

USB Controlled Multi-color Signal Beacon

TYPE : **NE-□N-USB**

General Instruction Manual

[WEB version]

■ Notice to customer

- Thank you very much for your purchase of the PATLITE product.
- To ensure correct use of the product, read this manual carefully before use, And, keep this manual safely for future reference.
- Be sure to read this manual again before you perform maintenance, inspection or repair. If you have any questions, contact our technical/repair service helpdesk shown in the back of this manual.

■ To installers or Contractors

- Read this manual thoroughly before using this product to ensure correct use.
- If you have any questions, contact our technical helpdesk shown in the back of this manual.
- Be sure to return this manual to the customer.

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1 Getting started




1.1 Safety signs

Be sure to follow the instructions below that are provided to prevent injury to you and others or property damage.




- ◇ The following signs are used to classify and explain the degrees of possible harm and damage that may occur if the product is used incorrectly by the neglect of given signs and instructions.




 Warning	Indicates a “hazardous situation which, if not avoided, could result in death or serious injury.”
 Caution	Indicates a “hazardous situation which, if not avoided, could result in minor or moderate injury or property damage.”

- ◇ The safety instructions are classified with the following pictograms.

	This pictogram is used for “don’ts” that you must not do.
	This pictogram is used for “do’s” that you must do.
	This pictogram is used for general cautions that is not specific.

1.2 Safety precautions

 Warning	
	<ul style="list-style-type: none"> ◇ To prevent electric shock, short circuit or damage, follow the instructions below. ◇ Be sure to turn off the USB power feed before you perform cabling, assembly or removal. Failure to follow this instruction may cause a short resulting in a burn on the internal circuit or electric shock injury. ◇ Use the product in the appropriate condition. ◇ Be sure to ask a specialist to install the product if construction is required. Failure to follow this instruction may result in electric shock, fire, falling, etc. ◇ Do not use or get near the product if you have an implanted medical electronic device such as a cardiac pacemaker. Failure to follow this instruction may affect the device by the magnetic force of the product.
	<ul style="list-style-type: none"> ◇ To prevent lethal or serious property effects caused by the breakdown or malfunction of the product, secure sufficient safety by the combined use of other devices.

 Caution	
	<ul style="list-style-type: none"> ◇ Do not allow the alarm to sound unreasonably close to you. Failure to follow this instruction may damage your hearing. ◇ Do not operate this product without the O-ring. Failure to comply will result in lower waterproofing performance, possibly causing failure. ◇ Do not use the product near a flame or in a hot and humid or a corrosive or flammable atmosphere. Failure to follow this instruction may cause a breakdown or malfunction. ◇ When you attach/detach the glove, do not touch the internal connector terminal. Failure to follow this instruction may cause a breakdown. ◇ After the product has been mounted on a device, do not grab it to climb up on top of the device. Failure to follow this instruction may cause damage to the product and result in toppling or fall accidents. ◇ Do not use this product near equipment that generates strong electrical or magnetic fields (such as magnetic cards, medical equipment, electric devices, speakers). Failure to follow this instruction could result in product damage and product malfunctions such as data loss. ◇ When using a tripod with this product, do not try to move or transport the product with the tripod attached. Failure to follow this instruction could result in equipment damage if the product falls over.
	<ul style="list-style-type: none"> ◇ In order to maintain protection against dust and waterproofing performance for this product, be sure to use the glove in the condition that it was originally attached. ◇ When you remove packing or wrapping materials from the device on which the product is mounted, take care not to get the materials snagged on the product. Failure to follow this instruction may cause damage to the product.

- | | |
|--|---|
| | <ul style="list-style-type: none">◇ Ensure that the product is securely installed, making sure that the product does not lost balance or fall over from the weight of the USB cable. Also, install so that there are no risks of people tripping over the USB cable. Failure to follow these instructions may result in injury or product damage.◇ Install the product on a stable, flat surface free from vibration or impact. Note that the sufficient force to hold the product may not be obtained depending on the conditions of the mounting surface (material, environment, steel plate thickness, coating thickness, etc.).◇ Before installing the product, clean any dust, stains, oil or iron leavings off the mounting surface and the product's bottom. Failure to follow this instruction may scratch the mounting surface or lose the force to hold the product.◇ When removing the product from a tripod, be sure to unscrew from the screws of the tripod, instead of trying to unscrew the product off directly from the tripod. Failure to follow this instruction may result in injury or product damage. |
|--|---|

Note

- | |
|---|
| <ul style="list-style-type: none">◇ Where the product is used for the primary purpose of safety maintenance, be sure to perform daily maintenance.◇ Before handling the product, remove static buildup from your body to prevent damage by electrostatic discharge (To remove static charges, touch other grounded metallic area with your bare hands).◇ For the handling of the parts of the product, follow the instructions below.<ul style="list-style-type: none">• Do not disassemble the parts that are not designed as removable.• Do not add any modification to the product.• For repair parts, be sure to use only those specified in this manual. |
|---|

- PATLITE cannot be held responsible for any damages caused from misuse of this product in a way that violates the warnings and instructions noted on this manual. Do not use this product in a way that is not outlined in this manual. Additionally, PATLITE also cannot be held responsible for any damages caused from careless or improper use and maintenance of this product.
- FCC notation requirements

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of FCC Rules and RSS-Gen of IC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

2 Model Number Configuration

2.1 About model labeling

N E — □ N — U S B

Installation

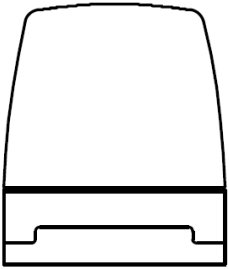
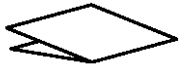
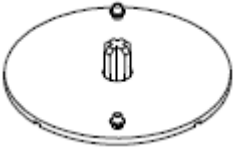
S : Direct, magnetic or inch-screw mounting

W : Two-hole screw mounting

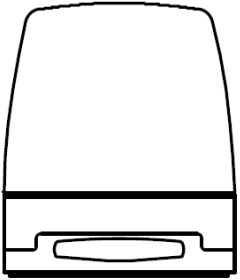
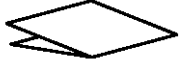
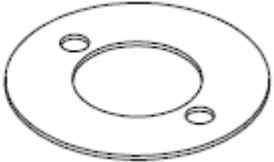
3 Package contents

3.1 About package contents

(1) NE-SN-USB

<p>NE-SN-USB unit : 1</p> 	<p>Instruction Manual : 1</p> 
<p>Slip-proof sheet : 1</p> 	

