

**Digital, photoelectric beam detector
SASO-PB200L**

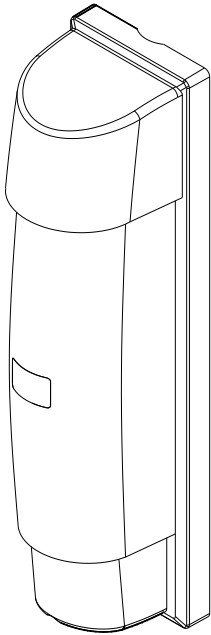
We appreciate your purchase of our photoelectric beam detector. This detector will provide long and dependable service when properly installed. Please read this instruction manual carefully for correct and effective use.



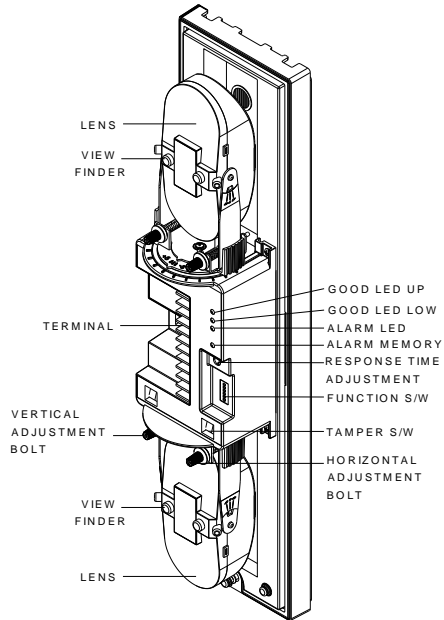
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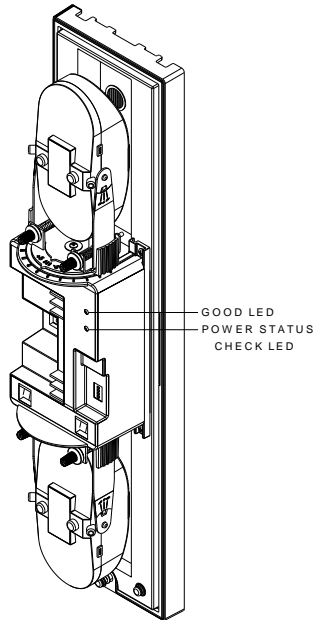
1. Description



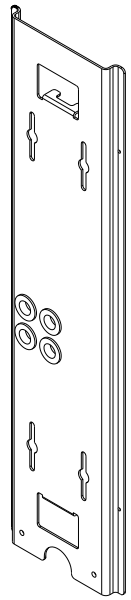
FRONT COVER



RECEIVER

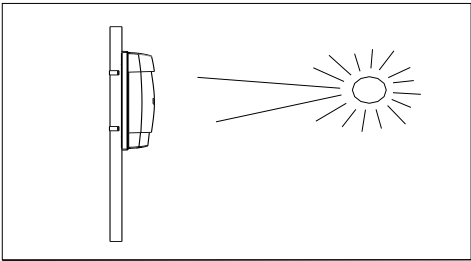


TRANSMITTER

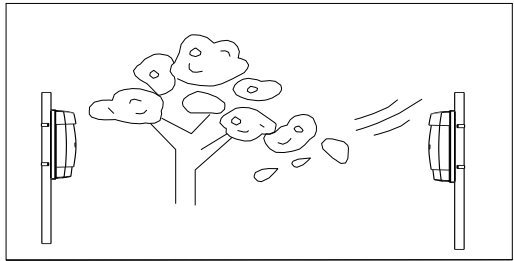


BACK PLATE

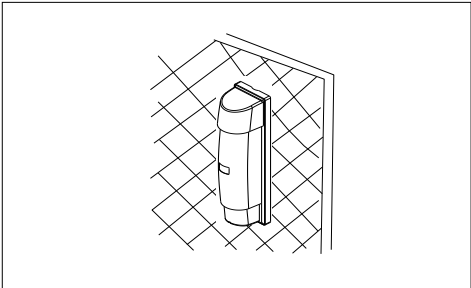
2. Cautions on Installation



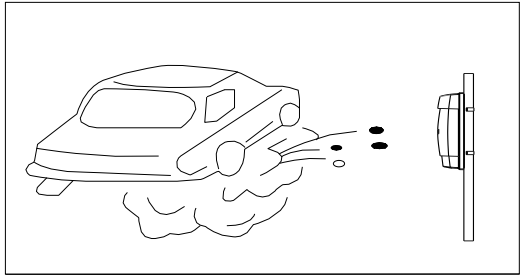
Avoid strong light from sun, auto-mobile head-lights etc. shining on transmitter or receiver



Do not install in a site where beam may be interrupted by trees or plants, consider seasonal changes.



Do not install in places where units may be splashed continuously by dirty water or direct sea spray.

