PATLITE®

GA0010087_01

Wireless Control Unit

Transmitter

TYPE WIO-B1T

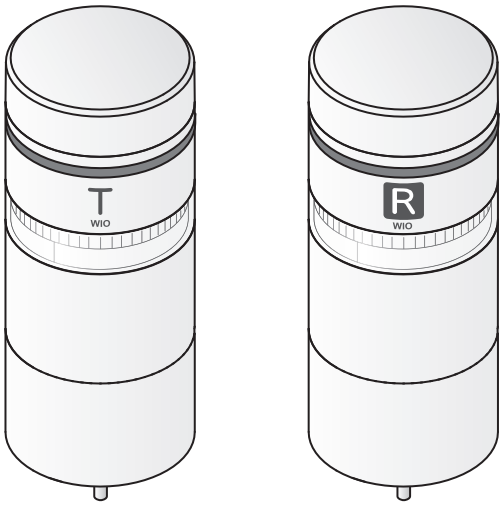
Receiver

TYPE WIO-B1R

TYPE WIO-B1R-RYG

Andon Kit

TYPE WIO-B1S-001



Instruction Manual

[Web Version]

Notice to Customer

Thank you very much for purchasing our PATLITE products.

- 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 our service and repair desk.

To the Contractor

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

Table of Contents

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.**

⚠ WARNING	This symbol indicates, "Failure to follow the instructions may lead to death or serious injury."
⚠ CAUTION	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.**

⃠ Prohibited	This symbol identifies "Prohibited" operations that should never be carried out.
❗ Mandatory	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 use this product in the vicinity of implanted cardiac pacemakers and other medical equipment, as this product's radio waves may affect the performance of these devices. ● 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. ● 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. ● Do not use or control this product in equipment or devices that, directly or indirectly, affect human life, or in equipment or devices where a high degree of reliability is required. We cannot be held responsible in the event of injury, death, or property damage that may result from the use of this product in facilities, equipment, or control systems. ● 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 for applications that require real-time operation, such as crane control or robot control. ● Do not install on moving objects, such as a vehicle or unmanned transportation vehicles. ● Do not use this product in applications where real-time performance is required.
Mandatory	● Take the following precautions to prevent electric shock, short-circuit, or damage. • Disconnect the power before wiring, repairs, or replacing a fuse. • Use this product under suitable conditions. (If the body or unit becomes damaged, replace it.) ● Request the installation and wiring be performed by a professional contractor if construction work is involved. Failure to follow this instruction could result in fire, electric shock, or falling of the product. ● Turn off the power before performing any electric wiring or product installation. Failure to follow this instruction could result in electric shock. ● If an unusual condition occurs while using this product, such as the emission of smoke, heat, abnormal odors, or unusual sounds, stop the application, disconnect the power, and contact your nearest PATLITE Sales Representative. ● 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. ● To prevent accidents when operating or maintaining this 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. ● In case the product falls over or falls down, install in a location where it will not hit any people or other objects.

⚠ CAUTION	
Prohibited	● Do not install this product near other electrical appliances. If you install this product near a facsimile, personal computer, television, microwave oven, or equipment using a motor, this product may not operate properly. ● Due to the nature of radio waves, communication can be disabled even over insignificant distances as a result of noise or other environmental factors. ● This product is for indoors only. Do not use outdoors. ● 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 use this product near fire, in hot or humid environments, or where corrosive or flammable gas is present. ● Do not use this product near equipment (such as a solenoid) or wires that generate strong electric or magnetic fields. Failure to follow these instructions could result in malfunction due to inductive noise. ● Do not use excessive force on this product. Failure to follow this instruction could result in deformed frame and product damage. ● Do not use this product near chemicals. This product could melt or become deformed if any chemicals adhere to it. ● 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. ● 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 apply voltage to the transmitter's “Flashing COM” terminal. Failure to follow this instruction will result in product failure.
Mandatory	● This product uses frequencies in the 2.4 GHz band. If this product is used in the vicinity of other wireless devices that use the same frequency as this product, radio interference may occur between this product and the other wireless devices. If radio interference occurs, shut down the other wireless devices or change the location where this product is used in order to avoid radio interference. ● Always use this product with the head cover, LED unit, or buzzer unit securely attached to maintain dust and waterproofing performance. ● When removing covers or packing, which are attached to this product, be careful not to snag the product. Failure to follow this instruction may result in equipment damage. ● Use only the specified replacement parts listed in this manual.

1.3. About Radio Law

This product incorporates radio equipment whose design has been certified as a radio station for low-power data communication systems based on the Radio Law.
Follow the points below when in use.

- Modifications to this product or to the firmware are punishable under Radio Law.
- We cannot be held responsible for illegal modifications to this product.
- In the unlikely event that this product causes harmful radio wave interference, stop the emission of radio waves first and take measures to avoid interference such as installing partitions.

The operating frequency band for this product is shared with local radio stations (which require a license) used in industrial production lines for identification of mobile objects such as microwave ovens, and scientific and medical equipment, specific low-power radio stations (which do not require a license), and amateur radio stations (which do not require a license).

1. Before using this product, make sure there are no local radio stations for identifying mobile objects, specific low-power radio stations, and amateur radio stations operating nearby.
2. In the unlikely event that this product causes harmful radio wave interference with the local radio station for identifying mobile objects, change the operating frequency, or stop the emission of radio waves first, and take measures to avoid interference such as installing partitions.
3. If you continue to have problems with radio interference from this product on specific low-power radio stations for mobile object identification or on amateur radio stations, please contact our Technical Support Center listed on our website.

1.4. Trademarks

- Bluetooth® and Bluetooth Low Energy are trademarks or registered trademarks of Bluetooth SIG, INC., in the United States and other countries.
- Other company and product names that are used are the registered trademarks or trademarks of those respective companies.
- QR Code is a registered trademark of DENSO WAVE INCORPORATED.

2. Models

2.1. Transmitter

	Model		Wireless Type	Transmitter / Receiver
Model Number	WIO	-	B1	T

B1 Bluetooth Low Energy

T Transmitter

* Bluetooth ver.5.0 LE Coded

2.2. Receiver

	Model		Wireless Type	Transmitter / Receiver	LED Unit
Model Number	WIO	-	B1	R	↓

B1 Bluetooth Low Energy

* Bluetooth ver.5.0 LE Coded

R Receiver

(empty) LED Unit not included

-RYG Red/Amber/Green LED Unit included

2.3 Andon Kit

	Model		Wireless Type	Transmitter / Receiver		TYPE
Model Number	WIO	-	B1	S	-	001

B1 Bluetooth Low Energy

* Bluetooth ver.5.0 LE Coded

S Transmitter and Receiver

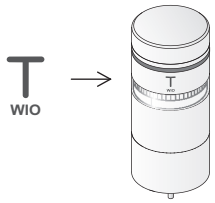
001 Red/Amber/Green LED Unit and AC Adapter (ADP-001C) Set

3. Contents

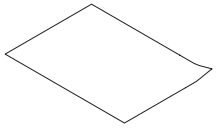
3.1. Transmitter

WIO-B1T

Transmitter: 1



Installation manual: 1



Accessories

Hexagon Nut with Flange (M4)

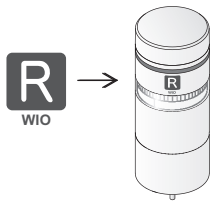
x 3

3.2. Receiver

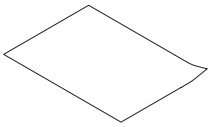
WIO-B1R-RYG

WIO-B1R

Receiver: 1



Installation manual: 1

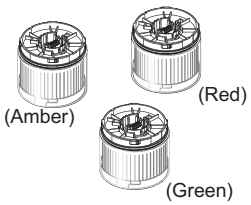


Accessories

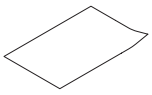
Hexagon Nut with Flange (M4)

x 3

LED Unit: 1 each



Instruction Manual: 1

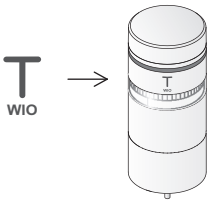


3.3. Andon Kit

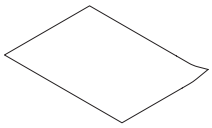
WIO-B1S-001

WIO-B1T

Transmitter: 1



Installation manual: 1

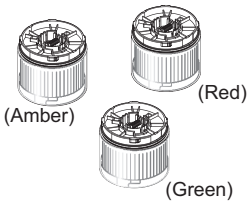


Accessories

Hexagon Nut with Flange (M4)

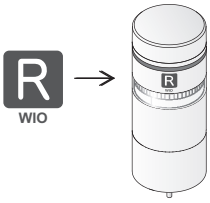
x 3

LED Unit: 1 each

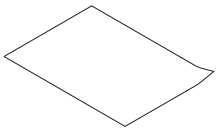


WIO-B1R

Receiver: 1



Installation manual: 1

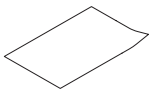


Accessories

Hexagon Nut with Flange (M4)

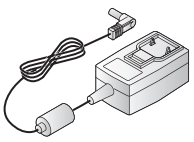
x 3

Instruction Manual: 1



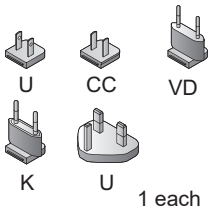
AC Adapter (ADP-001C)

AC Adapter



1 unit

AC Power Plug



1 each

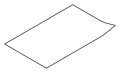
Extension cable

x 1

Cable tie

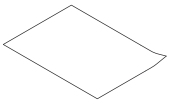
x 1

Instruction Manual (ADP-001C)



x 1

Instruction Manual (ADP-001)

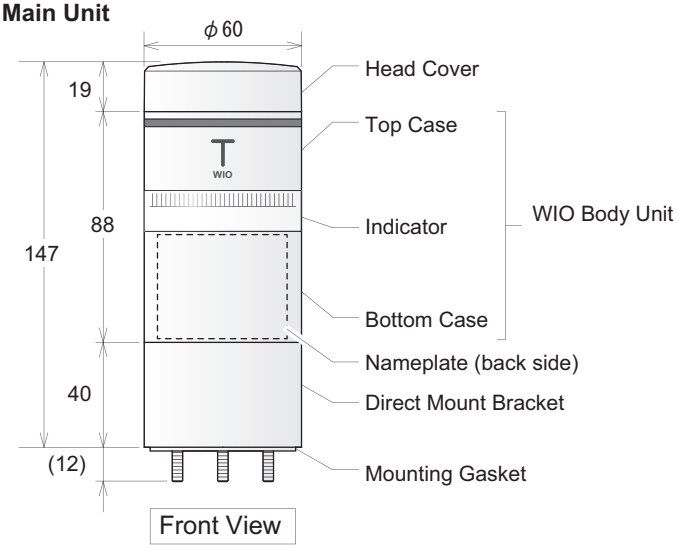


x 1

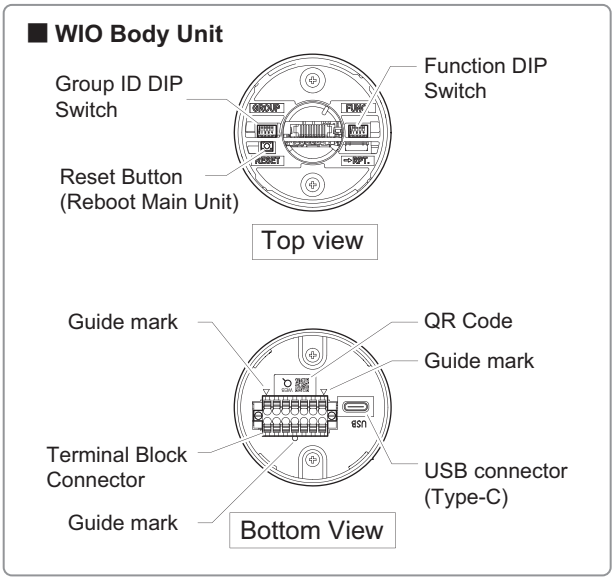
4. Part Names and Dimensions

4.1. Transmitter

■ **Main Unit**



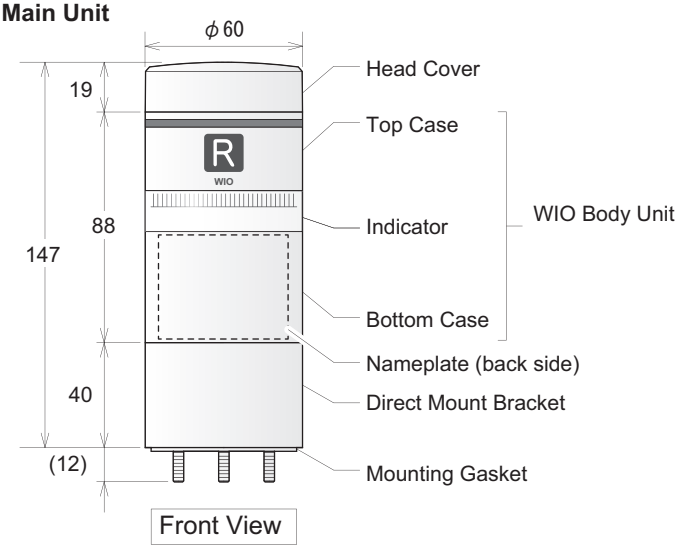
■ **WIO Body Unit**



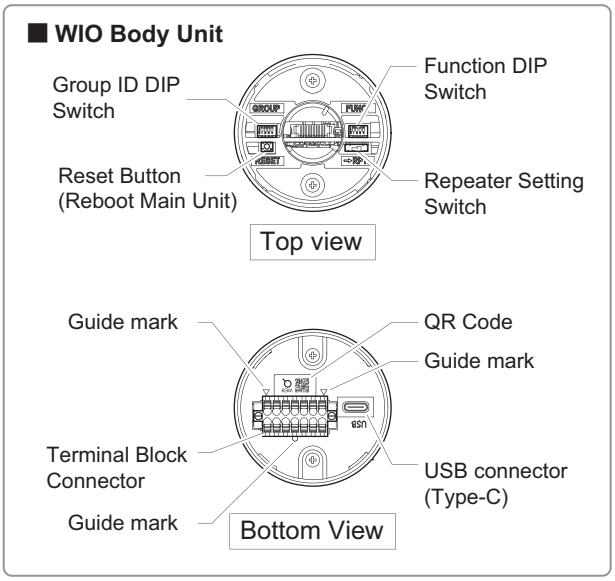
(Unit: mm)

4.2. Receiver

■ **Main Unit**



■ **WIO Body Unit**

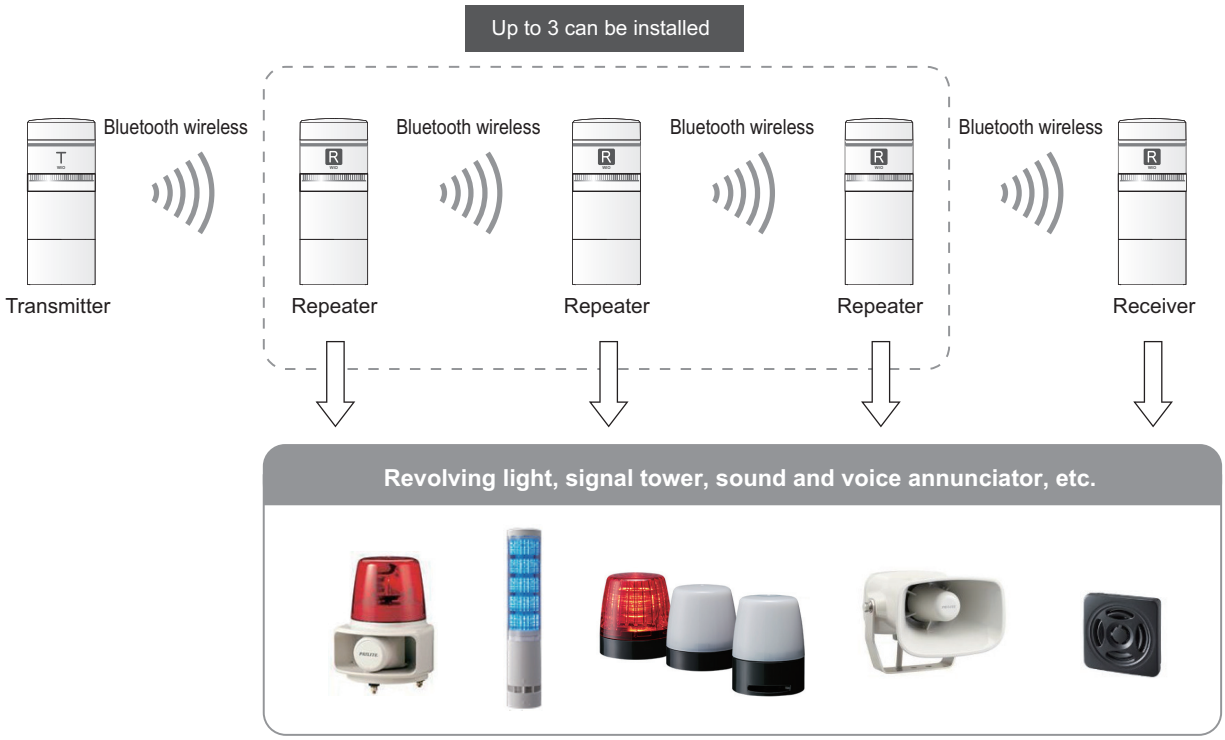


(Unit: mm)

5. Product Overview

5.1. Product Configuration

- This product consists of a transmitter and a receiver.
- Send signals from the transmitter to the receiver/repeater via Bluetooth® to operate revolving lights, signal towers, sound and voice annunciator, and so on connected to the receiver/repeater.
- If wireless quality is poor due to the installation location and signal conditions, the receiver can be used as a repeater for various conditions.

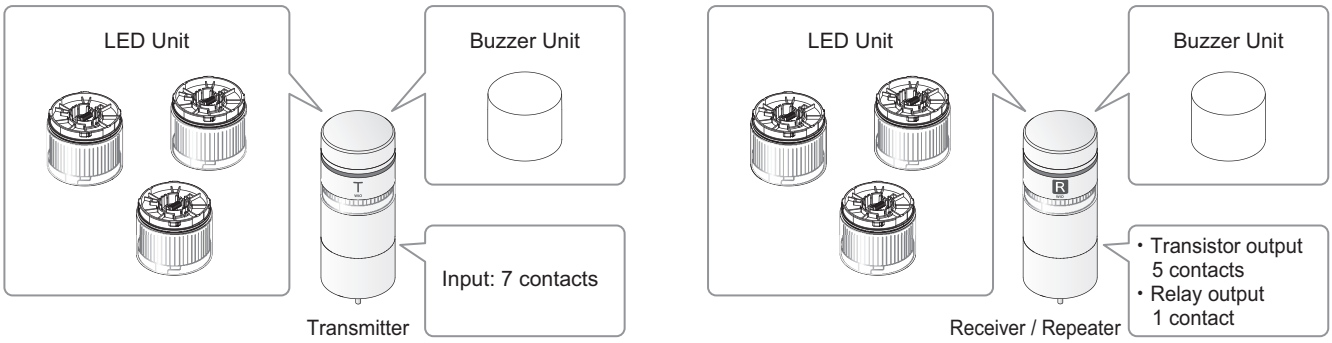


5.2. Specifications

- The transmitter has 7 inputs and the receiver/repeater has 5 transistor outputs and 1 relay output.
- You can attach additional units (LED units and buzzer unit) to this product.
  For information on how to install additional units, refer to "7.13. How to Attach and Detach Additional Units" (☞ page 73).

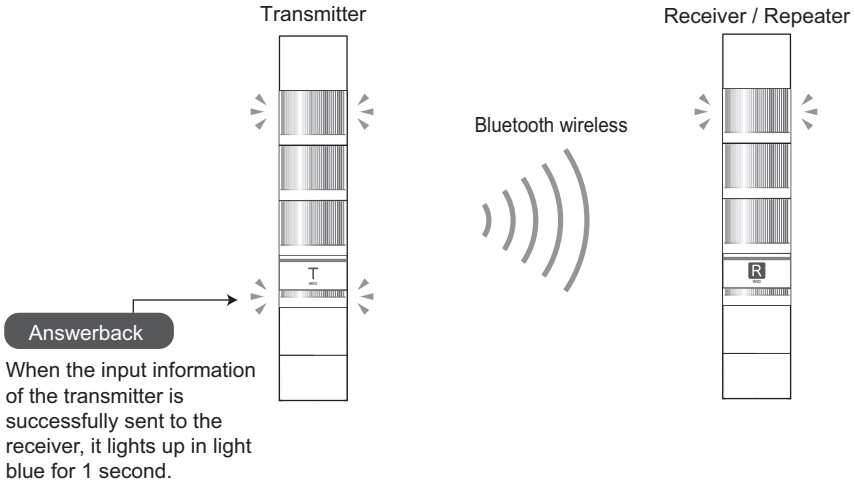
⚠ CAUTION

When LED and buzzer units are attached, operate with an input voltage from 21.6 to 26.4 VDC.



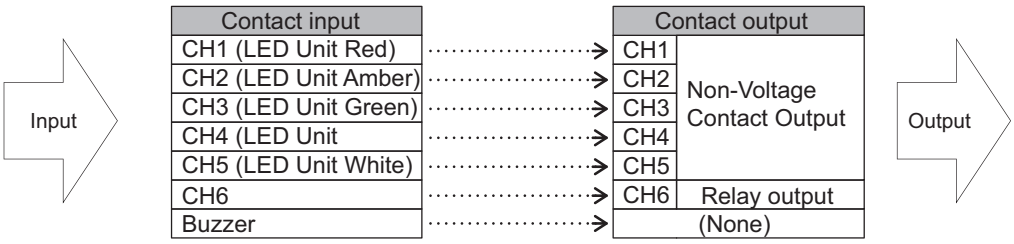
5.3. Operation

This product works in conjunction with the following.



■ Receiver's Contact Outputs Corresponding to the Transmitter's Contact InputsContact Input

The receiver's contact output corresponding to the transmitter's contact input is as follows.



■ LED Unit / Buzzer Unit Corresponding to Each

When a signal is input to the transmitter's contact input (CH1-6, buzzer), the LED unit/ buzzer unit connected to the transmitter/ receiver is also activated.
The LED unit/buzzer unit corresponding to each contact input is as follows.

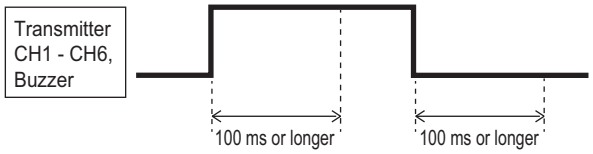
Each Contact Input	Additional Units
CH1	LED Unit Red
CH2	LED Unit Amber
CH3	LED Unit Green
CH4	LED Unit Blue
CH5	LED Unit White
CH6	(None)
Buzzer	Buzzer Unit

* When using the transmitter's flashing COM to control the receiver's buzzer unit, set the DIP switch to [Continuous Beep Sound].

⚠ CAUTION

⚠ Maintain the input signal status for 100 ms or longer.
Input signals shorter than 100 ms may not be detected.

⚠ When using the transmitter's flashing COM to control the receiver's buzzer unit, set the DIP switch to [Continuous beep].



6. For Proper Use of This Product

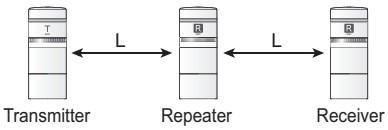
6.1. About the BLE Wireless Communication

This product uses the short-range wireless communication standard Bluetooth Low Energy (2.4 GHz bandwidth wireless). Since this is the same 2.4 GHz band as a wireless LAN and other wireless devices, interference may occur when used within the same area, but since the communication methods are different, they can coexist.
However, if there is interference, it may cause communication delays and issues.

6.2. Communication Delay

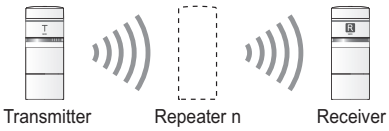
- Communication delays may occur depending on the distance between products, the number of repeaters, and the usage environment.
- If communication between products is lost, the connection is automatically restored (up to 2 minutes). However, depending on the installation environment, recovery may take longer or may not be possible. If the recovery time is longer than 3 minutes, review the installation environment and try changing the product installation location or adding a repeater
- The estimated communication delay time depends on the distance between products and the number of repeaters, as follows.

● Distance between products



L	Less than 50 m	50 m -100 m
Communication delay time *	Almost no delay	Push for about 0.5 seconds

● Number of repeaters

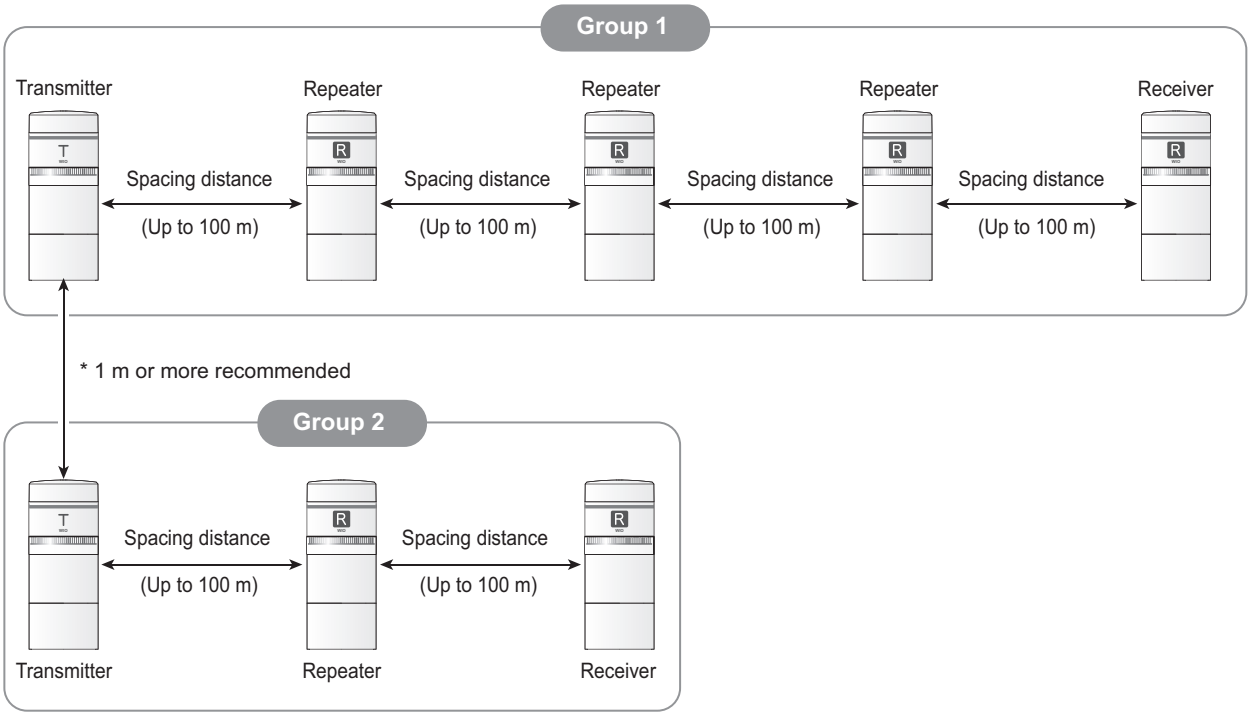


n	0 unit	1 unit	2 unit	3 unit
Communication delay time *	Almost no delay	Push for about 0.1 seconds	Push for about 0.3 seconds	Push for about 0.5 seconds

* Communication delay time is a rough calculation, and there is no guarantee that communication will always be possible within the time specified.

6.3. Communication Distance

The recommended maximum distance between products in the installation is 100 m.
However, the spacing distance varies depending on obstructions between products or the type of obstruction. Some installation environments may result in significantly shorter spacing distances, so be sure to refer to "6.4. Radio Influence and Interference in Installation Environments" (☞ page 18) prior to installation.

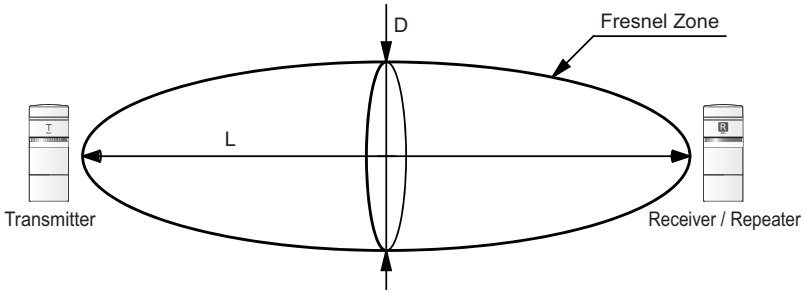


6.4. Radio Influence and Interference in Installation Environments

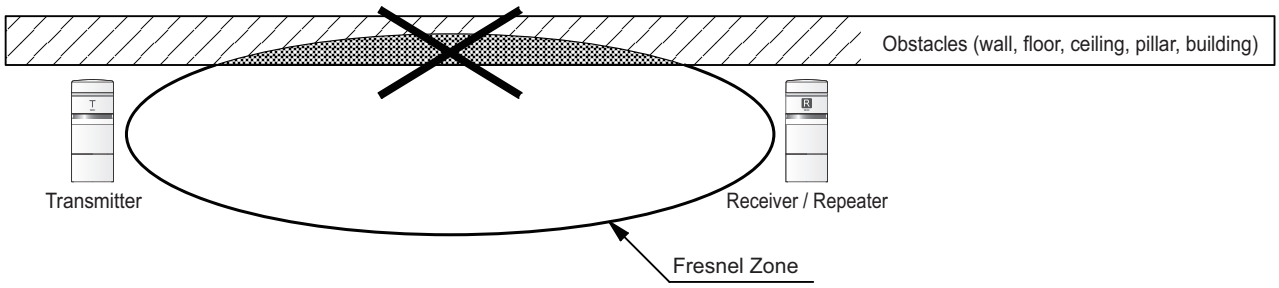
Check the following installation conditions, as they may significantly shorten the spacing distance.

- When there is an obstacle (metal objects such as steel plates, wire mesh, or other noise-generating devices such as concrete walls or welding machines) between the products
- When there is another wireless device nearby
- When strong wireless radio waves are constantly generated (e.g., video streaming over a wireless LAN, microwave oven use, and so on.)
- The maximum number of units that can be installed in the same building is 40 units.
  * The number of units is the total number of transmitters, repeaters, and receivers.

In addition, it is important to secure a "clear view space (Fresnel zone) free of obstacles" between products for stable communication. Installation should be done paying attention to securing the Fresnel zone as described below.



L	D
Line of sight distance	Fresnel zone diameter
100m	3.6m
50m	2.6m
10m	1.2m



7. Operation

7.1. Procedure up to Operation

- Please familiarize yourself with "6. For Proper Use of This Product" (☞ page 16) before operating this product.
- This section describes the procedure required to start operating this product. Follow the steps below to prepare operating this product. Perform STEP 1 to STEP 7 on the transmitter, receiver, and repeater.

STEP 1 Preparation of necessaryequipment and evaluation of communication configuration

STEP 2 Setting

Set this product to match its usage.
- "7.3.1. Group ID Setting" (☞ page 22)
- "7.3.2. Function Settings" (☞ page 24)
- "7.4. Functions" (☞ page 26)

STEP 3 Temporary installation

Perform temporary installation of this product.
- "7.7. Using a Repeater" (☞ page 34)
- "7.10. Mounting" (☞ page 42)
- "7.11. Wiring" (☞ page 46)
- "7.12. Wiring Example" (☞ page 54)

- Install this product in a location with good visibility.
  "6.4. Radio Influence and Interference in Installation Environments" (☞ page 18)
- Install this product Temporary installation can be easily performed by using a mounting bracket (SZW-003W) and AC adapter (ADP-001C).

STEP 4 Pairing

Perform pairing and check the signal status. Add a repeater if required.
- "7.5. Pairing" (☞ page 30)
- "7.6. How to Unpairing" (☞ page 33)
- "7.7.3. Adding a Repeater After Temporary Installation" (☞ page 35)

STEP 5 Verify communication

Confirm communication with the status of the indicator lights.
- "7.8. Checking the Indicator" (☞ page 37)

If wireless quality is poor, reconsider the installation location or add a repeater. When using a repeater, turn on the power starting from the transmitter."7.7.1. How to Switch the Repeater ON/OFF" (☞ page 34)

* If the communication check results show that the signal is poor and the installation location needs to be reconsidered, start over from STEP 3.

STEP 6 Installation

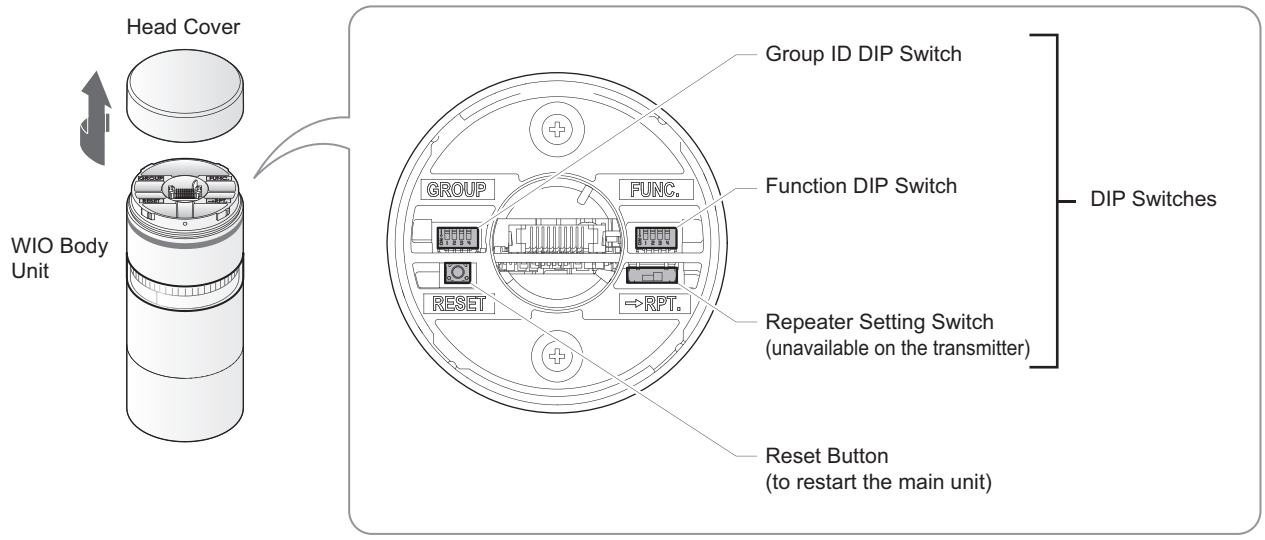
Install and wire this product.
- "7.10. Mounting" (☞ page 42)
- "7.11. Wiring" (☞ page 46)
- "7.12. Wiring Example" (☞ page 54)

STEP 7 Start operation

Turn on this product and start operations.

