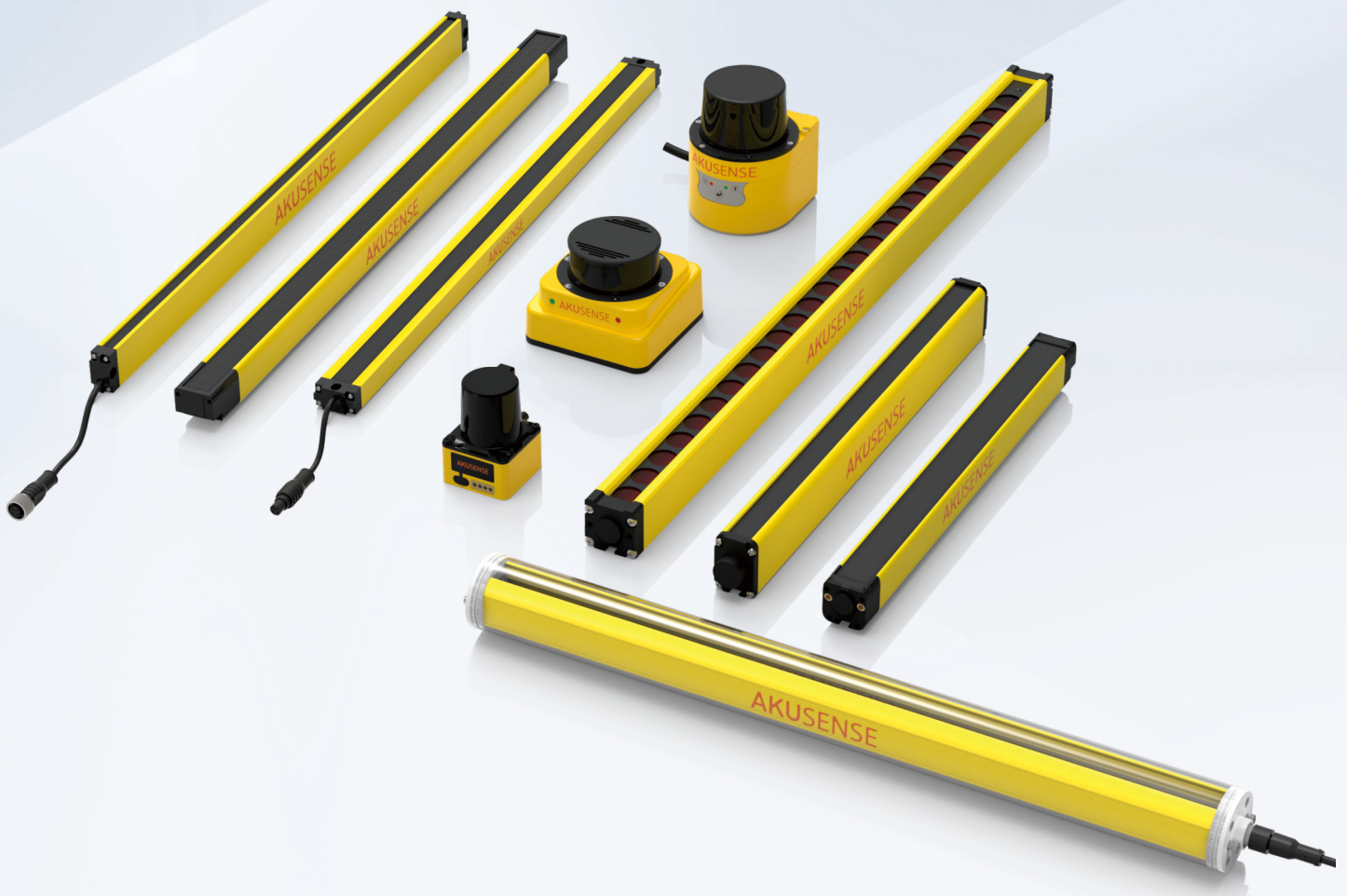


# Area/Security/Obstacle Avoidance Sensor



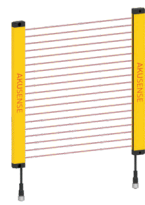
- ◎ TUV certified safety level 4, suitable for high-risk places
- ◎ Fastened structure design, strong anti-vibration performance
- ◎ Various sizes, protection heights and inspection methods are available, and can be quickly customized according to various non-standard requirements



**Standard Type (BML Series)**

- Cross-sectional size is 30mm \* 30mm.
- Multiple resolutions for option.
- 3M cable as standard

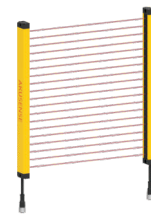
P.I-05



**Top-emitting Type (BZL Series)**

- Frontal detection, thickness is only 17mm.
- With plastic installation hole, easy to install.
- The protection distance can be customized according to clients' requirements.

P.I-08



**Side-emitting Type (BCL Series)**

- Side detection, thickness is only 15mm.
- With plastic installation hole, easy to install.
- Small upper and lower blind area, saving installation space.

P.I-12



**Waterproof Type (BPL Series)**

- Cylindrical design with a diameter of only 48mm
- High-strength sealing ring, IP68
- Extraordinary self-checking function and strong anti-interference capability

P.I-15



**Measuring Type (BAL Series)**

- Surface mount technology for superior shock resistance
- Extraordinary self-checking function and strong anti-interference capability
- Customizable RS485/232/422 communication protocols

P.I-18



**Economical Type (BKL Series)**

- Strong anti-electromagnetic interference
- Class 4 safety grating design standards
- Satisfying different installation scenarios, suitable for a variety of working environments

P.I-23



**Guidance Economical type (BSL Series)**

- Response time ≤ 20ms, fast response for safe production.
- Detection distance of 1-6m, covering general protection scenarios.
- Robust housing construction, resistant to pressure, vibration and shock.

P.I-21



**Safety Light Curtain (SAF Series)**

- Type 4 standard providing security, providing security for high-risk sites
- Beam Pitch: 10mm, 20mm, 30mm and 40mm.
- Protection distance: 3m or 12m, 8~20m

P.I-25

Lidar Scanner



**TOF LiDAR Scanner (AS-21C/41C)**

- 20M/40M sensing distance
- 300° scanning range
- 25HZ (Max.) scanning frequency
- 0.125° (Max.) resolution

P.I-28



**MINI LiDAR Scanner (AS-11C)**

- 20M sensing distance, small size
- 360° scanning range, no dead ends
- 12.5HZ (Max.) scanning frequency
- 0.5° (Max.) resolution

P.I-31



**Navigation Lidar (AS-100C)**

- Height: 72mm, scanning range: 360 degrees
- Scanning frequency: 10Hz/20Hz, scanning angle resolution: 0.05 degree/0.1 degree
- Scanning distance: 20m (10% reflectivity), range: 0.2m-100m
- Millimeter-level distance data resolution, RSSI function, suitable for navigation and map surveying.

P.I-34

Fiber Optic
Slot Sensors
Photoelectric
Laser
Proximity
Displacement
Magnetic
Contact
Area
Ultrasonic
Vision
Code Readers
Vibration
Temperature
Accessories

Guidance

Light curtains

Standard type
Top-emitting type
Side-emitting type
Waterproof type
Measuring type
Economical type

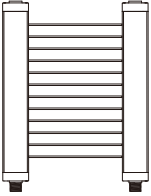
Safety Light Curtain

Beam pitch 10mm
Beam pitch 20mm
Beam pitch 30mm
Beam pitch 40mm

LIDAR scanner

TOF LIDAR scanner
MINI LIDAR scanner
Navigation LIDAR

## Standard Type

Appearance	Pitch	Min. sized detectable objects	Beams	Protection height	Protection distance	Model No.	Pages
	10mm	> $\phi$ 14mm, opaque	6~32	50~310mm	0.3~3m	NPN:BML10-TXX03NC PNP:BML10-TXX03PC	I-05
	14mm	> $\phi$ 19mm, opaque	6~32	70~434mm	0.3~3m	NPN:BML14-TXX03NC PNP:BML14-TXX03PC	
	20mm	> $\phi$ 25mm, opaque	4~32	60~620mm	0.3~3m	NPN:BML20-TXX03NC PNP:BML20-TXX03PC	
	25mm	> $\phi$ 30mm, opaque	6~32	125~775mm	0.3~3m	NPN:BML25-TXX03NC PNP:BML25-TXX03PC	
	30mm	> $\phi$ 35mm, opaque	4~32	90~930mm	0.3~3m	NPN:BML30-TXX03NC PNP:BML30-TXX03PC	
	40mm	> $\phi$ 45mm, opaque	4~32	120~1240mm	0.3~3m	NPN:BML40-TXX03NC PNP:BML40-TXX03PC	

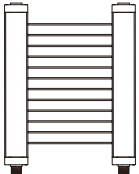
Note: XX represents the number of beam, eg. 06 represents the 6 axis.

## Top-emitting Type

Appearance	Pitch	Min. sized detectable objects	Beams	Protection height	Protection distance	Model No.	Pages
	10mm	> $\phi$ 18mm, opaque	6~32	50~310mm	0.3~1.5m	NPN:BZL10-TXX03NC PNP:BZL10-TXX03PC	I-08
	14mm	> $\phi$ 22mm, opaque	6~32	70~434mm	0.3~1.5m	NPN:BZL14-TXX03NC PNP:BZL14-TXX03PC	
	20mm	> $\phi$ 28mm, opaque	4~32	60~620mm	0.3~1.5m	NPN:BZL20-TXX03NC PNP:BZL20-TXX03PC	
	25mm	> $\phi$ 33mm, opaque	6~32	125~775mm	0.3~1.5m	NPN:BZL25-TXX03NC PNP:BZL25-TXX03PC	
	30mm	> $\phi$ 38mm, opaque	4~32	90~930mm	0.3~1.5m	NPN:BZL30-TXX03NC PNP:BZL30-TXX03PC	
	40mm	> $\phi$ 48mm, opaque	4~32	120~1240mm	0.3~1.5m	NPN:BZL40-TXX03NC PNP:BZL40-TXX03PC	

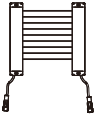
Note: XX represents the number of beam, eg. 06 represents the 6 axis.

## Measuring Type

Appearance	Pitch	Min. sized detectable objects	Beams	Protection height	Protection distance	Model No.	Pages
	2.5mm	> $\phi$ 3.75mm, opaque	32~1000	77.5~2497.5mm	0.3~3m	Voltage: BAL02-TXX03V Current: BAL02-TXX03A	I-18
	5mm	> $\phi$ 6.5mm, opaque	16~1000	75~4995mm	0.3~3m	Voltage: BAL05-TXX03V Current: BAL05-TXX03A	
	10mm	> $\phi$ 15mm, opaque	8~296	70~2950mm	0.3~3m	Voltage: BAL10-TXX03V Current: BAL10-TXX03A	
	20mm	> $\phi$ 25mm, opaque	4~596	60~11900mm	0.3~3m	Voltage: BAL20-TXX03V Current: BAL20-TXX03A	
	40mm	> $\phi$ 45mm, opaque	4~146	120~5800mm	0.3~3m	Voltage: BAL40-TXX03V Current: BAL40-TXX03A	

Note: XX represents the number of beam, eg. 06 represents the 6 axis.

## Side-emitting Type

Appearance	Pitch	Min. sized detectable objects	Beams	Protection height	Protection distance	Model No.	Pages
	20mm	> φ 28mm, opaque	6~32	100~620mm	0.3~1m	NPN:BCL20-TXX03NC PNP:BCL20-TXX03PC	I-12
	40mm	> φ 48mm, opaque	4~32	120~1240mm	0.3~1m	NPN:BCL40-TXX03NC PNP:BCL40-TXX03PC	

Note: XX represents the number of beam, eg. 06 represents the 6 axis.

## Waterproof Type

Appearance	Pitch	Min. sized detectable objects	Beams	Protection height	Protection distance	Model No.	Pages
	10mm	> φ 15mm, opaque	4~32	50~310mm	0.3~3m	NPN:BPL10-TXX03NC PNP:BPL10-TXX03PC	I-15
	14mm	> φ 19mm, opaque	4~32	70~434mm	0.3~3m	NPN:BPL14-TXX03NC PNP:BPL14-TXX03PC	
	20mm	> φ 25mm, opaque	4~32	60~620mm	0.3~3m	NPN:BPL20-TXX03NC PNP:BPL20-TXX03PC	
	25mm	> φ 30mm, opaque	4~32	125~775mm	0.3~3m	NPN:BPL25-TXX03NC PNP:BPL25-TXX03PC	
	30mm	> φ 35mm, opaque	4~32	90~930mm	0.3~3m	NPN:BPL30-TXX03NC PNP:BPL30-TXX03PC	
	40mm	> φ 45mm, opaque	4~32	120~1240mm	0.3~3m	NPN:BPL40-TXX03NC PNP:BPL40-TXX03PC	

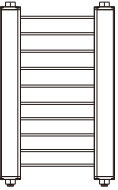
Note: XX represents the number of beam, eg. 06 represents the 6 axis.

## Economical Type

Appearance	Pitch	Min. sized detectable objects	Beams	Protection height	Protection distance	Model No.	Pages
	30mm	> φ 38mm, opaque	4~32	90~930mm	0.1~6m	NPN:BSL30-TXX06NC NPN:BSL30-TXX06PC	I-21
	40mm	> φ 48mm, opaque	4~32	120~1240mm	0.1~6m	NPN:BSL40-TXX06NC NPN:BSL40-TXX06PC	
	10mm	> φ 14mm, opaque	14~48	130~470mm	0.1~6m	NPN:BKL10-TXX06NC PNP:BKL10-TXX06PC	I-23
	20mm	> φ 25mm, opaque	8~48	140~940mm	0.1~6m	NPN:BKL20-TXX06NC PNP:BKL20-TXX06PC	
	40mm	> φ 45mm, opaque	4~48	120~1880mm	0.1~6m	NPN:BKL40-TXX06NC PNP:BKL40-TXX06PC	

Note: XX represents the number of beam, eg. 06 represents the 6 axis.

## Safety Type

Appearance	Pitch	Min. sized detectable objects	Beams	Protection height	Protection distance	Model No.	Pages
	10mm	> φ 18mm, opaque	16~72	150~710mm	0~3m 0~12m 8~20m	PNP:SAF10-TXXYYPC	I-25
	20mm	> φ 28mm, opaque	8~72	140~1420mm	0~3m 0~12m 8~20m	PNP:SAF20-TXXYYPC	
	30mm	> φ 38mm, opaque	6~72	150~2130mm	0~3m 0~12m 8~20m	PNP:SAF30-TXXYYPC	
	40mm	> φ 48mm, opaque	4~72	120~2840mm	0~3m 0~12m 8~20m	PNP:SAF40-TXXYYPC	

Note: XX represents the number of beam, eg. 06 represents the 6 axis. YY stands for protection distance. For example: 03 means 0~3m.

- Fiber Optic
- Slot Sensors
- Photoelectric
- Laser
- Proximity
- Displacement
- Magnetic
- Contact
- Area
- Ultrasonic
- Vision
- Code Readers
- Vibration
- Temperature
- Accessories

Guidance

Light curtains

- Standard type
- Top-emitting type
- Side-emitting type
- Waterproof type
- Measuring type
- Economical type

Safety Light Curtain

- Beam pitch 10mm
- Beam pitch 20mm
- Beam pitch 30mm
- Beam pitch 40mm

LIDAR scanner

- TOF LIDAR scanner
- MINI LIDAR scanner
- Navigation LIDAR

# Standard Type

## BML Series

Area



Appearance

Sectional area	30X30mm
NO. beams	4~32
Protection height	50~1240mm
Scanning range	0.3~3m
Resolution	10/14/20/25/30/40mm
Min. sized detectable objects	> $\phi$ 14/ $\phi$ 19/ $\phi$ 25/ $\phi$ 30/ $\phi$ 35/ $\phi$ 45mm, opaque
Supply voltage	24V DC $\pm$ 10%
Current consumption	< 200mA
Power consumption	4~6W
Output type	NPN/PNP
Synchronization type	line synchronization
Response time	$\leq$ 15ms
Light source	Infrared LED (Modulated)
Circuit protection	Reverse polarity, over-load, output short circuit protection
Ambient temperature	-10~+55°C (No condensation, no freezing)
Ambient humidity	35~85% RH
Anti-interference ability	10000Lux
Insulation resistance	Above 50M $\Omega$ (DC 500V megger)
Shock resistance	10~150Hz, 1.5mm double amplitude for 2 hours each in X, Y and Z directions
Vibration resistance	Acceleration: 500m/ s <sup>2</sup> (Approx:50G); x, y and z direction (3 times each)
Degree of protection	IP65
Material	Housing: Aluminum alloy; Transmissive cover: Polyester; End cover: Reinforced nylon
Connection	M12 connector
Accessories	Cable length 3m, female (Customization available)

### BML10

Resolution	10mm							
Min. sized detectable objects	> $\phi$ 14mm, opaque							
Protection distance	0.3~3m							
NO. beams	6	8	10	12	14	.....	32	
Protection height	50mm	70mm	90mm	110mm	130mm	.....	310mm	
Light curtain height	106mm	126mm	146mm	166mm	186mm	.....	366mm	
Model NO.	NPN NC	<a href="#">BML10-T0603NC</a>	<a href="#">BML10-T0803NC</a>	<a href="#">BML10-T1003NC</a>	<a href="#">BML10-T1203NC</a>	<a href="#">BML10-T1403NC</a>	.....	<a href="#">BML10-T3203NC</a>
	PNP NC	<a href="#">BML10-T0603PC</a>	<a href="#">BML10-T0803PC</a>	<a href="#">BML10-T1003PC</a>	<a href="#">BML10-T1203PC</a>	<a href="#">BML10-T1403PC</a>	.....	<a href="#">BML10-T3203PC</a>

Remarks: maximum number of optical axis 70 axis.

### BML14

Resolution	14mm							
Min. sized detectable objects	> $\phi$ 19mm, opaque							
Protection distance	0.3~3m							
NO. beams	6	8	10	12	14	.....	32	
Protection height	70mm	98mm	126mm	154mm	182mm	.....	434mm	
Light curtain height	128mm	156mm	184mm	212mm	240mm	.....	492mm	
Model NO.	NPN NC	<a href="#">BML14-T0603NC</a>	<a href="#">BML14-T0803NC</a>	<a href="#">BML14-T1003NC</a>	<a href="#">BML14-T1203NC</a>	<a href="#">BML14-T1403NC</a>	.....	<a href="#">BML14-T3203NC</a>
	PNP NC	<a href="#">BML14-T0603PC</a>	<a href="#">BML14-T0803PC</a>	<a href="#">BML14-T1003PC</a>	<a href="#">BML14-T1203PC</a>	<a href="#">BML14-T1403PC</a>	.....	<a href="#">BML14-T3203PC</a>

### BML20

Resolution	20mm							
Min. sized detectable objects	> $\phi$ 25, opaque							
Scanning range	0.3~3m							
NO. beams	4	6	8	10	12	... ..	32	
Protection height	60mm	100mm	140mm	180mm	220mm	... ..	620mm	
Light curtain height	115mm	155mm	195mm	235mm	275mm	... ..	675mm	
Model NO.	NPN NC	<a href="#">BML20-T0403NC</a>	<a href="#">BML20-T0603NC</a>	<a href="#">BML20-T0803NC</a>	<a href="#">BML20-T1003NC</a>	<a href="#">BML20-T1203NC</a>	... ..	<a href="#">BML20-T3203NC</a>
	PNP NC	<a href="#">BML20-T0403PC</a>	<a href="#">BML20-T0603PC</a>	<a href="#">BML20-T0803PC</a>	<a href="#">BML20-T1003PC</a>	<a href="#">BML20-T1203PC</a>	... ..	<a href="#">BML20-T3203PC</a>

Remarks: maximum number of optical axis 72 axis.

