Rev.1

Laserglow Technologies
Smart Proximity Detection System (SPDS)
User Manual

Vehicle Tag(VT) · Pedestrian Tag(PT)

Smart Proximity Detection System

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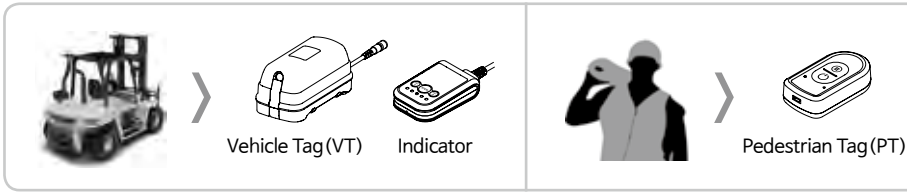
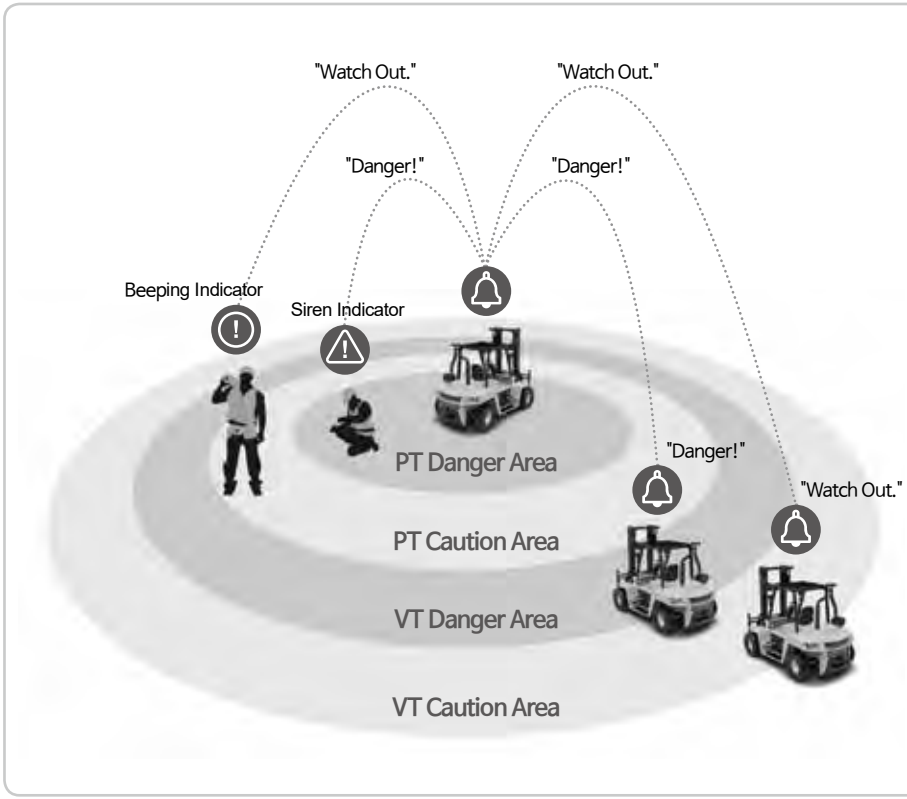
Thank you for purchasing Laserglow's SPDS product.
This product is a safety-assisting device to give warning signals by detecting the proximity of vehicles and pedestrians at industrial work sites. Laserglow will not be held responsible for any personal injury or property damage caused by improper use. Before using this product, please read this manual carefully.

1. What is SPDS?

Laserglow's SPDS is an intelligent proximity alert safety system that prevents collisions by alerting the operator of danger using 2 way communication to both drivers and pedestrians. This includes when a pedestrian approaches a vehicle or when a vehicle approaches another vehicle. It's easy to install without causing any damage to vehicles, and features industry leading proximity detection technology.



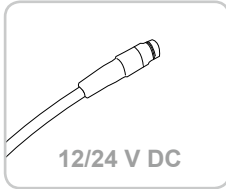


※ SPDS can be used with all industrial vehicles.(excavators, forklifts, loaders, tractors, etc.)

2. Safety Information

Caution!

※ Failure to observe the precautions in this manual may result in damage to the product or your property.



Use only 12/24V DC. For vehicles with 36/48V DC, be sure to connect SMPS module to use DC 12/24V. Failure to do so will result in permanent damage.