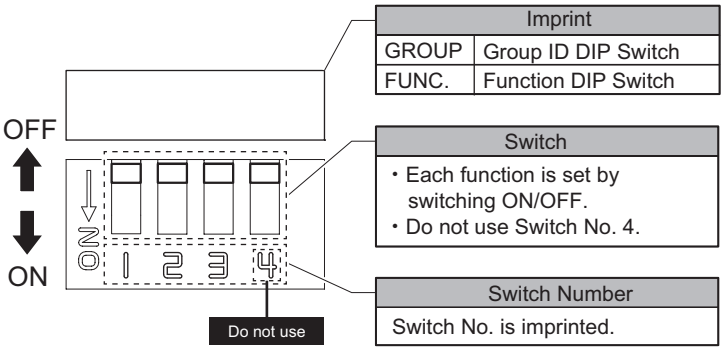
7.2. About the DIP Switches and Reset Button

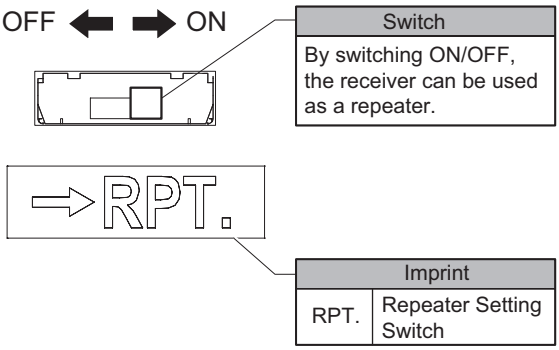
This product has DIP switches and a reset button on the top of the WIO body unit.
When setting up, turn the head cover counterclockwise to remove it, and then apply the settings.



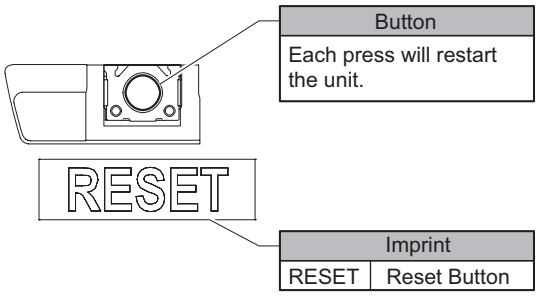
7.2.1. Description of DIP Switches and Reset Button

● DIP Switches





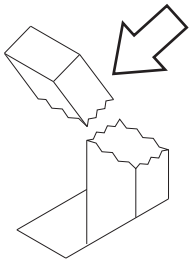
● Reset Button



7.2.2. Handling DIP Switches and Reset Button

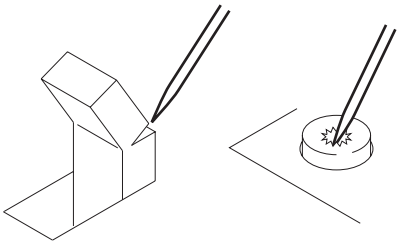
When setting the DIP switches and reset button, please set with following in mind.
Failure to follow this instruction could result in product failure due to product damage, a deformed frame, or touching of the contacts.

- Do not operate with excessive force.



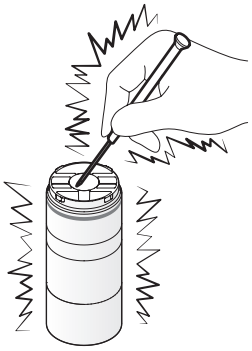
Switch is damaged

- Do not use sharp tipped objects with this product.



Switches are deformed
or buttons are damaged

- When using tools, use non-conductive tools.

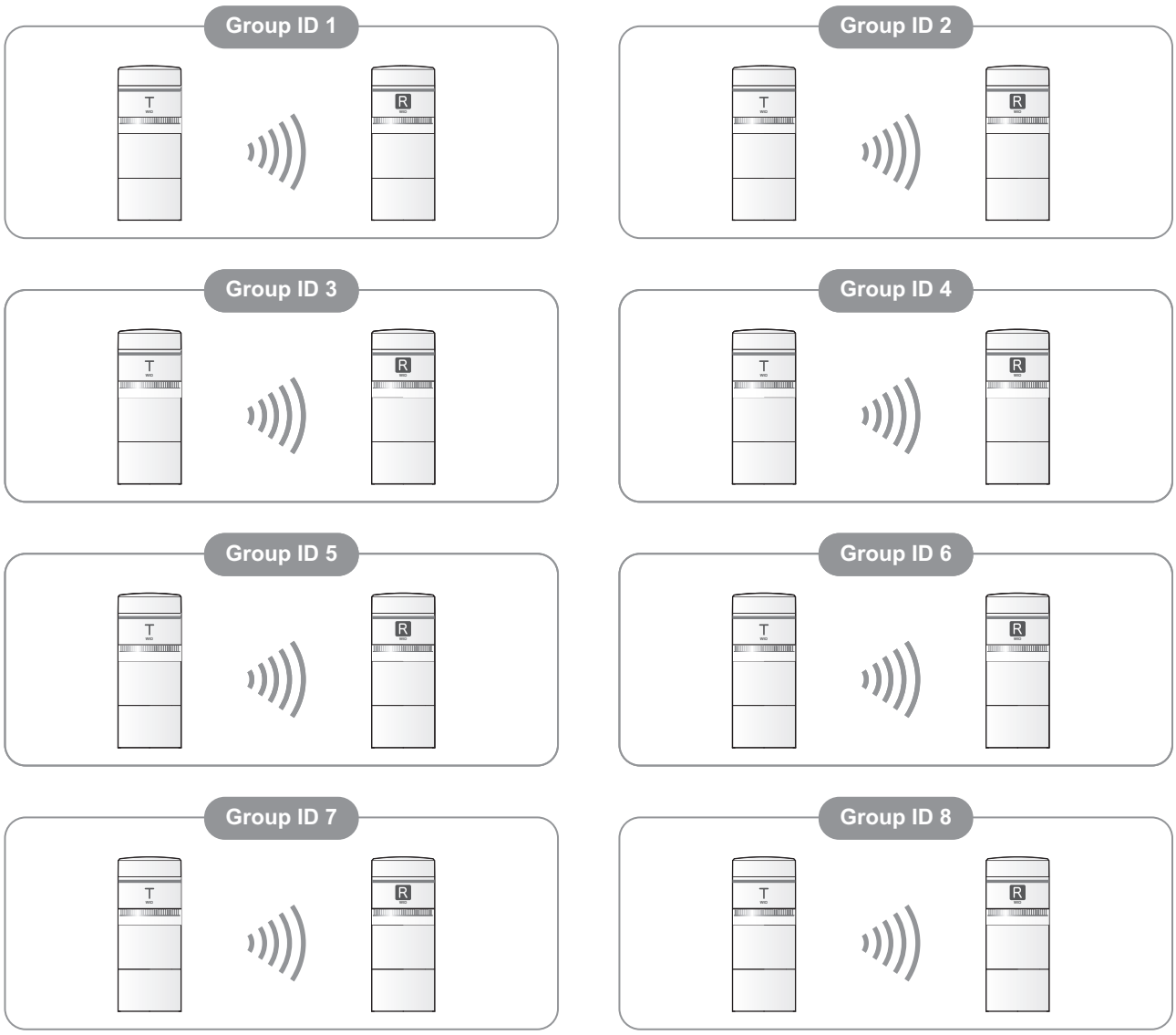


Electric shock or
product malfunction

7.3. Setting

7.3.1. Group ID Setting

- Set when operating this product with multiple group IDs.
- This product can operate up to 8 groups in the same area.
- Turning on multiple products in the same area at the same time and attempting to pair them may result in unintended pairing between products. In such cases, you can avoid pairing of unintended products by setting the Group ID of the product to be paired.



Point

- If multiple pairing registrations are made at the same time using the same group ID number, there is a possibility of unintended pairing between products.
- The diagram is an overview diagram. In actual use, one transmitter, 0 to 3 repeaters, and one receiver are configured within one group ID.

7.3.1.1. How to Set the Group ID

- Set up both transmitting and receiving products.
- Read "7.2. About the DIP Switches and Reset Button" (☞ page 20) before handling the Group ID DIP Switch.

1 Confirm the product to set is turned off.

2 Remove the head cover from the WIO body unit.

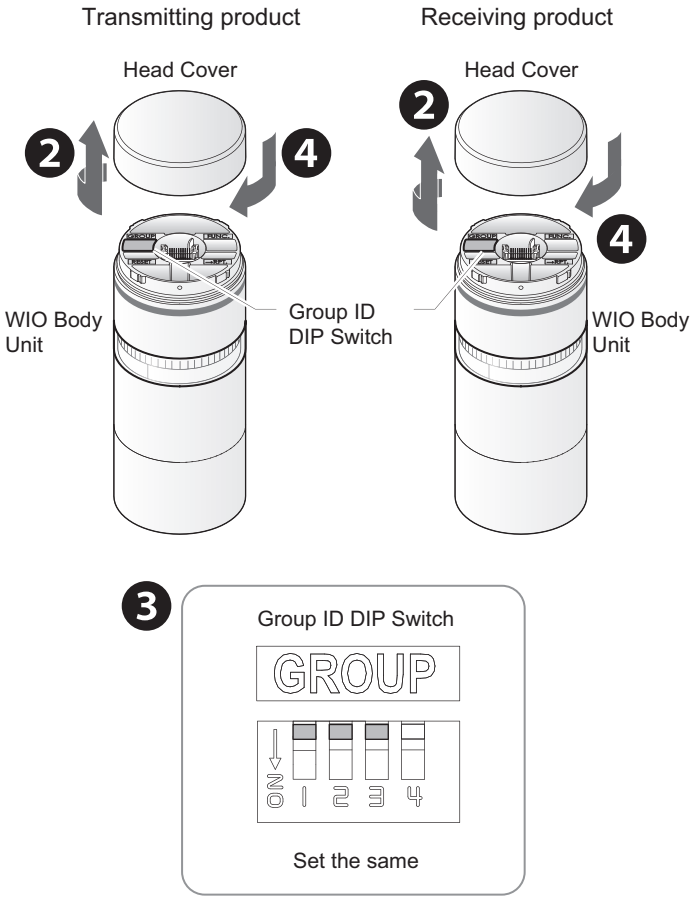
3 Change the Group ID DIP Switch for the product to be paired.

- Use the same settings for products to be paired.

List of group ID names

Group ID name	Switch Number		
	1	2	3
Group ID 1	OFF	OFF	OFF
Group ID 2	ON	OFF	OFF
Group ID 3	OFF	ON	OFF
Group ID 4	ON	ON	OFF
Group ID 5	OFF	OFF	ON
Group ID 6	ON	OFF	ON
Group ID 7	OFF	ON	ON
Group ID 8	ON	ON	ON

4 Attach the head cover to the WIO body unit.



7.3.2. Function Settings

This product has "Level Mode," "One-shot Mode", and "input logic switching" functions.
Assign functions by turning this product's Function DIP switch ON and OFF. For details on how to set functions, refer to "7.3.2.1. How to Set Functions".

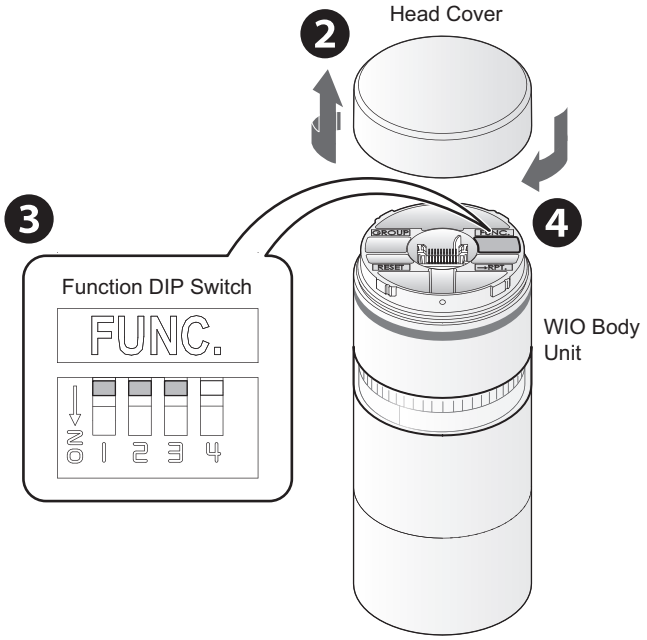
Point

- "Level Mode" is recommended for the following usage conditions.
  - When using alternating-type switches, such as toggle switches
  - When inputting from a PLC or other device in the equipment
- "One-shot Mode" is recommended for the following usage conditions
  - When using momentary switches such as pushbutton switches
  - When using a sensor that outputs only at the moment of detection

7.3.2.1. How to Set Functions

- Turn DIP switches No.1 to 3 ON or OFF to set functions.
- Read "7.2. About the DIP Switches and Reset Button" (☞ page 20) before handling the DIP switches.

1. Confirm the product to set is turned off.
2. Remove the head cover from the WIO body unit.
3. Set the Function DIP switch.
   - For details on each function, refer to "List of Functions for the Function DIP Switch" in the next section.
   - Do not use switch No. 4.
4. Attach the head cover to the WIO body unit.



7.3.2.2. List of Functions for the Function DIP Switch (Transmitter)

Switch Number	Function Name	Operation	Description
1	Unpairing	OFF: Disabled (factory default) ON: Execute unpairing	Switch for unpairing. Do not use when operating.
2	Level Mode / One-shot Mode	OFF: Level Mode (factory default) ON: One-shot Mode	Specify whether the input is detected at level (input ON or OFF) or at one-shot (rising ON from OFF).
3	Input logic switching	OFF: Input logic A (factory default) ON: Input logic B	Specify input logic A or B.

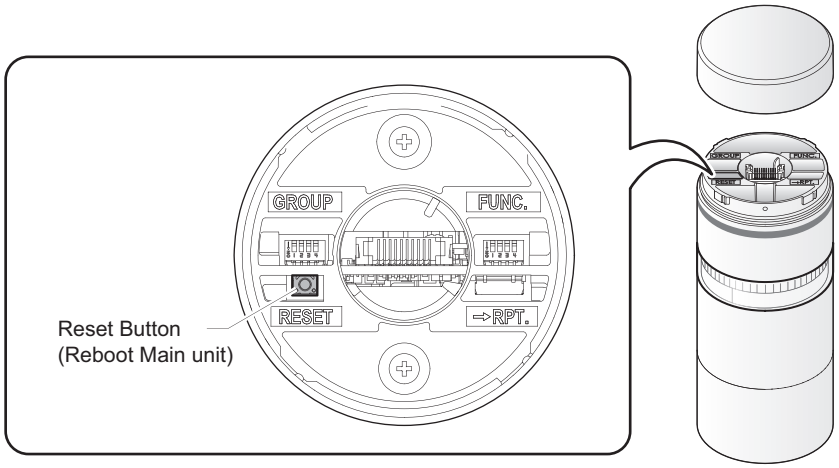
7.3.2.3. List of Functions for the Function DIP Switch (Receiver)

Switch Number	Function Name	Operation	Description
1	Unpairing	OFF: Disabled (factory default) ON: Execute unpairing	Switch for unpairing. Do not use when operating.
2	One-shot Mode output time*	OFF: Output for 12 seconds (factory default) ON: Hold output	Specifies the output time in One-shot Mode.
3	Not used	– (Factory default: OFF)	Do not use.

* This is valid only when the transmitting product is set to one-shot mode.

⚠ CAUTION

⚠ If the Function DIP switch is changed during operation (when the power is turned on), the setting is not reflected.
After setting the Function DIP switch, turn the power OFF→ON or press the reset button on the main unit to reflect the setting.

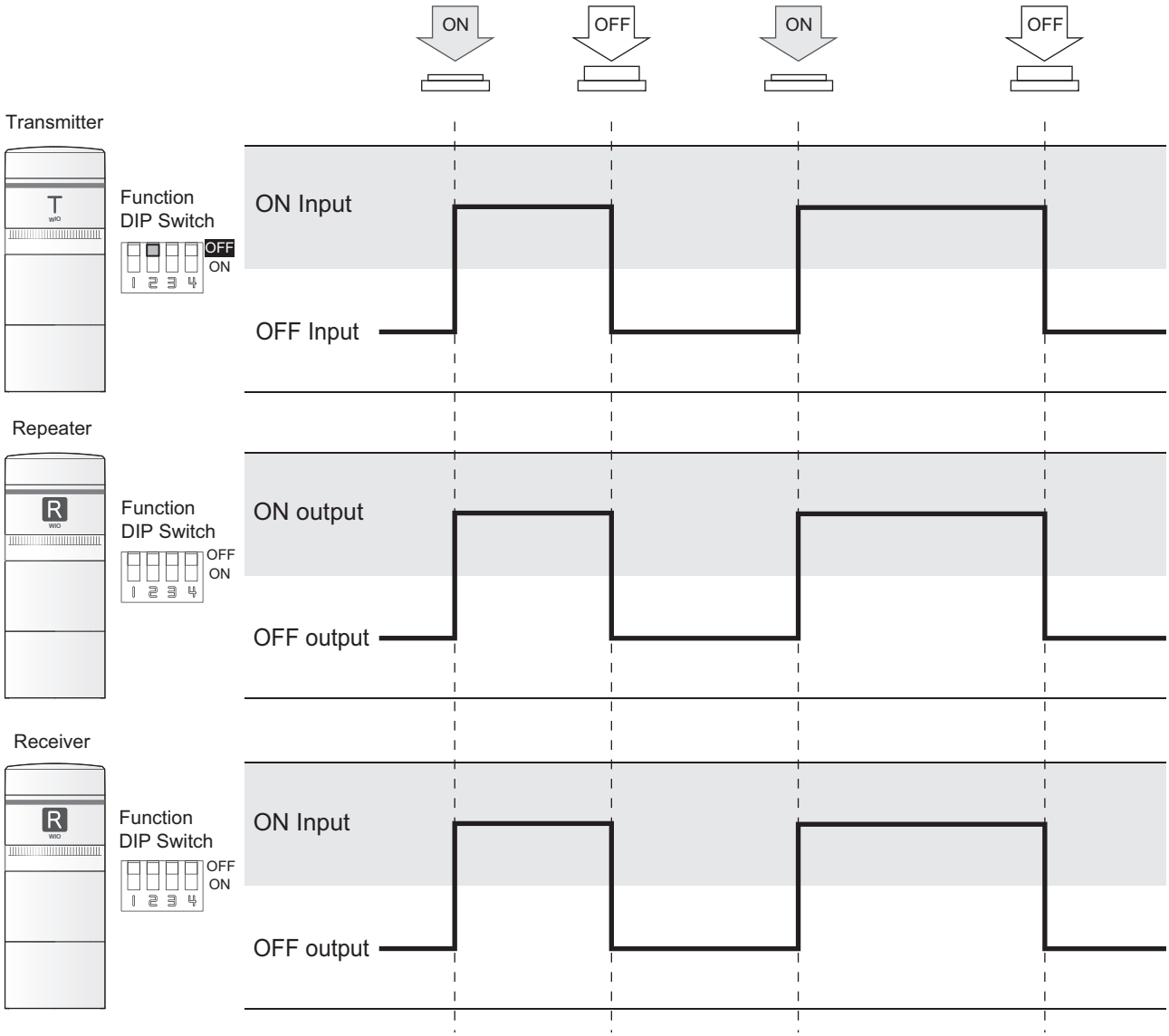


⚠ You cannot set functions channel by channel. All input channels and all output channels have common settings.

7.4. Functions

7.4.1. Level Mode

- The ON/OFF output of the receiver or repeater can be linked to the ON/OFF input of the transmitter.
- Read "7.2. About the DIP Switches and Reset Button" (☞ page 20) before handling the DIP switches.

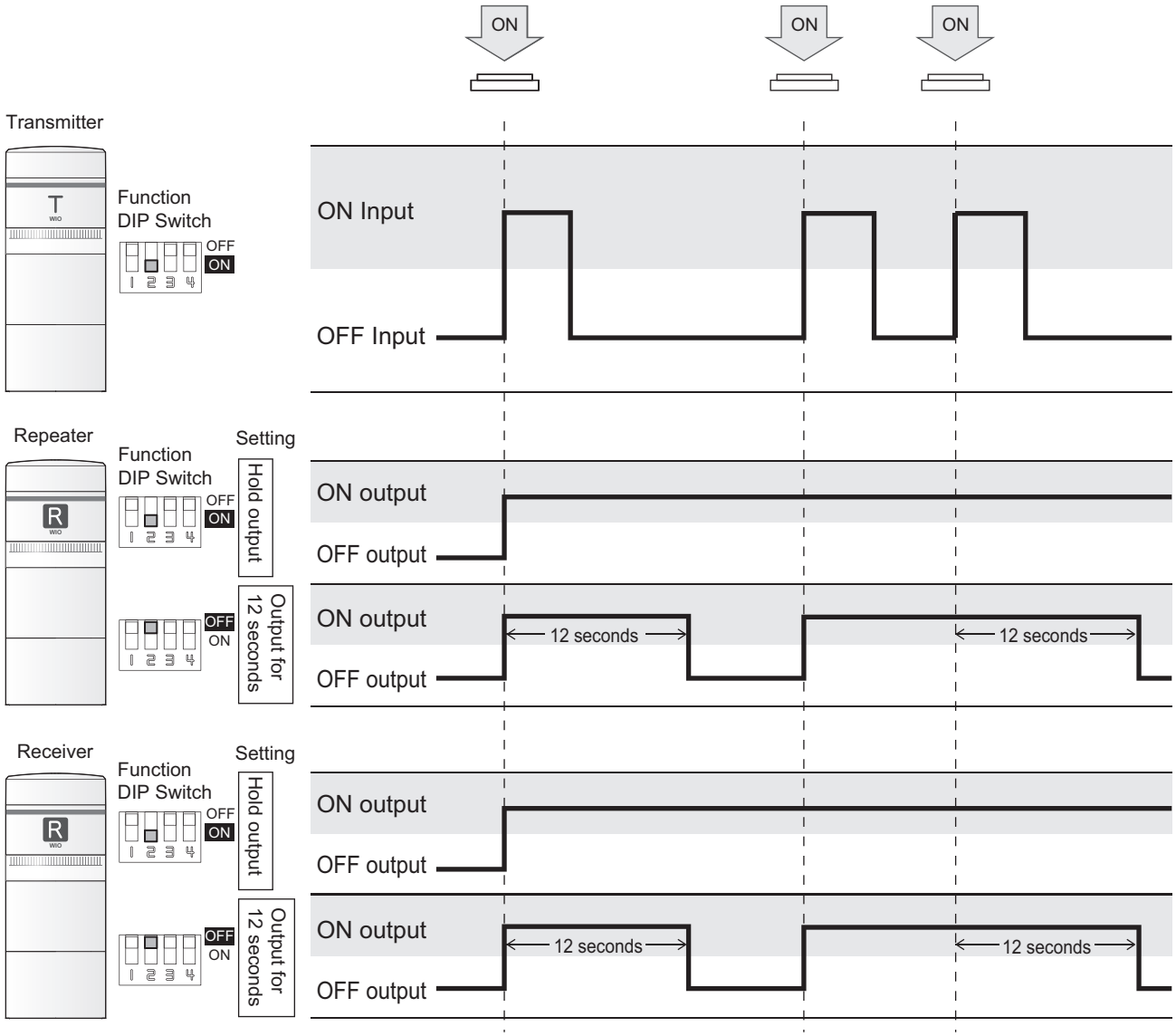


Point

- The outputs of all paired output devices operate in conjunction with the ON/OFF input from the transmitter.
- Due to wireless communication, the usage environment, and the number of repeaters, the timing of the output may be delayed.
  For details, refer to "6.2. Communication Delay" (☞ page 16).

7.4.2. One-shot Mode

- This product can hold the output of the receiving product (hold output/output for 12 seconds) by pressing the ON input when the transmitting product is emitting the OFF input.
- The output hold time can be set (hold output/output for 12 seconds) by the receiver's One-shot Mode output time setting.
- Read "7.2. About the DIP Switches and Reset Button" (☞ page 20) before handling the DIP switches.



⚠ CAUTION

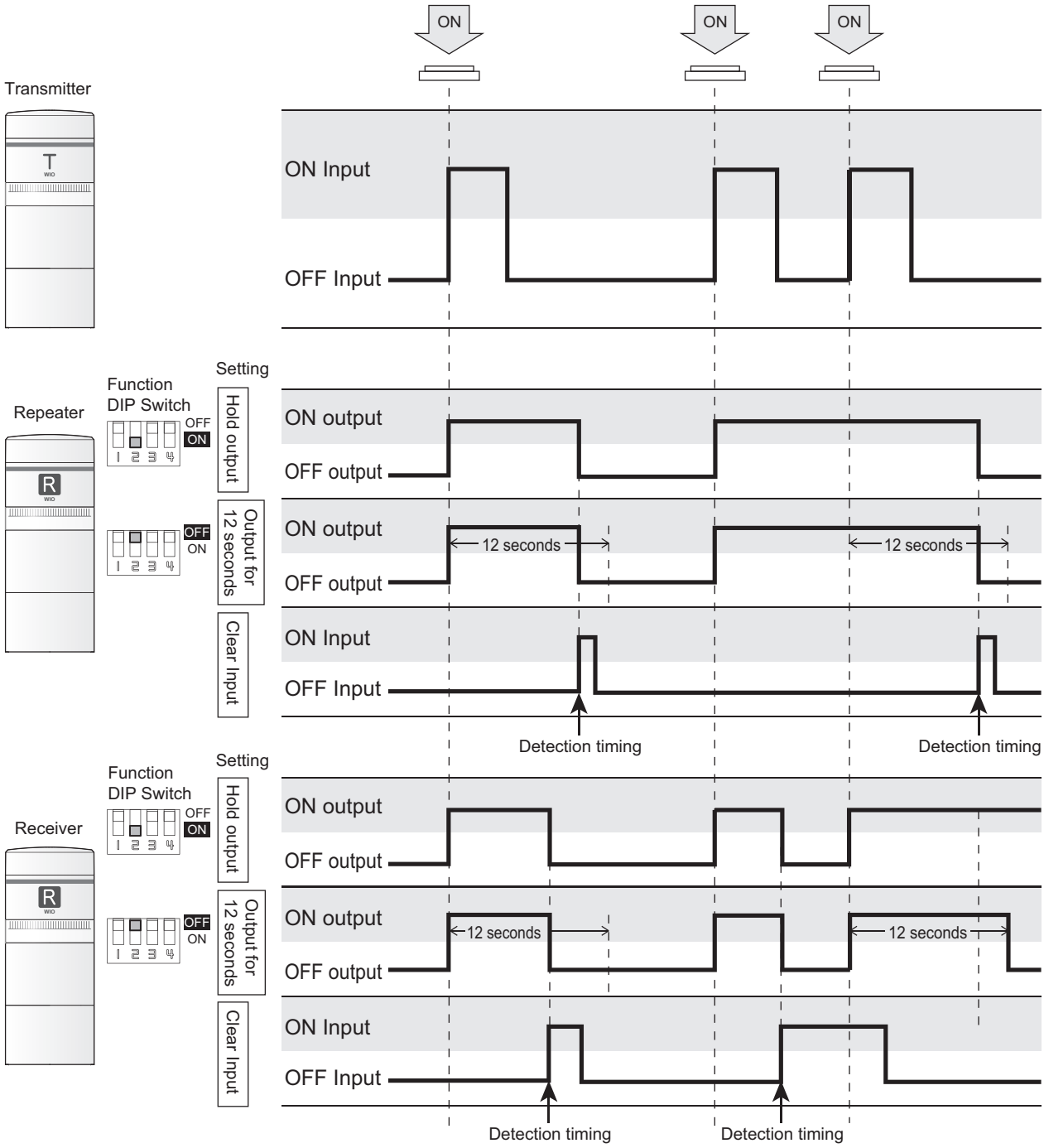
⚠ When it is set to output for 12 seconds and multiple inputs are received, outputs for 12 seconds from the timing of the last input.
Due to wireless communication, the usage environment, and the number of repeaters, the timing of the output may be delayed.

Point

- During output, if one-shot output clear is performed or the power for the receiver is turned off, the output is stopped. For information, refer to "7.4.2.1. One-shot Output Clear" (☞ page 28).
- For information on how to set One-shot Mode for the receiver/repeater, refer to "7.3.2.1. How to Set Functions" (☞ page 24).

7.4.2.1. One-shot Output Clear

- When operating in One-shot Mode, the output continuous state can be canceled by the receiving product.
- To cancel the output continuous state, execute Clear Input (OFF→ON) to the receiver or repeater that is maintaining the output.
- Read "7.2. About the DIP Switches and Reset Button" (☞ page 20) before handling the DIP switches.



Point

- One-shot Output Clear operates independently for each product. (One-shot Output Clear of the repeater and of the receiver are not linked.)
- One-shot Output Clear is detected as input OFF→ON (detection timing shown in the figure).
- This function can be operated only in One-shot Mode and not in Level Mode.

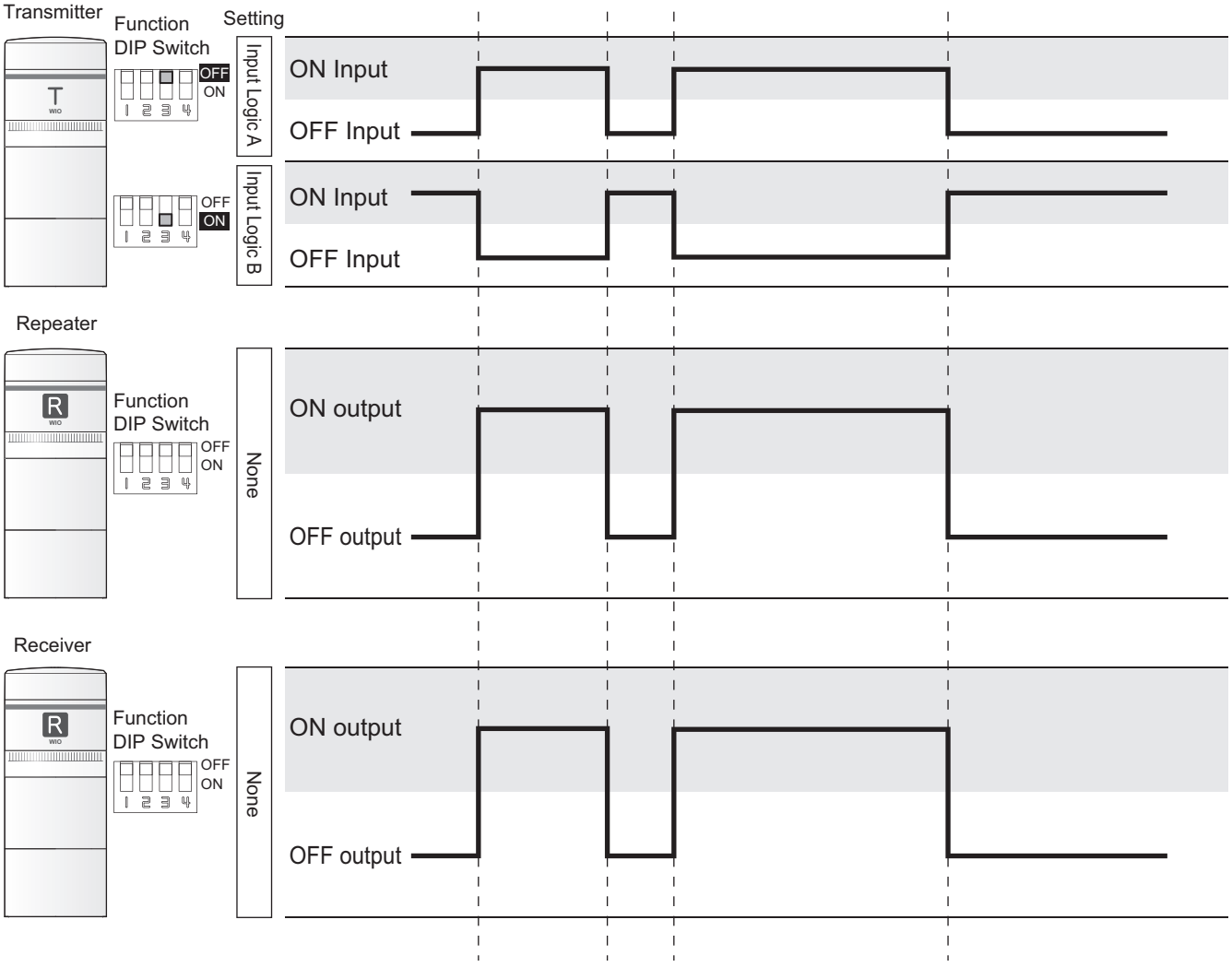
7.4.3. Input Logic A/B Switching Setting

- Select for this product the logical sum of the transmitter product's ON/OFF input and the receiver product's ON/OFF output [Input Logic A (NO Contact)], and the inverse logic of the transmitter product's ON/OFF input and the receiver product's ON/OFF output [Input Logic B (NC Contact)].
- Read "7.2. About the DIP Switches and Reset Button" (☞ page 20) before handling the DIP switches.

