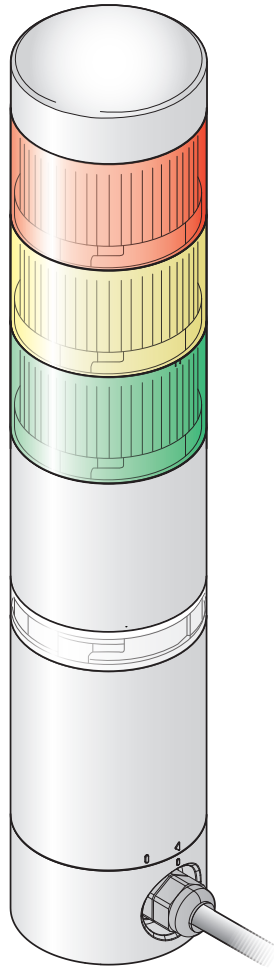


PATLITE®

Notice to Customer

Thank for your purchasing our PATLITE products. The WDB-D80S-PRO and WDT-6LR-Z2-PRO are WD PRO Series products. For the WDR-LE-Z2, refer to "WDT-4LR-Z2/WDT-5LR-Z2/WDT-6LR-Z2 Instruction Manual." For the WDR-L(E)-Z2-PRO(-L), refer to "WDT-4LR-Z2/WDT-5LR-Z2/WDT-6LR-Z2 /WDR-L(E)-Z2-PRO(-L) Instruction Manual."

- 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.
- When using the system operation software WDS-WIN01, use version 1.03 or later.

To the Contractor

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

Wireless Data Acquisition System
WD PRO Series

TYPE WDB-D80S-PRO

TYPE WDT-6LR-Z2-PRO

Instruction Manual [Web Version]

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1. Before you begin




1.1 About Safety Symbols

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




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

 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	<ul style="list-style-type: none"> ● This Wireless Data Acquisition System (hereby referred to as "this product") gets various data and wirelessly transfers this data from a transmitter to a receiver. Do not use this product for any other purpose. ● 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 use or install the receiver in locations where liquids such as water is present, oil will splatter, or locations that are humid or dusty. Failure to follow these instructions could result in fire, electric shock or product failure. ● To prevent accidents, do not use this product other than for its intended purpose and do not run operations or maintenance other than those described in this manual. ● This product is not intended for use where high reliability is required and where human life is involved, such as medical equipment, atomic energy equipment and machinery, aviation and aerospace, transportation, and control of other equipment. If this product is used for these applications, we cannot be held responsible in the event of injury or property damage. ● Do not modify or disassemble this product. Failure to follow these instructions could result in fire or electric shock. ● Do not use this product when there is condensation. Failure to follow these instructions could result in fire or electric shock. ● Do not allow liquids to enter the receiver, and do not allow it to have contact with metallic objects. Failure to follow these instructions could result in fire or electric shock.
 Mandatory	<ul style="list-style-type: none"> ● 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 falls. ● Turn off the power before performing any electric wiring or product installation. Failure to follow this instruction could result in electric shock. ● Always use a power supply within the operating voltage range. Failure to follow this instruction could result in fire or product failure. ● In places such as aircraft and hospitals, turn off this product where usage of wireless devices is prohibited and where its radio waves affect surrounding equipment. ● 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. To prevent accidents when operating or maintaining the product, in addition to the safety guidelines identified in the instructions of this manual, follow all general safety guidelines. ● In the unlikely event that there is an abnormal situation such as smoke or odors emitting from the product, immediately cut the power supplied to the product. Failure to follow this instruction could result in fire or electric shock. ● Take the following precautions to prevent electric shock, short-circuit, or damage. <ul style="list-style-type: none"> ▪ 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.

