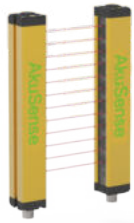


Area/Security/Obstacle Avoidance Sensors



- Adopt line synchronization mode, the performance is safe and reliable.
- Provide finger, palm, arm and other size detection.
- A variety of appearance size, protection height, detection method is optional.
- Can be quickly customized according to various non-standard requirements of customers.



Standard Type (BML Series)

- Cross-sectional size is 30mm * 30mm.
- Provide multiple resolution to be choose.
- Provide 3M connector cable (standard)

P.I-05



Top-emitting Type (BZL Series)

- Frontal detection, thickness only 17mm.
- With plastic installation hole, easy to fix.
- The protection distance can be customized according to customer needs.

P.I-08



Side-emitting Type (BCL Series)

- Side detection, thickness is only 15mm.
- With plastic installation hole, easy to fix.
- 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, protection class IP68
- Self-checking function is perfect, anti-interference ability is strong

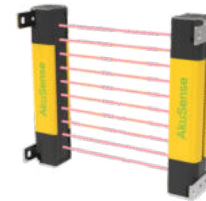
P.I-15



Measuring Type (BAL Series)

- Surface mount technology for superior shock resistance
- Self-checking function is perfect, anti-interference ability is strong
- Customizable RS485/232/422 communication protocols

P.I-18



Economical Type (BKL Series)

- Strong anti-electromagnetic interference
- Use class 4 safety grating design standards
- Meet a variety of installation scenarios, suitable for a variety of working environments

P.I-21

Safety Light Curtain



Safety Light Curtain (SAF Series)

- Four security levels can be achieved, providing security for high-risk sites
- Beam Pitch: 14mm, 30mm, Protection Distance: 3m or 6m, 4m or 12m
- With TUV, UL, CE, RHOS certification

P.I-23



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

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

P.I-25



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-28



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-23

Fiber Optic
Slot Sensors
Photoelectric
Laser
Proximity
Displacement
Magnetic
Contact
Area
Ultrasonic
Vibration
Temperature
Cables
Tester

Guidance

Light curtains

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

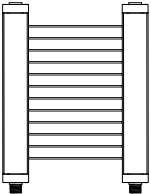
Safety Light Curtain

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

LiDAR scanner

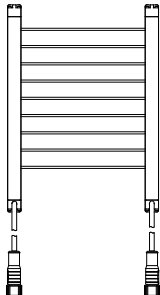
TOF LiDAR scanner
MINI LiDAR scanner
Navigation LiDAR

Standard Type

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

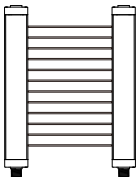
Note: XX represents the number of beam, eg. 06 represents the 6 axis.

Top-emitting Type

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

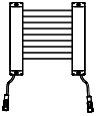
Note: XX represents the number of beam, eg. 06 represents the 6 axis.

Measuring Type

Appearance	Pitch	Min. sized detectable objects	Beams	Protection height	Protection distance	Model No.	Pages
	2.5mm	> φ 3.75mm, opaque	32~422	77.5~1175.5mm	0.3~3m	Voltage: BAL02-TXX03V Current: BAL02-TXX03A	I-18
	5mm	> φ 6.5mm, opaque	16~120	75~595mm	0.3~3m	Voltage: BAL05-TXX03V Current: BAL05-TXX03A	
	10mm	> φ 15mm, opaque	8~1000	70~9990mm	0.3~3m	Voltage: BAL10-TXX03V Current: BAL10-TXX03A	
	20mm	> φ 25mm, opaque	4~1000	60~19980mm	0.3~3m	Voltage: BAL20-TXX03V Current: BAL20-TXX03A	
	40mm	> φ 45mm, opaque	4~1000	120~39960mm	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	

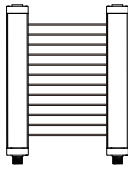
Note: XX represents the number of beam, eg. 06 represents the 6 axis.

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	

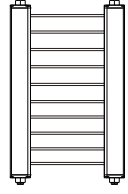
Note: XX represents the number of beam, eg. 06 represents the 6 axis.

Economical Type

Appearance	Pitch	Min. sized detectable objects	Beams	Protection height	Protection distance	Model No.	Pages
	10mm	> φ 14mm, opaque	14~48	130~470mm	0.1~6m	NPN:BKL10-TXX06PC PNP:BKL10-TXX06PC	I-21
	20mm	> φ 14mm, opaque	8~48	140~940mm	0.1~6m	NPN:BKL20-TXX06PC PNP:BKL20-TXX06PC	
	40mm	> φ 14mm, opaque	4~48	120~1880mm	0.1~6m	NPN:BKL40-TXX06PC 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-23
	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
- Vibration
- Temperature
- Cables
- Tester

Guidance

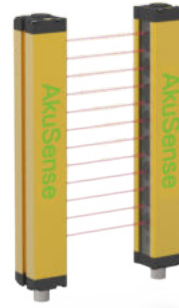
- Light curtains
- Standard type
- Top-emitting type
- Side-emitting type
- Waterproof type
- Measuring type
- Economical type
- Safety Light Curtain
- Beam pitch 10mm
- Beam pitch 20mm
- Beam pitch 30mm
- Beam pitch 40mm

- LIDAR scanner
- TOF LIDAR scanner
- MINI LIDAR scanner
- Navigation LIDAR

Standard Type

BML Series

Area



Appearance	
Sectional area	30X30mm
NO.of beams	4~32
Protection height	50~1240mm
Protection distance	0.3~3m
Beam pitch	10/14/20/25/30/40mm
Min. sized detectable objects	> ϕ 14/ ϕ 19/ ϕ 25/ ϕ 30/ ϕ 35/ ϕ 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)
Protective circuit	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 Ω (DC 500V megger)
Shock resistance	10~150Hz, double amplitude; 1.5mm, in each of x, y and z direction for 2 hours
Vibration resistance	Acceleration: 500m/ s ² (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

Beam pitch	10mm							
Min. sized detectable objects	> ϕ 14mm, opaque							
Protection distance	0.3~3m							
NO.of 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	BML10-T0603NC	BML10-T0803NC	BML10-T1003NC	BML10-T1203NC	BML10-T1403NC	BML10-T3203NC
	PNP NC	BML10-T0603PC	BML10-T0803PC	BML10-T1003PC	BML10-T1203PC	BML10-T1403PC	BML10-T3203PC

Remarks: maximum number of optical axes 70 axes.

BML14

Beam pitch	14mm							
Min. sized detectable objects	> ϕ 19mm, opaque							
Protection distance	0.3~3m							
NO.of 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	BML14-T0603NC	BML14-T0803NC	BML14-T1003NC	BML14-T1203NC	BML14-T1403NC	BML14-T3203NC
	PNP NC	BML14-T0603PC	BML14-T0803PC	BML14-T1003PC	BML14-T1203PC	BML14-T1403PC	BML14-T3203PC

BML20

Beam pitch	20mm							
Min. sized detectable objects	> ϕ 25, opaque							
Protection distance	0.3~3m							
NO.of 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	BML20-T0403NC	BML20-T0603NC	BML20-T0803NC	BML20-T1003NC	BML20-T1203NC	BML20-T3203NC
	PNP NC	BML20-T0403PC	BML20-T0603PC	BML20-T0803PC	BML20-T1003PC	BML20-T1203PC	BML20-T3203PC

Remarks: maximum number of optical axes 72 axes.

BML25

Beam pitch	25mm							
Min. sized detectable objects	> ϕ 30, opaque							
Protection distance	0.3~3m							
NO.of 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	BML25-T0603NC	BML25-T0803NC	BML25-T1003NC	BML25-T1203NC	BML25-T1403NC	BML25-T3203NC
	PNP NC	BML25-T0603PC	BML25-T0803PC	BML25-T1003PC	BML25-T1203PC	BML25-T1403PC	BML25-T3203PC

BML30

Beam pitch	30mm							
Min. sized detectable objects	> ϕ 35, opaque							
Protection distance	0.3~3m							
NO.of 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	BML30-T0403NC	BML30-T0603NC	BML30-T0803NC	BML30-T1003NC	BML30-T1203NC	BML30-T3203NC
	PNP NC	BML30-T0403PC	BML30-T0603PC	BML30-T0803PC	BML30-T1003PC	BML30-T1203PC	BML30-T3203PC

BML40

Beam pitch	40mm							
Min. sized detectable objects	> ϕ 45, opaque							
Protection distance	0.3~3m							
NO.of 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	BML40-T0403NC	BML40-T0603NC	BML40-T0803NC	BML40-T1003NC	BML40-T1203NC	BML40-T3203NC
	PNP NC	BML40-T0403PC	BML40-T0603PC	BML40-T0803PC	BML40-T1003PC	BML40-T1203PC	BML40-T3203PC

Remarks: maximum number of optical axes 72 axes.

- Fiber Optic
- Slot Sensors
- Photoelectric
- Laser
- Proximity
- Displacement
- Magnetic
- Contact

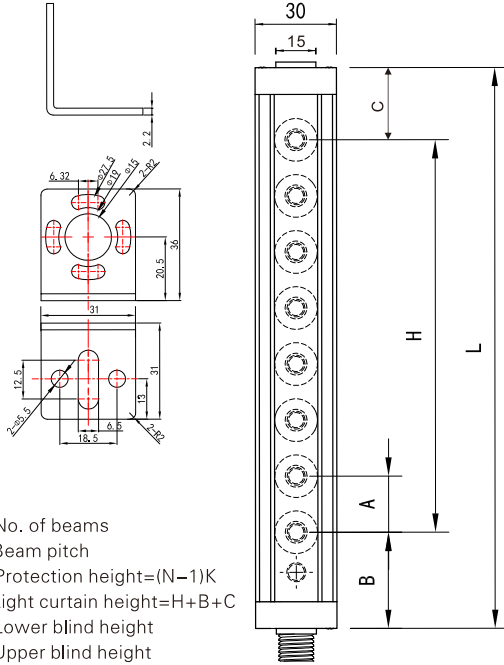
Guidance

- 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

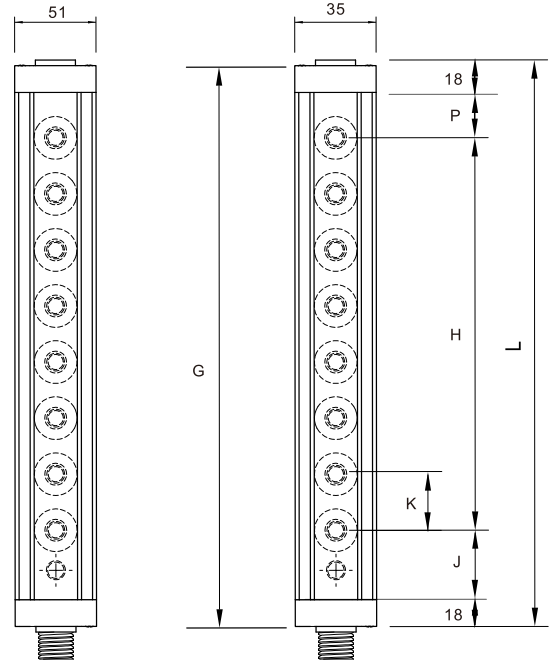
Standard Type

BML Series

Area



N: No. of 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 axes exceeds 32 axes:

H: Detection height
 $H = (N-1) * k$
 L: Light curtain height
 N: No. of 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

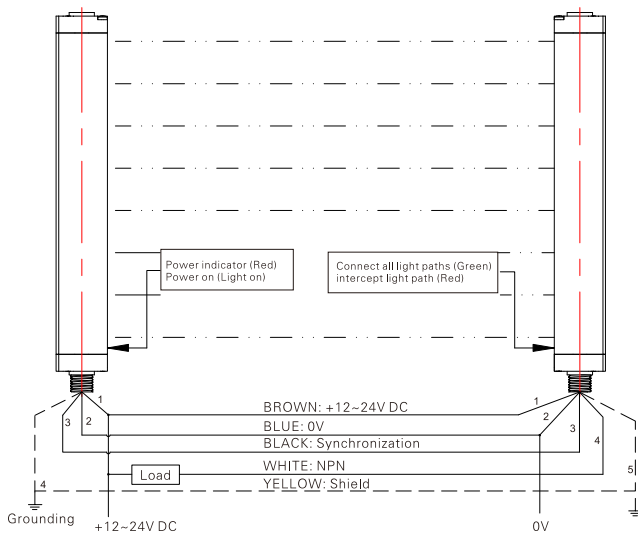
BML40

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

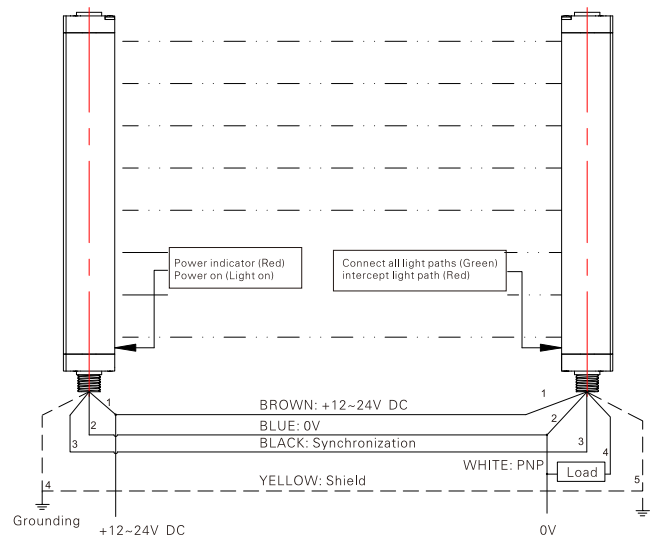
K	14	20	25	30	40
P	7	10	12.5	15	20
J	32	25	25	25	25

Connection Diagram

NPN



PNP





Appearance	
Sectional area	17.2*30mm
NO.of beams	6~32
Protection height	50~1240mm
Protection distance	0.3~3m
Beam pitch	10/14/20/25/30/40mm
Min. sized detectable objects	> ϕ 18/ ϕ 22/ ϕ 33/ ϕ 38/ ϕ 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)
Protective circuit	Reverse polarity, output short circuit protection
Ambient temperature	-10°C~+55°C (No condensation, no freezing)
Ambient humidity	35~85%RH
Anti-interference ability	10000Lux
Insulation resistance	Above 100M Ω (DC 500V megger)
Degree of protection	IP65
Material	Aluminium alloy
Connection	M12 connector
Accessories	Cable length 3m, female (Customization available)

- Fiber Optic
- Slot Sensors
- Photoelectric
- Laser
- Proximity
- Displacement
- Magnetic
- Contact
- Area**
- Ultrasonic
- Vibration
- Temperature
- Cables
- Tester

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

Beam pitch	10mm							
Min. sized detectable objects	> ϕ 18, opaque							
Protection distance	0.3~3m							
NO.of 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	BZL10-T0603NC	BZL10-T0803NC	BZL10-T1003NC	BZL10-T1203NC	BZL10-T1403NC	BZL10-T3203NC
	PNP NC	BZL10-T0603PC	BZL10-T0803PC	BZL10-T1003PC	BZL10-T1203PC	BZL10-T1403PC	BZL10-T3203PC

BZL14

Beam pitch	14mm							
Min. sized detectable objects	> ϕ 22, opaque							
Protection distance	0.3~3m							
NO.of 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	BZL14-T0603NC	BZL14-T0803NC	BZL14-T1003NC	BZL14-T1203NC	BZL14-T1403NC	BZL14-T3203NC
	PNP NC	BZL14-T0603PC	BZL14-T0803PC	BZL14-T1003PC	BZL14-T1203PC	BZL14-T1403PC	BZL14-T3203PC

Top-emitting Type

BZL Series

Area

BZL20

Beam pitch		20mm						
Min. sized detectable objects		> ϕ 28, opaque						
Protection distance		0.3~3m						
NO.of 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	BZL20-T0403NC	BZL20-T0603NC	BZL20-T0803NC	BZL20-T1003NC	BZL20-T1203NC	... ..	BZL20-T3203NC
	PNP NC	BZL20-T0403PC	BZL20-T0603PC	BZL20-T0803PC	BZL20-T1003PC	BZL20-T1203PC	... ..	BZL20-T3203PC

BZL25

Beam pitch		25mm						
Min. sized detectable objects		> ϕ 33, opaque						
Protection distance		0.3~3m						
NO.of 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	BZL25-T0603NC	BZL25-T0803NC	BZL25-T1003NC	BZL25-T1203NC	BZL25-T1403NC	... ..	BZL25-T3203NC
	PNP NC	BZL25-T0603PC	BZL25-T0803PC	BZL25-T1003PC	BZL25-T1203PC	BZL25-T1403PC	... ..	BZL25-T3203PC

BZL30

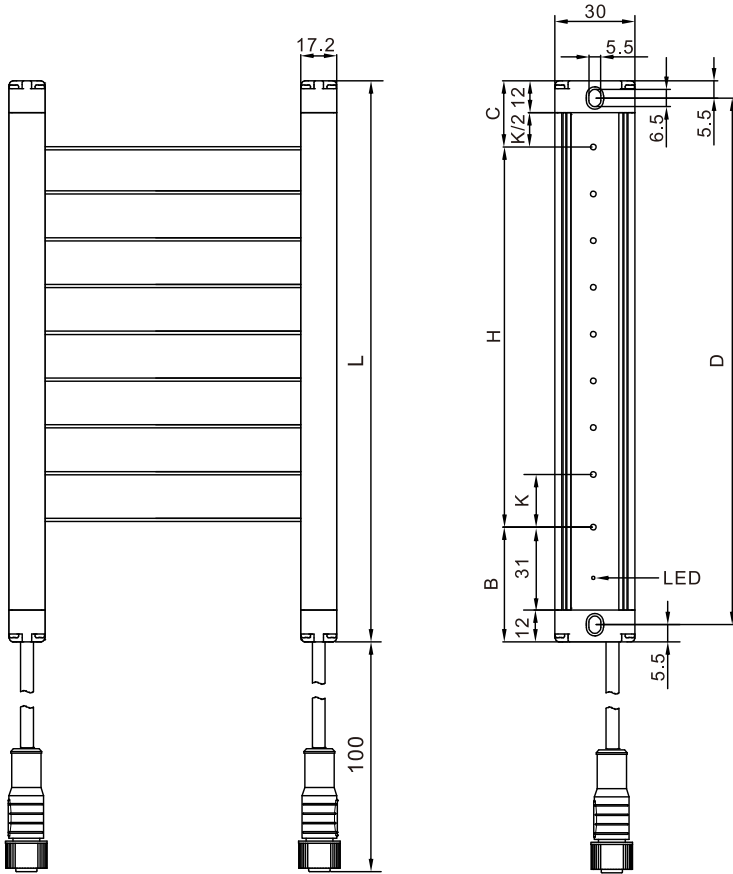
Beam pitch		30mm						
Min. sized detectable objects		> ϕ 38, opaque						
Protection distance		0.3~3m						
NO.of beams		4	6	8	10	12	... ..	32
Protection height		90mm	150mm	210mm	270mm	330mm	... ..	930mm
Light curtain height		154mm	214mm	274mm	334mm	394mm	... ..	994mm
Model NO.	NPN NC	BZL30-T0403NC	BZL30-T0603NC	BZL30-T0803NC	BZL30-T1003NC	BZL30-T1203NC	... ..	BZL30-T3203NC
	PNP NC	BZL30-T0403PC	BZL30-T0603PC	BZL30-T0803PC	BZL30-T1003PC	BZL30-T1203PC	... ..	BZL30-T3203PC

BZL40

Beam pitch		40mm						
Min. sized detectable objects		> ϕ 48, opaque						
Protection distance		0.3~3m						
NO.of 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	BZL40-T0403NC	BZL40-T0603NC	BZL40-T0803NC	BZL40-T1003NC	BZL40-T1203NC	... ..	BZL40-T3203NC
	PNP NC	BZL40-T0403PC	BZL40-T0603PC	BZL40-T0803PC	BZL40-T1003PC	BZL40-T1203PC	... ..	BZL40-T3203PC