(2) NE-WN-USB

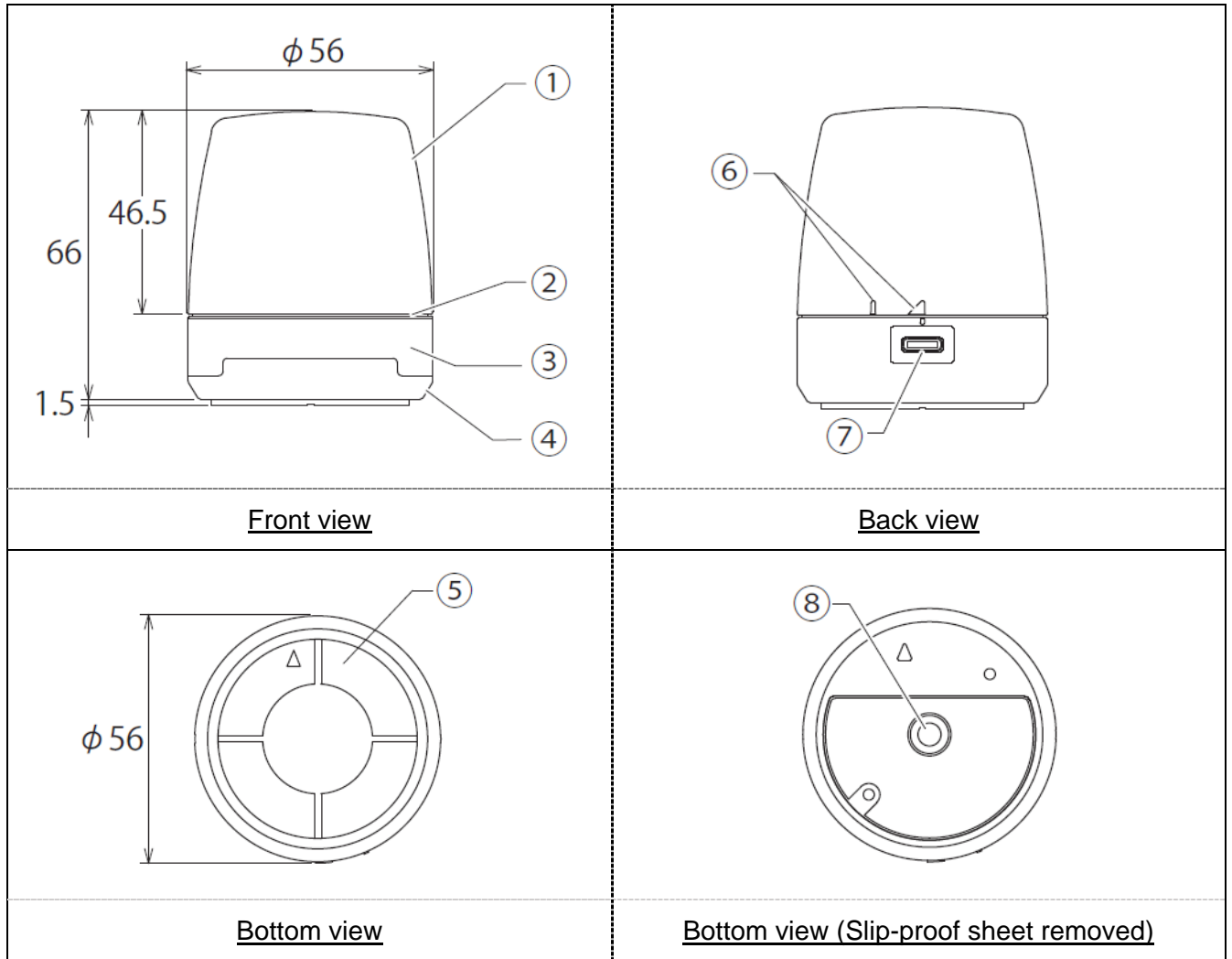
<p>NE-WN-USB unit : 1</p> 	<p>Instruction Manual : 1</p> 
<p>Waterproof sheet : 1</p> 	

*USB cable not included, please prepare your own.

4 Names and dimensions of parts

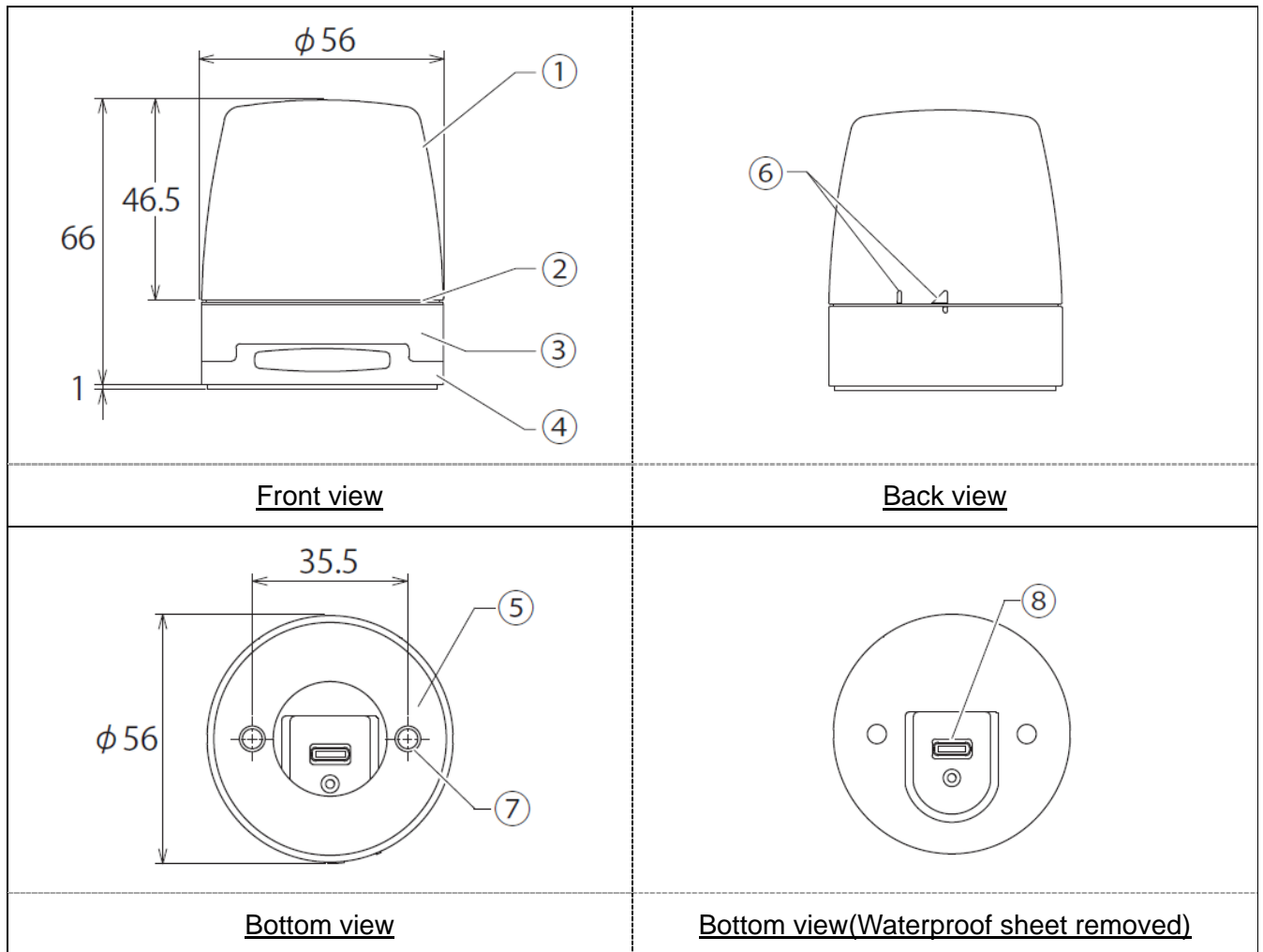
4.1 Names and dimensions of parts

(1) NE-SN-USB



No.	Name	Material	No.	Name	Material
①	Glove	PC	⑤	Slip-proof sheet	silicon
②	O-ring	silicon	⑥	Positioning indicator	—
③	Product label	—	⑦	USB 2.0 Connector (Type-C)	—
④	Outer housing	PC	⑧	Tripod screw hole (1/4-20UNC)	—