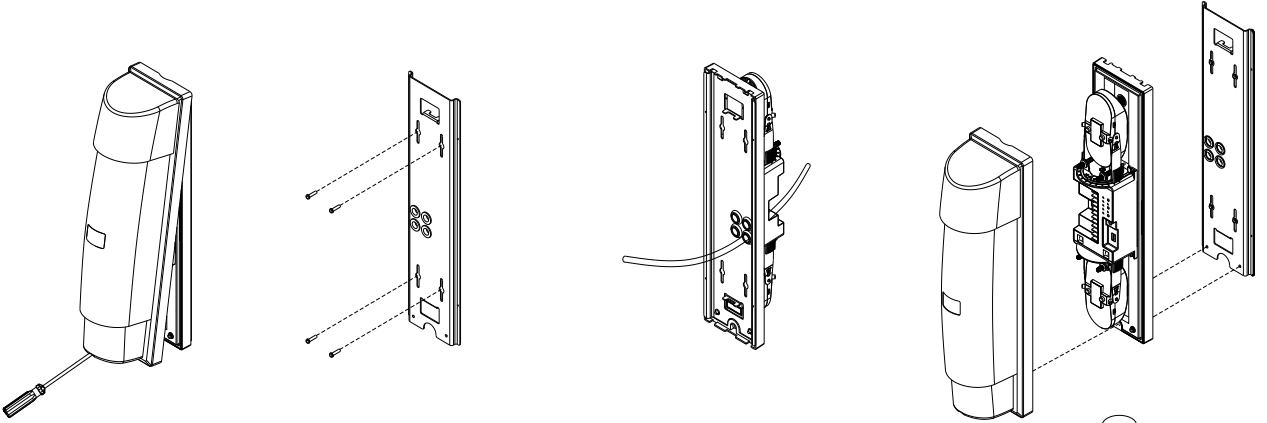


Do not install the unit on unsteady surfaces.

3. Installation

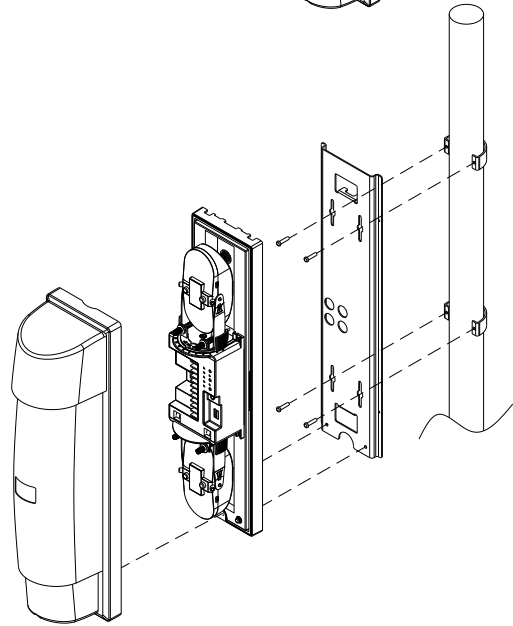
3-1. Wall mount

- ① Remove cover from unit by unscrewing bolts
- ② Put the plate against wall and secure the plate with 4mm screws.
- ③ Pull wires through the holes on the rear as the figure, connect wires to terminal, attach the unit to the mounting plate, and screw it
- ④ After wiring is completed, adjust alignment, check operation, and attach cover.

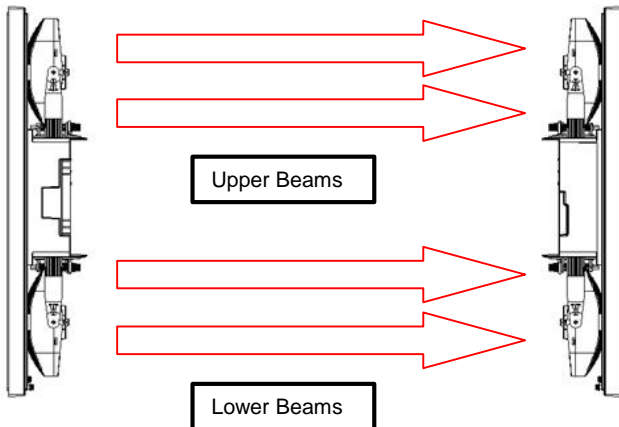


3-2. Pole mount (Pole size : $\Phi 38 \sim \Phi 44\text{mm}$)

- ① Remove cover from unit by unscrewing bolts
- ② Attach pole brackets to pole and secure to mounting plate with screws.
- ③ Attach the unit to the mounting plate
- ④ Pull through wire.
- ⑤ Connect terminals.
- ⑥ After wiring is completed, adjust alignment, check operation, and attach cover.



4. Quad Synchronized Pulse Beams

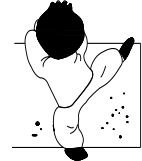
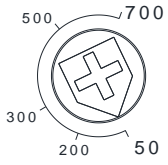


- In order for an alarm to be activated, both beams on upper or lower pairs should be blocked at response time of 700ms.
- When only one beam is blocked, alarm will not be activated.
- When all 4 beams are blocked at response time of 50ms ~ 700ms, alarm will be activated.
- This is to prevent a false alarm when leaves, a small bird, or any objects block one beam.