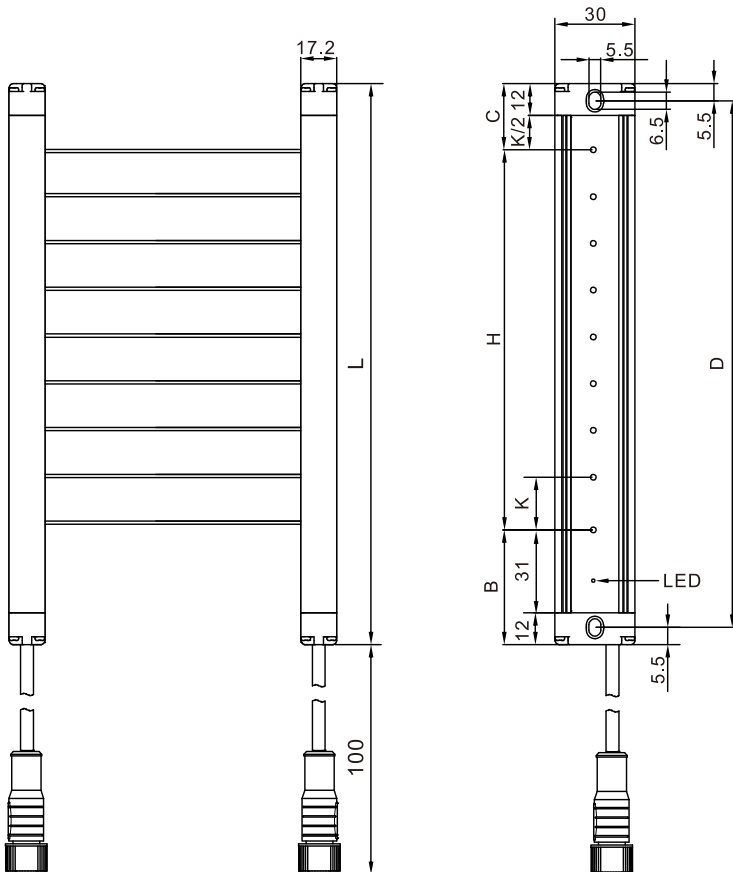
- Fiber Optic
- Slot Sensors
- Photoelectric
- Laser
- Proximity
- Displacement
- Magnetic
- Contact
- Area
- Ultrasonic
- Vibration
- Temperature
- Cables
- Tester
- Guidance
- Light curtains
 - Standard type
 - Top-emitting type
 - Side-emitting type
 - Waterproof type
 - Measuring type
 - Economical 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. of 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. of 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
Vibration
Temperature
Cables
Tester

Guidance

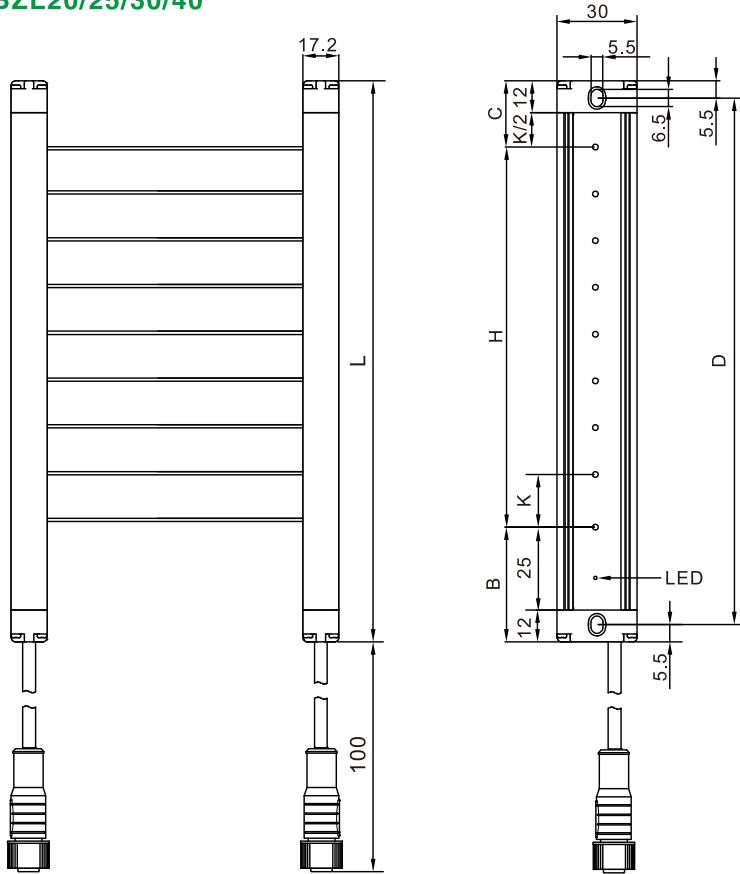
Light curtains
Standard type
Top-emitting type
Side-emitting type
Waterproof type
Measuring type
Economical type
Safety Light Curtain
Beam pitch 10mm
Beam pitch 20mm
Beam pitch 30mm
Beam pitch 40mm
LIDAR scanner
TOF LIDAR scanner
MINI LIDAR scanner
Navigation LIDAR

Top-emitting Type

BZL Series

BZL20/25/30/40

Area

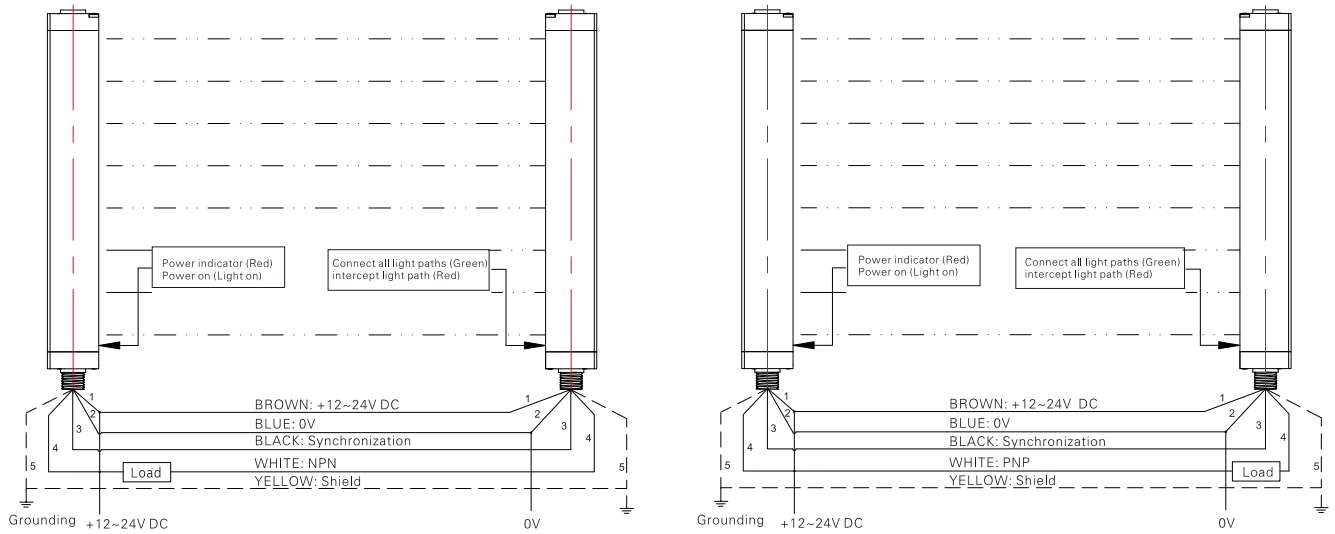


H: Protection Height= (N-1) K
 L: Light curtain total height=(N-1/2)K+49
 N: No. of beams
 K: Beam pitch
 B: Lower blind height=37
 C: Upper blind height=K/2+12
 D: Mounting hole spacing= (L-11)

Connection Diagram

NPN

PNP



- Fiber Optic
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- Laser
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- Displacement
- Magnetic
- Contact
- Area
- Ultrasonic
- Vibration
- Temperature
- Cables
- Tester

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.of beams	6~32
Protection height	50~1240mm
Protection distance	0.3~3m
Beam pitch	20~40mm
Min. sized detectable objects	> $\phi 28/\phi 48$ mm, 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)
Protective circuit	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 Ω , Based on 500V DC megger
Degree of protection	IP65
Material	Aluminium alloy
Connection	M12 connector
Accessories	Cable length 3m, female (Customization available)

- Fiber Optic
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- Photoelectric
- Laser
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- Magnetic
- Contact
- Area**
- Ultrasonic
- Vibration
- Temperature
- Cables
- Tester

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

Beam pitch	20mm							
Min. sized detectable objects	> $\phi 28$, opaque							
Protection distance	0.3~3m							
NO.of beams	6	8	10	12	14	... ..	32
Protection height	100mm	140mm	180mm	220mm	260mm	... ..	620mm
Light curtain height	159mm	199mm	239mm	279mm	319mm	... ..	679mm
Model NO.	NPN NC	BCL20-T0603NC	BCL20-T0803NC	BCL20-T1003NC	BCL20-T1203NC	BCL20-T1403NC	BCL20-T3203NC
	PNP NC	BCL20-T0603PC	BCL20-T0803PC	BCL20-T1003PC	BCL20-T1203PC	BCL20-T1403PC	BCL20-T3203PC

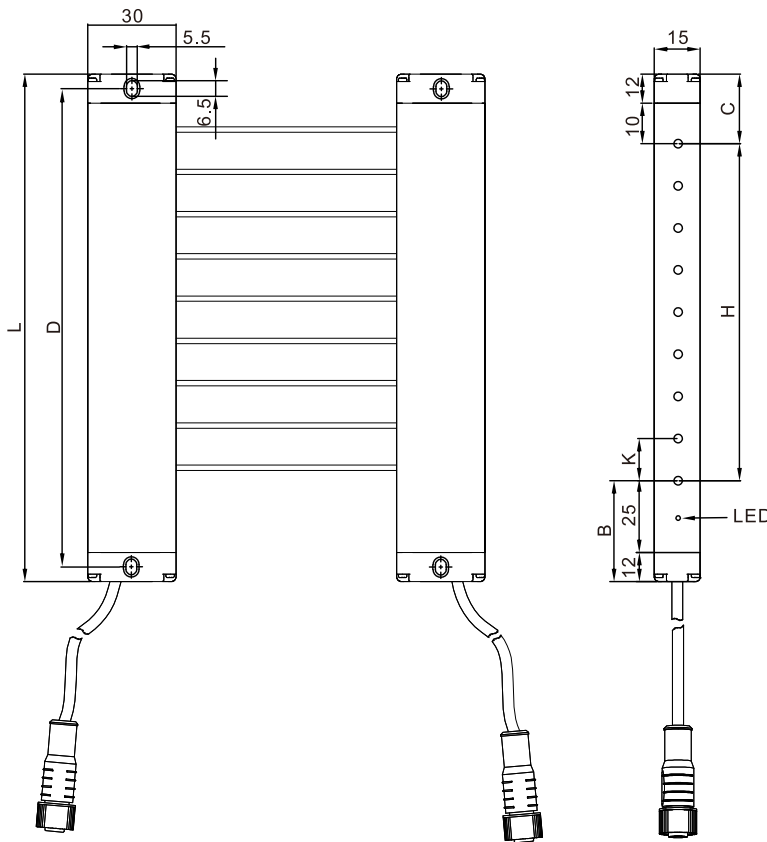
BCL40

Beam pitch	40mm							
Min. sized detectable objects	> $\phi 48$, opaque							
Protection distance	0.3~3m							
NO.of 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	BCL40-T0403NC	BCL40-T0603NC	BCL40-T0803NC	BCL40-T1003NC	BCL40-T1203NC	BCL40-T3203NC
	PNP NC	BCL40-T0403PC	BCL40-T0603PC	BCL40-T0803PC	BCL40-T1003PC	BCL40-T1203PC	BCL40-T3203PC