Point

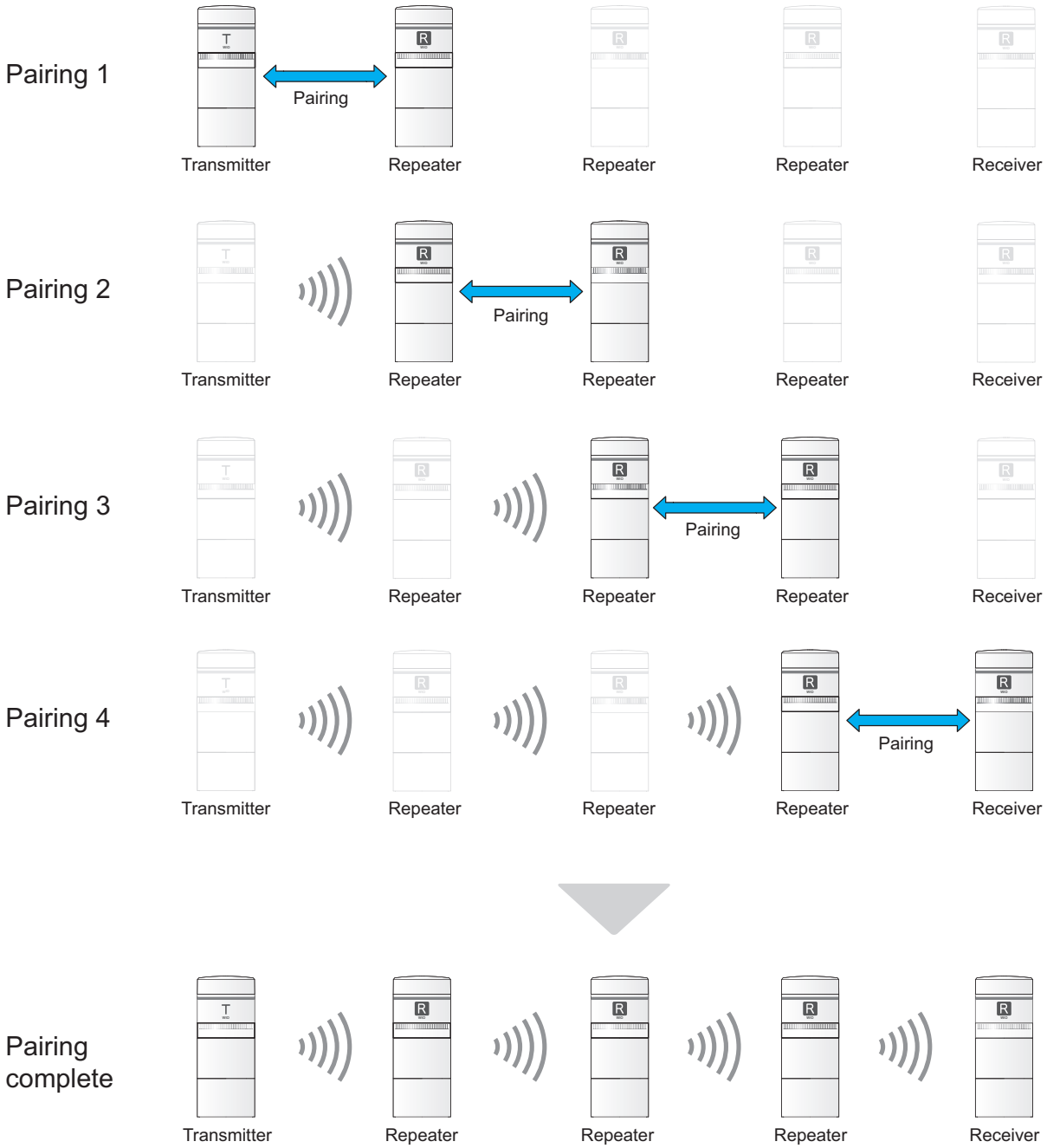
● When using input devices (sensors, switches) with a B contact, it is recommended to set "Input Logic B (NC contact)". For setup, refer to "7.3.2.1. How to Set Functions" (☞ page 24).

If the input logic is set to B and the LED unit/buzzer unit is installed, it will be performed as follows.
Transmitter side: When ON is input, LED unit/buzzer unit lights up/operates.
Receiver/repeater side: When OFF is input, LED unit/buzzer unit lights up/operates.



7.5. Pairing

- For the pairing procedure of this product, pair the transmitting product with the receiving product in the order of the Pairing, 1 to 4, as shown in the figure below.
- Pairing of this product refers to the state in which all devices (transmitter, receiver, and repeater) can connect to each other via Bluetooth.



⚠ CAUTION

- When pairing multiple products at the same time, use separate group IDs.
  Failure to follow the instruction may result in unintended pairing or failure to pair between products. If pairing between products is unintended, please unpair and pair again.
  (Refer to "7.6. How to Unpairing" (☞ page 33))
- When pairing devices with the same group ID, Turn on the power for each device in the order in which they are to be paired.
  Simultaneous power on may result in unintended pairing between products. If pairing between products is unintended, please unpair and pair again.
  (Refer to "7.6. How to Unpairing" (☞ page 33))
- ⚠ When the relay function switch is turned OFF, the pairing information is released. If the relay function switch is turned ON, pairing must be performed again.
- The receiver at the end of the line must be operated with the relay function turned off.
- ⚠ For products that are not paired, turn off the power.
- ⚠ This product does not allow pairing of four or more repeaters.
- If the product is replaced for maintenance, cancel the pairing of each product and perform pairing again from the transmitter side.

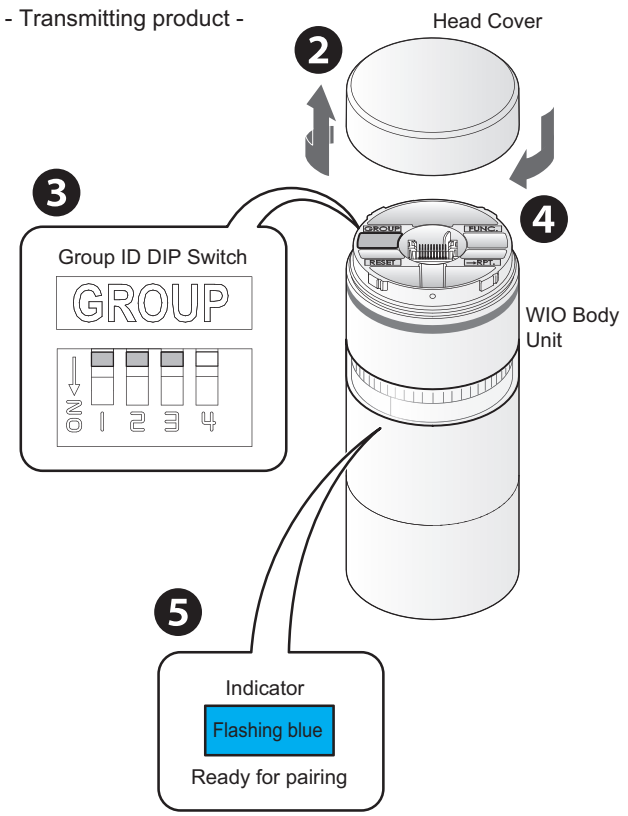
7.5.1. How to Set Pairing

- When pairing, confirm that the transmitting and receiving products are turned off.
- Read "7.2. About the DIP Switches and Reset Button" (☞ page 20) before handling the Group ID DIP Switch.

● How to Pair the Transmitting Product

1. Confirm the transmitting product is turned off.
2. Remove the head cover from the WIO body unit.
3. Set the Group ID DIP Switch.
   - Match the Group ID of the Group ID DIP Switch with the receiving product to be paired.
     Pairing will not occur unless the Group ID matches.
   - Specify the Group ID from 1 to 8.
     For information on how to allocate each group ID, refer to "7.3.1.1. How to Set the Group ID" (☞ page 23).
4. Attach the head cover to the WIO body unit.
5. Turn on the transmitting product and confirm that the indicator is flashing blue.

※ The indicator flashes blue when the transmitter product is ready for pairing.



● How to Pair the Receiving Product

6 Confirm the receiving product is turned off.

7 Remove the head cover from the WIO body unit.

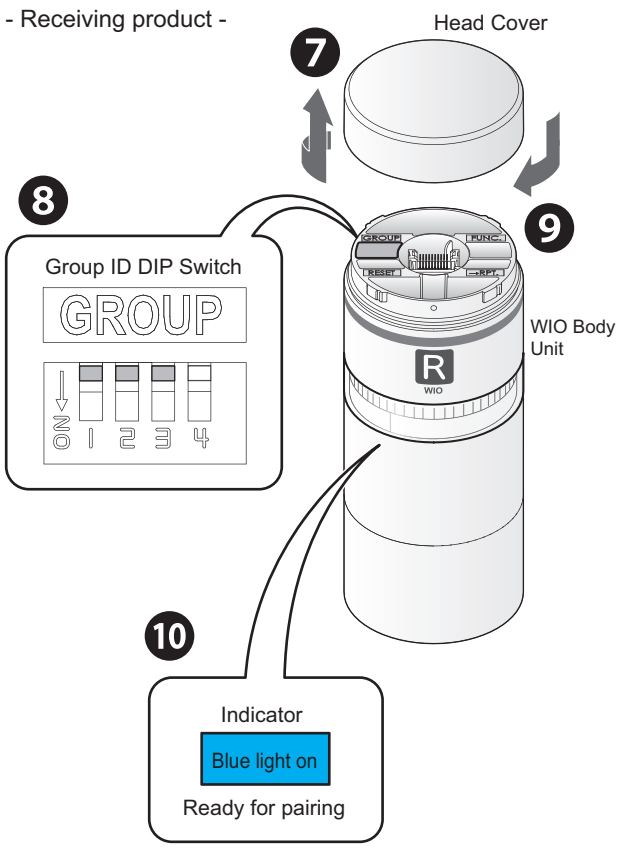
8 Set the Group ID DIP Switch.

- The switch No. of the Group ID DIP Switch should match the transmitting product to be paired.
  If the switch No. does not match, pairing will not occur.
- Specify the Group ID from 1 to 8.
  For information on how to allocate each group ID, refer to "7.3.1.1. How to Set the Group ID" (☞ page 23).

9 Attach the head cover to the WIO body unit.

10 Turn on the receiving product and confirm that the indicator is lit blue.

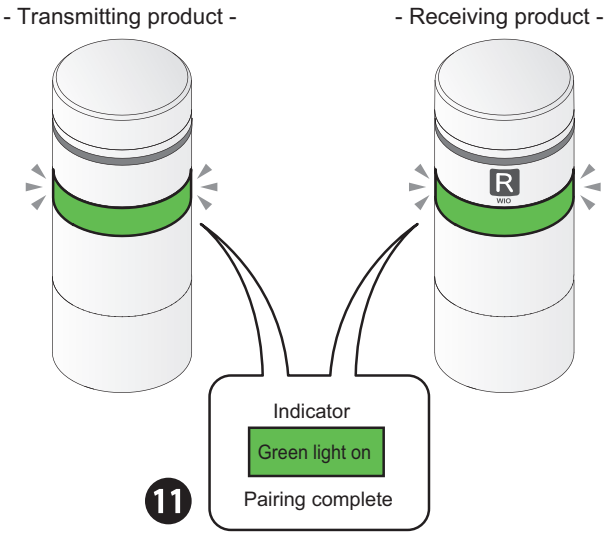
※ The indicator lights up blue when the receiving product is ready for pairing.



● Common (Transmitting and Receiving Products)

11 Confirm the indicators on the transmitting and receiving products are lit green.

- When pairing is complete, the indicator changes from lit blue/flashing blue to lit green.
- If the blue light continues to flash/light up for awhile, the installation environment may be poor, such as the group ID being incorrect or the sending/receiving product being out of range. Please reconsider the installation location.
- If the receiving product is a repeater, the indicator will change to flashing blue after pairing is complete.



Point

● When the relay function of the receiver at the end of the line is turned on, the product can be used as a repeater.

7.6. How to Unpairing

- To delete the connection information (pairing information) registered for each product, such as adding/removing a repeater or replacing the product for maintenance, cancel the pairing and then pairing again.
- Read "7.2. About the DIP Switches and Reset Button" (☞ page 20) before handling the DIP switches.
- To unpair, follow the procedure below.

1 Confirm the product to unpair is turned off.

2 Remove the head cover from the WIO body unit.

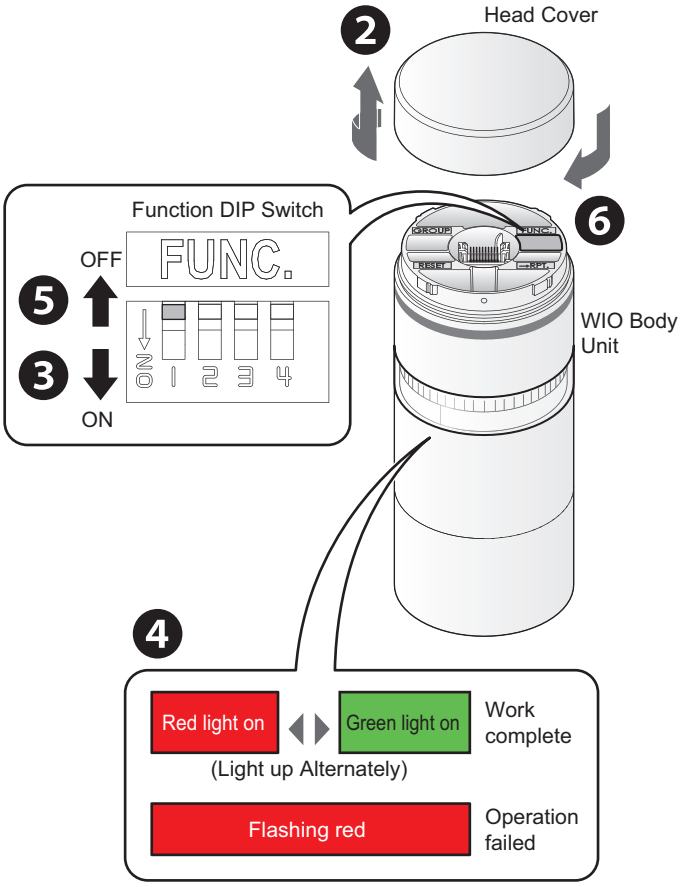
3 Turn ON the Function DIP Switch 1 for the product to unpair.

4 Turn on the power of the product to unpair, and confirm that the indicator repeatedly lights up alternately red ↔ green.

- Do not turn off the power before the indicator lights up alternately red ↔ green. Unpairing may fail.
- When unpairing is completed, the indicator repeatedly alternates between red↔ green.
- If unpairing failed, the indicator flashes red. That may indicate product failure. For information, refer to "9. Troubleshooting" (☞ page 80).

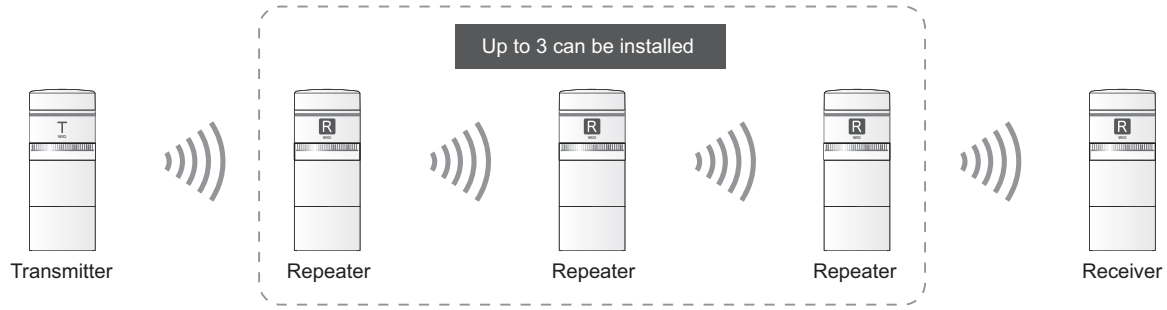
5 Turn off the power of the product to unpair, and turn off Function DIP Switch 1.

6 Attach the head cover to the WIO body unit.



7.7. Using a Repeater

- If the wireless quality is poor due to distance or obstacles between products, the wireless quality may be improved by installing a repeater.
- This product can be used as a repeater by changing the receiver settings.
- Up to three repeaters can be installed in one group.
- The output of the repeater and the output of the receiver are linked.



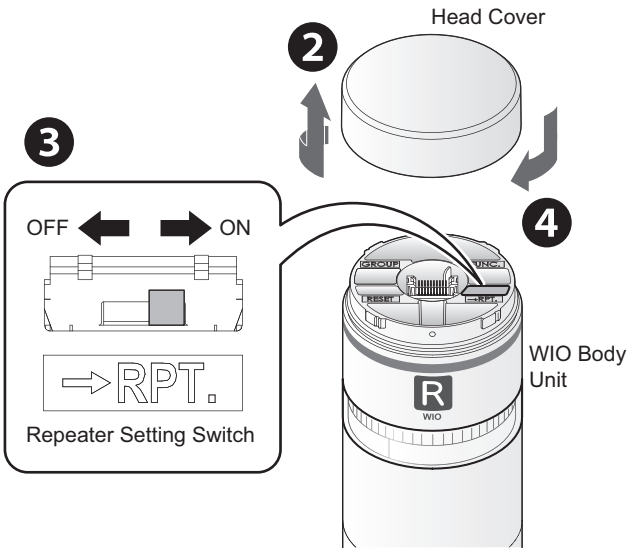
Point

- The system must consist of one transmitter, 0 to 3 repeaters, and one receiver.
- Four or more repeaters cannot be connected and used.
- A repeater is identified as a separate device from the receiver, so there must always be one receiver per group.
- Transmitters do not posses the relay function.
- If the product is replaced for maintenance, cancel the pairing of each product and perform pairing again from the transmitter side.

7.7.1. How to Switch the Repeater ON/OFF

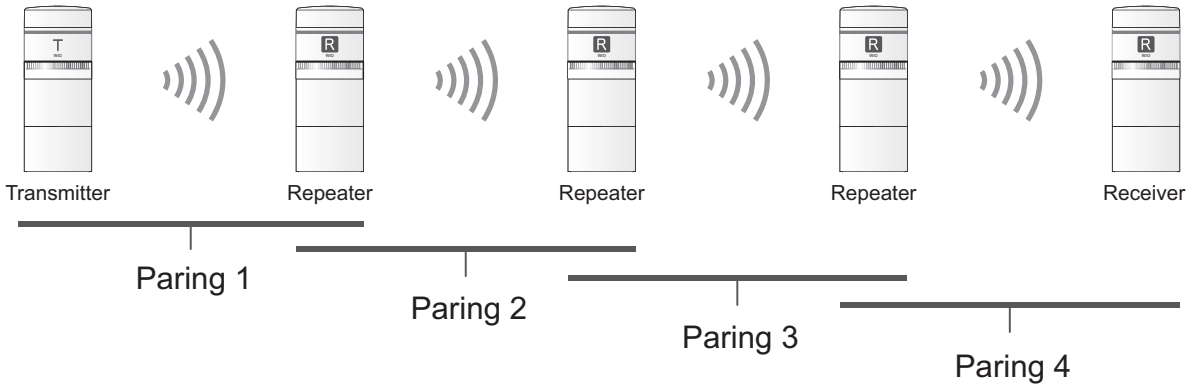
- To use the receiver as a repeater, switch the Repeater Setting Switch to ON.
- Before switching the Repeater Setting Switch, turn off the power to the repeater.
- Read "7.2. About the DIP Switches and Reset Button" (☞ page 20) before handling the Repeater Setting Switch.

1. Confirm the repeater is turned off.
2. Remove the head cover from the WIO body unit.
3. Change the Repeater Setting Switch.
4. Attach the head cover to the WIO body unit.



7.7.2. When Using Repeaters from Temporary Installation

- When using repeaters from when installation was performed, turn on the power from the transmitter, in turn, and pair as follows.
- For products that are not paired, turn off the power.



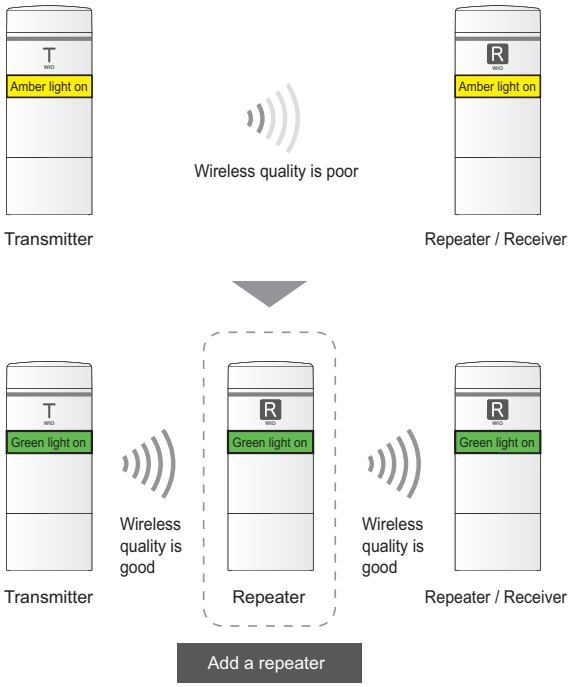
7.7.3. Adding a Repeater After Temporary Installation

- If wireless quality is poor after temporary installation, consider installing a repeater. At that time, if the indicator light is amber, the repeater can be added simply by turning the repeater ON.
- A repeater can be added between products by simply turning on the repeater only when all of the following conditions, ① through ③, are met.

  ① Connection information (pairing information) between products is registered.

  ② The wireless connection between the products is not in good condition (indicator light is amber) (Refer to "7.8. Checking the Indicator" (☞ page 37))

  ③ The number of repeaters within a single group does not exceed 2 units.



⚠ CAUTION

⚠ Add repeaters one at a time. Adding two or more repeaters at the same time may cause connection problems.

⚠ When eliminating the installation of a repeater after the addition of a repeater, unpair the transmitter and receiver, and pair again. Turning off the repeater does not restore the connection environment prior to the addition of the repeater.

⚠ **A repeater may be unintentionally paired with products when product systems exist under the following conditions. Please use caution.**

- **There are products (indicator light is amber) in close proximity that do not have a good wireless connection between products**
- **Products that are in the middle of pairing are in close proximity**

Point

- Connect via the added repeater.
- Add one repeater between the paired transmitter and receiver/repeater, or between the paired repeater and receiver/repeater.
- When the indicator light is amber, the repeater can be connected regardless of whether its group ID is a match or mismatch.

7.7.3.1. How to Add a Repeater

- When the indicator light is amber, a repeater can be added between products simply by turning on the repeater to be added (simple add function).
- Read "7.2. About the DIP Switches and Reset Button" (☞ page 20) before handling the Repeater Setting Switch.
- Follow the steps below.

1 Confirm the repeater is turned off.

2 Remove the head cover from the WIO body unit.

3 Turn on the Repeater Setting Switch ON.

4 Attach the head cover to the WIO body unit.

5 Turn on the repeater.

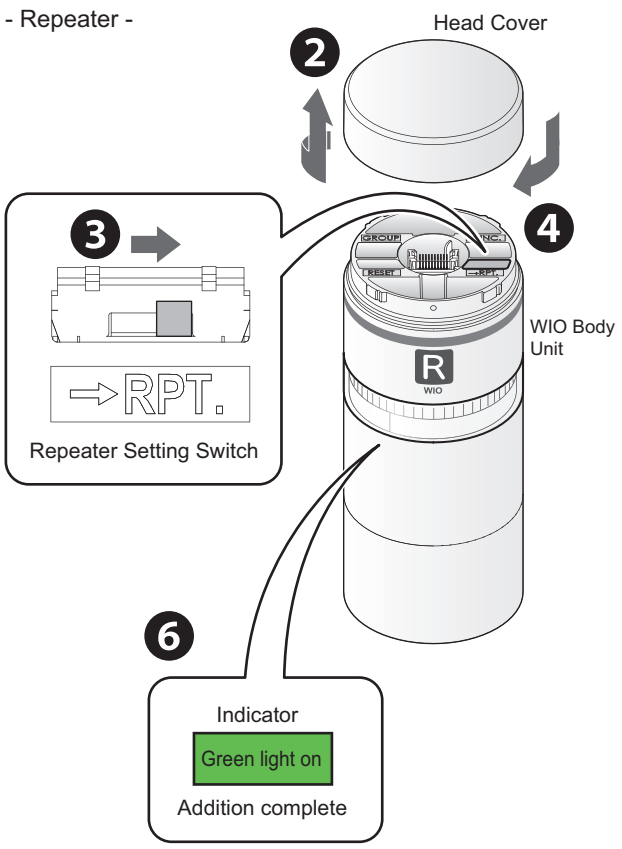
- The indicator light of the repeater is blue.
- Pairing is initiated while the indicator light on the repeater is blue for approximately 30 seconds.

※ If the indicator light changes from amber to green, during the approximate 30 seconds of inactivity, the repeater will not initiate pairing.

※ The indicator light flashes blue when pairing is initiated. If the blue light continues flashing for awhile, the receiving product may not be within range of the radio wave. Reconsider the installation location.

※ When the addition of a repeater is completed, the indicator light turns red, followed by green.

6 Confirm that pairing is complete and the indicator light is green.



⚠ CAUTION

⚠ When eliminating the installation of a repeater after the addition of a repeater, unpair the transmitter and receiver, and pair again. Turning off the repeater does not restore the connection environment prior to the addition of the repeater.

⚠ A repeater may be unintentionally paired with products when product systems exist under the following conditions. Please use caution.

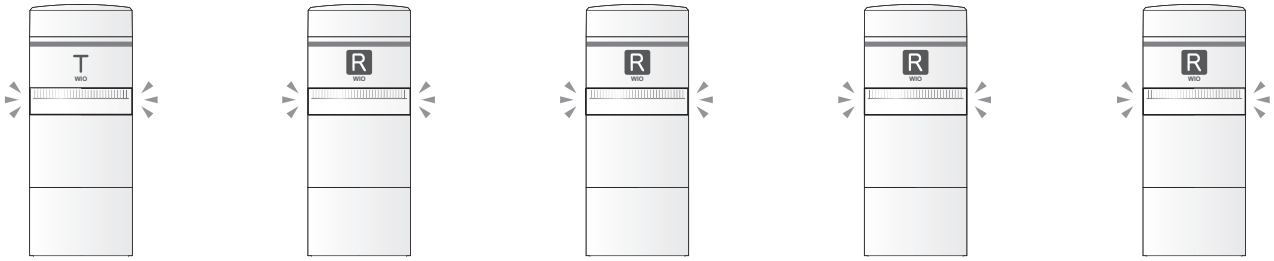
- There are products (indicator light is amber) in close proximity that do not have a good wireless connection between products
- Products that are in the middle of pairing are in close proximity

⚠ Depending on the installation environment or signal conditions, or if the product's power is turned off during addition, the indicator may not turn green even after about 2 minutes have passed since the power of the repeater to be added is turned on, and addition may not be possible. In that case, please follow the steps below.

- Review the communication environment of the repeater to be added.
- If the indicator of each product does not return to the state before the repeater was added, cancel the pairing of all products and perform pairing again from the transmitter side.

7.8. Checking the Indicator

Check the indicator status with its lighting.



Transmitter Repeater Repeater Repeater Receiver

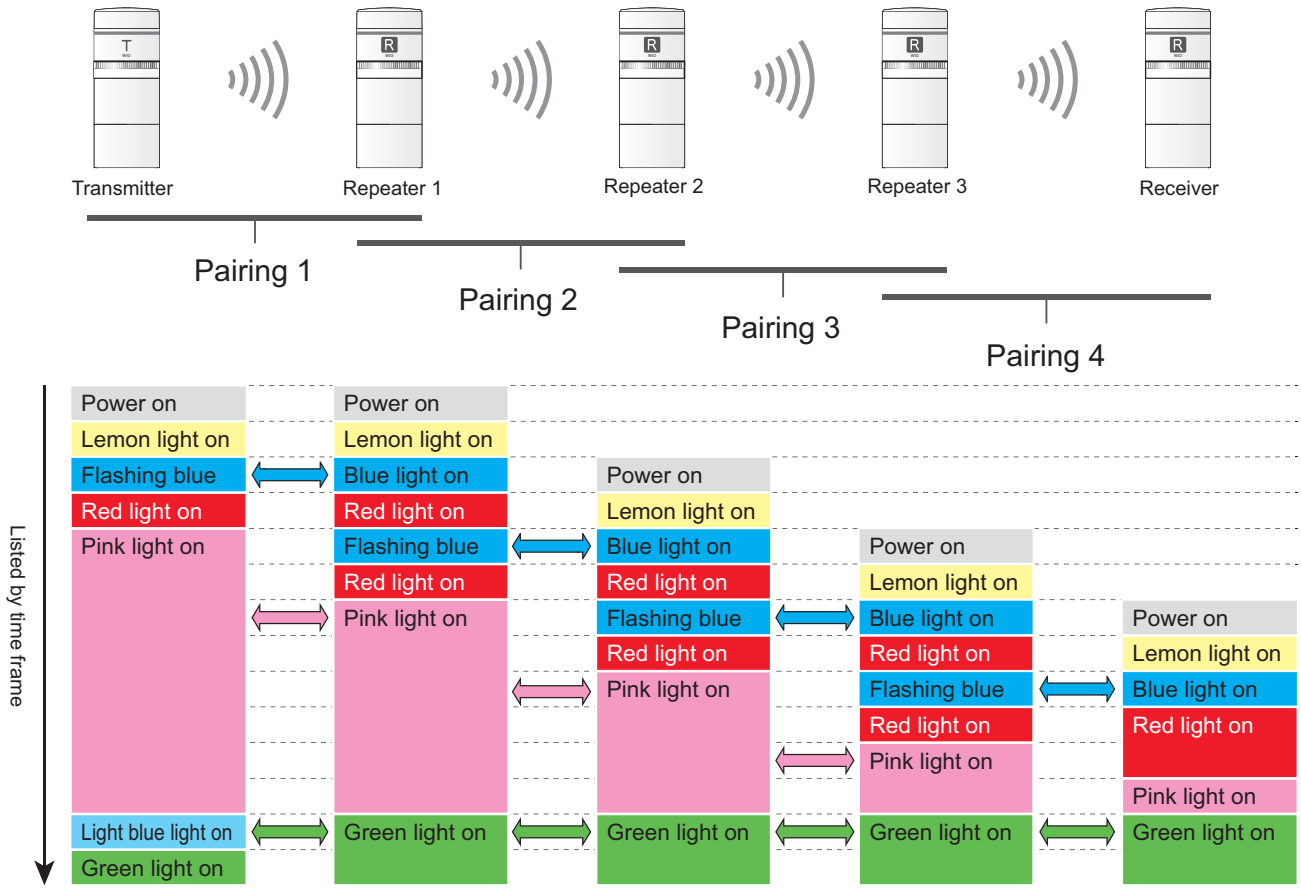
Category	Products			Indicator Light Status	Status	Contents
	Transmitter	Repeater	Receiver			
Starting up	●	●	●	Lemon light on	Starting up	After turning ON the power, in the start up state.
Pairing	●	●	-	Flashing blue	Pairing	After turning ON the power, in the state where the connection information (pairing information) is not registered. Searching for a connection point.
	-	●	●	Blue light on		
Operation	●	●	●	Green light on	Wireless quality	Wireless quality is good.
	●	●	●	Amber light on		Wireless quality is poor. Reconsider the installation location or install a repeater.
	●	●	●	Red light on		Waiting for wireless connection. Registration of connection information (pairing information) has completed.
	●	●	●	Pink light on		Wireless connection to the destination is established, but wireless connections between other products in the system are not established. Registration of connection information (pairing information) has completed.
	●	-	-	Flashing green Flashing amber Flashing pink	Operation Status	Flashes when the contact detects an input. (flashes green when the wireless quality is good, amber when it is poor, and pink when the wireless connection to the destination is established but not between other products in the system)
	-	●	●	Flashing green Flashing amber Flashing pink		Flashes when a contact is output. (flashes green when the wireless quality is good, amber when it is poor, and pink when the wireless connection to the destination is established but not between other products in the system)
	●	-	-	Light blue light on		When the input detected by the transmitter reaches the receiver, it lights up light blue for about 1 second (answerback). In order to periodically check the communication, it may light up in light blue even if it is not an answerback.
	●	●	●	Alternating Red↔ Green		Operating in unpairing mode.
Alarm	●	●	●	Flashing red	Error Status	When a fourth repeater is attempted to be added in the system, the indicator of the repeater flashes red.
						If the flashing status continues, an error has occurred in the product.

7.8.1. Indicator Display Examples

7.8.1.1. From Power-on to Start of Operation

● Before pairing (factory default and after unpairing)

① When using a transmitter, receiver, and repeater (3 units)

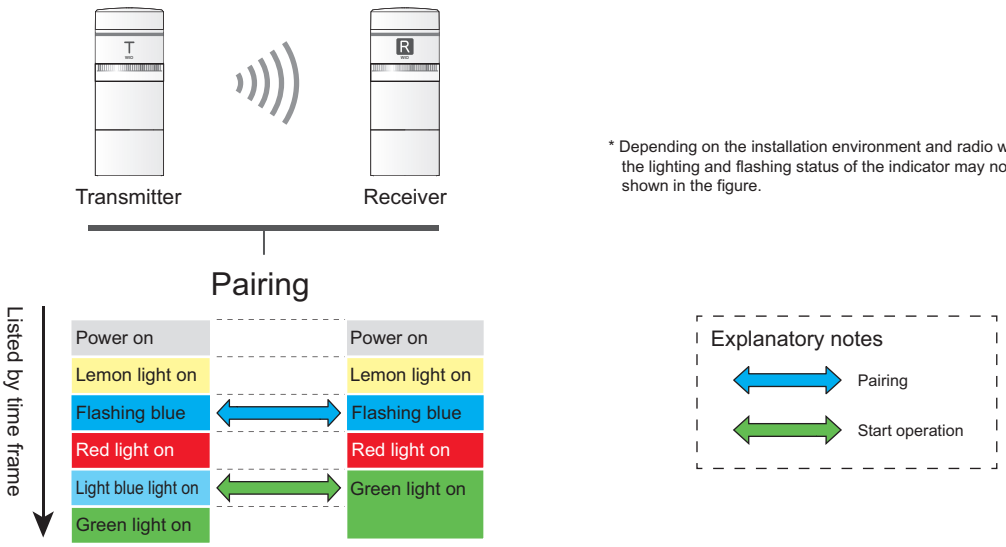


* Depending on the installation environment and radio wave conditions, the lighting and flashing status of the indicator may not transition as shown in the figure.