 **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.
- 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 in applications that require a high-degree of reliability or real-time performance. If there are communication problems, this product cannot retrieve accurate data.
- Do not use this product near fire, in hot or humid environments, or where corrosive or flammable gas is present. Failure to follow this instruction could result in product malfunction.
- Do not use or store this product in the following locations. Failure to follow this instruction could result in product malfunction or failure.
 - Environments with poor breathability and ventilation.
 - Near equipment that generate strong electrical or strong magnetic fields.
 - Places exposed to direct sunlight.
 - Locations subject to shock and vibration.
 - Near heating appliances.
 - Environments where there is dust or iron powder.
 - Locations where the product may fall and break.
 - Locations exposed to salty sea air.
- Attach the cap (included) to the cable gland. Waterproofing performance is lowered if the cap is not attached. Failure to follow this instruction could result in product failure.
- When the RS-232C cable is not passed through the cable gland, attach the sealing plug (included). Waterproofing performance is lowered if the sealing plug is not attached. Failure to follow this instruction could result in product failure.
- Do not touch the connector terminals inside the unit when attaching or removing each unit or head cover. Failure to follow this instruction could result in product failure.
- Do not apply voltage to the flashing common line or external input common line. Failure to follow this instruction will result in product failure.



Mandatory

- Operate this product only after thorough testing in the customer environment.
- Pay close attention to the polarity of the power supply before connection. Connecting the power supply incorrectly could result in product failure.
- To clean this product, wipe with a soft cloth dampened with water. Do not wipe with cleaners containing thinners, benzene, gasoline, or oil.
- To maintain dust and waterproofing performance, always use this product with the transmitter, LED unit, and head cover or buzzer unit securely attached.
- When removing covers or packing, which are attached to this product, be careful not to snag the product. Failure to follow this instruction could result in product failure.

CAUTION



- Although this product has a high level of security, there is the potential for third-parties to intercept communications as this product uses radio waves.
- When using this product, pay close attention to the following:
 - Due to the nature of radio waves, communication can be disabled even over insignificant distances as a result of noise or other environmental factors.
 - Do not use this product near chemicals. This product could melt or become deformed if any chemicals adhere to it.
 - To prevent static electricity, discharge the static electrical charge in your body before starting work. (You can discharge static electricity by touching your hand on grounded metal objects.)
 - Perform daily inspections.
 - As a precaution, use this product in conjunction with other equipment to handle potential problems.
- Operation under the following conditions could cause the wireless communication distance to become shorter than specified, and increase reaction times:
 - Metal obstructions, such as steel doors or reinforced concrete, are between the transmitter and receiver.
 - Transmitter or receiver is mounted on a metal surface.
 - Powerful radio waves are nearby, such as those emitted by broadcasting stations.
 - Power lines or other high-voltage lines are nearby.
- About the Operating Environment
 - We tested the product with out of the box computers in a normal operating environment. However, depending on your operating environment, which includes the computer main unit, peripheral devices and applications in use, there may be cases where this product will not run properly.
- The software copyrights are held by our company. Do not use this software in other products, or duplicate or modify a portion or all the software without prior written permission.
- Disposing this product
 - When disposing of this product, follow the rules and regulations on how to handle recyclable materials as outlined in your community.
- About this manual
 - The contents of this manual are subject to change without notice.
 - Images in this manual are for illustration purposes only, and may appear different from the actual product. Additionally, for ease of explanation, the illustration may hide a portion of the product.
 - This manual is copyrighted. No part of the manual, including drawings or technical information, can be copied or duplicated in any manner, without prior consent.
 - When transferring ownership of this product, include the instruction manual (digest version).
 - If you have any questions or need further information, contact your nearest PATLITE sales representative.

- We cannot warrant against breakdowns caused by disassembling this product, natural disasters, or handling of this product that is contrary to any warnings or precautions contained herein. Avoid using this product in ways other than those described in this manual.
- We cannot be held responsible for damages and injuries caused by failing to pay attention, or failing to follow precautions, during operation and maintenance.

- Conformity requirements for the UL Standard
 - Maximum surrounding air temperature rating of 50 °C
 - This product is designed for use on a flat surface for a Type 1 Enclosure.
 - For use in Pollution Degree 2 Environment.
 - Use a "class 2" power supply specified in the guidelines under UL1310.

- FCC notation requirement

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

- ◆ FCC CAUTION

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

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

(Responsible party in U.S.A.) PATLITE U.S.A. Corporation, R20130 S. Western Ave. Torrance, CA90501, U.S.A.



- EU Declaration of Conformity

We PATLITE Corporation, 4-1-3, Kyutaromachi, Chuo-ku, Osaka-shi, Osaka 541-0056 JAPAN declare under our sole responsibility that the product described below is in compliance the following directives.