Side-emitting Type

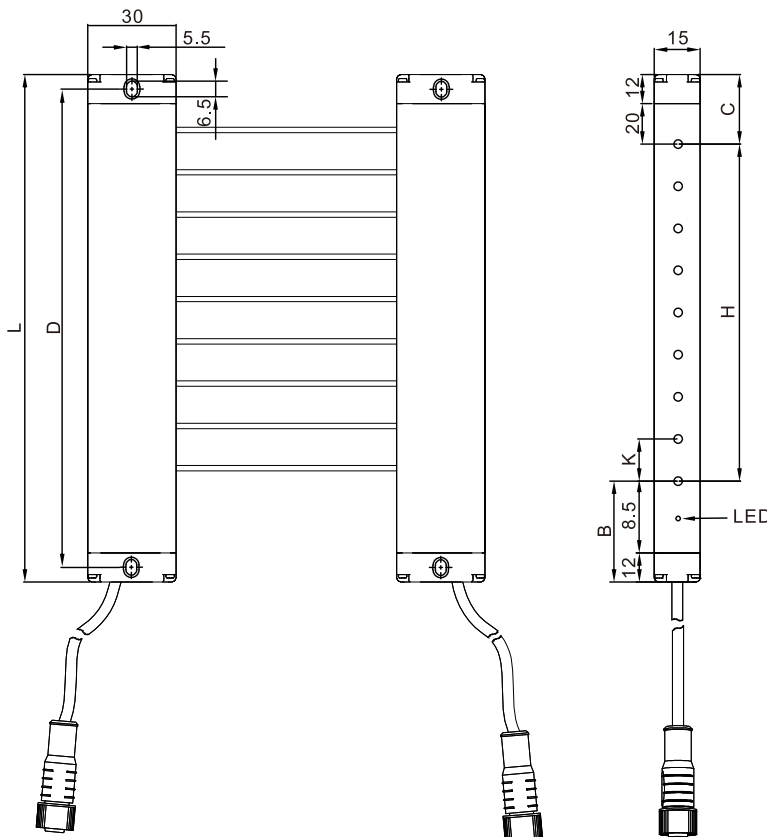
Dimensions(Unit:mm)

BCL20



H: Protection Height= (N-1) K
 L: Light curtain total height=H+59
 N: No. of 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. of beams
 K: Beam pitch=40
 B: Lower blind height=20.5
 C: Upper blind height=32
 D: Mounting hole spacing= (L-11)

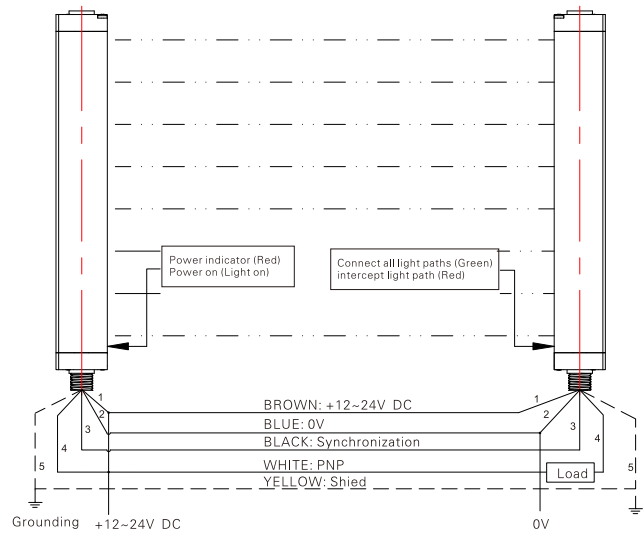
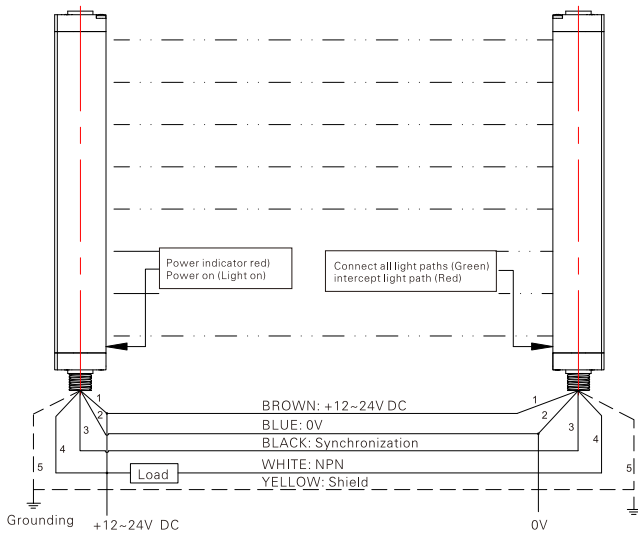
- Fiber Optic
- Slot Sensors
- Photoelectric
- Laser
- Proximity
- Displacement
- Magnetic
- Contact
- Area
- Ultrasonic
- Vibration
- Temperature
- Cables
- Tester

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
- Vibration
- Temperature
- Cables
- Tester

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.of beams	4~32
Protection height	50~1240mm
Protection distance	0.3~3m
Beam pitch	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)
Protective circuit	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	Cable length 3m, female (Customization available)

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

Beam pitch	10mm							
Min. sized detectable objects	> φ 15, opaque							
Protection distance	0.3~3m							
NO.of 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	BPL10-T0603NC	BPL10-T0803NC	BPL10-T1003NC	BPL10-T1203NC	BPL10-T1403NC	BPL10-T3203NC
	PNP NC	BPL10-T0603PC	BPL10-T0803PC	BPL10-T1003PC	BPL10-T1203PC	BPL10-T1403PC	BPL10-T3203PC

BPL14

Beam pitch	14mm							
Min. sized detectable objects	> φ 19, opaque							
Protection distance	0.3~3m							
NO.of 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	BPL14-T0603NC	BPL14-T0803NC	BPL14-T1003NC	BPL14-T1203NC	BPL14-T1403NC	BPL14-T3203NC
	PNP NC	BPL14-T0603PC	BPL14-T0803PC	BPL14-T1003PC	BPL14-T1203PC	BPL14-T1403PC	BPL14-T3203PC

BPL20

Beam pitch	20mm							
Min. sized detectable objects	> ϕ 20, opaque							
Protection distance	0.3~3m							
NO. of 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	BPL20-T0403NC	BPL20-T0603NC	BPL20-T0803NC	BPL20-T1003NC	BPL20-T1203NC	BPL20-T3203NC
	PNP NC	BPL20-T0403PC	BPL20-T0603PC	BPL20-T0803PC	BPL20-T1003PC	BPL20-T1203PC	BPL20-T3203PC

BPL25

Beam pitch	25mm							
Min. sized detectable objects	> ϕ 30, opaque							
Protection distance	0.3~3m							
NO. of 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	BPL25-T0603NC	BPL25-T0803NC	BPL25-T1003NC	BPL25-T1203NC	BPL25-T1403NC	BPL25-T3203NC
	PNP NC	BPL25-T0603PC	BPL25-T0803PC	BPL25-T1003PC	BPL25-T1203PC	BPL25-T1403PC	BPL25-T3203PC

BPL30

Beam pitch	30mm							
Min. sized detectable objects	> ϕ 35, opaque							
Protection distance	0.3~3m							
NO. of 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	BPL30-T0403NC	BPL30-T0603NC	BPL30-T0803NC	BPL30-T1003NC	BPL30-T1203NC	BPL30-T3203NC
	PNP NC	BPL30-T0403PC	BPL30-T0603PC	BPL30-T0803PC	BPL30-T1003PC	BPL30-T1203PC	BPL30-T3203PC

BPL40

Beam pitch	40mm							
Min. sized detectable objects	> ϕ 45, opaque							
Protection distance	0.3~3m							
NO. of 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	BPL40-T0403NC	BPL40-T0603NC	BPL40-T0803NC	BPL40-T1003NC	BPL40-T1203NC	BPL40-T3203NC
	PNP NC	BPL40-T0403PC	BPL40-T0603PC	BPL40-T0803PC	BPL40-T1003PC	BPL40-T1203PC	BPL40-T3203PC

Fiber Optic
Slot Sensors
Photoelectric
Laser
Proximity
Displacement
Magnetic
Contact
Area
Ultrasonic
Vibration
Temperature
Cables
Tester

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

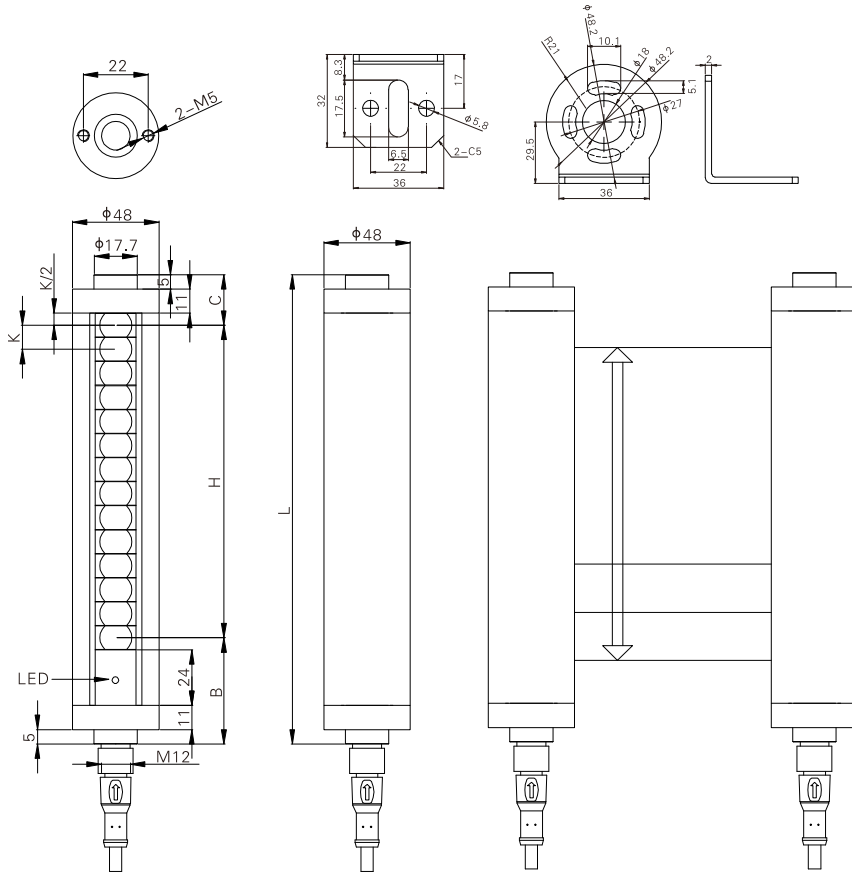
LIDAR scanner

TOF LIDAR scanner
MINI LIDAR scanner
Navigation LIDAR

Waterproof Type

Dimensions(Unit:mm)