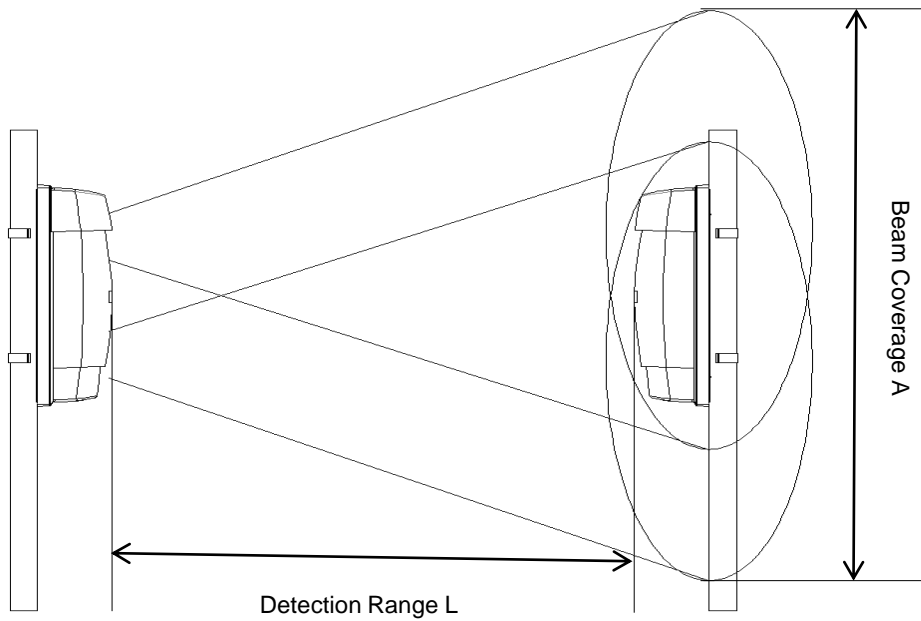
5. Response Time

Response Time Adjustment

- 1. Sprint (6.9m/s) - 50msec.
- 2. Quick Walk(1.2m/s) - 200msec.
- 3. Normal Walk (0.7m/s) - 300msec.
- 4. Slow Walk(0.5m/s) - 500msec.
- 5-6. Climbing Wall (0.3m/s) - 700msec.



6. Range of Beam Coverage

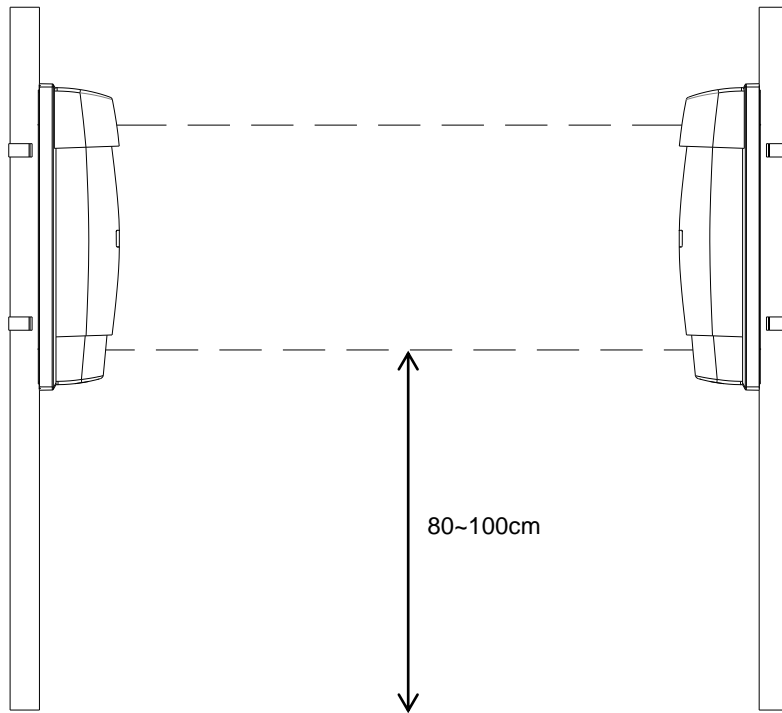


MODEL	L	A
SASO-PB200L	100m	3m
	200m	6m

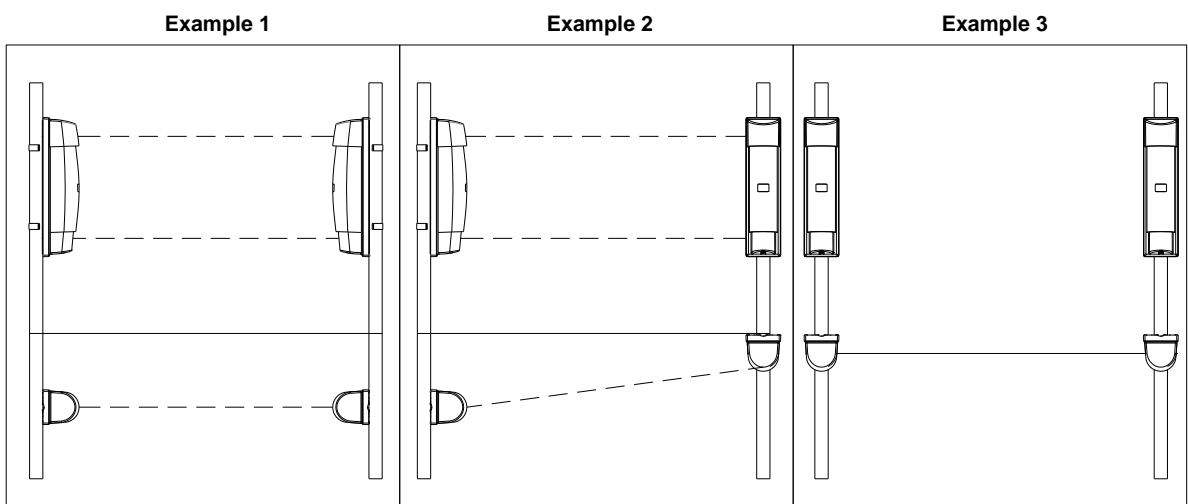
7. Mounting Height

• Heights of Installation

Using pole brackets, install the detector at a height of 80~100cm from the ground for optimal detection of intruder.