Do not immerse the product in water or place under running water. Failure to comply will result in permanent damage

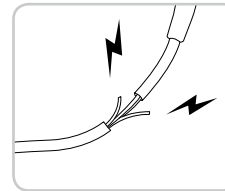
Do not place the product near flammable materials, stoves, candles, or fire. This may cause permanent damge

If the product smells, smokes, or makes abnormal noises, turn off the power and contact our customer service center immediately.

Caution!

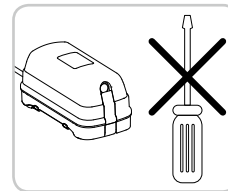
※ Failure to follow the warnings in this manual may result in damage to the product or serious injury.

Do not touch the connector or wiring with wet hands. This may cause electric shock or fire.



Do not place heavy objects on the product or on wiring as this may cause electric shock or fire.

If connectors or wiring get wet, wipe with a dry towel. Otherwise, it may cause electric shock or fire.

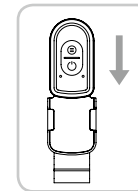


Do not disassemble or modify this product. This may cause trouble, and After-Sale Service will not be available.

Usage Precautions

The pedestrian tag(PT) includes rechargeable batteries, so do not replace the battery. There is a risk of malfunction or explosion.

Since the pedestrian tag(PT) has a built-inbattery, please store in a cool dry place away from direct sunlight when not in use.



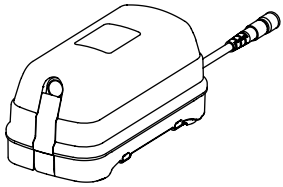
Combine PT and PT holder in the proper way as shown in the illustration. Failure to comply may result in damage

* CAUTION Risk of explosion if battery is replaced with incorrent type. Dispose of used batteries according to the instructions.

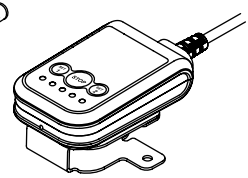
※ Any accidents caused by not following the instructions in this manual are the user's responsibility.

3. Component Names

Components

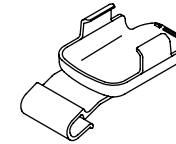


Vehicle Tag (VT)

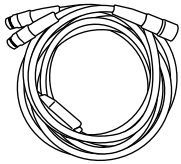


Indicator

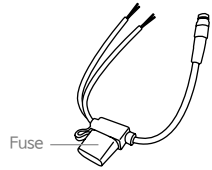
Pedestrian Tag (PT)



Helmet Holder

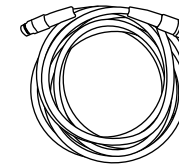


Cable Harness (6m)



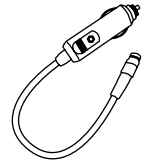
Open Wire Adapter Cable

User Manual

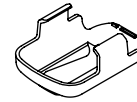


Optional
Extension Cable

Optional
High Speed Charging Cable (PT)

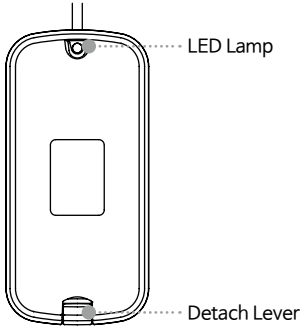


Optional
Car Adapter

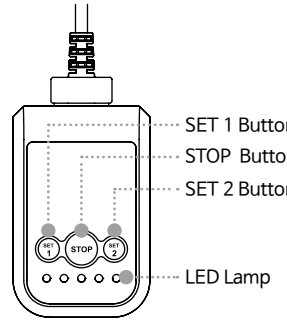


Optional
Clip Holder

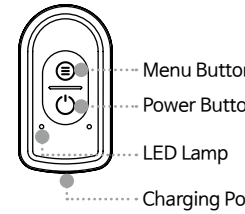
Component Part Names



Vehicle Tag (VT)

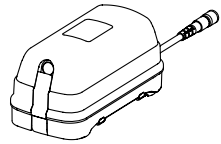
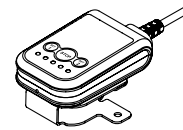


Indicator



Pedestrian Tag (PT)