### BML25

Resolution	25mm							
Min. sized detectable objects	> $\phi$ 30, opaque							
Scanning range	0.3~3m							
NO. beams	6	8	10	12	14	... ..	32	
Protection height	125mm	175mm	225mm	275mm	325mm	... ..	775mm	
Light curtain height	182.5mm	232.5mm	282.5mm	332.5mm	382.5mm	... ..	832.5mm	
Model NO.	NPN NC	<a href="#">BML25-T0603NC</a>	<a href="#">BML25-T0803NC</a>	<a href="#">BML25-T1003NC</a>	<a href="#">BML25-T1203NC</a>	<a href="#">BML25-T1403NC</a>	... ..	<a href="#">BML25-T3203NC</a>
	PNP NC	<a href="#">BML25-T0603PC</a>	<a href="#">BML25-T0803PC</a>	<a href="#">BML25-T1003PC</a>	<a href="#">BML25-T1203PC</a>	<a href="#">BML25-T1403PC</a>	... ..	<a href="#">BML25-T3203PC</a>

### BML30

Resolution	30mm							
Min. sized detectable objects	> $\phi$ 35, opaque							
Protection distance	0.3~3m							
NO. beams	4	6	8	10	12	... ..	32	
Protection height	90mm	150mm	210mm	270mm	330mm	... ..	930mm	
Light curtain height	150mm	210mm	270mm	330mm	390mm	... ..	990mm	
Model NO.	NPN NC	<a href="#">BML30-T0403NC</a>	<a href="#">BML30-T0603NC</a>	<a href="#">BML30-T0803NC</a>	<a href="#">BML30-T1003NC</a>	<a href="#">BML30-T1203NC</a>	... ..	<a href="#">BML30-T3203NC</a>
	PNP NC	<a href="#">BML30-T0403PC</a>	<a href="#">BML30-T0603PC</a>	<a href="#">BML30-T0803PC</a>	<a href="#">BML30-T1003PC</a>	<a href="#">BML30-T1203PC</a>	... ..	<a href="#">BML30-T3203PC</a>

### BML40

Resolution	40mm							
Min. sized detectable objects	> $\phi$ 45, opaque							
Scanning range	0.3~3m							
NO. beams	4	6	8	10	12	... ..	32	
Protection height	120mm	200mm	280mm	360mm	440mm	... ..	1240mm	
Light curtain height	185mm	265mm	345mm	425mm	505mm	... ..	1305mm	
Model NO.	NPN NC	<a href="#">BML40-T0403NC</a>	<a href="#">BML40-T0603NC</a>	<a href="#">BML40-T0803NC</a>	<a href="#">BML40-T1003NC</a>	<a href="#">BML40-T1203NC</a>	... ..	<a href="#">BML40-T3203NC</a>
	PNP NC	<a href="#">BML40-T0403PC</a>	<a href="#">BML40-T0603PC</a>	<a href="#">BML40-T0803PC</a>	<a href="#">BML40-T1003PC</a>	<a href="#">BML40-T1203PC</a>	... ..	<a href="#">BML40-T3203PC</a>

Remarks: maximum number of optical axis 72 axis.

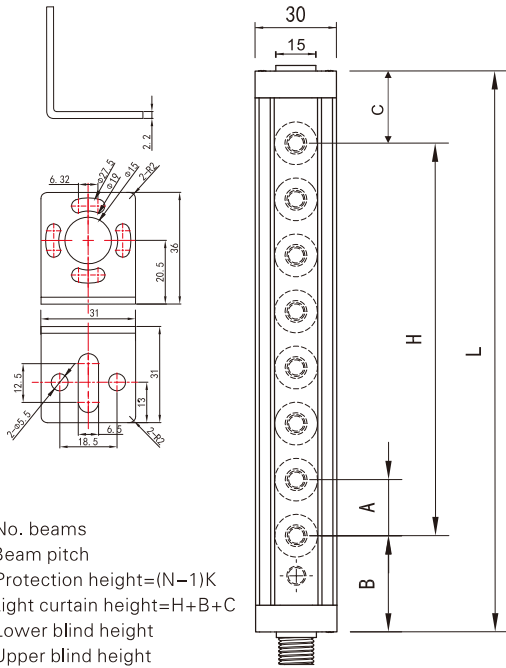
- Fiber Optic
- Slot Sensors
- Photoelectric
- Laser
- Proximity
- Displacement
- Magnetic
- Contact
- Area**
- Ultrasonic
- Vision
- Code Readers
- Vibration
- Temperature
- Accessories
- Guidance

- Light curtains**
- Standard type
- Top-emitting type
- Side-emitting type
- Waterproof type
- Measuring type
- Economical type
- Safety Light Curtain**
- Beam pitch 10mm
- Beam pitch 20mm
- Beam pitch 30mm
- Beam pitch 40mm
- LIDAR scanner**
- TOF LIDAR scanner
- MINI LIDAR scanner
- Navigation LIDAR

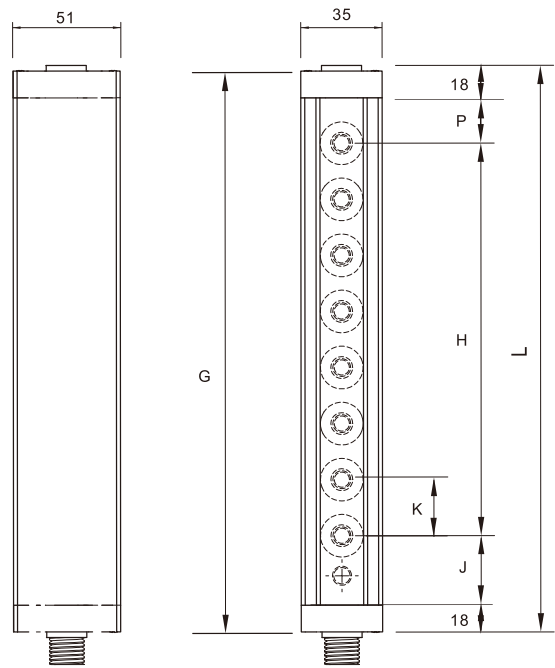
# Standard Type

## BML Series

Area



N: No. beams  
 K: Beam pitch  
 H: Protection height =  $(N-1)K$   
 L: Light curtain height =  $H+B+C$   
 B: Lower blind height  
 C: Upper blind height



When the detection distance is more than 10m and the number of optical axis exceeds 32 axis:

H: Detection height  
 $H = (N-1) * k$   
 L: Light curtain height  
 N: No. beams  
 $L = P + H + J + 18 + 18$

### BML10

K: 10  
 H:  $(N-1) * 10$   
 L:  $H+56$   
 B: 41  
 C: 15

### BML14

K: 14  
 H:  $(N-1) * 14$   
 L:  $H+58$   
 B: 41  
 C: 17

### BML20

K: 20  
 H:  $(N-1) * 20$   
 L:  $H+55$   
 B: 35  
 C: 20

### BML25

K: 25  
 H:  $(N-1) * 25$   
 L:  $H+57.5$   
 B: 35  
 C: 22.5

### BML30

K: 30  
 H:  $(N-1) * 30$   
 L:  $H+60$   
 B: 35  
 C: 25

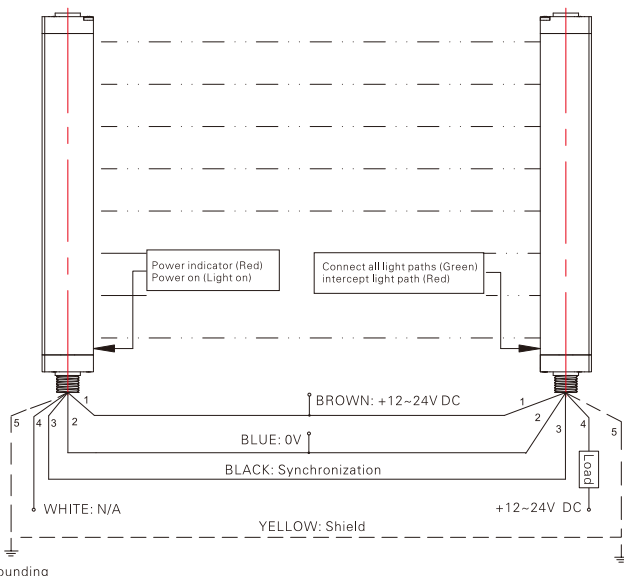
### BML40

K: 40  
 H:  $(N-1) * 40$   
 L:  $H+65$   
 B: 35  
 C: 30

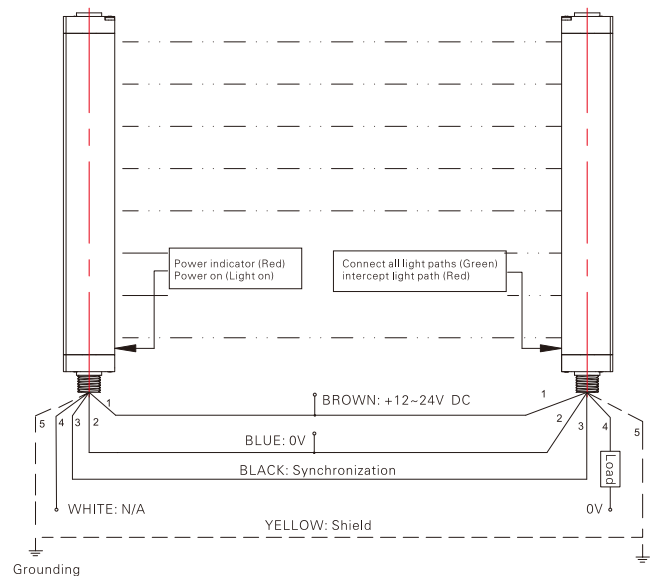
K	14	20	25	30	40
P	7	10	12.5	15	20
J	32	25	25	25	25

## Connection Diagram

### NPN



### PNP



# Top-emitting Type

## BZL Series

Area

### BZL20

Resolution	20mm							
Min. sized detectable objects	> $\phi$ 28, opaque							
Scanning range	0.3~3m							
NO. beams	4	6	8	10	12	... ..	32	
Protection height	60mm	100mm	140mm	180mm	220mm	... ..	620mm	
Light curtain height	119mm	159mm	199mm	239mm	279mm	... ..	679mm	
Model NO.	NPN NC	<a href="#">BZL20-T0403NC</a>	<a href="#">BZL20-T0603NC</a>	<a href="#">BZL20-T0803NC</a>	<a href="#">BZL20-T1003NC</a>	<a href="#">BZL20-T1203NC</a>	... ..	<a href="#">BZL20-T3203NC</a>
	PNP NC	<a href="#">BZL20-T0403PC</a>	<a href="#">BZL20-T0603PC</a>	<a href="#">BZL20-T0803PC</a>	<a href="#">BZL20-T1003PC</a>	<a href="#">BZL20-T1203PC</a>	... ..	<a href="#">BZL20-T3203PC</a>

### BZL25

Resolution	25mm							
Min. sized detectable objects	> $\phi$ 33, opaque							
Scanning range	0.3~3m							
NO. beams	6	8	10	12	14	... ..	32	
Protection height	125mm	175mm	225mm	275mm	325mm	... ..	775mm	
Light curtain height	186.5mm	236.5mm	286.5mm	336.5mm	386.5mm	... ..	836.5mm	
Model NO.	NPN NC	<a href="#">BZL25-T0603NC</a>	<a href="#">BZL25-T0803NC</a>	<a href="#">BZL25-T1003NC</a>	<a href="#">BZL25-T1203NC</a>	<a href="#">BZL25-T1403NC</a>	... ..	<a href="#">BZL25-T3203NC</a>
	PNP NC	<a href="#">BZL25-T0603PC</a>	<a href="#">BZL25-T0803PC</a>	<a href="#">BZL25-T1003PC</a>	<a href="#">BZL25-T1203PC</a>	<a href="#">BZL25-T1403PC</a>	... ..	<a href="#">BZL25-T3203PC</a>

### BZL30

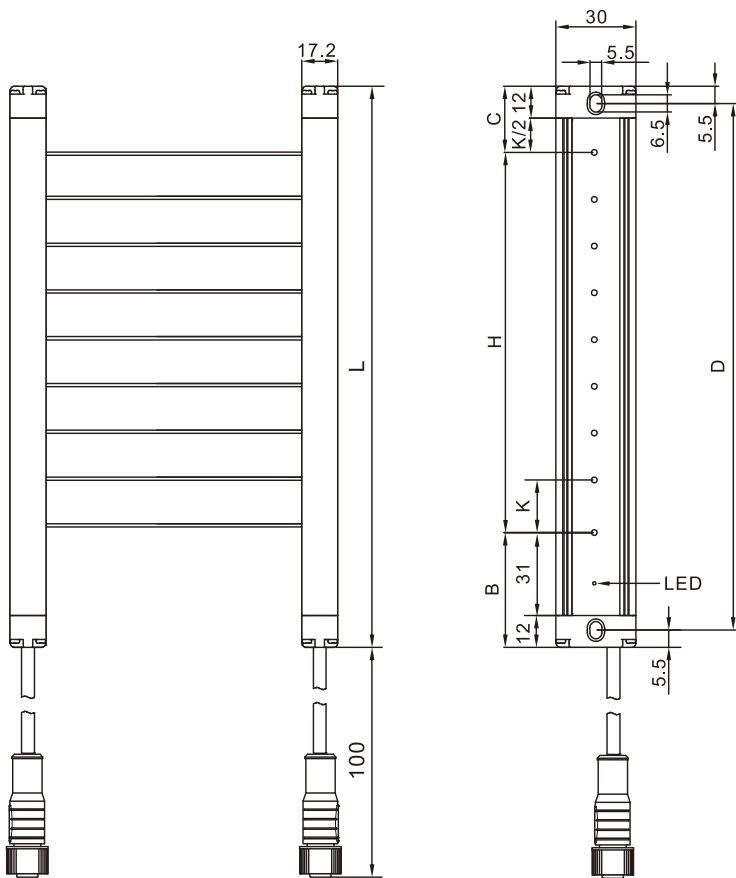
Resolution	30mm							
Min. sized detectable objects	> $\phi$ 38, opaque							
Scanning range	0.3~3m							
NO. beams	4	6	8	10	12	... ..	32	
Protection height	90mm	150mm	210mm	270mm	330mm	... ..	930mm	
Light curtain height	154mm	214mm	274mm	334mm	394mm	... ..	994mm	
Model NO.	NPN NC	<a href="#">BZL30-T0403NC</a>	<a href="#">BZL30-T0603NC</a>	<a href="#">BZL30-T0803NC</a>	<a href="#">BZL30-T1003NC</a>	<a href="#">BZL30-T1203NC</a>	... ..	<a href="#">BZL30-T3203NC</a>
	PNP NC	<a href="#">BZL30-T0403PC</a>	<a href="#">BZL30-T0603PC</a>	<a href="#">BZL30-T0803PC</a>	<a href="#">BZL30-T1003PC</a>	<a href="#">BZL30-T1203PC</a>	... ..	<a href="#">BZL30-T3203PC</a>

### BZL40

Resolution	40mm							
Min. sized detectable objects	> $\phi$ 48, opaque							
Scanning range	0.3~3m							
NO. beams	4	6	8	10	12	... ..	32	
Protection height	120mm	200mm	280mm	360mm	440mm	... ..	1240mm	
Light curtain height	189mm	269mm	349mm	429mm	509mm	... ..	1309mm	
Model NO.	NPN NC	<a href="#">BZL40-T0403NC</a>	<a href="#">BZL40-T0603NC</a>	<a href="#">BZL40-T0803NC</a>	<a href="#">BZL40-T1003NC</a>	<a href="#">BZL40-T1203NC</a>	... ..	<a href="#">BZL40-T3203NC</a>
	PNP NC	<a href="#">BZL40-T0403PC</a>	<a href="#">BZL40-T0603PC</a>	<a href="#">BZL40-T0803PC</a>	<a href="#">BZL40-T1003PC</a>	<a href="#">BZL40-T1203PC</a>	... ..	<a href="#">BZL40-T3203PC</a>

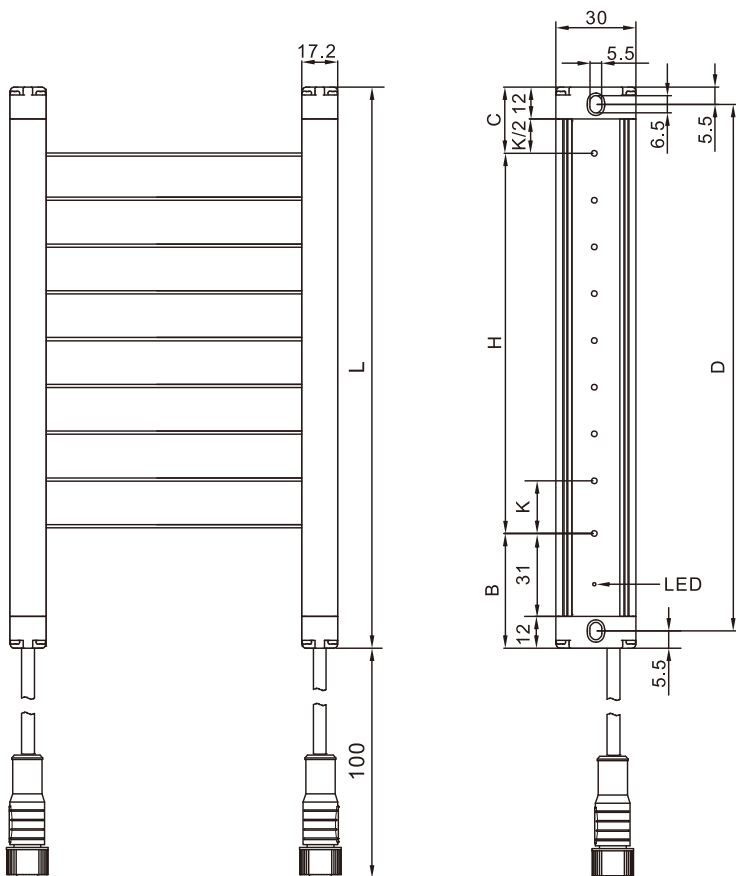
- Fiber Optic
- Slot Sensors
- Photoelectric
- Laser
- Proximity
- Displacement
- Magnetic
- Contact
- Area
- Ultrasonic
- Vision
- Code Readers
- Vibration
- Temperature
- Accessories
- Guidance
- Light curtains
  - Standard type
  - Top-emitting type
  - Side-emitting type
  - Waterproof type
  - Measuring type
  - Economical type
- Safety Light Curtain
  - Beam pitch 10mm
  - Beam pitch 20mm
  - Beam pitch 30mm
  - Beam pitch 40mm
- LIDAR scanner
  - TOF LIDAR scanner
  - MINI LIDAR scanner
  - Navigation LIDAR

