PATLITE®

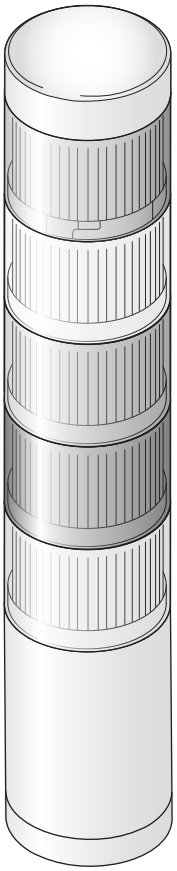
GA0010847_04

Signal Tower with Ethernet

TYPE LR5-LAN

Instruction Manual

[Web Version]



Notice to Customer

Thank you very much for purchasing our PATLITE product.

- Request the installation and wiring be performed by a professional contractor if construction work is involved.
- Prior to installation, read this manual thoroughly before using this product to ensure correct use.
- Re-read this manual before conducting maintenance, inspections, repairs, and so on.
  If you have any questions about this product, please contact the service and repair desk listed on the website.
- Before using this product, update to the latest version of the firmware.
  By registering as a member on our home page, you can download the latest version of the firmware from My Page.

To the Contractor

- Prior to installation, read this manual thoroughly to ensure it is installed correctly.
- Return this manual to the customer.

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1. Before You Begin

1.1. About Safety Symbols

To prevent injuries to the user and other personnel, as well as to prevent damage to assets, note the following.

● **The following symbols classify warnings and cautions, and describe the level of harm and damage that will occur when the corresponding instructions are ignored.**

	**This symbol indicates, "Failure to follow the instructions may lead to death or serious injury."**
	**This symbol indicates, "Failure to follow the instructions may lead to injury or property damage."**

● **The following symbols classify and describe the content of associated messages.**

	**This symbol identifies "Prohibited" operations that should never be carried out.**
	**This symbol identifies "Mandatory" instructions that should always be carried out.**
	**This symbol identifies general "Caution" related information.**

1.2. Safety Precautions

WARNING	
Prohibited	● Do not modify or disassemble this product. Failure to follow this instruction could result in fire or electric shock. ● Do not use this product when there is condensation. Failure to follow this instruction could result in fire or electric shock. ● After installation, do not use this product to climb up onto equipment. Failure to follow this instruction will result in product damage and/or falling off the machinery. ● Do not use or leave the head cover, LED units or buzzer unit either removed or cracked. Failure to follow this instruction could result in fire or electric shock. ● Do not apply voltage that exceeds the acceptable range. If you apply more than the rated voltage, internal circuits will be damaged. Failure to follow this instruction could result in fire or electric shock. ● This product is not intended for use in facilities or equipment that require a high degree of reliability and which may affect human life, either directly or indirectly. We cannot be held responsible in the event of injury, death, or property damage that may result in the use of this product in facilities, equipment, or control systems.
Mandatory	● Observe the following to prevent short-circuits, electric shock, and damage: ・Turn off the power before wiring or repairs, including replacement of the fuse. ・Install the product correctly. (If the body or unit becomes damaged, replace it.) ● If installing this product requires construction, have the work done by a professional contractor. Failure to follow this instruction may result in electric shock, fire, or falling objects. ● To prevent , injuries and property damage that could result from product failure or malfunction, ensure sufficient safety by using this product together with other equipment. ● When using this product for the purpose of maintaining safety, inspect it daily. Use this product with other equipment in the unlikely event of product failure or malfunction. ● If an unusual condition occurs while using this product, such as emitting smoke, heat, abnormal odor, or unusual sound, stop the application, disconnect the power, and contact your nearest PATLITE Sales Representative. ● To prevent accidents when operating or maintaining the product, in addition to the safety guidelines identified in the instructions of this manual, follow all general safety guidelines. We cannot foresee all circumstances concerning the handling and dangers associated with this product. Therefore, not every possible danger is indicated in this instruction manual.

⚠CAUTION

Prohibited

- Do not use in locations near fire or environments with high temperature and humidity. Do not use this product where corrosive, flammable gas is present.
- Do not use this product with the O-ring or waterproof gasket removed. This will lower waterproofing performance. Failure to follow this instruction could result in product failure.
- Do not touch the connector terminals inside the unit when attaching or removing each unit or head cover. Failure to follow this instruction could result in product damage.
- Do not use this product if liquids (such as water or chemicals) or foreign metallic objects (such as copper wire) have entered this product. Failure to follow this instruction could result in product damage.
- Don't use it near equipment (solenoid and so on.) or wires which creates strong electric or magnetic fields. Failure to follow this instruction could result in malfunction due to inductive noise.
- Do not use this product near chemicals. This product could melt or become deformed if any chemicals adhere to it.
- Do not use excessive force on this product. Failure to follow this instruction could result in deformed frame and product damage.
- Do not use sharp tipped objects with this product. Operation may become impossible as scratches develop on buttons and contacts are interfered with.
- Avoid exposure to the buzzer sound from a close distance. Failure to follow this instruction will result in injury (hearing loss).
- For the purpose of safety, insert a fuse on the power supply side to protect external devices as shown in "6.2 How to Wiring".
- Do not bend the power supply wire or LAN cable unnecessarily. Failure to follow this instruction could result in disconnection and malfunction or equipment damage.
- When packing or unpacking equipment that the product is attached to, be careful not to snag the product. Failure to follow this instruction may result in equipment damage.
- Do not wipe dirt on this product with thinners, benzine, gasoline, oil, chemicals, and so on. Failure to follow this instruction could result in discoloration and deterioration. Wipe with a soft cloth, dampened with water and wrung tightly.

Mandatory

- Before handling static-sensitive parts of this product, discharge any static electricity from the body. (To prevent damage from static electricity, place your hand or other body part onto a metal object or to an earth ground.)
- Use only the specified replacement parts listed in this manual.

1.3. Trademarks

- Microsoft Edge and Internet Explorer are registered trademarks of Microsoft Corporation in the United States and other countries.
- Google Chrome is a trademark or registered trademark of Google LLC.
- Modbus is a registered trademark of Modicon Inc. (Schneider Automation International).
- EtherNet/IP is a trademark of ODVA, Inc.
- Other company and product names that are used are the registered trademarks or trademarks of those respective companies.

1.4. Network Security

The user is responsible for the network security of this product and its use.

Take appropriate network security measures to avoid security breaches.

- Use this unit in a network secured by a firewall, etc.
- Change the login password periodically.
- Save user authenticasion information(passwords) in such a way that it is kept out of the hands of third parties

This product cannot connect directly to the Internet.

When connecting this product to the Internet, use a router or similar device.

2. Models

	Model	Size		Tiers	Rated Voltage	Mount Spec.	Comm. Spec.	Buzzer Unit	Body Color		LED Unit Color
Assembly Model	LR	5	-	↓	02	↓	↓	↓	W	-	RYGBC
Unit Model * (Body Unit)	LR	5	-		02	↓	↓	↓	W		

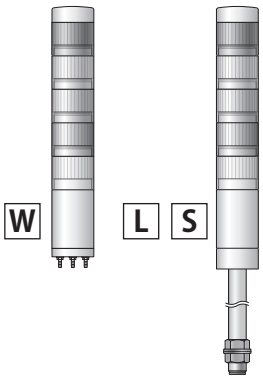
- **5** ϕ 50
- **1** ～ **5** Tiers
- **02** 24V DC
- **W** Direct
- **L** Pole + L-bracket
- **S** Mounting with short pole/L-bracket *2
- **E** Socket, HTTP, Modbus/TCP
- **I** EtherNet/IP
- **B** With buzzer *1
- **N** No buzzer
- **W** Off-white (Material:PC)
- **K** Black *2 (Material:PC)
- **U** Silver *2 (Material:PC)
- LED Color:R(Red)/ Y(Amber)/G(Green)/ B(Blue)/C(White) From top to bottom)

*1 The “With buzzer” option is not available for unit model.
*2 Not sold in Japan.

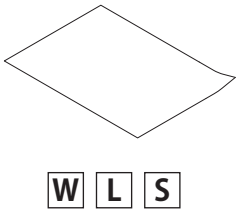
3. Parts and Accessories

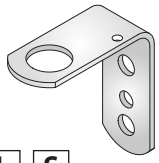
Depending on the model, the contents vary.

Main Unit : 1



Installtion Manual : 1

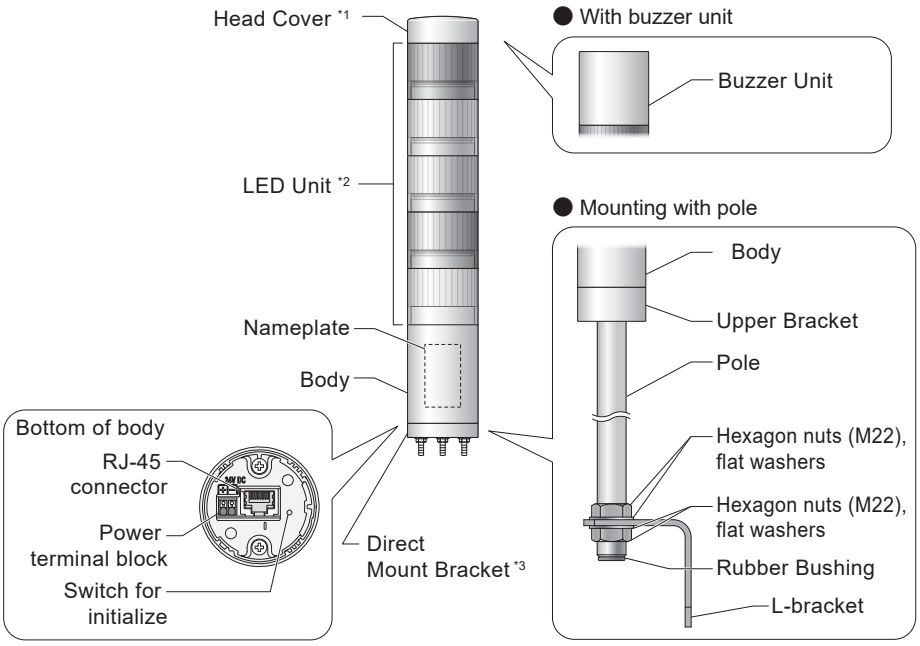


Accessory	
Hexagon Nut with Flange	L-bracket
Size M3	
 W x 3	 L S x 1

* The product appearance varies depending on the product specifications. For details, please refer to “4.Part Names and Outer Appearance (☞P.11)”.

4. Part Names and Outer Appearance

4.1. Names of Parts

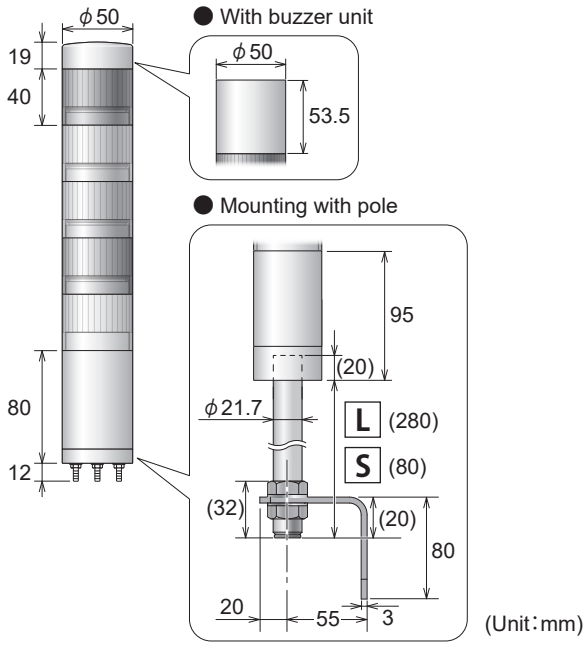


*1 In the case of a product with the buzzer unit, the product comes assembled with the buzzer unit instead of the head cover. The head cover is not included with the product.

*2 Any unit model does not include LED unit.

*3 In the case of a product to be mounted with a pole, the product comes assembled with parts required for pole mounting instead of the direct mount bracket. The direct mount bracket is not included with the product.

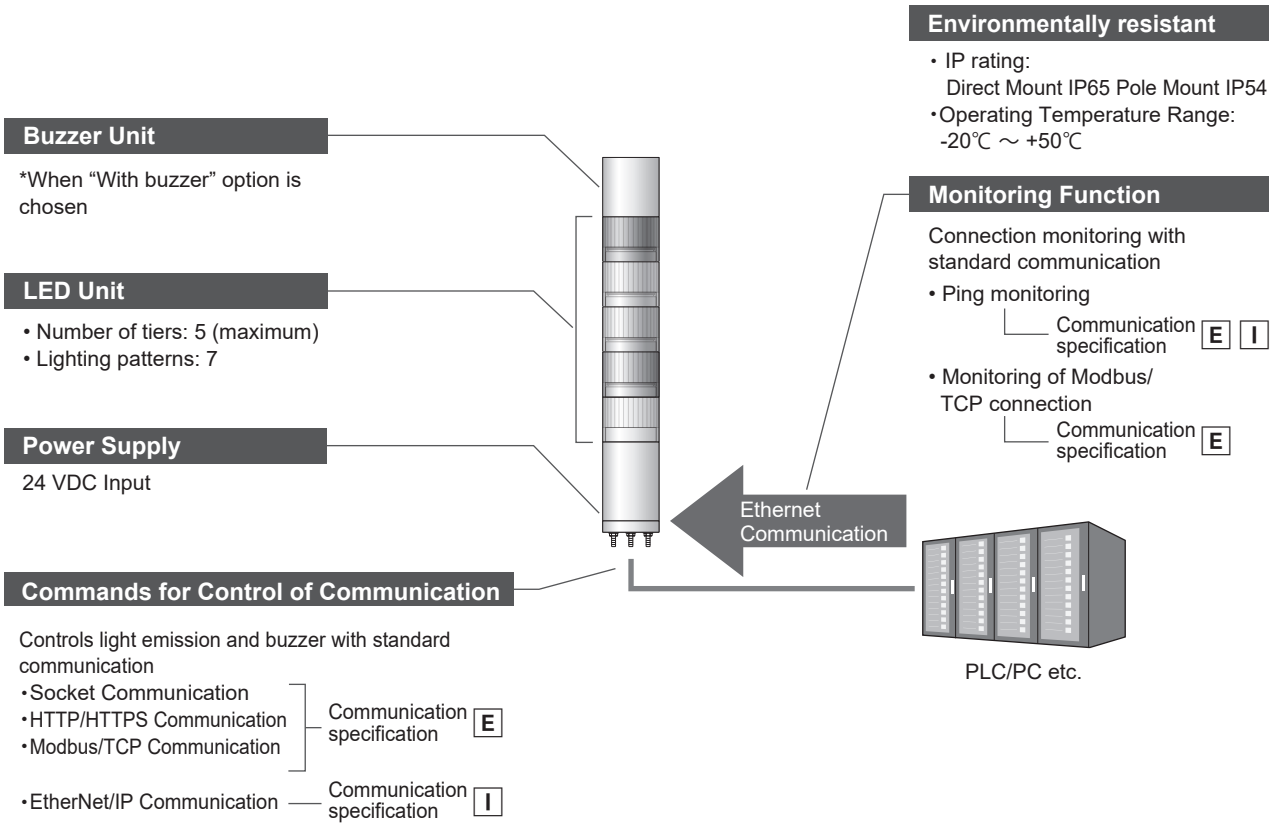
4.2. Dimensions of Parts



5. Product Features and Functions

5.1. Product Features

5.1.1. Product Features



5.1.2. Multilingual Support

You can work with the Web Setup Screen in multiple supported languages.



Supported languages

Japanese, English, Traditional Chinese, Simplified Chinese, Korean, Thai, German, French, Italian, Spanish

5.2. Product Functions

This section describes the functions of this product.

5.2.1. Signal Tower and Buzzer Notification Functions

- You can turn on, turn off or flash the Signal Tower, or emit a buzzer in response to events.
- The following indicates a list of operations for each pattern.
- Regarding the method of changing the buzzer sound pattern, please refer to “6.3. Buzzer Pattern Set-up (☞ P.21)”.

● Signal Tower pattern list

No flashing



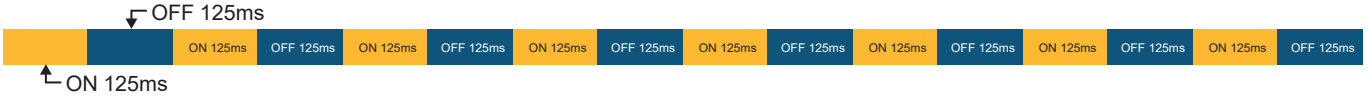
Flashing (slow)



Flashing (medium)



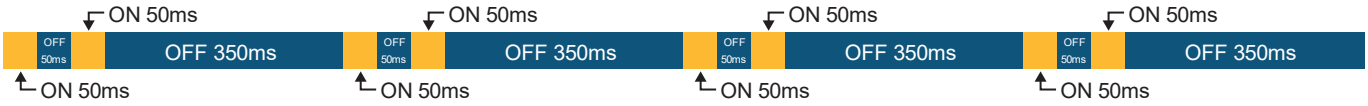
Flashing (fast)



Single flash



Double flash



Triple flash



POINT

● Single flash, Double flash and Triple flash cannot be used with the WD transmitter for the wireless data communication system. The correct data cannot be acquired.

5.2.2. Communication Command Control Function

・You can use various commands to control light or buzzer of Signal Tower and send notifications.

・Following commands can be executed in each communication.

● Socket communication function (Communication specification [E])

Command	Overview
Signal Tower motion control	・Controls the red, amber, green, blue and white LED units by using commands. ・Controls the buzzer with commands.
Clear	Turns off the Signal Tower and stops the buzzer.
Get Status	Obtains the status of the signal lights and the buzzer.

● Modbus/TCP communication (Communication specification [E])

Function Name	Overview
Read Holding Registers	Gets the current state of the Signal Tower and buzzer
Write Single Register	Changes 1 data in the Data Address Register, and control the Signal Tower and buzzer
Diagnostics	Gets the power status of this product.
Write Multiple Registers	Changes multiple data in the Data Address Register, and control the Signal Tower and buzzer.

● HTTP communication (Communication specification [E])

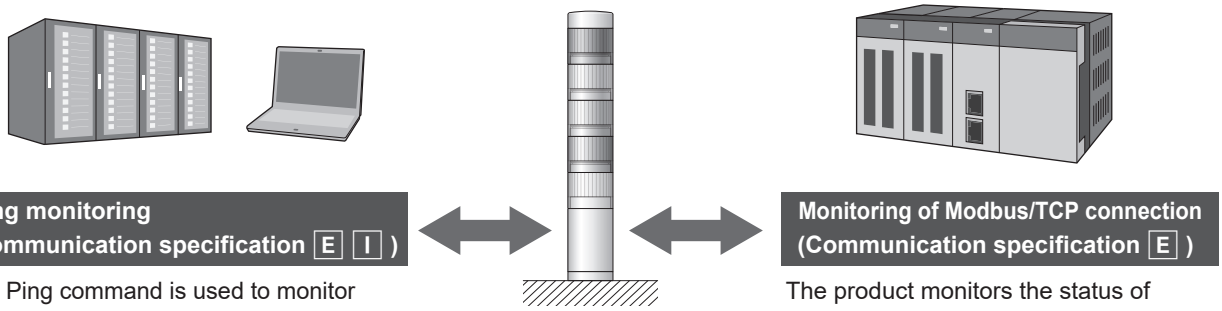
Parameter Name	Overview
alert	Controls the signal lights by colour and controls the buzzer.
clear	Turns off the Signal Tower and stops the buzzer.
format	Obtains Signal Tower and buzzer status, software version, and MAC address in a specified format.

● EtherNet/IP communication (Communication specification [I])

Function Name	Overview
Signal Tower motion control	・Controls the red, amber, green, blue and white LED units by using commands. ・Controls the buzzer.
Clear	Turns off the Signal Tower and stops the buzzer.
Get Status	Obtains the status of the signal lights and the buzzer.

5.2.3. Connection Monitoring Function

- You can observe network and connection of a device by using Ping monitoring or Modbus/TCP connection monitoring.
- As the monitoring function, only one of the above monitoring methods can be selected.
- Modbus/TCP connection monitoring is available only with the communication specification [E].



Ping monitoring (Communication specification [E] [I])

The Ping command is used to monitor whether the network and the device are alive.

Only one device can be monitored by using the ping monitoring.

In the event of line fault or no response from the monitored device, an error is detected and the product performs the preset operation.

Monitoring of Modbus/TCP connection (Communication specification [E])

The product monitors the status of connection that use the sockets to communicate with the Modbus master.

If Modbus/TCP connection with the monitored device via the sockets is disconnected, the product determines connection error and performs the preset operation.

After you enable monitoring of Modbus/TCP connection, when Modbus/TCP connection is established, the product performs “operation upon restoration of communication”, and after disconnection, the product performs “operation upon communication error occurrence”. Also, if the product is connected by another Modbus master, the product performs “operation upon restoration of communication”.

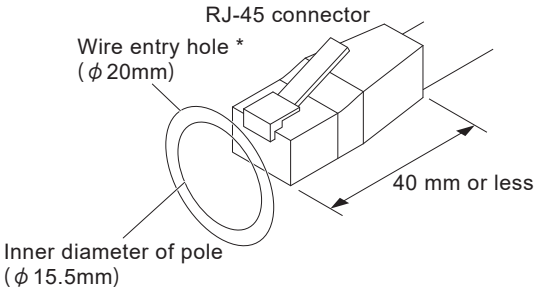
6. Mounting, Installation, Wiring, and Powering on

⚠ CAUTION

- Install a location with low vibration and sufficient strength.
- This product can only be mounted in upright position.
- Use this product indoors only. (Do not use outdoors.)
- When increased waterproofing is required, seal the screw or flanged nut parts, as well as over the waterproof sheet around the mounting hole, with a waterproof sealant.
- If increased waterproofing is required on an uneven mounting surface, in addition to the screw or flanged nut parts, seal the gap between the product and the mounting surface with a waterproof sealant.

POINT

- Since the RJ-45 connector at the end of the LAN cable is connected to the body, it should meet the dimensional requirements shown below.



* When using the wall-mount bracket SZK-002□ or SZK-001U, you have use a LAN cable with a diameter of 15 mm or less.