Explanatory notes
- Pairing
- Start relay operation *
- Start operation

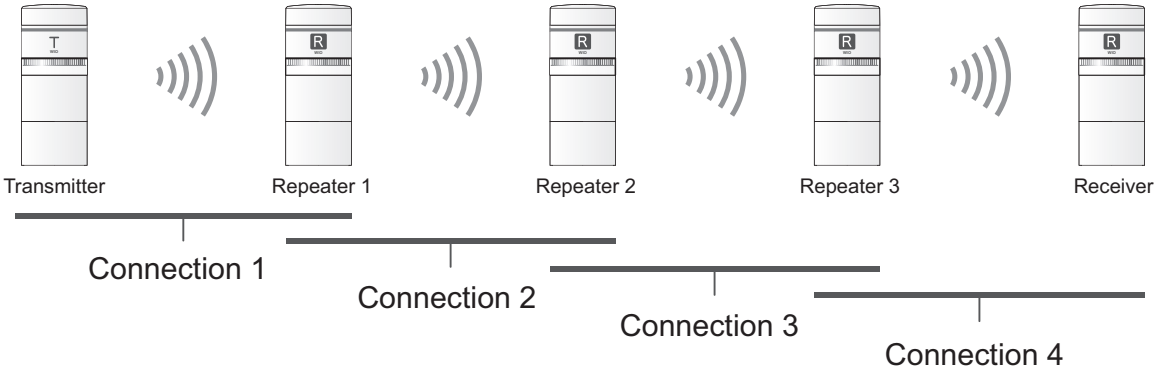
* The relay operates output.
(Actual operation should be started after the receiver is connected.)

② When using a transmitter and receiver

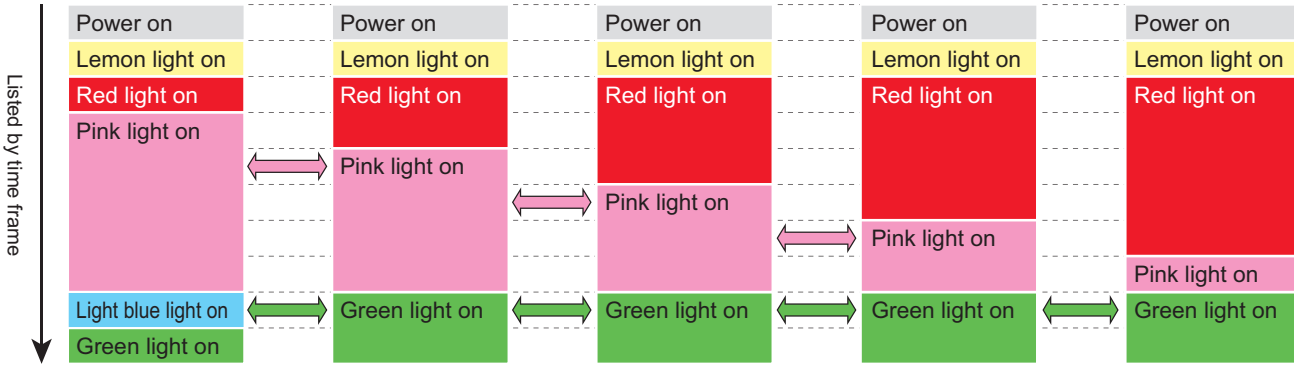


* Depending on the installation environment and radio wave conditions, the lighting and flashing status of the indicator may not transition as shown in the figure.

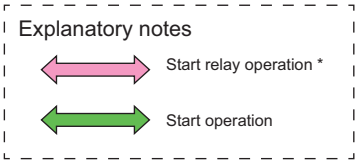
● After pairing is complete



*Connect in the order of connection 1, 2, 3, and 4.



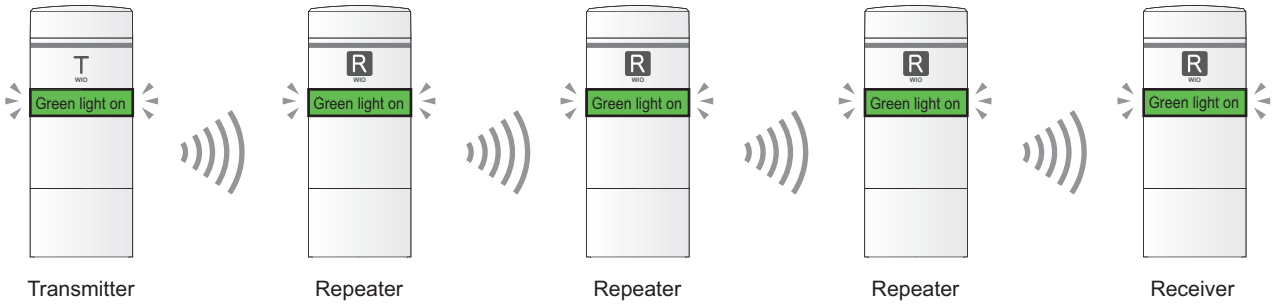
* Depending on the installation environment and radio wave conditions, the lighting and flashing status of the indicator may not transition as shown in the figure.



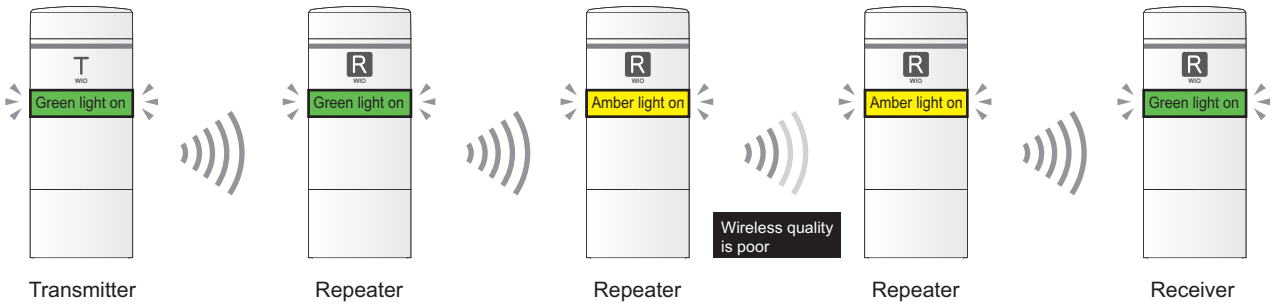
* The relay operates output.
(Actual operation should be started after the receiver is connected.)

7.8.1.2. Wireless Quality under Operational Conditions

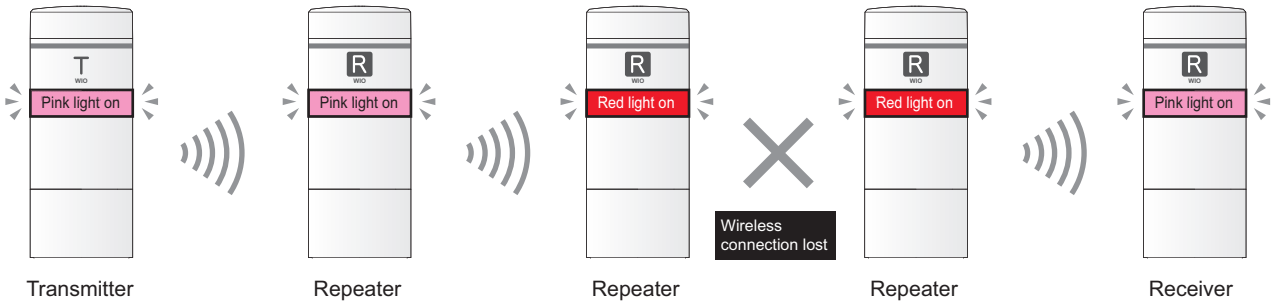
● When wireless quality is good



● When wireless quality is poor

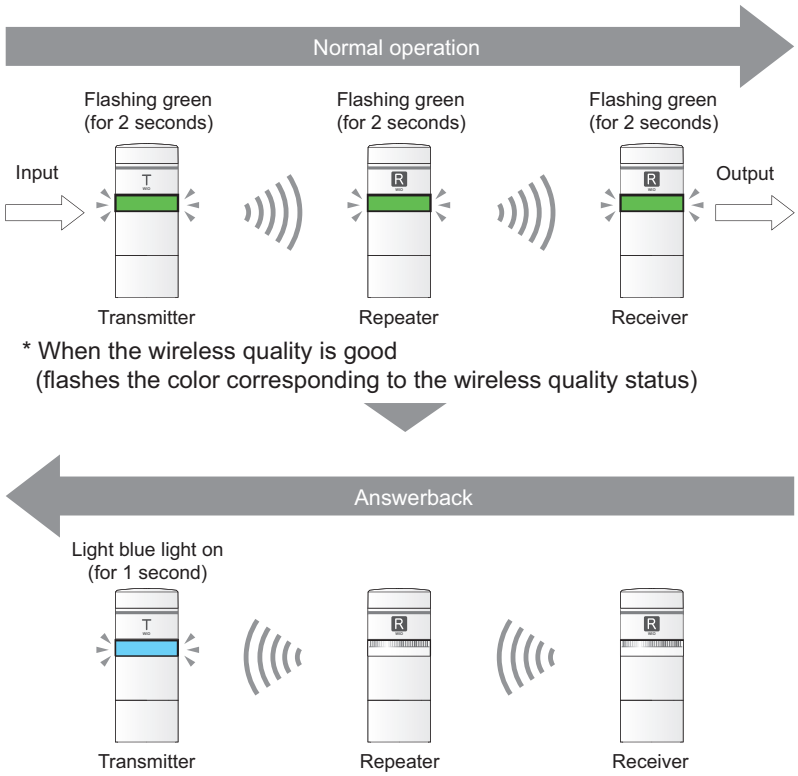


● When wireless connection is lost



7.9. Answerback

A light blue indicator light for 1 second confirms that input information from the transmitter has successfully transmitted to the receiver and that the output device has been operated on.



Point

- Even if a repeater outputs, it does not answer back. The input information reaches the terminal receiver, and an answer back is given at the stage of normal output.
- If signals are continuously input to the transmitter over a short period of time, the indicator on the receiver/transmitter may not flash.
- In order to periodically check the communication, it may light up in light blue even if it is not an answerback.

7.10. Mounting

7.10.1 Direct Mounting

The mounting method for the transmitter and receiver are the same.

1 In the mounting location, drill holes for mounting and wiring the product.

2 Rotate the WIO body unit counterclockwise and detach from the direct mount bracket.

- Detach the bracket in the same way as the head cover described in "7.13. How to Attach and Detach Additional Units" (☞ page 73).

3 Use the hexagon nut with flange to secure the direct mount bracket in the mounting position.

Recommended Torque (approximate)	0.6 N • m

4 Pass the cable through the wire distribution hole.

5 Remove the two screws from the terminal block connector and perform the wiring.

- Refer to "7.11.1. Detaching the Terminal Block Connector" (☞ page 46)
- Refer to "7.11.3. Wiring the Terminal Block Connector" (☞ page 47)

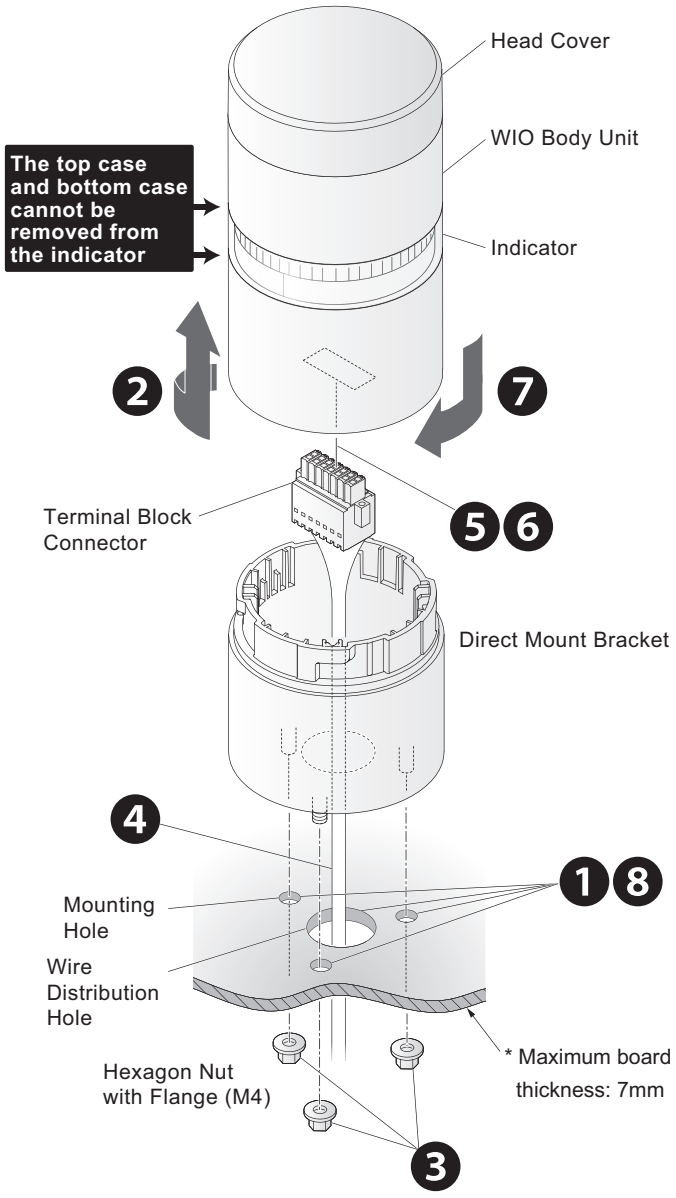
6 Attach the terminal block connector to the WIO body unit.

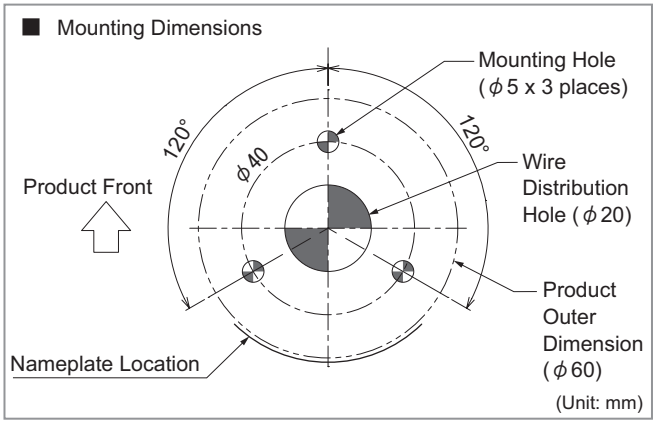
- Refer to "7.13. How to Attach and Detach Additional Units" (☞ page 73)

7 Install the WIO body unit to the direct mount bracket following the removal procedure in reverse order.

- Attach the bracket in the same way as the head cover described in "7.13. How to Attach and Detach Additional Units" (☞ page 73).

8 If required, apply sealant around the mounting and wire distribution holes.



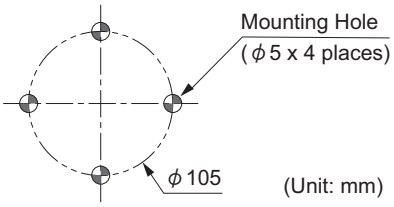


7.10.2. Mounting with Mounting Bracket (Option)

1 Determine how to secure the mounting bracket.

When securing with screws

As shown in the illustration below, drill mounting holes at the installation location.



* Screws (M4 or nominal diameter 4) to secure the bracket are not included. Please provide your own. (bracket thickness: 7 mm)

2 Attach the grommet to the mounting bracket's wiring hole (rear).

* Either wiring hole (rear) can be used.
  Use both wiring holes, if necessary.
* A cable gland can be used instead of a grommet (accessory) to prevent dust from entering the mounted product through the wiring holes. (Cable gland mounting hole diameter: ϕ 16.5, mounting plate thickness: 1.5 mm, outer diameter: ϕ 26 mm or less for the mounting portion.)

3 Pull wires out the grommets and attach the direct mount bracket to the mounting bracket.

4 Secure the product to the mounting bracket with hexagon nuts (M4).

Recommended Torque	0.6 N • m

* For the installation method of each product mount, refer to the corresponding product's instruction manual.
* Hexagon nuts (M4) are not included with this product.
  Use the hexagon nuts that are attached to each product.

5 Pass the wire through the wiring hole.

6 Remove the two screws from the terminal block connector and perform the wiring.

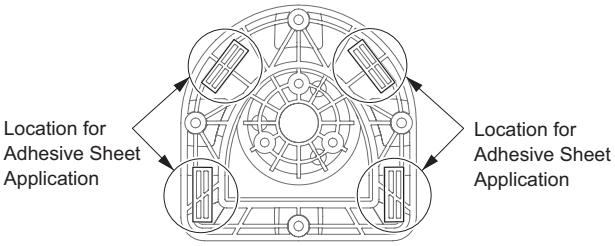
- Refer to "7.11.1. Detaching the Terminal Block Connector" (☞ page 46)
- Refer to "7.11.3. Wiring the Terminal Block Connector" (☞ page 47)

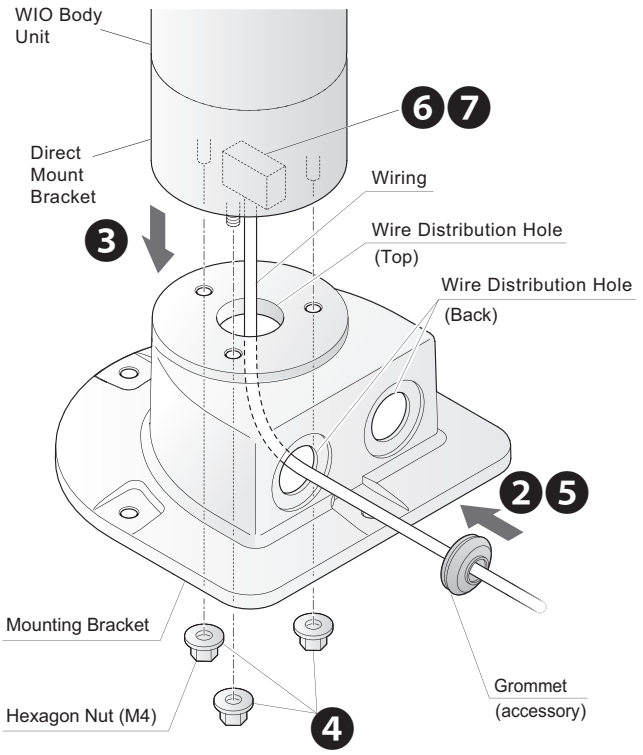
7 Attach the terminal block connector to the WIO body unit.

- Refer to "7.13. How to Attach and Detach Additional Units" (☞ page 73)

When securing with adhesive sheet

Peel away the yellow non-stick paper from the adhesive sheet and stick it to the location for the adhesive sheet.





8 Secure the mounting bracket to the installation location.

When securing with screws

Secure the mounting bracket with screws (M4 or nominal diameter 4).

* When using a flat washer for mounting, use one with a diameter of ϕ 10 mm or less.

When securing with adhesive sheet

Peel off the transparent protective film and secure the mounting bracket.

7.10.3. Mounting with Pole (Option)

The following is an example installation using two circular brackets (SZP-003W: option) and Pole N.

1 Rotate the WIO body unit counterclockwise and detach from the direct mount bracket.

- Detach the bracket in the same way as the head cover described in "7.13. How to Attach and Detach Additional Units" (☞ page 73).

2 Attach the pole's water proof ring to the circular bracket.

3 Insert the pole into the circular bracket.

- There is an insertion direction. Refer to the diagram to the right.

4 Tighten the circular bracket from the top with the bind tapping screws (3 x 12) (2 pieces).

Recommended Torque	0.8N • m

5 Attach the waterproof packing.

6 Attach the direct mount bracket to the circular bracket.

7 Tighten the circular bracket from the bottom with the three hexagon nuts with flange.

Recommended Torque	0.6 N • m

8 Attach the pole's water proof ring to the circular bracket.

9 **Insert the pole into the circular bracket.**

- There is an insertion direction. Refer to the diagram to the right.

10 Tighten the circular bracket from the bottom with the bind tapping screws (3 x 12) (2 pieces).

Recommended Torque	0.8N • m

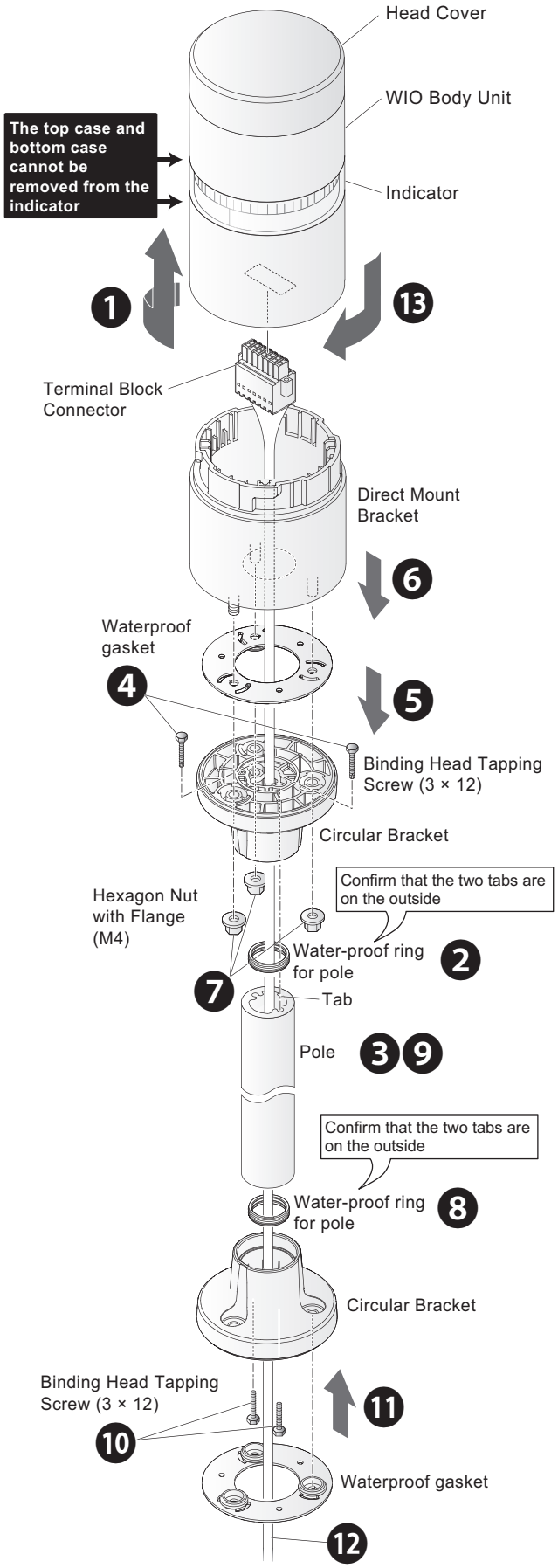
11 Attach the waterproof packing.

12 Pass the wires through the circular bracket and pole.

- Make sure the wires can pass through the circular bracket and pole before work.

13 Install the WIO body unit to the direct mount bracket following the removal procedure in reverse order.

- Attach the bracket in the same way as the head cover described in "7.13. How to Attach and Detach Additional Units" (☞ page 73).



⚠ CAUTION

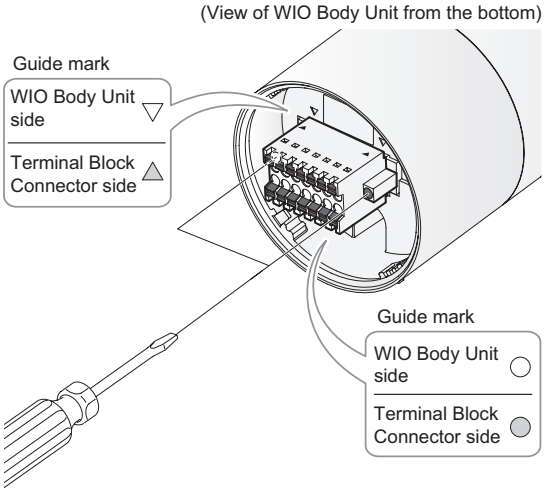
⚠ Do not remove the waterproof gasket attached to the direct mount bracket.
(Install together with the waterproof packing of the circular bracket)

⚠ Installation using other than the supplied accessories is not warranted.

7.11. Wiring

7.11.1. Detaching the Terminal Block Connector

To remove the terminal block, turn the terminal block connector screws (2 places) counterclockwise and pull out the terminal block connector. To install the terminal block, line up the guide marks on the WIO body unit and terminal block connector, and follow the removal procedure in reverse order to install.



Recommended Torque	0.2 N • m

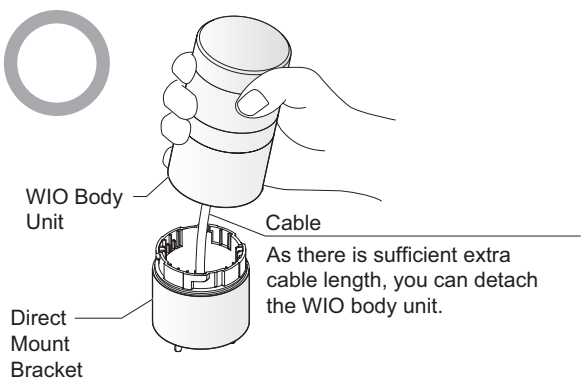
Point

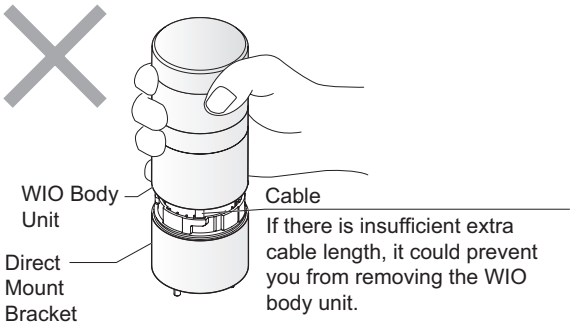
- Use a flat-blade screwdriver with a blade-edge width of 2.5 mm or less and a thickness of 0.4 mm or less. (Or equivalent)

7.11.2. Wiring Caution

⚠ CAUTION

- When securing the lead wire, secure with extra wire length. If there is insufficient extra cable length, it could prevent you from removing the WIO body unit from the direct mount bracket.





7.11.3. Wiring the Terminal Block Connector

- Lead wires are not included with this product. Please provide your own.
- Follow the steps below to wire the terminal block connector.

⚠ WARNING

- Before any work is done, disconnect the power.
- Be sure wiring is carried out correctly. Failure to follow these instructions could result in burning internal circuits or fire.

⚠ CAUTION

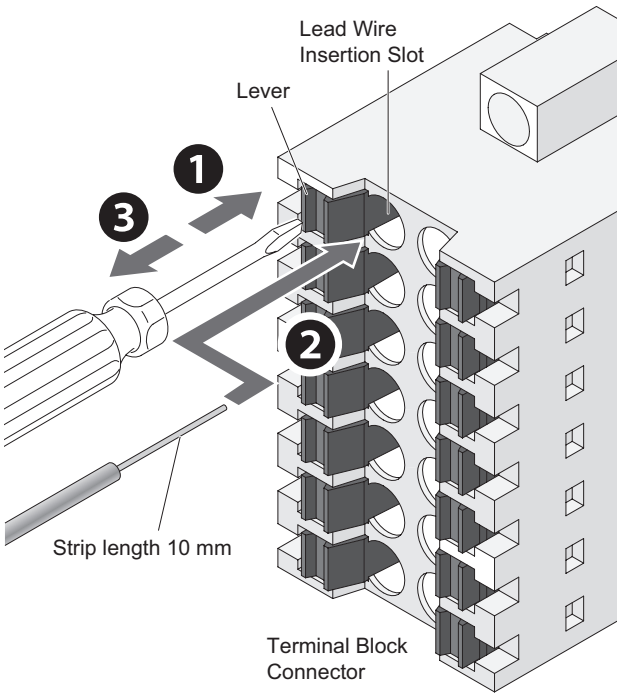
- Do not use excessive force when pressing the lever of the terminal block connector.
- To protect external equipment, install a fuse on the power supply side.
- When wiring lead wires, consider the voltage drop along with the appropriate length and diameter.
- Before turning on the power, check that the wiring and switch settings are correct.
- Wire so that the core of the lead wire is not exposed. Failure to follow this instruction could cause a short circuit leading to fire or equipment damage.
- After completing the wiring, check for any loose wires. Failure to follow this instruction could result in malfunction or electric shock.

1. While placing a flat-blade screwdriver on the lever of the terminal block connector, press down.

2. Keep the lever pressed down and insert the stripped lead wire into the lead wire insertion slot.

※ When using a single wire or ferrule terminal, you can connect by simply inserting the lead wire into the lead wire insertion slot.

3. With the lead wire inserted, release the flat blade screwdriver from the lever. Check if the lead wire is locked into place.



● Supported Wire Diameter

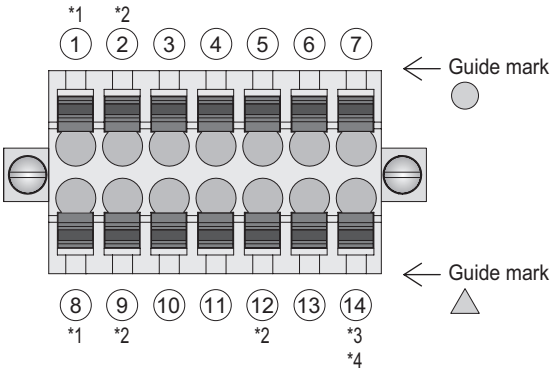
Single Wire	ϕ 0.5 - 1.2 mm (AWG24-16)
Stranded Wire	0.2 - 1.5 mm^2 (AWG24-16)

Point

- Use a flat-blade screwdriver with a blade-edge width of 2.5 mm or less and thickness of 0.4 mm or less. (Or equivalent)
- Do not push the screwdriver against the lever harder than necessary. Failure to follow this instruction could result in equipment damage.
- Strip 10 mm of the insulation from the lead wire.
- 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.)

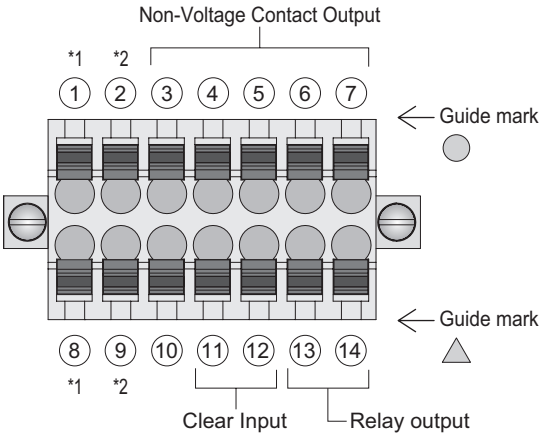
7.11.4. Terminal Block Connector Pin Arrangement

7.11.4.1. Transmitter



No.	Item
①	Power supply *1 Connected internally with No. ⑧
②	Power supply (COM) *2 Connected internally with No. ⑨ and ⑫
③	Input CH1 / LED Red
④	Input CH2 / LED Amber
⑤	Input CH3 / LED Green
⑥	Input CH4 / LED Blue
⑦	Input CH5 / LED White
⑧	Power supply *1 Connected internally with No. ①
⑨	Power supply (COM) *2 Connected internally with No. ② and ⑫
⑩	Input: CH6
⑪	Input: Buzzer
⑫	COM *2 Connected internally with No. ② and ⑨
⑬	NC
⑭	Flashing COM *3 Operates only when the buzzer unit is installed *4 Do not apply voltage

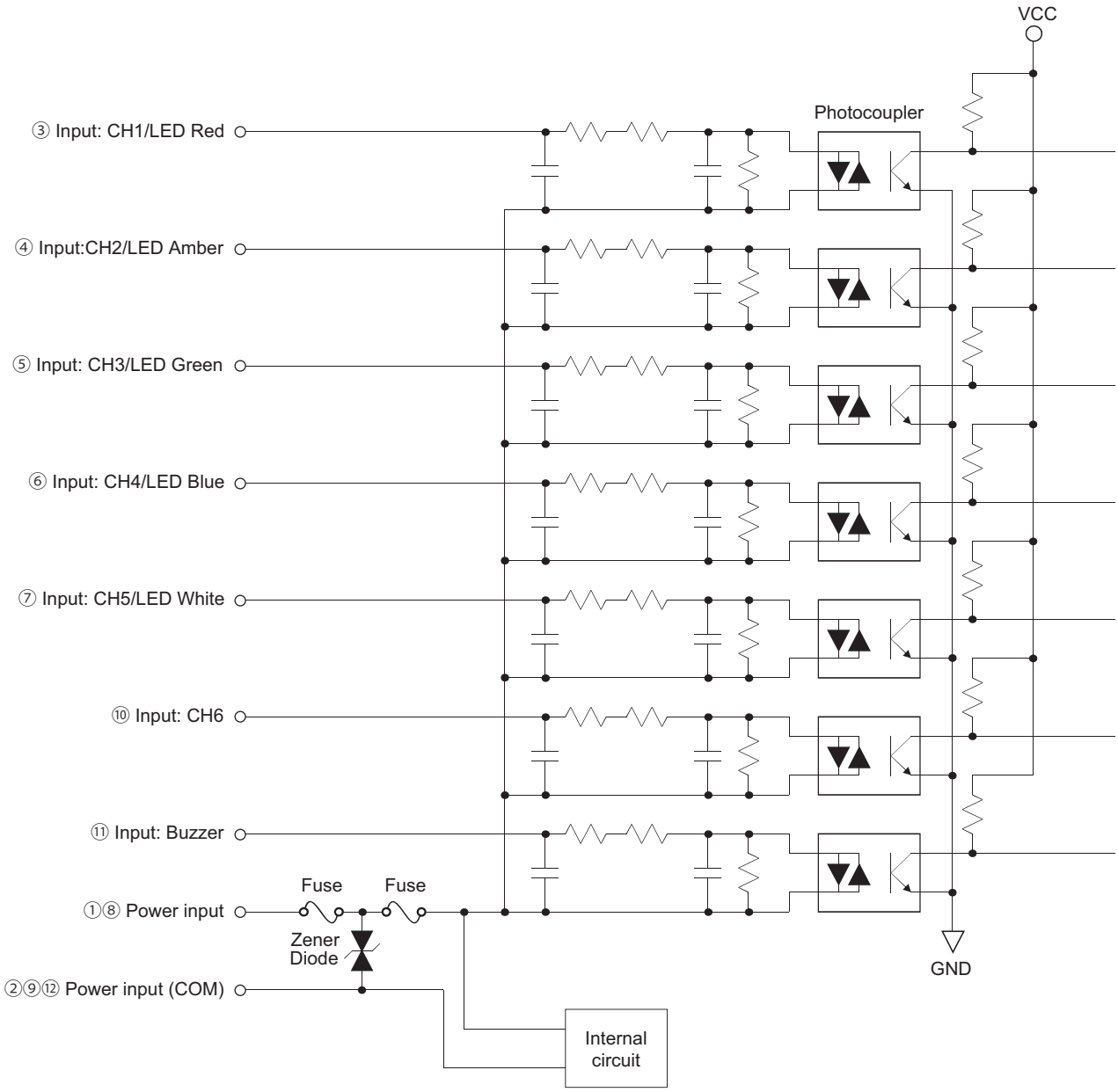
7.11.4.2. Receiver



No.	Item	
①	Power supply 1	*1 Connected internally with No. ⑧
②	Power supply 2	*2 Connected internally with No. ⑨
③	Output: CH1	Non-Voltage Contact Output
④	Output: CH2	
⑤	Output: CH3	
⑥	Output: CH4	
⑦	Output: CH5	
⑧	Power supply 1	*1 Connected internally with No. ①
⑨	Power supply 2	*2 Connected internally with No. ②
⑩	COM (Output for CH1-5)	–
⑪	Clear Input ⊕	Clear Input
⑫	Clear Input ⊖	
⑬	Output: CH6 ⊕	Relay output
⑭	Output: CH6 ⊖	

7.11.5. Internal Circuit Diagram

7.11.5.1. Transmitter

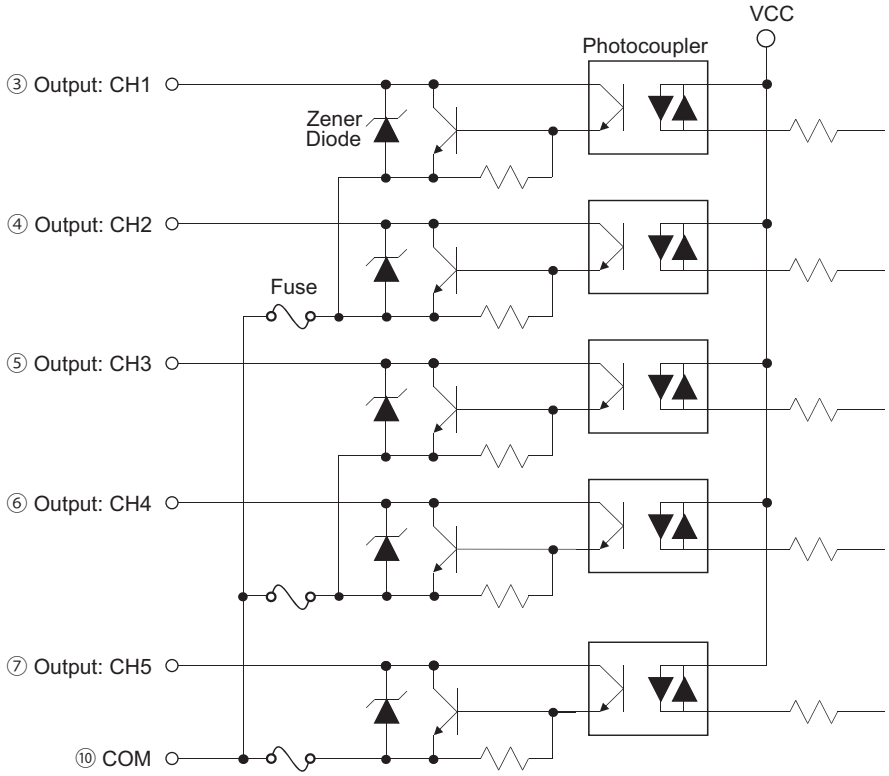


● Signal Wire Contact Capacity (Recommended)

Current Capacity	10 mA or more (without LED unit and buzzer unit connected) *When LED unit is connected, Input 1 - 5: 100 mA or more *Per LED unit tier *When buzzer unit is connected, Input buzzer: 300 mA or more
Withstand Voltage	35 V or more
Leakage Current	0.1mA or less

7.11.5.2. Receiver

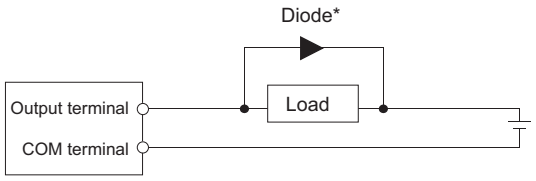
● **No-voltage contact output (NPN open collector)**



⚠ CAUTION

⚠ The output terminal is an NPN open collector output. For connection, use a product with the specification that it can be driven by an NPN transistor.