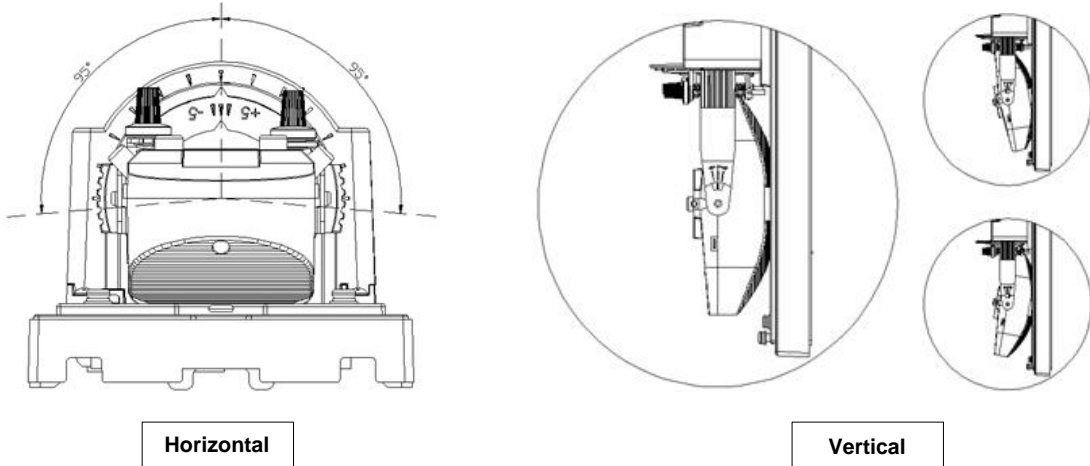
• Installation Examples



8. Optical Alignment

Read voltage from monitor jack with volt-meter(digital) to confirm optical alignment until the voltage reaches the highest level (3.5~4.0V).

1. Supply power with cover detached. Align Transmitter and Receiver to face each other using angle adjustment.



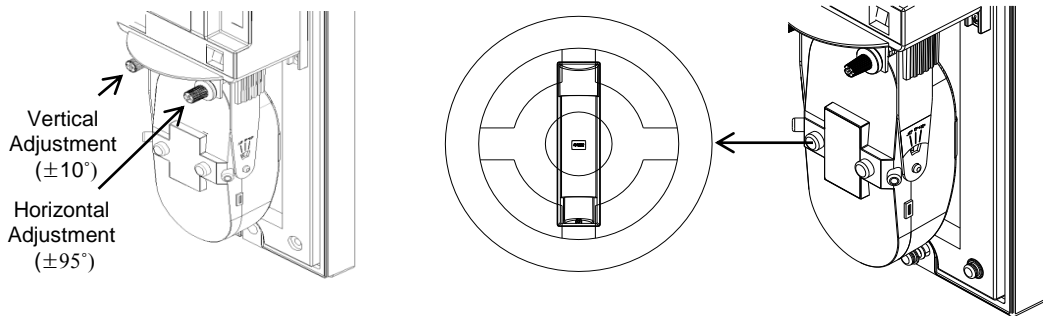
Horizontal

Vertical

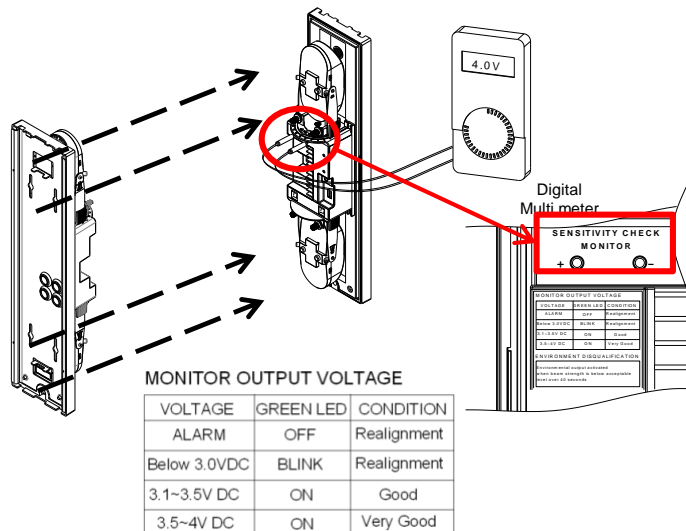
- Horizontal angle can be adjusted within the range of 0° to $\pm 90^\circ$ • Vertical angle can be adjusted within the range of -10° to $+10^\circ$
- One click of movement changes the angle by 3°

2. After the first approximate alignment, use the view finder and adjustment bolts for more accurate alignment

- Look through the view finder on either side, and line-up optics horizontally and vertically by rotating the adjustment bolt, until the opposite unit appears in the center of the view finder.
- Perform the alignment process for both upper and lower optical units of the transmitter and receiver