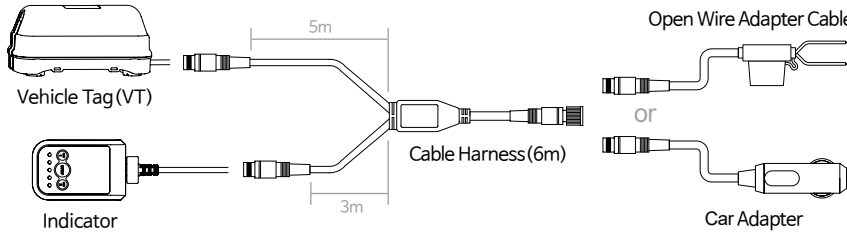
4. Specifications

Specifications		Vehicle Tag(VT)	Indicator	Pedestrian Tag(PT)
Product Image				
Electrical Feature	Power	12/24V DC Input(9/32Vdc)	12/24V DC Input(9/32Vdc)	-
	Current	300mA	500mA	-
	Interface	CAN Bus 2.0	CAN Bus 2.0	-
	LED Status and Alarm method	·Normal operation : Green LED flashing ·Approaching alarm : Green/Red LED flashing	·Normal operation : Green LED flashing ·Approaching alarm : Green/Red LED flashing + Warning voice	·Normal operation : Green LED flashing ·Approaching alarm : alarm + vibration(3 options)
	Sound Level / @Distance	-	92dB / 0.1m	87dB / 0.1m
	Battery	-	-	Lithium polymer 950mA
	Operating Voltage	-	-	3.7V
	Charge Interface	-	-	Micro USB Type-B(5V/1A)
	Charge Time	-	-	Approximately 1 hour 30 minutes
	Charge Current	-	-	0.85mA
	Operating Time	-	-	6 days(8 hours/day)
Mechanical Feature	Size	177.8 × 84.1 × 86mm	93 × 130.5 × 47.5mm	40 × 72 × 19.5mm
	Weight	444g	207g	58.5g
	Mounting Method	Magnet pad attachment method	Fixed with screw (or adhesive tape)	Clip, Necklace chain
Opereation Specification	Operating Temperature	-30 ~ 85˚C	-30 ~ 85˚C	-20 ~ 55˚C
	Storage Temperature	-40 ~ 85˚C	-40 ~ 85˚C	-20 ~ 55˚C
	Waterproof	IP65	IP65	Basic waterproof

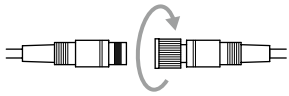
※ Some features may change without prior notice to improve the performance of the product.

5. Installation

Caution! **It is highly recommended to install SPDS with the power off.**
Turn on the power after connecting all components.



* Normal operation: Green Flashes ON after turning on the power.

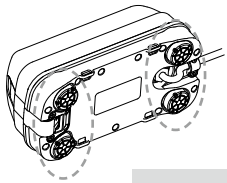


∗ Caution! Fully tighten cable terminals to ensure proper connection and water-tight seal.

Setting Tips

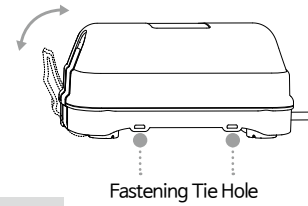
It is better to install VT in a 360˚open space (on top of vehicle cabin for example), rather than a space inside the cabin. As a wireless frequency(RF) device, this will allow better communication between devices.

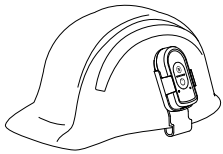
Laserglow's SPDS is designed with the customer in mind for easy installation without the help of an installer. The powerful magnet on the bottom of the VT attaches easily and securely to vehicles and can be easily detached using the detach lever.
In situations where there's no magnetic surface to mount using magnet, VT can be secured with zip ties.



Magnetic Pad : Easy to install

Detach lever : Easy to detach from vehicle by pulling the lever as shown





Pedestrian Tag Helmet Clip

6. Setting - Indicator

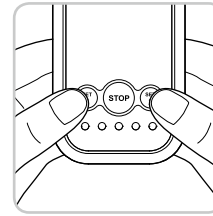
※ **Detailed setting of each function is available in SPDS Toolkit.** (Please refer to SPDS Toolkit user manual)

Danger / Caution Area Distance Setting

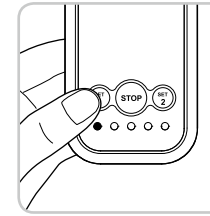
※ In a condition of normal operation

Set the distance in order by following below 4 steps.