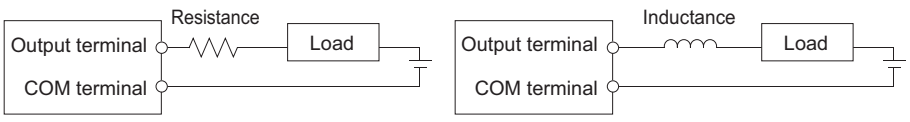
⚠ For inductive loads, provide a protection circuit in parallel with the load.



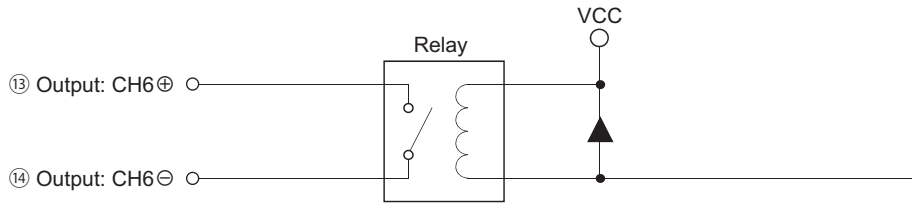
*Reverse withstand voltage: 3 times or more than the load voltage
*Average rectification current: load current or more

⚠ When connecting a load with a high inrush current, provide a protection circuit to reduce its effect.

⚠ Inrush current varies with the load. Please take this into consideration when making preparations.



● Relay output

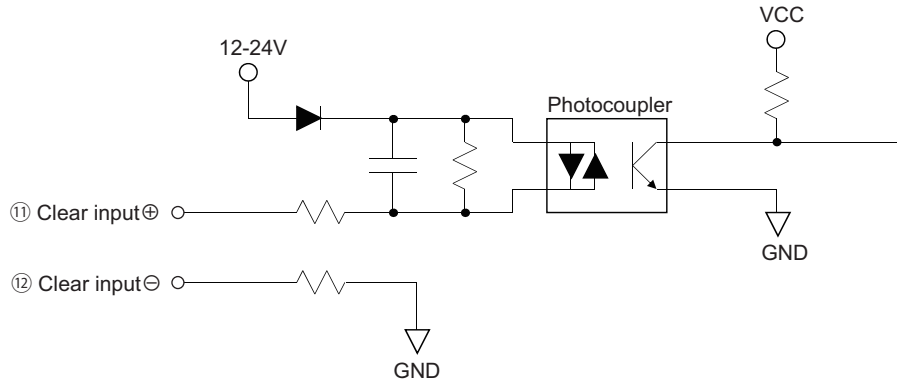


⚠ CAUTION

⚠ Relays have an open/close life. (Open/close life: 100,000 times or more *30 VDC, 3.0 A, resistive load open/close)
Open/close life depends on the type of load, voltage, current, open/close quality, ambient atmosphere, and other factors.

⚠ When connecting a load with a high inrush current, it is recommended to provide a protection circuit to reduce its effect.
High inrush current increases the amount of contact wear and transition, causing problems such as contact welding and contact locking due to transitions, which shorten the open/close life of the contacts.

● Clear Input



● Signal Wire Contact Capacity (Recommended)

Current Capacity	10 mA or more
Withstand Voltage	35 V or more

⚠ CAUTION

❗ Use switches, relays, etc. for external contacts. (External contacts for transistor outputs cannot be connected.)

7.11.6. Handling the AC Adapter

To prevent electric shock, fire, or malfunction, observe the following.

⚠ WARNING

- ⃠ Do not, by any means, disassemble or modify the product.
- ⃠ Do not modify, forcibly bend or pull the power cord.
- ⃠ Do not use the AC adapter outdoors, in wet areas, or touch the AC adapter with wet hands. Failure to follow this instruction could result in electric shock.
- ⃠ Do not use the product beyond the ratings in the product specifications.
- ⃠ Do not use the AC adapter to operate any product other than the WIO series and PATLITE products for which the AC adapter is recommended.
- ⃠ While power is still applied to the AC adapter, do not connect or disconnect the DC power plug. Failure to follow this instruction could result in electric shock or equipment damage.
- ❗ If any abnormality (smoke, unusual odor, unusual noise) occurs, immediately unplug the main unit from the outlet and discontinue use.
- ❗ Firmly insert the power plug of the AC adapter into the power outlet all the way to the base.
- ❗ Be sure to hold the AC adapter when plugging or unplugging it into the power outlet.
- ❗ Periodically unplug the main unit from the power outlet and clean dust around the power plug with a dry cloth.

⚠ CAUTION

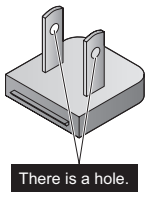
⚠ "ADP-001C" can be used in the following countries and regions. Please note that we are not responsible for use in other areas.

Countries and regions where it can be used: Japan, USA, Canada, EU, China, Taiwan, South Korea, Indonesia, Thailand, Philippines, Vietnam

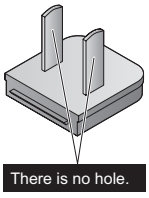
7.11.6.1. AC Plug Types

Five types of AC plugs are included with the AC adapter. Use the shapes with caution.

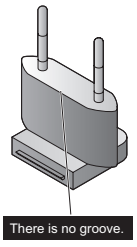
- UL -



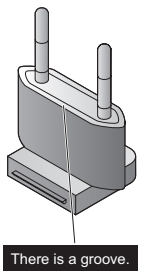
- CCC -



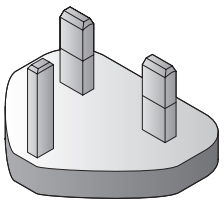
- VDE -



- KC -



- UK -



7.11.6.2. How to Use the AC Adapter

1 Connect the extension cable lead wires to the power input terminal of this product.

※ For information about power input terminal wiring, refer to "7.11. Wiring" (☞ page 46) and "7.12. Wiring Example" (☞ page 54).

2 Connect the extension cable and AC adapter, then tie them together with cable ties. (To prevent disconnection of cables)

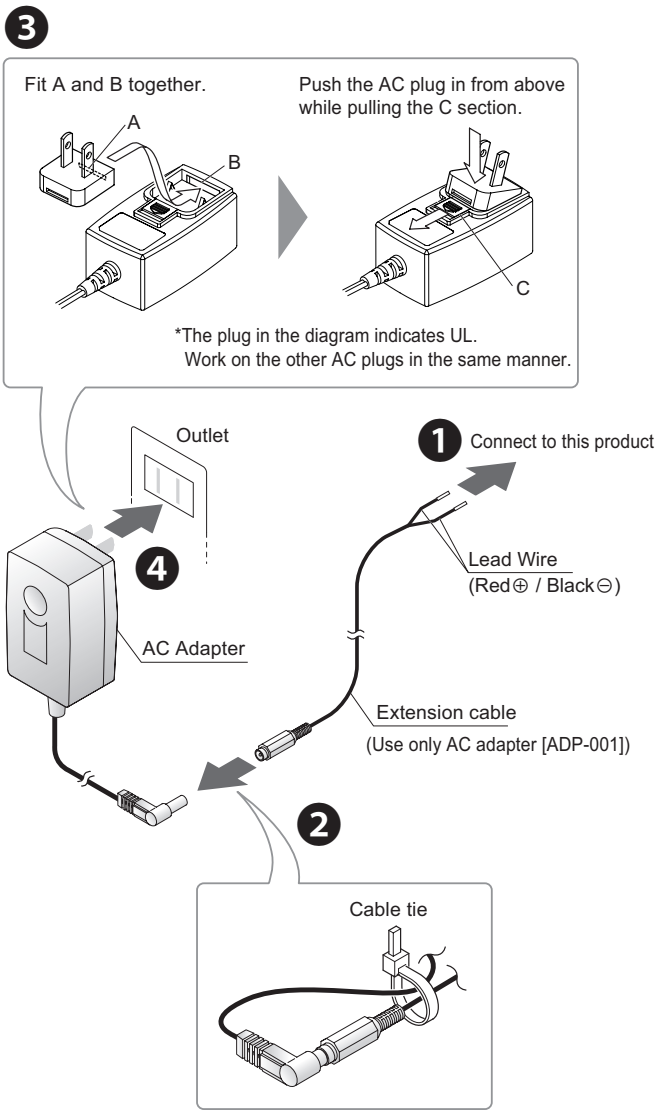
- Use care and avoid applying excessive force when tying cables with cable ties.

3 Assemble the AC plug with the AC adapter.

※ Check if the AC plug assembly is secure.
※ Do not work with wet hands or in dusty places. Moisture or dust on the contacts may cause electric shock or fire.
※ Select and install an AC plug that matches the outlet specifications.

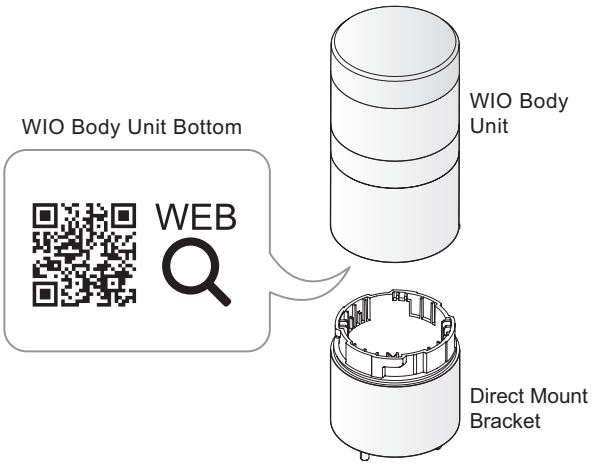
4 Plug the AC adapter into the power outlet.

※ Periodically wipe away any dust and grime around the AC plug. Failure to follow these instructions could result in fire.



7.12. Wiring Example

This section describes wiring examples for input and output devices. Wiring information can also be viewed from the QR code on the bottom of the WIO body unit.



7.12.1. Wiring Example for Input Devices

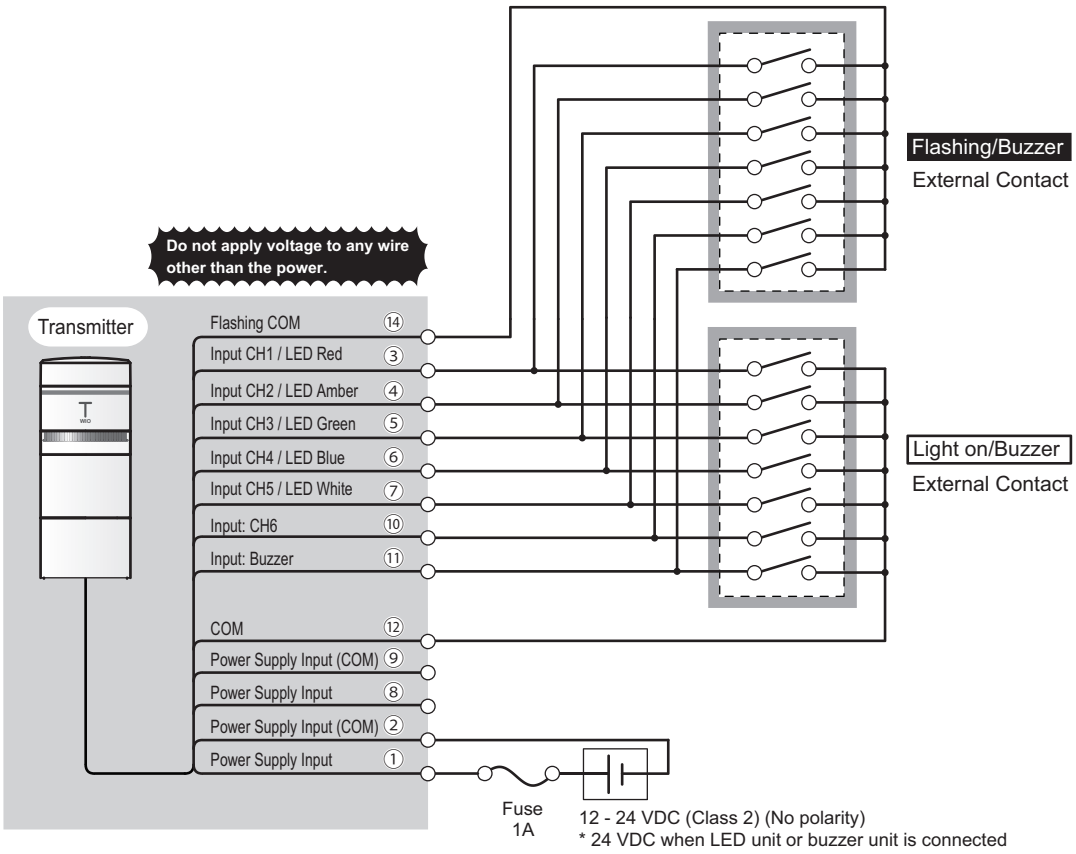
7.12.1.1. Typical Wiring Example

Wiring example for each type of external contact.
If you have any questions about a special application for this product, please contact our Technical Support Center listed on our website.
Accidental wiring will result in product failure.

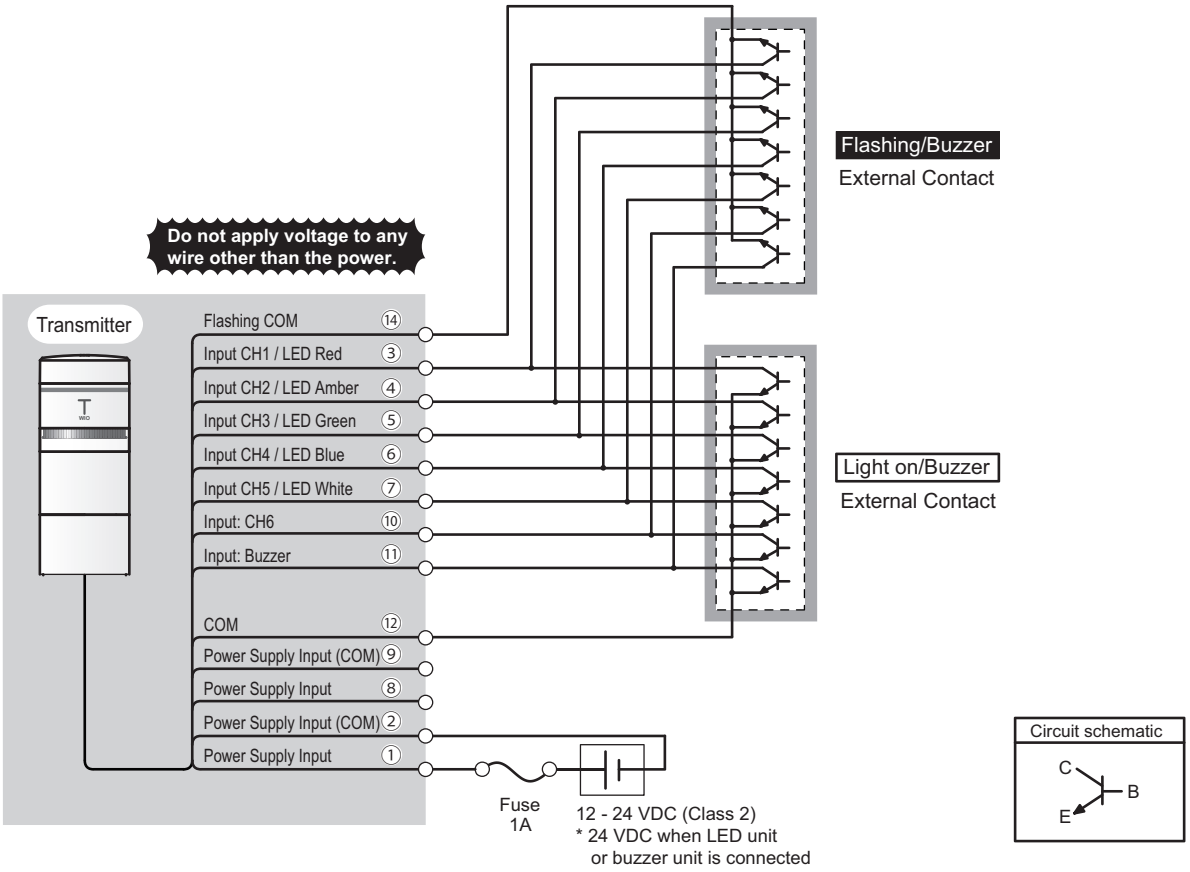
⚠ CAUTION

⚠ To both turn on and flash the lamp, prepare separate external contacts for turning the lamp on and for flashing the lamp.

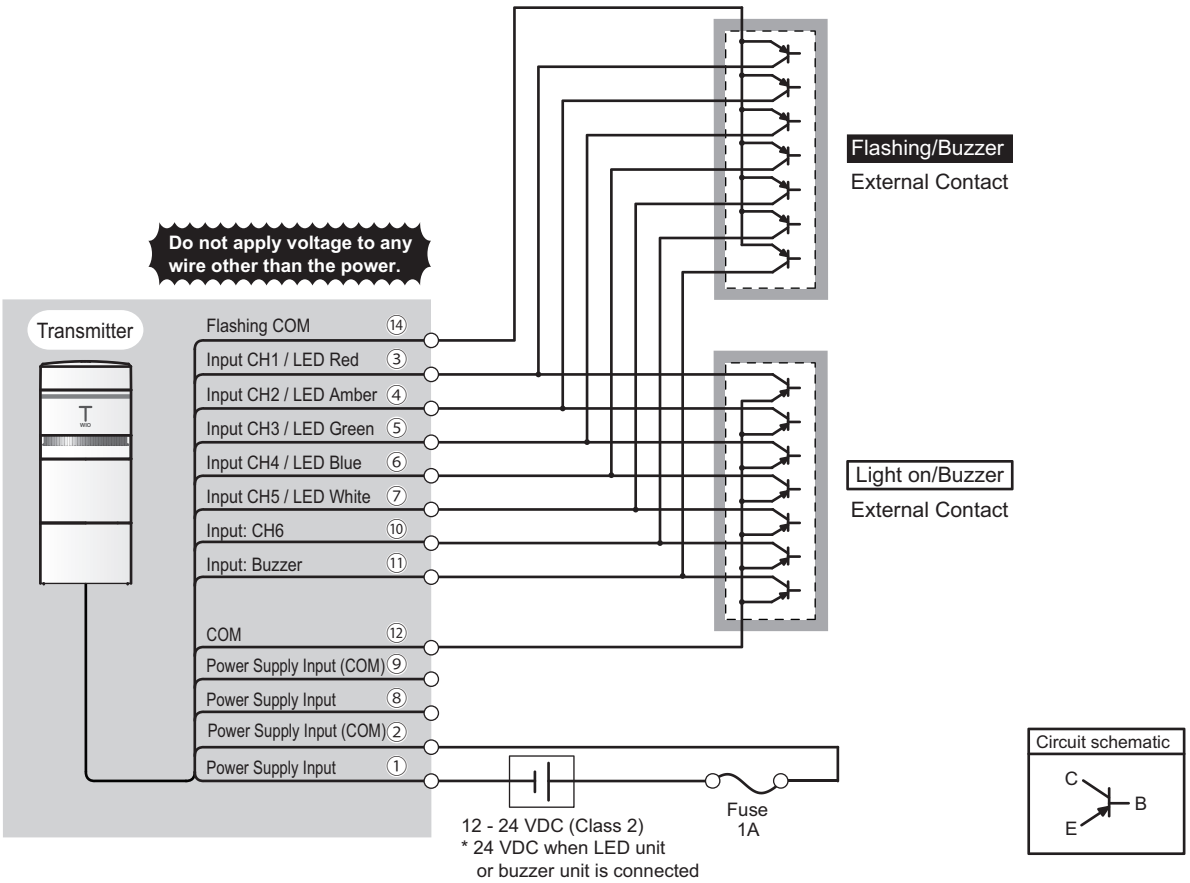
● **External contact classification: Contact relay**



● External contact classification: PLC (NPN transistor)

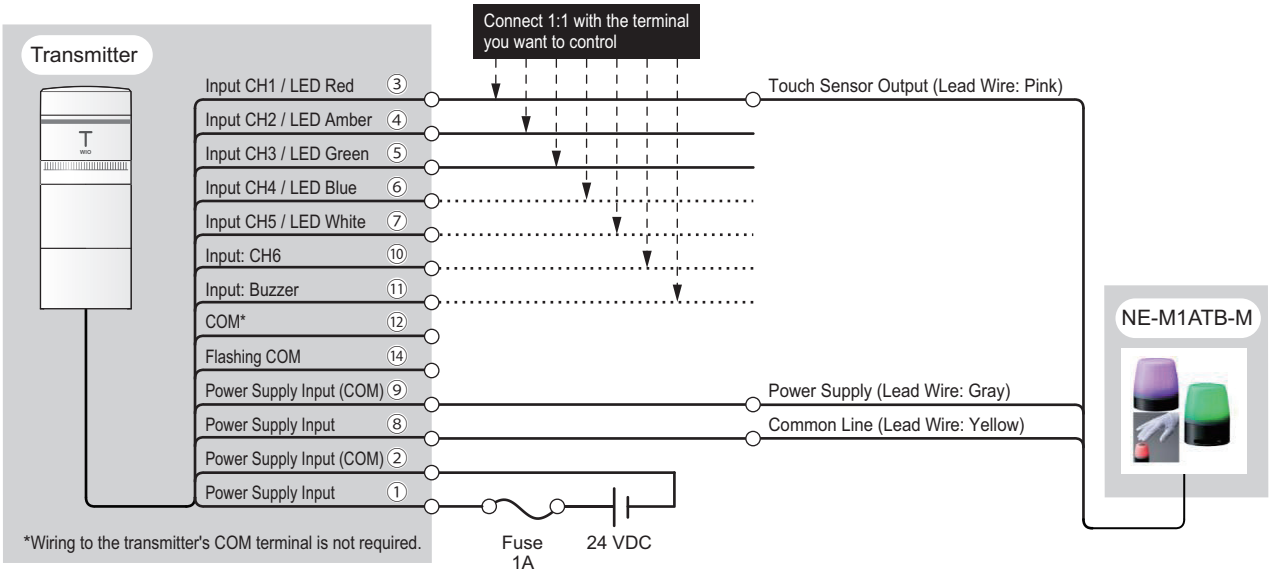


● External contact classification: PLC (PNP transistor)



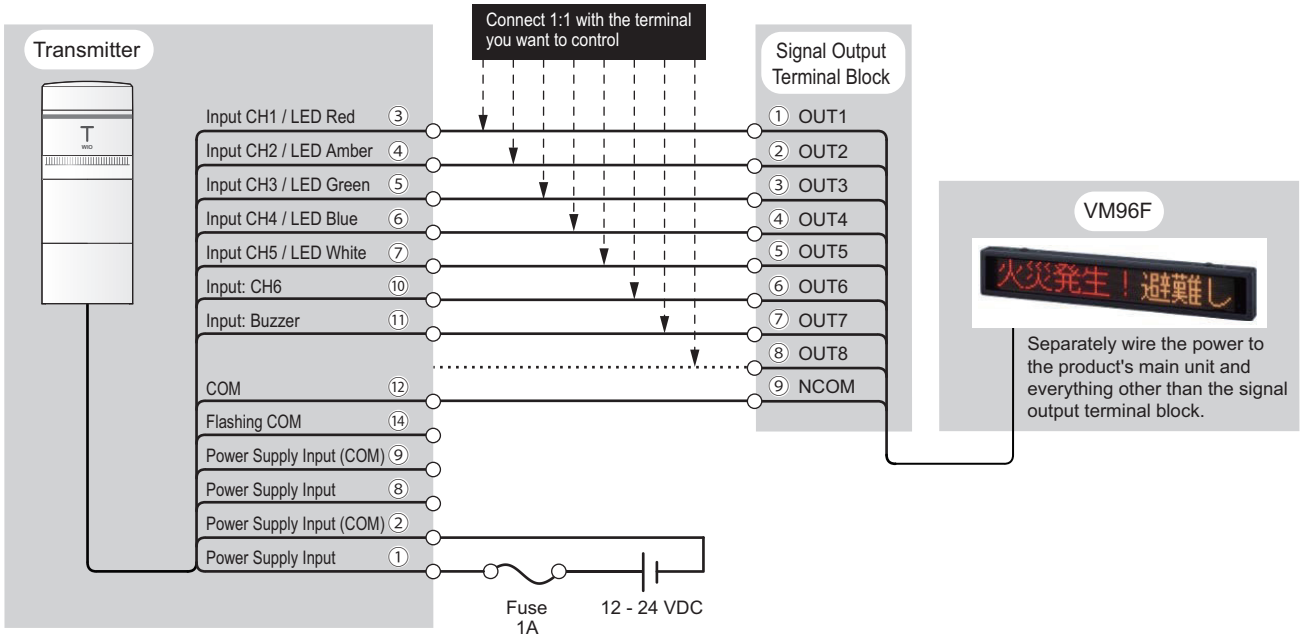
7.12.1.2. Signal Tower

● NE-M1ATB-M (touch sensor output)