(2) NE-WN-USB



No.	Name	Material	No.	Name	Material
①	Glove	PC	⑤	Waterproof sheet	silicon
②	O-ring	silicon	⑥	Positioning indicator	—
③	Product label	—	⑦	Mounting hole(two)	—
④	Outer housing	PC	⑧	USB2.0 Connector(Type-C)	—

5 Operation Overview

5.1 What is a USB Controlled Multi-color Signal Beacon?

It is a signal beacon that can be controlled from a host PC via a USB connection.

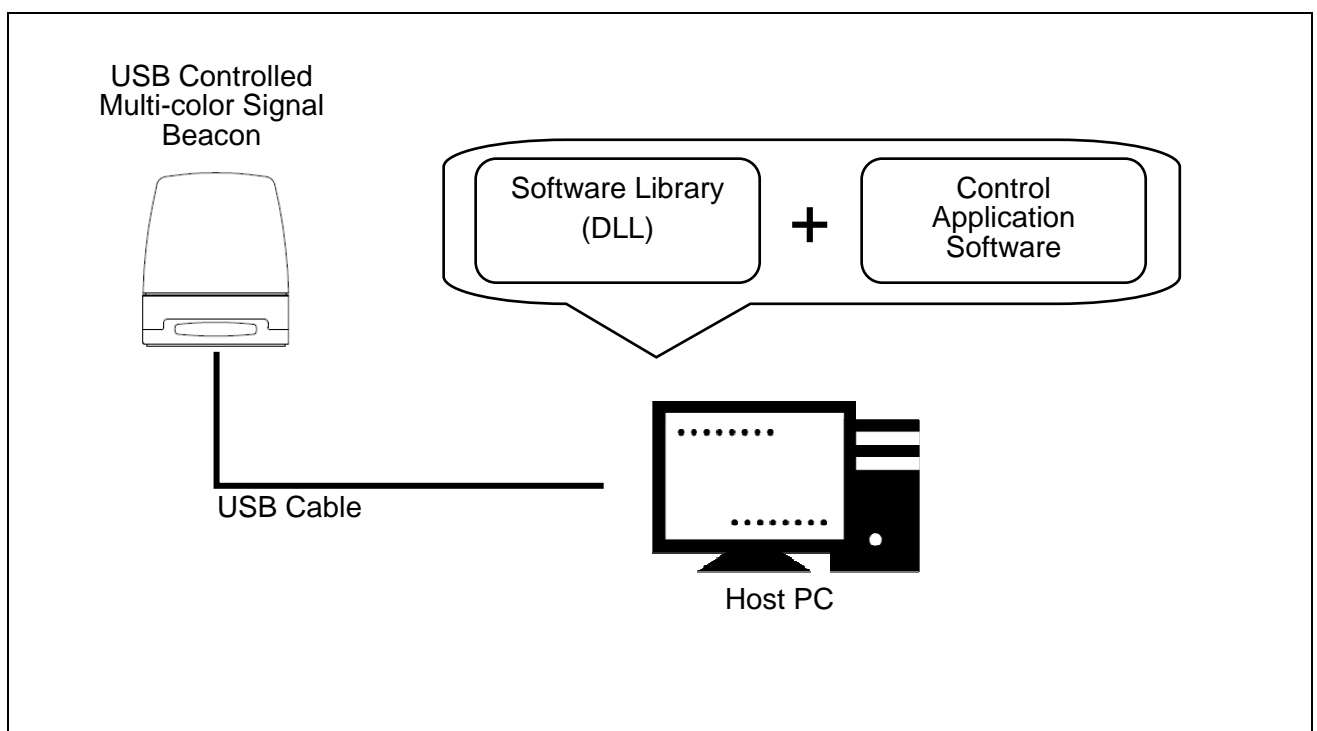
5.2 Device Configuration

(1) Glossary of Key Terms

Term	Description
USB Controlled Multi-color Signal Beacon	Refers to this product.
HID Class	Refers to the device class of this product. (HID : Human Interface Device)
Host PC	Refers to the computer that will be used to control this product.
Control Application Software	Application software that will be installed on the host PC and used to control this product. You will need to create your own software.
Software Library (DLL)	A software library for Windows that can be integrated and used with your control application software. Downloadable from our website. (DLL : Dynamic Link Library)

(2) Device Configuration

- Configuration Diagram



5.3 Function List

(1) Function Overview

Function	Description	Detail
USB communication	A function for connecting and communicating with the host PC via USB cable.	—
LED control	A function to control multi-color LEDs from a host PC via USB communication. <ul style="list-style-type: none"> Control Items : ON / OFF / Flash Pattern ON 	☞ 『5.3(2)①』
Alarm control	A function for the host PC to control the alarm via USB communication. <ul style="list-style-type: none"> Control Items : Sound ON / Sound OFF / Sound Pattern 	☞ 『5.3(2)②』




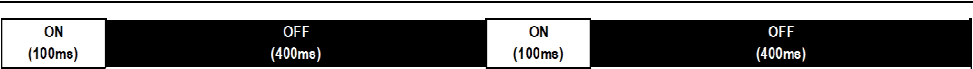


(2) Function details

① LED Control Function

◇LED Color Control

LED Colors to Control
Red / Amber / Green / Blue / Cyan / Purple / White

① – 1 LED Control Items

Control item	Description
Off	Turn LEDs off. Initial state after startup.
On	Turn LEDs on and keeps them on.
Flashing Pattern	Specify one of six types of LED patterns to illuminate the Multi-color LED. Operation of LED patterns for one cycle is shown in the timing chart below.
Pattern 1	
Pattern 2	
Pattern 3	
Pattern 4	
Pattern 5	
Pattern 6	

② Alarm Control Function

② – 1 Alarm Control Item

Control Item	Description
Stop	Turns alarm off. Initial state after startup.
Sound Pattern	Specify one of seven alarm patterns to sound. Select either continuous operation or specified number of times (1-14). One operation is one cycle. The operation of each alarm pattern is shown in the table below.
Pattern 1	Continuous
Pattern 2	Sweep
Pattern 3	Call Sign
Pattern 4	Low Urgency ※The sound complies with ISO 24501 (JIS S 0014)
Pattern 5	High Urgency ※The sound complies with ISO 24501 (JIS S 0014)
Pattern 6	Twinkle Star (melody)
Pattern 7	London Bridge (melody)

5.4 Control method

There are two ways to control this product. Please select according to your equipment configuration and development environment.