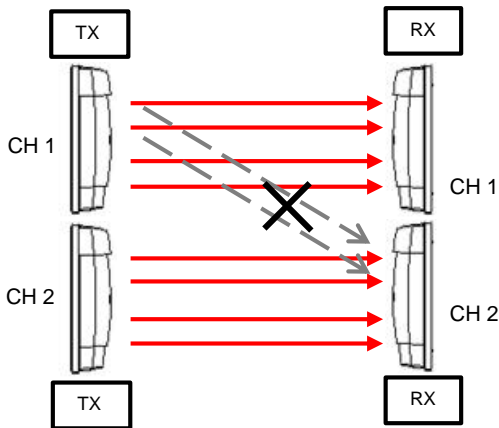
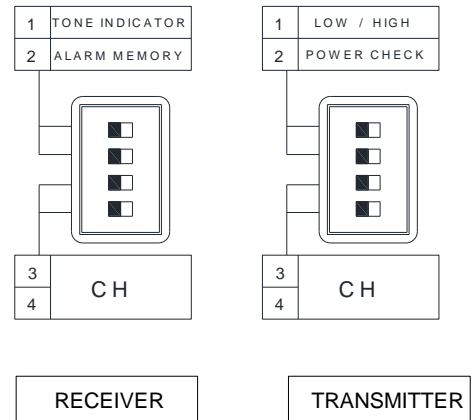
3. To confirm the correct alignment, insert a tester in a monitor jack and check monitor output voltage. Continue aligning using the above method until the voltage reading on the tester reaches above 3.5V.



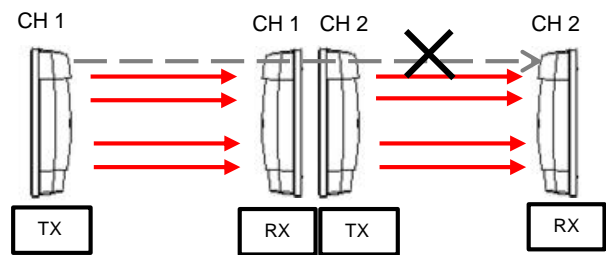
9. Channel Setting

- Selectable 4 channels prevents mutual interference between sets, allowing multiple application of the beams.
- Make sure to set the transmitter and receiver to the same channel.