6.1. How to Install

6.1.1. When Directly Installing the Product (Mount specification W)

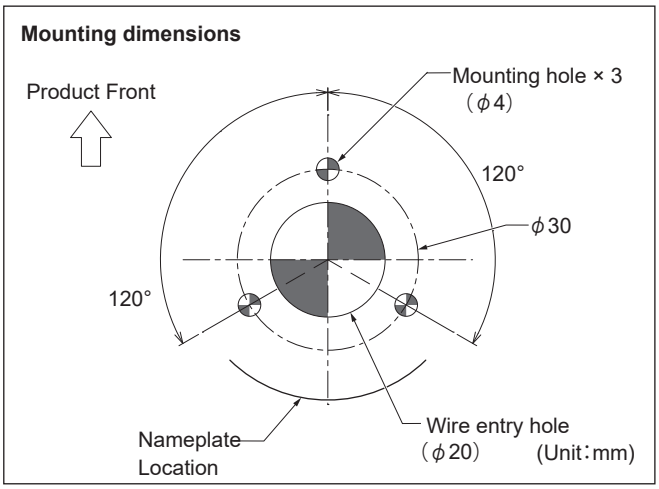
1. Drill a mounting hole and wire entry hole at the mounting position of the product.
2. Remove the body from the direct mount bracket by turning it counterclockwise.
3. Fix the direct mount bracket to the mounting position with hexagon nuts with flange.

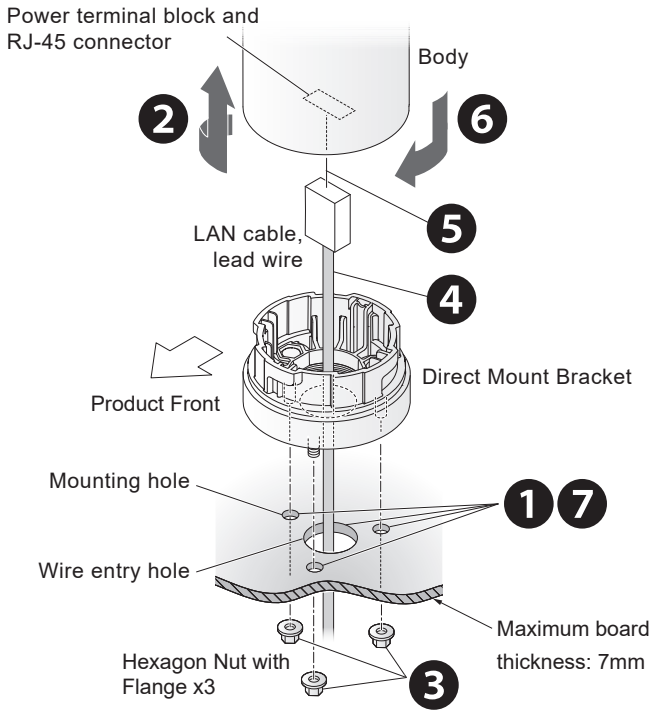
Recommended Torque	0.6 N・m (approximate)

4. Pass the cable through the wire entry hole.
5. Connect the lead wire to the power terminal block, and connect the LAN cable to the RJ-45 connector.
6. Mount the body to the direct mount bracket in the reverse order of removal.

When installing the direct mounting bracket, pass the LAN cable and lead wires straight through the wiring hole.
In addition, make sure that there are no slack wires inside the product.
If the wires are installed with slack, they may become pinched inside, which may cause a malfunction.

7. Fill the mounting holes and the wire entry hole with sealing material if necessary.





6.1.2. When Using a Pole to Fix the Product (Mount specification L S)

1 Make mounting holes in the mounting position of the L-bracket.

2 Remove the body from the upper bracket by turning it counterclockwise.

3 Pass the cable through from the bottom of the pole.

If passing the cable through the pole is difficult with the cable getting caught, bind the LAN cable and the lead wire using a commercially available cable tie and then pass them through the pole.

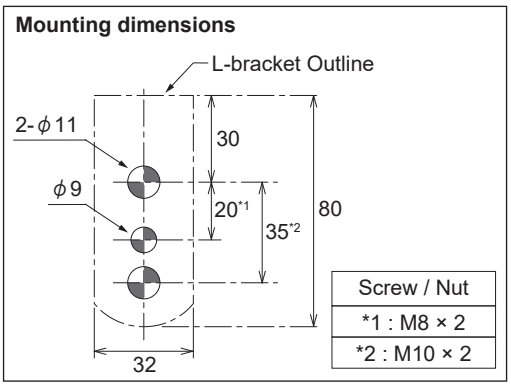
4 Connect the lead wire to the power terminal block, and connect the LAN cable to the RJ-45 connector.

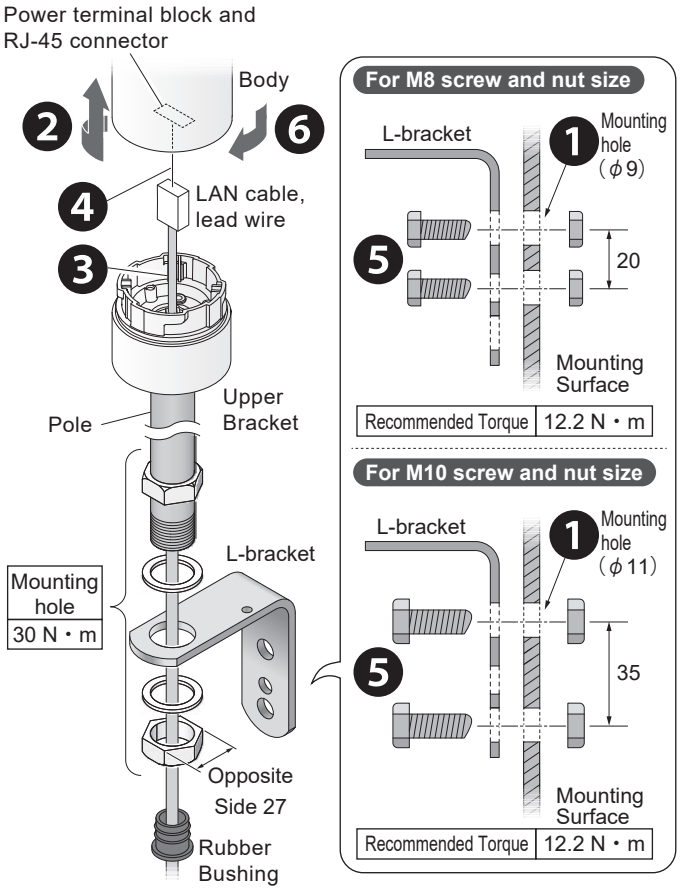
5 Attach the body to the pole bracket by reversing the removal procedure.

When installing the pole bracket, pass the LAN cable and lead wires straight through the pole.
In addition, make sure that there are no slack wires inside the product.
If the wires are installed with slack, they may become pinched inside, which may cause a malfunction.

6 Secure the product with screws and nuts.

The user is expected to provide commercially available screws and nuts for the fixation of the product.





(Unit：mm)

POINT

- When not using an L-bracket attachment, make a ϕ 22-23mm fitting hole.

6.2. How to Wiring

⚠ CAUTION

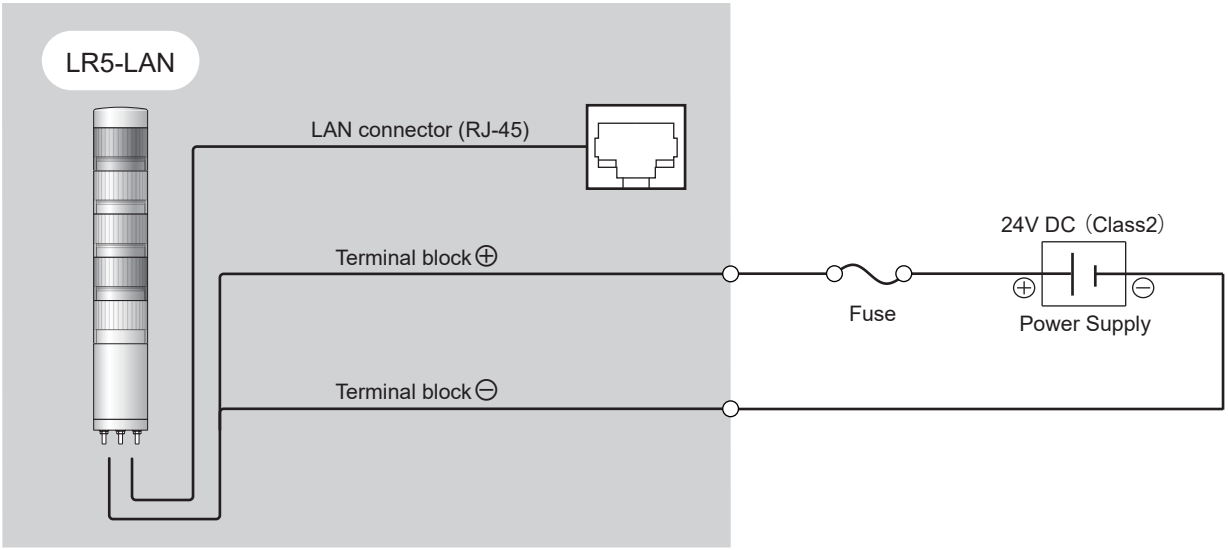
Please read the following carefully when wiring the power supply wires.

- Turn OFF the power before wiring. A short circuit may damage internal circuits or cause an electric shock.
- Pay close attention to the wiring to avoid mistakes. Incorrect wiring will burn out internal circuits.
- As shown in the wiring example, be sure to insert a fuse on the power supply side for external equipment protection. It will protect the power supply from burnout in case of a wiring error.

Please read the following carefully when wiring LAN cables.

- Confirm that the network is indoors and the LAN cable is not routed outdoors. Failure to follow this instruction could result in equipment damage due to transient voltage from lightning.
- The LAN cable should have an RJ-45 connector and be rated for Category 5e or higher (Category 6 or higher recommended). (You can use either a straight through or crossover cable.)
- When wiring, do not tug the power supply wires, LAN cable, or RJ45 connector, nor stuff them into the main unit.

6.2.1. Wiring Example



● Fuse

Fuse Rating	250V / 1A

* Reccomended Fuse : 250V/1A (5 × 20mm Fast-Acting Glass Body Cartridge Fuse)

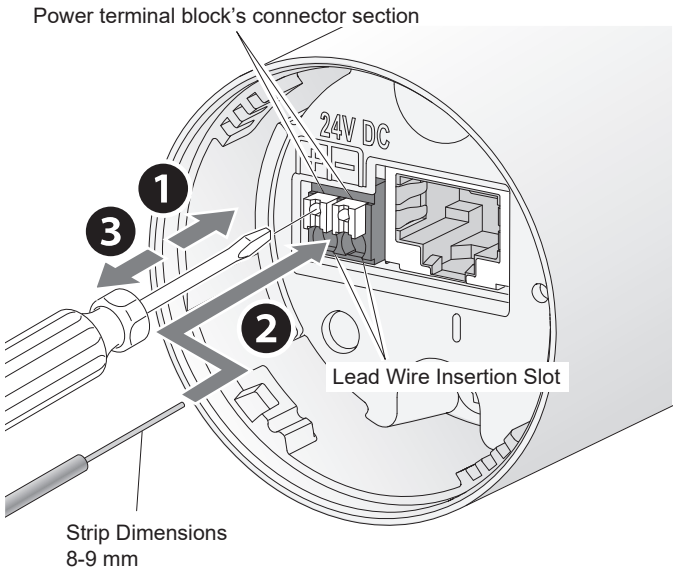
6.2.2. How to Wire to the Power Terminal Block

1. Using a flathead screwdriver or a similar tool, depress the power terminal block's connector section.
2. With the connector section depressed, insert a stripped lead wire* into the lead wire insertion slot.

* Where the lead wire is a solid wire or a stranded wire with rod terminal, just insert it into the lead wire insertion slot.

* For information of the recommended ferrule corresponding to each stranded wire size, please refer to " ● List of Wire Sizes and Recommended Ferrules" in the table below.

3. With the lead wire inserted, release the flathead screwdriver from the connector section. (Confirm that the lead wire has been locked)



POINT

- Use a flat-blade screwdriver with a blade-edge width of 2.0 mm or less and thickness of 0.5 mm or less. (Or equivalent)
- Do not push screwdriver against the lever harder than necessary. Failure to follow this instruction could result in equipment damage.
- Strip the lead wire 8–9 mm.
- When removing the lead wire, do not simply pull the wire to remove it. (First press the lever down with a flat-blade screwdriver to release the lock.)

● Supported Wire Diameter

Single Wire	ϕ 0.5-1.2mm (AWG24-16)
Stranded Wire	0.2-1.5mm^2 (AWG24-16)

● List of Wire Sizes and Recommended Ferrules

Wire size		Model (Order part number)	Manufacturer
mm^2	AWG		
0.25	24	H0,25/12 HBL(9025760000)	Weidmüller
0.34	22	H0,34/12 TK(9025770000)	
0.5	20	H0,5/14 OR(0690700000)	
0.75	18	H0,75/14 W(0462900000)	

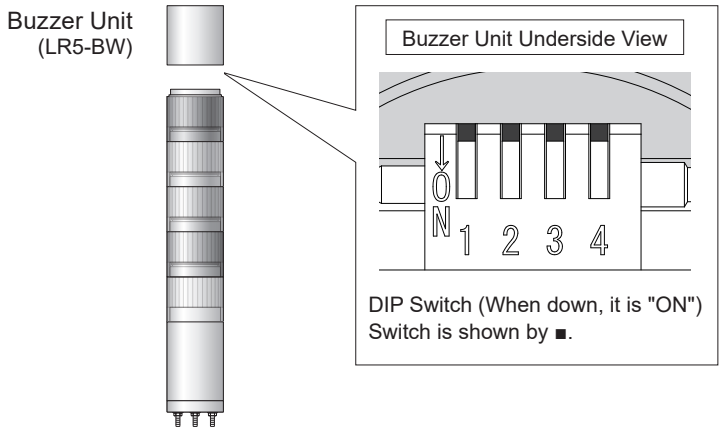
For the latest model information, please contact the manufacturer directly.

6.3. Buzzer Pattern Set-up

- If your product is a model with a buzzer unit (B), you can set a buzzer sound pattern and volume.
- To set them, you have to remove the buzzer unit and configure the DIP switches on its bottom.
- If you want to use buzzer sounds in a model without a buzzer unit, please purchase the buzzer unit (LR5-BW) separately.

⚠ CAUTION

- Do not use excess force when performing operations. Failure to comply will result in damage due to breakage or deformation.
- Do not use sharp-pointed objects to perform operations. Failure to comply may result in damage and inoperative switches or hinder contact between contact parts.



● DIP Switch Configuration Table

Buzzer Sound	DIP Switch 1	DIP Switch 2	Sound Pattern
No.1	OFF	OFF	Rapid intermittent beep (call sign)
No.2	ON	OFF	Continuous beep sound
No.3	OFF	ON	Rapid hi-low
No.4	ON	ON	Sweep sound

DIP Switch 3	Volume
OFF	Normal
ON	Sound Reduction

Note: DIP Switch 4 is not used.
The factory default settings have all of the DIP switches in the “OFF” (Up) position.

6.4. Unit Detachment Method

- Refer to the following diagrams when detaching the buzzer unit, recombining the LED Unit, etc.
- The removal and attachment procedures are also available on the product page.
  URL of product page: https://www.patlite.com/product/detail0000000983.html

⚠ WARNING

❗ Be sure the power is disconnected before working on this product.

⚠ CAUTION

⃠ Do not apply excessive strength with each unit or body. Failure to comply may damage the unit.

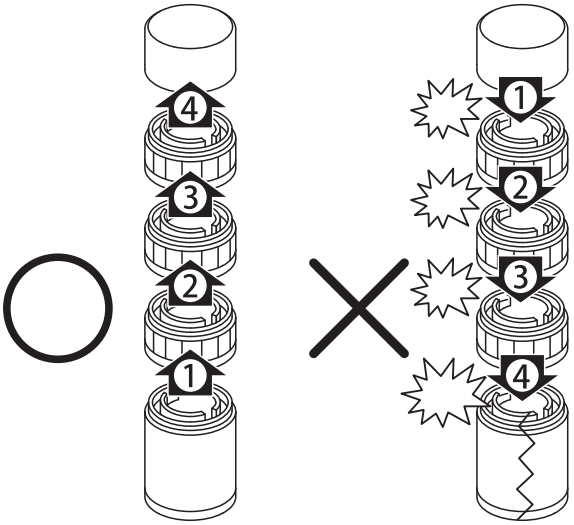
⃠ Do not touch the connector area or the inside of the body and LED unit. Failure to comply may damage the unit.

❗ Be sure to lock each unit securely when attaching. Failure to comply may damage the unit.

❗ Detach the unit in the following manner. Any other method may result in damaging the product.

Attachment : Attach one unit at a time to the body.

Removal : Firmly hold the bottom section while removing the upper section.

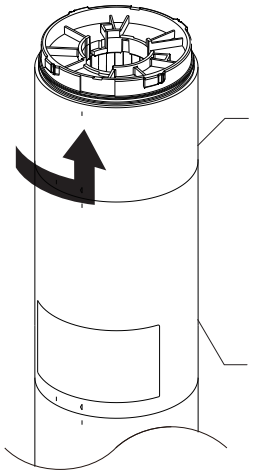


POINT

● The maximum number of units that can be assembled per product is one WD transmitter, five LED units, and one buzzer unit. Assembling the number of units exceeding the above is not allowed.

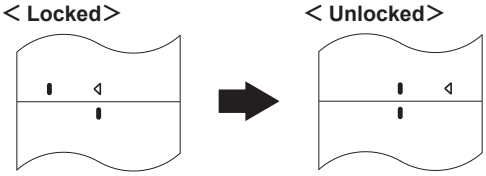
6.4.1. LED Unit to Body

● Removal

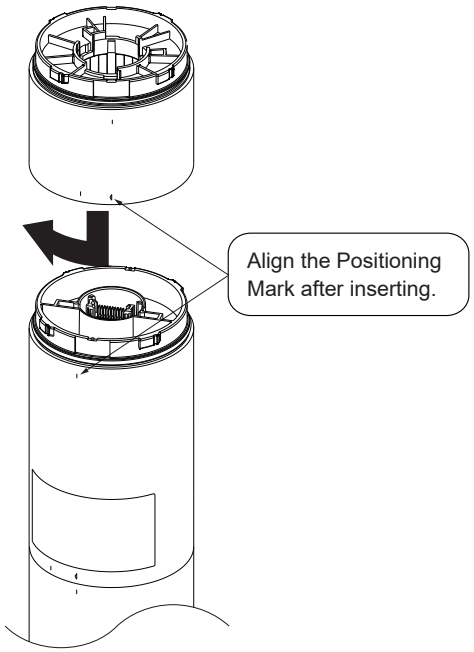


While holding the body or LED unit, turn the LED unit counterclockwise, until it unlocks, then pull it upwards to remove.

■ **Positioning Mark**

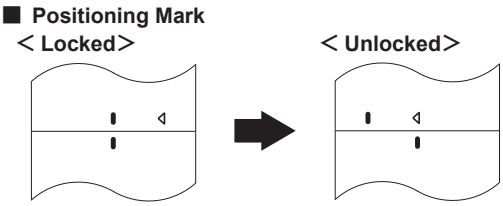


● Attachment



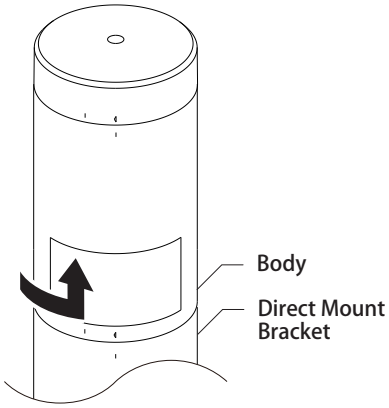
Align the Positioning Mark after insertion, then turn the unit clockwise to lock it.

■ **Positioning Mark**



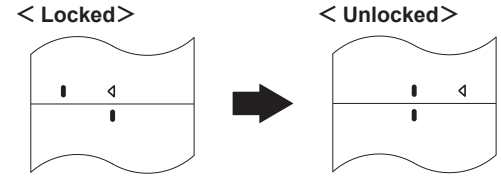
6.4.2. Body Unit

● Removal

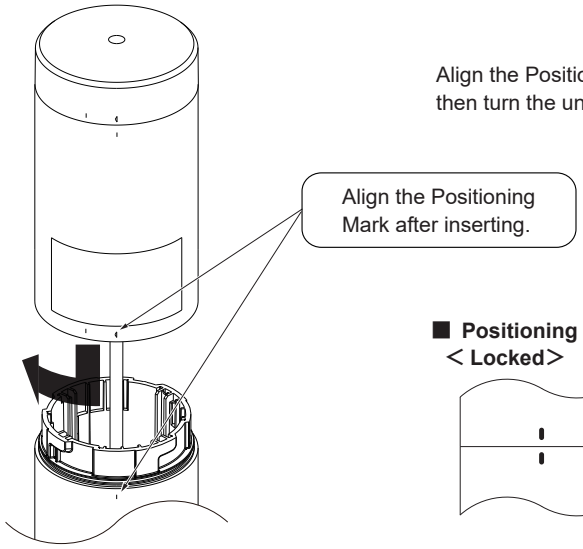


While holding the direct mount bracket,
turn the body counterclockwise until it unlocks,
then pull it upwards to remove.

■ **Positioning Mark**

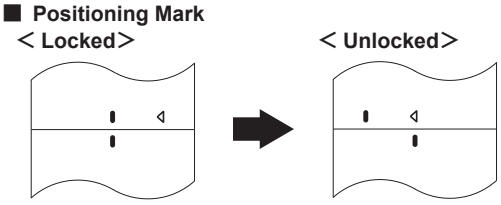


● Attachment



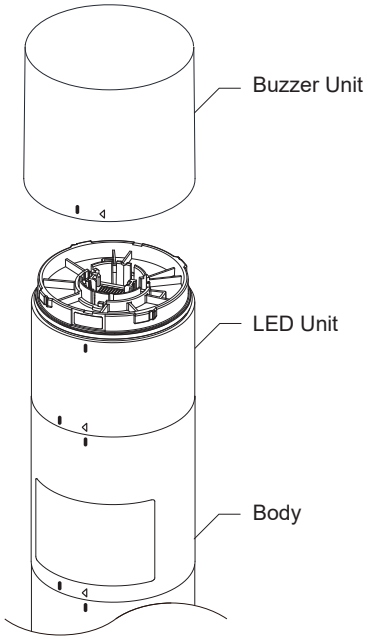
Align the Positioning Mark after insertion,
then turn the unit clockwise to lock it.