### BZL10



H:Protection Height= ( N-1 ) K  
 L:Light curtain total height=H+60  
 N:No. beams  
 K:Beam pitch=10  
 B:Lower blind height=43  
 C:Upper blind height=17  
 D:Mounting hole spacing= ( L-11 )

### BZL14



H:Protection Height= ( N-1 ) K  
 L:Light curtain total height=H+62  
 N:No. beams  
 K:Beam pitch=14  
 B:Lower blind height=43  
 C:Upper blind height=19  
 D:Mounting hole spacing= ( L-11 )

Fiber Optic
Slot Sensors
Photoelectric
Laser
Proximity
Displacement
Magnetic
Contact
Area
Ultrasonic
Vision
Code Readers
Vibration
Temperature
Accessories

#### Guidance

Light curtains
Standard type
Top-emitting type
Side-emitting type
Waterproof type
Measuring type
Economical type
Safety Light Curtain
Beam pitch 10mm
Beam pitch 20mm
Beam pitch 30mm
Beam pitch 40mm
LIDAR scanner
TOF LIDAR scanner
MINI LIDAR scanner
Navigation LIDAR



Appearance	
Sectional area	17.2*30mm
NO. beams	6~32
Protection height	50~1240mm
Scanning range	0.3~3m
Resolution	10/14/20/25/30/40mm
Min. sized detectable objects	> $\phi$ 18/ $\phi$ 22/ $\phi$ 33/ $\phi$ 38/ $\phi$ 48mm, opaque
Supply voltage	24V DC $\pm$ 10%
Current consumption	<200mA
Power consumption	3~8W
Output type	NPN/PNP
Synchronization type	line synchronization
Response time	$\leq$ 15ms
Light source	Infrared LED (Modulated)
Circuit protection	Reverse polarity, output short circuit protection
Ambient temperature	-10 $^{\circ}$ C~+55 $^{\circ}$ C (No condensation, no freezing)
Ambient humidity	35~85%RH
Anti-interference ability	10000Lux
Insulation resistance	Above 100M $\Omega$ (DC 500V megger)
Degree of protection	IP65
Material	Aluminium alloy
Connection	M12 connector
Accessories	3M cable, female (Customization available)

- Fiber Optic
- Slot Sensors
- Photoelectric
- Laser
- Proximity
- Displacement
- Magnetic
- Contact
- Area**
- Ultrasonic
- Vision
- Code Readers
- Vibration
- Temperature
- Accessories

Guidance

Light curtains

- Standard type
- Top-emitting type**
- Side-emitting type
- Waterproof type
- Measuring type
- Economical type

Safety Light Curtain

- Beam pitch 10mm
- Beam pitch 20mm
- Beam pitch 30mm
- Beam pitch 40mm

LIDAR scanner

- TOF LIDAR scanner
- MINI LIDAR scanner
- Navigation LIDAR

### BZL10

Resolution	10mm						
Min. sized detectable objects	> $\phi$ 18, opaque						
Scanning range	0.3~3m						
NO. beams	6	8	10	12	14	... ..	32
Protection height	50mm	70mm	90mm	110mm	130mm	... ..	310mm
Light curtain height	110mm	130mm	150mm	170mm	190mm	... ..	370mm
Model NO.	NPN NC	<a href="#">BZL10-T0603NC</a>	<a href="#">BZL10-T0803NC</a>	<a href="#">BZL10-T1003NC</a>	<a href="#">BZL10-T1203NC</a>	<a href="#">BZL10-T1403NC</a>	<a href="#">BZL10-T3203NC</a>
	PNP NC	<a href="#">BZL10-T0603PC</a>	<a href="#">BZL10-T0803PC</a>	<a href="#">BZL10-T1003PC</a>	<a href="#">BZL10-T1203PC</a>	<a href="#">BZL10-T1403PC</a>	<a href="#">BZL10-T3203PC</a>

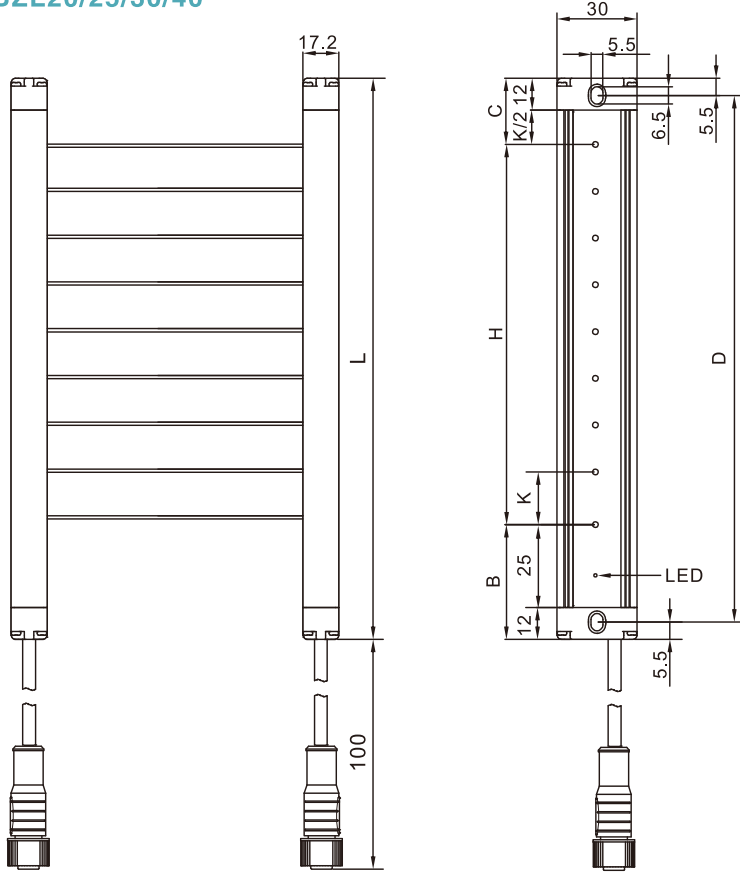
### BZL14

Resolution	14mm						
Min. sized detectable objects	> $\phi$ 22, opaque						
Scanning range	0.3~3m						
NO. beams	6	8	10	12	14	... ..	32
Protection height	70mm	98mm	126mm	154mm	182mm	... ..	434mm
Light curtain height	132mm	160mm	188mm	216mm	244mm	... ..	496mm
Model NO.	NPN NC	<a href="#">BZL14-T0603NC</a>	<a href="#">BZL14-T0803NC</a>	<a href="#">BZL14-T1003NC</a>	<a href="#">BZL14-T1203NC</a>	<a href="#">BZL14-T1403NC</a>	<a href="#">BZL14-T3203NC</a>
	PNP NC	<a href="#">BZL14-T0603PC</a>	<a href="#">BZL14-T0803PC</a>	<a href="#">BZL14-T1003PC</a>	<a href="#">BZL14-T1203PC</a>	<a href="#">BZL14-T1403PC</a>	<a href="#">BZL14-T3203PC</a>

# Top-emitting Type

## BZL Series

### BZL20/25/30/40

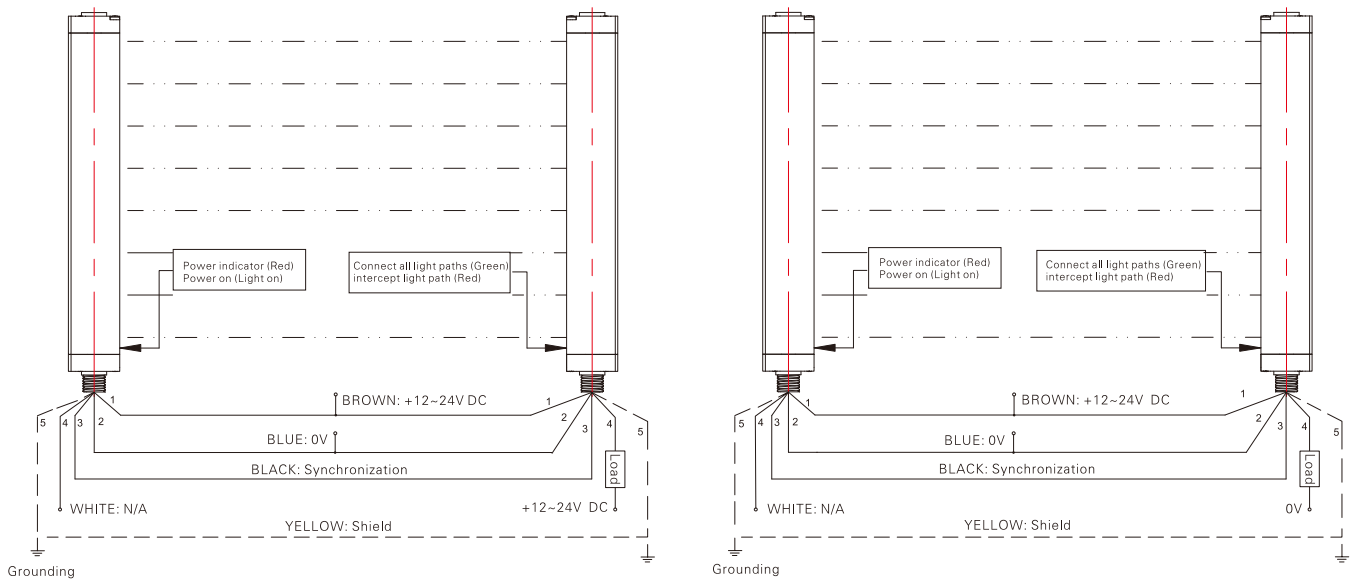


$H$ : Protection Height =  $(N-1) K$   
 $L$ : Light curtain total height =  $(N-1/2)K + 49$   
 $N$ : No. beams  
 $K$ : Beam pitch  
 $B$ : Lower blind height = 37  
 $C$ : Upper blind height =  $K/2 + 12$   
 $D$ : Mounting hole spacing =  $(L-11)$

## Connection Diagram

### NPN

### PNP



Area

- Fiber Optic
- Slot Sensors
- Photoelectric
- Laser
- Proximity
- Displacement
- Magnetic
- Contact
- Area
- Ultrasonic
- Vision
- Code Readers
- Vibration
- Temperature
- Accessories

Guidance

- Light curtains
- Standard type
- Top-emitting type
- Side-emitting type
- Waterproof type
- Measuring type
- Economical type
- Safety Light Curtain
- Beam pitch 10mm
- Beam pitch 20mm
- Beam pitch 30mm
- Beam pitch 40mm
- LIDAR scanner
- TOF LIDAR scanner
- MINI LIDAR scanner
- Navigation LIDAR



Appearance

Sectional area	30*15mm
NO. beams	6~32
Protection height	50~1240mm
Scanning range	0.3~3m
Resolution	20~40mm
Min. sized detectable objects	> $\phi$ 28/ $\phi$ 48mm, opaque
Supply voltage	24V DC $\pm$ 10%
Current consumption	<200mA
Power consumption	3~8W
Output type	NPN/PNP
Synchronization type	line synchronization
Response time	$\leq$ 15ms
Light source	Infrared LED (Modulated)
Circuit protection	Reverse polarity, output short circuit protection
Ambient temperature	-10~+55 $^{\circ}$ C (No condensation, no freezing)
Ambient humidity	35~85%RH
Anti-interference ability	10000Lux
Insulation resistance	Above 100M $\Omega$ , Based on 500V DC megger
Degree of protection	IP65
Material	Aluminium alloy
Connection	M12 connector
Accessories	3M cable, female (Customization available)

- Fiber Optic
- Slot Sensors
- Photoelectric
- Laser
- Proximity
- Displacement
- Magnetic
- Contact
- Area**
- Ultrasonic
- Vision
- Code Readers
- Vibration
- Temperature
- Accessories

Guidance

Light curtains

- Standard type
- Top-emitting type
- Side-emitting type
- Waterproof type
- Measuring type
- Economical type

Safety Light Curtain

- Beam pitch 10mm
- Beam pitch 20mm
- Beam pitch 30mm
- Beam pitch 40mm

LIDAR scanner

- TOF LIDAR scanner
- MINI LIDAR scanner
- Navigation LIDAR

### BCL20

Resolution	20mm							
Min. sized detectable objects	> $\phi$ 28, opaque							
Scanning range	0.3~3m							
NO. beams	6	8	10	12	14	... ..	30	
Protection height	100mm	140mm	180mm	220mm	260mm	... ..	580mm	
Light curtain height	159mm	199mm	239mm	279mm	319mm	... ..	639mm	
Model NO.	NPN NC	<a href="#">BCL20-T0603NC</a>	<a href="#">BCL20-T0803NC</a>	<a href="#">BCL20-T1003NC</a>	<a href="#">BCL20-T1203NC</a>	<a href="#">BCL20-T1403NC</a>	... ..	<a href="#">BCL20-T3003NC</a>
	PNP NC	<a href="#">BCL20-T0603PC</a>	<a href="#">BCL20-T0803PC</a>	<a href="#">BCL20-T1003PC</a>	<a href="#">BCL20-T1203PC</a>	<a href="#">BCL20-T1403PC</a>	... ..	<a href="#">BCL20-T3003PC</a>

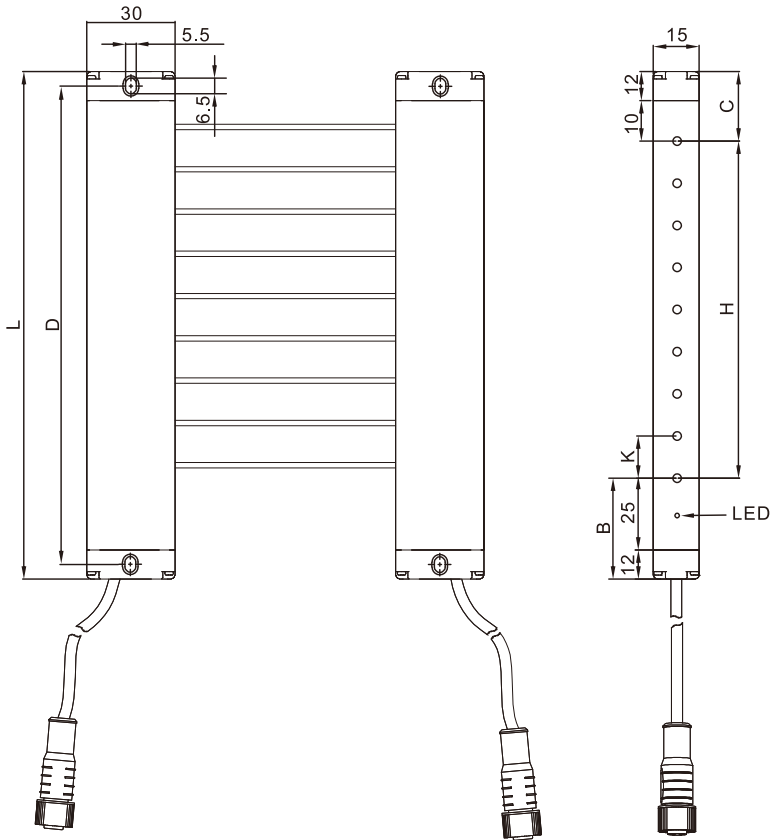
### BCL40

Resolution	40mm							
Min. sized detectable objects	> $\phi$ 48, opaque							
Scanning range	0.3~3m							
NO. beams	4	6	8	10	12	... ..	32	
Protection height	120mm	200mm	280mm	360mm	440mm	... ..	1240mm	
Light curtain height	172.5mm	252.5mm	332.5mm	412.5mm	492.5mm	... ..	1292.5mm	
Model NO.	NPN NC	<a href="#">BCL40-T0403NC</a>	<a href="#">BCL40-T0603NC</a>	<a href="#">BCL40-T0803NC</a>	<a href="#">BCL40-T1003NC</a>	<a href="#">BCL40-T1203NC</a>	... ..	<a href="#">BCL40-T3203NC</a>
	PNP NC	<a href="#">BCL40-T0403PC</a>	<a href="#">BCL40-T0603PC</a>	<a href="#">BCL40-T0803PC</a>	<a href="#">BCL40-T1003PC</a>	<a href="#">BCL40-T1203PC</a>	... ..	<a href="#">BCL40-T3203PC</a>

# Side-emitting Type

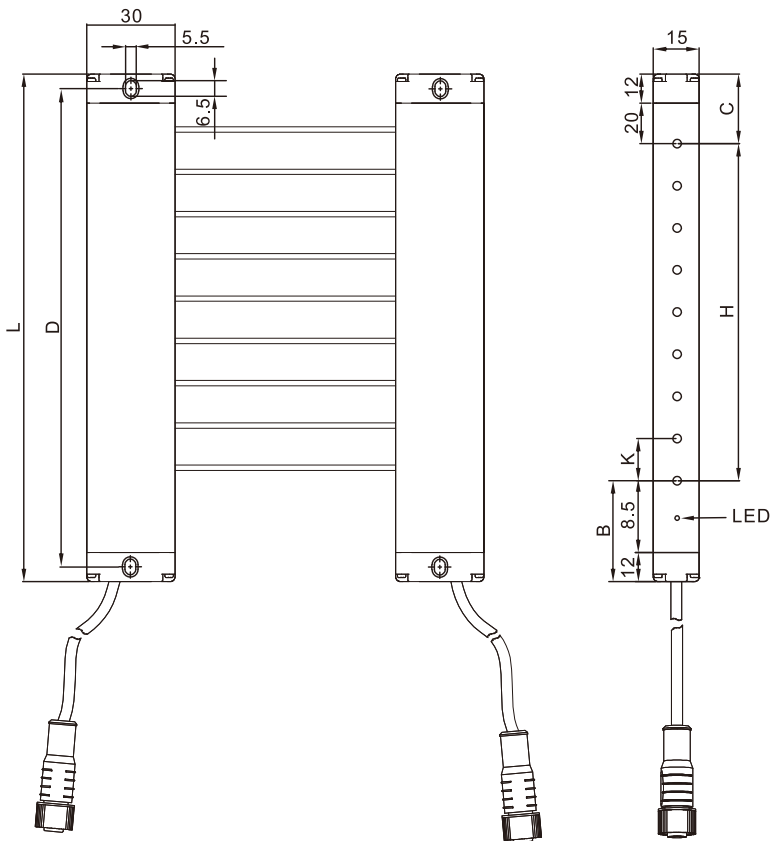
## Dimensions(Unit:mm)