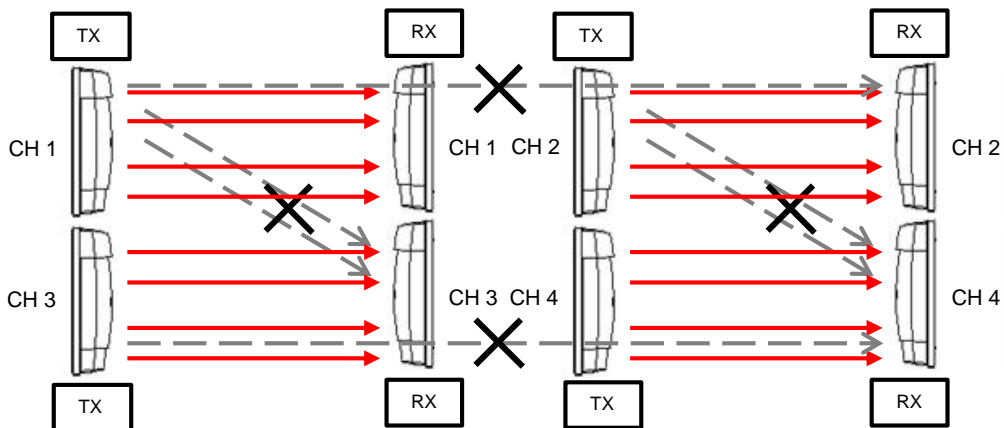
CH	Setting
1	
2	
3	
4	



DOUBLE LEVEL DETECTION



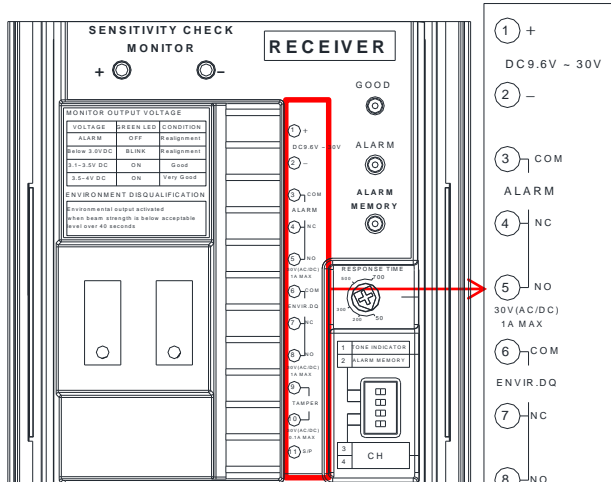
STRAIGHT LINE DETECTION



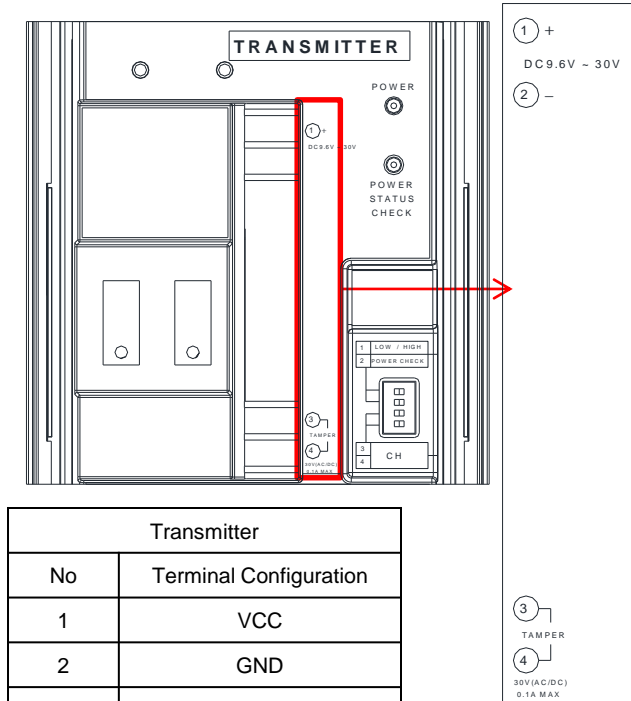
DOUBLE LEVEL STRAIGHT LINE DETECTION

- CH1 beam that the transmitter (upper TX) generates will not be recognized by the receiver set with CH2 (lower RX).

10. Terminal Arrangement



Receiver		
No	Terminal Configuration	
1	VCC	
2	GND	
3	ALARM	COM
4		NC
5		NO
6	ENVIR. DQ	COM
7		NC
8		NO
9	TAMPER	
10		
11	SPARE	

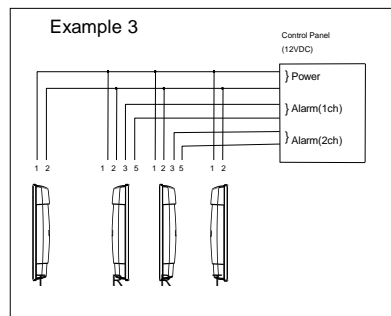
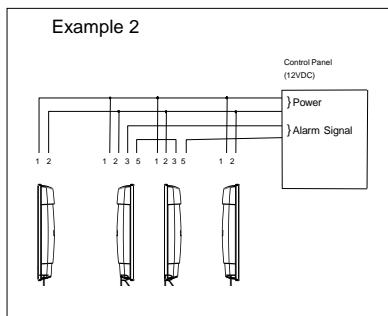
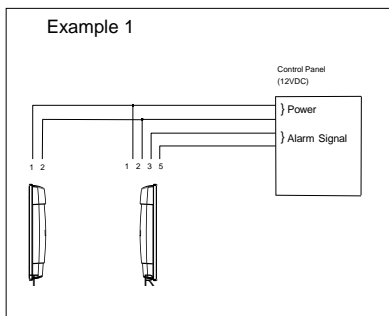


Transmitter		
No	Terminal Configuration	
1	VCC	
2	GND	
3	TAMPER	
4		

• Wiring distance

Wiring size	Voltage	
	DC	12V
AWG 22(Dia 0.65mm)	145m	
AWG 20(Dia 0.8mm)	225m	
AWG 18(Dia 1.0mm)	350m	
AWG 16(Dia 1.1mm)	500m	

• Connection



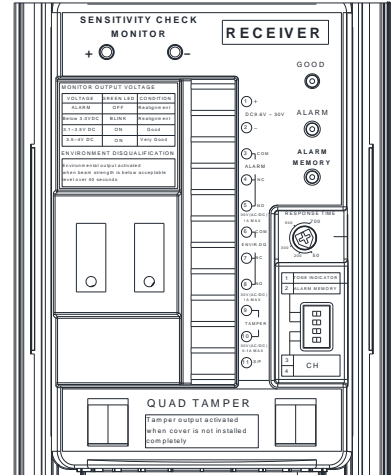
- Maximum wiring distance when two or more sets are connected is the value above divided by the number of sets.
- The signal line can be wired to distance of up to 1,000m with AWG22 telephone line.

11. Environmental Disqualification Output

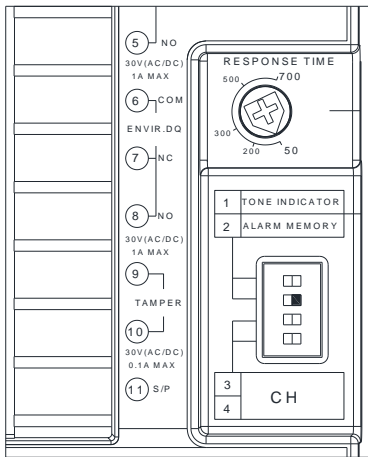
ENVIRONMENT DISQUALIFICATION

Environmental output activated when beam strength is below acceptable level over 40 seconds

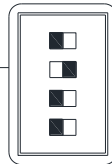
- When beam strength continues to be below 1.0V for more than 40 seconds by various of reasons, the environmental output will be activated, providing a notice that there have been impairments to the unit.
- For example, when the alignment of the unit has been tilted by animals, hurricane, or an object is blocking one of the beams, the receiver outputs an environmental output.