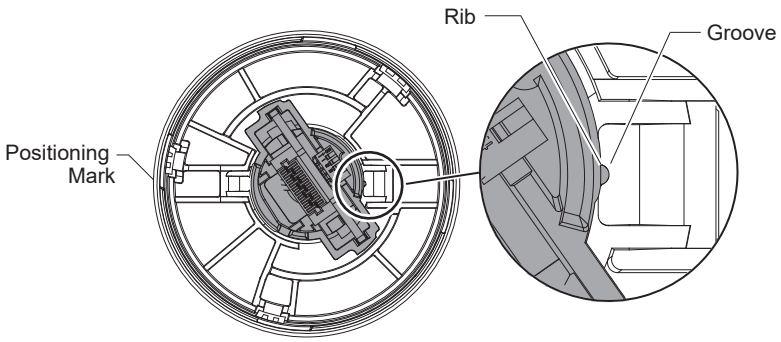
■ **Positioning Mark**



6.4.3. Troubleshooting the Buzzer Unit Attachment

The Buzzer Unit is generally in the status shown in the diagram below after removal.



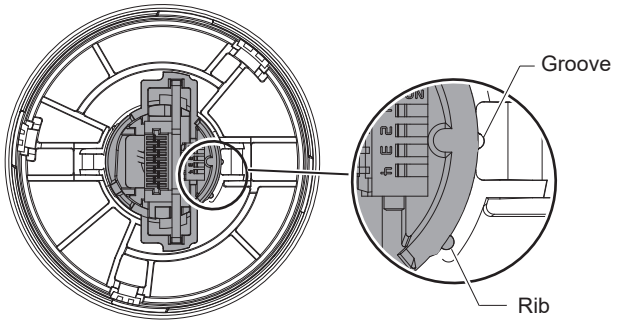


Buzzer Unit (Detached)
Bottom View

The rib inside of the Buzzer Unit fits into the groove when the Buzzer Unit has been removed from the product.

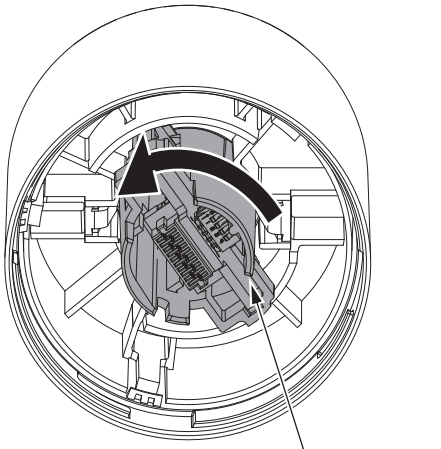
⚠ CAUTION

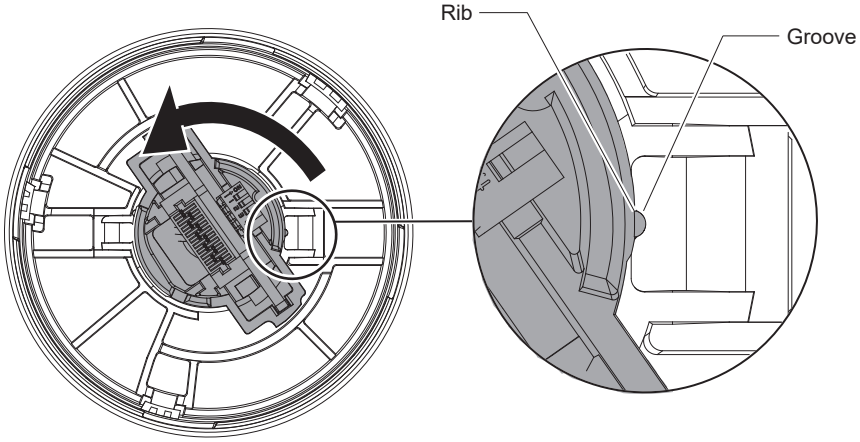
⚠ Check to make sure the rib inside of the Buzzer Unit fits into the groove if the Buzzer Unit does not attach properly. There may be a case where the rib slides out of the groove during removal of the buzzer unit as shown on the right, depending on how the unit is removed. Attaching the Buzzer Unit to the product again in this state may result in damage.



Buzzer Unit Bottom View

Use the procedure below if the Buzzer Unit does not attach properly.





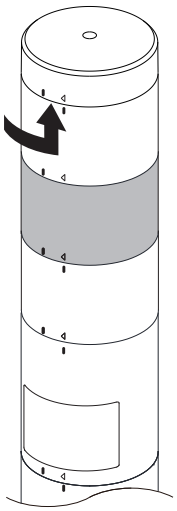
Buzzer Unit Bottom View

Turn the part inside the Buzzer Unit in the counter-clockwise direction.
Turn until the rib fits into the groove, then attach the Buzzer Unit to the product.

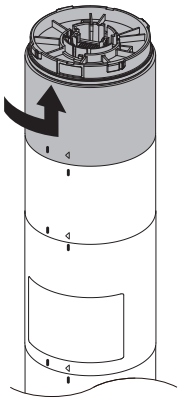
6.4.4. Example for LED Unit Reconfiguration

● Moving an LED Unit lower

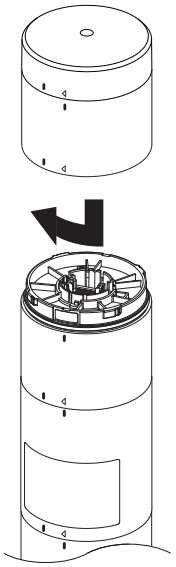
1. Remove the LED Unit right above the LED Unit in the area to remove.



2. Turn the LED Unit to remove counterclockwise while holding the adjacent LED unit to release the lock, then pull upward.

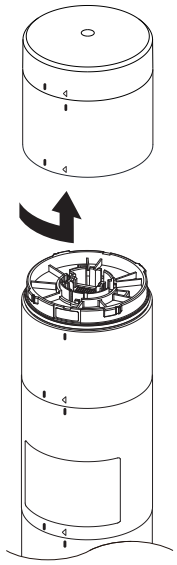


3. ❶ Align the positioning marks and insert the LED Unit that was removed in 1 , then turn the LED Unit clockwise to lock it in place.

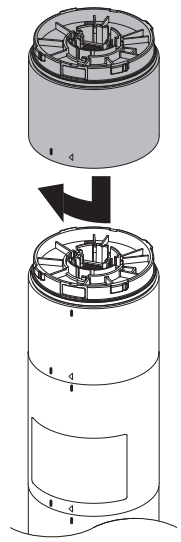


● Adding an LED Unit

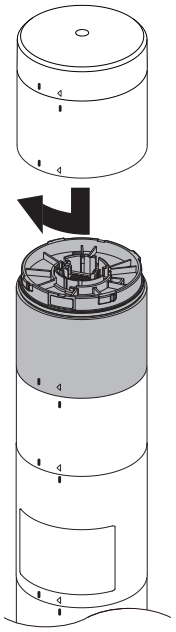
1. Remove the LED Unit above the area to attach an additional LED unit.



2. Align the positioning marks and insert the LED Unit, then turn the LED Unit clockwise to lock it in place.

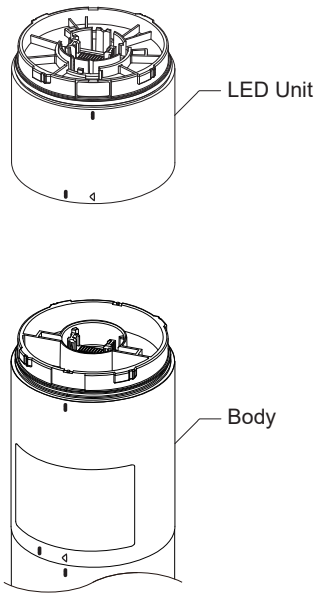
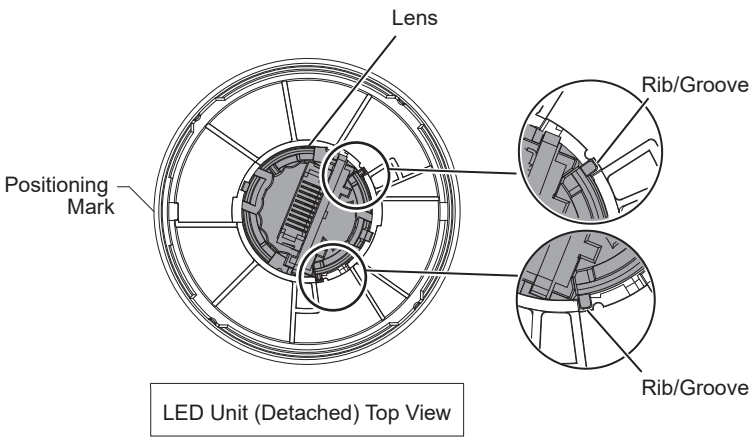


3. ❶Align the positioning marks and insert the LED Unit that was removed in 1 , then turn the LED Unit clockwise to lock it in place.

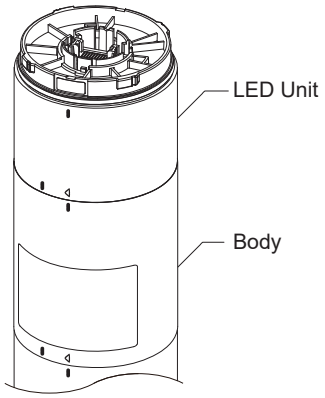
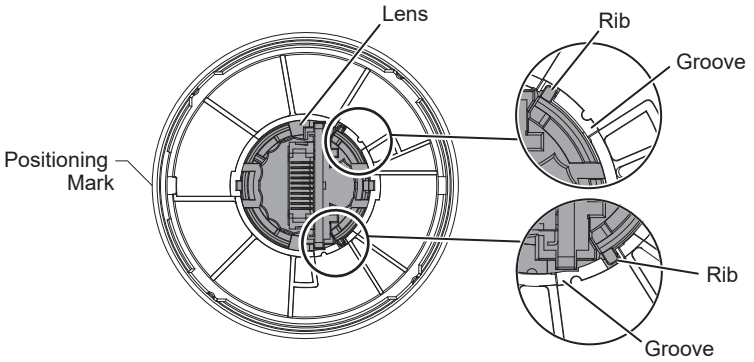


● Troubleshooting the LED Unit

The structure of the LED Unit is indicated below.

<table>
<tr><th>Status</th><th>Condition</th></tr>
<tr><td>
</td><td>

LED Unit (Detached) Top View

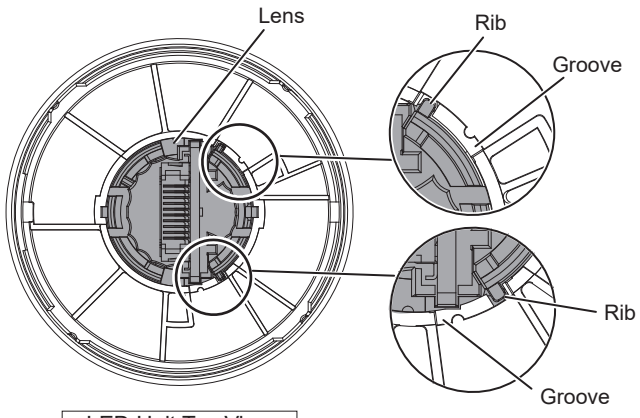
The rib of the lens generally fits into the groove when the LED Unit has been removed from the product.</td></tr>
<tr><td>
</td><td>

LED Unit (Attached) Top View

The rib of the lens generally does not sit in the groove while the LED Unit is attached to the product.</td></tr>
</table>

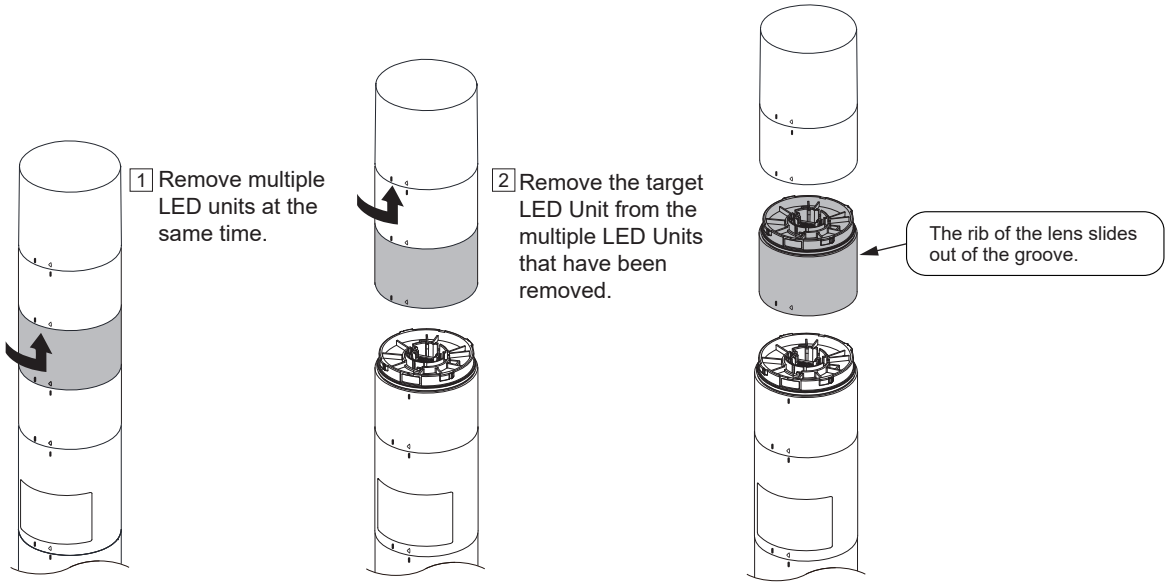
⚠ CAUTION

Check whether the rib of the lens inside of the LED Unit fits into the groove if the LED Unit does not attach properly. Attach the LED Unit by referring to the next page if the rib does not fit into the groove as shown in the diagram below. In addition, the rib may slide out of the groove during removal as shown in the diagram below depending on how the LED Unit is removed.
Attaching the LED Unit to the product again in this state may result in damage.

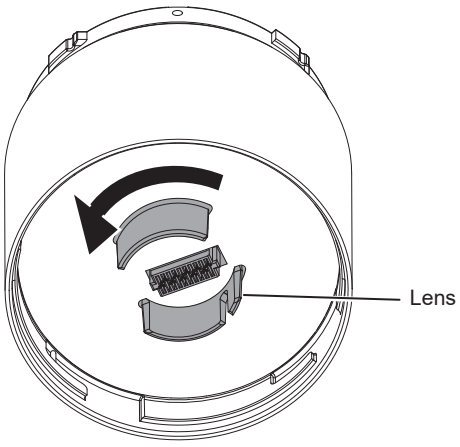


LED Unit Top View

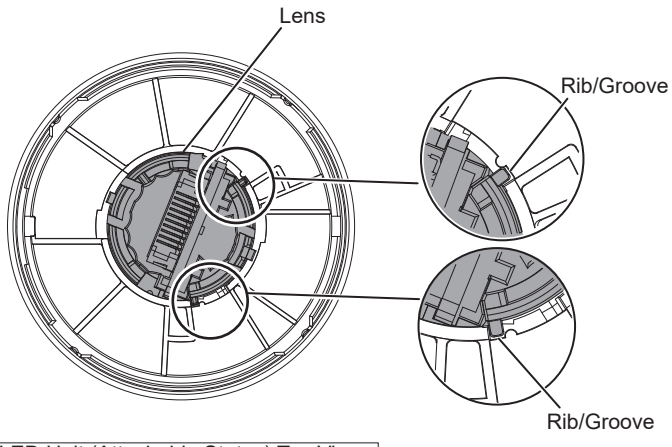
Do not remove the LED unit as shown in below. The rib of the lens will slide out of the groove. Attaching the LED Unit to the product again in this state may result in damage.



Use the procedure below if the LED Unit does not attach properly.



LED Unit Bottom View

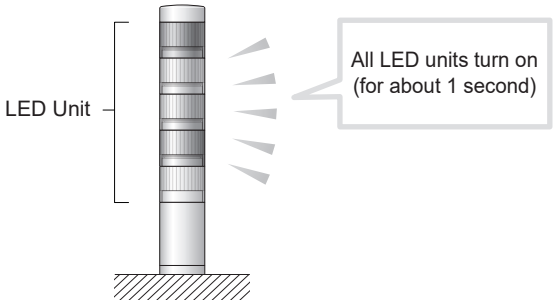


LED Unit (Attachable Status) Top View

Turn the lens inside the LED Unit in the counter-clockwise direction.
Turn until the lens snaps in place, and then attach the LED Unit to the product.

6.5. Checking at Startup

- After turning on the power of the body, you have to check the lighting condition of each LED unit.
- When the product gets ready for use, the units light up to inform the user of the product condition.
- After an update of the firmware or during automatic network configuration, it may take apporoximately 30 seconds for the LED units to turn on.
- When normal operation is detected, all the LED units turn on for about one second.



7. Before Use

This section describes the setup procedure required to use this product. Follow the steps below for setup.

STEP 1 Set Up Network Settings on the PC

STEP 2 Connect this product to a PC with a LAN cable

"6.2. How to Wiring (☞ P.19)"

STEP 3 Power up this product

"6.2. How to Wiring (☞ P.19)"

STEP 4 Set password

"7.2. Setting Up the Password (☞ P.36)"

Must be done at the time of purchase or after initializing the settings. After setup, the login screen will display.

STEP 5 Display the Web Setup Screen

"7.3. Displaying the Web Setup Screen (☞ P.38)"

STEP 6 Display the Web Setup Screen

- Setting Up Product Network Settings
  (Communication specifications E I)
  "7.4. Setting Up Product Network Settings (☞ P.40)"
- When controlled with PNS Command
  (Communication specifications E)
  "7.5.1. Make Settings for Socket communication function (☞ P.41)""
- When controlled with Modbus/TCP
  (Communication specifications E)
  "7.5.2. Setting up Modbus/TCP (☞ P.42)"
- Setting Up Monitoring Settings
  (Communication specifications E I)
  "7.6. Setting up Connection Monitoring (☞ P.43)"

After completing the settings for your purpose, either cycle the power or reboot before starting operation of the product.

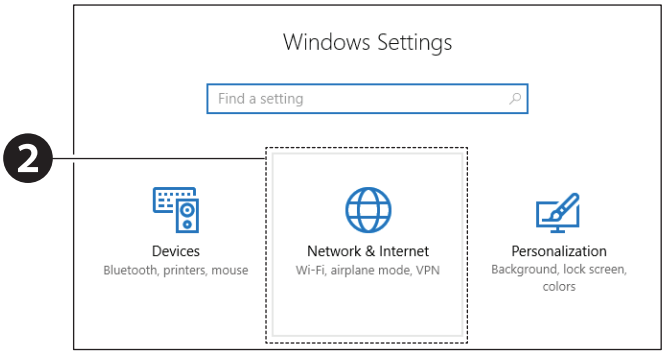
STEP 7 Use this product

7.1. Setting Up Network Settings on the PC

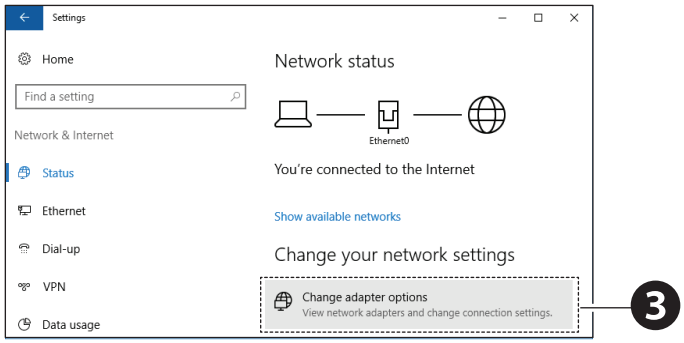
- To display the product's Web Setup Screen, set up is required on a personal computer.
- The setup procedure differs according to the OS. You have to see the procedure appropriate to the OS of your PC. The procedures are intended for the product with factory settings.
- When enabling the DHCP function on the Web Setup Screen, configure the settings to match your environment. (Depending on the OS version, the configuration procedure may be different.)

7.1.1. Windows 10

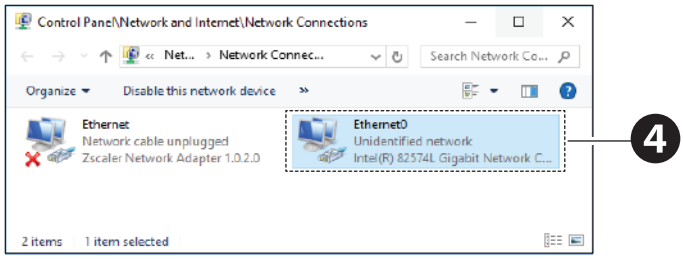
1. From the taskbar's "Windows Start menu", click "Settings" to enter the "Settings" screen.
2. Click "Network & Internet" to enter the "View network status and tasks" screen.



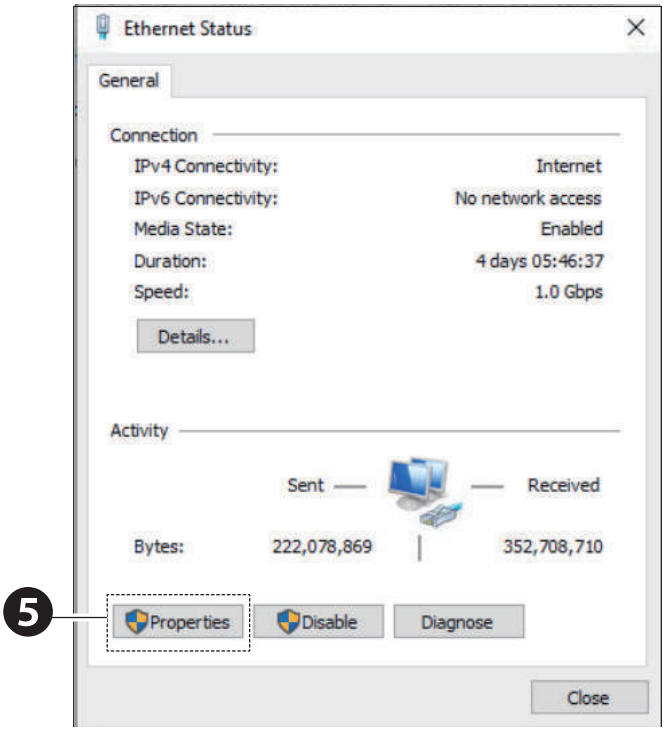
3. From "View network status and tasks", click "Change adapter options" to display the "Network Connections" screen.