Area

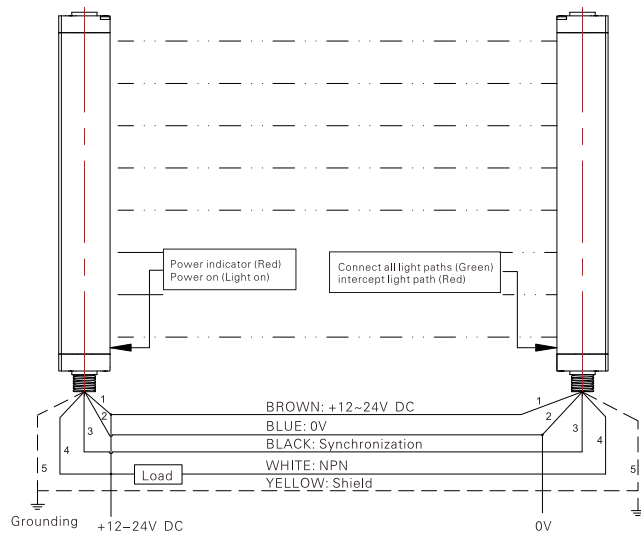


BPL10	BPL25
K: 10	K: 25
H: (N-1)*10	H: (N-1)*25
L: H+68	L: H+69.5
B: 47	B: 41
C: 21	C: 28.5
BPL14	BPL30
K: 14	K: 30
H: (N-1)*14	H: (N-1)*30
L: H+70	L: H+72
B: 47	B: 41
C: 23	C: 31
BPL20	BPL40
K: 20	K: 40
H: (N-1)*20	H: (N-1)*40
L: H+67	L: H+77
B: 41	B: 41
C: 26	C: 36

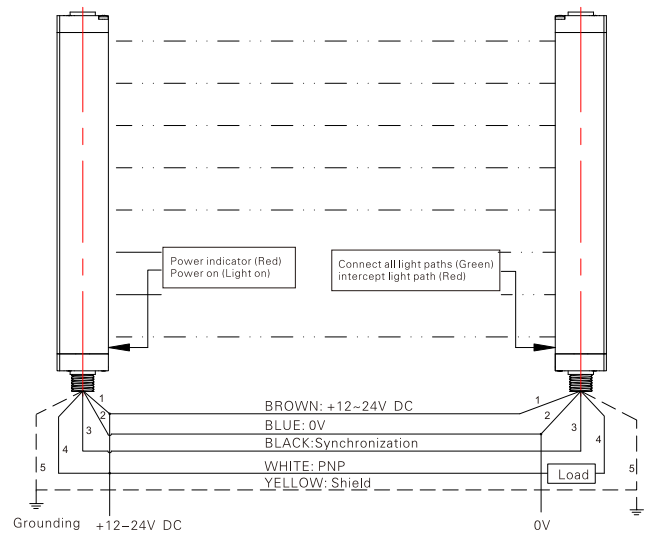
N: No. of beams
 K: Beam pitch
 H: Protection Height=(N-1)K
 L: Light curtain total height=H+B+C
 B: Lower blind height
 C: Upper blind height=K/2+16

Connection Diagram

NPN



PNP



- Fiber Optic
- Slot Sensors
- Photoelectric
- Laser
- Proximity
- Displacement
- Magnetic
- Contact
- Area
- Ultrasonic
- Vibration
- Temperature
- Cables
- Tester

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.of beams	4~1000
Protection height	60~1240mm
Protection distance	0.3~3m
Beam pitch	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
Synchronization type	line synchronization
Response time	≤15ms
Light source	Infrared LED (Modulated)
Protective circuit	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	Cable length 3m, female (Customization available)

- Fiber Optic
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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

BAL02

Beam pitch	2.5mm							
Min. sized detectable objects	> φ 3.75, opaque							
Protection distance	0.3~3m							
NO.of beams	32	64	96	128	160	... ..	448
Protection height	77.5mm	157.5mm	237.5mm	317.5mm	397.5mm	... ..	1117.5mm
Light curtain height	136.5mm	216.5mm	296.5mm	376.5mm	456.5mm	... ..	1176.5mm
Model NO.	Voltage output	BAL02-T3203V	BAL02-T6403V	BAL02-T9603V	BAL02-T12803V	BAL02-T16003V	BAL02-T44803V
	Current output	BAL02-T3203A	BAL02-T6403A	BAL02-T9603A	BAL02-T12803A	BAL02-T16003A	BAL02-T44803A

BAL05

Beam pitch	5mm							
Min. sized detectable objects	> φ 6.5, opaque							
Protection distance	0.3~3m							
NO.of beams	16	24	32	40	48	... ..	120
Protection height	75mm	115mm	155mm	195mm	235mm	... ..	595mm
Light curtain height	136.5mm	176.5mm	216.5mm	256.5mm	296.5mm	... ..	656.5mm
Model NO.	Voltage output	BAL05-T1603V	BAL05-T2403V	BAL05-T3203V	BAL05-T4003V	BAL05-T4803V	BAL05-T12003V
	Current output	BAL05-T1603A	BAL05-T2403A	BAL05-T3203A	BAL05-T4003A	BAL05-T4803A	BAL05-T12003A

Measuring Type

BAL Series

Area

BAL10

Beam pitch	10mm						
Min. sized detectable objects	> ϕ 15, opaque						
Protection distance	0.3~3m						
NO.of beams	8	10	12	14	16	... ..	1000
Protection height	70mm	90mm	110mm	130mm	150mm	... ..	9990mm
Light curtain height	136.5mm	156.5mm	176.5mm	196.5mm	216.5mm	... ..	10056.5mm
Model NO.	Voltage output BAL10-T0803V	BAL10-T1003V	BAL10-T1203V	BAL10-T1403V	BAL10-T1603V	... ..	BAL10-T100003V
	Current output BAL10-T0803A	BAL10-T1003A	BAL10-T1203A	BAL10-T1403A	BAL10-T1603A	... ..	BAL10-T100003A

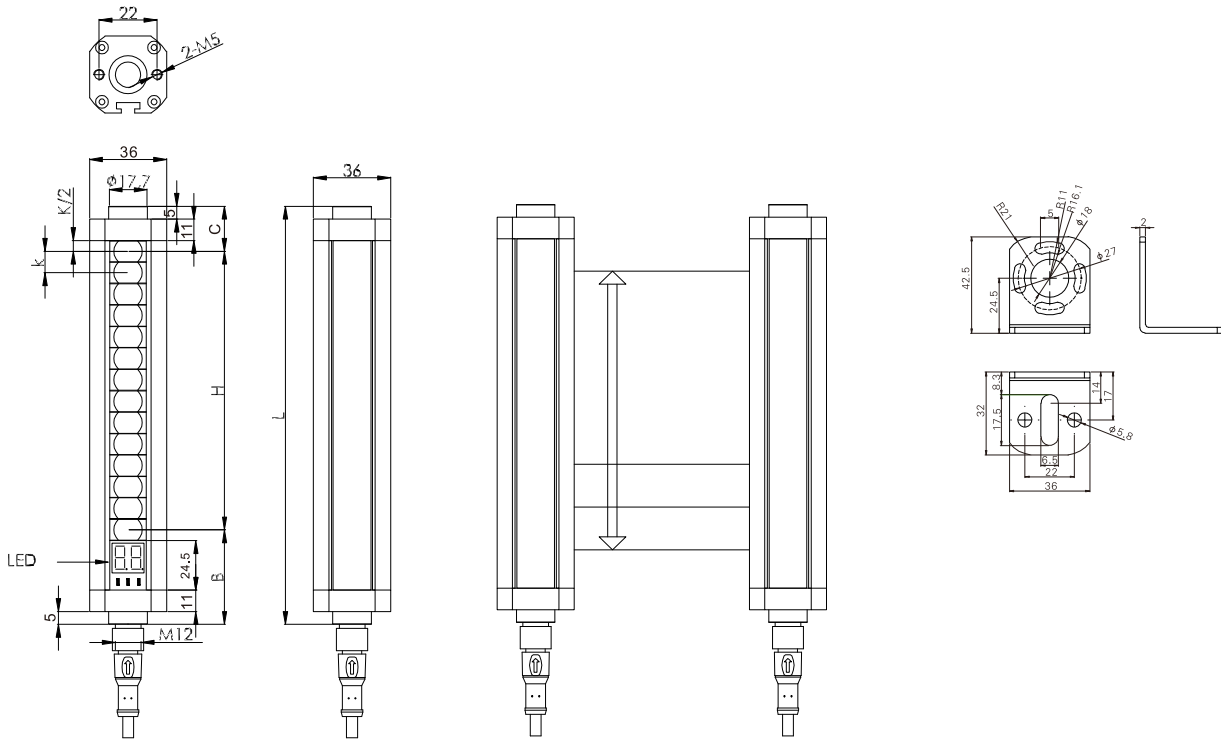
BAL20

Beam pitch	20mm						
Min. sized detectable objects	> ϕ 25, opaque						
Protection distance	0.3~3m						
NO.of beams	4	6	8	10	12	... ..	1000
Protection height	60mm	100mm	140mm	180mm	220mm	... ..	19980mm
Light curtain height	136.5mm	176.5mm	216.5mm	256.5mm	296.5mm	... ..	20056.5mm
Model NO.	Voltage output BAL20-T0403V	BAL20-T0603V	BAL20-T0803V	BAL20-T1003V	BAL20-T1203V	... ..	BAL20-T100003V
	Current output BAL20-T0403A	BAL20-T0603A	BAL20-T0803A	BAL20-T1003A	BAL20-T1203A	... ..	BAL20-T100003A