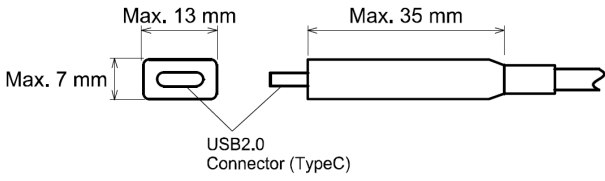
Description	Detail
Control using DLL software library.	☞ 『7.3』
Control using specific protocols.	☞ 『7.4』

6 Device setup and installation

6.1 Mounting directions

⚠ Warning	
⚠	<ul style="list-style-type: none"> ◇ Be sure to turn off the USB power supply before performing any installation or maintenance work. Failure to follow this instruction may result in electric shock or burning of the internal circuit.

⚠ Caution	
⊘	<ul style="list-style-type: none"> ◇ Do not touch the connector of the USB and the internal LED. Failure to follow this instruction may damage the product. ◇ Do not apply excessive force on the connector while connected to a USB cable. Doing so may damage the product. ◇ Do not apply excessive force on the product. Doing so may damage the product.
⚠	<ul style="list-style-type: none"> ◇ When connecting the product to a PC, be sure to connect the product directly to the PC without the use of USB hubs, Using USB hubs may cause unstable connection and improper operation of the product.
⚠	<ul style="list-style-type: none"> ◇ Remove water and dirt from the main unit before starting work. Do not work with wet hands. If water or dirt gets inside the product, it may cause a malfunction. ◇ Check the contact surface between the glove, case, and the O-rings for foreign matter such as dust and sand, and if there is foreign matter, wipe it off with a soft, dry cloth. Waterproof performance may deteriorate due to adhesion of foreign matter. ◇ To ensure waterproof performance, check that there are no cracks or scratches on the O-ring.

Note	
<ul style="list-style-type: none"> ◇ Use a USB cable that is 3m or shorter. ◇ The Type-C Connector of the USB cable you are connecting should follow the specifications noted on the right diagram. 	 <p style="text-align: center;">USB2.0 Connector (TypeC)</p>

(1) NE-SN-USB (direct mount / magnetic mount)

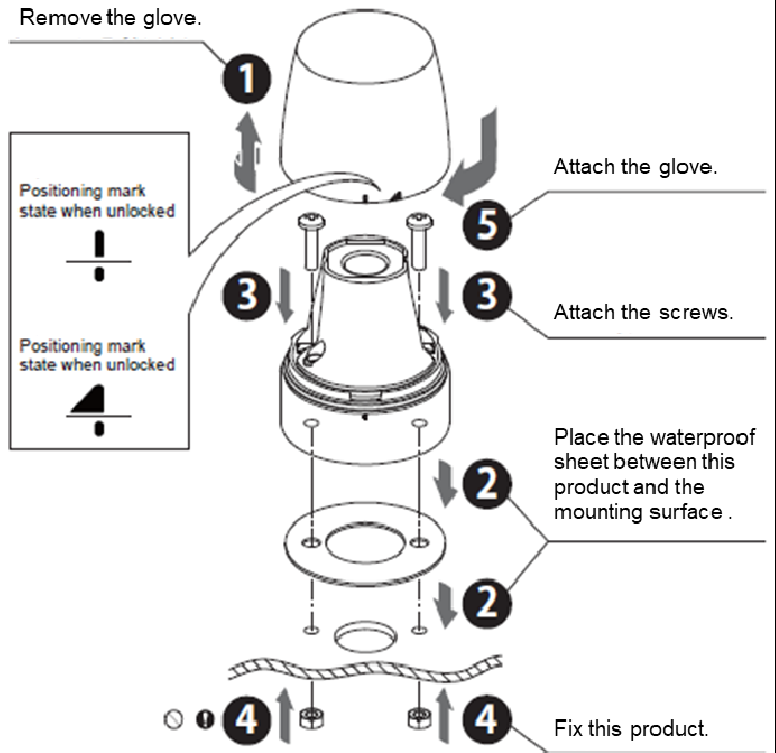
No.	Process	
1	<p>Attach the slip-proof sheet to the product.</p> <p>When installing the product, make sure to align the ▲ mark on the product and the non-slip sheet.</p>	
2	<p>Attach the product to the mounting surface.</p> <p>*When mounting the NE-SN-USB magnetically, it should be placed on a flat metal surface that has magnetic properties. It is also recommended to install it at a height of 2m or less.</p>	

(2) NE-SN-USB (screw mounting)

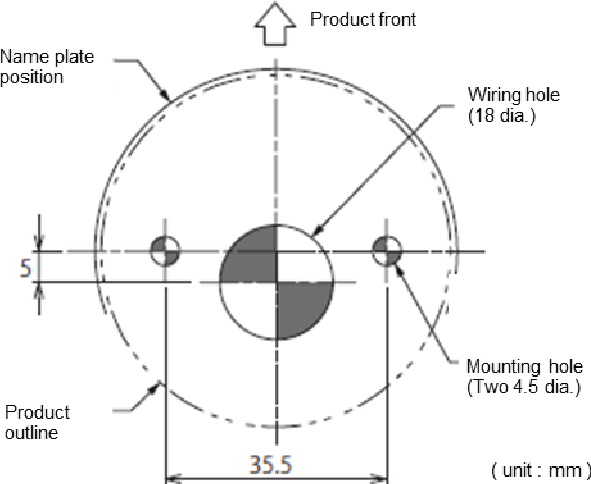
No.	Process	
1	<p>Remove the non-slip sheet from the product.</p> <p>*When the non-slip sheet is installed, the screw holes are hidden and cannot be used.</p>	
2	<p>Attach this product to a tripod.</p> <p>*Do not use screws with a length of 5.5mm or longer. Do not use a screw with a length of 5.5mm or longer, as this will not secure the product firmly to the tripod and may damage the product.</p> <p>*The mounting method varies depending on the tripod. Refer to the instruction manual of the tripod to be used.</p>	

(3) NE-WN-USB

No.	Process
1	<p>Check the positioning marks on the main unit and the glove, and remove the glove from the main unit by rotating it so that it is in the unlocked position.</p>
2	<p>Place the waterproof sheet between this product and the mounting surface.</p>
3	<p>Attach the M4 screw to the product. *Screws with a screw head diameter of 6 mm to 8.5 mm can be used.</p>
4	<p>Fix this product in two places. (Recommended tightening torque: 0.6 N · m)</p>
5	<p>Attach the glove to the main unit so that the positioning mark is aligned with the unlocked position, and rotate the glove until it is aligned with the unlocked to locked position.</p>