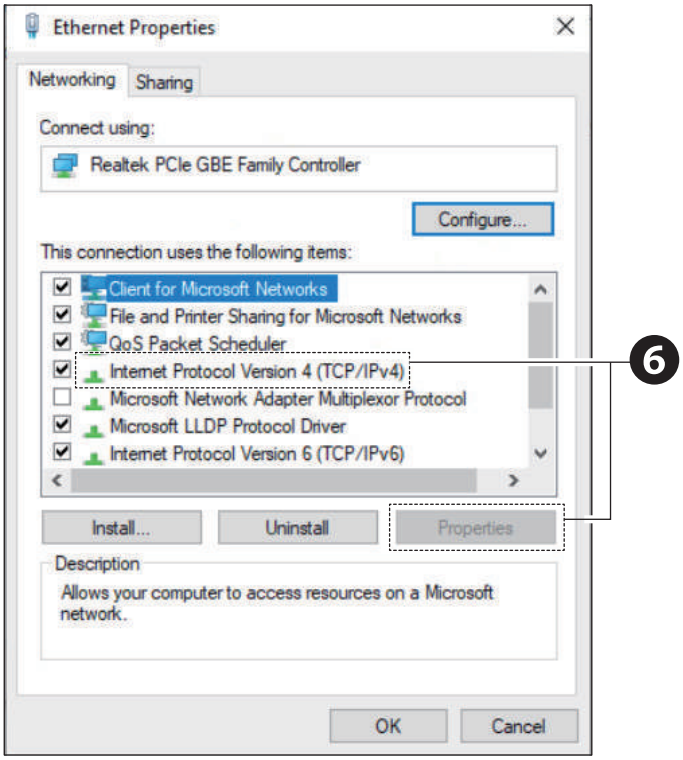
4. Double-click either "Ethernet" or "Local Area Connection", used to connect the product.



5 Click "Properties".



6 Select "Internet Protocol Version 4 (TCP/IPv4)" and click "Properties".

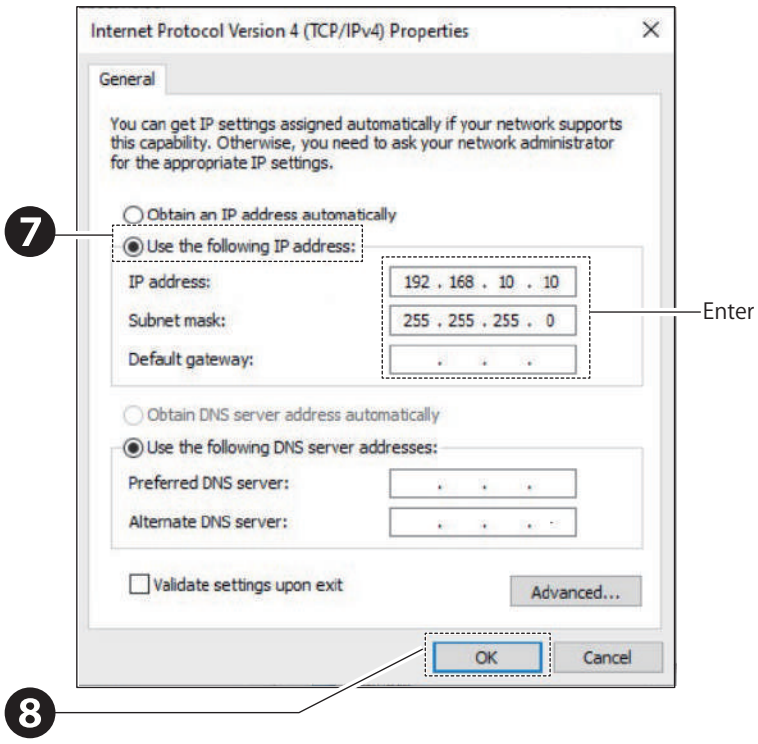


7 In the "General" tab, select the "Use the following IP address:" check box and set the items.

- IP address: 192.168.10.2 to 254
- Subnet mask: 255.255.255.0
- Default gateway: No setting is required for a direct connection. When connecting to a network, check with the network administrator.

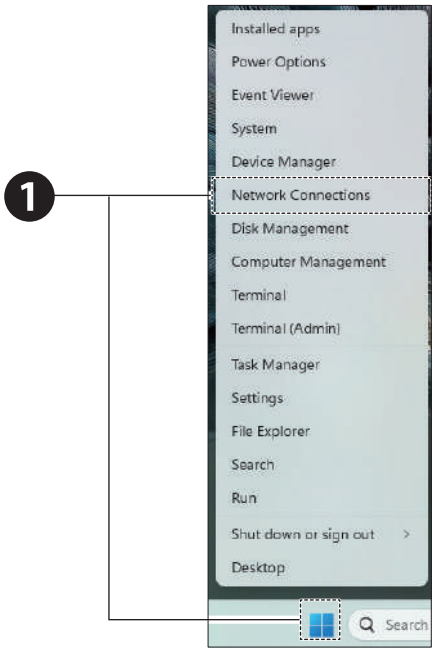
* Determine beforehand the settings you plan to use at run time.

8 After the entries are complete, click "OK".

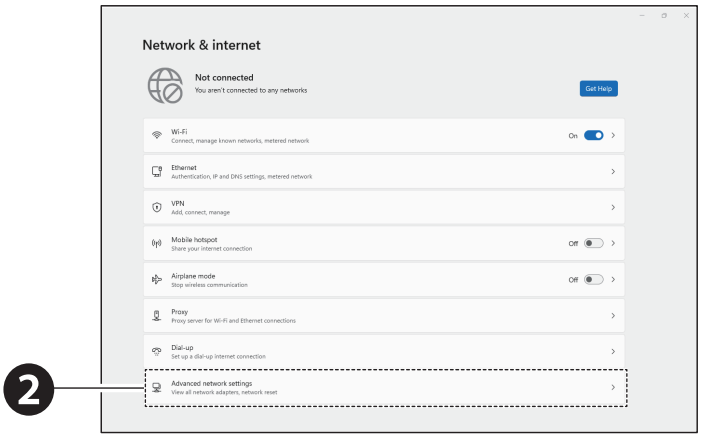


7.1.2. Windows 11

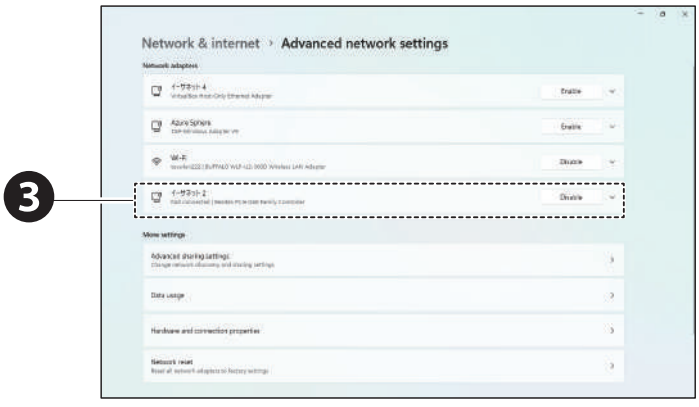
1. Right-click “Start” to display the menu, and then click “Network Connections”.



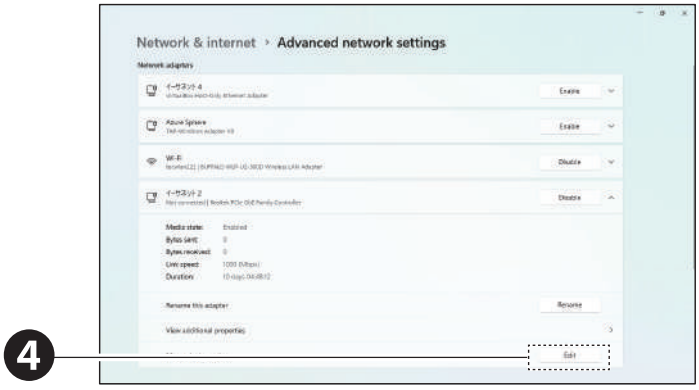
2. Click “Advanced network settings”.



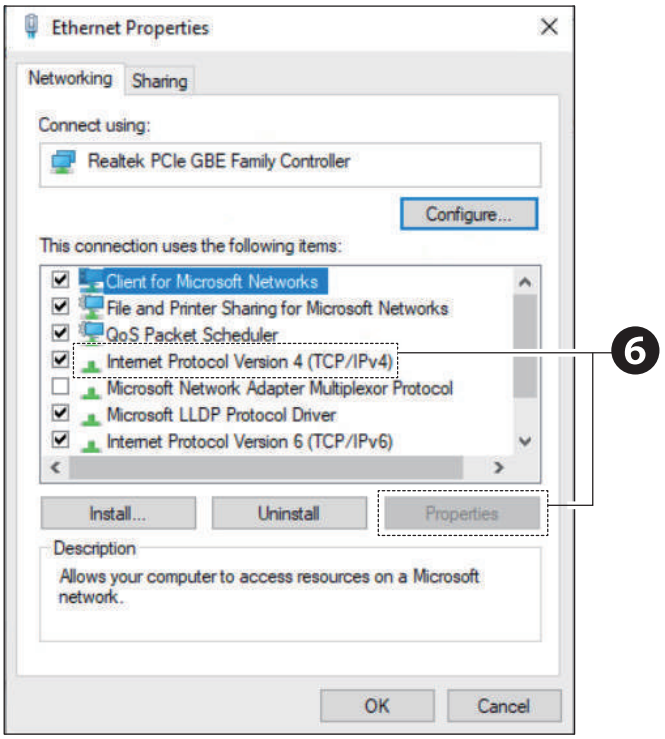
3. Click ▽ of “Ethernet” used to connect the product.



4. Click “Edit”.



5 Select "Internet Protocol Version 4 (TCP/IPv4)" and click "Properties".

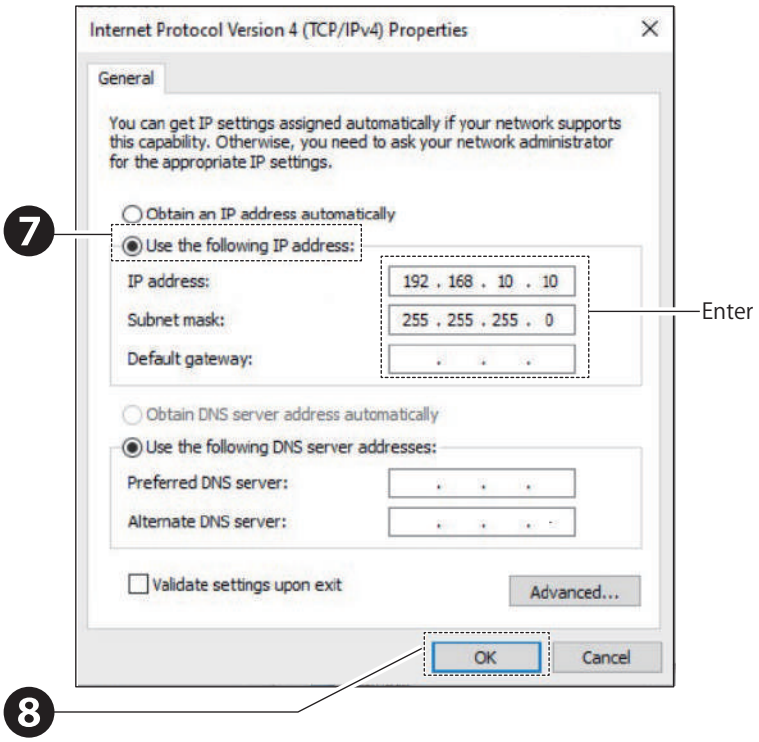


6 In the "General" tab, select the "Use the following IP address:" check box and set the items.

- IP address: 192.168.10.2 to 254
- Subnet mask: 255.255.255.0
- Default gateway: No setting is required for a direct connection. When connecting to a network, check with the network administrator.

* Determine beforehand the settings you plan to use at run time.

7 After the entries are complete, click "OK".



7.2. Setting Up the Password

- The web browsers compatible with the product are Google Chrome (version 128 whose operation testing is completed) and Microsoft Edge (version 128 whose operation testing is completed).
- The instructions in this manual use "Google Chrome" as an example. Use “Microsoft Edge” in the same way.
- To specify various settings on this product, a password is required.
- When accessing the product with a browser for the first time after purchase or after initialization, the user authentication setting screen will be displayed instead of the login screen.

⚠ CAUTION

⚠ Do not forget the password. If you cannot remember password, you will not be able to log in. If you cannot remember password, initialize the system and reset your password.

POINT

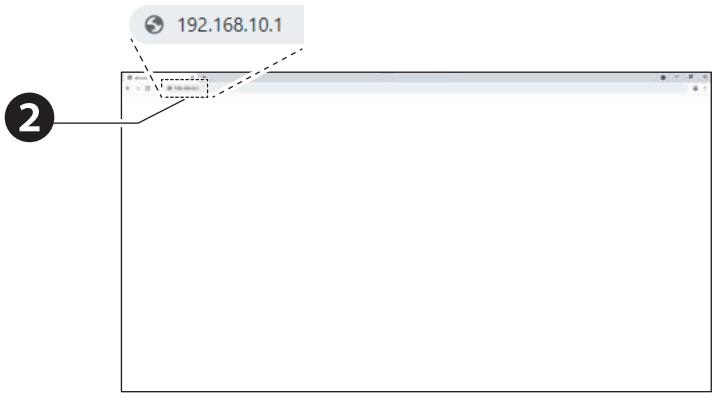
● The first time access or after initialization, the display will be in English. In the "Language Menu", select the display language.

1 Start a Web browser.

2 In the Web browser address bar, enter the IP address* set for this product.

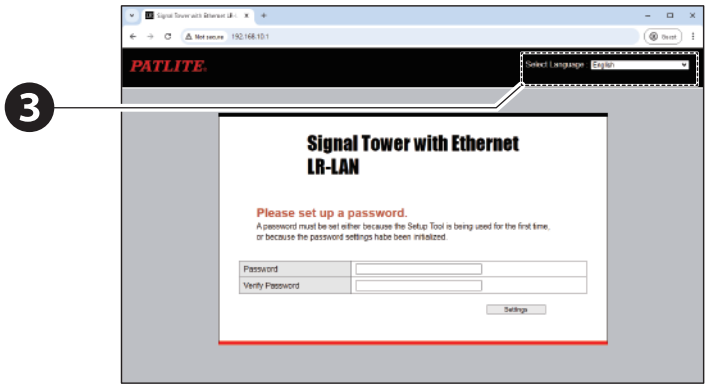
* The default IP address for this product is "192.168.10.1".

* If the User authentication settings screen does not appear, confirm your computer’s network settings are set up correctly.
“7.1. Setting Up Network Settings on the PC (☞ P.31)”



3 Select the language.

- English
- 日本語 | Japanese
- 繁體中文 | Traditional Chinese
- 简体中文 | Simplified Chinese
- 한국어 | Korean
- ไทย | Thai
- Deutsche | German
- Français | French
- Italiano | Italian
- Español | Spanish

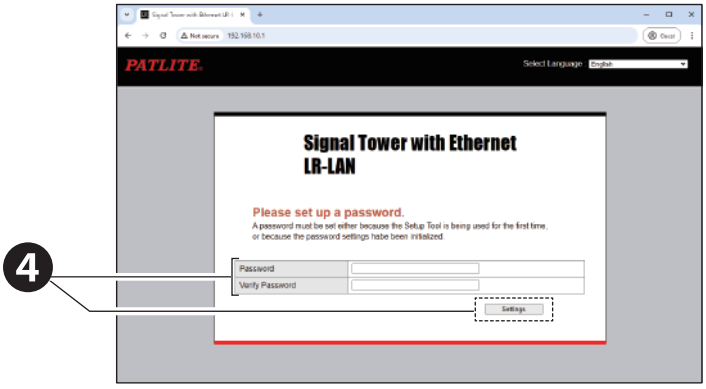


4 Enter the password and click the "Settings" button.

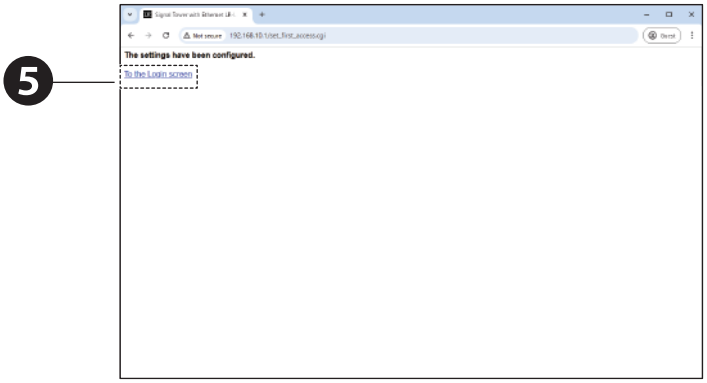
- "Password": Enter the password
- “Verify Password”: Reenter the password you want to set

* The password must be 8 to 64 half-width alphanumeric characters.
(When the communication method E is used and the firmware version is 1.00, the password must be 1 to 16 half-width alphanumeric characters.)

* Password characters are case-sensitive.



5 After completing the settings, click "To the Login screen" to return to the login screen.



7.3. Displaying the Web Setup Screen

⚠ CAUTION

⚠ While logged in, after a specified period of inactivity (approx. 10 minutes) you are automatically logged out.

⚠ If the screen does not display correctly due to corrupted characters, change the character encoding to Unicode (UTF-8).

⚠ To prevent set up from multiple locations at the same time, duplicate logins are not allowed.

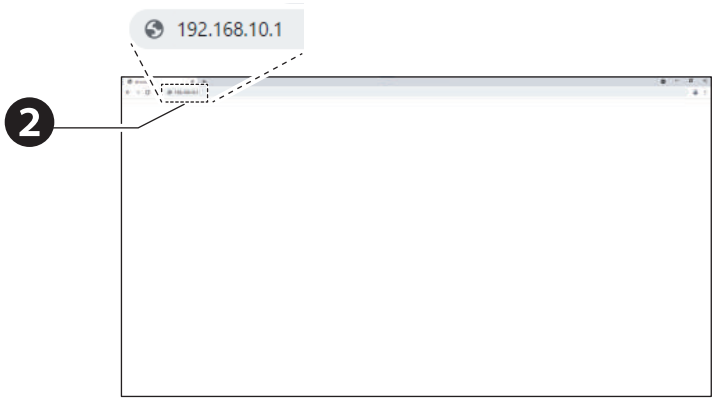
⚠ If you fail to log in 10 times, login is restricted for 10 minutes and you cannot log in even if you enter the correct password.Please log in after 10 minutes or turn off and on the product.

1 Start a Web browser.

2 In the Web browser address bar, enter the IP address* set for this product.

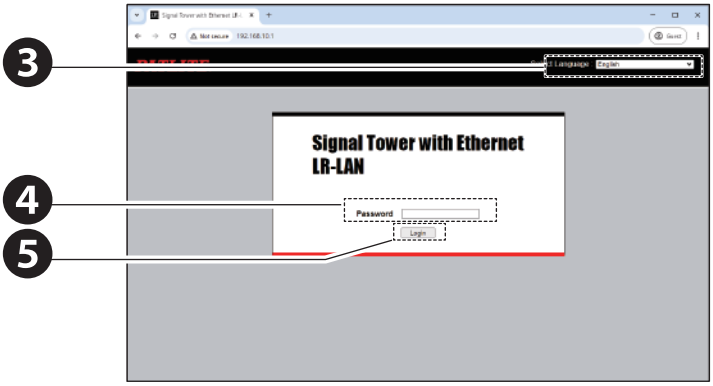
* The default IP address for this product is "192.168.10.1".

* If the User authentication settings screen does not appear, confirm your computer's network settings are set up correctly.
"7.1. Setting Up Network Settings on the PC (☞ P.31)"



3 Select the language.

- English
- 日本語 | Japanese
- 繁體中文 | Traditional Chinese
- 简体中文 | Simplified Chinese
- 한국어 | Korean
- ไทย | Thai
- Deutsche | German
- Français | French
- Italiano | Italian
- Español | Spanish



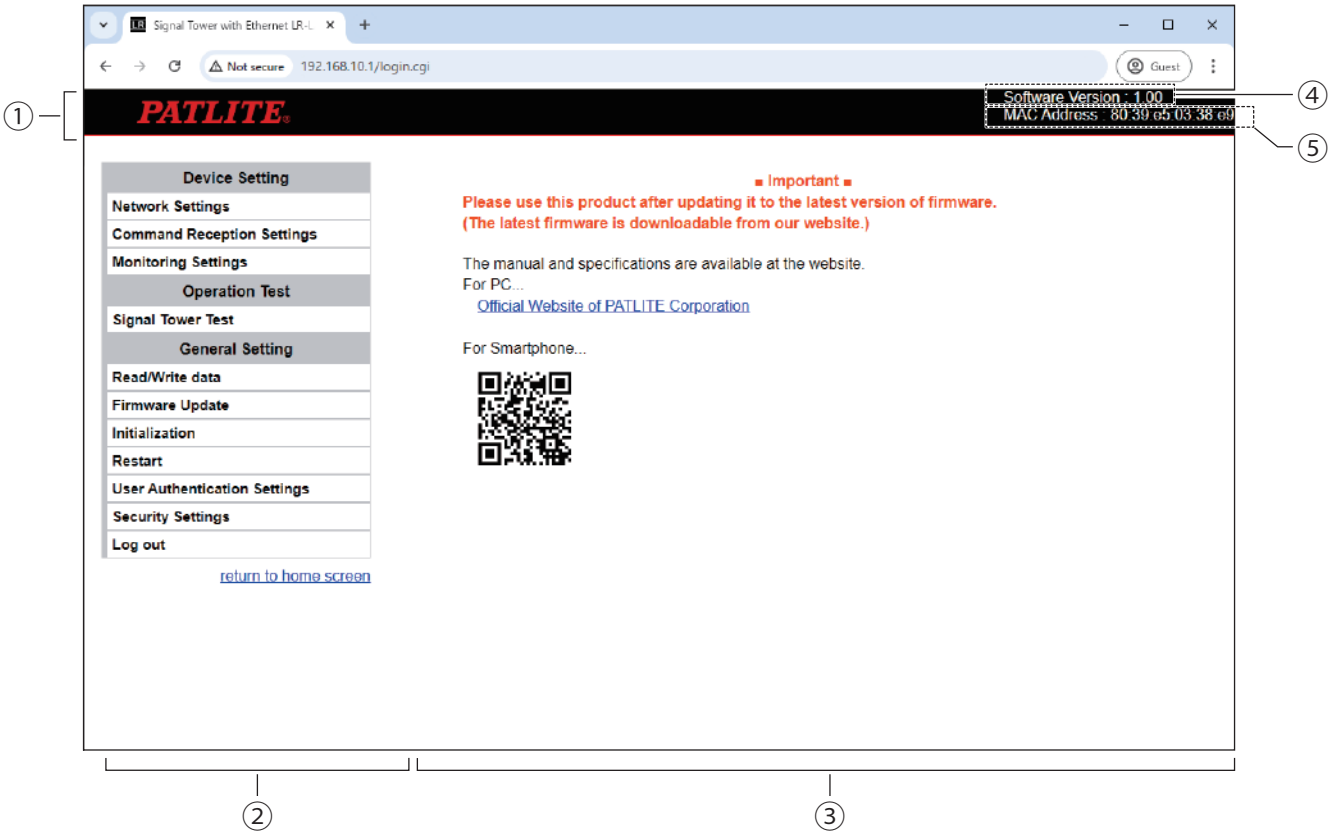
4 Enter the Password* .