BAL40

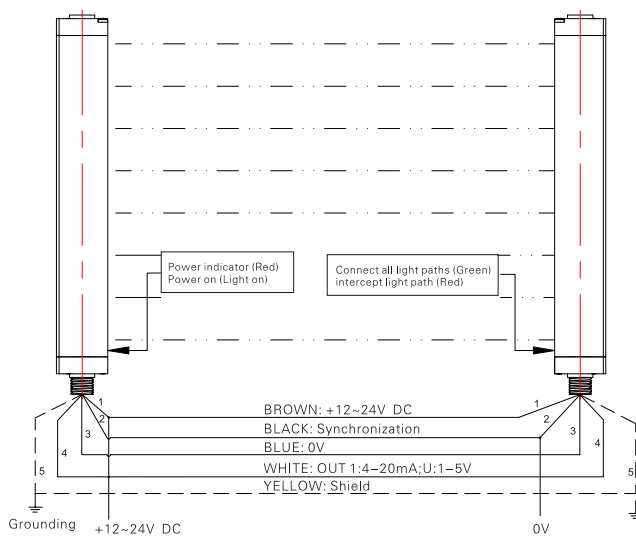
Beam pitch	40mm						
Min. sized detectable objects	> ϕ 45, opaque						
Protection distance	0.3~3m						
NO.of beams	4	6	8	10	12	... ..	1000
Protection height	120mm	200mm	280mm	360mm	440mm	... ..	39960mm
Light curtain height	196.5mm	276.5mm	356.5mm	436.5mm	516.5mm	... ..	40036.5mm
Model NO.	Voltage output BAL40-T0403V	BAL40-T0603V	BAL40-T0803V	BAL40-T1003V	BAL40-T1203V	... ..	BAL40-T100003V
	Current output BAL40-T0403A	BAL40-T0603A	BAL40-T0803A	BAL40-T1003A	BAL40-T1203A	BAL40-T100003A

- Fiber Optic
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- Laser
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- Displacement
- Magnetic
- Contact
- Area
- Ultrasonic
- Vibration
- Temperature
- Cables
- Tester
- Guidance
- Light curtains
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 - 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



H: Protection Height= (N-1) K
 L: Light curtain total height=B+H+C
 N: No. of beams
 K: Beam pitch
 B: Lower blind height=K/2+40.5 (K=40, B=50.5)
 C: Upper blind height=K/2+16 (K=40, C=26)
 D: Mounting hole(M5) spacing=22

Connection Diagram



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- MINI LIDAR scanner
- Navigation LIDAR

Economical Type

BKL Series

Area



NEW!

Appearance

Sectional area	30X30mm
No.of beams	4~256
Protection height	120~3000mm
Protection distance	0.1~6m
Beam pitch	10/20/40mm
Min.sized detectable objects	> ϕ 14/ ϕ 25/ ϕ 45mm, opaque
Operating voltage	12~24V DC \pm 10%
Current consumption	< 200mA
Power consumption	3~8W
Output type	NPN/PNP
Synchronization type	Optical synchronization, line synchronization
Response time	\leq 10ms
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 Ω high resistance meter based on DC500V
Vibration resistance	10~150Hz, double amplitude; 1.5mm, in each of x, y and z direction for 2 hours
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

Beam pitch	10mm							
Min. sized detectable objects	> ϕ 14, opaque							
Protection distance	0.1~6m							
NO.of beams	14	16	18	20	22	...	48	
Protection height	130mm	150mm	170mm	190mm	210mm	...	470mm	
Light curtain height	150mm	170mm	190mm	210mm	230mm	...	490mm	
Model NO.	NPN NC	BKL10-T1406NC	BKL10-T1606NC	BKL10-T1806NC	BKL10-T2006NC	BKL10-T2206NC	...	BKL10-T4806NC
	PNP NC	BKL10-T1406PC	BKL10-T1606PC	BKL10-T1806PC	BKL10-T2003PC	BKL10-T2206PC	...	BKL10-T4806PC

Remarks: maximum number of optical axes 64 axes.

BKL20

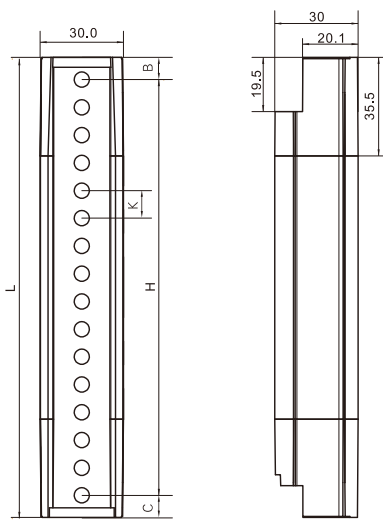
Beam pitch	20mm							
Min. sized detectable objects	> ϕ 25, opaque							
Protection distance	0.1~6m							
NO.of beams	8	10	12	14	16	...	48	
Protection height	140mm	180mm	220mm	260mm	300mm	...	940mm	
Light curtain height	170mm	210mm	250mm	290mm	330mm	...	970mm	
Model NO.	NPN NC	BKL20-T0806NC	BKL20-T1006NC	BKL20-T1206NC	BKL20-T1406NC	BKL20-T1606NC	...	BKL20-T4806NC
	PNP NC	BKL20-T0806PC	BKL20-T1006PC	BKL20-T1206PC	BKL20-T1406PC	BKL20-T1606PC	...	BKL20-T4806PC

Remarks: maximum number of optical axes 128 axes.

BKL40

Beam pitch	40mm							
Min. sized detectable objects	> φ45, opaque							
Protection distance	0.1~6m							
NO. of beams	4	6	8	10	12	... ..	48
Protection height	120mm	200mm	280mm	360mm	440mm	... ..	1880mm
Light curtain height	170mm	250mm	330mm	410mm	490mm	... ..	1930mm
Model NO.	NPN NC	BKL40-T0406NC	BKL40-T0606NC	BKL40-T0806NC	BKL40-T1006NC	BKL40-T1206NC	BKL40-T4806NC
	PNP NC	BKL40-T0406PC	BKL40-T0606PC	BKL40-T0806PC	BKL40-T1006PC	BKL40-T1206PC	BKL40-T4806PC

Dimensions(Unit:mm)



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

$$B = 1/2K + 3mm$$

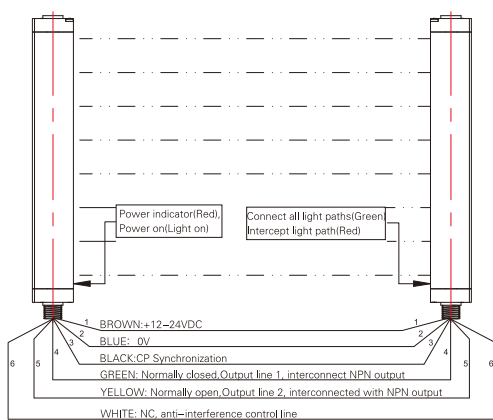
$$C = 1/2K + 3mm$$

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

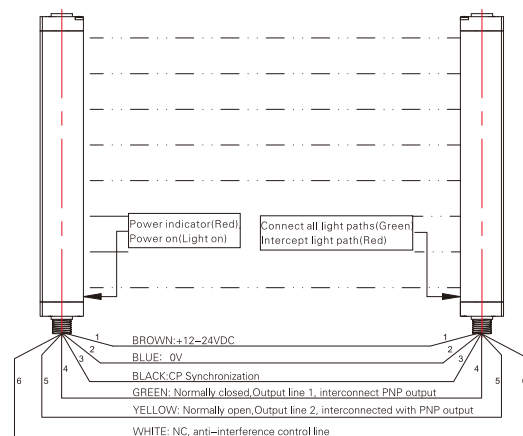
$$L = N * K + 6mm$$

Connection diagram

NPN



PNP



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Guidance

Light curtains

- Standard type
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- 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



Appearance	
Security Level	Type 4 Cat.4 PLe
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.of beams	4~72
Protection height	130~3000mm
Protection distance	0.1~40m
Beam pitch	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 \pm 10%
Current consumption	Transmitter \leq 300mA; Receiver \leq 100mA (Non load)
Output type	PNP (Two groups)
EMC EMS	Comply with the requirements of Class 4 safety light curtain in GB / T19436-1 and GB4584-2007
EMC EMI	Comply with EN61326-1 and EN55011 electromagnetic field requirements for industrial sites
Response time	\leq 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: $-10^{\circ}\text{C} \sim +55^{\circ}\text{C}$ (No freezing and no condensation) ; Storage: $-10^{\circ}\text{C} \sim +55^{\circ}\text{C}$
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 \pm 0.05mm; Scanning times: three axes, 20 times per axis
Impact resistance	Acceleration 10g, pulse duration: 16ms, number of collisions: three axes, 1000 \pm 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 integrated 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 signal.

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.

SAF10

Beam pitch	10mm							
Min. sized detectable objects	φ 18, opaque							
Protection distance	Type A: 0~3m; Type B: 0~12m; Type C: 8~20m;							
NO.of 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 ⁰³ PC	SAF10-T20 ⁰³ PC	SAF10-T24 ⁰³ PC	SAF10-T28 ⁰³ PC	SAF10-T32 ⁰³ PC	SAF10-T72 ⁰³ PC
	Other	03: Type A 0~3m		12: Type B 0~12m		20: Type C 8~20m		

SAF20

Beam pitch	20mm							
Min. sized detectable objects	φ 28, opaque							
Protection distance	Type A: 0~3m; Type B: 0~12m; Type C: 8~20m;							
NO.of 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 ⁰³ PC	SAF20-T10 ⁰³ PC	SAF20-T12 ⁰³ PC	SAF20-T14 ⁰³ PC	SAF20-T16 ⁰³ PC	SAF20-T72 ⁰³ PC
	Other	03: Type A 0~3m		12: Type B 0~12m		20: Type C 8~20m		

SAF30

Beam pitch	30mm							
Min. sized detectable objects	φ 38, opaque							
Protection distance	Type A: 0~3m; Type B: 0~12m; Type C: 8~20m;							
NO.of 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 ⁰³ PC	SAF30-T08 ⁰³ PC	SAF30-T10 ⁰³ PC	SAF30-T12 ⁰³ PC	SAF30-T14 ⁰³ PC	SAF30-T72 ⁰³ PC
	Other	03: Type A 0~3m		12: Type B 0~12m		20: Type C 8~20m		

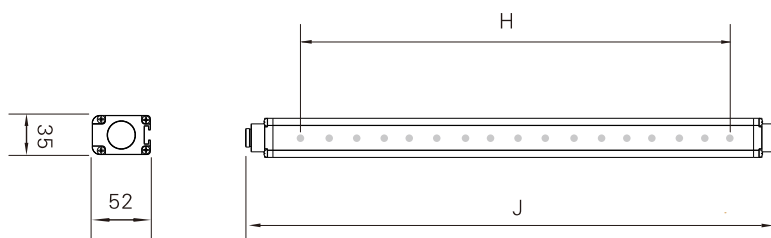
SAF40

Beam pitch	40mm							
Min. sized detectable objects	φ 48, opaque							
Protection distance	Type A: 0~3m; Type B: 0~12m; Type C: 8~20m;							
NO.of 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 ⁰³ PC	SAF40-T06 ⁰³ PC	SAF40-T08 ⁰³ PC	SAF40-T10 ⁰³ PC	SAF40-T12 ⁰³ PC	SAF40-T72 ⁰³ PC
	Other	03: Type A 0~3m		12: Type B 0~12m		20: Type C 8~20m		

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 - Beam pitch 20mm
 - Beam pitch 30mm
 - Beam pitch 40mm
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 - TOF LIDAR scanner
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Dimensions(Unit:mm)