- Product Name: Wireless Data Acquisition System WD PRO Transmitter
- Company Logo: **PATLITE**
- Directive: Electromagnetic Compatibility Directive(EMC): 2014/30/EU
- RoHS Directive: 2011/65/EU
- Radio Equipment Directive: 2014/53/EU
- Low Voltage Directive (LVD): 2014/35/EU

Visit our homepage at https://www.patlite.com/ce/wd_07539.html to download "EU Declaration of Conformity".



La operación de este equipo está sujeta a las siguientes dos condiciones: (1) es posible que este equipo o dispositivo no cause interferencia perjudicial y (2) este equipo o dispositivo debe aceptar cualquier interferencia, incluyendo la que pueda causar su operación no deseada.

第十二條

經型式認證合格之低功率射頻電機，非經許可，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。

第十四條

低功率射頻電機之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。前項合法通信，指依電信法規定作業之無線電通信。低功率射頻電機須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

This telecommunication equipment conforms to the standard or technical requirements of NBTC.

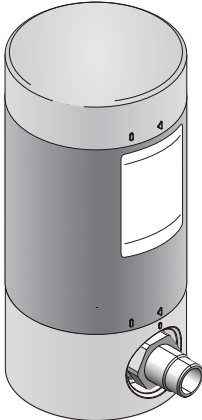


2. Contents

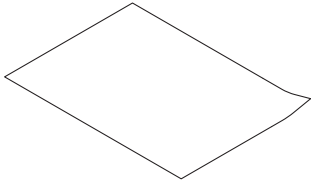
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

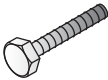
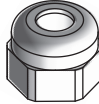

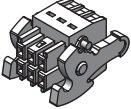
2.1.1 WDB-D80S-PRO (Contact Input - Serial Communication Base Unit)

Main Unit: 1



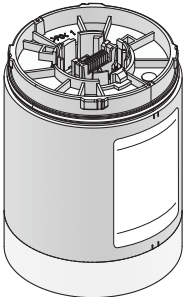
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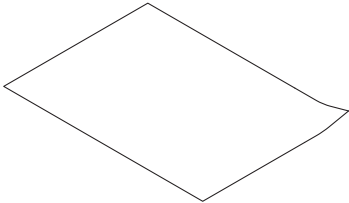
Accessories		
Hexagon Nut with Flange (M4)  3	Hexagon Nut with Flange (M3)  6	Hexagon Bolt (M3)  3
Cap for Cable Gland  1	Sealing Plug for Cable Gland  1	Terminal Block Connector  1

2.1.2 WDT-6LR-Z2-PRO (WD PRO Transmitter)

Main Unit: 1



Instruction Manual (digest version): 1 copy

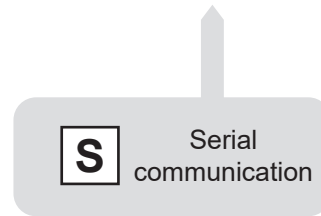
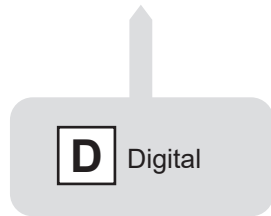


3. Models

3.1 About Models

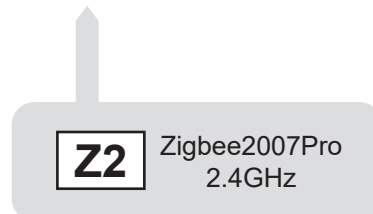
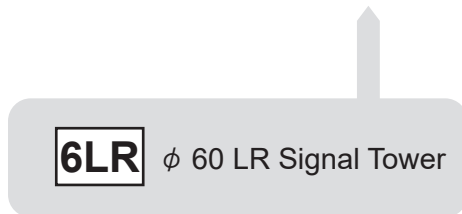
3.1.1 WDB-D80S-PRO (Contact Input - Serial Communication Base Unit)

	Model	Format	Number of External Contact Inputs	Number of External Contact Outputs	Communication	Series
Model Number	WDB -	D	8	0	S	-PRO