* If you forget your password, please reset it. "9.1. Initialization Method (☞ P.66)"

5 Click the "Login" button to log in.

- On a successful log in, the Web Setup Screen (home screen) is displayed.

● How to Read the Top Screen



No.	Name	Description
①	Header	Displays the product information.
②	Menu	Navigate to each function.
③	Setting Screen	Set the of each function.
④	Software version	Check the firmware version that this product is currently using.
⑤	MAC Address	Check the MAC Address of this product.

POINT

- To configure a setting, from the menu on the left-hand side click the item you want to set. The selected set up screen is displayed.
- For the communication specification [I] , ② "Command Reception Settings" in the menu is not displayed.

7.4. Setting Up Product Network Settings

- To use this product, the network settings must be configured.
- The default IP address is 192.168.10.1.

⚠ CAUTION

⚠ With "Obtain automatically" being selected as the setting method of IP address, if the product cannot access the DHCP server, it behaves differently depending on the communication method.
- Communication method [E] : The product is started with the network settings of factory default.
- Communication method [I] : The product continues searching until it accesses the DHCP server.

⚠ With the "Automatic Settings" option, the product restarts with the DHCP function enabled.

⚠ After changing the IP address, to reconnect to the product change the network settings on your computer as required.

1 From the menu items, select “Network Settings”.

2 Select the way to set an IP address.

- To specify a fixed IP address, select "Set manually".
- To obtain an IP address automatically from the DHCP server, select "Obtain automatically".

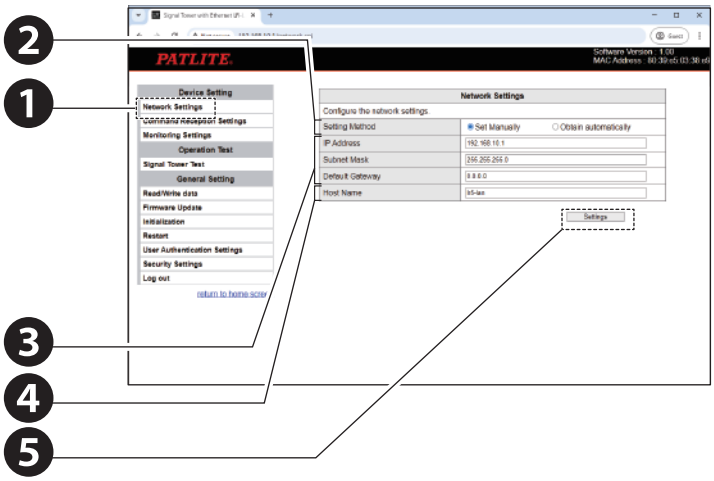
3 Enter the "IP Address", "Subnet Mask", and "Default Gateway".

- Enter the settings in accordance with the network environment in which this product is used.

* If the "Setting Method" is "Obtain automatically", input is disabled

4 Enter the product's host name.

5 Click "Settings" to apply the defined settings.



Item	Description	Default Value	Input Range	Input
Way to set IP address	Select how to configure the IP address for this product.	Set manually	-	Required
IP Address	Enter the IP address of this product.	192.168.10.1	IPv4 address format	Required
Subnet Mask	Enter the subnet mask of this product.	255.255.255.0	IPv4 address format	Required
Default Gateway	Enter the default gateway.	0.0.0.0	IPv4 address format	Required
Host Name	Enter the product's host name.	lr5-lan	Maximum 63 characters*	Required

* Single-byte alphanumeric characters, hyphens, and periods can be used. Hyphen cannot be used at the beginning and end of a “label” separated by periods. Each label must contain at least one alphabetic character.

Example: w w w . p a t l i t e . c o . j p
Label Label Label Label

POINT

● When "Obtain automatically" is selected, the host name is notified to the DHCP server.

7.5. Make Settings to Receive Commands

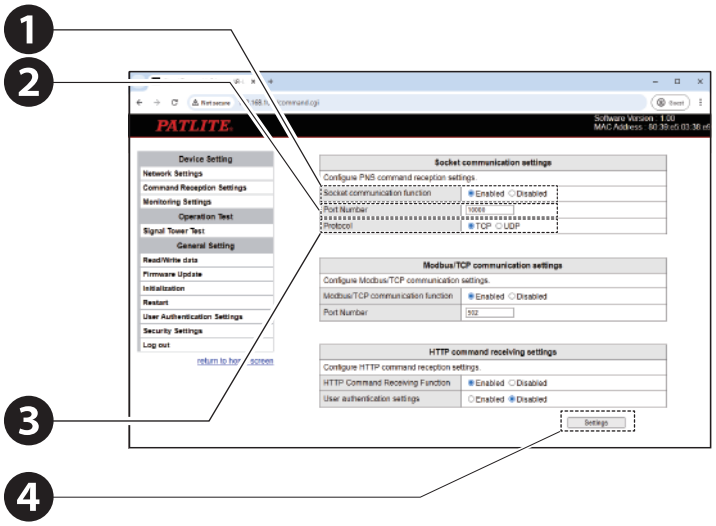
- You have to make settings to receive various commands.
- From “Command Reception Settings” on the menu screen, you display the screen where you set various commands.

⚠ CAUTION

⚠ For the communication specification I , the settings are unavailable.

7.5.1. Make Settings for Socket communication function

1. Choose “Enabled” for Socket communication function.
2. Enter the port number for receiving data.
3. Select protocol from "TCP / UDP".
   - TCP：Transmission Control Protocol
   - UDP：User Datagram Protocol
4. Click "Confirm" to apply the defined settings.



Item	Description	Default Value	Input Range	Input
Socket communication function	Switch between “Enabled” and “Disabled”.	Enabled	-	Required
Port Number	Enter the port number for receiving data.	10000	10000 to 65535 *	Required
Protocol	Select either "TCP" or "UDP".	TCP	-	Required

* You cannot set the same port number as the one specified for Modbus/TCP communication.

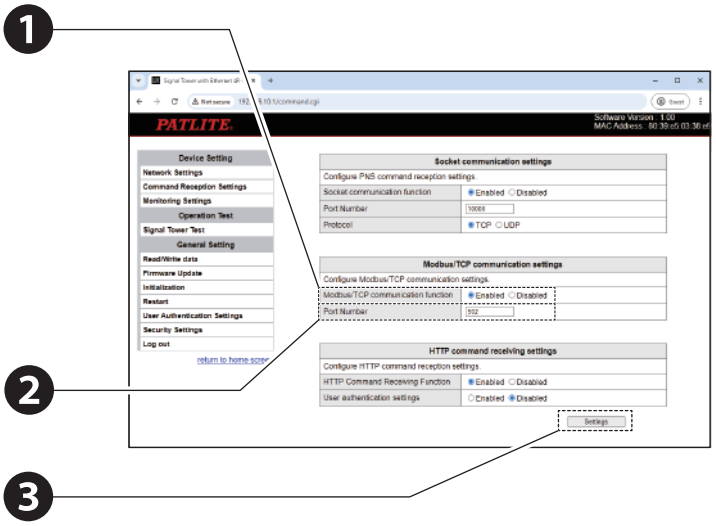
7.5.2. Setting up Modbus/TCP

❶ Choose “Enabled” for Modbus/TCP communication.

❷ Enter the port number to use.

❸ Click "Settings" to apply the defined settings.

- If a change is made in these settings, the product is disconnected from the currently connected Modbus master.



Item	Description	Default Value	Input Range	Input
Modbus/TCP communication function	Switch between “Enabled” and “Disabled”.	Enabled	-	Required
Port Number	Enter the port number to use.	502	502, or 1024 to 65535 *	Required

* You cannot set the same port number as the one specified for Socket communication function (PNS command).

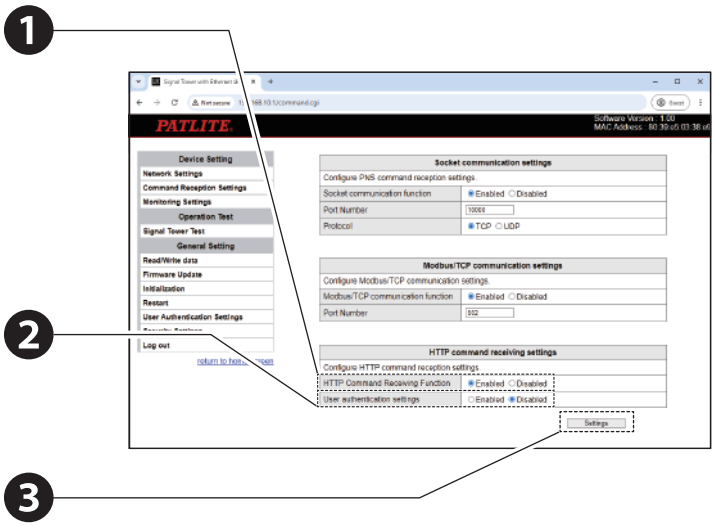
7.5.3. Make Settings to Receive HTTP Commands

❶ Choose “Enabled” for the function of receiving HTTP commands.

❷ Choose “Enabled” or “Disabled” for user authentication.

- If user authentication is enabled, enter user name and password.
- If user authentication is disabled, proceed to step ❸.

❸ Click "Settings" to apply the defined settings.



Item	Description	Default Value	Input Range	Input
HTTP Command Receiving Function	Switch between “Enabled” and “Disabled”.	Enabled	-	Required
User authentication settings	Define whether user authentication is required to receive HTTP commands.	Disabled	-	Required
Username1-8	Enter the user names to be verified in user authentication.	Blank	One-byte alphanumerics, hyphens and periods: up to 16 characters	-
Password1-8	Enter the passwords to be verified in user authentication.	Blank	One-byte alphanumerics, underscores, hyphens and periods: up to 16 characters	-

7.6. Setting up Connection Monitoring

⚠ CAUTION

⚠ For the communication specification [I] , you cannot set “Modbus/TCP connection monitoring.”

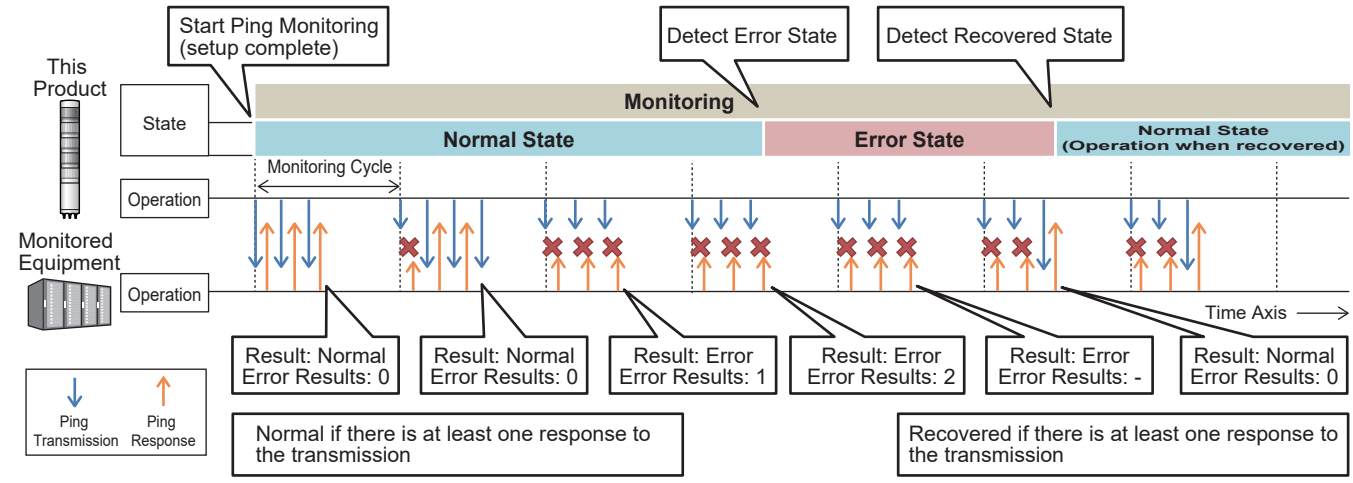
⚠ If you want to monitor connection with EtherNet/IP communication, use an Ethernet hub that supports 100BASE-TX. If a 10BASE-T Ethernet hub is used for Ping monitoring, the monitoring operation may become unstable due to the network load by EtherNet/IP communication.

- You can set up connection monitoring.
- From “Monitoring Settings” on the menu screen, you display the connection monitoring setup screen.
- The setup allows a choice between ping monitoring and Modbus/TCP connection monitoring.

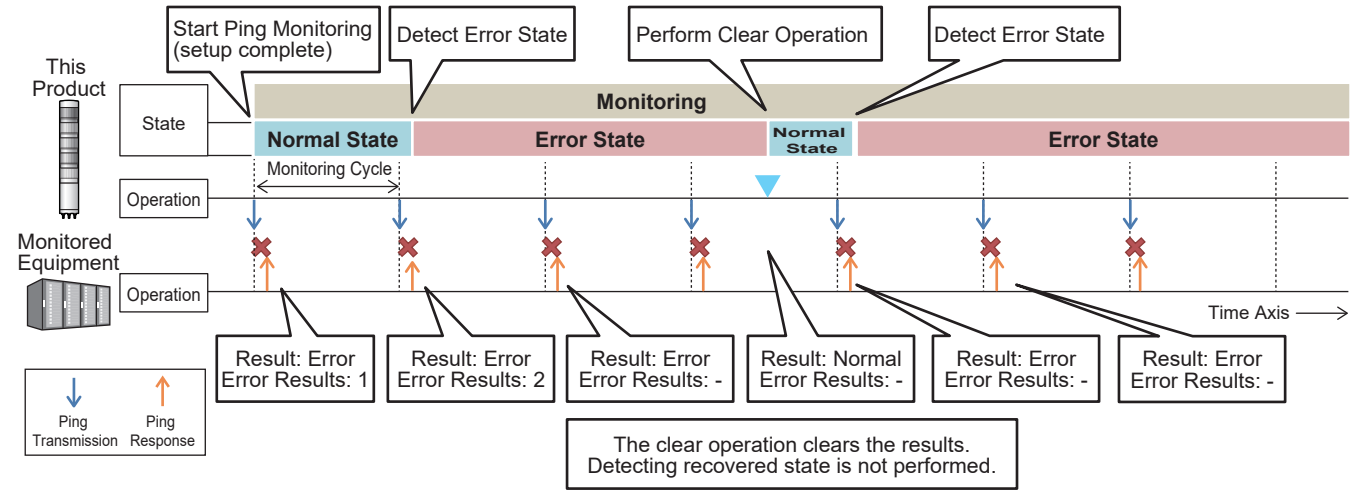
7.6.1. Ping Monitoring

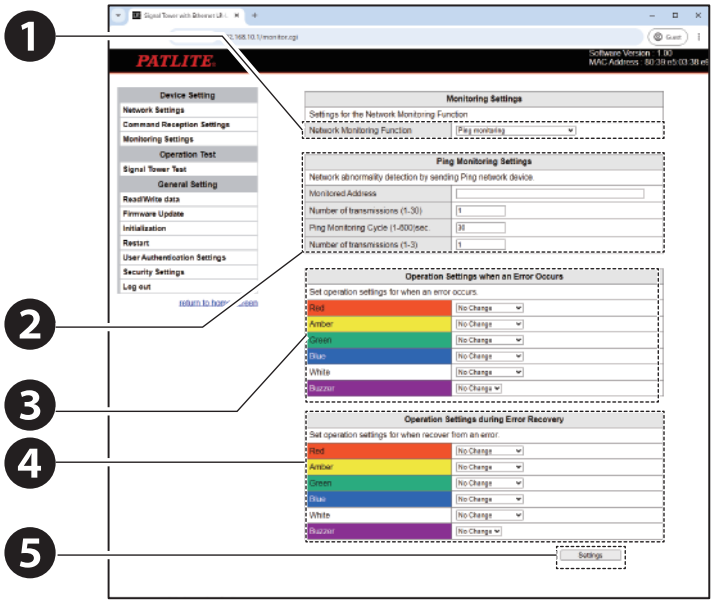
- Set up to use ping monitoring.
- Ping communication can be used to monitor a device on the network and detect abnormal condition and return to normal state.
- Only one device is subject to ping monitoring.
- Ping monitoring starts after its settings are completed.
- Monitoring the local host is not available.
- The following example describes timing details of error states and when they are detected.

Example 1 **When number of transmissions is 2, and number of items to send is 3**



Example 2 **If clear operation is performed while monitoring for error states (set the number of transmissions to 2, and number of items to send to 1)**





1 Select “Ping monitoring” from the pulldown menu.

2 Set the Monitored Equipment.

1	In "Monitored Address", register the Monitored Address of the equipment.
2	In "Number of transmissions (1-30)", set the number of Ping responses that are identified as errors.
3	In "Ping Monitoring Cycle (1-600)sec.", set the cycle of ping transmission.
4	In "Number of transmissions (1-3)", set the number of Ping to send for each frequency.

3 Set the operation to be done when an error occurs.

1	Select the lighting pattern of the LED unit.
2	Select the sound pattern of the buzzer unit.

4 Set the operation to be done when the product recovers from error.

1	Select the lighting pattern of the LED unit.
2	Select the sound pattern of the buzzer unit.

5 Click "Settings" to apply the defined settings.

Item		Description	Default Value	Input Range	Input
Network Monitoring Function		Select the content of connection monitoring to be performed.	Not Used	Not Used, Ping monitoring, Modbus/TCP Connection Monitoring	Required
Ping Monitoring Settings	Monitored Address	Enter the IP address that undergoes ping monitoring.	Blank	IPv4 address format	-
	Number of transmissions	Enter the number of pings sent before error detection.	1	1-30	Required
	Ping Monitoring Cycle	Select the frequency of ping transmissions	30	1-600	Required
	Number of transmissions	Set the number of pings to be sent per cycle.	1	1-3	Required
Operation Settings when an Error Occurs	Lighting pattern	Set lighting pattern used upon error occurrence for red/amber/green/blue/ white LED units.	No Change	No Change, OFF, ON, Flashing (slow/medium/ fast), Flash (Single/Double/ Triple)	Required
	Sound pattern	Set buzzer sound pattern used upon error occurrence.	No Change	No Change, OFF, ON	Required
Operation Settings during Error Recovery	Lighting pattern	Set lighting pattern used upon error recovery for red/amber/green/blue/ white LED units.	No Change	No Change, OFF, ON, Flashing (slow/medium/ fast), Flash (Single/Double/ Triple)	Required
	Sound pattern	Set buzzer sound pattern used upon error recovery	No Change	No Change, OFF, ON	Required

7.6.2. Setting up Modbus/TCP Connection Monitoring (Communication specification E)

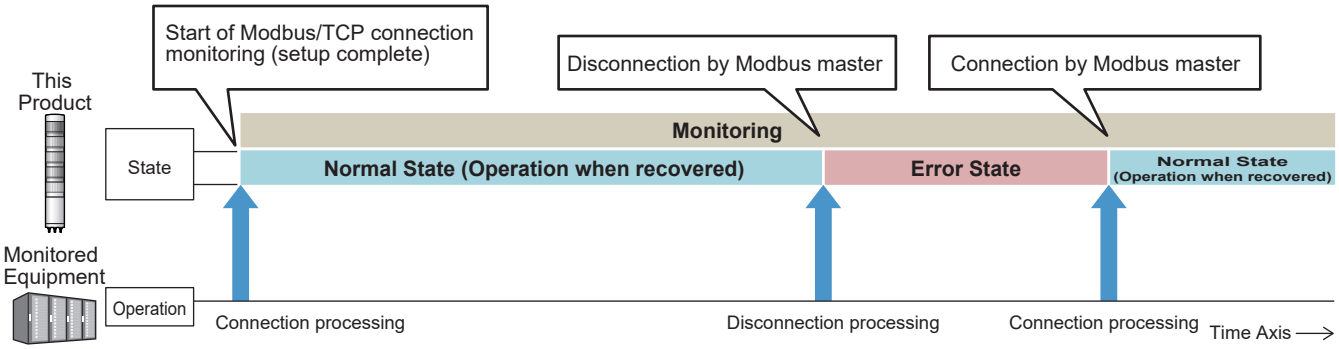
- You can make settings to use the function of monitoring Modbus/TCP connection.
- During Modbus/TCP connection, you can monitor communication with the Modbus master to detect disconnection.
- Monitoring of Modbus/TCP connection starts after connection with the Modbus master is established.
- Connection with the Modbus master triggers the operation that is performed when the product recovers from error.
- If the product is disconnected from the Modbus master or if a timeout occurs, disconnection is determined and the product performs the operation to be done when an error occurs.