### BCL20



H: Protection Height= ( N-1 ) K  
 L: Light curtain total height=H+59  
 N: No. beams  
 K: Beam pitch=20  
 B: Lower blind height=37  
 C: Upper blind height=22  
 D: Mounting hole spacing= ( L-11 )

### BCL40



H: Protection Height= ( N-1 ) K  
 L: Light curtain total height=H+52.5  
 N: No. beams  
 K: Beam pitch=40  
 B: Lower blind height=20.5  
 C: Upper blind height=32  
 D: Mounting hole spacing= ( L-11 )

- Fiber Optic
- Slot Sensors
- Photoelectric
- Laser
- Proximity
- Displacement
- Magnetic
- Contact
- Area
- Ultrasonic
- Vision
- Code Readers
- Vibration
- Temperature
- Accessories

Guidance

Light curtains

- Standard type
- Top-emitting type
- Side-emitting type
- Waterproof type
- Measuring type
- Economical type

Safety Light Curtain

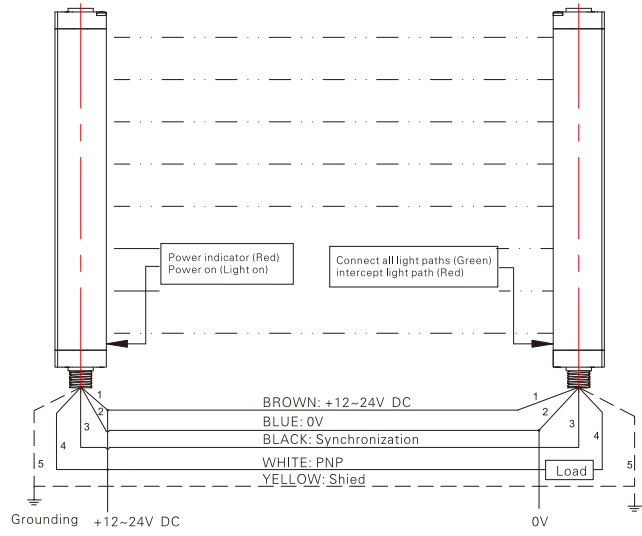
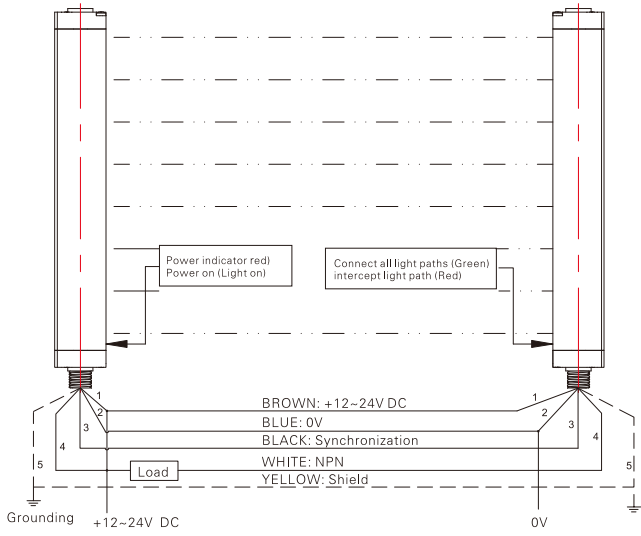
- Beam pitch 10mm
- Beam pitch 20mm
- Beam pitch 30mm
- Beam pitch 40mm

LIDAR scanner

- TOF LIDAR scanner
- MINI LIDAR scanner
- Navigation LIDAR

### NPN

### PNP



- Fiber Optic
- Slot Sensors
- Photoelectric
- Laser
- Proximity
- Displacement
- Magnetic
- Contact
- Area
- Ultrasonic
- Vision
- Code Readers
- Vibration
- Temperature
- Accessories

Guidance

Light curtains

- Standard type
- Top-emitting type
- Side-emitting type
- Waterproof type
- Measuring type
- Economical type

Safety Light Curtain

- Beam pitch 10mm
- Beam pitch 20mm
- Beam pitch 30mm
- Beam pitch 40mm

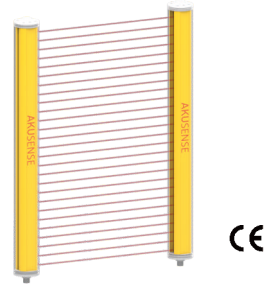
LIDAR scanner

- TOF LIDAR scanner
- MINI LIDAR scanner
- Navigation LIDAR

# Waterproof Type

## BPL series

Area



Appearance	
Sectional area	φ 48mm
NO. beams	4~32
Protection height	50~1240mm
Scanning range	0.3~3m
Resolution	10/14/20/25/30/40mm
Min. sized detectable objects	> φ 15/φ 19/φ 25/φ 30/φ 35/φ 45mm, opaque
Supply voltage	24V DC±10%
Current consumption	<200mA
Power consumption	3~8W
Output type	NPN/PNP
Synchronization type	Line synchronization
Response time	≤15ms
Light source	Reverse LED (Modulated)
Circuit protection	Reverse polarity, output short circuit protection
Ambient temperature	-10~+55°C, No freezing
Ambient humidity	35~85%RH, No condensation
Anti-interference ability	10000Lux
Insulation resistance	Above 100MΩ, Based on 500V DC megger
Degree of protection	IP68
Material	Aluminium alloy
Connection	M12 connector
Accessories	3M cable, female (Customization available)

- Fiber Optic
- Slot Sensors
- Photoelectric
- Laser
- Proximity
- Displacement
- Magnetic
- Contact
- Area
- Ultrasonic
- Vision
- Code Readers
- Vibration
- Temperature
- Accessories
- Guidance

- Light curtains
- Standard type
- Top-emitting type
- Side-emitting type
- Waterproof type
- Measuring type
- Economical type

- Safety Light Curtain
- Beam pitch 10mm
- Beam pitch 20mm
- Beam pitch 30mm
- Beam pitch 40mm
- LIDAR scanner
- TOF LIDAR scanner
- MINI LIDAR scanner
- Navigation LIDAR

### BPL10

Resolution	10mm							
Min. sized detectable objects	> φ 15, opaque							
Scanning range	0.3~3m							
NO. beams	6	8	10	12	14	.....	32	
Protection height	50mm	70mm	90mm	110mm	130mm	.....	310mm	
Light curtain height	118mm	138mm	158mm	178mm	198mm	.....	378mm	
Model NO.	NPN NC	<a href="#">BPL10-T0603NC</a>	<a href="#">BPL10-T0803NC</a>	<a href="#">BPL10-T1003NC</a>	<a href="#">BPL10-T1203NC</a>	<a href="#">BPL10-T1403NC</a>	.....	<a href="#">BPL10-T3203NC</a>
	PNP NC	<a href="#">BPL10-T0603PC</a>	<a href="#">BPL10-T0803PC</a>	<a href="#">BPL10-T1003PC</a>	<a href="#">BPL10-T1203PC</a>	<a href="#">BPL10-T1403PC</a>	.....	<a href="#">BPL10-T3203PC</a>

### BPL14

Resolution	14mm							
Min. sized detectable objects	> φ 19, opaque							
Scanning range	0.3~3m							
NO. beams	6	8	10	12	14	.....	32	
Protection height	70mm	98mm	126mm	154mm	182mm	.....	434mm	
Light curtain height	140mm	168mm	196mm	224mm	252mm	.....	504mm	
Model NO.	NPN NC	<a href="#">BPL14-T0603NC</a>	<a href="#">BPL14-T0803NC</a>	<a href="#">BPL14-T1003NC</a>	<a href="#">BPL14-T1203NC</a>	<a href="#">BPL14-T1403NC</a>	.....	<a href="#">BPL14-T3203NC</a>
	PNP NC	<a href="#">BPL14-T0603PC</a>	<a href="#">BPL14-T0803PC</a>	<a href="#">BPL14-T1003PC</a>	<a href="#">BPL14-T1203PC</a>	<a href="#">BPL14-T1403PC</a>	.....	<a href="#">BPL14-T3203PC</a>

### BPL20

Resolution		20mm					
Min. sized detectable objects		> $\phi$ 20, opaque					
Scanning range		0.3~3m					
NO. beams	4	6	8	10	12	... ..	32
Protection height	60mm	100mm	140mm	180mm	220mm	... ..	620mm
Light curtain height	127mm	167mm	207mm	247mm	287mm	... ..	687mm
Model NO.	NPN NC	<a href="#">BPL20-T0403NC</a>	<a href="#">BPL20-T0603NC</a>	<a href="#">BPL20-T0803NC</a>	<a href="#">BPL20-T1003NC</a>	<a href="#">BPL20-T1203NC</a>	<a href="#">BPL20-T3203NC</a>
	PNP NC	<a href="#">BPL20-T0403PC</a>	<a href="#">BPL20-T0603PC</a>	<a href="#">BPL20-T0803PC</a>	<a href="#">BPL20-T1003PC</a>	<a href="#">BPL20-T1203PC</a>	<a href="#">BPL20-T3203PC</a>

### BPL25

Resolution		25mm					
Min. sized detectable objects		> $\phi$ 30, opaque					
Scanning range		0.3~3m					
NO. beams	6	8	10	12	14	... ..	32
Protection height	125mm	175mm	225mm	275mm	325mm	... ..	775mm
Light curtain height	194.5mm	244.5mm	294.5mm	344.5mm	394.5mm	... ..	844.5mm
Model NO.	NPN NC	<a href="#">BPL25-T0603NC</a>	<a href="#">BPL25-T0803NC</a>	<a href="#">BPL25-T1003NC</a>	<a href="#">BPL25-T1203NC</a>	<a href="#">BPL25-T1403NC</a>	<a href="#">BPL25-T3203NC</a>
	PNP NC	<a href="#">BPL25-T0603PC</a>	<a href="#">BPL25-T0803PC</a>	<a href="#">BPL25-T1003PC</a>	<a href="#">BPL25-T1203PC</a>	<a href="#">BPL25-T1403PC</a>	<a href="#">BPL25-T3203PC</a>

### BPL30

Resolution		30mm					
Min. sized detectable objects		> $\phi$ 35, opaque					
Scanning range		0.3~3m					
NO. beams	4	6	8	10	12	... ..	32
Protection height	90mm	150mm	210mm	270mm	330mm	... ..	930mm
Light curtain height	162mm	222mm	282mm	342mm	402mm	... ..	1002mm
Model NO.	NPN NC	<a href="#">BPL30-T0403NC</a>	<a href="#">BPL30-T0603NC</a>	<a href="#">BPL30-T0803NC</a>	<a href="#">BPL30-T1003NC</a>	<a href="#">BPL30-T1203NC</a>	<a href="#">BPL30-T3203NC</a>
	PNP NC	<a href="#">BPL30-T0403PC</a>	<a href="#">BPL30-T0603PC</a>	<a href="#">BPL30-T0803PC</a>	<a href="#">BPL30-T1003PC</a>	<a href="#">BPL30-T1203PC</a>	<a href="#">BPL30-T3203PC</a>

### BPL40

Resolution		40mm					
Min. sized detectable objects		> $\phi$ 45, opaque					
Scanning range		0.3~3m					
NO. beams	4	6	8	10	12	... ..	32
Protection height	120mm	200mm	280mm	360mm	440mm	... ..	1240mm
Light curtain height	197mm	277mm	357mm	437mm	517mm	... ..	1317mm
Model NO.	NPN NC	<a href="#">BPL40-T0403NC</a>	<a href="#">BPL40-T0603NC</a>	<a href="#">BPL40-T0803NC</a>	<a href="#">BPL40-T1003NC</a>	<a href="#">BPL40-T1203NC</a>	<a href="#">BPL40-T3203NC</a>
	PNP NC	<a href="#">BPL40-T0403PC</a>	<a href="#">BPL40-T0603PC</a>	<a href="#">BPL40-T0803PC</a>	<a href="#">BPL40-T1003PC</a>	<a href="#">BPL40-T1203PC</a>	<a href="#">BPL40-T3203PC</a>

- Fiber Optic
- Slot Sensors
- Photoelectric
- Laser
- Proximity
- Displacement
- Magnetic
- Contact
- Area
- Ultrasonic
- Vision
- Code Readers
- Vibration
- Temperature
- Accessories

#### Guidance

#### Light curtains

- Standard type
- Top-emitting type
- Side-emitting type
- Waterproof type
- Measuring type
- Economical type

#### Safety Light Curtain

- Beam pitch 10mm
- Beam pitch 20mm
- Beam pitch 30mm
- Beam pitch 40mm

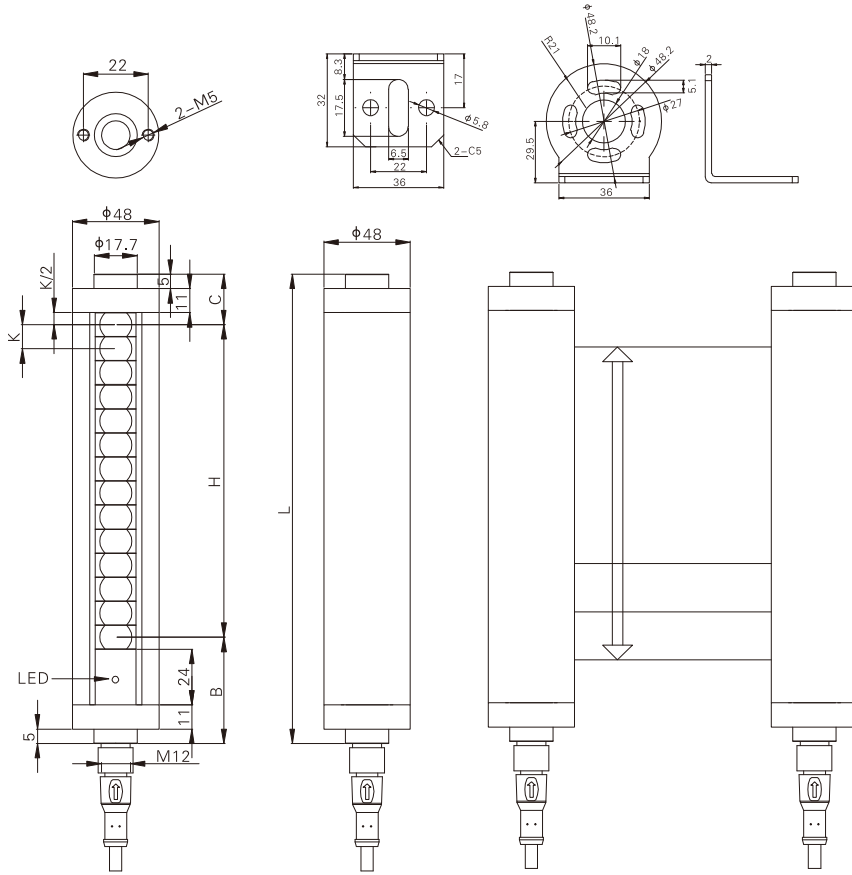
#### LIDAR scanner

- TOF LIDAR scanner
- MINI LIDAR scanner
- Navigation LIDAR

# Waterproof Type

## Dimensions(Unit:mm)

Area

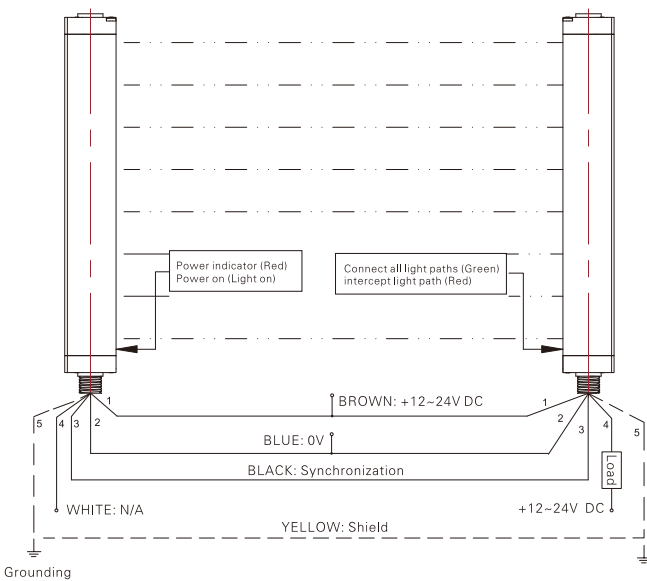


BPL10	BPL25
K: 10	K: 25
H: (N-1)*10	H: (N-1)*25
L: H+68	L: H+69.5
B: 47	B: 41
C: 21	C: 28.5
BPL14	BPL30
K: 14	K: 30
H: (N-1)*14	H: (N-1)*30
L: H+70	L: H+72
B: 47	B: 41
C: 23	C: 31
BPL20	BPL40
K: 20	K: 40
H: (N-1)*20	H: (N-1)*40
L: H+67	L: H+77
B: 41	B: 41
C: 26	C: 36

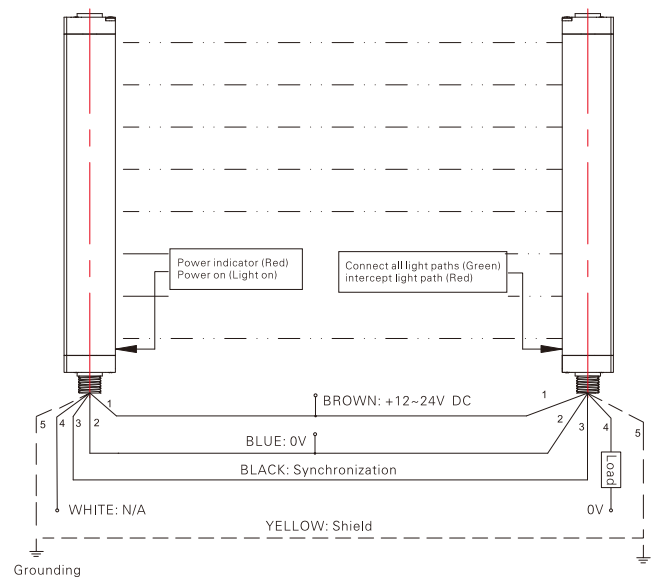
N: No. beams  
 K: Beam pitch  
 H: Protection Height=(N-1)K  
 L: Light curtain total height=H+B+C  
 B: Lower blind height  
 C: Upper blind height=K/2+16

## Connection Diagram

### NPN

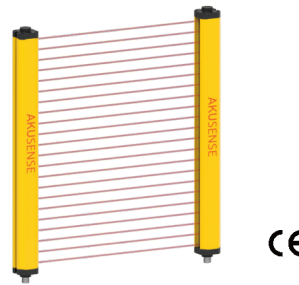


### PNP



- Fiber Optic
- Slot Sensors
- Photoelectric
- Laser
- Proximity
- Displacement
- Magnetic
- Contact
- Area
- Ultrasonic
- Vision
- Code Readers
- Vibration
- Temperature
- Accessories
- Guidance