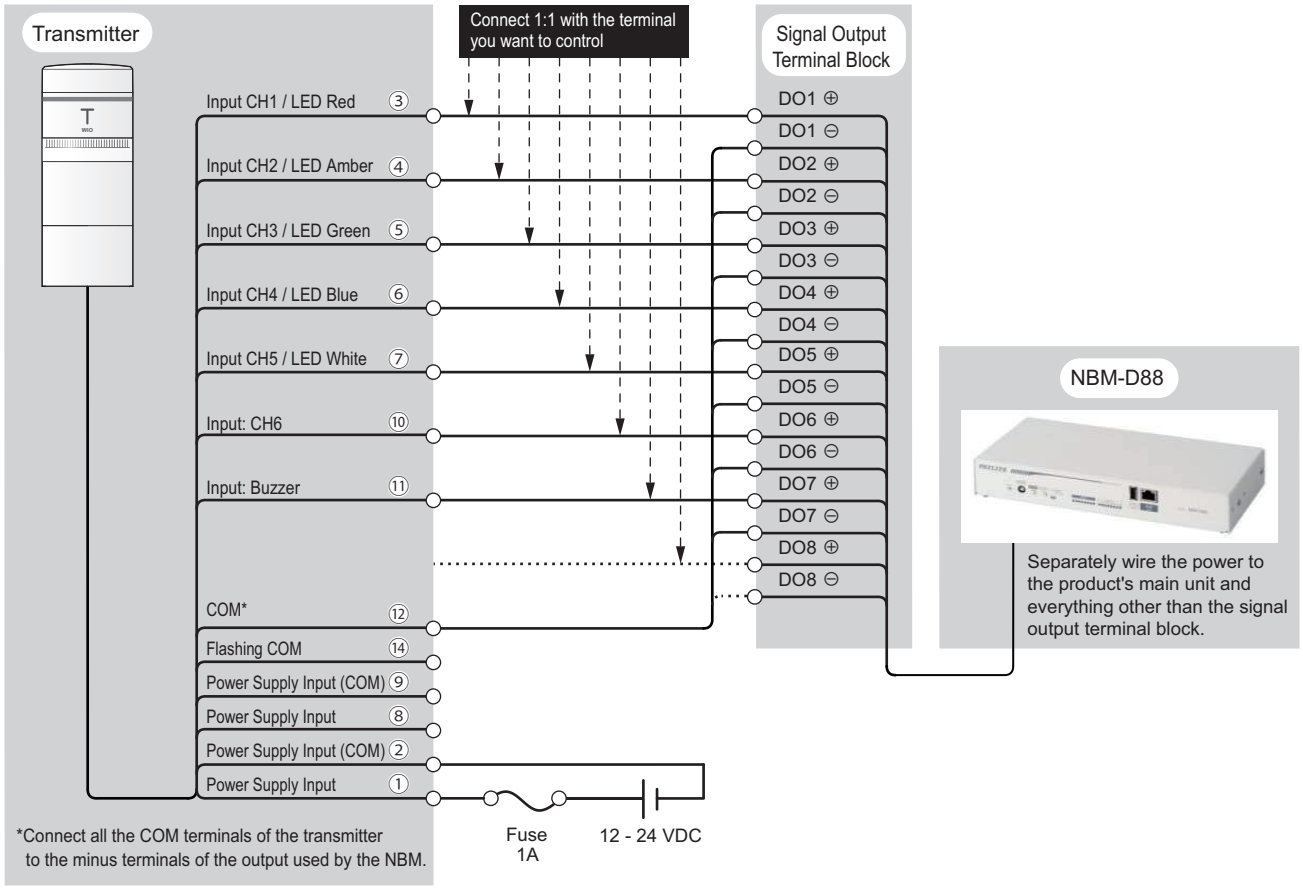
7.12.1.3. LED Display Board

● VM96F

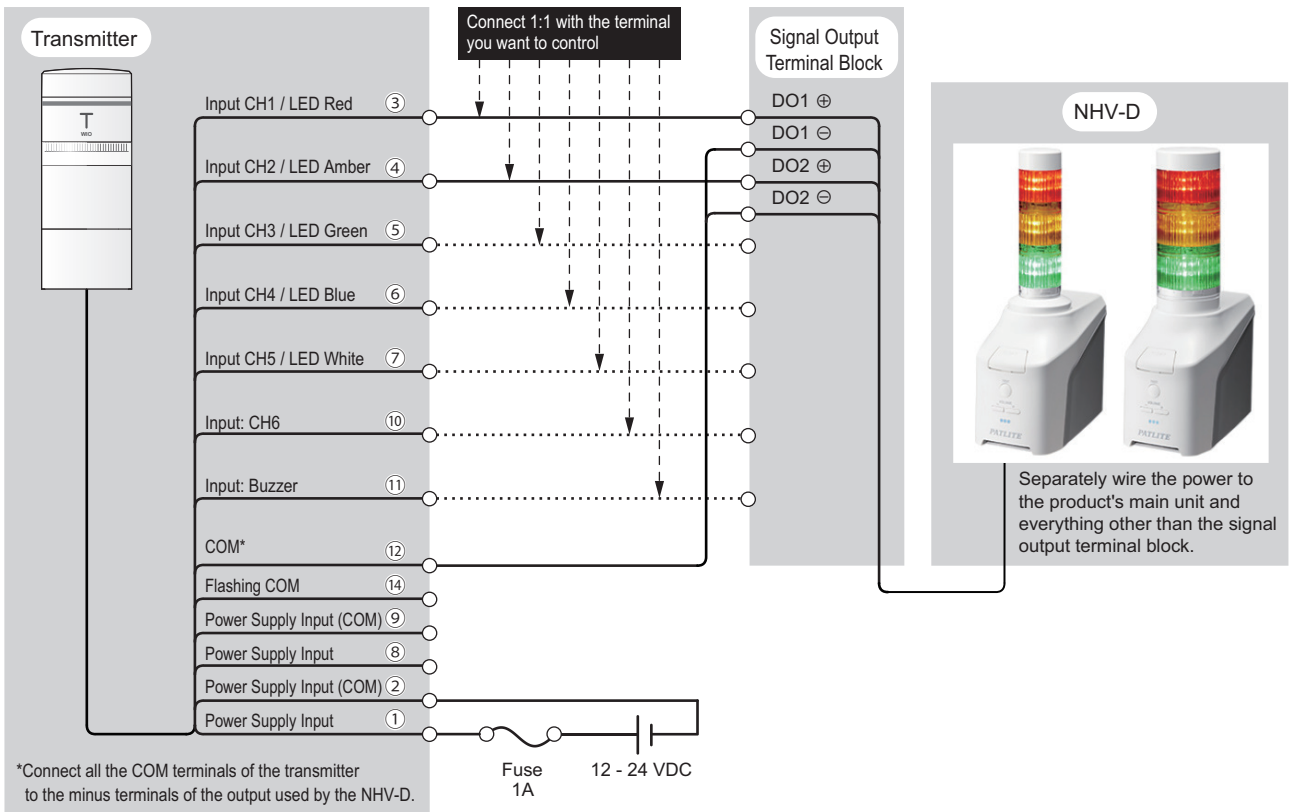


7.12.1.4. Network Products

● NBM-D88



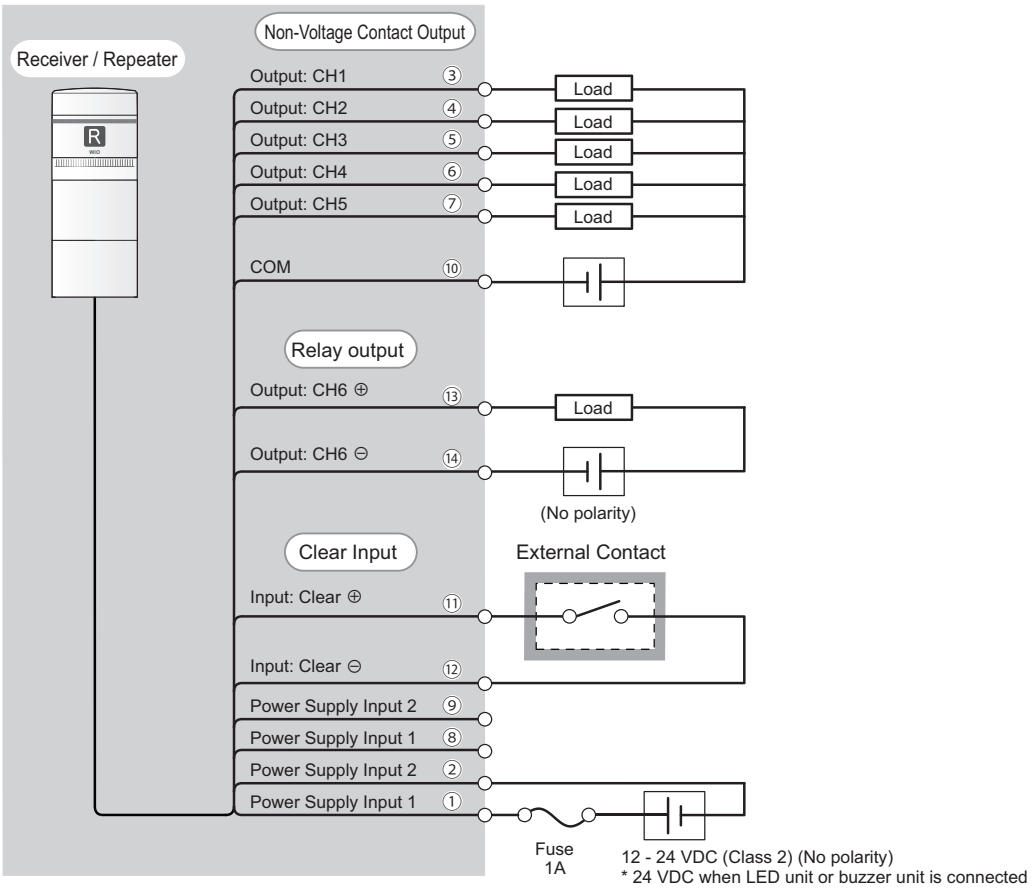
● NHV-D



7.12.2. Wiring Example for Output Devices

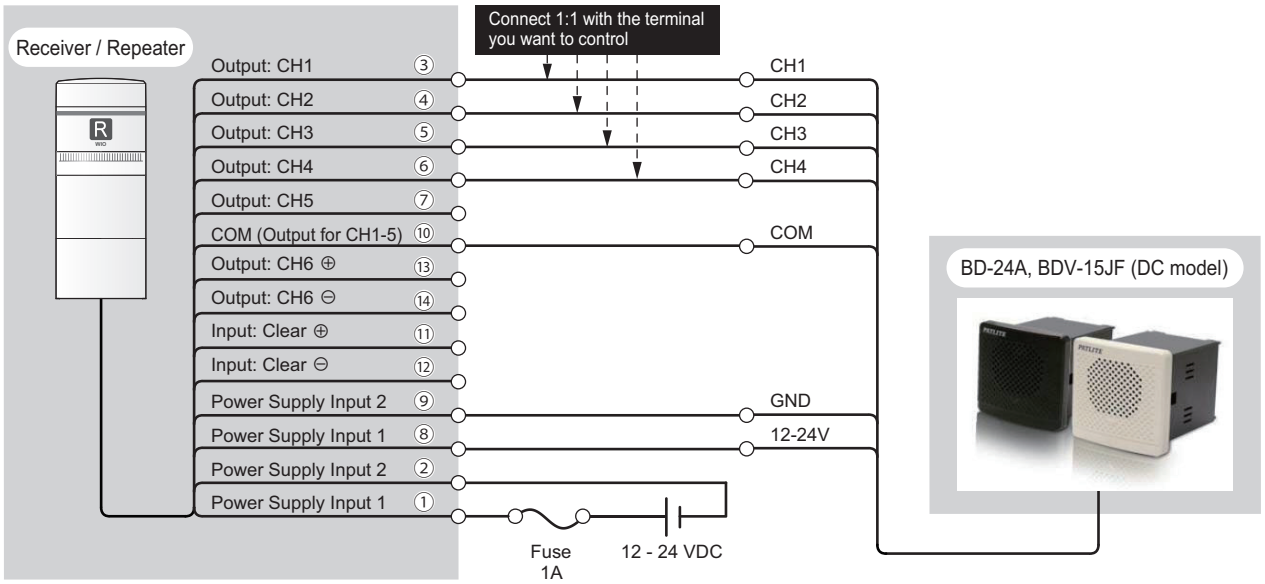
7.12.2.1. Typical Wiring Example

If you have any questions about a special application for this product, please contact our Technical Support Center listed on our website.
Accidental wiring will result in product failure.

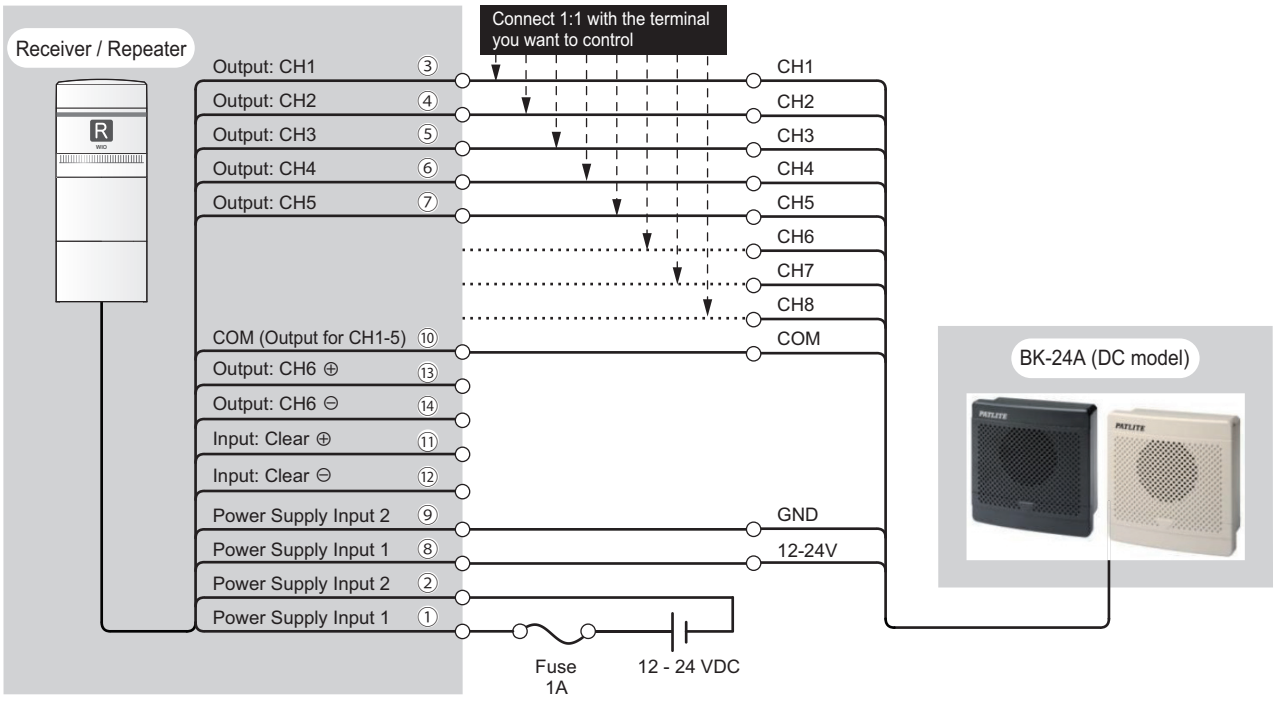


7.12.2.2. Sound and Audio Equipment

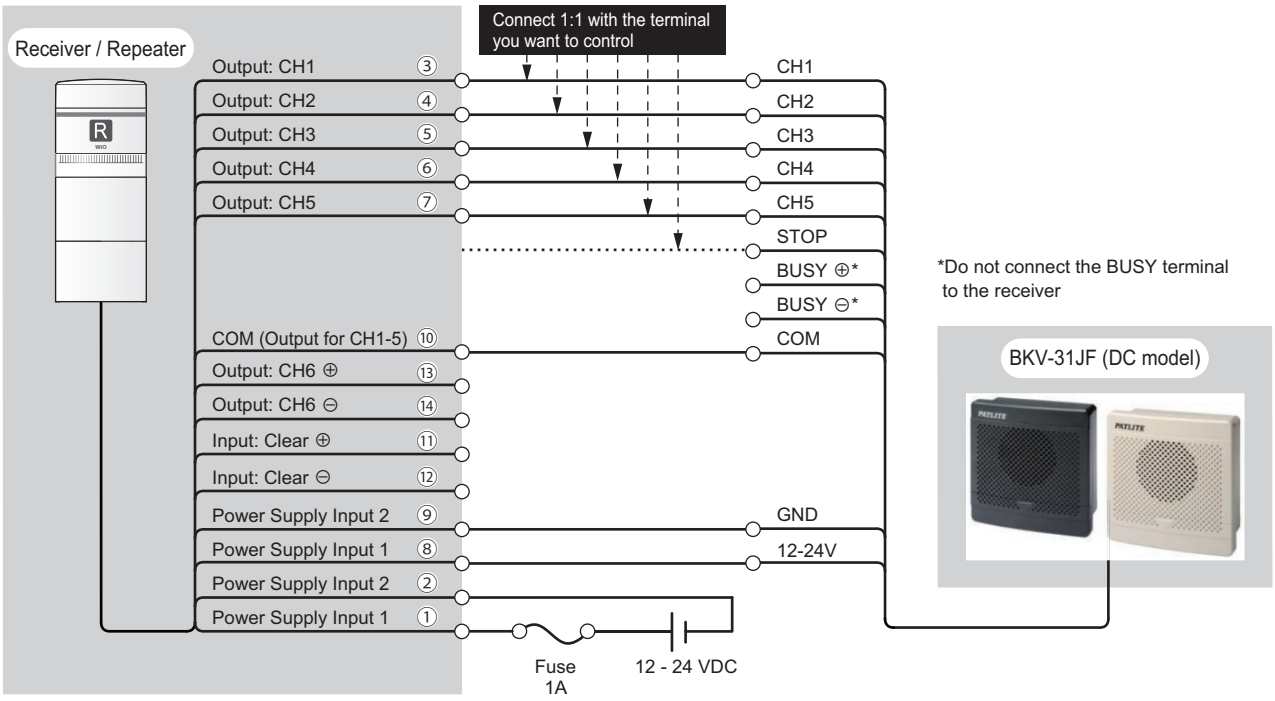
● BD-24A, BDV-15JF



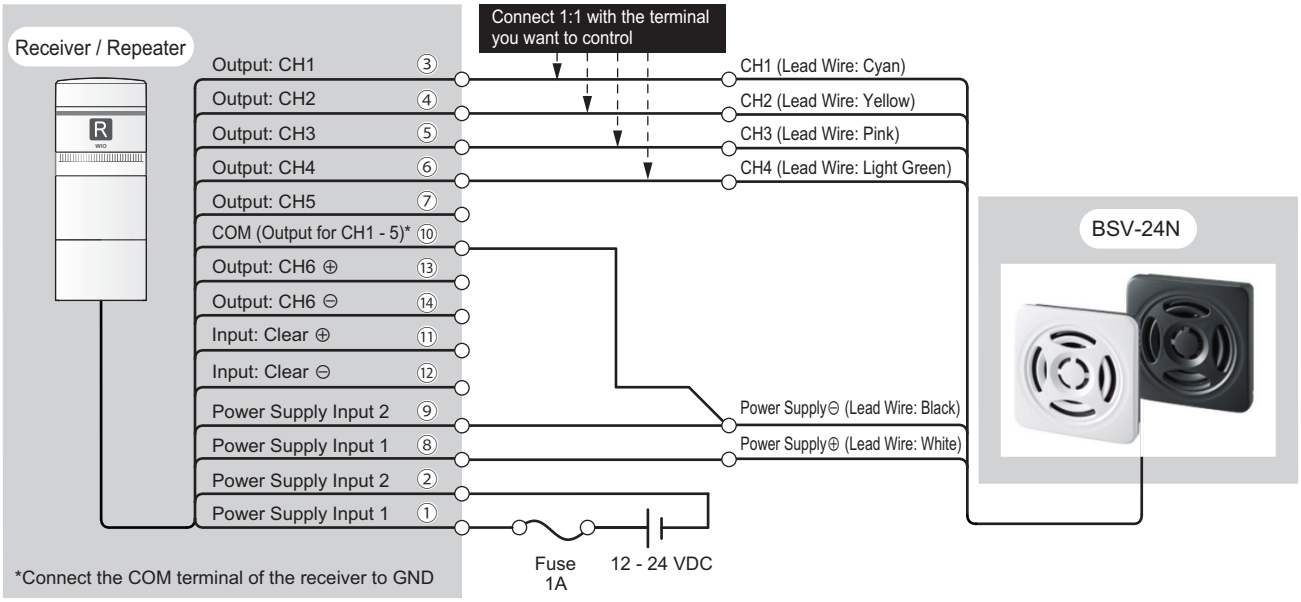
● BK-24A



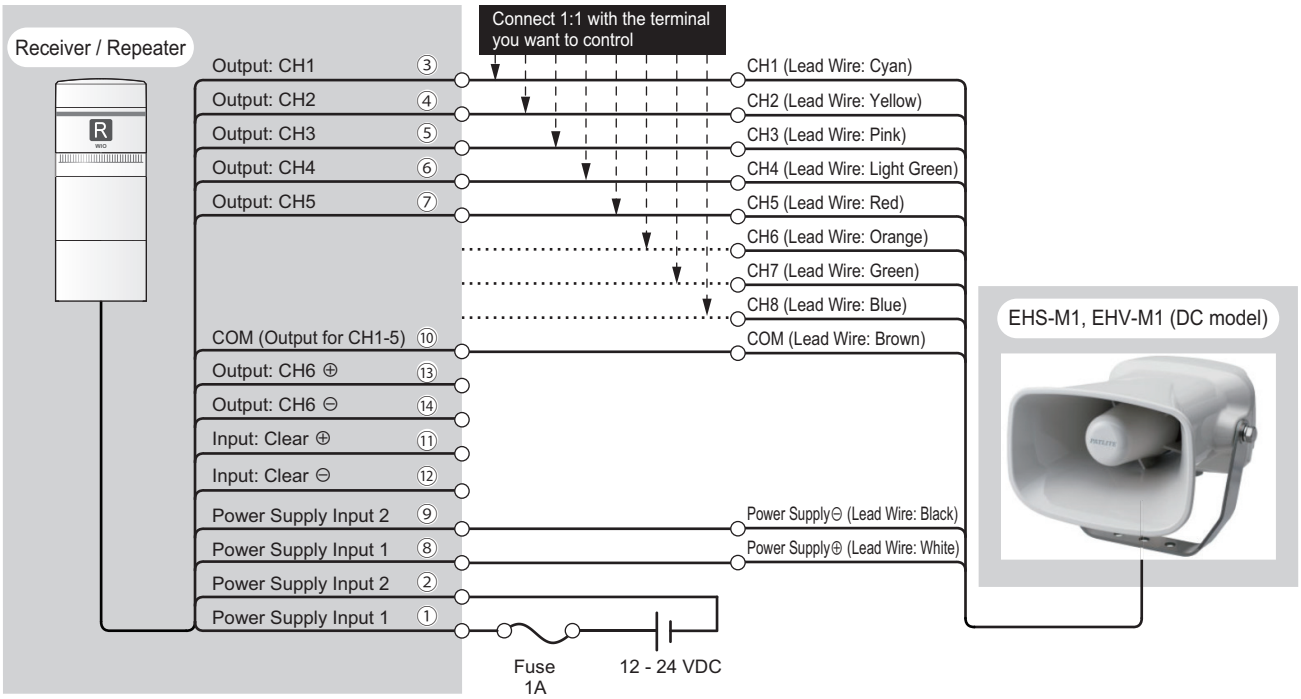
● BKV-31JF



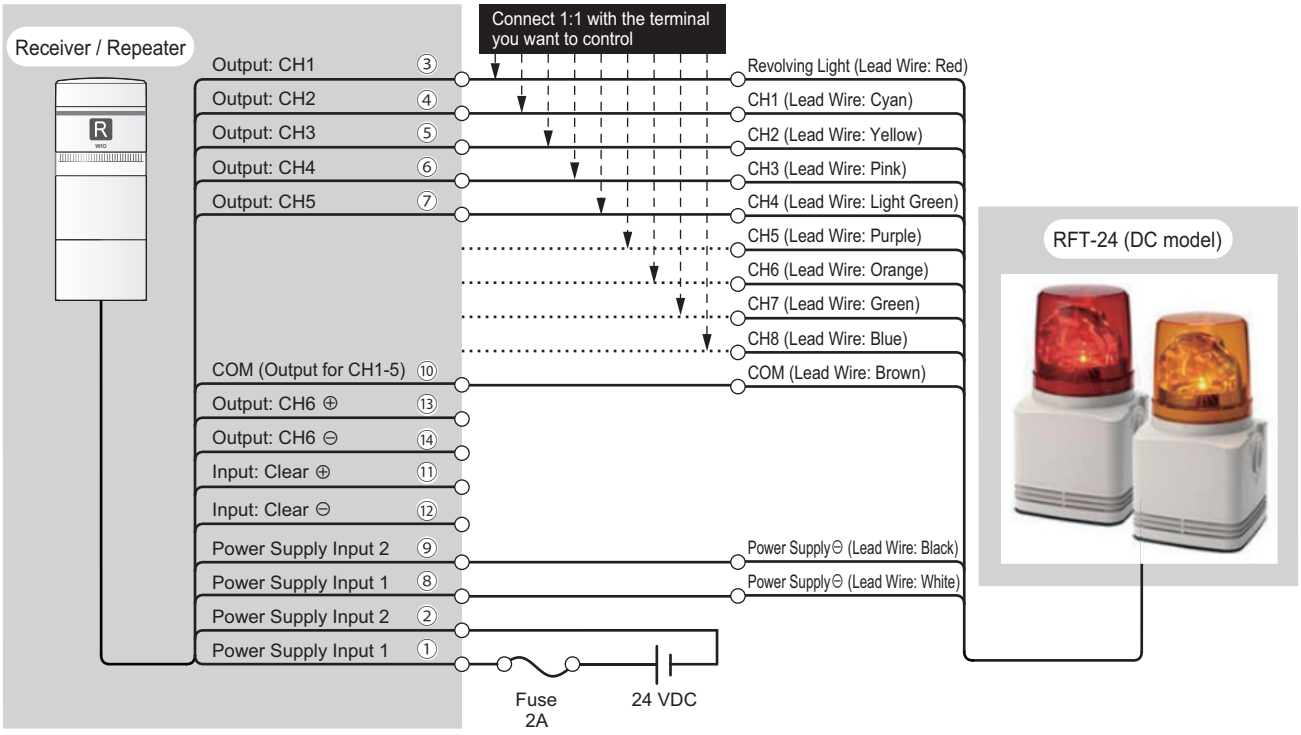
● BSV-24N



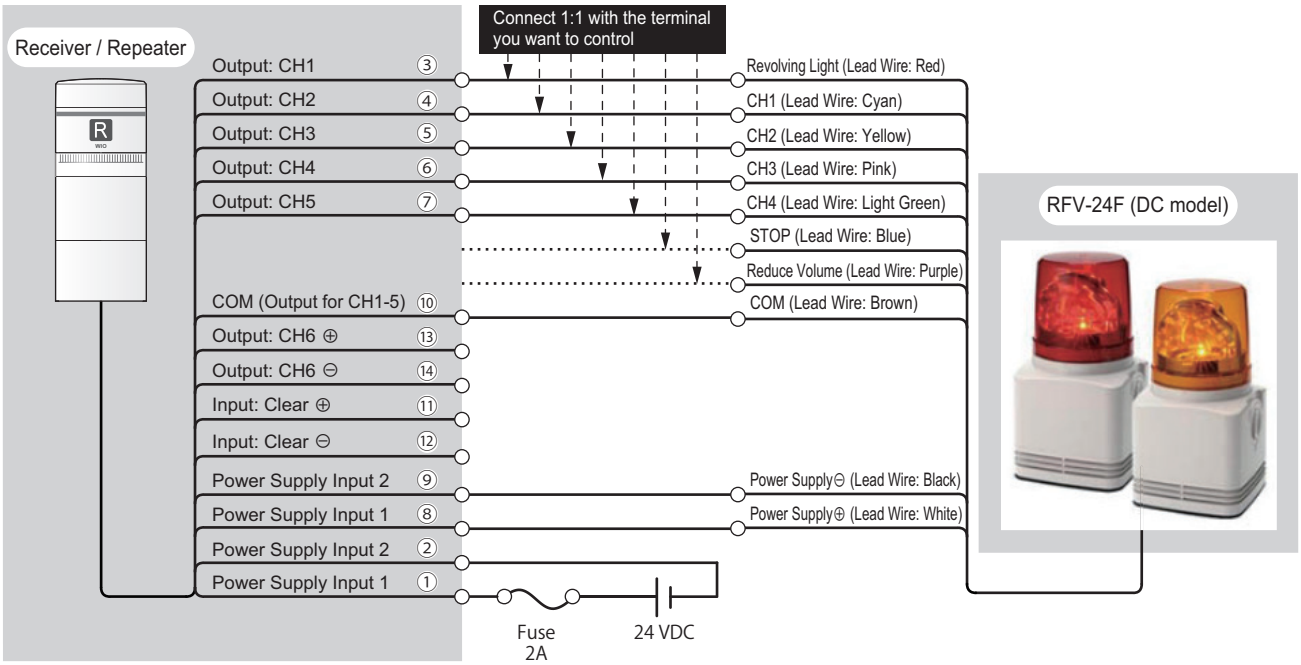
● EHS-M1, EHV-M1



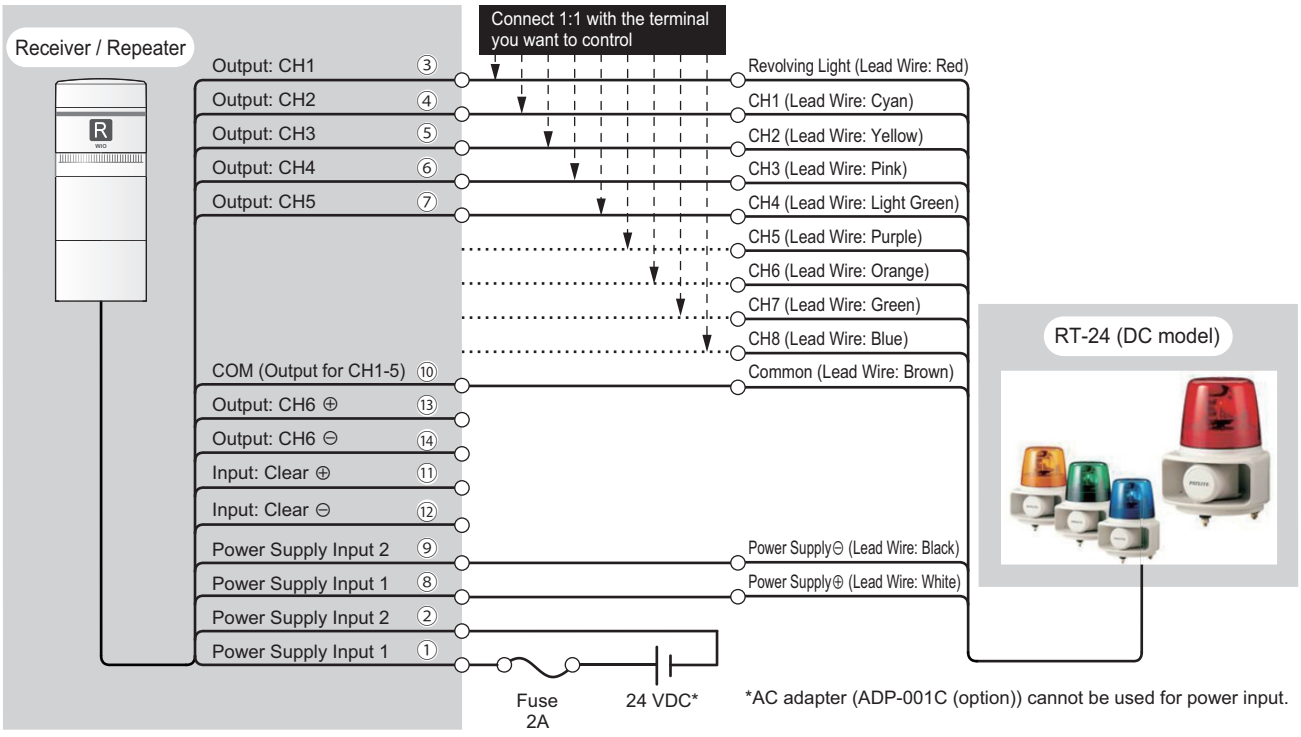
● RFT-24



● RFV-24F

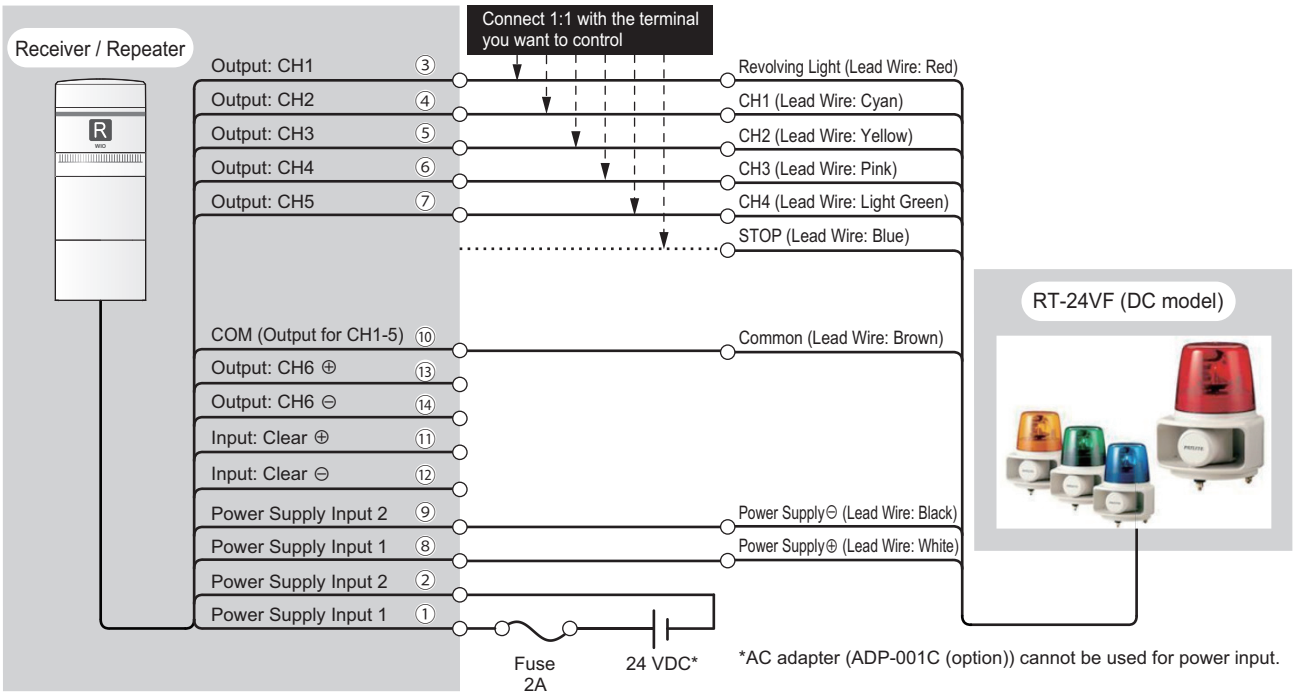


● RT-24



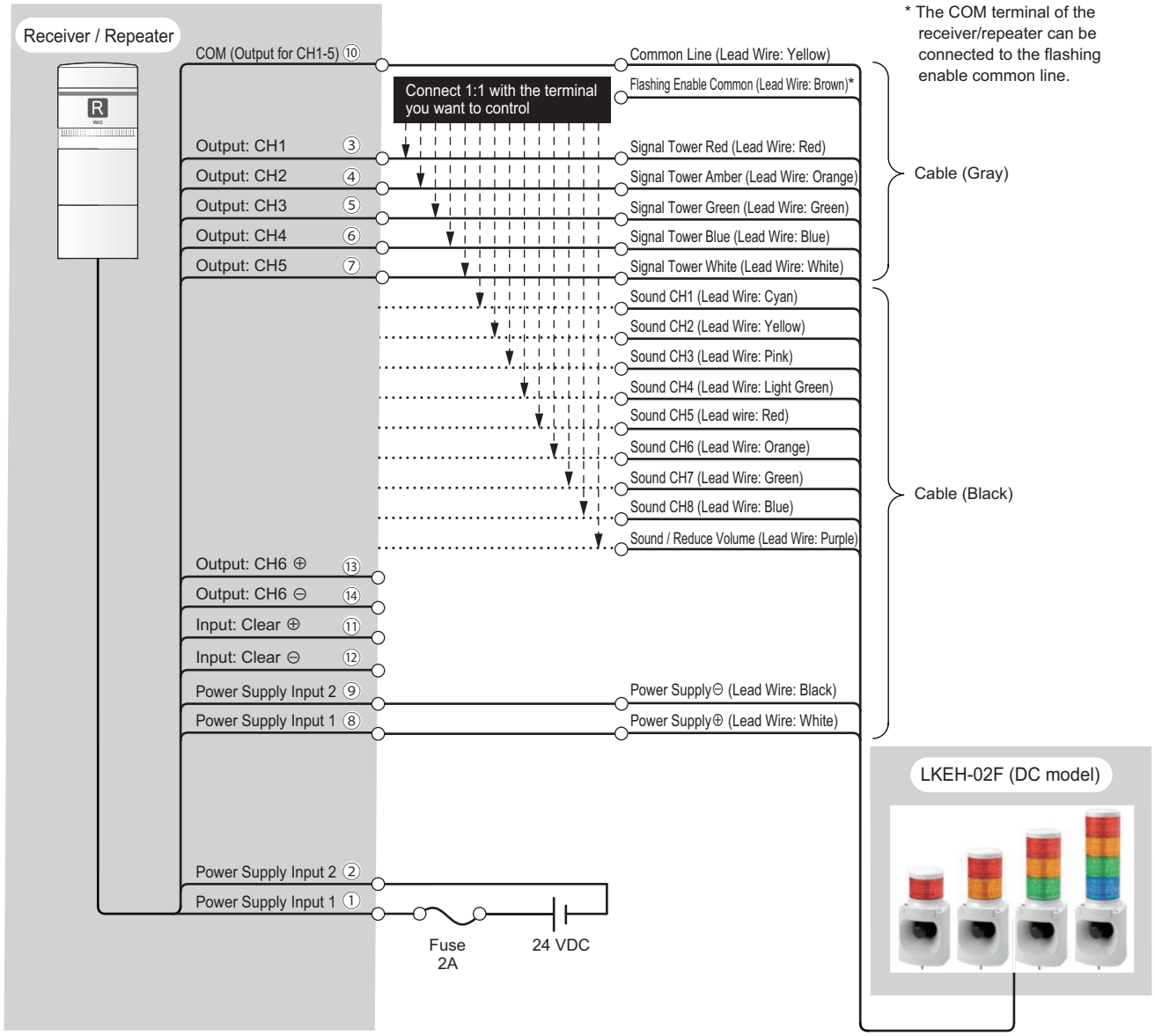
*AC adapter (ADP-001C (option)) cannot be used for power input.