POINT

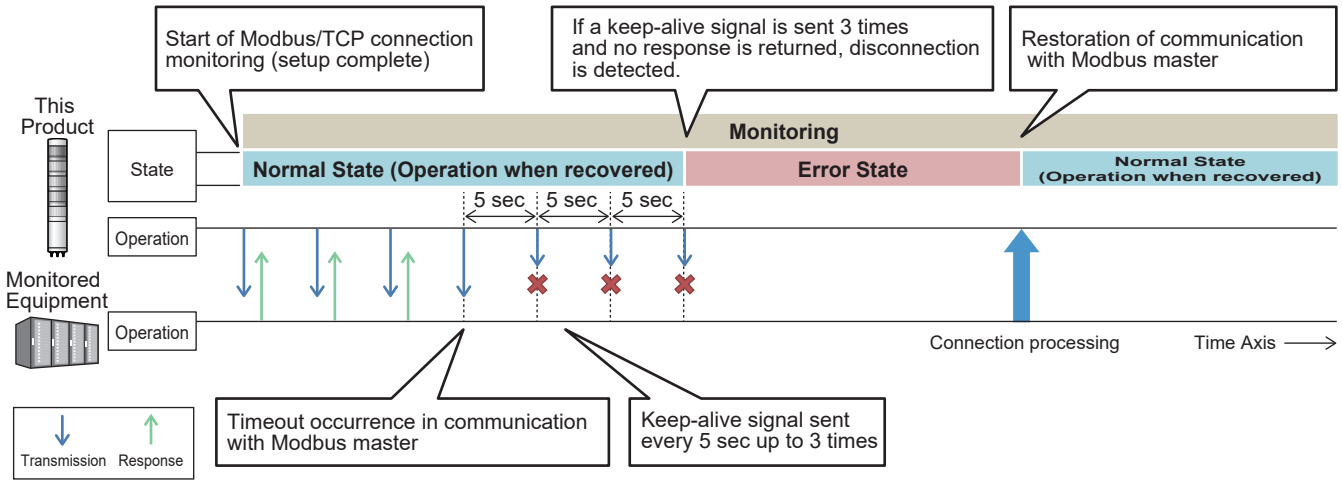
- The product cannot be simultaneously connected to multiple Modbus masters using Modbus/TCP communication.
- If there is more than one Modbus master, the masters are not distinguished. When the product is connected from a Modbus master different from the one connected before an error, it also performs the operation upon error recovery.
  (1) Connection with 1st Modbus master -> “Operation Settings during Error Recovery”
  (2) Disconnection of communication with 1st Modbus master -> “Operation Settings when an Error Occurs”
  (3) Connection with 2nd Modbus master -> “Operation Settings during Error Recovery”
  (4) Disconnection of communication with 2nd Modbus master -> “Operation Settings when an Error Occurs”
- When an error occurs, the product accepts operation commands for the signal lights and the buzzer, but if its clearing operation is in process, it performs the operation upon error occurrence instead of turning off lights and sound.

- The following example describes timing details of error states and when they are detected.

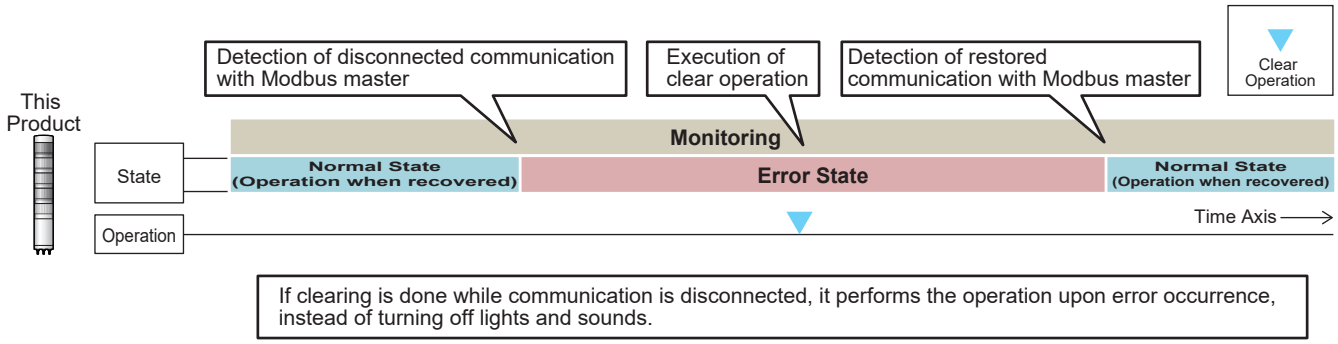
Example 1 **When the product is disconnected by Modbus master**



Example 2 **When communication with Modbus master is disconnected**



Example 3 When clear operation is done under abnormal condition detected during monitoring



1 From the pulldown menu, select “Modbus/TCP Connection Monitoring”.

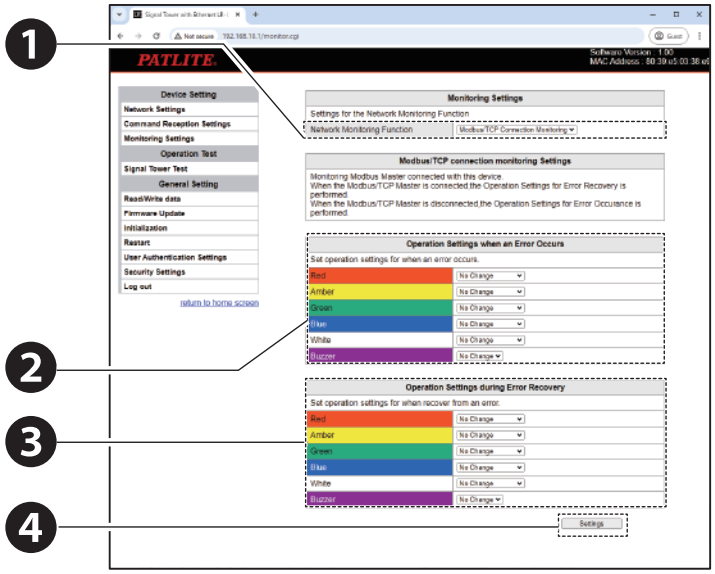
2 Set the operation to be done when an error occurs.

1	Select the lighting pattern of the LED unit.
2	Select the sound pattern of the buzzer unit.

3 Set the operation to be done when the product recovers from error.

1	Select the lighting pattern of the LED unit.
2	Select the sound pattern of the buzzer unit.

4 Click "Settings" to apply the defined settings.



- If a change is made in these settings, the product is disconnected from the currently connected Modbus master.

Item		Description	Default Value	Input Range	Input
Network Monitoring Function		Select the content of connection monitoring to be performed.	Not Used	Not Used, Ping monitoring, Modbus/TCP Connection Monitoring	Required
Operation Settings when an Error Occurs	Lighting pattern	Set lighting pattern used upon error occurrence for red/amber/green/blue/white LED units.	No Change	No Change, OFF, ON, Flashing (slow/medium/fast), Flash (Single/Double/Triple)	Required
	Sound pattern	Set buzzer sound pattern used upon error occurrence.	No Change	No Change, OFF, ON	Required
Operation Settings during Error Recovery	Lighting pattern	Set lighting pattern used upon error occurrence for red/amber/green/blue/white LED units.	No Change	No Change, OFF, ON, Flashing (slow/medium/fast), Flash (Single/Double/Triple)	Required
	Sound pattern	Set buzzer sound pattern used upon error occurrence.	No Change	No Change, OFF, ON	Required

7.7. Performing Operational Check of the Signal Lights

You can operate the signal lights from the Web Setup Screen to check their operation before actual use.

For the communication specification [E], you can generate PNS and HTTP commands to check the commands used during operation.

1. From the menu items, select “Signal Tower Test”.

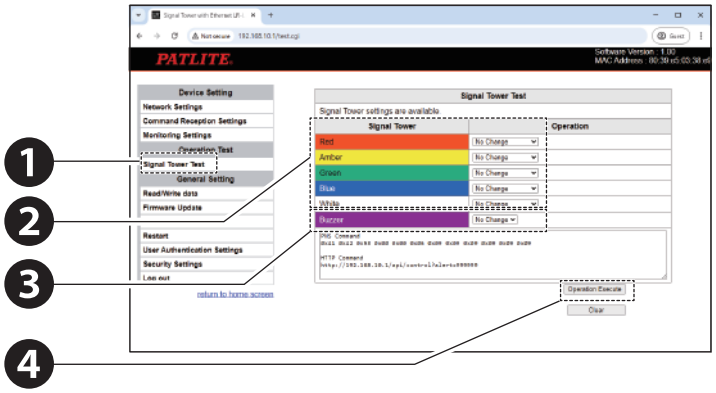
2. Select the lighting condition of each signal light.

   - The lighting condition can be selected from OFF, ON, Flashing (slow), Flashing (medium), Flashing (fast), Single Flash, Double Flash, Triple Flash and No Change.

3. Select the operation pattern of the buzzer.

   - Its operation pattern can be selected from OFF, ON and No Change.

4. Click “Operation Execute”.



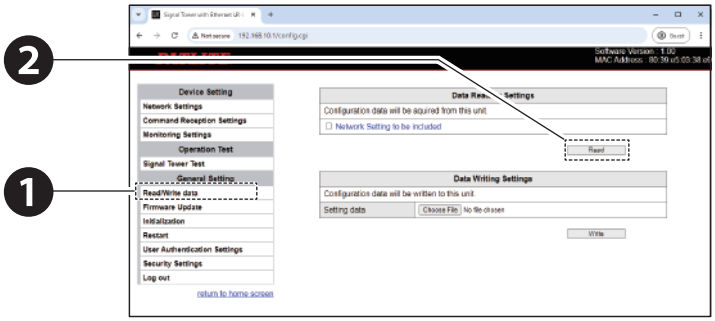
POINT

- The conditions of the product are reset by clicking the Clear button. Operation check is left selected without being reset.
- When you select the lighting pattern of each LED colour and the operation pattern of the buzzer, PNS command or HTTP command is automatically displayed in the text box. (Communication specifications [E])

7.8. Reading Configuration Data

- You can read setting items of this product and saved as setup data on a PC.
- You can select and write the setup data of this product that has been read.

1. From the menu items, select “Read/Write data”.
2. Click the "Read" button.
   - If you want to include network settings in the data read, check "Network Settings to be included".
3. Save the configuration data to your PC.

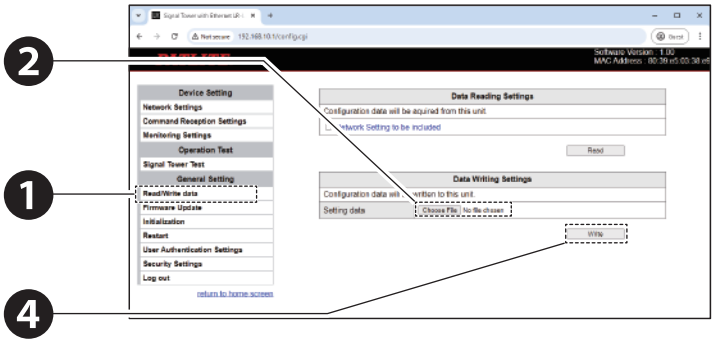


Note:
- While reading the setup data and you transmit a command, the associated operation will not run.
- The setup data consists of operation settings registered in the main unit.
- The file name of configuration data is “config.ini”. If you include the network settings, the file name will be “config_network.ini”.
- The configuration data does not include the following items.
  - User authentication settings
  - Certificate and private key file

7.9. Writing the Configuration Data

You can write the configuration data saved in the section “7.8. Reading Configuration Data”.

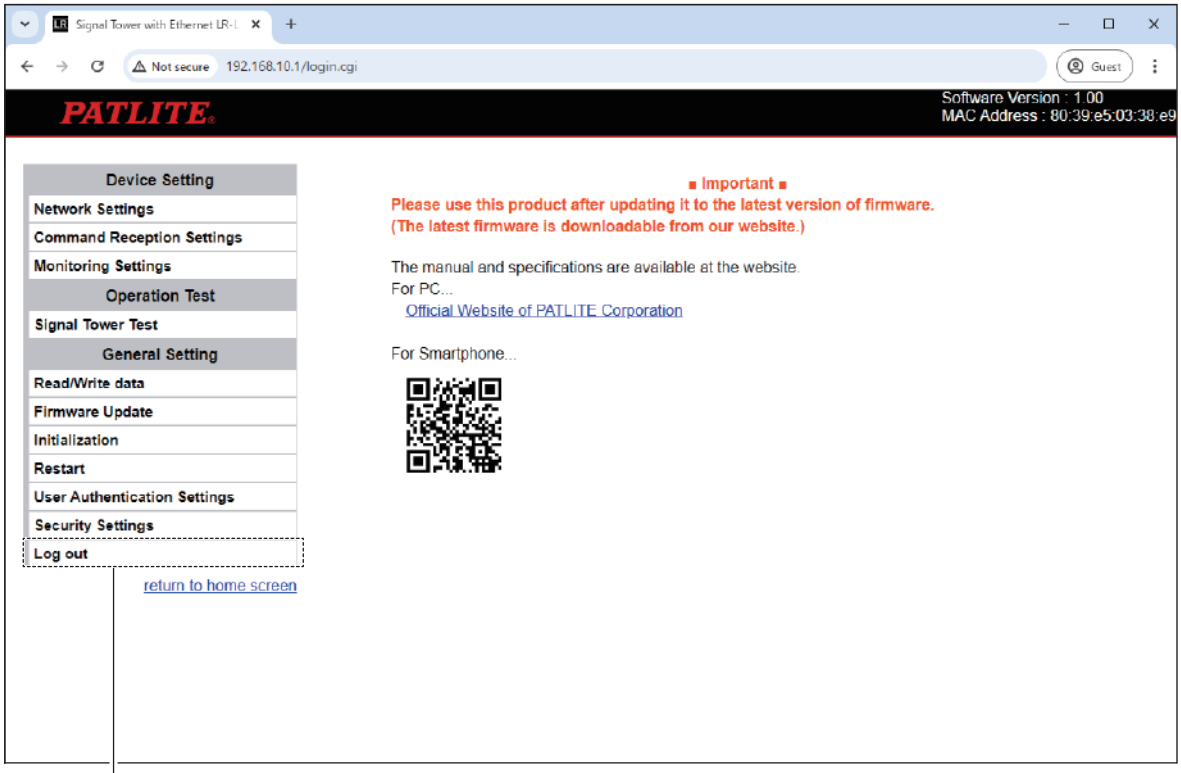
1. From the menu items, select “Read/Write data”.
2. Click the "Choose File" button.
3. Select the configuration data you want to write, and click “Open”.
4. Click the "Write" button to update the settings.
   - The unit automatically reboots after setup.



Note: Do not register any setting data other than this product's setup data. Failure to follow these instructions will result in equipment failure.

7.10. How to logout from the Web setup screen

When the settings on the Web Setup Screen are completed, click “Log out” to exit.



Click when settings are complete.

8. How to Use

8.1. PNS Commands (Communication specifications E)

- By sending PNS commands from your computer, you can do things like control this product or get its status.
- For the protocol, select either "TCP" or "UDP".
- You can use communication port numbers 10000 to 65535.

● Communication Protocols

Protocol	Port Number
TCP	10000-65535
UDP	

POINT

- Set up PNS command settings in the "Command Configuration" screen. " “7.5. Make Settings to Receive Commands (☞ P.41)”
- Using PNS command, you can create up to 8 simultaneous connections.

● Commands You Can Execute

ID	Command	Overview
S (53H)	Signal Tower motion control	• Controls the red, amber, green, blue and white LED units by using commands. • Controls the buzzer with commands
C (43H)	Clear	Turns off the Signal Tower and stops the buzzer. While a Modbus/TCP monitoring error is occurring, the operation set by the monitoring function is performed.
G (47H)	Get Status	Gets the status of this product.

8.1.1. Signal Tower Motion Control Commands

You can control the red, amber, green, blue and white LED units and the buzzer with the lighting and sound patterns specified in the data area.

Request Command

・Transmission Data Format

Product Category *1		ID *2	Unused	Data Size		Data Area *3 (6 byte)					
						1	2	3	4	5	6
A	B	S	-	-	-	Signal Tower					Buzzer
41H	42H	53H	00H	00H	06H	Red	Amber	Green	Blue	White	
1 byte	1 byte	1 byte	1 byte	2 byte		1 byte	1 byte	1 byte	1 byte	1 byte	1 byte

* 1 This product's product category is "AB".

* 2 Use "S" for ID.

* 3 Data area is as follows

Type	Value	Description
LED Pattern	00H	Light off
	01H	Light on
	02H	Flashing (slow)
	03H	Flashing (medium)
	04H	Flashing (fast)
	05H	Single flash
	06H	Double flash
	07H	Triple flash
	09H	No change

Type	Value	Description
Buzzer pattern	00H	OFF
	01H	ON
	09H	No change

Response Command

Normal response
ACK
06H
1 byte

Error response
NAK
15H
1 byte

Example Transmission

• Signal light: Red: Continuous on, Amber/Green: Flashing (slow), Blue: Off, White: Continuous on

• Buzzer: Sounding

Product Category AB		ID S	Unused	Data Size		Data Area (6 byte)					
						1	2	3	4	5	6
41H	42H	53H	00H	00H	06H	01H	02H	02H	00H	01H	01H

8.1.2. Clear Command

Turns off the Signal Tower and stops the buzzer.

Request Command

• Transmission Data Format

Product Category *1		ID *2	Unused	Data Size	
A	B	C	-	-	-
41H	42H	43H	00H	00H	00H
1 byte	1 byte	1 byte	1 byte	2 byte	

* 1 This product's product category is "AB".

* 2 Use "C" for ID.

Response Command

Normal response
ACK
06H
1 byte

Error response
NAK
15H
1 byte

8.1.3. Get Status Command

You can obtain the pattern of each LED colour and the status of the buzzer.

Request Command

• Transmission Data Format

Product Category *1		ID *2	Unused	Data Size	
A	B	G	-	-	-
41H	42H	47H	00H	00H	00H
1 byte	1 byte	1 byte	1 byte	2 byte	

* 1 This product's product category is "AB".

* 2 Use "G" for ID.

Response Command

• Response Data (Normal response)

Data Area (6 byte)					
1	2	3	4	5	6
Signal Tower					Buzzer
Red	Amber	Green	Blue	White	
1 byte	1 byte	1 byte	1 byte	1 byte	1 byte

• Data Area

Type	Value	Description
LED Pattern	00H	Light off
	01H	Light on
	02H	Flashing (slow)
	03H	Flashing (medium)
	04H	Flashing (fast)
	05H	Single flash
	06H	Double flash
	07H	Triple flash

Type	Value	Description
Buzzer pattern	00H	OFF
	01H	ON

• Response Data (Error response)

Error response
NAK
15H
1 byte

Example Response

• Signal light: Red: Continuous on, Amber: Flashing (medium), Green: Continuous on, Blue: Triple Flash, White: Continuous on

• Buzzer: Sounding

Data Area (6 byte)					
1	2	3	4	5	6
Signal Tower					Buzzer
Red	Amber	Green	Blue	White	
01H	03H	01H	07H	01H	01H

8.2. Modbus/TCP (Communication specifications E)

- By sending commands from a Modbus/TCP supported master device, you can do things like control this product or get its status.
- You can use communication port numbers 502, and 1024 to 65535.

POINT

- Set up Modbus/TCP settings in the Modbus/TCP Setup. For information, refer to “7.5.2. Setting up Modbus/TCP (☞ P.42)”.
- You can simultaneously connect only one Modbus master by using Modbus/TCP.

● Modbus/TCP Data Structure

Transaction ID	Protocol ID	Field Length	Unit ID	Function Code	Data
2 byte	2 byte	2 byte	1 byte	1 byte	n byte

Area Name	Description
Transaction ID	0000H-FFFFH
Protocol ID	0000H Fixed
Field Length	Number of bytes following Unit ID
Unit ID	00H-FFH
Function Code	Code that identifies the function defined in Modbus
Data	Data string defined for each function code

8.2.1. Function Code

The following function codes are supported by this product.

Code(Hex)	Function Name	Description
03H	Read Holding Registers	Gets the current state of the Signal Tower and buzzer.
06H	Write Single Register	Changes 1 data in the Data Address Register, and controls the Signal Tower and buzzer.
08H	Diagnostics	Gets the power status of this product.
10H	Write Multiple Registers	Changes multiple data in the Data Address Register, and controls the Signal Tower and buzzer.

8.2.2. Register Address

Register Address	Control	Data	
1 (01H)	Signal Tower motion control LED Unit: Red	High	00H: Do not control, 01H: Control
		Low	Control of signal light operation. Signal light pattern (Lower bits) *
2 (02H)	Signal Tower motion control LED Unit: Amber	High	00H: Do not control, 01H: Control
		Low	Control of signal light operation. Signal light pattern (Lower bits) *
3 (03H)	Signal Tower motion control LED Unit: Green	High	00H: Do not control, 01H: Control
		Low	Control of signal light operation. Signal light pattern (Lower bits) *
4 (04H)	Signal Tower motion control LED Unit: Blue	High	00H: Do not control, 01H: Control
		Low	Control of signal light operation. Signal light pattern (Lower bits) *
5 (05H)	Signal Tower motion control LED Unit: White	High	00H: Do not control, 01H: Control
		Low	Control of signal light operation. Signal light pattern (Lower bits) *
6 (06H)	Signal Tower motion control Buzzer	High	00H: Do not control, 01H: Control
		Low	Control of signal light operation. Buzzer pattern (Lower bits) *
7 (07H)	Not used		00H (static)
8 (08H)	Clear	High	00H (static)
		Low	00H: No change (when reading), 01H: Execute Clear

* For values, see the tables below.

・Signal light pattern values

Value	Description
00H	Light off
01H	Light on
02H	Flashing (slow)
03H	Flashing (medium)
04H	Flashing (fast)
05H	Single flash
06H	Double flash
07H	Triple flash
09H	No change

・Buzzer pattern values

Value	Description
00H	OFF
01H	ON
09H	No change

POINT

- If each control operation is executed at the same time, it is executed in the following priority order.
  - ・Clear > Signal light operation control
- When the clear is executed, the light is off and the buzzer is muted. While a Modbus/TCP monitoring error is occurring, the operation set by the monitoring function is performed.
- All high data readings are set to 00H.

8.2.3. Example Mapping of Registers

Register Address	Register Number	Example data
1 (01H)	40001	Continuous on: 0101H = 257, Flashing (slow): 0102H = 258
2 (02H)	40002	Continuous on: 0101H = 257, Flashing (slow): 0102H = 258
3 (03H)	40003	Continuous on: 0101H = 257, Flashing (slow): 0102H = 258
4 (04H)	40004	Continuous on: 0101H = 257, Flashing (slow): 0102H = 258
5 (05H)	40005	Continuous on: 0101H = 257, Flashing (slow): 0102H = 258
6 (06H)	40006	ON: 0101=257
7 (07H)	40007	-
8 (08H)	40008	Execute Clear: 0001H = 1

8.2.4. Example Transmission

● Read Holding Registers (03H)

Control Command

Transaction ID	Protocol ID	Field Length	Unit ID	Function Code	Data	
					Start Address *1	Number of Registers*2
00H 01H	00H 00H	00H 06H	01H	03H	00H 00H	00H 06H

*1 To get the status of the register addresses, specify "-1" of the start register address.
*2 Specify the number of the registers to get the status.