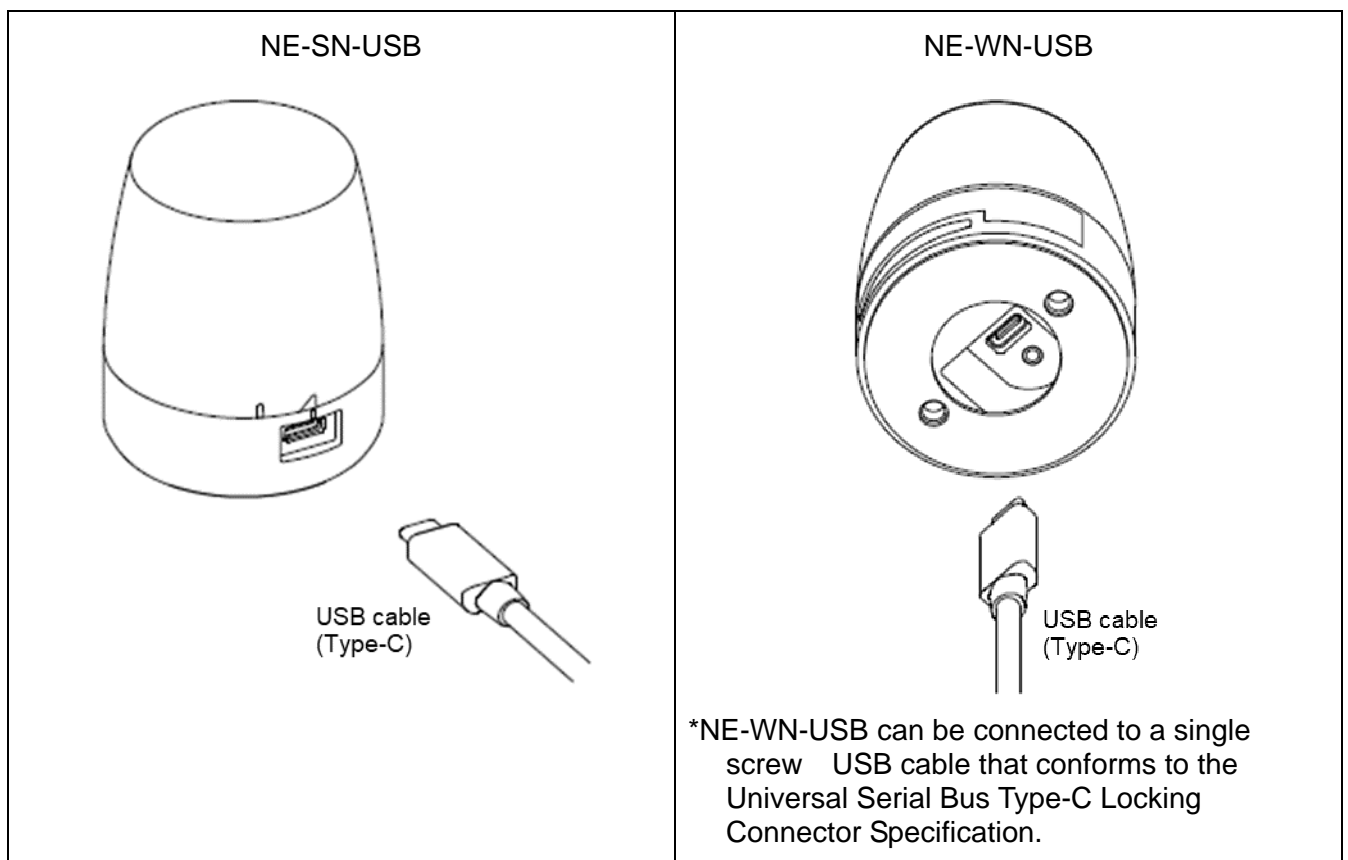
6.2 Mounting Surface Dimensions

No.	Process	
1	<p>If mounting the NE-WN-USB, prepare the mounting surface according to the below diagram.</p> <p>*If mounting the NE-SN-USB, you do not need to be followed.</p>	 <p>(unit : mm)</p>

6.3 Wiring Method

Note

- ◇ Reconnect or disconnect process may be performed on rare occasions depending on the settings of the connected PC.
Disabling the "USB Selective Suspend Settings" in the "Power Options" settings on a Windows PC may improve this behavior.



When this product is connected to a host PC or other device, the white LED turns on twice with Pattern 6 to confirm connection. This function can be switched ON / OFF with the connection display setting switching command described in 7.4 Protocol Specifications.




7 How to Control the USB Controlled Multi-color Signal Beacon

7.1 Purpose and Precautions

(1) Purpose

- This section describes the software library(DLL) and USB communication protocol for controlling this product.

(2) Precautions

 CAUTION	
	<ul style="list-style-type: none"> ◇ Only the information necessary for control is described in this manual. This manual does not contain all the information about this product. ◇ Operation examples are provided for the software and related information described in this manual. You may use this information for software design assuming all responsibility. There is no assumption of responsibility for damages incurred by you or a third party as a result of using this information. ◇ The contents of this manual are subject to change without notice. ◇ There is no assumption of responsibility for inaccuracies in this manual.
	<ul style="list-style-type: none"> ◇ Any unauthorized copying of part or all of this manual is prohibited.

7.2 Before Design

- ◇ The following control methods are available for this product, Select and design the appropriate control method according to the customer's usage environment.
- Control using software library(DLL)
 - Control that conforms with protocol specification

Control Method	Features	
Control using Software Library(DLL)	Design details	<ul style="list-style-type: none"> • Create application software that controls this product using a DLL. (DLL is recognized as an HID class device, and responsible for USB communication with this product.)
	Host device	<ul style="list-style-type: none"> • PC (Windows®)
Control that Conforms with Protocol Specification	Design details	<ul style="list-style-type: none"> • Use interrupt transfer to send data conforming to protocol specifications, and create application software recognized as an HID class device to control this product.
	Host device	<ul style="list-style-type: none"> • PC (Windows®, or other operating systems.)

7.3 Control Using Software Library (DLL)

(1) Overview

This section describes the method of controlling this product with a software library (DLL).

- ◇ Download the software library (DLL) from our website.
- ◇ Check the content before creating the program. Sample code can also be downloaded from our website. Check the code in conjunction with this manual.

(2) Development Environment

Item	Description		Overview
Development language	C#		—
Compatible software	Visual Studio® 2019		.NET Framework 4.7.2 or later must be installed.
Necessary external files	Software library (DLL)	NeUsbController.dll	Library that is used to control this product.
	Windows standard	HID.dll	File installed with Windows.
		kernel32.dll	
setupapi.dll			

(3) API List

No	Function	Overview
1	NE_OpenDevice	Starts USB communication.
2	NE_CloseDevice	Ends USB communication.
3	NE_SetLight	Control the multi-color LED with the specified color and pattern.
4	NE_SetBuz	Control alarm with the specified pattern, volume, and number of times.
5	NE_SetLightBuz	Simultaneously control the LED and alarm with the specified color, pattern, volume, and number of times.
6	NE_Reset	Turn off the LED and stop the alarm.
7	NE_GetDeviceState	Gets LED and alarm status.
8	NE_GetFirmVer	Gets firmware version.

(4) API Details

① NE_OpenDevice

Item	Description
Name	int NE_OpenDevice()
Overview	Connects to this product via USB communication.
Argument	None
Return Value	If successful, returns 0. If an error occurs, a value less than 0 is returned. Refer to “ 7.3.(6) Error ” for details.
Precautions	This function internally gets the device handle that performs USB communication. To release the device handle, it is necessary to call “NE_CloseDevice”. This function cannot get multiple device handles.

② NE_CloseDevice

Item	Description
Name	int NE_CloseDevice()
Overview	Ends USB communication with this product.
Argument	None
Return Value	If successful, returns 0. If an error occurs, a value less than 0 is returned. Refer to “ 7.3.(6) Error ” for details.