- Light curtains
- Standard type
- Top-emitting type
- Side-emitting type
- Waterproof type
- Measuring type
- Economical type
- Safety Light Curtain
- Beam pitch 10mm
- Beam pitch 20mm
- Beam pitch 30mm
- Beam pitch 40mm
- LIDAR scanner
- TOF LIDAR scanner
- MINI LIDAR scanner
- Navigation LIDAR



Appearance	
Sectional area	36*36mm
NO. beams	4~1000
Protection height	60~1240mm
Scanning range	0.3~3m
Resolution	2.5/5/10/20/40mm
Min. sized detectable objects	φ 3.75/ φ 6.5/ φ 15/ φ 25/ φ 45mm, opaque
Supply voltage	24V DC±10%
Current consumption	<200mA
Power consumption	3~8W
Output type	4~20mA/1~5V;Selectable NPN/PNP and 485/232 output modes
Synchronization type	line synchronization
Response time	≤15ms
Light source	Infrared LED (Modulated)
Circuit protection	Reverse polarity, output short circuit protection
Ambient temperature	-10~+55°C (No condensation, no freezing)
Ambient humidity	35~85%RH
Anti-interference ability	10000Lux
Insulation resistance	Above 100MΩ (DC 500V megger)
Degree of protection	IP65
Material	Aluminium alloy
Connection	M12 connector
Accessories	3M cable, female (Customization available)

- Fiber Optic
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- Accessories

**Guidance**

**Light curtains**

- Standard type
- Top-emitting type
- Side-emitting type
- Waterproof type

**Measuring type**

- Economical type

**Safety Light Curtain**

- Beam pitch 10mm
- Beam pitch 20mm
- Beam pitch 30mm
- Beam pitch 40mm

**LIDAR scanner**

- TOF LIDAR scanner
- MINI LIDAR scanner
- Navigation LIDAR

### BAL02

Resolution	2.5mm							
Min. sized detectable objects	> φ 3.75, opaque							
Scanning range	0.3~3m							
NO. beams	32	64	96	128	160	... ..	1000	
Protection height	77.5mm	157.5mm	237.5mm	317.5mm	397.5mm	... ..	2497.5mm	
Light curtain height	136.5mm	216.5mm	296.5mm	376.5mm	456.5mm	... ..	2556.5mm	
Model NO.	Voltage output	BAL02-T3203V	BAL02-T6403V	BAL02-T9603V	BAL02-T12803V	BAL02-T16003V	... ..	BAL02-T100003V
	Current output	BAL02-T3203A	BAL02-T6403A	BAL02-T9603A	BAL02-T12803A	BAL02-T16003A	... ..	BAL02-T100003A

### BAL05

Resolution	5mm							
Min. sized detectable objects	> φ 6.5, opaque							
Scanning range	0.3~3m							
NO. beams	16	24	32	40	48	... ..	1000	
Protection height	75mm	115mm	155mm	195mm	235mm	... ..	4995mm	
Light curtain height	136.5mm	176.5mm	216.5mm	256.5mm	296.5mm	... ..	5056.5mm	
Model NO.	Voltage output	BAL05-T1603V	BAL05-T2403V	BAL05-T3203V	BAL05-T4003V	BAL05-T4803V	... ..	BAL05-T100003V
	Current output	BAL05-T1603A	BAL05-T2403A	BAL05-T3203A	BAL05-T4003A	BAL05-T4803A	... ..	BAL05-T100003A

# Measuring Type

## BAL Series

Area

### BAL10

Resolution	10mm						
Min. sized detectable objects	> $\phi$ 15, opaque						
Scanning range	0.3~3m						
NO. beams	8	10	12	14	16	... ..	296
Protection height	70mm	90mm	110mm	130mm	150mm	... ..	2950mm
Light curtain height	136.5mm	156.5mm	176.5mm	196.5mm	216.5mm	... ..	3016.5mm
Model NO.	Voltage output BAL10-T0803V	BAL10-T1003V	BAL10-T1203V	BAL10-T1403V	BAL10-T1603V	... ..	BAL10-T29603V
	Current output BAL10-T0803A	BAL10-T1003A	BAL10-T1203A	BAL10-T1403A	BAL10-T1603A	... ..	BAL10-T29603A

### BAL20

Resolution	20mm						
Min. sized detectable objects	> $\phi$ 25, opaque						
Scanning range	0.3~3m						
NO. beams	4	6	8	10	12	... ..	596
Protection height	60mm	100mm	140mm	180mm	220mm	... ..	11900mm
Light curtain height	136.5mm	176.5mm	216.5mm	256.5mm	296.5mm	... ..	11976.5mm
Model NO.	Voltage output BAL20-T0403V	BAL20-T0603V	BAL20-T0803V	BAL20-T1003V	BAL20-T1203V	... ..	BAL20-T59603V
	Current output BAL20-T0403A	BAL20-T0603A	BAL20-T0803A	BAL20-T1003A	BAL20-T1203A	... ..	BAL20-T59603A

### BAL40

Resolution	40mm						
Min. sized detectable objects	> $\phi$ 45, opaque						
Scanning range	0.3~3m						
NO. beams	4	6	8	10	12	... ..	146
Protection height	120mm	200mm	280mm	360mm	440mm	... ..	5800mm
Light curtain height	196.5mm	276.5mm	356.5mm	436.5mm	516.5mm	... ..	5896.5mm
Model NO.	Voltage output BAL40-T0403V	BAL40-T0603V	BAL40-T0803V	BAL40-T1003V	BAL40-T1203V	... ..	BAL40-T14603V
	Current output BAL40-T0403A	BAL40-T0603A	BAL40-T0803A	BAL40-T1003A	BAL40-T1203A	... ..	BAL40-T14603A

- Fiber Optic
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- Light curtains
  - Standard type
  - Top-emitting type
  - Side-emitting type
  - Waterproof type
  - Measuring type
  - Economical type
- Safety Light Curtain
  - Beam pitch 10mm
  - Beam pitch 20mm
  - Beam pitch 30mm
  - Beam pitch 40mm
- LIDAR scanner
  - TOF LIDAR scanner
  - MINI LIDAR scanner
  - Navigation LIDAR



# Economical Type

## BSL Series

Area



Economical

Appearance	
Sectional area	30X30mm
No. beams	4~32 beams
Protection height	90~1240mm
Light curtain height	123.1~1273.1mm
Scanning range	0.1~6m
Resolution	30/40mm
Min.sized detectable object	> $\phi$ 38/ $\phi$ 48mm,opaque
Operating voltage	12~24V DC $\pm$ 10%
Current consumption	< 200mA at the transmitter; < 200mA at the receiver
Load current	<150mA
Voltage drop	2V
Indicator light	Transmitter: power indicator: green; receiver: action indicator: red; power indicator: green
Switching mode	D.on
Output type	NPN/PNP
Synchronization type	Cable synchronization
Response time	$\leq$ 20ms
Light source	Infrared LED 860nm ( modulated )
Circuit protection	Reverse polarity,over-load,output short circuit protection
Ambient temperature	Operating temperature: $-10^{\circ}$ C to $55^{\circ}$ C, no freezing; no condensation; storage temperature: $-10^{\circ}$ C to $55^{\circ}$ C
Ambient humidity	35~85%RH, for storage: 35~95%RH
Anti interference ability	Incandescent lamp: up to 3000lux; sunlight: up to 10000lux
Insulation withstand voltage	$\pm$ 500V 50/60Hz 60s
Vibration resistance	10~150Hz, 1.5mm double amplitude for 2 hours each in X, Y and Z directions
Static electricity	$\pm$ 8000V
Group pulse	$\pm$ 2000V
Degree of protection	IP65
Material	Housing:Aluminum alloy
Connection method	M12 connector
Accessories	Straight angle fixture

### BSL30

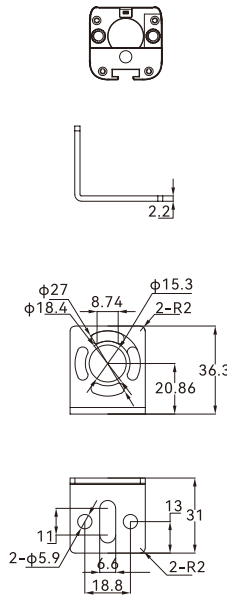
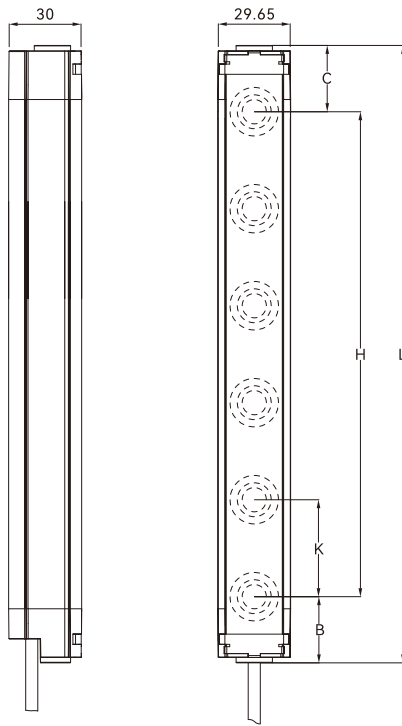
Resolution	30mm							
Min. sized detectable objects	> $\phi$ 38,opaque							
Scanning range	0.1~6m							
NO.of beams	4 beams	6 beams	8 beams	10 beams	12 beams	... ..	32 beams	
Protection height	90mm	150mm	210mm	270mm	330mm	... ..	930mm	
Light curtain height	123.1mm	183.1mm	243.1mm	303.1mm	363.1mm	... ..	963.1mm	
Model NO.	NPN NC	<a href="#">BSL30-T0406NC</a>	<a href="#">BSL30-T0606NC</a>	<a href="#">BSL30-T0806NC</a>	<a href="#">BSL30-T1006NC</a>	<a href="#">BSL30-T1206NC</a>	... ..	<a href="#">BSL30-T3206NC</a>
	PNP NC	<a href="#">BSL30-T0406PC</a>	<a href="#">BSL30-T0606PC</a>	<a href="#">BSL30-T0806PC</a>	<a href="#">BSL30-T1006PC</a>	<a href="#">BSL30-T1206PC</a>	... ..	<a href="#">BSL30-T3206PC</a>

### BSL40

Resolution	40mm							
Min. sized detectable objects	> $\phi$ 48,opaque							
Scanning range	0.1~6m							
NO.of beams	4 beams	6 beams	8 beams	10 beams	12 beams	... ..	32 beams	
Protection height	120mm	200mm	280mm	360mm	440mm	... ..	1240mm	
Light curtain height	153.1mm	233.1mm	313.1mm	393.1mm	473.1mm	... ..	1273.1mm	
Model NO.	NPN NC	<a href="#">BSL40-T0406NC</a>	<a href="#">BSL40-T0606NC</a>	<a href="#">BSL40-T0806NC</a>	<a href="#">BSL40-T1006NC</a>	<a href="#">BSL40-T1206NC</a>	... ..	<a href="#">BSL40-T3206NC</a>
	PNP NC	<a href="#">BSL40-T0406PC</a>	<a href="#">BSL40-T0606PC</a>	<a href="#">BSL40-T0806PC</a>	<a href="#">BSL40-T1006PC</a>	<a href="#">BSL40-T1206PC</a>	... ..	<a href="#">BSL40-T3206PC</a>

# Economical Type

## Dimensions (Unit:mm)



B=16.55mm  
 C=16.55mm  
 $H=(N-1)*K$   
 $L=H+B+C$

B: Upper blind height  
 C: Lower blind height

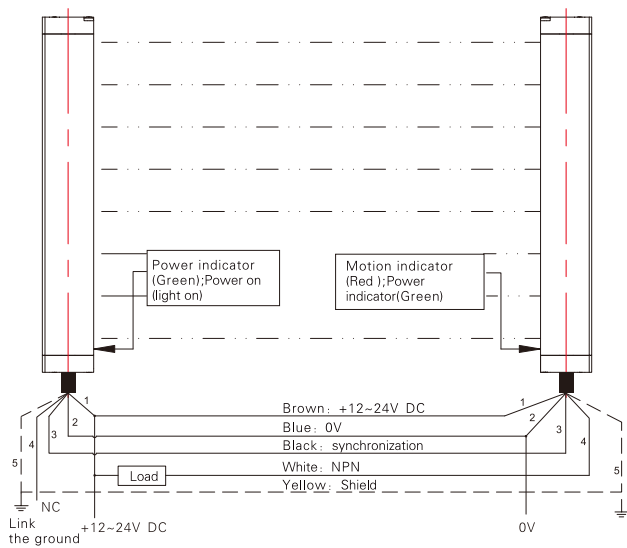
K: Beam pitch  
 H: Protection height  
 N: No. beam  
 L: Total light curtain height

Area

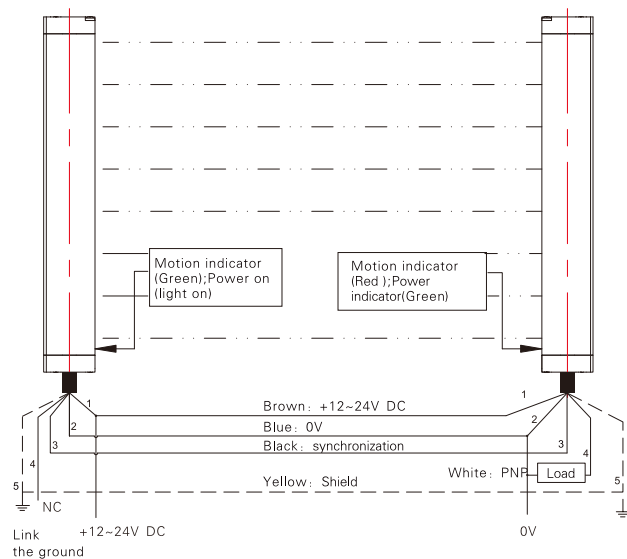
- Fiber Optic
- Slot Sensors
- Photoelectric
- Laser
- Proximity
- Displacement
- Magnetic
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- Area
- Ultrasonic
- Vision
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## Connection diagram

### NPN



### PNP



### Guidance

#### Light curtains

- Standard type
- Top-emitting type
- Side-emitting type
- Waterproof type
- Measuring type
- Economical type

#### Safety Light Curtain

- Beam pitch 10mm
- Beam pitch 20mm
- Beam pitch 30mm
- Beam pitch 40mm

#### LIDAR scanner

- TOF LIDAR scanner
- MINI LIDAR scanner
- Navigation LIDAR

# Economical Type

## BKL Series

Area



Appearance

Sectional area	35.5X35.5mm
No.of beams	4~256
Protection height	120~3000mm
Scanning range	0.1~6m
Resolution	10/20/40mm
Min.sized detectable objects	> $\phi$ 14/ $\phi$ 25/ $\phi$ 45mm,opaque
Operating voltage	12~24V DC $\pm$ 10%
Current consumption	<200mA
Power consumption	3~8W
Output type	NPN/PNP
Synchronization type	Line synchronization
Response time	$\leq$ 15ms
Light source	Infrared LED (modulated)
Protective circuit	Reverse polarity protection, output short circuit protection, overload protection
Ambient temperature	-15 $^{\circ}$ C~+55 $^{\circ}$ C ,No freezing
Ambient humidity	35~85%RH, No condensation
Anti-interference ability	10000Lux ( Incident angle $\geq$ 5 $^{\circ}$ )
Insulation resistance	>10M $\Omega$ high resistance meter based on DC500V
Vibration resistance	10~150Hz, 1.5mm double amplitude for 2 hours each in X, Y and Z directions
Impact resistance	Acceleration: 500m/ s $^2$ (Approx:50G); x, y and z direction (3 times each)
Degree of protection	IP65
Material	Housing: Aluminum alloy
Connection	M12 connector
Accessories	Right angle fixing frame

### BKL10

Resolution	10mm							
Min. sized detectable objects	> $\phi$ 14, opaque							
Scanning range	0.1~6m							
NO.of beams	14	16	18	20	22	... ..	48	
Protection height	130mm	150mm	170mm	190mm	210mm	... ..	470mm	
Light curtain height	170mm	190mm	210mm	230mm	250mm	... ..	510mm	
Model NO.	NPN NC	<a href="#">BKL10-T1406NC</a>	<a href="#">BKL10-T1606NC</a>	<a href="#">BKL10-T1806NC</a>	<a href="#">BKL10-T2006NC</a>	<a href="#">BKL10-T2206NC</a>	... ..	<a href="#">BKL10-T4806NC</a>
	PNP NC	<a href="#">BKL10-T1406PC</a>	<a href="#">BKL10-T1606PC</a>	<a href="#">BKL10-T1806PC</a>	<a href="#">BKL10-T2003PC</a>	<a href="#">BKL10-T2206PC</a>	... ..	<a href="#">BKL10-T4806PC</a>

Remarks: maximum number of optical axis 64 axis.