Response Command

• Signal light: Red: Continuous on, Amber: Flashing (slow), Green: Off, Blue: Continuous on, White: Off
• Buzzer: Sounding

Transaction ID	Protocol ID	Field Length	Unit ID	Function Code
00H 01H	00H 00H	00H 0FH	01H	03H

Data						
Number of bytes	Register1	Register2	Register3	Register4	Register5	Register6
0CH	00H 01H	00H 02H	00H 00H	00H 01H	00H 00H	00H 01H

● Write Single Resister (06H)

Control Command

Signal light: Operation with “Amber: Flashing (medium)”

Transaction ID	Protocol ID	Field Length	Unit ID	Function Code	Data	
					Address *1	Register2 *2
00H 02H	00H 00H	00H 06H	FFH	06H	00H 01H	01H 03H

*1 To control register addresses, specify "-1" of the register address.
*2 Specify the status to control.

Response Command

Transaction ID	Protocol ID	Field Length	Unit ID	Function Code	Data	
					Address	Register2
00H 02H	00H 00H	00H 06H	FFH	06H	00H 01H	01H 03H

● Diagnostics (08H)

Control Command

Transaction ID	Protocol ID	Field Length	Unit ID	Function Code	Data	
					Diagnosis Sub Cod *1	Data *2
00H 03H	00H 00H	00H 06H	00H	08H	00H 00H	00H 00H

*1 Fixed to "00H 00H".
*2 Fixed to "00H 00H".

Response Command

Transaction ID	Protocol ID	Field Length	Unit ID	Function Code	Data	
					Diagnosis Sub Cod	Data *
00H 03H	00H 00H	00H 06H	00H	08H	00H 00H	00H 01H

* Response Data when powered: 00H 01H

● Write Multiple Resisters (10H)

Control Command

• Signal light: Red: Continuous on, Amber: Flashing (slow), Green: No Change, Blue: Continuous on, White: Off

• Buzzer: ON

Transaction ID	Protocol ID	Field Length	Unit ID	Function Code
00H 01H	00H 00H	00H 13H	00H	10H

Data								
Start Address *1	Number of Registers *2	Number of bytes *3	Register1	Register2	Register3	Register4	Register5	Register6
00H 00H	00H 06H	0CH	01H 01H	01H 02H	00H 00H	01H 01H	01H 00H	01H 01H

*1 To control register addresses, specify "-1" of the start register address.

*2 Specify the number of registers to send.

*3 Specify the number of bytes in the register to send.

Response Command

Transaction ID	Protocol ID	Field Length	Unit ID	Function Code	Data	
					Start Address	Number of Registers
00H 01H	00H 00H	00H 06H	00H	10H	00H 00H	00H 06H

8.3. HTTP Commands (Communication specifications E)

By sending HTTP commands, you can control this product and obtain the status of this product.

● HTTP Command Control

Parameter Name	Description
alert	Controls the each color of the Signal Tower and controls the buzzer.
clear	Turns off the Signal Tower and stops the buzzer. While a Modbus/TCP monitoring error is occurring, the operation set by the monitoring function is performed.

● Get HTTP command status

Parameter Name	Description
format	Obtains the Signal Tower and buzzer status, software version, and MAC address in the specified format.

8.3.1. Controls HTTP Command

By sending HTTP commands, you can control this product's tiers and buzzer.

Item	Description
Protocol	HTTP
Method	GET
Syntax	http://<IP address>/api/control?<Parameter Name>=<Value>[&<Parameter Name>=<Value>]
Response	Success.: The parameter name is correct
	Error.: The specified parameter name is invalid or the function is disabled.

Parameter Name	Parameter	Values	Description
alert	alert=<integer value>	6 digits	Controls each color of the Signal Towers and buzzers. Specify the pattern in order of red, amber, green, blue, white and buzzer.
clear	clear=<integer value>	1 digits	Lights off the Signal Tower and stops the buzzer.
user	user=<string>	Max. 16 characters	Specify the username for User authentication.
pass	pass=<string>	Max. 16 characters	Specify the password for User authentication.

POINT

● Be sure to specify "user" and "pass" at the same time.

8.3.1.1. "alert" control

Parameter: alert=<integer value (6 digits)>

1	2	3	4	5	6
LED pattern Red	LED pattern Amber	LED pattern Green	LED pattern Blue	LED pattern White	Buzzer pattern

Type	Value	Description
LED Pattern	0	Light off
	1	Light on
	2	Flashing (slow)
	3	Flashing (medium)
	4	Flashing (fast)
	5	Single flash
	6	Double flash
	7	Triple flash
	9	No change

Type	Value	Description
Buzzer pattern	0	OFF
	1	ON
	9	No change

8.3.1.2. "clear" control

Parameter: clear=<integer value (1 digit)>

Type	Value	Description
Clear	1	Execute Clear

8.3.1.3. Example Transmission

● **alert**

User authentication：Disabled

・Signal light: Red: Continuous on, Amber: Flashing (slow), Green: No Change, Blue: Continuous on, White: Off

・Buzzer: ON

http://192.168.10.1/api/control?alert=129101

User authentication：Enabled

・Signal light: Red: Off, Amber: Continuous on, Green: Flashing (slow), Blue: Off, White: Continuous on

・Buzzer: No change

・Username："Username1:patlite",Password："Password1:patlite"

http://192.168.10.1/api/control?alert=012019&user=patlite&pass=patlite

● **clear**

When you disable user authentication, turn off the signal lights and stop the buzzer:

http://192.168.10.1/api/control?clear=1

8.3.2. Get HTTP command status

By sending HTTP command, you can check the Signal Tower and buzzer status, and also the software version.

Item	Description	
Protocol	HTTP	
Method	GET	
Syntax	http://<IPaddress>/api/status?<Parameter Name>=<Value>[&<Parameter Name>=<Value>]	
Response data	Response data in text and JSON format	When the parameter name is correct.
	Error.	The specified parameter name is invalid or the function is disabled.

Parameter Name	Parameter	Values	Description
format	format=<string>	text, json	Returns the current status of the Signal Tower in the specified format. text: data in text format, json: data in JSON format Specify the pattern in order of red, amber, green, blue, white and buzzer.
user	user=<string>	Max. 16 characters	Specify the username for User authentication.
pass	pass=<string>	Max. 16 characters	Specify the password for User authentication.

● **Available data**

Item	Header	Description	Data type (JSON format)
Status of Signal Tower Control	LED Status R, Y, G, B, C	• Indicates the control status (pattern) of the Signal Tower • For details of the values, refer to “Signal Tower control status (pattern)” on the next page.	(Decimal)
Buzzer control state	Buzzer Status	For details of the values, refer to “Buzzer control status” on the next page.	(Decimal)
Status of connection monitoring.	Connection Error	• Indicates the status of connection monitoring. 1: Error occurrence 0: Other than error occurrence • For details, refer to “7.6. Setting up Connection Monitoring” on page 43.	(Decimal)
Main unit firmware	Firmware Version	Indicates the firmware version. □ . □□ ↑ 0-9	String
MAC Address	MAC Address	Indicates the MAC address of this product. □ : □ : □ : □ : □ : □ ↑ 00H-ff H	String

● Signal Tower control status (pattern)

->Displays in decimal

Type	Value	Description
LED Pattern	0	Light off
	1	Light on
	2	Flashing (slow)
	3	Flashing (medium)
	4	Flashing (fast)
	5	Single flash
	6	Double flash
	7	Triple flash

● Buzzer control status

->Displays in decimal

Type	Value	Description
Buzzer pattern	0	OFF
	1	ON

● Obtained data format specifications

Line feed code	LF
Indent	Single-byte 4 space characters (JSON only)
Character code	UTF-8

● Example of command transmission and obtained data

- MAC address of this product: "80:39:E5:00:1A:2F"
- Signal light: Red: Continuous on, Amber: Flashing (slow), Green: Off, Blue: Continuous on, White: Off
- Buzzer: ON
- Firmware version: "1.00"
- Status of connection monitoring: Error occurrence

```
<text>
obtained data
LED Status R : 1
LED Status Y : 2
LED Status G : 0
LED Status B : 1
LED Status C : 0
Buzzer Status : 1
Connection Error : 1
Firmware Version : 1.00
MAC Address : 80:39:e5:00:1a:2f

<json>
{
"LED_Status" : [1, 2, 0, 1, 0],
"Buzzer_Status" : 1,
"Connection_Error" : 1,
"Firmware_Version" : "1.00",
"MAC_Address" : "80:39:e5:00:1a:2f"
}
```

8.4. EtherNet/IP (Communication specifications I)

⚠ CAUTION

⚠ When you connect the product to a network where multiple devices are linked by using EtherNet/IP communication, you must use an Ethernet hub. If you use a repeater hub for EtherNet/IP communication, the entire network may become unstable.

- Through EtherNet/IP communication, you can control the product and obtain its status.
- To use the product, you need to import the dedicated EDS file into the configuration software of the PLC to be used. Download EDS file from our website. (For information on how to import the EDS file, refer to the instruction manual of the configuration software of each PLC manufacturer.)
- The product acts as an EtherNet/IP adapter. The following objects control the signal tower from the scanner.
- The communication method is implicit message communication. The used protocol is "UDP" and port number is "2222." The number is fixed and you cannot change it.

● Assembly Object

Instance	Communication Direction	Size (Byte)	Connection Type	RPI
101	Adapter (Product) -> Scanner (PLC)	16	Exclusive Owner	10 ms or more *
102	Scanner (PLC) -> Adapter (Product)	16		

* Configure the PLC to match the network environment, number of connections, etc.

- The following data is assigned to each input (signal tower operation control and Clear) and output (status acquisition).

● Input (PLC -> Product)

Number	Control Assignment	Data *2
1	Signal tower operation control LED unit red	Signal tower pattern value
2	Signal tower operation control LED unit amber	Signal tower pattern value
3	Signal tower operation control LED unit green	Signal tower pattern value
4	Signal tower operation control LED unit blue	Signal tower pattern value
5	Signal tower operation control LED unit white	Signal tower pattern value
6	Signal tower operation control buzzer	Buzzer pattern value
7	Clear *1	0000H: No change 0001H: Execute Clear
8	Reserved	0000H: Fixed

*1 Clear is executed when the data changes to 0001H.

*2 The data consists of 2 bytes, but only the lower 1 byte is involved in the operation.

POINT

- When individual control operations are executed simultaneously, the order of priority is as shown on the right. [Priority: Clear > Signal tower operation control]
- When the clear is executed, the light is off and the buzzer is muted.

● Signal tower pattern value

Value	Description
0000H	Off
0001H	On
0002H	Flashing (slow)
0003H	Flashing (medium)
0004H	Flashing (fast)
0005H	Single flash
0006H	Double flash
0007H	Triple flash
0009H	No change

● Buzzer pattern value

Value	Description
0000H	Stop
0001H	Sounding
0009H	No change

● Output (Product -> PLC)

Number	Control Assignment	Data
1	Signal tower status LED unit red	Signal tower pattern value
2	Signal tower status LED unit amber	Signal tower pattern value
3	Signal tower status LED unit green	Signal tower pattern value
4	Signal tower status LED unit blue	Signal tower pattern value
5	Signal tower status LED unit white	Signal tower pattern value
6	Signal tower status buzzer	Buzzer pattern value
7	Reserved	0000H: Fixed
8	Ping monitoring status *	0000H: No error 0001H: An error has occurred

* Enabled only when “Ping monitoring” is set in the connection monitoring setting. When "Disable" is set, the data is fixed at "0000H."

9. Maintenance

9.1. Initialization Method

This product can be initialized in two methods. For information about the items that can be initialized, refer to the table below

Initialization Method	Main unit settings	Network Settings
Switch for initialize	●	●
Web Setup Screen	●	● or × (Selectable)

●: Initialized items, ×: Non-initialized Items

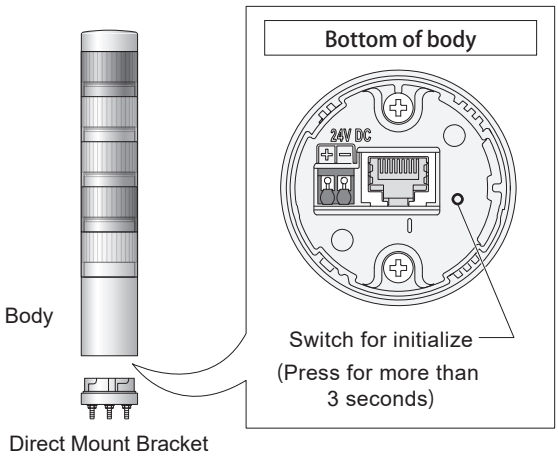
9.1.1. How to Initialize with the "Switch for Initialize"

- When the product is reset using the Switch for Initialize, it will automatically restart with the factory settings. For details of the factory setting of each item, please refer to "● Default value of each item after initialization (factory default) (☞ P. 68)".
- The product has to be initialized while it is running.

⚠ CAUTION

- ⃠ Do not press the "Switch for Initialize" too hard. Failure to follow this instruction could result in equipment damage.
- ⃠ Do not use excessive force operation on "Switch for Initialize". Failure to follow this instruction could result in deformed frame and product damage.
- ❗ When pressing the Switch for Initialize, use a non-conductive tool (such as ceramic screwdriver) with a diameter of about 1.6 mm.
- ⃠ Do not use sharp tipped objects with this product. Operation may become impossible as scratches develop on "Switch for Initialize" and switch contacts are interfered with.

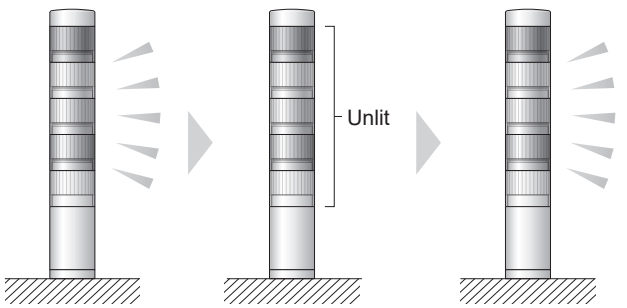
1 Press the Switch for Initialize on the bottom of the body for at least 3 seconds.



*The figure above shows the product installed with a direct mount bracket. If a pole is used for installation, remove the body from the pole bracket.

2 Check the lighting status of the LED units.

- After all the LED units are lit (about one second), their light goes off in the order of white, blue, green, amber and red. When they are all turned off, this means the completion of initialization.
- At the completion of initialization, the product automatically reboots with the factory default settings.



9.1.2. Initialize from the Web Setup Screen

⚠ CAUTION

⚠ If you initialize with the "Initialize the network" check box selected, this product's network settings revert to the default settings. To use it again, you need to reconfigure the network.

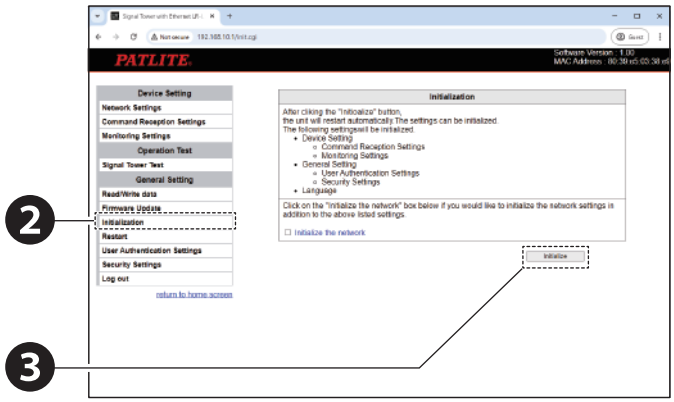
1 Log in to the Web Setup Screen.

- ""7.3. Displaying the Web Setup Screen (☞ P.38)""

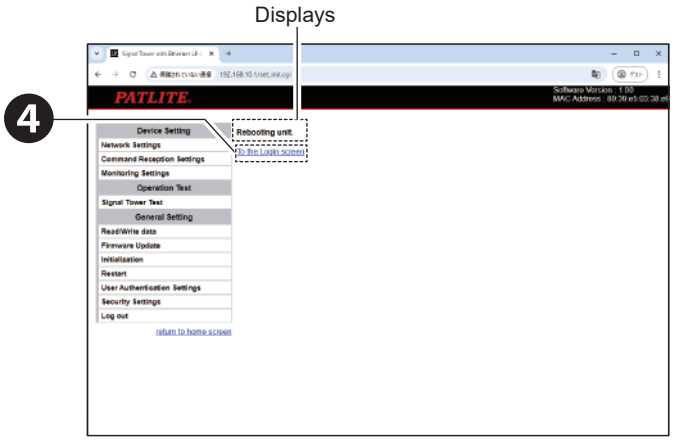
2 From the menu items, select “Initialization”.

- Select the "Initialize the network" check box to also initialize the network settings.

3 Click the "Initialize" button.



4 When "Rebooting unit." is displayed, click "To the Login screen" to return to the login screen.



POINT

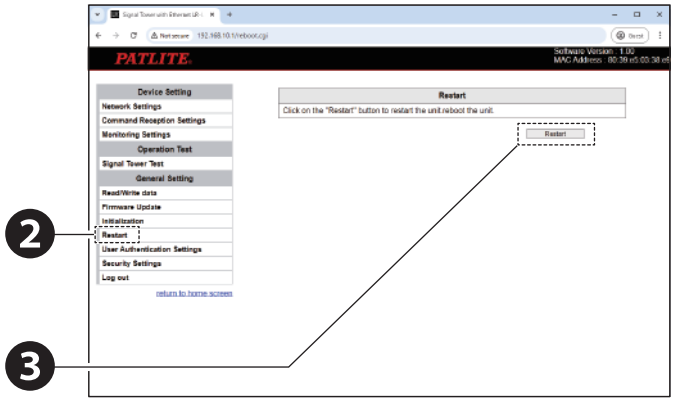
- After initialization, the password is not set and the password setting screen will appear when you access the Web screen next time.
- Initial values of each item after initialization (factory default)

Item				Default Value
Device Setting	Network Settings	Setting Method		Setup Manually
		IP Address		192.168.10.1
		Subnet Mask		255.255.255.0
		Default Gateway		0.0.0.0
		Host Name		lr5-lan
	Command Reception Settings (Communication specifications E)	Socket communication settings	Socket communication function	Enabled
			Port Number	10000
			Protocol	TCP
		Modbus/TCP communication settings	Modbus/TCP communication function	Enabled
			Port Number	502
		HTTP command receiving settings	HTTP Command Receiving Function	Enabled
			User authentication settings	Disabled
	Monitoring Settings	Network Monitoring Function		Not Used
General Setting	Security Settings	Protocol	Protocol	HTTP
		Certificate	Certificate	No file chosen
			Private Key	No file chosen

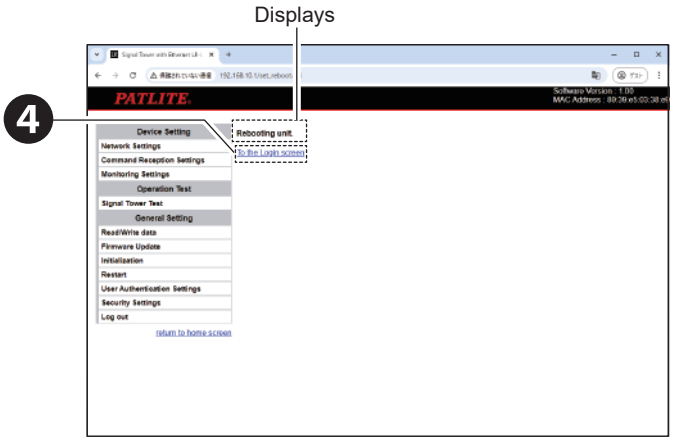
9.2. Restarting Method

Use the Web setup screen to restart this product

1. Log in to the Web Setup Screen.
   - “7.3. Displaying the Web Setup Screen (☞ P.38)”
2. From the menu items, select “Restart”.
3. Click the "Restart" button.

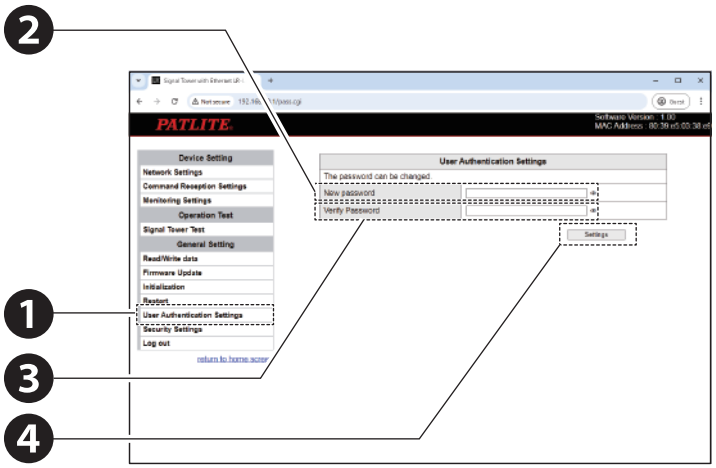


4. When "Rebooting unit." is displayed, click "To the Login screen" to return to the login screen.



9.3. How to change Web Login Password

You can change the password in the Web Setup Screen. Changing the password also on the Web setup screen.



1. From the menu items, select “User Authentication Settings”.
2. In the User Authentication Settings screen, enter your new password in the new password field.
   - Character count: 8 to 64 half-width alphanumeric characters
     (When the communication method [E] is used and the firmware version is 1.00, the password must be 1 to 16 half-width alphanumeric characters.)
   * Password characters are case-sensitive.
3. Re-enter the new password in the "Verify Password" field.
4. Click the "Settings" button.
   - Click "Settings" and the entered value is now the new password.

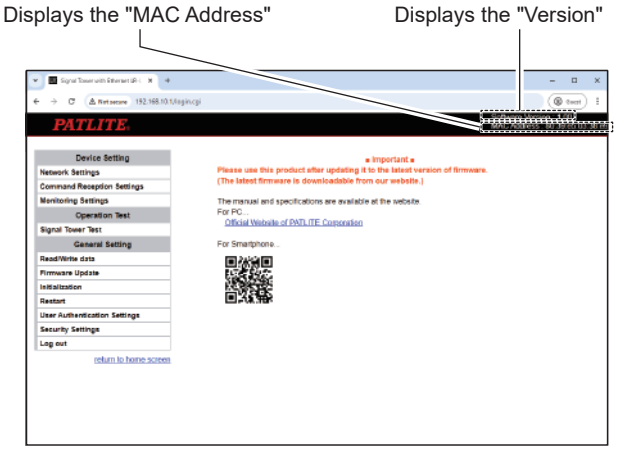
9.4. How to check the Version

You can check the firmware version of this product in the following two methods.