③ NE_SetLight

Item	Description
Name	int NE_SetLight(LEDColors color, LEDPatterns ledPattern)
Overview	Specify the LED color and LED pattern and turn on this product. The alarm maintains its current state.
Argument	color : Specifies the LED color to control. For details, refer to “ 7.3.(5-1) LED unit color to be controlled. ” ledPattern : Specifies the LED pattern. For details, refer to “ 7.3.(5-2) LED pattern ”.
Return Value	If successful, returns 0. If an error occurs, a value less than 0 is returned. Refer to “ 7.3.(6) Error ” for details.
Precautions	It is necessary to call “NE_OpenDevice” before calling this function.
Program Example	<pre>int open_state, send_state; open_state = NE_OpenDevice(); if(open_state == 0){ send_state = NE_SetLight (LEDColors.Red, LEDPatterns. Continuous); /* RedON */ } NE_CloseDevice();</pre>

④ NE_SetBuz

Item	Description
Name	int NE_SetBuz(BuzzerPatterns buzPattern, int volume, int count)
Overview	Specify the alarm pattern, volume, and number of times to make this product sound the alarm. The LED unit maintains its current state.
Argument	<p>buzPattern :</p> <p>Specify the alarm pattern. Refer to “7.3. (5-3) Alarm pattern” for details.</p> <p>volume :</p> <p>Specify the volume.</p> <p>If “0” is specified, there will be no sound.</p> <p>If “1” to “10” is specified, the volume will be set according to the numerical value.</p> <p>count :</p> <p>If “0” is specified, it operates continuously.</p> <p>If “1” to “14” is specified, it sounds the defined number of times.</p>
Return Value	<p>If successful, returns 0.</p> <p>If an error occurs, a value less than 0 is returned.</p> <p>Refer to “7.3.(6) Error” for details.</p>
Precautions	It is necessary to call “NE_OpenDevice” before calling this function.
Program Example	<pre>int open_state, send_state; open_state = NE_OpenDevice(); if(open_state == 0){ send_state = NE_SetBuz (BuzzerPatterns. Pattern1, 5, 14); /* Pattern1, Volume 5, 14 times repeat */ } NE_CloseDevice();</pre>

⑤ NE_SetLightBuz

Item	Description
Name	int NE_SetLightBuz (LEDColors? color, LEDPatterns? ledPattern, BuzzerPatterns? buzPattern, int? volume, int? count)
Overview	Specify the LED color, LED pattern, alarm pattern, volume, and number of times to controlled the LED and alarm of this product at the same time.
Argument	<p>color, ledPattern, buzPattern, volume, count :</p> <p>Specify the LED color, LED pattern, alarm pattern, volume, and number of times.</p> <p>Refer to “7.3.(5-2)LED pattern” and “7.3.(5-3) Alarm pattern” for details.</p> <p>You can specify “null” for each.</p> <p>If “null” is specified, the setting will be maintained as it is.</p>
Return Value	<p>If successful, returns 0.</p> <p>If an error occurs, a value less than 0 is returned.</p> <p>Refer to “7.3.(6) Error” for details.</p>
Precautions	It is necessary to call “NE_OpenDevice” before calling this function.
Program Example	<pre>int open_state, send_state; open_state = NE_OpenDevice(); if(open_state == 0){ send_state = NE_SetLightBuz (LEDColors.Blue, LEDPatterns.Pattern1, null, 10, 0); /* Blue, Pattern1, Alarm KEEP, volume 10, endless repeat */ } NE_CloseDevice();</pre>

⑥ NE_Reset

Item	Description
Name	int NE_Reset()
Overview	Turns off the LED and stops the alarm.
Argument	None
Return Value	If successful, returns 0. If an error occurs, a value less than 0 is returned. Refer to “7.3.(6) Error” for details.
Precautions	It is necessary to call “NE_OpenDevice” before calling this function.
Program Example	<pre> int open_state, send_state; open_state = NE_OpenDevice(); if(open_state == 0){ send_state = NE_Reset(); /* ALL OFF */ } NE_CloseDevice(); </pre>

⑦ NE_GetDeviceState

Item	Description																																																																																																						
Name	byte[] NE_GetDeviceState ()																																																																																																						
Overview	Acquires the LED and alarm status of the connected this product.																																																																																																						
Argument	None																																																																																																						
Return Value	<p>1st byte : LED / alarm status 4th bit : Alarm status 0 : Stopped 1 : Sounding bit 0 : LED status 0 : Off 1 : On</p> <p>2nd byte : Error status 4th bit : Error status 0 : No error 1 : Error occurred</p> <p>If this product is not connected, returns 0.</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th></th> <th colspan="8">1st byte</th> <th colspan="8">2nd byte</th> </tr> <tr> <th>bit</th> <th>7</th><th>6</th><th>5</th><th>4</th><th>3</th><th>2</th><th>1</th><th>0</th> <th>7</th><th>6</th><th>5</th><th>4</th><th>3</th><th>2</th><th>1</th><th>0</th> </tr> </thead> <tbody> <tr> <td>BCD</td> <td>0</td><td>0</td><td>0</td><td>0/1</td><td>0</td><td>0</td><td>0</td><td>0/1</td> <td>0</td><td>0</td><td>0</td><td>0/1</td><td>0</td><td>0</td><td>0</td><td>0</td> </tr> <tr> <td></td> <td colspan="4">Alarm Status</td> <td colspan="4">LED Status</td> <td colspan="4">Error Status</td> <td colspan="4"></td> </tr> <tr> <td></td> <td colspan="4">0 : Stopped</td> <td colspan="4">0 : Off</td> <td colspan="4">0 : No error</td> <td colspan="4"></td> </tr> <tr> <td></td> <td colspan="4">1 : Sounding</td> <td colspan="4">1 : On</td> <td colspan="4">1 : Error occurred</td> <td colspan="4"></td> </tr> </tbody> </table>		1 st byte								2 nd byte								bit	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0	BCD	0	0	0	0/1	0	0	0	0/1	0	0	0	0/1	0	0	0	0		Alarm Status				LED Status				Error Status									0 : Stopped				0 : Off				0 : No error									1 : Sounding				1 : On				1 : Error occurred							
	1 st byte								2 nd byte																																																																																														
bit	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0																																																																																							
BCD	0	0	0	0/1	0	0	0	0/1	0	0	0	0/1	0	0	0	0																																																																																							
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	0 : Stopped				0 : Off				0 : No error																																																																																														
	1 : Sounding				1 : On				1 : Error occurred																																																																																														
Precautions	It is necessary to call "NE_OpenDevice" before calling this function.																																																																																																						
Program Example	<pre>int open_state, send_state; open_state = NE_OpenDevice(); if(open_state == 0){ byte[] state = NE_GetDeviceState(); /* Get Device State */ } NE_CloseDevice();</pre>																																																																																																						