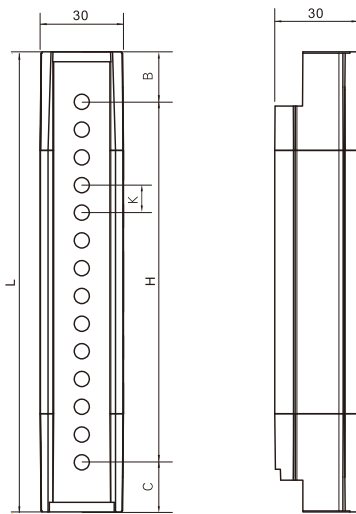
### BKL20

Resolution	20mm							
Min. sized detectable objects	> $\phi$ 25, opaque							
Scanning range	0.1~6m							
NO.of beams	8	10	12	14	16	... ..	48	
Protection height	140mm	180mm	220mm	260mm	300mm	... ..	940mm	
Light curtain height	180mm	220mm	240mm	300mm	340mm	... ..	980mm	
Model NO.	NPN NC	<a href="#">BKL20-T0806NC</a>	<a href="#">BKL20-T1006NC</a>	<a href="#">BKL20-T1206NC</a>	<a href="#">BKL20-T1406NC</a>	<a href="#">BKL20-T1606NC</a>	... ..	<a href="#">BKL20-T4806NC</a>
	PNP NC	<a href="#">BKL20-T0806PC</a>	<a href="#">BKL20-T1006PC</a>	<a href="#">BKL20-T1206PC</a>	<a href="#">BKL20-T1406PC</a>	<a href="#">BKL20-T1606PC</a>	... ..	<a href="#">BKL20-T4806PC</a>

### BKL40

Resolution	40mm							
Min. sized detectable objects	> $\phi$ 45, opaque							
Scanning range	0.1~6m							
NO.of beams	4	6	8	10	12	... ..	48	
Protection height	120mm	200mm	280mm	360mm	440mm	... ..	1880mm	
Light curtain height	140mm	240mm	320mm	400mm	480mm	... ..	1920mm	
Model NO.	NPN NC	<b>BKL40-T0406NC</b>	<b>BKL40-T0606NC</b>	<b>BKL40-T0806NC</b>	<b>BKL40-T1006NC</b>	<b>BKL40-T1206NC</b>	... ..	<b>BKL40-T4806NC</b>
	PNP NC	<b>BKL40-T0406PC</b>	<b>BKL40-T0606PC</b>	<b>BKL40-T0806PC</b>	<b>BKL40-T1006PC</b>	<b>BKL40-T1206PC</b>	... ..	<b>BKL40-T4806PC</b>

### Dimensions(Unit:mm)



B: Upper blind  
 C: Lower blind  
 K: Beam pitch  
 H: Protection Height  
 N: No. beams  
 L: Light curtain total height

$$B = 1/2 + 3\text{mm}$$

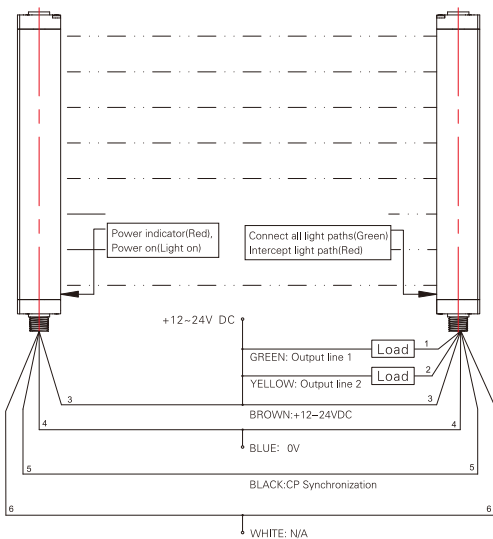
$$C = 1/2 + 3\text{mm}$$

$$H = (N - 1) * K$$

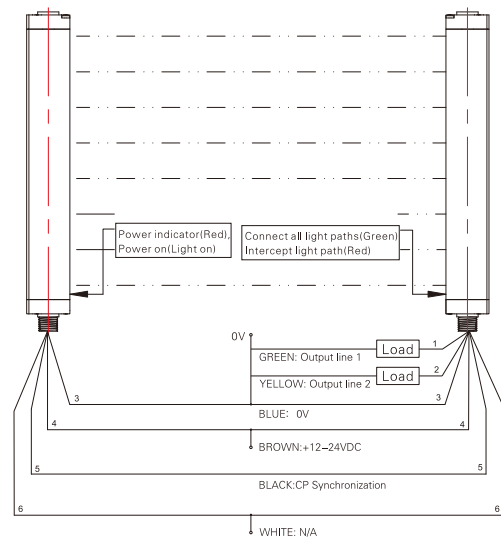
$$L = H + B + C$$

### Connection diagram

#### NPN



#### PNP



- Fiber Optic
- Slot Sensors
- Photoelectric
- Laser
- Proximity
- Displacement
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**Guidance**

**Light curtains**

- Standard type
- Top-emitting type
- Side-emitting type
- Waterproof type
- Measuring type
- Economical type

**Safety Light Curtain**

- Beam pitch 10mm
- Beam pitch 20mm
- Beam pitch 30mm
- Beam pitch 40mm

**LIDAR scanner**

- TOF LIDAR scanner
- MINI LIDAR scanner
- Navigation LIDAR

# Safety Light Curtain

## SAF Series

Area



Appearance	
Security Level	Type 4 Cat.4 PLc
Executive standard	GB/T19436.1; GB/T 19436.2; GB4584-2007; IEC 61496-1; IEC61496-2
Light source	Infrared LED (center wavelength 940nm)
Sectional area	52X35mm
NO. beams	4~72
Protection height	130~3000mm
Scanning range	0.1~40m
Resolution	10/20/30/40mm
Min. sized detectable objects	> φ 18/ φ 28/ φ 38/ φ 48mm, Opaque
EAA	Meet the requirements of IEC 61496-2, when the detection distance is more than 3m, EAA <2.5°
Supply voltage	24V DC±10%
Current consumption	Transmitter≤300mA; Receiver≤100mA ( Non load )
Output type	PNP ( Two groups )
EMC	Comply with the requirements of Class 4 safety light curtain in GB / T19436-1 and GB4584-2007
EMI	Comply with EN61326-1 and EN55011 electromagnetic field requirements for industrial sites
Response time	≤20ms
Output characteristics	PNP transistor output X2 (ON), load current is less than 300mA, residual voltage is less than 3.5V (excluding the effect of wire extension)
Ambient temperature	Operating: -10°C~+55°C ( No freezing and no condensation ) ; Storage: -10°C~+55°C
Ambient humidity	Operating: 35~85%RH; Storage: 35~95%RH
Anti-interference ability	Incandescent: 3000Lux; Fluorescent: 3000Lux; Sunlight: 10000Lux
Vibration resistance	Frequency: 10 ~ 55Hz; amplitude: 0.35 ± 0.05mm; Scanning times: three axes, 20 times per axis
Impact resistance	Acceleration 10g, pulse duration: 16ms, number of collisions: three axes, 1000 ± 10 times per axis
Degree of protection	IP65
Supporting controller	Not equipped with controller; or equipped with CSRMB module, output relay passive contact signal
Accessories	Transmission line, mounting bracket

### Product description

Safety light curtain integrates controller function into the sensor, is designed for risk assessment does not need to be equipped with a controller and need to have level signal control of equipment (for example: using PLC, computer-controlled equipment) to provide photoelectric protection device, can output two safe PNP signals.

Meets the requirements of safety level IV. SAF series photoelectric protection device can effectively detect any opaque objects that enter the light curtain area beyond the detection accuracy. It is suitable for the safety protection of mechanical presses, hydraulic presses, shearing machines, bending machines and other dangerous occasions. Can be used for detection and anti-theft.

### Features

- Perfect self-test function, realizing full self-test including output signal.
- Floating shield function can be realized, which is convenient to realize the processing of long materials;
- Provide two relay passive contact outputs, higher safety performance
- High detection accuracy up to 18mm, which can protect fingers
- Large detection distance, up to 40m;
- Large detection height, up to 2840mm;
- Multiple product specifications, wide range of application;
- Can provide split indication function, intuitive display of beam on/off status.
- Good vibration damping performance, suitable for high-speed punching, large tonnage presses, long service life.
- Strong resistance to light interference and electromagnetic interference; more stable work.
- When configured with safety relay module, it can provide 3 normally open and 1 normally closed output and 2 normally open and 1 normally closed output in two forms.

Light curtains
Standard type
Top-emitting type
Side-emitting type
Waterproof type
Measuring type
Economical type
Safety Light Curtain
Beam pitch 10mm
Beam pitch 20mm
Beam pitch 30mm
Beam pitch 40mm
LIDAR scanner
TOF LIDAR scanner
MINI LIDAR scanner
Navigation LIDAR

### SAF10

Resolution	10mm							
Min. sized detectable objects	φ 18, opaque							
Scanning range	Type A: 0~3m; Type B: 0~12m; Type C: 8~20m;							
NO. beams	16	20	24	28	32	... ..	72	
Protection height	150mm	190mm	230mm	270mm	310mm	... ..	710mm	
Light curtain height	239mm	279mm	319mm	359mm	399mm	... ..	799mm	
Model NO.	PNP NC	SAF10-T16 <sup>03</sup> PC	SAF10-T20 <sup>03</sup> PC	SAF10-T24 <sup>03</sup> PC	SAF10-T28 <sup>03</sup> PC	SAF10-T32 <sup>03</sup> PC	... ..	SAF10-T72 <sup>03</sup> PC
	Other	03: Type A 0~3m		12: Type B 0~12m		20: Type C 8~20m		

### SAF20

Resolution	20mm							
Min. sized detectable objects	φ 28, opaque							
Scanning range	Type A: 0~3m; Type B: 0~12m; Type C: 8~20m;							
NO. beams	8	10	12	14	16	... ..	72	
Protection height	140mm	180mm	220mm	260mm	300mm	... ..	1420mm	
Light curtain height	239mm	279mm	319mm	359mm	399mm	... ..	1519mm	
Model NO.	PNP NC	SAF20-T08 <sup>03</sup> PC	SAF20-T10 <sup>03</sup> PC	SAF20-T12 <sup>03</sup> PC	SAF20-T14 <sup>03</sup> PC	SAF20-T16 <sup>03</sup> PC	... ..	SAF20-T72 <sup>03</sup> PC
	Other	03: Type A 0~3m		12: Type B 0~12m		20: Type C 8~20m		

### SAF30

Resolution	30mm							
Min. sized detectable objects	φ 38, opaque							
Scanning range	Type A: 0~3m; Type B: 0~12m; Type C: 8~20m;							
NO. beams	6	8	10	12	14	... ..	72	
Protection height	150mm	210mm	270mm	330mm	390mm	... ..	2130mm	
Light curtain height	239mm	299mm	359mm	419mm	479mm	... ..	2219mm	
Model NO.	PNP NC	SAF30-T06 <sup>03</sup> PC	SAF30-T08 <sup>03</sup> PC	SAF30-T10 <sup>03</sup> PC	SAF30-T12 <sup>03</sup> PC	SAF30-T14 <sup>03</sup> PC	... ..	SAF30-T72 <sup>03</sup> PC
	Other	03: Type A 0~3m		12: Type B 0~12m		20: Type C 8~20m		

### SAF40

Resolution	40mm							
Min. sized detectable objects	φ 48, opaque							
Scanning range	Type A: 0~3m; Type B: 0~12m; Type C: 8~20m;							
NO. beams	4	6	8	10	12	... ..	72	
Protection height	120mm	200mm	280mm	360mm	440mm	... ..	2840mm	
Light curtain height	239mm	319mm	399mm	479mm	559mm	... ..	2959mm	
Model NO.	PNP NC	SAF40-T04 <sup>03</sup> PC	SAF40-T06 <sup>03</sup> PC	SAF40-T08 <sup>03</sup> PC	SAF40-T10 <sup>03</sup> PC	SAF40-T12 <sup>03</sup> PC	... ..	SAF40-T72 <sup>03</sup> PC
	Other	03: Type A 0~3m		12: Type B 0~12m		20: Type C 8~20m		

- Fiber Optic
- Slot Sensors
- Photoelectric
- Laser
- Proximity
- Displacement
- Magnetic
- Contact
- Area
- Ultrasonic
- Vision
- Code Readers
- Vibration
- Temperature
- Accessories

#### Guidance

#### Light curtains

- Standard type
- Top-emitting type
- Side-emitting type
- Waterproof type
- Measuring type
- Economical type

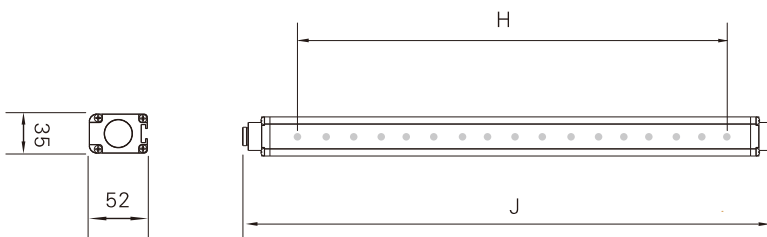
#### Safety Light Curtain

- Beam pitch 10mm
- Beam pitch 20mm
- Beam pitch 30mm
- Beam pitch 40mm

#### LIDAR scanner

- TOF LIDAR scanner
- MINI LIDAR scanner
- Navigation LIDAR

## Dimensions(Unit:mm)



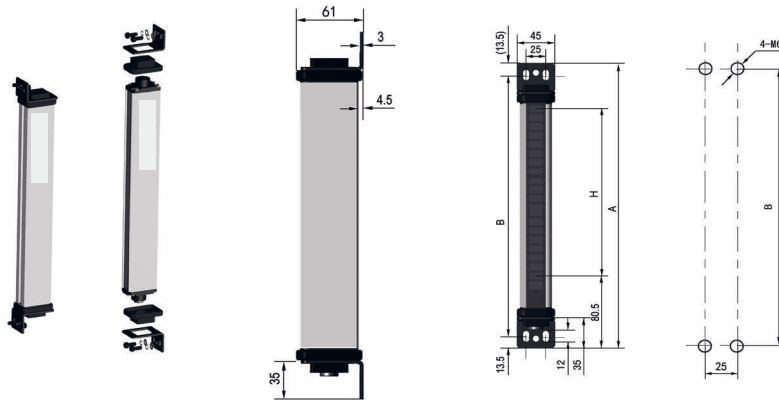
H: Protection height  
J: Length of light emitter and light receiver

# Safety Light Curtain

## Installation Method

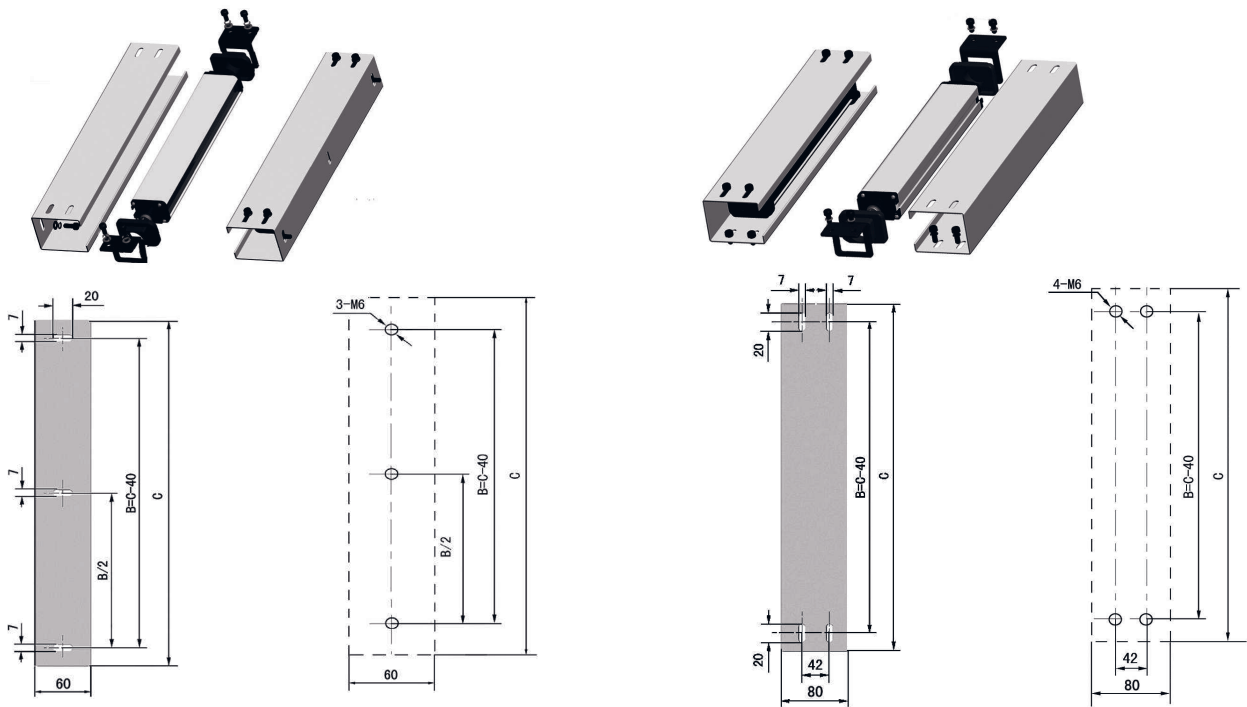
Area

Front and side integrated installation method (ZC)



A	Optical axis spacing 10mm	H+131
	Optical axis spacing 20mm	H+141
	Optical axis spacing 30mm	H+131
	Optical axis spacing 40mm	H+161
B	Optical axis spacing 10mm	H+104
	Optical axis spacing 20mm	H+114
	Optical axis spacing 30mm	H+104
	Optical axis spacing 40mm	H+134
H	Protection height	

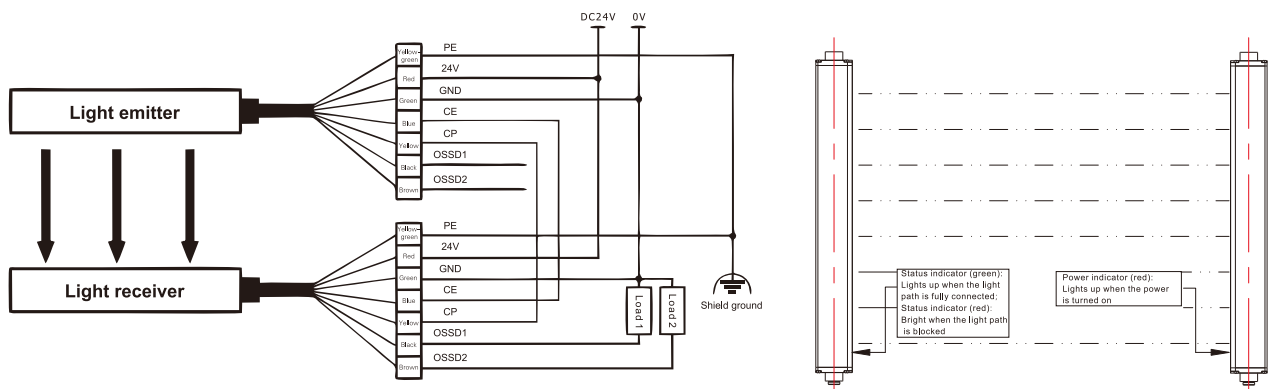
Protective cover installation method (FZC)



Formal installation of protective cover

Side-mounted protective cover

## Connection diagram



Note: The control signal lines OSSD1 and OSSD2 at the light emitter end are floating.