12. Alarm Memory Function



2 ALARM MEMORY

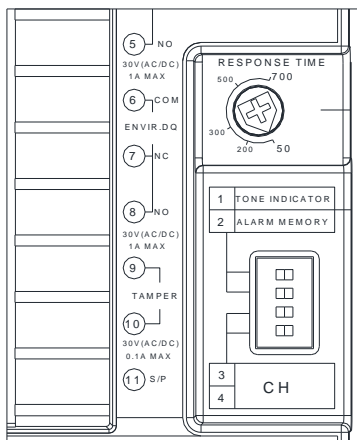


- When multiple sets of detectors are installed, alarm memory LED will blink for up to 24 hours, allowing users to check which set the alarm was activated.

- After checking which set the alarm was activated from, you can reset this function by 1) disable the function by selecting OFF on dip switch #2, 2) pressing tamper switch. The function will also be rest automatically 24 hours after the alarm.

13. Tone Indicator

- This function aids installation by generating the different intervals of tones based on the strength of beam that the receiver receives. When the monitor jack voltage is above 3.0V, which is good enough strength, then the tone is continuous. The lower voltage, which means less strength, results in the shorter interval of the tones.



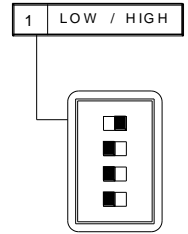
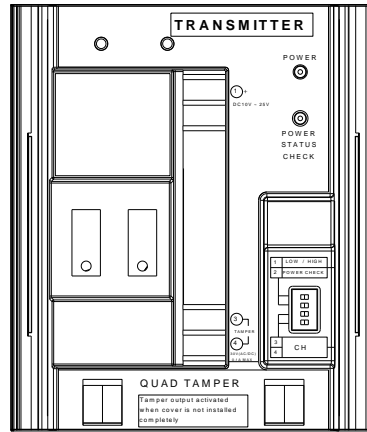
1 TONE INDICATOR



Monitor Jack Voltage	Tone Interval
Above 3.0V	—————
3.0V ~ 2.0V	
2.0V ~ 1.0V	
Below 1.0V	

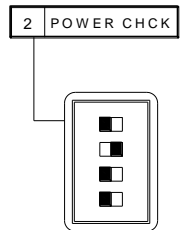
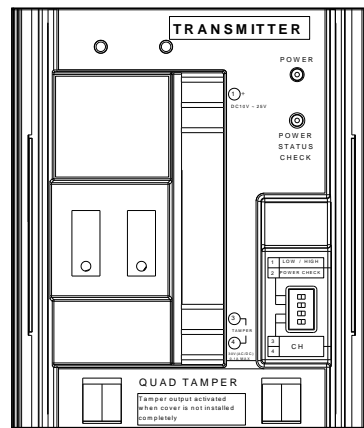
14. Beam Strength Selection

- 2 Different beam strength can be selectable based on desired detection distance.
- HIGH : For detection distance of 100m ~ 200m
- LOW : For detection distance of 0m~100m

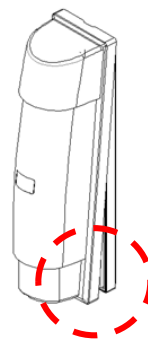
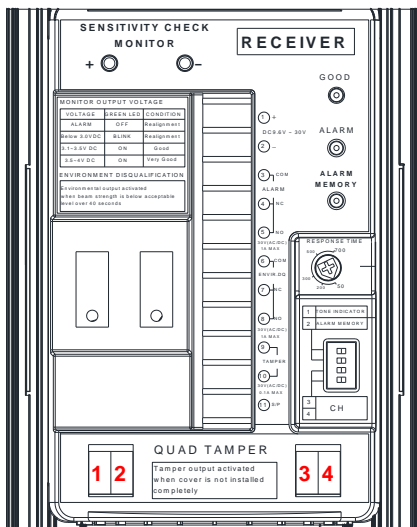


15. Power Status Check

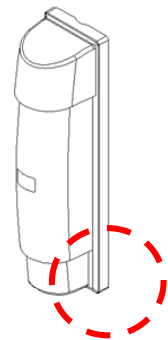
- This function gives a notification when the supply voltage is currently below 9.6V(± 0.3V) by a blue LED.
- When the power check indicator is ON, please check the supply voltage immediately for the low voltage can affect the overall function of the unit.
- This function is only installed in the Transmitter.