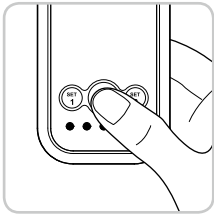
Setting PT Danger Area ▶
Setting PT Caution Area ▶
Setting VT Danger Area ▶
Setting VT Caution Area ▶
Distance Setting Completed



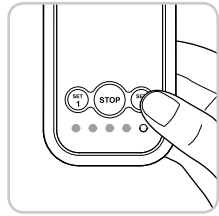
① Press and hold SET 1 and SET 2 buttons simultaneously for 2 seconds or more.



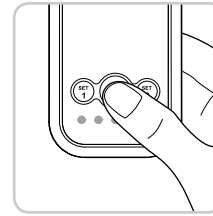
② Set the **PT Danger Area** by pressing SET 1 or SET 2 buttons. (Refer to "How to set the distance" on the following page)



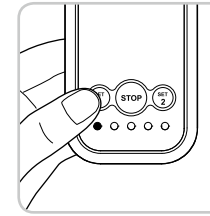
③ Press STOP button to complete the **PT Danger Area** setting.



④ When green LED is on, set the **PT Caution Area** by pressing SET 1 or SET 2 buttons. (Refer to "How to set the distance" on the following page.)



⑤ Press STOP button to complete the **PT Caution Area** setting.

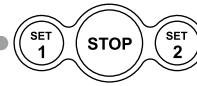


⑥ When red LED is on, set the **VT Danger / Caution Area** by pressing SET 1 or SET 2 buttons as the previous process ②~⑤.

Volume Control

※ In a condition of normal operation

SET 1 Button : - Volume



SET 2 Button : + Volume

Restore Default Settings

※ In case of malfunction

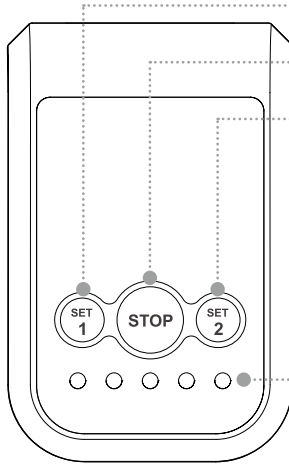
- Press and hold SET1, STOP and SET2 buttons for 3 seconds.
- When the red LED flashes sequentially, press and hold the STOP button again for more than 2 seconds. The LED will turn off and the setting will be initialized. Reboot will take about 5 seconds. (Do not turn off until the green LED flashes.)

※ **Default values after initialization : 4m for PT Danger Area / 8m for PT Caution Area**
8m for VT Danger Area / 10m for VT Caution Area

6. Setting - Indicator

How to Set the Distance

Distance setting can be set to even distance [2 / 4 / 6 / 8 / 10m] or odd distance [1 / 3 / 5 / 7 / 9m]. The default setting is even distance.



SET 1 button : Distance -2 m

STOP button : OK

SET 2 button : Distance +2m

2m space per LED lamp [● ON ○ OFF]

● ○ ○ ○ ○ : 2m or 1m
● ● ○ ○ ○ : 4m or 3m
● ● ● ○ ○ : 6m or 5m
● ● ● ● ○ : 8m or 7m
● ● ● ● ● : 10m or 9m

* To change to Odd distance [1 / 3 / 5 / 7 / 9m] : Press and hold SET 1 + STOP button at the same time.

Eg. Setting PT Danger Area 3m, PT Caution Area 9m / VT Danger Area 5m, VT Caution Area 7m

· Set an even distance 1m longer than the desired PT Danger, Caution Area / VT Danger, Caution Area as shown below. (Set 3m⇒**4m**, 9m⇒**10m** / 5m⇒**6m**, 7m⇒**8m**)

PT Danger Area (Red LED)	●	●	○	○	○	: 4m
PT Caution Area (Green LED)	●	●	●	●	●	: 10m
VT Danger Area (Red LED)	●	●	●	○	○	: 6m
VT Caution Area (Green LED)	●	●	●	●	○	: 8m

② Press & hold SET 1 button + STOP button at the same time. It is now set to odd and all values will be 1m shorter than even setting i.e. 3m distance for PT Danger Area / 9m distance for PT Caution Area / 5m distance for VT Danger Area / 7m distance for VT Caution Area.