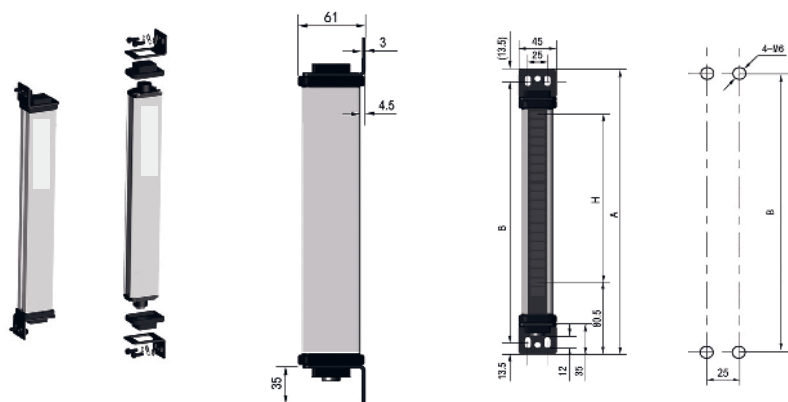


H: Protection height
J: Length of light emitter and light receiver

Safety Light Curtain

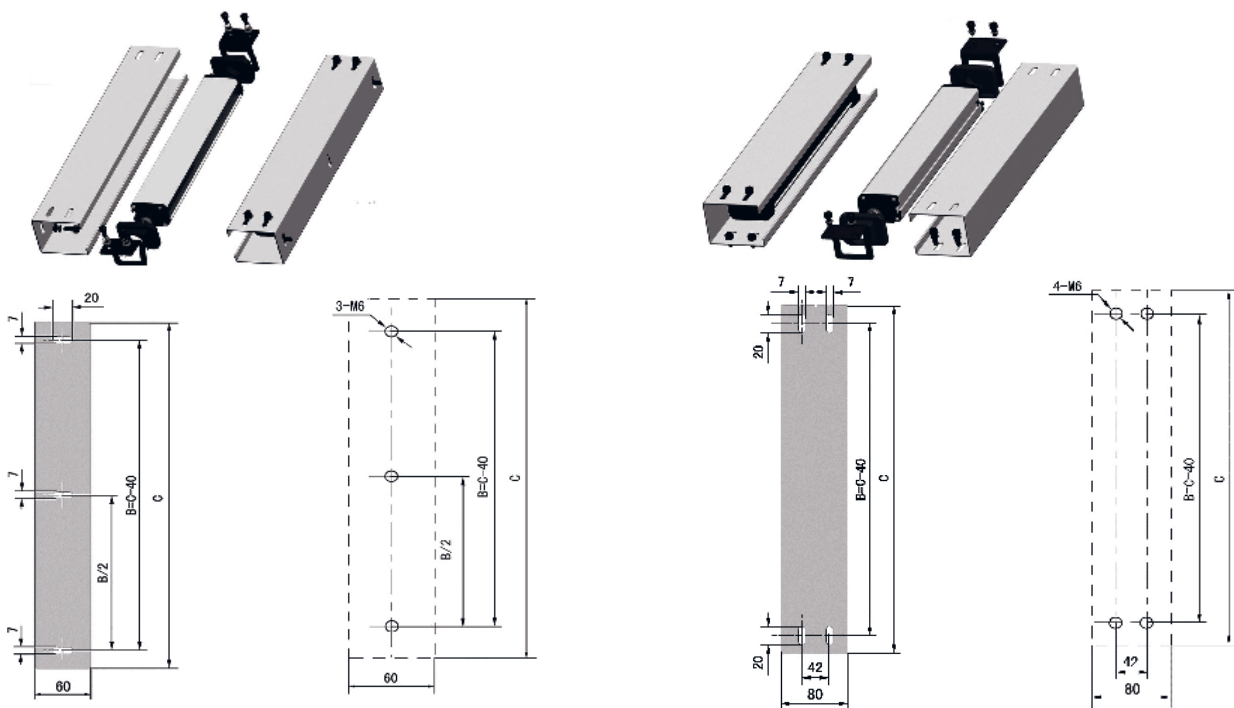
Installation Method

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	

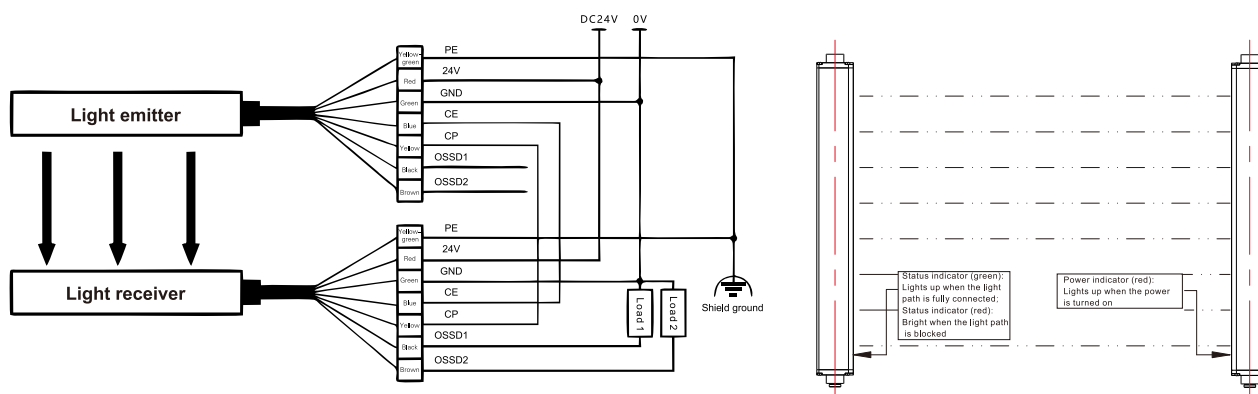
Protective cover installation method (FZC)



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.

LiDAR Scanner

TOF LiDAR Scanner

TOF Principle

NEW!



Area

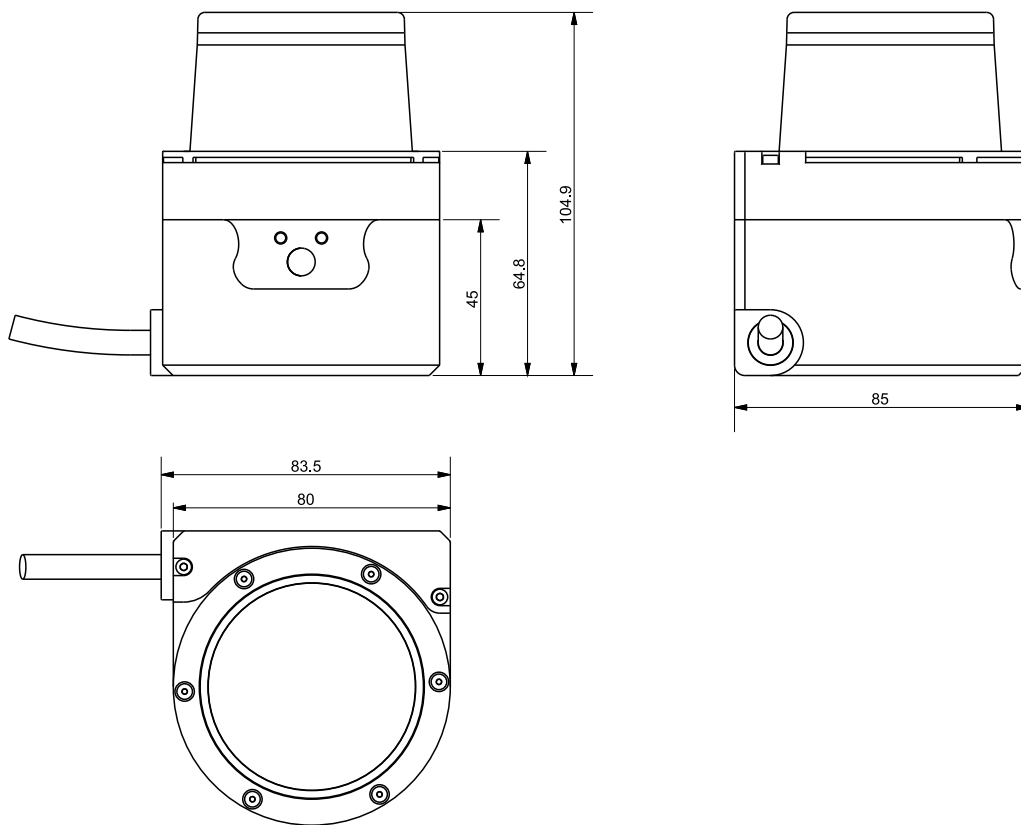
Appearance			
Light source		Infrared laser(905nm)	
Laser safety level		Class 1 (GB7247.1-2012, Eye-safe IEC)	
Laser spot light diameter		8mm	
Laser spot light scan angle		12.5 mrad	
Scanning angle range		300°	
Scanning frequency		25Hz(system default)/12.5Hz/6.25Hz	
Scanning angle resolution		0.5° (system 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)
		Monitoring mode: Point number monitoring / target width monitoring / contour monitoring	
		Monitor signal level: Attention / warning / alarm	
Built-in application		Number of regional groups: 16 groups, support self-learning background exclusion	
Regional monitoring		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°C, 2h (GB/T 2423.3)	
Operating temperature range		-25°C~+50°C	
Storage temperature range		-30°C~+70°C	
Ambient illumination range		≤70,000lux	
Model NO.		AS-21C	AS-41C

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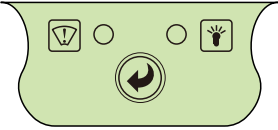





Power Interface

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

Accessories

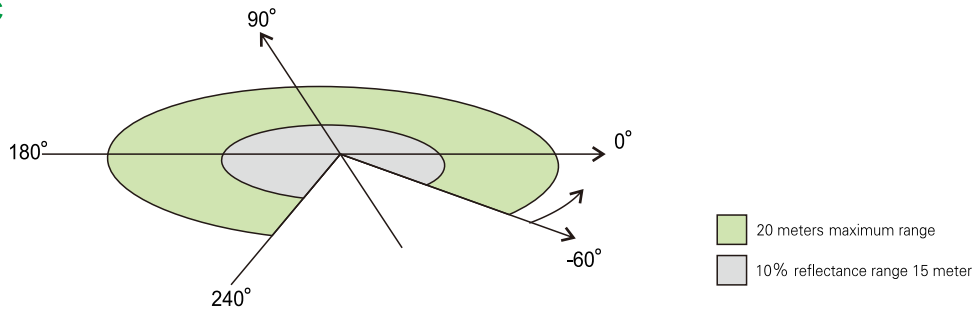
			Mounting screws, gasket and easy installation tool
Composite Bracket: AS-21C-AT 1 Piece	Power Cable: AS-21C-EC 1 Strip	Crystal Protective Cover: AS-21C-WJ 1 Piece	Accessories: M4x8 1 Set