⑧ NE_GetFirmVer

Item	Description																																																																																					
Name	byte[] NE_GetFirmVer()																																																																																					
Overview	Get the firmware version of the connected USB Controlled Multi-color Signal Beacon.																																																																																					
Argument	None																																																																																					
Return Value	<p>1st byte : Product model / major version First 4bits : 0 : NE-SN-USB; 1 : NE-WN-USB Last 4bits : Major version</p> <p>2nd byte : Minor version First 4bits : First decimal place Last 4bits : Second decimal place</p> <p>All in BCD notation. (Example : 0x0123=NE-SN-USB Ver.1.23, 0x1258=NE-WN-USB Ver.2.58)</p> <p>If this product is not connected, returns 0.</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="background-color: #cccccc;">bit</th> <th style="background-color: #cccccc;">15</th> <th style="background-color: #cccccc;">14</th> <th style="background-color: #cccccc;">13</th> <th style="background-color: #cccccc;">12</th> <th style="background-color: #cccccc;">11</th> <th style="background-color: #cccccc;">10</th> <th style="background-color: #cccccc;">9</th> <th style="background-color: #cccccc;">8</th> <th style="background-color: #cccccc;">7</th> <th style="background-color: #cccccc;">6</th> <th style="background-color: #cccccc;">5</th> <th style="background-color: #cccccc;">4</th> <th style="background-color: #cccccc;">3</th> <th style="background-color: #cccccc;">2</th> <th style="background-color: #cccccc;">1</th> <th style="background-color: #cccccc;">0</th> </tr> </thead> <tbody> <tr> <td>BCD</td> <td>0</td> <td>0</td> <td>0</td> <td>1</td> <td>0</td> <td>0</td> <td>1</td> <td>0</td> <td>0</td> <td>0</td> <td>1</td> <td>1</td> <td>0</td> <td>1</td> <td>0</td> <td>0</td> </tr> <tr> <td></td> <td colspan="4">0b0:NE-SN-USB</td> <td colspan="4">Major Version</td> <td colspan="4">Minor Version</td> <td colspan="4">Minor Version</td> </tr> <tr> <td></td> <td colspan="4">0b1:NE-WN-USB</td> <td colspan="4">First place</td> <td colspan="4">First decimal place</td> <td colspan="4">Second decimal place</td> </tr> <tr> <td></td> <td colspan="4">Other:Reserve</td> <td colspan="4">(0~F)</td> <td colspan="4">(0~9)</td> <td colspan="4">(0~9)</td> </tr> </tbody> </table>	bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	BCD	0	0	0	1	0	0	1	0	0	0	1	1	0	1	0	0		0b0:NE-SN-USB				Major Version				Minor Version				Minor Version					0b1:NE-WN-USB				First place				First decimal place				Second decimal place					Other:Reserve				(0~F)				(0~9)				(0~9)			
bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0																																																																						
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Precautions	It is necessary to call "NE_OpenDevice" before calling this function.																																																																																					
Program Example	<pre>int open_state, send_state; open_state = NE_OpenDevice(); if(open_state == 0){ byte[] ver = NE_GetFirmVer(); /* Get Firmware Version */ } NE_CloseDevice();</pre>																																																																																					

(5) Parameters

(5-1) LED Color Control

- Use the following parameters to specify the LED color to be controlled.

Control Item	Input	
LED Color Control	Parameters	Value
OFF(Off)	Off	0
R (Red)	Red	1
G (Green)	Green	2
Y (Amber)	Amber	3
B (Blue)	Blue	4
P (Purple)	Purple	5
C (Cyan)	Cyan	6
W (White)	Clear	7
Associated API		
NE_SetLight、NE_SetLightBuz		

(5-2) LED Pattern

- Use the following parameters to specify the LED pattern to be controlled.

Control Item	Input	
LED Pattern	Parameters	Value
Off	Off	0
On	Continuous	1
LED Pattern 1	Pattern1	2
LED Pattern 2	Pattern2	3
LED Pattern 3	Pattern3	4
LED Pattern 4	Pattern4	5
LED Pattern 5	Pattern5	6
LED Pattern 6	Pattern6	7
Associated API		
NE_SetLight, NE_SetLightBuz		

(5-3) Alarm Pattern

- Use the following parameters to specify the alarm patterns to be controlled.

Control Item	Input	
Alarm Pattern	Parameters	Value
Off	Off	0
Continuous	Continuous	1
Sweep	Pattern1	2
Call Sign	Pattern2	3
Low Urgency	Pattern3	4
High Urgency	Pattern4	5
Twinkle Star (Melody)	Pattern5	6
London Bridge (Melody)	Pattern6	7
Associated API		
NE_SetBuz, NE_SetLightBuz		

(6) Error

(6-1) Error List

Parameter	Description	Value
NoExist	The USB Controlled Multi-color Signal Beacon could not be detected. Check connection.	-1
DeviceLocked	The USB Controlled Multi-color Signal Beacon was detected, but it was occupied by another program and communication could not be established.	-2
ConnectionError	A connection has not been established. Need to call "NE_OpenDevice" again.	-3
WrongParam	An out-of-range value was specified for the parameter. Need to check parameter.	-4
TransferTimeout	A timeout occurred during transmission / reception.	-5
TransferFailed	Failed to send / receive. (Abnormal response from device, connection interruption during transmission, etc.).	-6
WinApiError	An error occurred while calling the Windows API DLL.	-7

(6-2) API List that Returns Error

API	Errors that May be Returned
NE_OpenDevice	NoExist, DeviceLocked, WinApiError
NE_SetLight	ConnectionError, WrongParam, TransferTimeout, WinApiError
NE_SetBuz	
NE_SetLightBuz	
NE_Reset	ConnectionError
NE_GetDeviceState	ConnectionError, WrongParam

7.4 Controlling According to Protocol Specifications

(1) Overview

This section describes details on USB communication with this product.

◇Check content before creating the program.

(2) USB Communication Settings

◇Communication settings for controlling the LEDs and alarms are as follows.

Item	Description
Device class	Uses the HID class so that a device is recognized as a standard HID device by the host.
Transfer mode	Interrupt transfer
Transfer direction	OUT transfer (host PC⇒this product) , IN transfer (this product⇒host PC)
Number of interfaces	1 (single structure data transmission only)
Vendor ID	191A
Device ID	6001

(3) USB Communication Protocol

(3-1) Protocol Data Area

◇The control protocol is as follows. 8 bytes in length.

1 st byte	2 nd byte	3 rd byte	4 th byte	5 th byte	6 th byte	7 th byte	8 th byte
Command Version	Command ID 0x00	Alarm Control	Alarm Volume	LED Control	Open		
	Command ID 0x01	Setting	Open	Open			
1byte	1byte	1byte	1byte	1byte	3byte		
①	②	③	④	⑤	⑥		

① Command Version

1 st byte
<ul style="list-style-type: none"> 0x00 : Fixed

② Command ID

2 nd byte
<ul style="list-style-type: none"> 0x00 : Control command 0x01 : Command to switch connection display setting

③ Alarm Control (when the command ID is 0x00)

3 rd byte							
7 bit	6 bit	5 bit	4 bit	3 bit	2 bit	1 bit	0 bit
Continuous operation / Number of operations				Alarm Pattern			
<ul style="list-style-type: none"> • 0x0 : Continuous operation • 0x1~0xE : Number of operations 1 to 14 times 				<ul style="list-style-type: none"> • 0x0 : Off • 0x1 : Continuous • 0x2 : Sweep • 0x3 : Call Sign • 0x4 : Low Urgency • 0x5 : High Urgency • 0x6 : Twinkle Star (Melody) • 0x7 : London Bridge (Melody) • 0x8~0xF : Maintain current status 			
<p>(Example)</p> <ul style="list-style-type: none"> • 0x01 → Sounds a continuous sound. • 0xD5 → Sounds the high urgency sound 13 times. 							