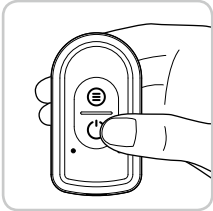
※ If you want to change from odd distance to even distance again, press and hold Set 2 & STOP again.

Setting Tips

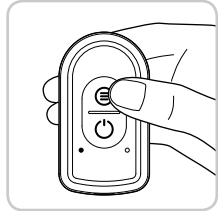
SPDS sounds warning signals by detecting proximity every 0.5 seconds, therefore **vehicle speed must be considered when setting proximity distance.**

6. Setting - Pedestrian Tags

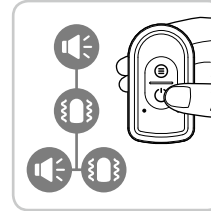
Alarm type Setting



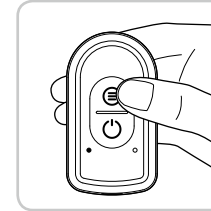
① Press and hold the power button to turn on the power. (Charging is required if the red LED is on.)



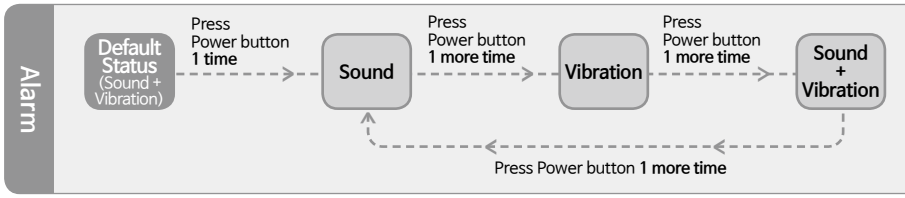
② Press and hold the menu button. (A short vibration will occur.)



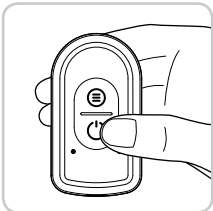
③ Press the power button to set the desired alarm type. (Please refer to the alarm system below.)



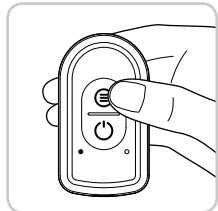
④ Press and hold the menu button to complete the setup.



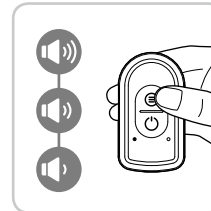
Volume Control



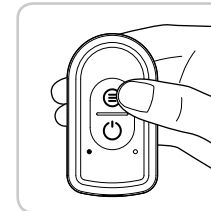
① Press and hold the power button to turn on the power. (Charging is required if the red LED is on.)



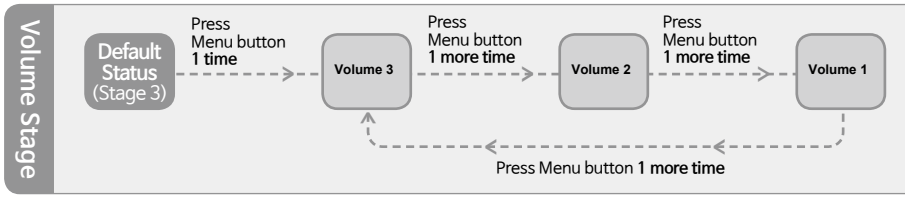
② Press and hold the menu button. (A short vibration will occur.)



③ Press the menu button to set the desired volume level. (See volume steps below.)



④ Press and hold the menu button to complete the setup.

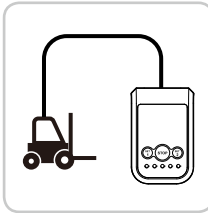


6. Setting - Pedestrian Tags
(Driver Mode)

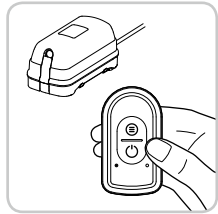
Driver Mode is a function that deactivates PT of a driver who frequently drives vehicles. Prior to set the Driver Mode below, PC program "SPDS Toolkit" setting must be completed.