- Check the version from the Web Setup Screen
- Check with the "Get HTTP command status"

● Check the version from the Web Setup Screen

1. Log in to Web setup screen of this product.
   - The firmware version is displayed in the upper right corner of the screen.
   - The MAC address of this product is displayed at the bottom of the firmware version.



● Check with the "Get HTTP command status" (Communication specifications [E])

For information, refer to“8.3.2. Get HTTP command status (☞P.62)”

9.5. How to update the Firmware

You can update the firmware of this product on the Web set up screen.

⚠ CAUTION

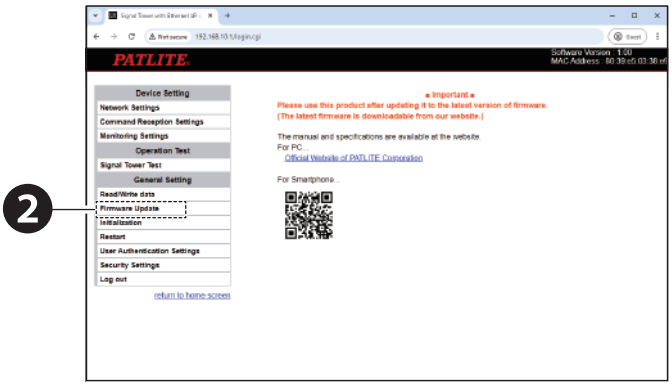
- ⃠ After clicking "Update", do not interact with the browser until firmware update is complete.
- ⃠ During an update, never power off the product. In addition, do not disconnect the power supply wire or LAN cable. Failure to do so may cause malfunction.
- ❗ Before updating, check the firmware version and compatible models. Performing updates with firmware that is not compatible with this product could result in equipment damage.
- ⚠ You cannot update the firmware to the one for models of a different communication method.

  Example 1: Updating the firmware in a model of communication method [E] to the one for communication method [I]

  Example 2: Updating the firmware in a model of communication method [I] to the one for communication method [E]

1 Log in to the Web Setup Screen.

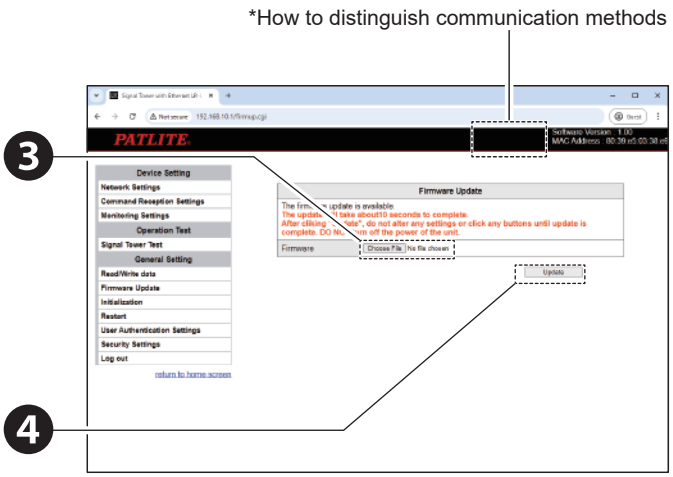
2 From the menu screen, select “Firmware Update”.



3 Click "Choose File" and select the firmware to be updated.

* You can identify the communication method by the header display.

- [redacted] (No display): Communication method [E]
- EtherNet/IP : Communication method [I]



4 Click "Update".

- Click "Update" to start updating the firmware.
- After update is complete, this product automatically reboots.

9.6. Setting Up Security

- Select the protocol to be used when accessing the Web setting screen or controlling with HTTP commands with HTTP or HTTPS.
- Register the certificate and private key used when selecting HTTPS.

Specification of Certificate and Private key	
Certificate *	PEM format. (Base 64 encoded X.509)
Private key *	PEM format. (PKCS#1 and plain text)
MAX size of certificate and private key	4KB in total.

*When you open their files with a text editor, make sure that they have the following format.
Both certificate and private key files contain only plain text, and the first line of the former must start with "-----BEGIN CERTIFICATE-----", and that of the latter must start with "-----BEGIN RSA PRIVATE KEY-----".

⚠ CAUTION

⚠ If you select https communication, when you access the Web Setup Screen or display a pop-up, sometimes an error screen with a message such as "This site is not secure" or "This connection does not protect privacy" will appear. When the error screen is displayed, in the browser click the [Details] link, then click [Go to Web page] to access the Web Setup Screen. (The displayed text differs depending on your browser and browser version.)

⚠ Be sure to register the correct combination of certificate and private key. If the wrong combination is registered, communication may be hindered.

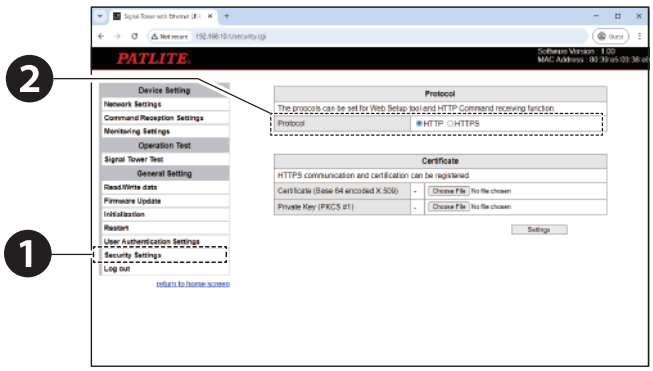
⚠ Since HTTPS communication uses encrypted data communication, the response may be slower than HTTP communication.

⚠ Only TLS1.2 is supported as the encryption protocol for HTTPS communication.

⚠ Update the OS and browser versions to the latest version if communication via HTTPS cannot be accomplished.

⚠ When HTTPS is selected, it is used to receive HTTP commands.

1. From the menu items, select "Security Settings".
2. Select "HTTP" or "HTTPS" for the protocol.



HTTP communication(Select "HTTP")

3. Click "Settings" to apply the defined settings.

HTTPS communication(Select "HTTPS")

3. Register the certificate.
4. Register the private key.
5. Click "Settings" to apply the defined settings.

10. Troubleshooting

10.1. Troubleshooting

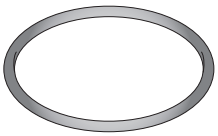
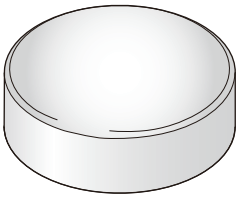
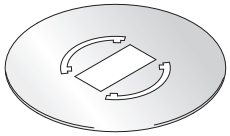
Issue	Checklist	Reference
Power does not turn on	Is the power supply applied at the correct voltage? Check that the power supply is applied at the rated voltage.	"6.2. How to Wiring (☞ P.19)"
	Is the power supply wiring reversed? Check that the power supply wiring.	
The Web Setup Screen does not display or does not display correctly	Is the LAN cable connected? Check if the LAN cable is connected properly.	"6.2. How to Wiring (☞ P.19)"
	Is the LAN cable rated Category 5e or higher? Use LAN cables rated for Category 5e or higher.	"6.2. How to Wiring (☞ P.19)"
	Is the IP address for the product correct? Check the IP address of the product.	"7.3. Displaying the Web Setup Screen (☞ P.38)" "7.4. Setting Up Product Network Settings (☞ P.40)"
	Is the IP address for the product duplicated on other equipment? Check the IP address of the product.	
	Are you accessing the correct IP address? Check the IP address of the product.	
	Is the IP address on the personal computer correct? Check the personal computer settings.	"7.1. Setting Up Network Settings on the PC (☞ P.31)"
	Check the browser you are using. Use either Google Chrome or Microsoft Edge.	-
	In the browser security settings, is JavaScript disabled? Enable running JavaScript in the browser.	-
	Check operation after deleting the browser history.	-
	You may be viewing browser cache data. Please try either of the following methods. ・ After logging out of the Web setup screen, log in again to check the display of cache data. ・ Clear the browser cache, refresh the Web settings screen, and check the display of cached data. * The method for clearing the browser cache varies depending on the browser used. Follow the clearing method of your browser.	-
	Are you accessing the page using an unallowed browser? The page cannot be accessed from multiple browsers at the same time.	-

Issue	Checklist	Reference
Cannot automatically get IP address, does not start in DHCP mode	For the communication method [E] If the product cannot access the DHCP server, it operates with the default network address 192.168.10.1. Make sure that the product environment enables connection to the DHCP server.	-
	For the communication method [I] The product continues searching until it accesses the DHCP server. To cancel the search, reset the product using the Switch for Initialize.	-
	Is allocation of IP addresses set to "Manual Settings"? Change the setting method to "Obtain automatically".	“7.4. Setting Up Product Network Settings (☞ P.40)”
Logging in to the Web Setup Screen causes an error to display	Are you accessing the correct IP address? Check the IP address displayed in the browser's address field.	-
Communication function is not possible	Is the communication port correct? Check the "Port Number" setting.	“7.5. Make Settings to Receive Commands (☞ P.41)”
	Is the communication command protocol correct? Check the communication command protocol you are using.	“7.5. Make Settings to Receive Commands (☞ P.41)”
	Is the transmission data correct? Check the transmission data settings.	“8.1. PNS Commands (Communication specifications [E]) (☞ P.51)” “8.2. Modbus/TCP (Communication specifications [E]) (☞ P.55)” “8.3. HTTP Commands (Communication specifications [E]) (☞ P.60)”
	Are you sending to the product address? Check the IP address of the product.	“7.3. Displaying the Web Setup Screen (☞ P.38)” “7.4. Setting Up Product Network Settings (☞ P.40)”
	Check the settings of the source equipment and of communication equipment on the transmission route to confirm communication is not blocked by a firewall, filtering, port blocking function, and so on.	-
	Check the communication method supported by your product model. ▪ Communication method [E] : Socket, Modbus/TCP and HTTP communications ▪ Communication method [I] : EtherNet/IP communication	“5.2.2. Communication Command Control Function (☞ P.14)”
	For the communication method [I] After writing settings to the PLC, did you restart it? Depending on the PLC model, restarting it may be needed to update the settings. Check the instruction manual of the PLC you are using.	-

Issue	Checklist	Reference
Communication function is not possible	For the communication method [I] Reconsider the RPI (Requested Packet Interval). Depending on the network configuration, number of connections, etc., RPI may need to be reconsidered. Check the instruction manual of the PLC you are using.	“8.4. EtherNet/IP (Communication specifications [I]) (☞ P.64)”
Different operation from the command sent	Is this product receiving Modbus/TCP commands? Check the equipment that is sending Modbus/TCP commands to this product.	“8.2. Modbus/TCP (Communication specifications [E]) (☞ P.55)”
LED does not light up or flash	Is the power supply applied at the correct voltage? Check that the power supply is applied at the rated voltage.	-
There is no buzzer sound/ Buzzer sound is not stable	Is the power supply applied at the correct voltage? Check that the power supply is applied at the rated voltage.	-
	Are you using a buzzer sound other than a Continuous beep sound? If you are using a buzzer sound other than the Continuous beep sound, the buzzer sound is not constant from the buzzer sound command until the buzzer starts sounding (maximum 0.5 second delay). If this is the case, use the Continuous beep sound. However, even if Continuous beep sound is used, the buzzer may not sound consistently depending on network conditions.	-
The sound of the buzzer is low	Are the volume settings for the buzzer too low?	“6.3. Buzzer Pattern Set-up (☞ P.21)”
Failed to write the setup data	Is the setting data writing correctly? Check the writing setting data is correct.	“7.9. Writing the Configuration Data (☞ P.49)”
Failed to write the firmware	Is it writing the correct firmware? Check if it is writing the correct firmware.	“9.5. How to update the Firmware (☞ P.71)”
Clearing is not working	Have you taken action to be done upon error occurrence during connection monitoring? If error occurs, perform clearing and then take the above action.	“7.6. Setting up Connection Monitoring (☞ P.43)”
Ping monitoring is unavailable	Does the monitored device have Windows OS? Since Windows OS does not respond to ping by default, configure your Firewall to allow it to respond to pings.	-

11. Service Parts

These are the various parts for the customer to use when repairing or replacing parts for the product.

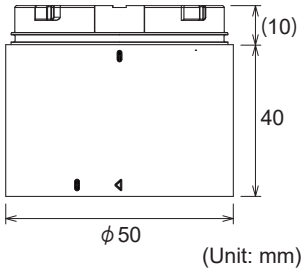
O-ring 50	Head Cover 50	Shading Sheet 50
 5 pcs.	 1pc.	 5 pcs.

12. Optional Parts

12.1. Optional Parts

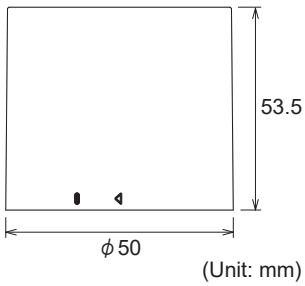
The optional parts for this product are listed below.

● LED Unit

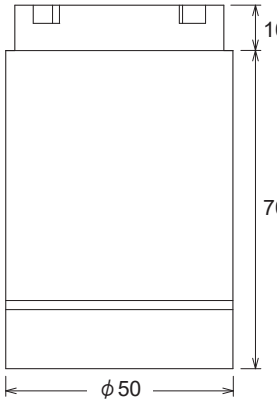
Model	External Diagram	General Specifications
LR5-E- □ □ * R Red Y Amber G Green B Blue C White (NONE) color Globe Z clear Globe	 (Unit: mm)	• Ambient operating temperature: -20℃～ +50℃ • Ambient operating humidity: 90 % RH or less; No condensation • Mass (Tolerance: ±10 %): 0.04kg • Remarks: The brightness of each LED may differ according to the characteristics of the LED or color variations in each individual LED or the product.

* Models differ depending on LED unit color. When ordering, please refer to the table and inform us of the model.

● Buzzer Unit

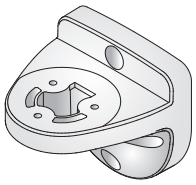
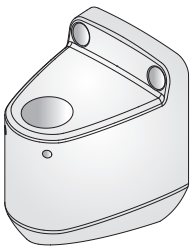
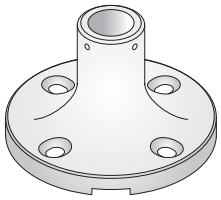
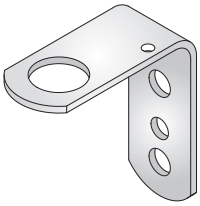
Model	External Diagram	General Specifications
LR5-B □ W Off-white K Black U Silver (Material : PC)	 (Unit: mm)	• Ambient operating temperature: -20℃～ +50℃ • Ambient operating humidity: 90 % RH or less; No condensation • Mass (Tolerance: ±10 %): 0.05kg • Buzzer sound/frequency (typ.): No.1: Rapid intermittent beep (call sign) / 3,378 Hz • Buzzer sound/frequency (typ.): No.2: Continuous beep sound / 3,378 Hz • Buzzer sound/frequency (typ.): No.3: Rapid hi-low / 2,016 Hz & 3,012 Hz • Buzzer sound/frequency (typ.): No.4: Sweep sound / 1,000 Hz - 4,032 Hz • Sound pressure levelTyp.: 85dB (Sound Reduction approx. -10 dB Toggle with DIP switch) • Environmental conditions: No.4: Buzzer sound: No. 4 Sweep sound measured from a distance of 1m in a total circumference from the buzzer source.

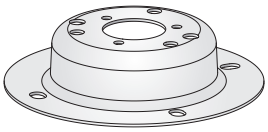
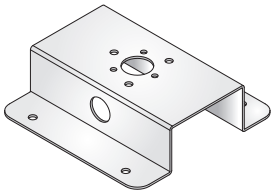
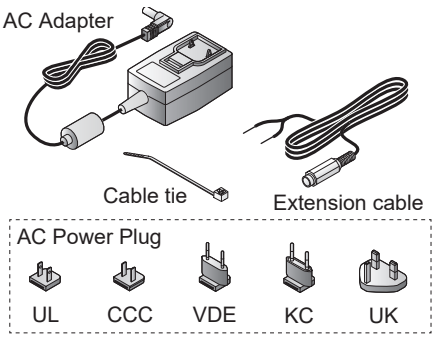
● Wireless Data Communication System Transmitter

Model	External Diagram	General Specifications
WDT-5LR-Z2	 (Unit: mm)	• Ambient operating temperature: -10℃～ +50℃ • Ambient operating humidity: 85 % RH or less; No condensation • Mass (Tolerance: ±10 %): 0.074kg • Communication standard: IEEE 802.15.4 (Wireless communication) • Communication frequency: 2,405 MHz to 2,480 MHz (16 channels) • Communication distance: Estimated to be approx. 30 m (Reference value)

12.2. Optional Parts for attachment

The optional parts for attachment are listed in the following table:

Wall-Mount Bracket *1		Circular Bracket	L-bracket
SZK-002 □	SZK-001U *2	SZ-010 *3	SZL-001
 □ = W : Off-white K : Black U : Silver			

Circular Bracket	Mounting Bracket	AC Adapter
SZW-001W	SZW-002W	ADP-001C
		

*1 When using the wall-mount bracket SZK-002 □ or SZK-001U, you have to prepare a LAN cable with a diameter of 15 mm or less as the one used for wiring.

*2 When using the pole, you have to it by removing the hexagon nut, flat washer and rubber bushing from the pole.

*3 When using the pole, you have to it by removing the hexagon nut and flat washer from the pole.

13. Specifications

Rated Voltage		24V DC	
Operating Voltage Range		Rated Voltage ± 10%	
Rated Current Consumption		Main Unit	Typ.15 mA Max. 20 mA
		LED Unit	Typ.40 mA Max. 45 mA (per tier)
		Buzzer Unit	Typ.50 mA Max. 55 mA
Inrush Current (Typ.)	Current Value	-	
	Time (Reference Value)	-	
	Environmental Condition	Cold start at 25℃	
Operating Ambient Temperature		-20 ℃ ～ +50 ℃	
Operating Ambient Humidity		90% RH or less, no freezing, no condensation	
Storage Ambient Temperature		-30℃ ～ +60℃	
Storage Ambient Humidity		90% RH or less, no freezing, no condensation	
Mounting Location		Indoors	
Mounting Direction		Upright	
Protection Rating		Mount specification: W type	IP 65 (IEC 60529)
		Mount specification: L type & S type	IP 54 (IEC 60529)
	Environmental Condition	Upright	
Insulation Resistance		More than 5M Ω at 500 VDC between the live part and non-current carrying metallic part	
Withstand Voltage		500 VAC applied for 1 min between live part and non-current carrying metallic part without breaking insulation	
Mass (Tolerance: ± 10%)		(LED Unit) + [Buzzer Unit]	
		Mount specification: W type	0.1kg + (0.04kg) × Tiers + [0.05kg]
		Mount specification: L type	0.39kg + (0.04kg) × Tiers + [0.05kg]
		Mount specification: S type	0.3kg + (0.04kg) × Tiers + [0.05kg]
Outer Dimensions		“4. Part Names and Outer Appearance (☞ P.11)”	
Buzzer Sound/Typical Frequency		No.1	Rapid intermittent beep / 3,378Hz
		No.2	Continuous beep sound / 3,378Hz
		No.3	Rapid Hi-Lo / 2,016Hz&3,012Hz
		No.4	Sweep sound / 1,000Hz-4,032Hz
	Setting	Depending on DIP Switch Settings Refer to the “6.3.Buzzer Pattern Set-up (☞ P.21)”	

<table>
<tr><td colspan="2" rowspan="3">Sound Pressure Level</td><td colspan="2">Typ.85dB</td></tr>
<tr><td colspan="2">Sound Reduction Approx. -10dB</td></tr>
<tr><td colspan="2">Depending on DIP Switch Settings Refer to the “6.3. Buzzer Pattern Set-up (☞ P.21)”</td></tr>
<tr><td></td><td>Environmental Condition</td><td colspan="2">Buzzer sound No.4 was measured from the total circumfrence of the Buzzer Unit at 1m</td></tr>
<tr><td rowspan="3">Interfaces</td><td rowspan="2">Power Supply</td><td colspan="2">Screwless Terminal Block (24V DC)</td></tr>
<tr><td>Supported Wire Diameter</td><td>Single wire: ϕ 0.5-1.2mm
Stranded wire: 0.2-1.5mm^2 (AWG24-16)</td></tr>
<tr><td>Ethernet</td><td colspan="2">RJ-45 Connector</td></tr>
<tr><td colspan="2">Network Communication Format</td><td colspan="2">Ethernet (IEEE802.3 Conformity)
10BASE-T/100BASE-TX (Auto-MDI/MDIX)</td></tr>
<tr><td colspan="2">Operation Interface</td><td colspan="2">Switch for Initialize ×1pc</td></tr>
<tr><td colspan="2" rowspan="2">Accessories</td><td>Mount specification: W type</td><td>Hexagon nut with flange(M3) ×3pcs</td></tr>
<tr><td>Mount specification: L type & S type</td><td>L-bracket ×1pc</td></tr>
<tr><td colspan="2" rowspan="3">Supported Unit</td><td>LED Unit</td><td>LR5-E- □ , LR5-E- □ Z
*Maximum number of 5 tiers for LED Units</td></tr>
<tr><td>Buzzer Unit</td><td>LR5-BW</td></tr>
<tr><td>WD transmitter</td><td>WDT-5LR-Z2</td></tr>
<tr><td colspan="2" rowspan="6">Supported Option</td><td>Wall-Mount Bracket</td><td>SZK-002 □ , SZK-001U</td></tr>
<tr><td>Circular Bracket</td><td>SZ-010</td></tr>
<tr><td>L-bracket</td><td>SZL-001</td></tr>
<tr><td>Circular Bracket</td><td>SZW-001W</td></tr>
<tr><td>Mounting Bracket</td><td>SZW-002W</td></tr>
<tr><td>AC Adapter</td><td>ADP-001C</td></tr>
<tr><td colspan="2">Conformity Standards</td><td colspan="2">UL 508 ,CAN/CSA C22.2 No.14-18
FCC Part15 SubpartB(Class A), ICES-003 Issue 7(Class A)
EN 61000-6-4, EN 61000-6-2, EN IEC 63000
KS C 9610-6-4, KS C 9610-6-2 *Except Mounting:S</td></tr>
<tr><td colspan="2">Remarks</td><td colspan="2">• Due to the characteristics of the LED elements, a variation in difference of the color tone and brightness of every product may occur
• Conforms to the CE/UKCA requirements
• UL Recognized Component (File No.E215660)</td></tr>
</table>

PATLITE Corporation G2K

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