Setting (when the command ID is 0x01)

3 rd byte							
7 bit	6 bit	5 bit	4 bit	3 bit	2 bit	1 bit	0 bit
Open							Setting
<ul style="list-style-type: none"> • 0x0 : Fixed 							<ul style="list-style-type: none"> • 0 : OFF • 1 : ON
<p>(Example)</p> <ul style="list-style-type: none"> • 0x01 → The display setting is ON. 							

④ Alarm Volume

4 th byte							
7 bit	6 bit	5 bit	4 bit	3 bit	2 bit	1 bit	0 bit
Open				Volume			
0x0 : Fixed				<ul style="list-style-type: none"> • 0x0 : Silent • 0x1~0x9 : Stepped volume from maximum to silent • 0xA : Maximum volume • 0xB~0xF: Maintain current status 			

※If the command ID is 0x01, 0x00 : fixed.

⑤ LED Control

5 th byte							
7 bit	6 bit	5 bit	4 bit	3 bit	2 bit	1 bit	0 bit
LED Color				Pattern Selection			
<ul style="list-style-type: none"> • 0x0 : Off • 0x1 : Red • 0x2 : Green • 0x3 : Amber • 0x4 : Blue • 0x5 : Purple • 0x6 : Cyan • 0x7 : White • 0x8~0xF : Maintain current status 				<ul style="list-style-type: none"> • 0x0 : Off • 0x1 : On • 0x2 : Pattern No1 • 0x3 : Pattern No2 • 0x4 : Pattern No3 • 0x5 : Pattern No4 • 0x6 : Pattern No5 • 0x7 : Pattern No6 • 0x8~0xF : Maintain current status 			

※If the command ID is 0x01, 0x00 : Fixed

⑥ Open

8 th byte
<ul style="list-style-type: none"> • 0x00 : Fixed

(3-2) Protocol Example

◇ Red light on, continuous sound (volume 6).

1 st byte	2 nd byte	3 rd byte	4 th byte	5 th byte	6 th byte	7 th byte	8 th byte
Command Version	Command ID	Alarm Control	Alarm Volume	LED Control	Open		
0x00	0x00	0x01	0x06	0x11	0x00	0x00	0x00

◇ Amber light on (LED pattern 4), intermittent call sign (volume 8) sounds (4 times).

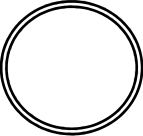
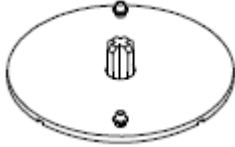
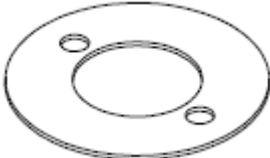
1 st byte	2 nd byte	3 rd byte	4 th byte	5 th byte	6 th byte	7 th byte	8 th byte
Command Version	Command ID	Alarm Control	Alarm Volume	LED Control	Open		
0x00	0x00	0x43	0x08	0x35	0x00	0x00	0x00

◇ Purple light on, turn alarm off.

1 st byte	2 nd byte	3 rd byte	4 th byte	5 th byte	6 th byte	7 th byte	8 th byte
Command Version	Command ID	Alarm Control	Alarm Volume	LED Control	Open		
0x00	0x00	0x00	0x00	0x51	0x00	0x00	0x00

8 Replacement and Optional Parts

- To be used by the customer for repair or replacement.

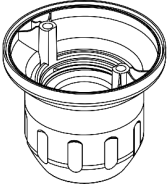
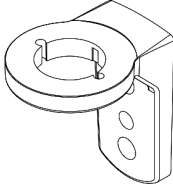
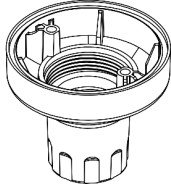
O-ring 60	Slip-proof sheet *1	Waterproof Sheet *2
1 piece	1 piece	1 piece
		

- There are no optional parts for this product.

*1 For NE-SN-USB only.

*2 For NE-WN-USB only.

The following optional parts are available for this product. (Compatible only with NE-WN-USB)

Pole Bracket	Wall Mount Bracket	NPT Pole Bracket
NE-001D	NE-002D	SZP-092D
		

9 Specifications

Product Name		USB Controlled Multicolor Signal Beacon	
Model		NE-SN-USB	NE-WN-USB
Rated Voltage		DC5V (USB Bus Power)	
Operating Voltage Range		Rated Voltage \pm 5%(Compliant with USB 2.0 standard)	
Rated Current Consumption	Max	205mA	170mA
	Environmental Condition	Luminous Color : White、 Alarm : Alarm Pattern [No.1 Continuous], Volume Level [Max]	
Operating Ambient Temperature		-20°C to +50°C	-25°C to +60°C
Operating Ambient Humidity		Less than 90% (No condensation)	
Storage Ambient Temperature		-20°C to +50°C	-25°C to +60°C
Storage Ambient Humidity		Less than 90% (No condensation)	
Mounting Location		Indoor	
Mounting Direction		All Directions	All Directions (Upright only if waterproofness is necessary.)
Protection Rating		IP20	IP65
	Environmental Condition	All Directions	Upright (IP20 except for upright)
Insulation Resistance		More than 5Mohm at DC500V between live part and non-current carrying metallic part	
Withstand Voltage		500VAC for 1min between live part and non-current carrying metallic part without breaking insulation	
Alarm	Sound Pressure Level	Typ.65dB	Typ.85dB
	Environmental Condition	Front direction from the surface/at 0.5m Alarm Pattern [No.2 Sweep Sound]	Front direction from the surface/at 1m Alarm Pattern [No.2 Sweep Sound]
	Volume change Levels	10 levels (None ... Max)	
Luminous Color		Red / Amber / Green / Blue / Cyan / Purple / White	
Mass(Tolerance \pm 10%)		0.075kg	0.068kg
		(Without accessories)	
Communication Method		USB2.0 Full Speed (Device Class: HID)	
Software Library (DLL) Supported OS		Windows(DLL) / Mac / Linux (Download from the website)	
Conformity Standards		cUL (CSA C22.2 No.62368-1-14), UL (UL62368-1) IC (ICES-003 Class B) FCC (FCC Part15 Subpart B Class B) CE EMC Directive (EN 55032, EN 55035) REACH Regulation, CE RoHS Directive (EN IEC 63000) KC (KS C 9832, KS C 9835)	

	<p>EAC (TR CU 020), EAC (TR EAEU 037) Electromagnetic Compatibility Regulations 2016 (BS EN 55032, BS EN 55035) The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012 (BS EN IEC 63000)</p>
Remarks	<p>Due to the characteristics of the LED elements, a variation in difference of the color tone and brightness of every product may occur.</p>

PATLITE Corporation G2J

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