How to Register Driver Tag

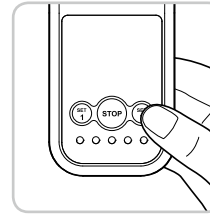
① **Set the Driver Registration Function ON by using SPDS Toolkit. (Please refer to SPDS Toolkit User Manual for more details.)**



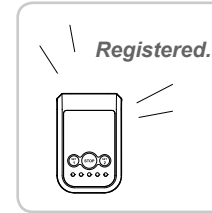
② **Once Driver Registration Function is completed, connect the indicator to the vehicle.**



③ **Place the PT within 1m range from the VT.**

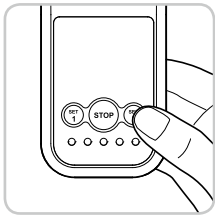


④ **Press and hold SET2 button for 2 seconds.**

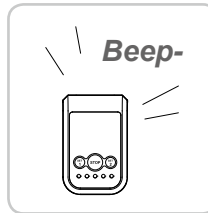


⑤ **PT is registered as a driver tag with the voice message. "Registered."(The beep sound will occur in case of failure.)**

How to Release Driver Tag



① **Press and hold SET2 button for 2 seconds.**



② **PT is released as a normal tag with a beep sound.**

NOTE

1. **Only 1 PT per 1 Indicator is available for registration (Release the existing registered PT prior to register another PT as a driver tag).**
2. **Driver Tag is automatically released once the power is OFF.**

How to Deactivate Driver Registration Function

Set the Driver Registration Function OFF by using SPDS Toolkit.

7. How to use

VT Indicators that vehicle operator must know

Situation	LED Lamp Status	Alarm	Mute Alarm
When a pedestrian/vehicle approaches **Caution Area**	Red / Green Light flashes gradually	Repeating "Watch Out"	**Press STOP Button 1 Time** Even if the alarm is OFF, the alarm will occur again when a pedestrian or other vehicle leaves the caution/ danger area and then re-enters.
When a pedestrian/vehicle approaches **Danger Area**		Repeating "Danger"	

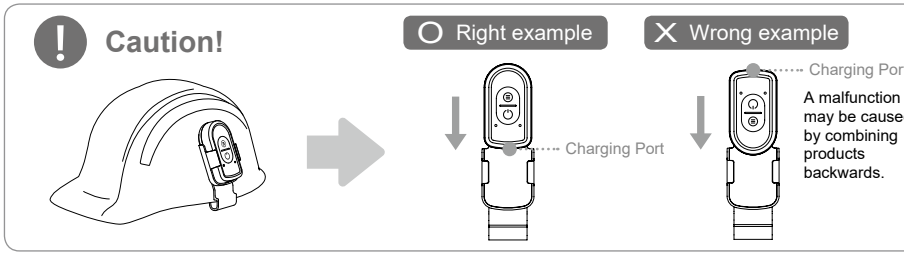
* When pedestrian enters and escapes out of Danger/Caution Area, for the safety of pedestrians, the alarm will go off from the point 1m further away that was set originally.
(Ex 1 : PT Danger Area - 2m, PT Caution Area - 4m
⇒ The alarm will continue until the pedestrian leaves 3m of PT Danger Area and 5m of PT Caution.)
(Ex 2 : VT Danger Area - 4m, VT Caution Area - 6m
⇒ The alarm will continue until the vehicle leaves 5m of VT Danger Area, 7m of VT Caution.)

PT Indicators that pedestrians must know

Situation	LED Lamp Status	Alarm	Alarm Pause	Mute Alarm
When a pedestrian (PT) enters the **Caution Area**	Green Flash	1. Beeping 2. Vibration (short interval) 3. Both (Depends on menu setting)	**Press menu or power button one time.** Alarm will occur in 10 seconds automatically after pause.	**Press menu or power button twice quickly. ("Beep" alarm will occur.)** Even though alarm is muted (double click), if the pedestrian escapes the set Danger / Caution Area then re-enters, the alarm will go off again.
When a pedestrian (PT) enters the **Danger Area**		1. Siren 2. Vibration (long interval) 3. Both (Depends on menu Setting)		
When the battery is low (Lessthan about 4hours of use)	Red Flash	Beeping 5 times every 10 minutes.	-	-

* When pedestrian enters and escapes out of Danger/Caution Area, for the safety of pedestrians, the alarm will go off at a point 1m further away than was originally set.
(Ex : If the Danger Area/ Caution Area is set at 2m / 4m, the warning sound of PT will go off until it escapes 3m of Danger Area and 5m of Caution Area from VT)