**TOF Principle**



Appearance			
Light source		Infrared laser(905nm)	
Laser safety level		Class 1 (GB7247.1–2012, Eye–safe IEC)	
Laser spot light diameter		8mm	
Laser spot light scan angle		12.5 mrad	
Scanning angle range		300°	
Scanning frequency		25Hz(system default)/12.5Hz/6.25Hz	
Scanning angle resolution		0.5° (system default)/0.25° /0.125°	
Sensing range		0.1m ~ 20m	0.1m ~40m
10% reflectivity range		15m	30m
Outdoor performance		Anti–dusty, Anti–sunlight	
Rain fog and smoke penetration		Supported	
Measurement error	System error (typical)	± 5cm	± 5cm ( 1m~20m ) ; ± 10cm ( 20m~40m )
	Statistical error (1σ)	± 2cm	± 2cm ( 1m~20m ) ; ± 4cm ( 20m~40m )
Built–in application		Monitoring mode: Point number monitoring / target width monitoring / contour monitoring	
Regional monitoring		Monitor signal level: Attention / warning / alarm	
		Number of regional groups: 16 groups, support self–learning background exclusion	
		Concurrent work area group number: 16 (max)	
		Guide the network camera to monitor the target video positioning and tracking	
Self–test equipment		Contents:Transparent cover dirt / block / high temperature / low temperature Output mode: Indicator + TCP packets	
Ethernet		Rate: 10/100 Mbps; Network protocol: TCP/IP; Function: Device configuration / measurement data output /monitor signal output	
I/O Input		Quantity: 4; Type: Switching level input; High level range: 10V~28V DC; Low level range: 0V~5V DC Preset function: Monitor area selection (0x0 – 0xF); Regional monitoring disarm / forced alarm, active level: high level	
I/O Output		Quantity: 4; Type: PNP switch output ; Output voltage: Supply voltage;Power on: OFF;Device ready (OUT), active state: pass (High level), zone detection signal output (OUT2/OUT3/OUT4) active state: configurable	
Indicator light		Quantity: 2; Definition: ERR (Device alarm: Fault/Abnormal ,Transparent cover dirty / block, high and low temperature, Dense fog); HTR (operation status indication: detection signal / self–learning )	
Front panel button		Quantity: 1; Definition: Shielded monitor signal output / start background self–learning /restart device	
Operating voltage		10V~ 28V DC	
Power		5W(measuring),3.6W@DC 12V/14.4W@DC 24V(heating)	
Outer covering protection rank(IP)		IP65(GB4208–2008)	
Insulation resistance		1M Ω (GB16796–2009.5.4.4)	
Dielectric strength		0.5KV(GB16796–2009.5.4.3)	
Weight		0.6kg	
Dimension(L×W×H)		83.5 × 85 × 104.9(mm)	
Electromagnetic compatibility (EMC)	Electrostatic discharge	6KV (GB/T17626.2~2006, class 3)	
	Fast bursts	1KV (GB/T17626.4~2008, class 2)	
	Electromagnetic field radiation immunity	GB/T17626.3~2006, class 2	
Surge immunity		GB / T17626.5–2008 Power interface: 1.2 / 50 μs, 2KV / 1KA (Class 3) Ethernet interface: 10 / 700 μs, 1KV / 25A (Class 2); I / O interface: 1.5 / 50 μs, 0.5KV / 0.25KA (Class 1)	
Impact		GB/T 2423.5	
Single impact		15g, 11ms	
Continuous impact		10g, 16ms	
Vibration		GB/T 2423.10	
Frequency Range		10Hz~150Hz	
Amplitude		5g	
Humidity		93%, +40℃, 2h ( GB/T 2423.3 )	
Operating temperature range		–25℃~+50℃	
Storage temperature range		–30℃~+70℃	
Ambient illumination range		≤70,000lux	
Model NO.		AS-21C	AS-41C

- Fiber Optic
- Slot Sensors
- Photoelectric
- Laser
- Proximity
- Displacement
- Magnetic
- Contact
- Area
- Ultrasonic
- Vision
- Code Readers
- Vibration
- Temperature
- Accessories

**Guidance**

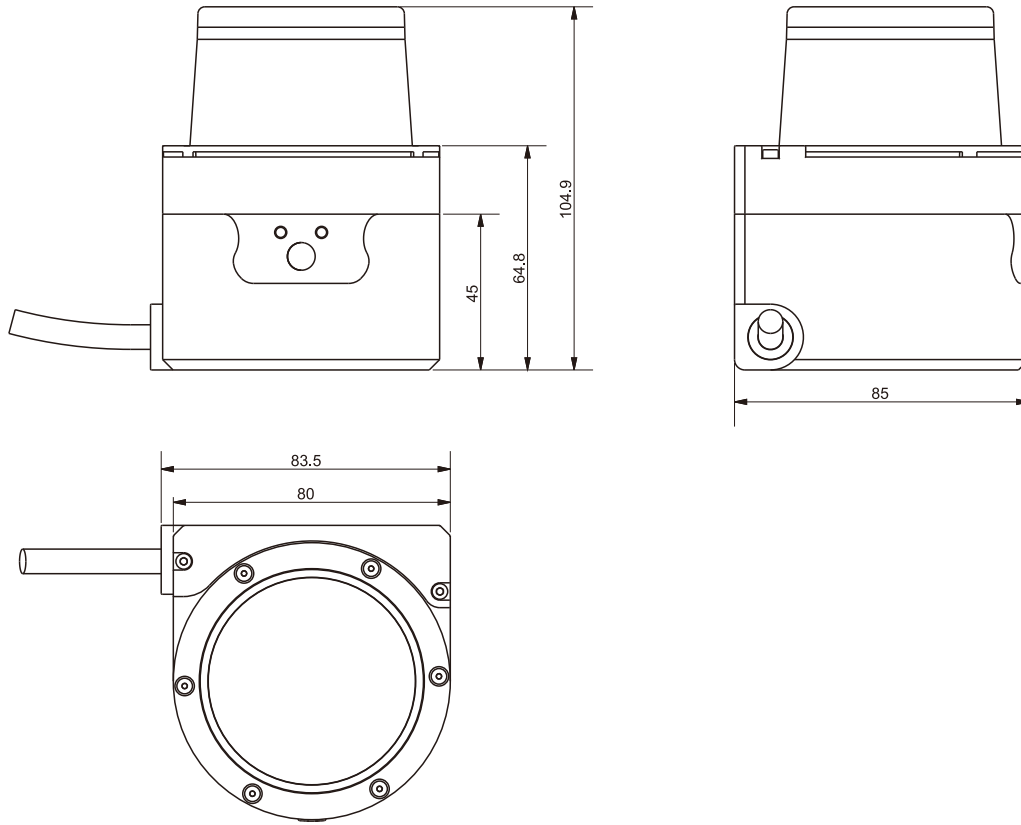
- Light curtains**
- Standard type
- Top-emitting type
- Side-emitting type
- Waterproof type
- Measuring type
- Economical type
- Safety Light Curtain**
- Beam pitch 10mm
- Beam pitch 20mm
- Beam pitch 30mm
- Beam pitch 40mm
- LIDAR scanner**
- TOF LIDAR scanner
- MINI LIDAR scanner
- Navigation LIDAR

# LiDAR Scanner

## Dimensions

Unit:mm

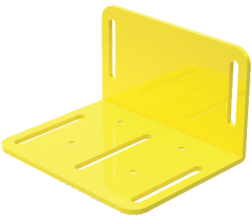


Area

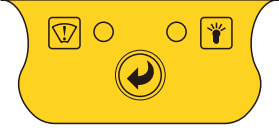





## Power Interface

	Socket	Type	Explanation
I/O	DC002	Power	Female 2 pin
Power	Ethernet	RJ45 socket	4 pin
Network port	I/O	Cable	10 pin

## Accessories

			Mounting screws, gasket and easy installation tool
Composite Bracket: AS-21C-AT 1 Piece	Power Cable: AS-21C-EC 1 Strip	Crystal Protective Cover : AS-21C-WJ 1 Piece	Accessories: M4x8 1 Set

	Name	Instructions
	 <b>ERR</b>	Work fault indicator ◆ Startup state: Light on(About 27s)Always off: No fault ◆ Always on:Internal fault ◆ Always on: Internal fault,Abnormal measurement ◆ Long flicker ( 0.25Hz ) : High / low temperature alarm ◆ Short flicker(1Hz) : Transmissive cover is dirty/occluded <sup>1</sup>
	 <b>HTR</b>	Work status indicator ◆ Startup state: Off ◆ Off: The device does not start measuring/ready to restart ◆ Always on:Equipment normal measurement ◆ Flash1 (0.5Hz) : Monitor Signal output ◆ Flash2 (1Hz) : Self-learning <sup>2</sup> ◆ Flash3 (2.5Hz) : Ready to start self-learning <sup>2</sup>
	 <b>SLR</b>	Operation button ◆short press (1s~5s)Start background self-learning ◆Long press( ≥ 6s ) : Delete background

1:Including being blocked by dense fog or the detection area being blocked.

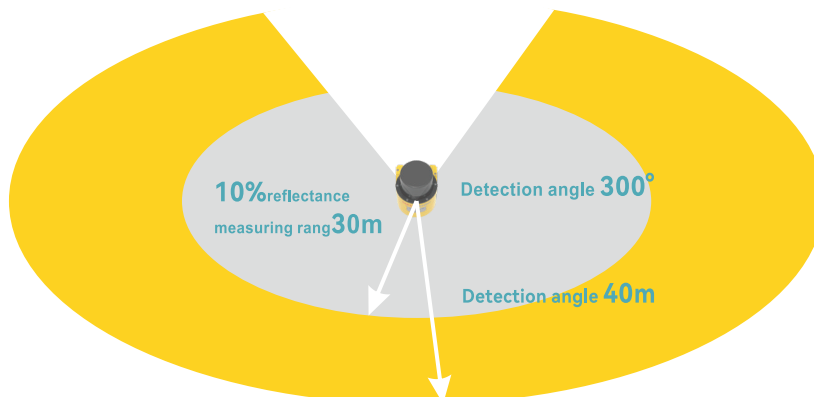
2:Including "background self-learning" and "normal goal self-learning"(customized function).

### Measuring coordinate system/scan range/range

#### AS-21C



#### AS-41C



- Fiber Optic
- Slot Sensors
- Photoelectric
- Laser
- Proximity
- Displacement
- Magnetic
- Contact
- Area
- Ultrasonic
- Vision
- Code Readers
- Vibration
- Temperature
- Accessories

#### Guidance

- Light curtains
- Standard type
- Top-emitting type
- Side-emitting type
- Waterproof type
- Measuring type
- Economical type

#### Safety Light Curtain

- Beam pitch 10mm
- Beam pitch 20mm
- Beam pitch 30mm
- Beam pitch 40mm

#### LIDAR scanner

- TOF LIDAR scanner
- MINI LIDAR scanner
- Navigation LIDAR

# LiDAR Scanner

## MINI LiDAR Scanner

**TOF principle**



Appearance

Light source	Infrared laser(905nm)	
Laser safety level	Class1(GB7247.1-2012, Eye-safe IEC)	
Laser spot light diameter	10mm	
Laser spot light scan angle	10.0(H) 2.0(V)mrad	
Scanning angle range	360°	
Scanning frequency	12.5Hz	
Scanning angle resolution	0.5°	
Sensing range	0.1m ~20m	
10% reflectivity range	15m	
Outdoor performance	Indoor, anti - light, anti - dirt	
Rain fog and smoke penetration	Support	
Measurement error	System error (typical)	± 5cm ( 1m~15m )
	Statistical error (1σ)	± 2cm ( 1m~15m )
	Monitoring mode: point number monitoring / target width monitoring / contour monitoring	
Built-in application	Monitoring signal type: attention / warning / alarm	
Regional monitoring	Number of regional groups: 16 groups	
	Number of concurrent work area groups: 16 (max)	
	Can detect targets of any shape, support normal target self-learning function	
Self-test equipment	Contents: Dirty cover / blocking / high temperature / low temperature; output method: indicator + TCP message	
Ethernet	Rate: 10/100 Mbps; network protocol: TCP / IP; function: device configuration / measurement data output / monitor signal output	
I/O Input	Quantity: 4; Type: Level input; High level range: 10V~28V DC; Low level range: 0V~5V DC; Preset function: monitoring area selection (0x0 - 0xF); area monitoring disarm / force alarm, effective level: high level;	
I/O Output	Quantity: 4; Type: PNP switch output; Output voltage: power supply voltage; Power-on state: off; Device ready (OUT), valid state: on, zone detection signal output (OUT2 / OUT3 / OUT4) valid state: configurable	
Indicator light	Quantity: 2; Definition: ERR (equipment alarm: failure / abnormality, dirty / transparent cover, high and low temperature, dense fog); HTR (operation status indication: detection signal / self-learning)	
Operating voltage	12V~28V DC	
Power	4.5W@DC 24V	
Outer covering protection rank(IP)	IP65(GB4208-2008)	
Insulation resistance	1M Ω (GB16796-2009.5.4.4)	
Dielectric strength	0.5KV(GB16796-2009.5.4.3)	
Weight	0.5kg	
Dimension(L×W×H)	86.0 × 85.0 × 59.5(mm)	
Electromagnetic compatibility (EMC)	Electrostatic discharge	6KV ( GB/T17626.2-2006, Class 3 )
	Fast bursts	1KV ( GB/T17626.4-2008, Class 2 )
	Electromagnetic field radiation immunity	GB/T17626.3-2006, Class 2
Surge immunity	GB/T17626.5-2008; Power interface: 1.2/50 μs, 2KV/1KA ( Class 3 ) ; Ethernet interface: 10/700 μs, 1KV/25A ( Class 2 ) ; I/O interface: 1.5/50 μs, 0.5KV/0.25KA ( Class 1 ) ;	
Impact	GB/T 2423.5	
Single impact	15g, 11ms	
Continuous impact	10g, 16ms	
Vibration	GB/T 2423.10	
Frequency Range	10Hz~150Hz	
Amplitude	5g	
Humidity	93%, +40°C, 2h ( GB/T 2423.3 )	
Operating temperature range	-10°C~+45°C	
Storage temperature range	-30°C~+70°C	
Ambient illumination range	≤70,000lux	
Model NO.	AS-11C	

Area

Fiber Optic

Slot Sensors

Photoelectric

Laser

Proximity

Displacement

Magnetic

Contact

Area

Ultrasonic

Vision

Code Readers

Vibration

Temperature

Accessories

Guidance

Light curtains

Standard type

Top-emitting type

Side-emitting type

Waterproof type

Measuring type

Economical type

Safety Light Curtain

Beam pitch 10mm

Beam pitch 20mm

Beam pitch 30mm

Beam pitch 40mm

LIDAR scanner

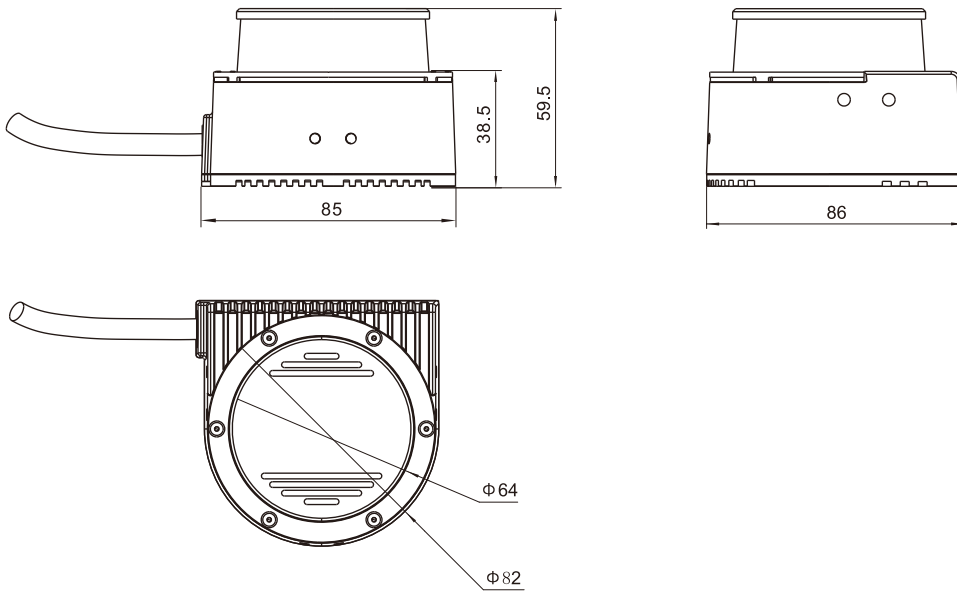
TOF LIDAR scanner

MINI LIDAR scanner

Navigation LIDAR

Unit:mm

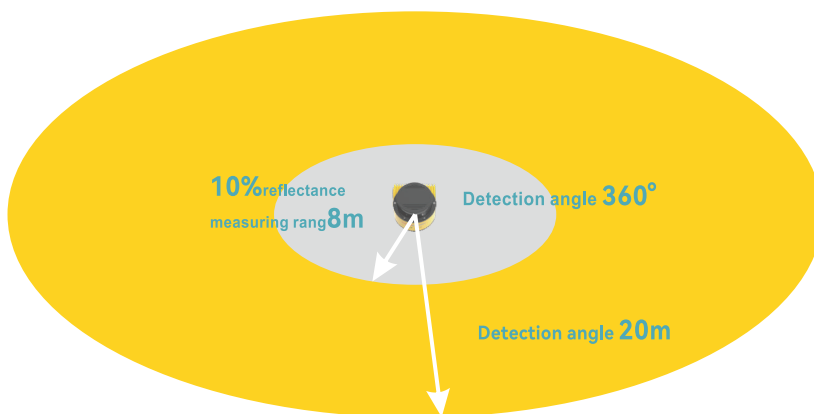
Dimensions



## Power Interface

I/O	Socket	Type	Explanation
Power	DC002	Power	Female 2 pin
Network port	Ethernet	RJ45 socket	4 pin
	I/O	Cable	9 pin

## Accessories



Area

- Fiber Optic
- Slot Sensors
- Photoelectric
- Laser
- Proximity
- Displacement
- Magnetic
- Contact
- Area
- Ultrasonic
- Vision
- Code Readers
- Vibration
- Temperature
- Accessories

### Guidance

### Light curtains

- Standard type
- Top-emitting type
- Side-emitting type
- Waterproof type
- Measuring type
- Economical type

### Safety Light Curtain

- Beam pitch 10mm
- Beam pitch 20mm
- Beam pitch 30mm
- Beam pitch 40mm

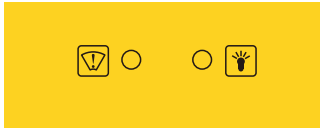


### LiDAR scanner

- TOF LiDAR scanner
- MINI LiDAR scanner
- Navigation LiDAR

# LiDAR Scanner

## Indicators and Operation Buttons

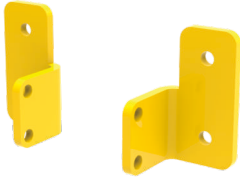


Area

	Name	Instructions
	 ERR	Work fault indicator <ul style="list-style-type: none"> <li>◆ Startup status: bright (About 27s)</li> <li>◆ Off: No fault</li> <li>◆ Steady light: Internal fault</li> <li>◆ Long flicker (0.5 Hz): High temperature / low temperature alarm</li> <li>◆ Short flicker (1Hz): Transmissive cover is dirty/occluded<sup>1</sup></li> </ul>
	 HTR	Work status indicator <ul style="list-style-type: none"> <li>◆ Startup state: off</li> <li>◆ Off: The device does not start measurement/ready to reboot</li> <li>◆ Bright: Normal measurement of equipment</li> <li>◆ Flashing 1 (0.5Hz): Monitor signal output</li> <li>◆ Flashing 2 (1Hz): Self-learning<sup>2</sup></li> <li>◆ Flashing 3 (2.5Hz) : Ready for self-learning<sup>2</sup></li> </ul>

1: Including being blocked by dense fog or the detection area being blocked.

2: Including "background self-learning" and "normal goal self-learning"(customized function).