● RT-24VF

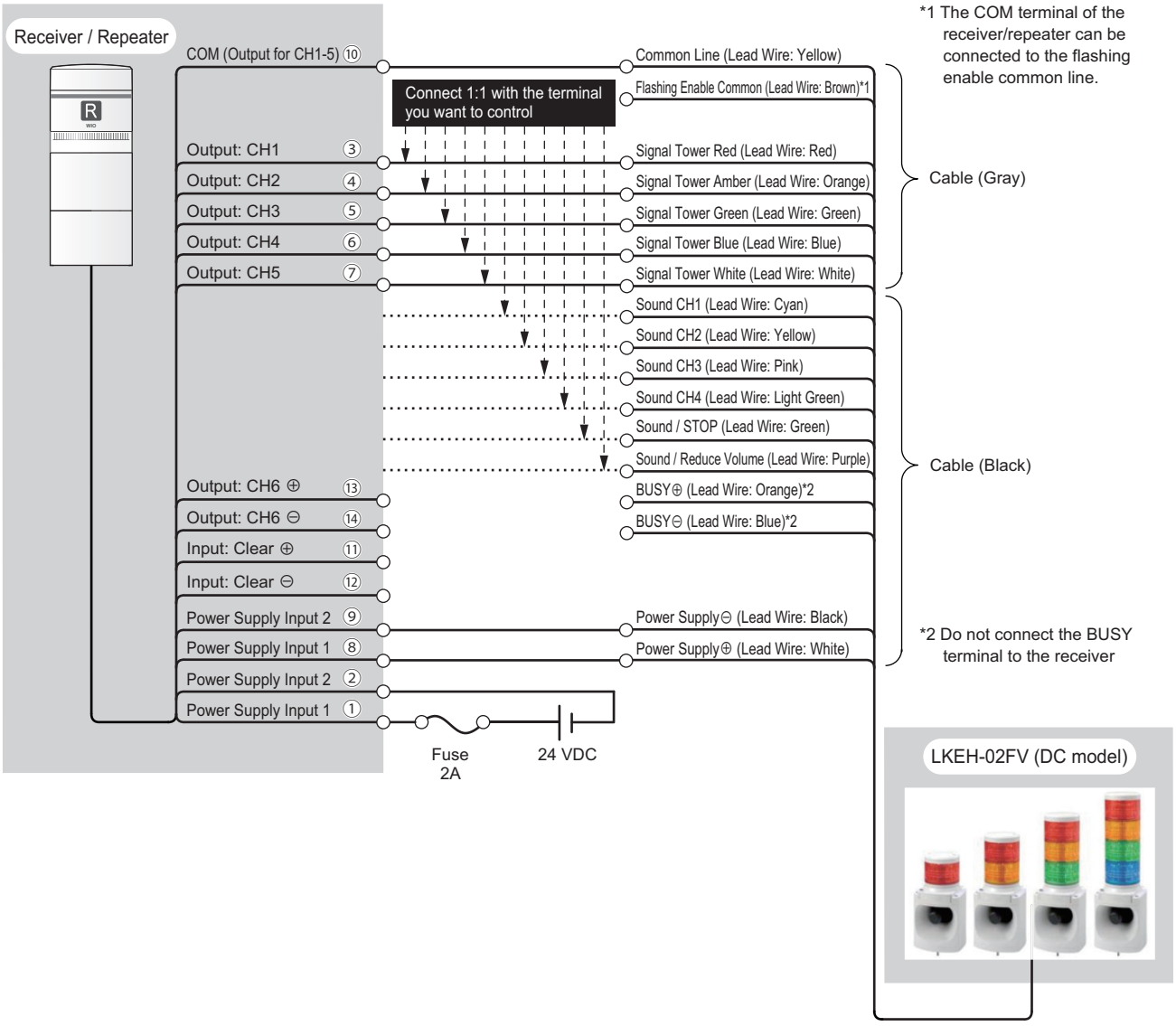


*AC adapter (ADP-001C (option)) cannot be used for power input.

● LKEH-02F

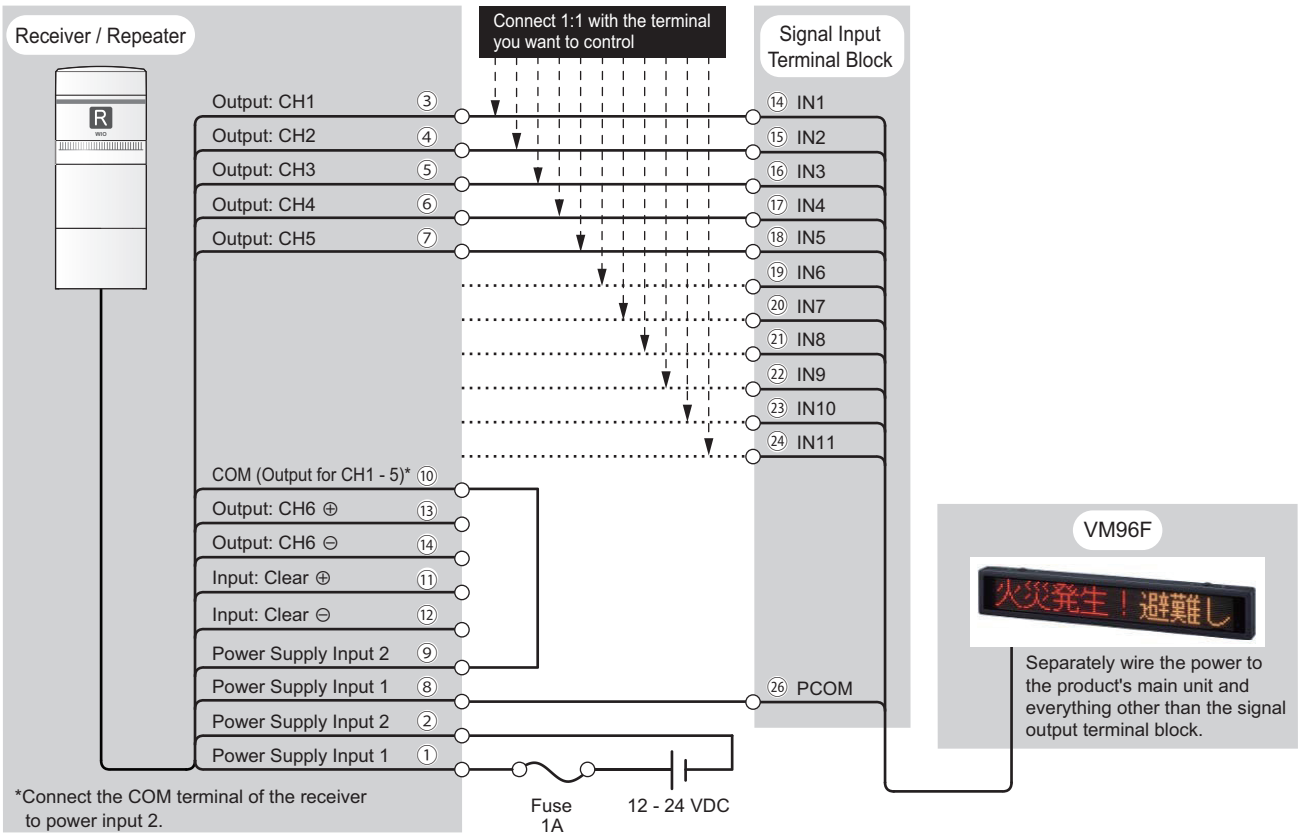

Receiver / Repeater
COM (Output for CH1-5) ⑩
Output: CH1 ③
Output: CH2 ④
Output: CH3 ⑤
Output: CH4 ⑥
Output: CH5 ⑦
Output: CH6 ⊕ ⑬
Output: CH6 ⊖ ⑭
Input: Clear ⊕ ⑪
Input: Clear ⊖ ⑫
Power Supply Input 2 ⑨
Power Supply Input 1 ⑧
Power Supply Input 2 ②
Power Supply Input 1 ①
Fuse 2A
24 VDC
Connect 1:1 with the terminal you want to control
Common Line (Lead Wire: Yellow)
Flashing Enable Common (Lead Wire: Brown)*
Signal Tower Red (Lead Wire: Red)
Signal Tower Amber (Lead Wire: Orange)
Signal Tower Green (Lead Wire: Green)
Signal Tower Blue (Lead Wire: Blue)
Signal Tower White (Lead Wire: White)
Sound CH1 (Lead Wire: Cyan)
Sound CH2 (Lead Wire: Yellow)
Sound CH3 (Lead Wire: Pink)
Sound CH4 (Lead Wire: Light Green)
Sound CH5 (Lead wire: Red)
Sound CH6 (Lead Wire: Orange)
Sound CH7 (Lead Wire: Green)
Sound CH8 (Lead Wire: Blue)
Sound / Reduce Volume (Lead Wire: Purple)
Power Supply⊖ (Lead Wire: Black)
Power Supply⊕ (Lead Wire: White)
* The COM terminal of the receiver/repeater can be connected to the flashing enable common line.
Cable (Gray)
Cable (Black)
LKEH-02F (DC model)

● LKEH-02FV


Receiver / Repeater
COM (Output for CH1-5) ⑩
Output: CH1 ③
Output: CH2 ④
Output: CH3 ⑤
Output: CH4 ⑥
Output: CH5 ⑦
Output: CH6 ⊕ ⑬
Output: CH6 ⊖ ⑭
Input: Clear ⊕ ⑪
Input: Clear ⊖ ⑫
Power Supply Input 2 ⑨
Power Supply Input 1 ⑧
Power Supply Input 2 ②
Power Supply Input 1 ①
Connect 1:1 with the terminal you want to control
Fuse 2A
24 VDC
Common Line (Lead Wire: Yellow)
Flashing Enable Common (Lead Wire: Brown)*1
Signal Tower Red (Lead Wire: Red)
Signal Tower Amber (Lead Wire: Orange)
Signal Tower Green (Lead Wire: Green)
Signal Tower Blue (Lead Wire: Blue)
Signal Tower White (Lead Wire: White)
Sound CH1 (Lead Wire: Cyan)
Sound CH2 (Lead Wire: Yellow)
Sound CH3 (Lead Wire: Pink)
Sound CH4 (Lead Wire: Light Green)
Sound / STOP (Lead Wire: Green)
Sound / Reduce Volume (Lead Wire: Purple)
BUSY⊕ (Lead Wire: Orange)*2
BUSY⊖ (Lead Wire: Blue)*2
Power Supply⊖ (Lead Wire: Black)
Power Supply⊕ (Lead Wire: White)
*1 The COM terminal of the receiver/repeater can be connected to the flashing enable common line.
Cable (Gray)
Cable (Black)
*2 Do not connect the BUSY terminal to the receiver
LKEH-02FV (DC model)

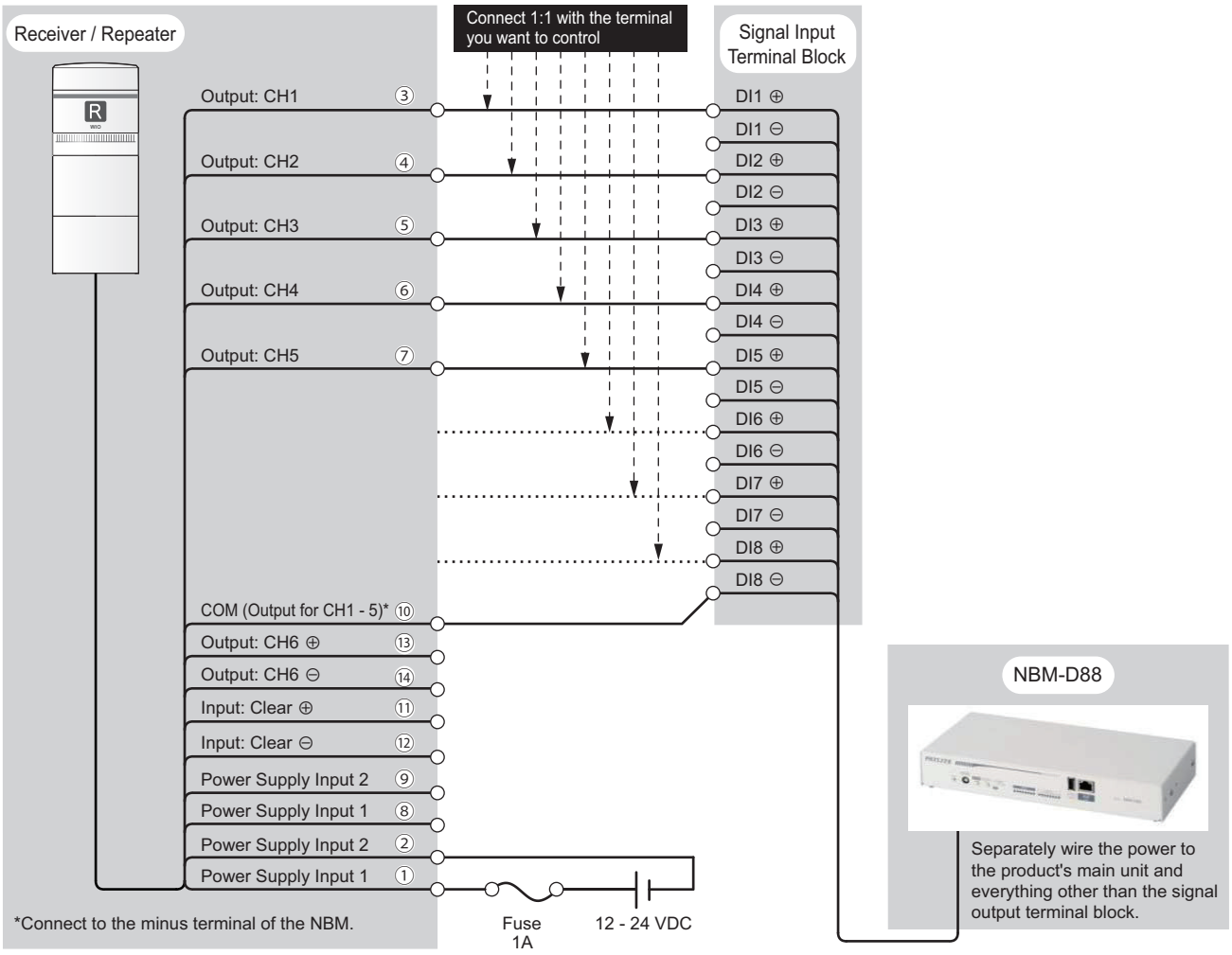
7.12.2.3. LED Display Board

● VM96F

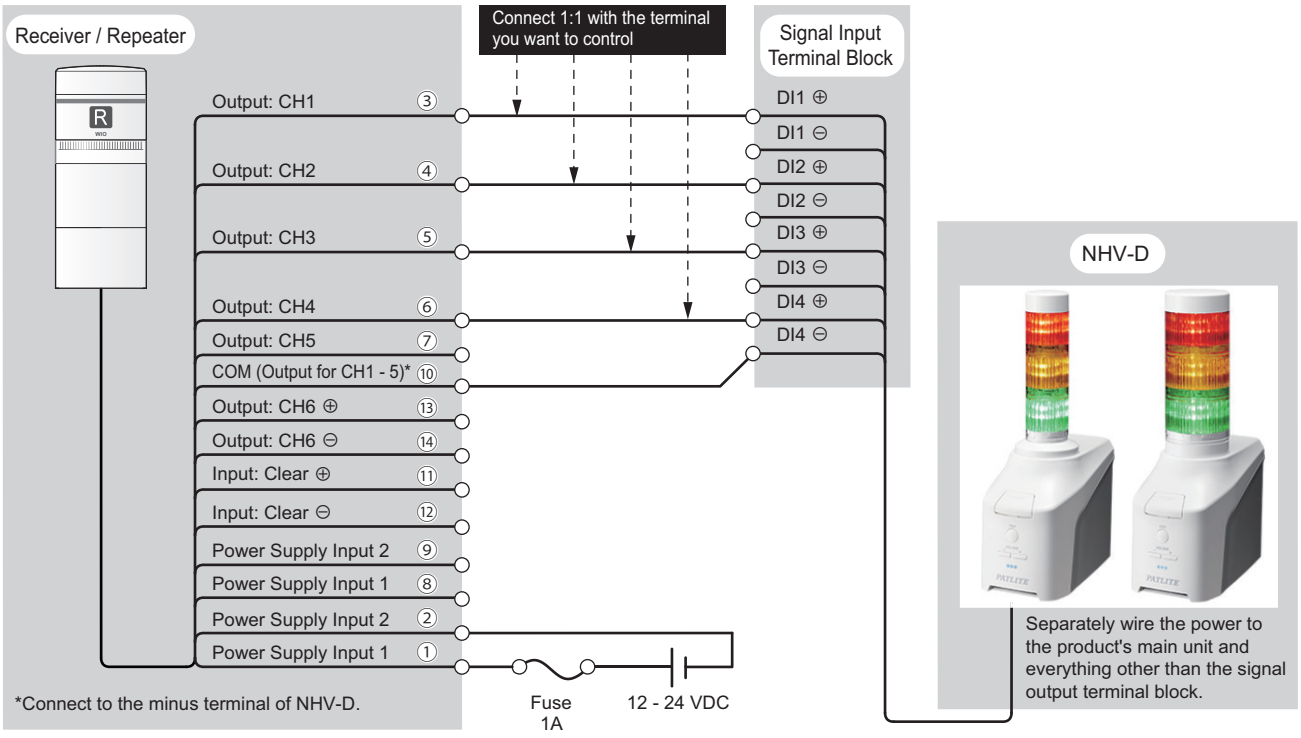


7.12.2.4. Network Products

● NBM-D88

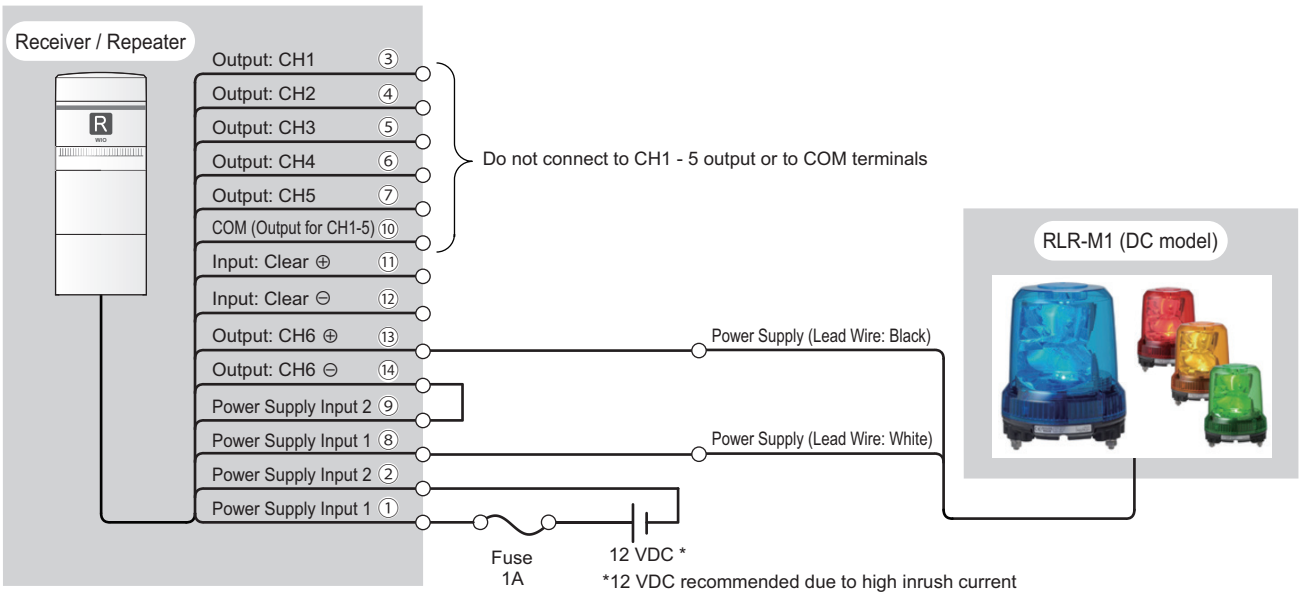


● NHV-D

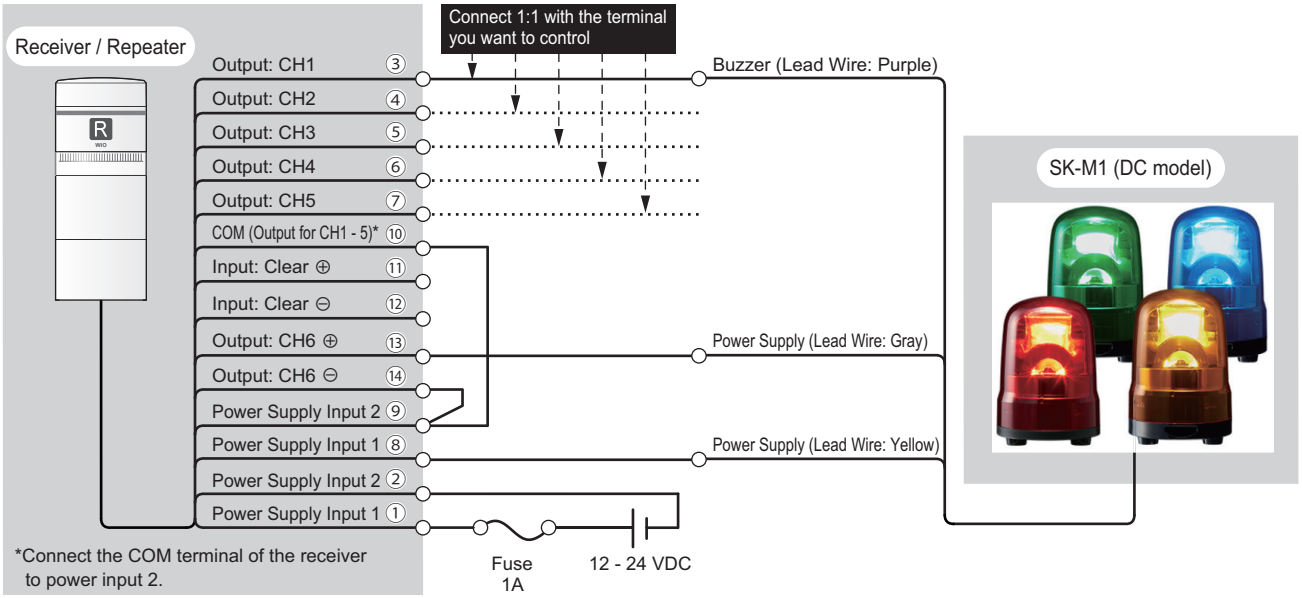


7.12.2.5. Signal Light / Revolving Light

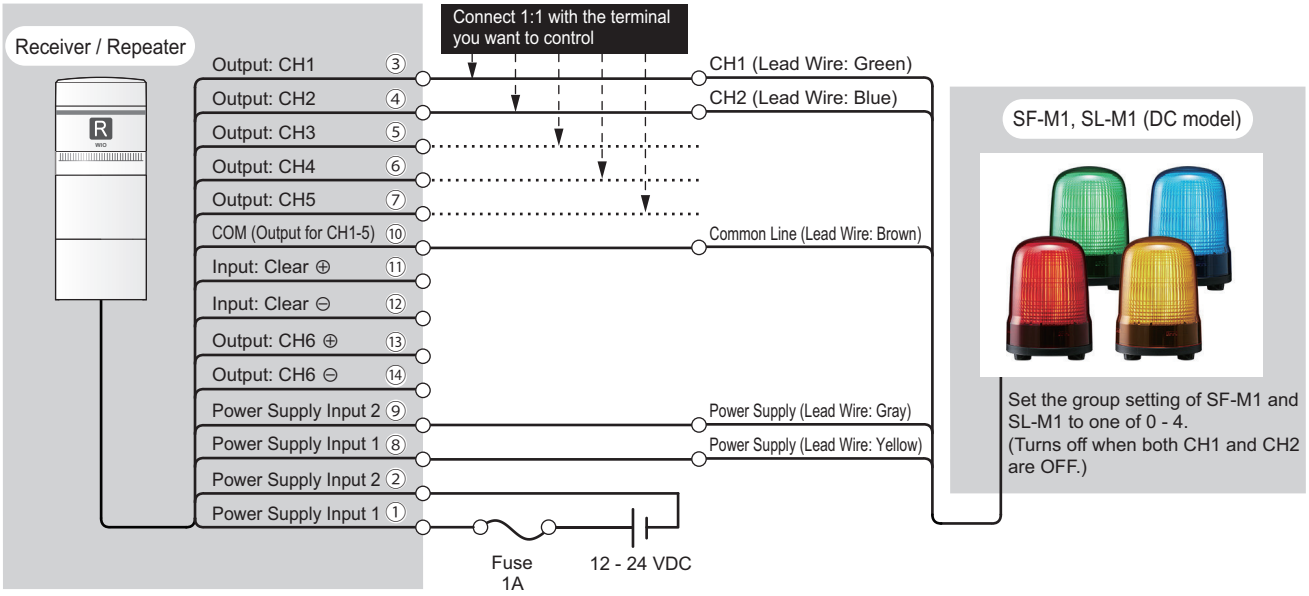
● RLR-M1



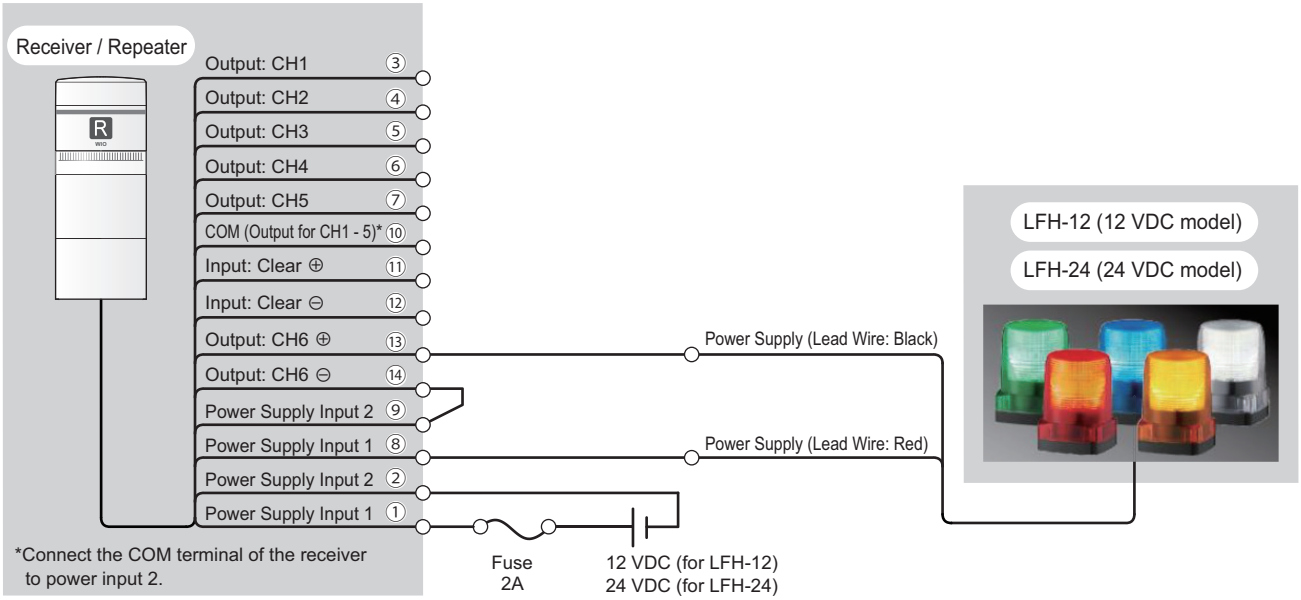
● SK-M1



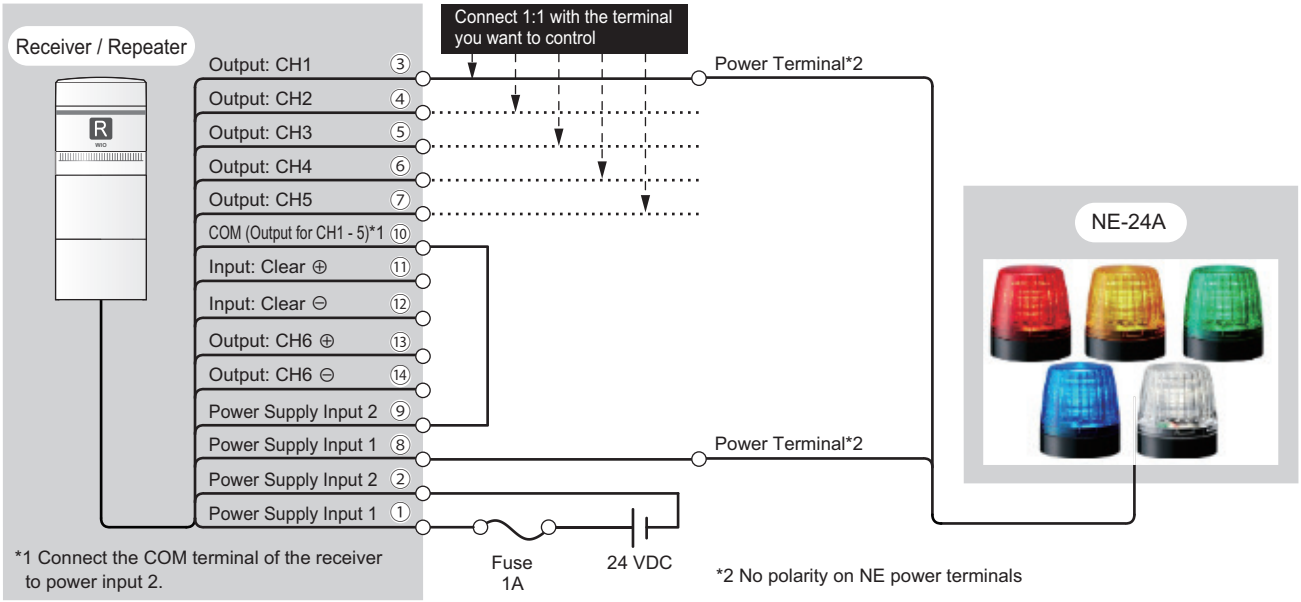
● SF-M1, SL-M1



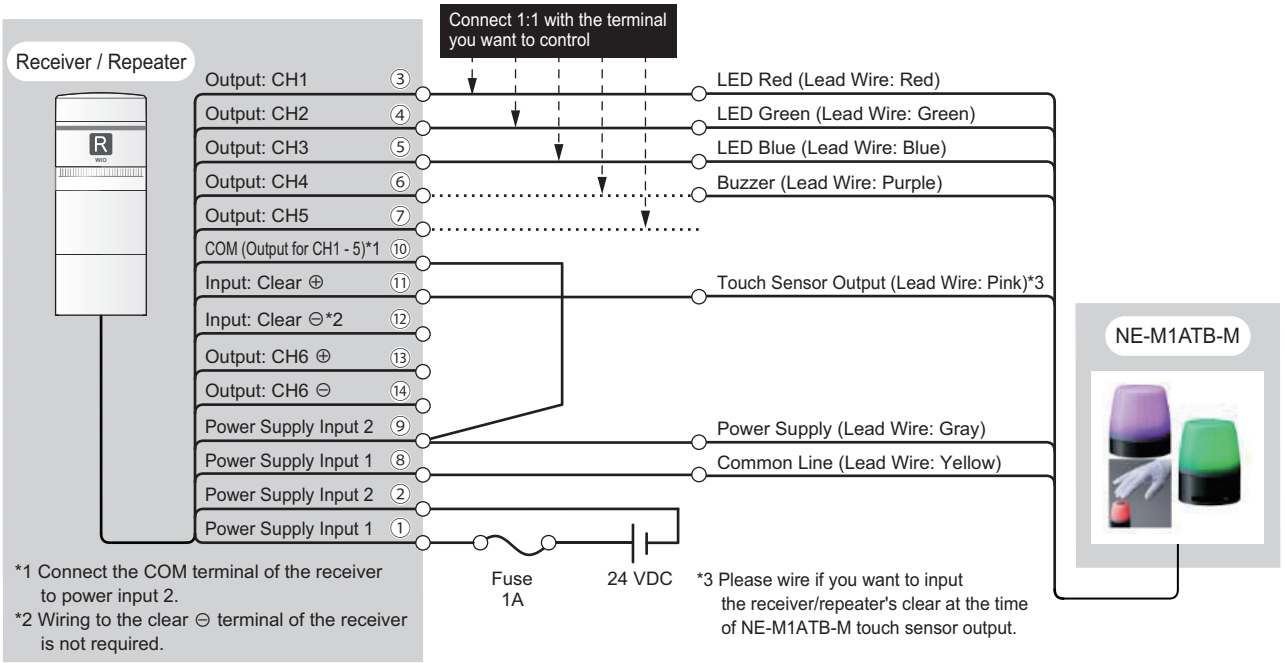
● LFH-12/24



● NE-24A

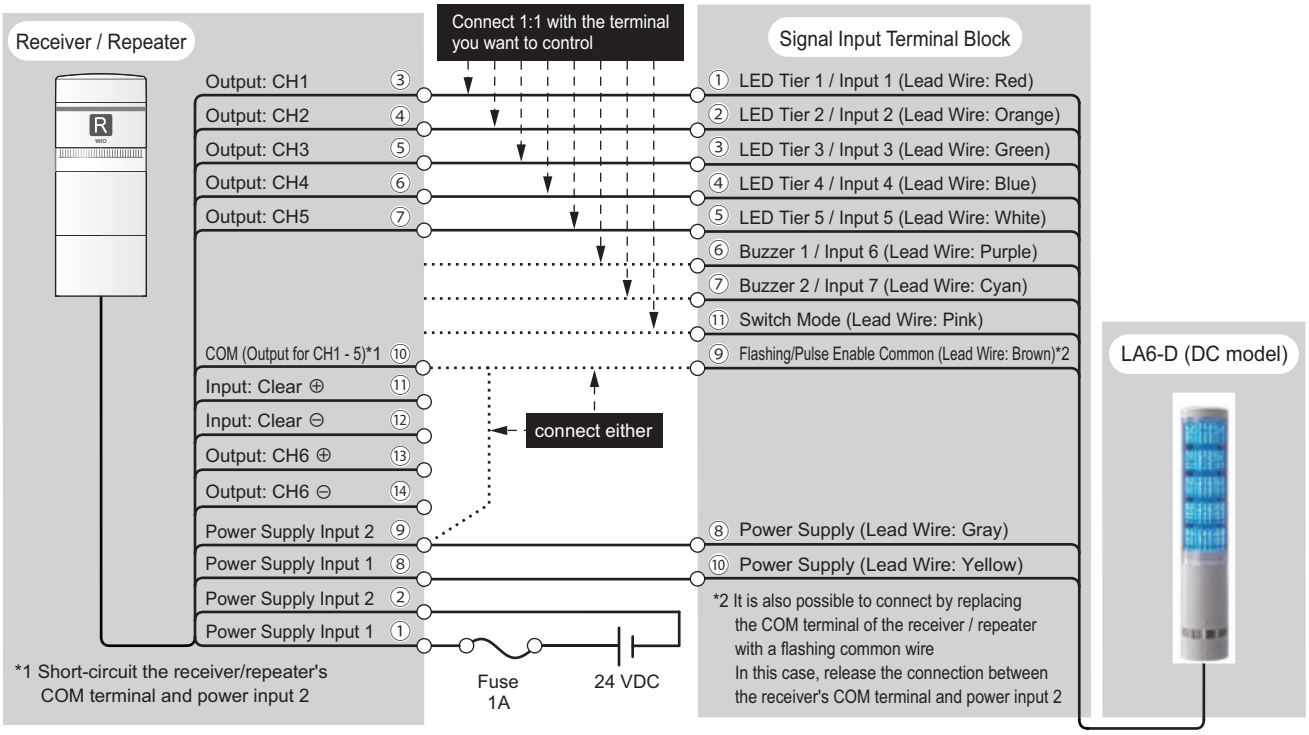


● NE-M1ATB-M

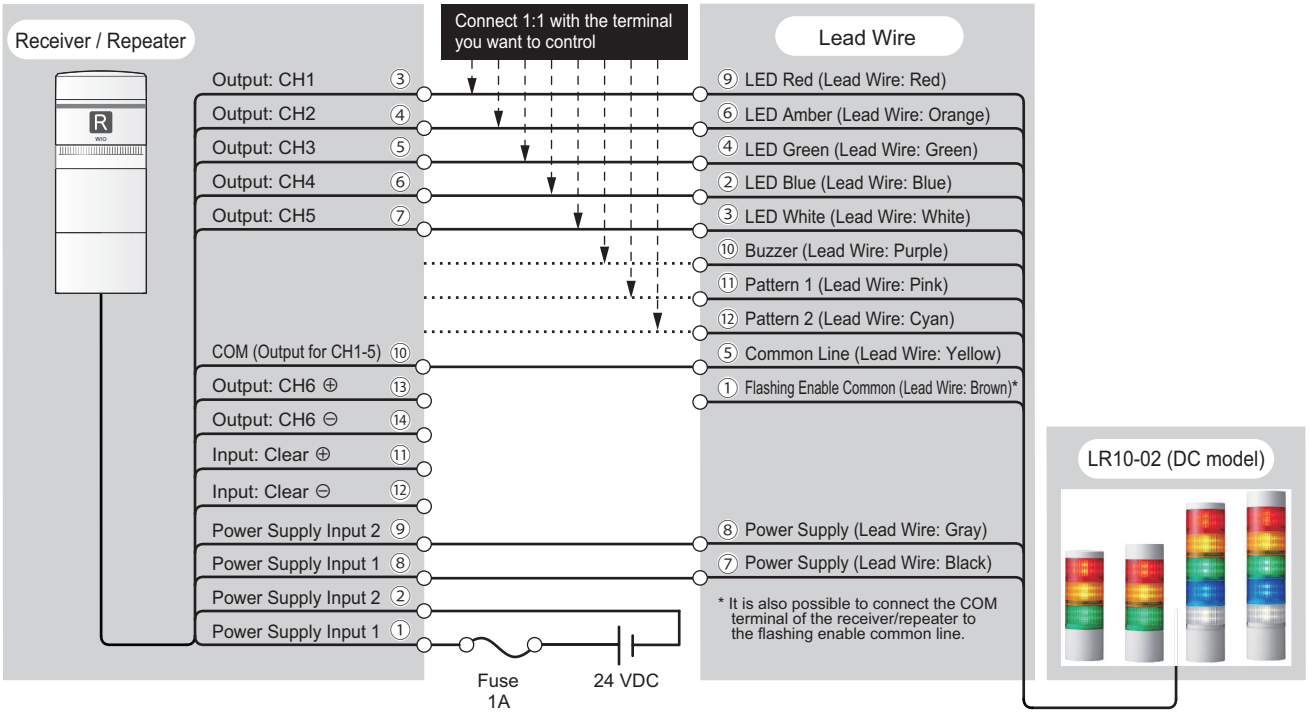


7.12.2.6. Signal Tower

● LA6-D



● LR10-02



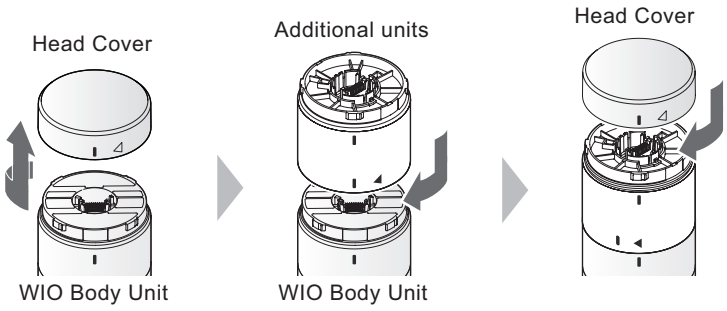
7.13. How to Attach and Detach Additional Units

When attaching or detaching additional units (LED unit, Buzzer unit) to this product, be sure to follow the steps below.