※ Alarm Type Setting / Volume Control : Refer to page 10



7. How to use - LED status display

LED Status	VT	Indicator	PT
Power ON	●	● ○ ○ ○ ○	●
	Green Flash	Green Flash	Green Flash
Power OFF	○	○ ○ ○ ○ ○	●
	LED Off	LED Off	After Red light blinks once, it turns off
Normal	●	●	●
	Green Flash	Green Flash	Green Flash
Low Voltage Battery	-	-	●
	-	-	Red Flash
Battery Charging	-	-	●
	-	-	Red On
Fully Charged	-	-	●
	-	-	Green On
Entering PT Caution / Danger Area	● + ●	● + ●	●
	Green + Red flashing	Green + Red flashing	Green Flash
Entering VT Caution / Danger Area	● + ●	● + ●	-
	Green + Red flashing	Green + Red flashing	-

8. Troubleshooting

Issue	Reason	Solution
Access to PT MENU is unavailable.	You can access the menu after turning on the power.	If you press and hold the power button for 2 seconds, the green LED will blink. Press and hold the menu button for 2 seconds afterward.
There is a red LED on the PT.	It is a signal indicating low voltage when the remaining battery power is less than 4 hours.	Please charge it. When it is 100% charged, the green LED will turn on.
The volume of VT sound is too low.	Indicator's volume setting is low.	The indicator can be adjusted up to 5 levels. See how to adjust volume on page 8
Can I mute the alarm when I drive a vehicle with a PT?	Mute of alarm sound is possible.	<How to mute alarm> * PT : Press Menu or Power button twice quickly with short intervals. * Indicator : Press STOP button once (When PT owner deviates and reenters the Danger / Caution area, the alarm will go off again)
Can I pause an alarm to talk to a VT car driver for a moment?	It is possible to pause for 10 seconds. After 10 seconds, the alarm will resume.	<Alarm pause tip> * PT : Press Menu or Power button once. (PT alarm will go off after 10 seconds automatically)
Previously set distance of Danger/ Caution area is not precise.	A. The alert sounds in shorter horizontal distance depending on the installation height of VT. B. When entering and exiting the Danger / Caution Area, alarm will go off 1m further from the set distance for safety reasons. <Example> In case of setting 2m for Danger Area and 4m for Caution Area, alarm will keep going off until you exit 3m (Danger Area) and 5m (Caution Area).	Case A and B are considered a normal function. If it becomes an issue, it is recommended to reset the distance to default settings (See Indicator initialization and distance setting on page 8).

WARRANTY

Warranty Term 1 year from the purchase date

Product Name		Model Name	
Place of Purchase		Date of Purchase	
Name of Customer		Phone Number	

* Service information

1. If a performance or functional failure occurs from proper use during the warranty period, the repair service is free of charge.
2. When repair service is required, please present the warranty card with all information filled in.
3. The following cases will be charged for the repair regardless of warranty period.
   - Failure due to careless use or improper repair or modification
   - Failure due to non-compliance to the specifications stated in this manual
4. After the expiration of warranty period, a fee will be charged for the repair service.
5. The warranty card cannot be reissued.

※ If failures occur when a person who is not in our service team tries to repair the product and it breaks down, or uses components from other companies, Laserglow will not be responsible for those failures.

※ Please contact Laserglow Technologies for refund or exchange of product.

- **Model No : SPDPT [Pedestrian Tag], SPDVT [Vehicle Tag]**
- **FCC ID : 2AWBN-SPDPT , 2AWBN-SPDVT**
- **IC ID: 26108-SPDPT , 26108-SPDVT**
- **Manufacturer : Laserglow Technologies / CANADA**

* This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions : (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
* **Caution** : Any changes or modifications in construction of this device which are not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
* **Note** : The following statement applies to all products that bear the FCC logo on the product label. This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules. See 47 CFR Sec. 15.105(b). These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures :

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Think Smart,

Work Safe

Distributor

* Contact distributor below for all inquiries about the purchased product:

Laserglow Technologies
99 Ingram Dr Unit B, North York, ON M6M 2L7
North York, Toronto, ON
Tel. (416) 729-7976 **Fax.** (480) 247-4864 **E mail.** sales@laserglow.com
www.laserglow.com