### Accessories

			Mounting screws, gasket and easy installation tool
Side bracket: A AS-11C-AT	Cable: A piece of AS-11C-EC	Network cable crystal head waterproof jacket: A AS-11C-WJ	Accessories: A set of M4x8

#### Light curtains

Standard type

Top-emitting type

Side-emitting type

Waterproof type

Measuring type

Economical type

#### Safety Light Curtain

Beam pitch 10mm

Beam pitch 20mm

Beam pitch 30mm

Beam pitch 40mm

#### LIDAR scanner

TOF LIDAR scanner

MINI LIDAR scanner

Navigation LIDAR

**TOF principle**



CE

Area

Appearance		
Light source	Infrared laser (905nm)	
Laser safety level	Class I (GB7247.1-2012, human eye safety)	
Laser spot light diameter	10mm	
Laser spot light scan angle	2.0(H)×8.0(V)mrad	
Scanning angle range	360°	
Scanning frequency	10Hz/20Hz	
Scanning angle resolution	0.05° /0.1°	
Sensing range	0.2m ~100m	
RSSI Measurement Range	3%~1000% (reflector)	
10% reflectivity range	20m	
Outdoor performance	Anti-sunlight, anti-dirt, support smoke penetration, use under non-rainfall conditio	
Measurement data	Composite data (distance + RSSI)	
Measurement error	System error (typical) Distance measurement: 25mm(1m~20m) / 40mm(20m~50m); RSSI measurement: 2%(1m~20m) / 4%(20m~50m) Statistical error (1σ) Distance measurement: 10mm(1m~20m) / 20mm(20m~50m); RSSI measurement: 1%(1m~20m) / 2%(20m~50m)	
Self-test equipment	Content: Dirty/blocking/high temperature/low temperature of the translucent cover	
Ethernet	Rate: 10/100 Mbps; function: device configuration/measurement data output	
I/O Input	Quantity: 3; Type: level input (vs. general input common ground "GND IN"); high level range: 9V ~ 30V DC; low level range: 0V~0.7V DC; Preset function: power saving and life extension control (In2 / In3), effective level: high lev	
I/O Output	Quantity: 3; Type: PNP switch output (vs. power supply positive terminal); Power-on state: off; Preset function: equipment on Thread (OUT), effective state: op	
Indicator light	Quantity: 4; Definition: PWR: power indicator; LNK: Ethernet indicator; ERR: working failure indicator; HTR: normal measurement indicator	
Operating voltage	9V~30V DC	
Power	5W@DC 24V	
Outer covering protection rank(IP)	IP65(GB4208~2008)	
Insulation resistance	1MΩ (GB16796~2009.5.4.4)	
Dielectric strength	0.5KV(GB16796~2009.5.4.3)	
Weight	0.7kg	
Dimension(L×W×H)	97.0×97.0×72.0(mm)	
Electromagnetic compatibility (EMC)	Electrostatic discharge	6KV ( GB/T17626.2~2006, Class 3 )
	Fast bursts	1KV ( GB/T17626.4~2008, Class 2 )
	Electromagnetic field radiation immunity	GB/T17626.3~2006, Class 2
Surge immunity	GB/T17626.5~2008; Power interface: 1.2/50μs, 2KV/1KA ( Class 3 ) ; Ethernet interface: 10/700μs, 1KV/25A ( Class 2 ) ; I/O interface: 1.5/50μs, 0.5KV/0.25KA ( Class 1 ) ;	
Impact	GB/T 2423.5	
Single impact	15g, 11ms	
Continuous impact	10g, 16ms	
Vibration	GB/T 2423.10	
Frequency Range	10Hz~150Hz	
Amplitude	5g	
Humidity	93%, +40°C, 2h ( GB/T 2423.3 )	
Operating temperature range	-10°C~+50°C	
Storage temperature range	-30°C~+70°C	
Ambient illumination range	≤80,000lux	
Model NO.	<b>AS-100C</b>	

Fiber Optic
Slot Sensors
Photoelectric
Laser
Proximity
Displacement
Magnetic
Contact
<b>Area</b>
Ultrasonic
Vision
Code Readers
Vibration
Temperature
Accessories

#### Guidance

<b>Light curtains</b>
Standard type
Top-emitting type
Side-emitting type
Waterproof type
Measuring type
Economical type
<b>Safety Light Curtain</b>
Beam pitch 10mm
Beam pitch 20mm
Beam pitch 30mm
Beam pitch 40mm

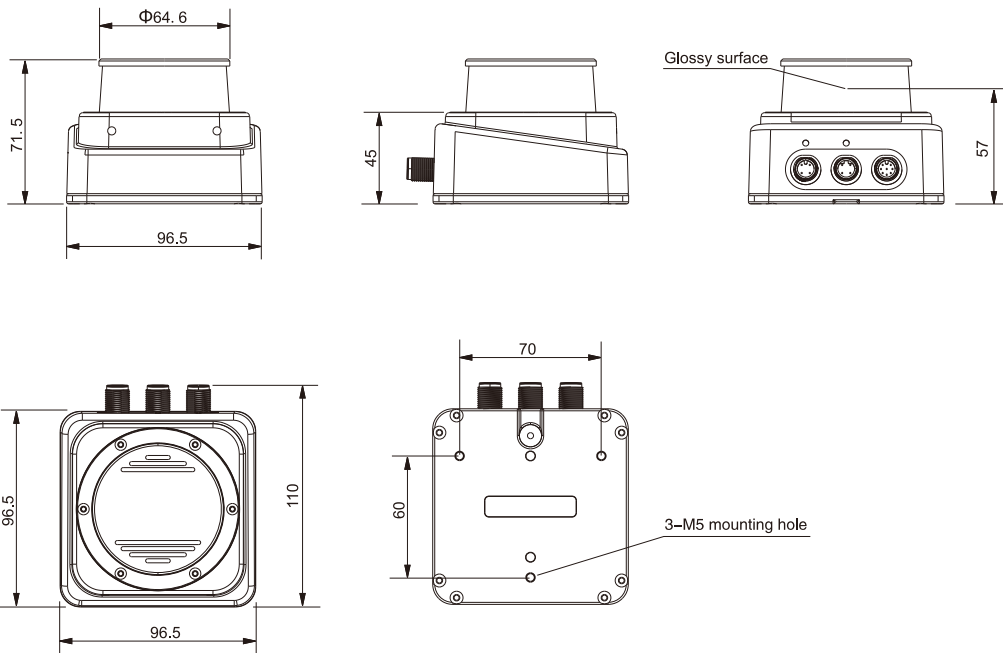
<b>LIDAR scanner</b>
TOF LIDAR scanner
MINI LIDAR scanner
Navigation LIDAR

# LiDAR Scanner

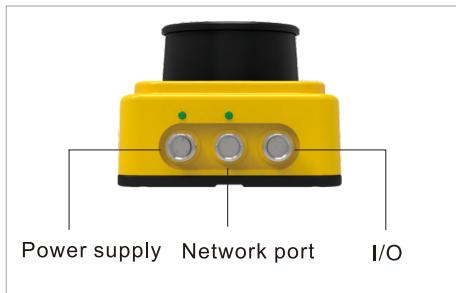
## Dimensions

Unit:mm

Area

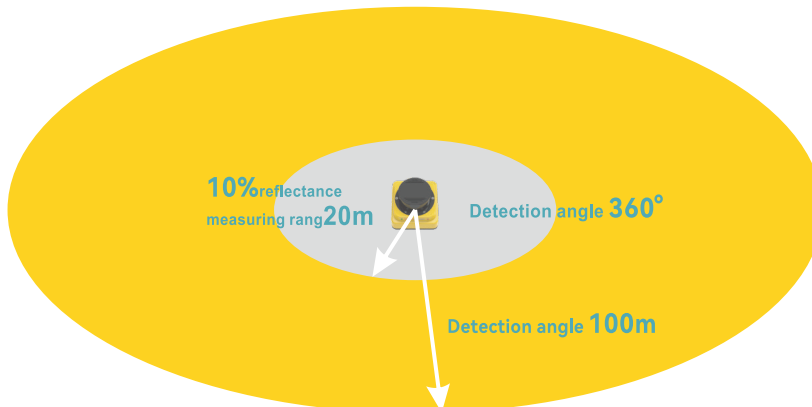


## Power connector

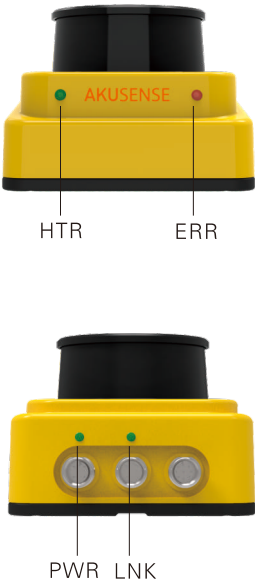


Socket	Types	Number of terminal
Power supply	M12(Type A), Male	4
Etherne	M12(Type B), Male	4
I/O	M12(Type B), Male	8

## Measuring coordinate system/scanning range/range








## Indicator Lights and Operation Buttons

	Name	Description
	PWR	Power Indicator ◆ Normal off: no power / power is invalid ◆ Constant light: power on
	LNK	Ethernet indicator ◆ Always off: no network connection ◆ Always on: there is a network connection
	ERR	Work failure indicator ◆ Starting state: Yellow (about 24 seconds) ◆ Green: no fault ◆ Yellow: internal fault/measurement abnormal ◆ Long flashing (0.5Hz): high temperature/low temperature alarm ◆ Short flashing (1Hz): Dirty/obstructed light transmission cover
	HTR	Normal measurement indicator ◆ Starting state: off ◆ Always off: the device has not started to measure ◆ Always on: the equipment is measuring normally

- 1: Including measurement stop and motor stop;  
 2: Including being blocked by dense fog.

### Accessories

					Mounting screws, washers And easy installation tools
Mounting bracket: AS-100C-AT set	M12 dust plug Comes with	Power cable: AS-100C-ECA	RJ45 network cable: AS-100C-RJ45 A	I/O cable: AS-100C-IOCB A	Parts and accessories: M5x8 set

- Fiber Optic
- Slot Sensors
- Photoelectric
- Laser
- Proximity
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- Magnetic
- Contact
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- Ultrasonic
- Vision
- Code Readers
- Vibration
- Temperature
- Accessories

#### Guidance

- Light curtains**
- Standard type
- Top-emitting type
- Side-emitting type
- Waterproof type
- Measuring type
- Economical type

#### Safety Light Curtain

- Beam pitch 10mm
- Beam pitch 20mm
- Beam pitch 30mm
- Beam pitch 40mm

#### LIDAR scanner

- TOF LIDAR scanner
- MINI LIDAR scanner
- Navigation LIDAR

# LiDAR Scanner

## AS-31/32C

TOF Principle

Area



Appearance

Light source	Infrared Laser(905nm)	
Laser safety level	Class 1 ( Eye-safe IEC )	
Light spot size	7*3mm	4.5*2mm
Spot scanning angle	5.2*9mrad	4.0*2mrad
Scanning angle range	270°	
Sampling frequency	30KHz	
Scanning frequency	10Hz/15Hz/20Hz/25Hz/30Hz	
Scanning angle resolution	0.12° /0.18° /0.23° /0.35°	
Measuring range ( 70%reflectivity range )	0.1m ~20m	
Measuring range ( 10%reflectivity range )	0.1m – 10m	
Function	Navigation	
Operating environment	Indoor	
Measurement error	Resolution	1cm
	Linearity	2cm
Linearity	YES	
Abnormal Alarming	YES	
Communication	Ethernet/RJ45	
Operating voltage	DC12V	DC 9–28V
Power consumption	5W	
Degree of protection	IP65(GB4208–2008)	
Weight	0.25kg	
Dimension ( L*W*H )	60 × 60 × 84.9(mm)	60 × 60 × 81(mm)
Electromagnetic compatibility (EMC)	Electrostatic discharge	6KV ( GB/T17626.2~2006, Class 3 )
	Fast bursts	1KV ( GB/T17626.4~2008, Class 2 )
	Electromagnetic field radiation immunity	GB/T17626.3~2006, Class 2
Insulation resistance	100MΩ, based on megger 500V DC	
Surge resistance	Power supply 1KV	
Impact resistance	10 to 150Hz, 1.5mm double amplitude for 2 hours each in X, Y and Z directions	
Vibration resistance	500m/s(about 50G), 3 times each in X, Y and Z directions	
Storage humidity	93%, +40°C, 2h ( GB/T2423.3 )	
Operating temperature	–20°C~60°C	
Storage temperature	–20°C~70°C	
Ambient illuminance	80,000Lux	
Model No.	AS-31C	AS-32C

Fiber Optic
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Photoelectric
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Guidance
Light curtains
Standard type
Top-emitting type
Side-emitting type
Waterproof type
Measuring type
Economical type
Safety Light Curtain
Beam pitch 10mm
Beam pitch 20mm
Beam pitch 30mm
Beam pitch 40mm
LIDAR scanner
TOF LIDAR scanner
MINI LIDAR scanner
Navigation LIDAR



Appearance	
Sensing principle	TOF
Laser wavelength	905 nm
Max. Sensing range	10 m (70% reflectivity)/4 m (10% reflectivity)
Scanning angle range	270°
Sampling frequency	18 KHz / 54 KHz
Scanning frequency	25 Hz
Resolution	0.5°
Measuring accuracy	± 2 cm (within the range of 10 m)
Response time	40 ms
Startup relay	< 10 s
Channels	64 channels (each channel contains 3 detected areas)
Detection output delay	0 – 2 s , adjustable
Detection delay	0 – 2 s , adjustable
Detected size	0 – 5° , size
Switch input	Quantity: 6 (NPN)
Switch output	Quantity: 4 (3 for area signal, 1 for warning)
Indicator	Quantity: 4 (3 for area signal, 1 for warning)
Communication interface	USB–TYPE C (serial port)
Operating voltage	DC 9 V – 28 V
Power consumption	Power Rating: < 1 W ( no load )      Starting power: < 3 W ( no load )
Working temperature	–10 °C to 50 °C
Storage temperature	–20 °C to 70 °C
Humidity	Less than 85%, non–condensing
Protection degree	IP65
Ambient brightness	80000 Lux
Weight	171 g
Size	50 mm(L) * 50 mm(W) * 72 mm(H)
Model	<b>AS-33C</b>

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**Guidance**

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- LiDAR scanner**
- TOF LiDAR scanner
- MINI LiDAR scanner
- Navigation LiDAR

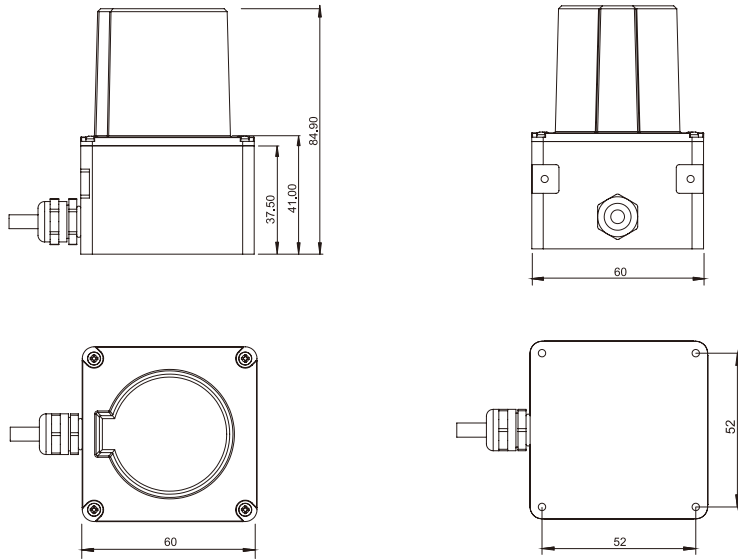
# LiDAR Scanner

Unit:mm

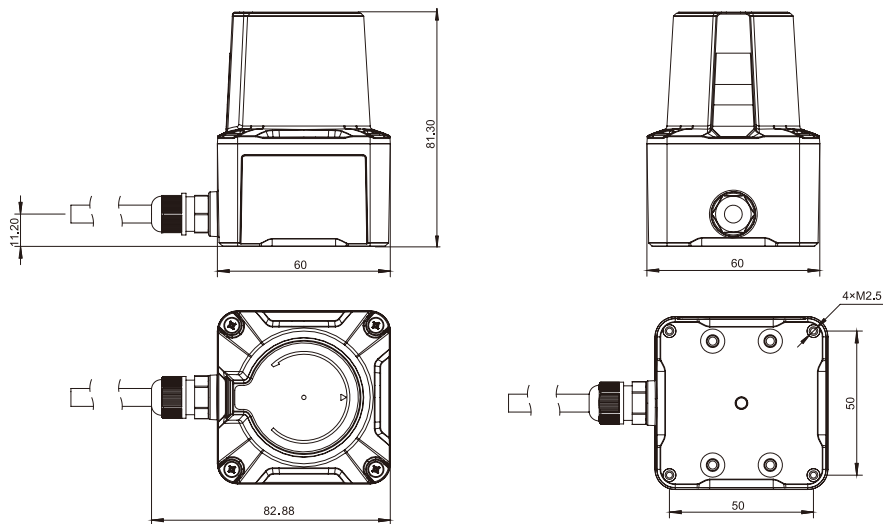
Dimensions

Area

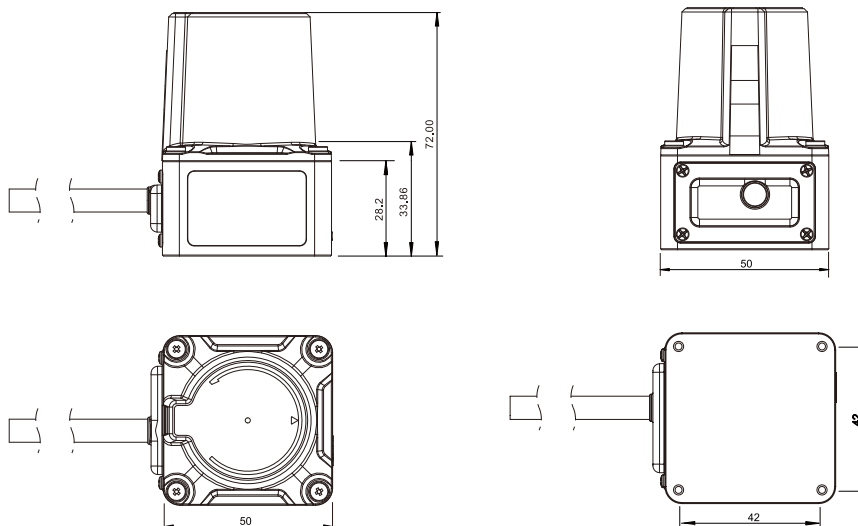
## AS-31C



## AS-32C



## AS-33C



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**Safety Light Curtain**

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Beam pitch 20mm

Beam pitch 30mm

Beam pitch 40mm

**LIDAR scanner**

TOF LIDAR scanner

MINI LIDAR scanner

Navigation LIDAR