16. Quad Tamper



Cover Still Open

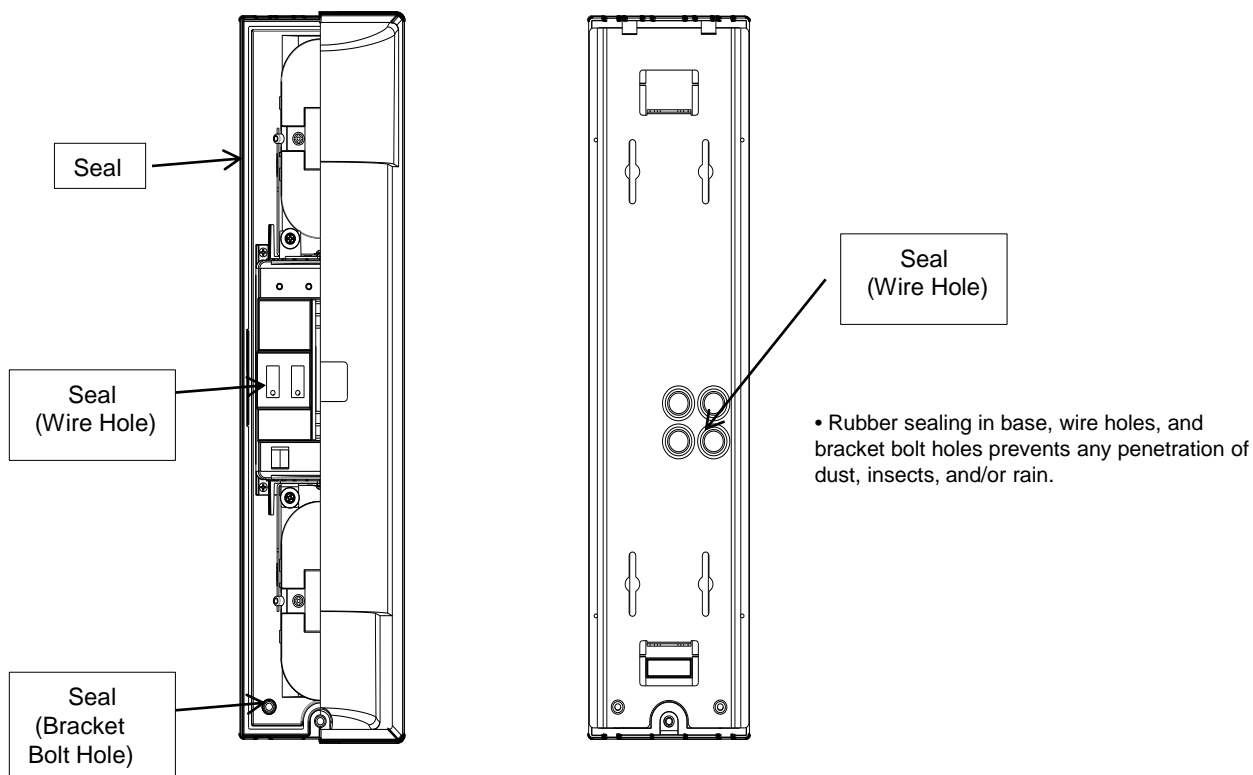


Cover Closed

- When all 4 tamper should be pushed for a proper tamper setting.

- When all 4 tampers are pushed, the cover is properly closed.
- All LED will be shut off when cover is properly closed for economical operation.

17. Anti-Insect / Rain Construction



18. Troubleshooting

Trouble	Possible Cause	Possible Solution
Operation LED does not light	1. No power supply.	1. Turn on the power.
	2. Bad wiring connection or broken wire, short	2. Check wiring.
Alarm LED does not light when the beam is broken.	1. No power supply.	1. Turn on the power.
	2. Bad wiring connection or broken wire, short.	2. Check wiring.
	3. Beam is reflected on another object and sent into the receiver.	3. Remove the reflecting object or change beam direction.
	4. Two beams aren't broken simultaneously	4. Break 2 beams simultaneously.
Alarm LED continues to light	1. Beam alignment is out.	1. Check and adjust again.
	2. Shading object between Tx. and Rx.	2. Remove the shading object.
	3. Optics of units are soiled.	3. Clean the optics with a soft cloth.
	4. Improper channel.	4. Check channel.
Intermittent alarms.	1. Bad wiring connection.	1. Check again.
	2. Change of supply voltage.	2. Stabilize supply voltage.
	3. Shading object between Tr. and Re.	3. Remove the shading object.
	4. A large electric noise source, such as power machine, is located nearby Tx. and Rx.	4. Change the place for installation.
	5. Unstable installation of Tx. and Rx.	5. Stabilize.
	6. Soiled optics of Tx. and Rx.	6. Clean the optics with a soft cloth
	7. Improper alignment.	7. Check and adjust again.
	8. Small animals may pass through the 2 beams	8. Set the response time longer.

19. Specifications

Model	SASO-PB200L	
Detection system	Simultaneous breaking of 2 beams	
Infrared beam	Double modulation pulsed beams by LED	
Protection range	Indoor or Outdoor 200m	
Supply voltage	9.6V ~ 30V DC (Polarity)	
Current	TX : 45mA / RX : 40mA	
Response time	50 ~ 700 m/s	
LED	Transmitter	Green LED : Power On / Red LED : Power Status Check
	Receiver	Green LED : Correct Setting / Red LED : Alarm Activated / Blue LED : Alarm Memory
Alarm output	Dry contact relay output 1C Contact action : Interruption time & delay time(1~3 sec) Contact capacity : 30V(AC/DC) 1A or less	
Environment output	Dry contact relay output 1C Contact action : Interruption time & delay time(1~3 sec) Contact capacity : 30V(AC/DC) 1A or less	
Tamper output	Dry contact relay output from N/C (Receiver only) Contact action : Activated when cover is detached	
Temperature	-20°C ~ 60°C	
Beam adjustment	Horizontal : 190° (±95°), Vertical : 20° (±10°)	
Mounting position	Outdoor / Indoor	
Material	PC resin(Green)	
IP rating	IP 55	
External dimensions	W113 x H460 x D122 (mm)	
Weight	Rx / Tx : 3.4kg	
Functions	Alarm Memory, Environmental Disqualification, Quad Tamper, Tone Indicator, Power Check. Etc.	
Option	Pole attachment(2pcs/set)	

20. External Dimensions