	Name	Instructions
	 ERR	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 ¹
	 HTR	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 ² ◆ Flash3 (2.5Hz) : Ready to start self-learning ²
	 SLR	Operation button ◆short press (1s~5s)Start background self-learning ◆Long press(≥ 6s) : Delete background

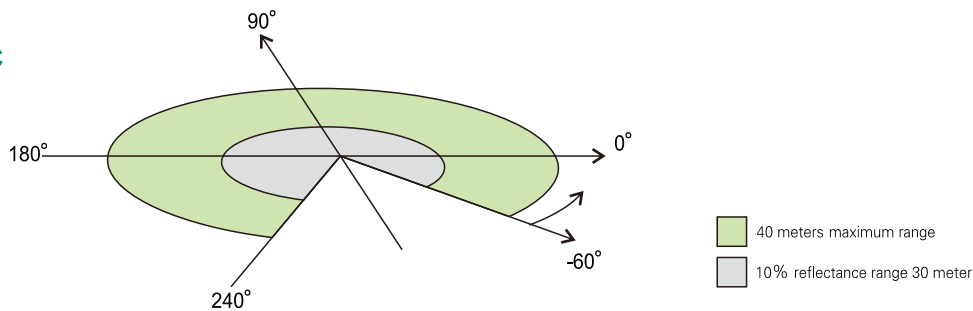
1:Including being blocked by dense fog or the detection area being blocked.
 2:Including "background self-learning" and "normal goal self-learning"(customized function).

Measuring coordinate system/scan range/range

AS-21C



AS-41C



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 - Navigation LIDAR

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) Statistical error (1σ)	
	± 5cm (1m~15m) ± 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

Vibration

Temperature

Cables

Tester

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

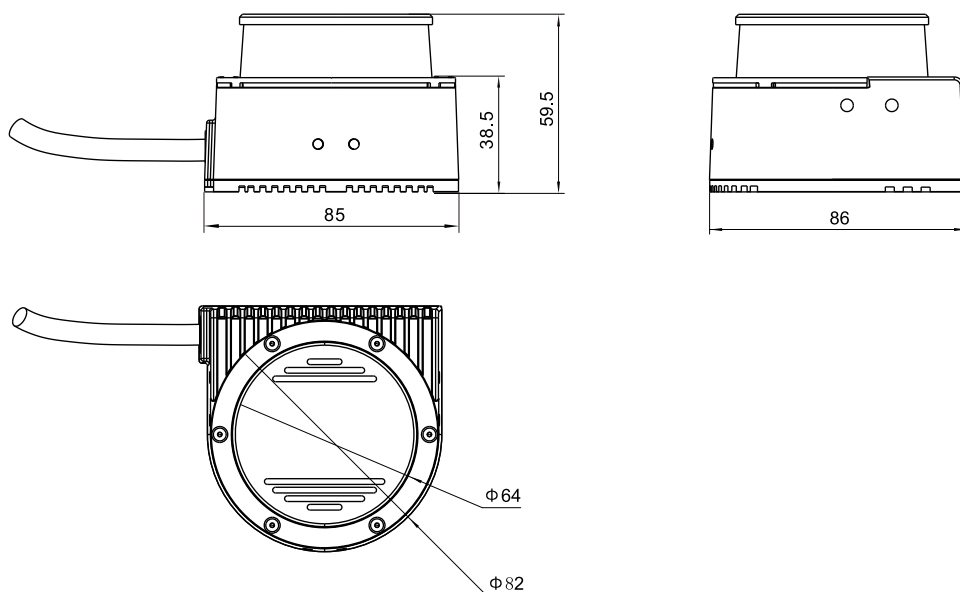
TOF LiDAR scanner

MINI LiDAR scanner

Navigation LiDAR

Dimensions

Unit:mm



Power Interface

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

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			

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

LiDAR scanner

- TOF LiDAR scanner
- MINI LiDAR scanner
- Navigation LiDAR

LiDAR Scanner

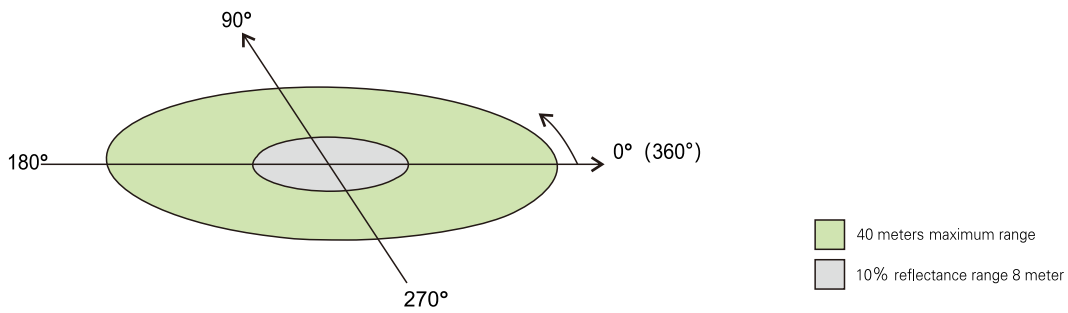
Indicators and Operation Buttons

Area

	Name	Instructions
	ERR	Work fault indicator <ul style="list-style-type: none"> ◆ Startup status: bright (About 27s) ◆ Off: No fault ◆ Steady light: Internal fault ◆ Long flicker (0.5 Hz): High temperature / low temperature alarm ◆ Short flicker (1Hz): Transmissive cover is dirty/occluded¹
	HTR	Work status indicator <ul style="list-style-type: none"> ◆ Startup state: off ◆ Off: The device does not start measurement/ready to reboot ◆ Bright: Normal measurement of equipment ◆ Flashing 1 (0.5Hz): Monitor signal output ◆ Flashing 2 (1Hz): Self-learning² ◆ Flashing 3 (2.5Hz) : Ready for self-learning²

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



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LiDAR scanner

TOF LiDAR scanner

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Navigation LiDAR

TOF principle

NEW!



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		1M Ω (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: 1.2/50 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~+50°C
Storage temperature range		-30°C~+70°C
Ambient illumination range		≤80,000lux
Model NO.		AS-100C

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Safety Light Curtain
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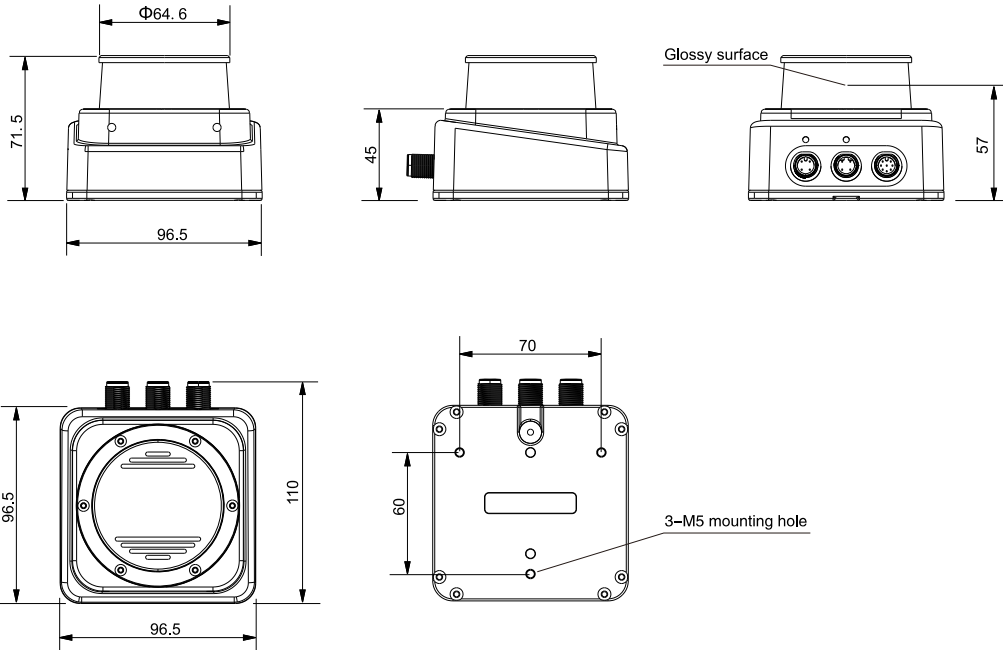
LiDAR scanner
TOF LiDAR scanner
MINI LiDAR scanner
Navigation LiDAR

LiDAR Scanner

Dimensions

Unit:mm

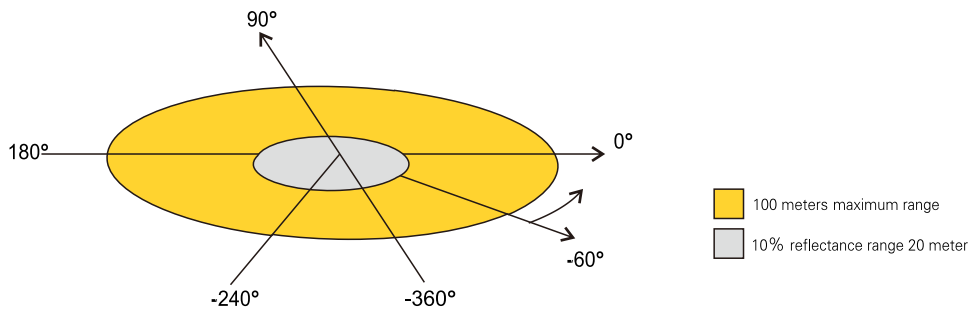
Area



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








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Indicator Lights and Operation Buttons

	Name	Description
 <p>HTR ERR</p>	PWR	Power Indicator <ul style="list-style-type: none"> ◆ Normal off: no power / power is invalid ◆ Constant light: power on
	LNK	Ethernet indicator <ul style="list-style-type: none"> ◆ Always off: no network connection ◆ Always on: there is a network connection
 <p>PWR LNK</p>	ERR	Work failure indicator <ul style="list-style-type: none"> ◆ Starting state: bright (about 24 seconds) ◆ Always off: no fault ◆ Always on: internal fault/measurement abnormal¹ ◆ Long flashing (0.5Hz): high temperature/low temperature alarm ◆ Short flashing (1Hz): Dirty/obstructed light transmission cover
	HTR	Normal measurement indicator <ul style="list-style-type: none"> ◆ 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-IOCB A	I/O cable: AS-100C-IOCB A	Parts and accessories: M5x8 set

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- LIDAR scanner**
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- MINI LIDAR scanner