⚠ CAUTION

- ⃠ The maximum number of attachments for each unit: 1 x this product + 5 x LED units + 1 x buzzer unit. Do not attach units beyond that.
- ❗ When LED and buzzer units are attached, operate with an input voltage from 21.6 to 26.4 VDC.
- ⃠ Do not attach a WD transmitter due to possible radio interference effects.
- ⃠ Do not apply excessive force to this product and to each unit. Failure to follow this instruction could result in equipment damage.
- ⃠ Do not touch the connectors on this product and on each unit as well as LEDs in LED units. Failure to follow this instruction could result in equipment damage.
- ❗ Securely lock each unit when attaching. Failure to secure units could result in product damage.
- ❗ Attach or detach additional units, in order, one at a time. Any other method may result in damaging additional units.
- ⚠ When using the transmitter's flashing COM to control the receiver's buzzer unit, set the DIP switch to [Continuous beep].

● How to attach and detach



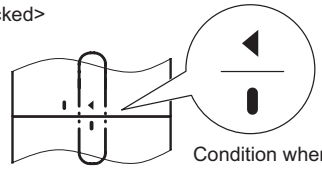
Rotate the head cover counterclockwise to unlock and remove.

While aligning with the positioning mark, insert the additional unit and turn clockwise to lock.

While aligning with the positioning mark, insert the head cover and turn clockwise to lock.

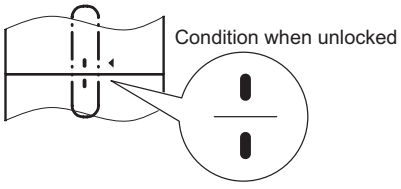
● Positioning

<Locked>



Align and fit the positioning marks and turn clockwise to lock.

<Unlocked>

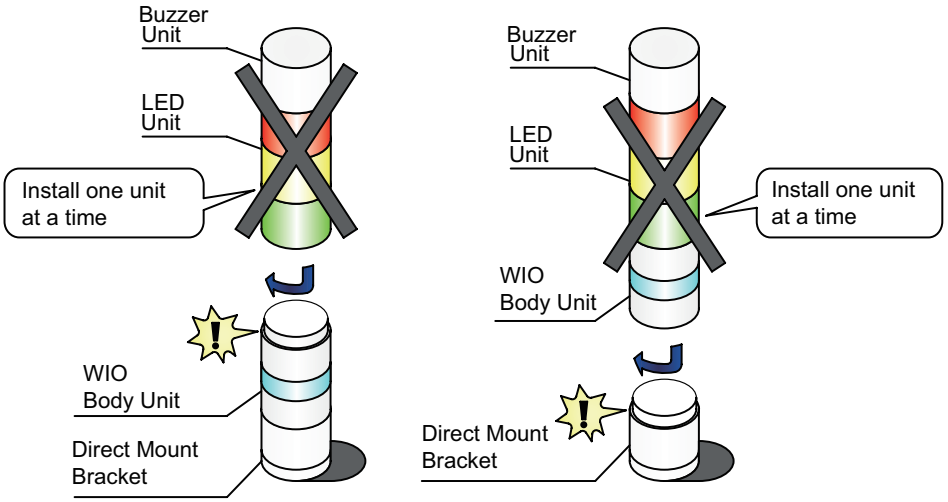


While holding the adjacent lower unit, turn the unit to be removed counterclockwise to unlock it and lift it up.

7.13.1. Attaching the LED Unit and Buzzer Unit

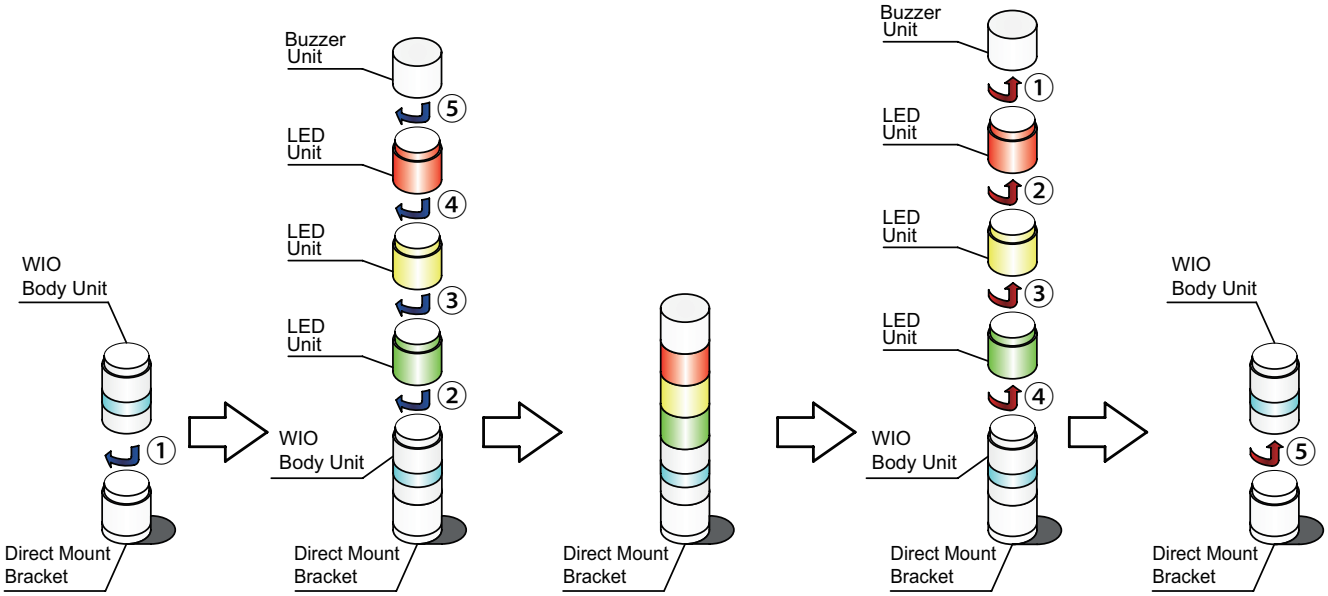
⚠ CAUTION

❗ Attach or detach units one at a time.



7.13.2. Order of Attaching/Detaching Units

Attach and detach units in the following order.



Attach each unit

Attach one unit to each WIO body unit.

Detach each unit

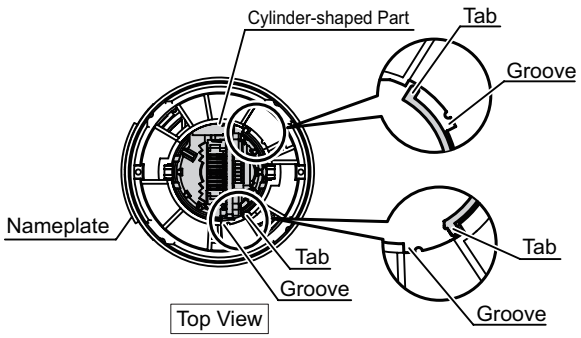
Hold and remove adjacent units.

Point

- If a buzzer unit is attached, the head cover is not required. Keep it in a safe place.

⚠ CAUTION

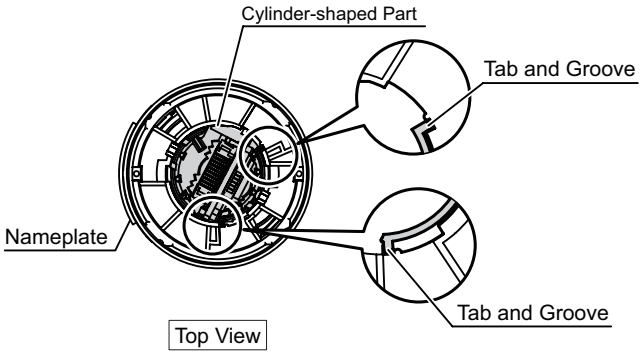
⚠ If additional unit does not attach properly to this product, confirm the tab of the cylinder-shaped part at the top of unit is fitted correctly into the groove. Additionally, depending on how it is detached, the tab may come out of the groove when detaching the additional unit from this product. Attaching while the tab is still in this state may cause damage.



Cannot Connect Condition

⚠ If the unit does not attach properly to this product, try the following method.

- Turn the cylinder-shaped part in the middle of the bottom surface counterclockwise.
- Turn the cylinder-shaped part until it snaps into place, then attach it to this product.

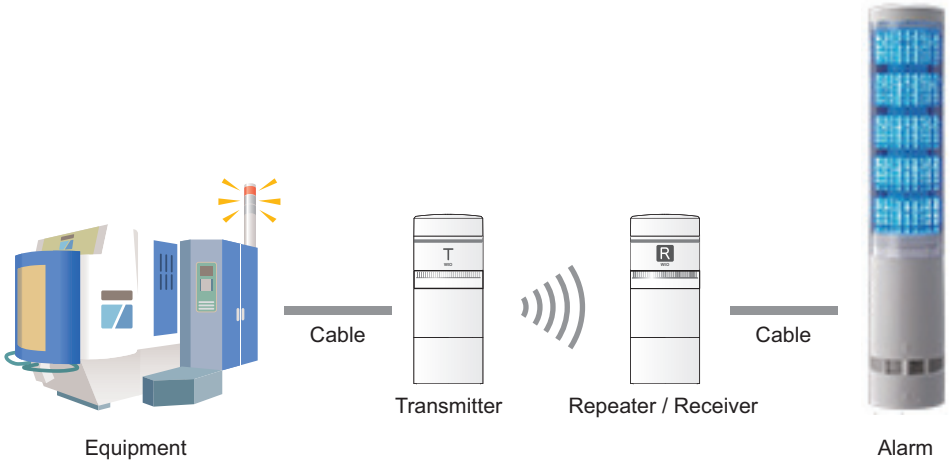


(Attachable)

8. System Configuration Example

8.1. Status Notification

The receiver can report the status of equipment with outputs.



● Configuration example

Component	Quantity
Transmitter	1 unit
Receiver	1 unit
Repeater	As required
AC Adapter (option)	As required
Mounting Bracket (option)	As required
Alarm (example. LA6-D)	1 unit

● Wiring Example

Equipment

Description
Power supply 24 VDC
COM
Output 1 (LED red)
Output 2 (LED amber)
Output 3 (LED green)

Transmitter

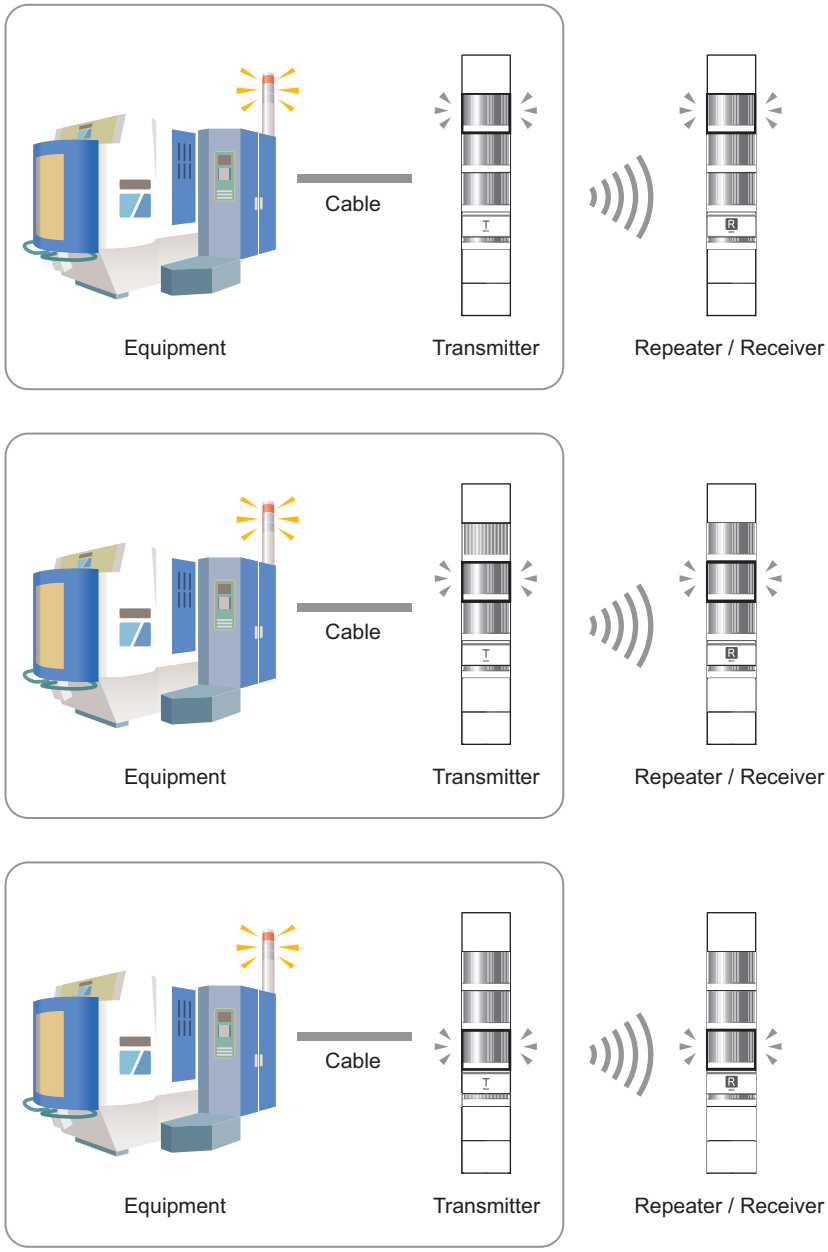
No.	Description
1	Power supply
2	Power supply (COM)
3	Input CH1 / LED Red
4	Input CH2 / LED Amber
5	Input CH3 / LED Green
6	Input CH4 / LED Blue
7	Input CH5 / LED White
8	Power supply
9	Power supply (COM)
10	Input: CH6
11	Input: Buzzer
12	COM
13	NC
14	Flashing COM

Wiring of repeater/receiver and alarm

Refer to "7.12.2.6. Signal Tower" (☞ P.72)

8.2. Collective Andon

The equipment operating status (signal lights) of each line can be centrally displayed as Andon.



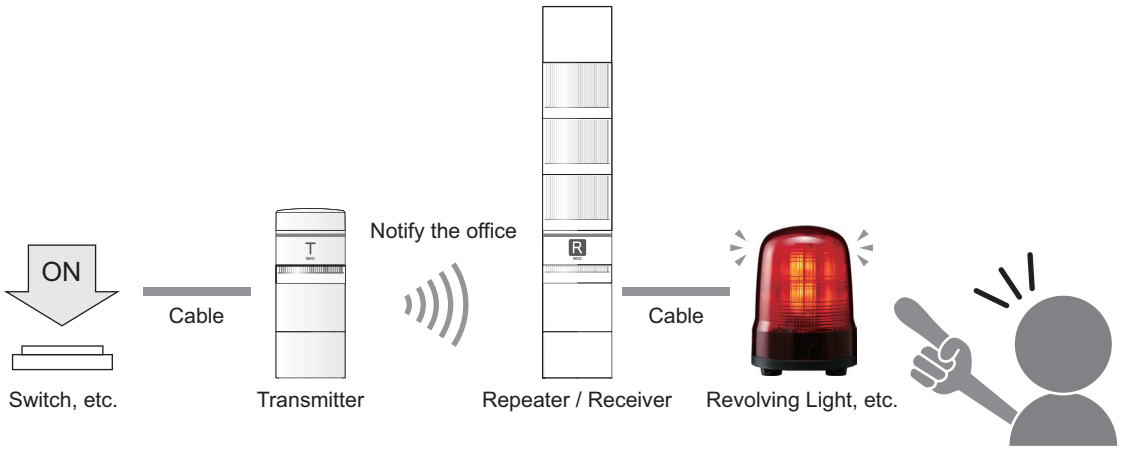
● Configuration example

Component	Quantity
Transmitter	1 unit each
Receiver	1 unit each
Repeater	As required
AC Adapter (option)	As required
LED Unit	As required

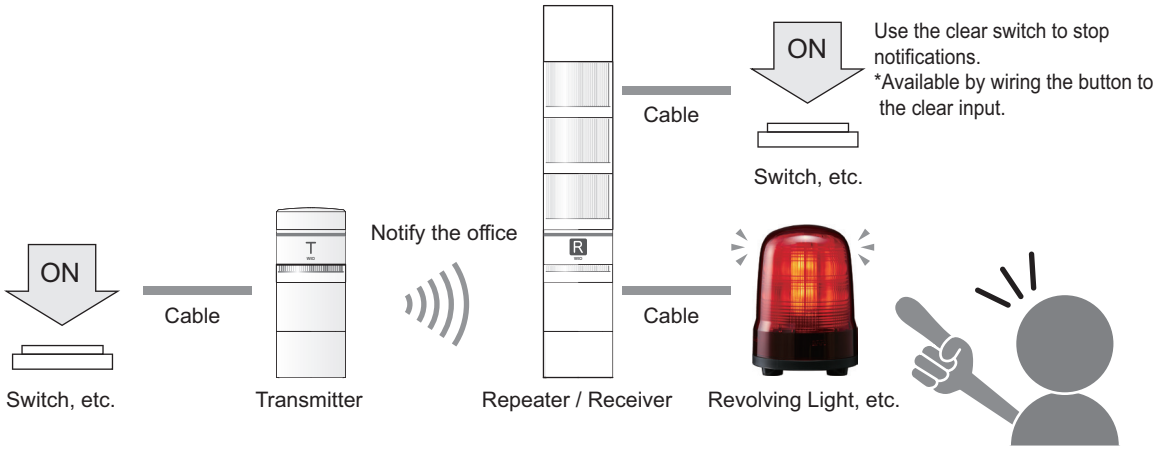
8.3. Call the Person in Charge

The system can be used to call the person in charge in the event of an abnormality.

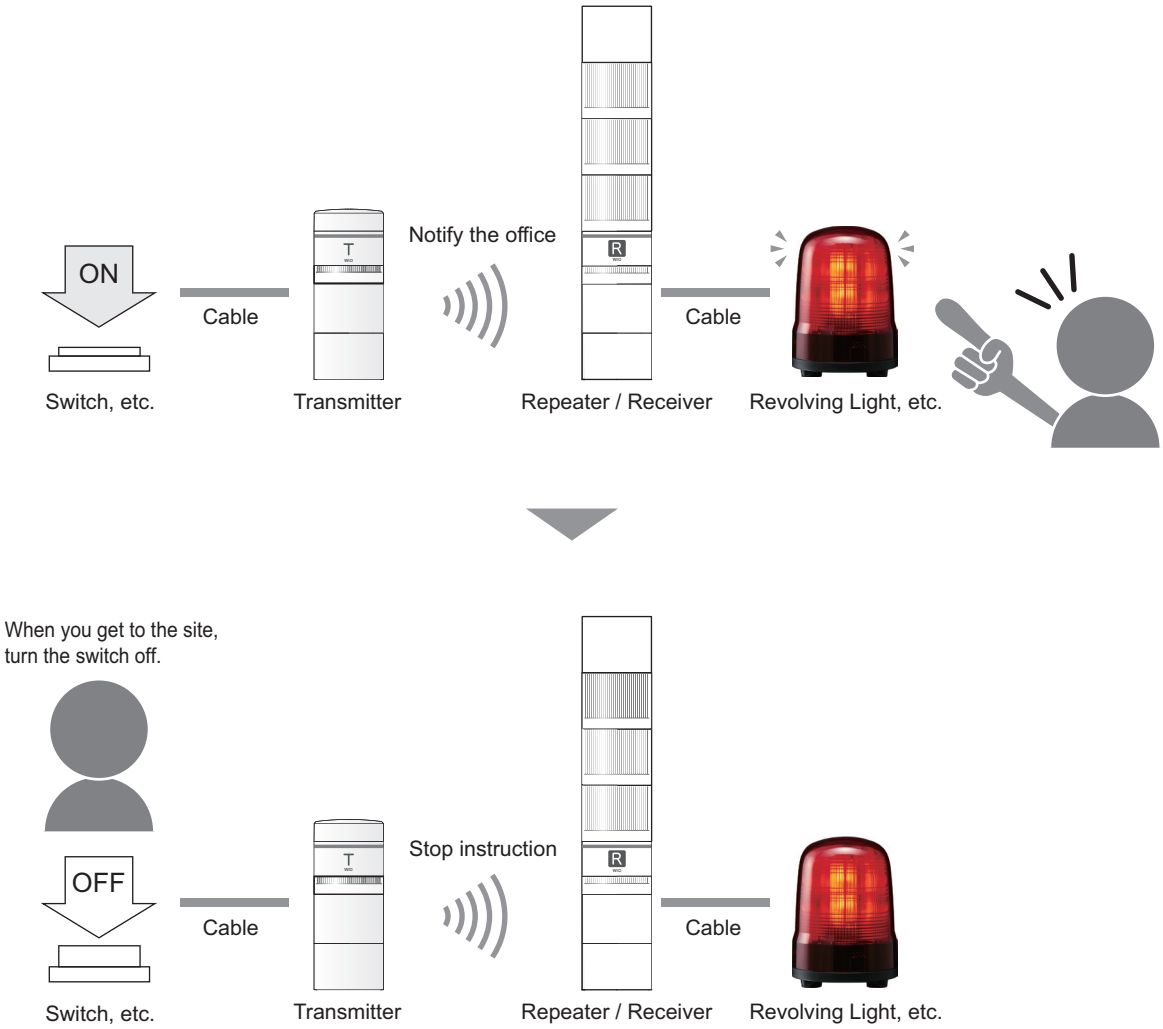
● Call example 1 (For 12-second output in one-shot mode)



● Call example 2 (For holding output in one-shot mode)



● Call example 3 (For level mode)



● Configuration example

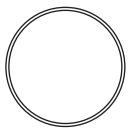
Component	Quantity
Transmitter	1 unit
Receiver Set	1 set
Repeater	As required
AC Adapter (option)	As required
Revolving Light, etc.	1 unit
Switch	1 piece

9. Troubleshooting

Transmitter	Receiver / Repeater	Issue	Checklist
●	●	Indicator does not light up.	Check if the product is correctly installed and the wiring is correct.
●	●		Check if wiring for the power supply is correct.
●	●	The indicator is flashing red.	If the repeater indicator is flashing red, there may be more than 4 repeaters in the system. Review the system equipment configuration. If the indicator on a product other than the repeater is flashing red, cancel pairing and pair with the connected product again.
●	●	The indicator does not change from a red light.	There may be a communication error that prevents connection with the registered product. ・Check if the registered product is working properly. ・Change the installation location and see if the condition changes. ・Check for any sources of noise in the surrounding area that could impede wireless communication.
●	–	The receiver does not perform output even if a signal is input to input CH.	Check that the input CH is wired correctly.
–	●	Does not perform output.	Check that the output CH is wired correctly.
–	●	Output does not stop even after a Clear Input operation during output.	・Check that the Clear Input operation is wired correctly. ・Clear Input does not work when operating in Level Mode.
–	●	The indicator does not change from a red light while adding a repeater.	A repeater error has occurred during pairing. Unpair the repeater and add the repeater again.
●	●	LED unit does not light up or LED unit is dark.	Check that the input voltage of the product to which the LED unit is attached is in the range of 21.6 to 26.4 VDC.

10. Replacement Parts

O-ring 60

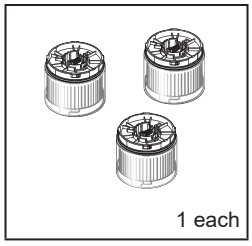


5 pieces

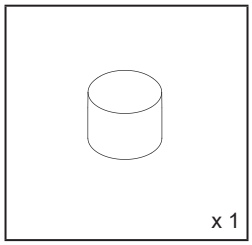
11. Optional Parts

11.1. Supported Units

● **LED unit: LR6-E- □ , LR6-E- □ Z, LR6-E-MZ**

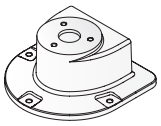
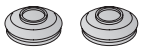
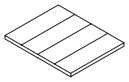
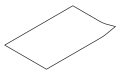


● **Buzzer unit: LR6-BW**

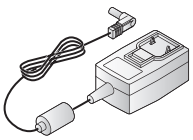
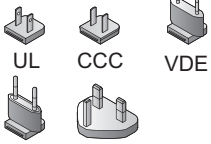
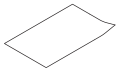
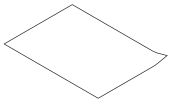


11.2. Supported Options

- **Wall Mounting Bracket: SZK-003W, SZK-001U*1**
- **Pole: POLE22- □ 00AT, POLE22- □ 00AN (Available only when SZP-003W is mounted)**
- **Circular bracket: SZP-001W*2, SZP-002U*2, SZP-003W*2, SZW-001W**
- **Tilt Bracket: SZQ-001W*2**
- **L Angle: SZL-001*3**
- **Mounting Bracket: SZW-002W**
- **Mounting Bracket: SZW-003W**

Mounting Bracket	Grommet	Adhesive Sheet	Instruction Manual
			
x 1	x 2	x 1	x 1

- **AC Adapter: ADP-001C**

AC Adapter	AC Power Plug	Extension cable	Cable tie	Instruction Manual (ADP-001C)	Instruction Manual (ADP-001)
					
x 1	1 each	x 1	x 1	x 1	x 1

*1 Available only when POLE22- □ 00AT or POLE22- □ 00AN is mounted
*2 Available only when POLE22- □ 00AN is mounted
*3 Available only when POLE22- □ 00AT is mounted

12. Specifications

12.1. Transmitter

Rated Voltage			12 to 24 VDC (24 VDC when LED unit or buzzer unit is installed)
Operating Voltage Range			10.8 to 26.4 VDC (21.6 to 26.4 VDC when LED unit or buzzer unit is installed)
Rated Current Consumption	24V DC input	Main Unit	Maximum: 63 mA or less
		LED Unit	Maximum: 42 mA or less (per tier)
		Buzzer Unit	Maximum: 42 mA or less
	12V DC input	Main Unit	Maximum: 53 mA or less
Operating Ambient Temperature			-10°C to +50°C
Operating Ambient Humidity			85% RH or less, no freezing, no condensation
Storage Ambient Temperature			-20°C to +60°C
Storage Ambient Humidity			85% RH or less, no freezing, no condensation
Mounting Location			Indoors
Mounting Direction			Upright
Protection Rating			IP 65 (IEC 60529), NEMA TYPE 4X,13 (IP54 when SZP-003W is mounted on the product body)
	Environmental Conditions		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%)			220 g *Hexagon nut with flange (Accessory) not included
External Dimensions			"4. Part Names and Dimensions" (☞ page 12)
Interfaces	Terminal Block Connector		Screwless Terminal Block (14 contacts)
		Supported Wire Diameter	Single wire: ϕ 0.5 - 1.2 mm, Stranded wire: 0.2 - 1.5 mm^2 (AWG24-16)
		Power supply	12 to 24 VDC input (12 to 24 VDC, GND)
		Input: Number of Contacts	7 contacts
		Input: Output ON current	10 mA or less (per contact)
		Input: Input Reaction Time	100 ms or longer
		Output	None
	USB connector		USB 2.0 (Type-C connector) *For maintenance purposes only, do not use.
Display Unit			Status Display Indicator

Lever	Group ID DIP Switch, Function DIP Switch, Reset Button
Accessories	Hexagon nut with flange (M4) x 3

12.2. Receiver

Rated Voltage			12 to 24 VDC (24 VDC when LED unit or buzzer unit is installed)
Operating Voltage Range			10.8 to 26.4 VDC (21.6 to 26.4 VDC when LED unit or buzzer unit is installed)
Rated Current Consumption	24V DC input	Main Unit	Maximum: 52 mA or less
		LED Unit	Maximum: 42 mA or less (per tier)
		Buzzer Unit	Maximum: 42 mA or less
	12V DC input	Main Unit	Maximum: 79 mA or less
Ambient Operating Temperature			-10°C to +50°C
Ambient Operating Humidity			85% RH or less, no freezing, no condensation
Storage Ambient Temperature			-20°C to +60°C
Storage Ambient Humidity			85% RH or less, no freezing, no condensation
Mounting Location			Indoors
Mounting Direction			Upright
Protection Rating			IP 65 (IEC 60529), NEMA TYPE 4X,13 (IP54 when SZP-003W is mounted on the product body)
	Environmental Conditions		Upright
Insulation Resistance			More than 5MΩ 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%)			220 g *Hexagon nut with flange (Accessory) not included
External Dimensions			"4. Part Names and Dimensions" (☞ page 12)
Interfaces	Terminal Block Connector		Screwless Terminal Block (14 contacts)
		Supported Wire Diameter	Single wire: ϕ 0.5 - 1.2 mm, Stranded wire: 0.2 - 1.5 mm^2 (AWG24-16)
	Power supply		12 to 24 VDC input (12 to 24 VDC, GND)
	Input		1 contact (Clear Input)
	Output	Non-Voltage Contact Output (NPN open collector)	5 contacts (COM terminal 1 contact)
			Maximum load voltage: 35 VDC, Maximum load current: 250 mA
		Relay output (1 contact A)	1 contact
			Contact rating: 30 VDC 3.0 A *1, minimum applicable load: 10.8 VDC 10 mA
			Open/close life: 100,000 times or more *30 VDC 3.0 A resistive load
	USB connector		USB 2.0 (Type-C connector) *For maintenance only, do not use.
Display Unit			Status Display Indicator

Lever	Group ID DIP Switch, Function DIP Switch, Reset Button
	Repeater Setting Switch
Accessories	Hexagon nut with flange (M4) x 3

*1 Our products with a recommended contact capacity of "35V DC or more" can be used only when operated within the allowable voltage range of this product (10.8 to 26.4 VDC).

PATLITE Corporation G2J

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