3.1.2 WDT-6LR-Z2-PRO (WD PRO Transmitter)

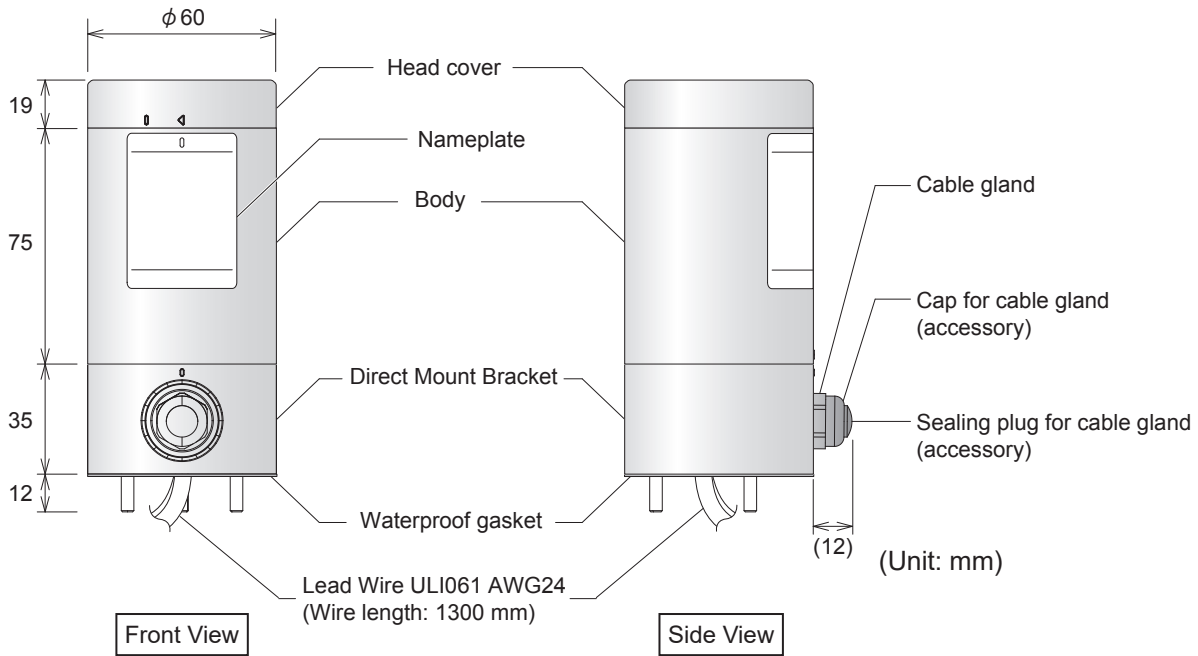
	Model	Size	Wireless Type	Series
Model Number	WDT -	6LR -	Z2	-PRO



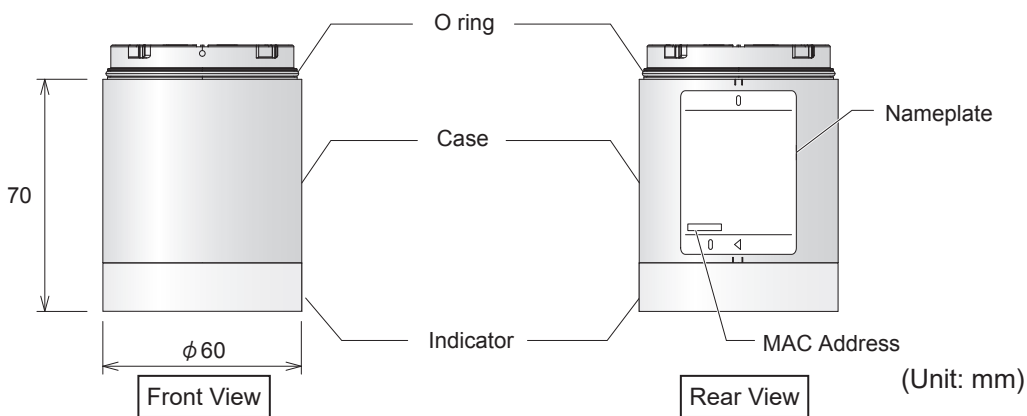
4. Part Names and Dimensions

4.1 About Part Names and Dimensions

4.1.1 WDB-D80S-PRO (Contact Input - Serial Communication Base Unit)



4.1.2 WDT-6LR-Z2-PRO (WD PRO Transmitter)



5. Operation Overview

5.1 About the WD System

To collect data available on equipment in your facility, the WD system transmits associated information (such as equipment operation data) to a host computer over the WD wireless network. By using visualization application software, you can use collected information to accurately view the capacity utilization rate, trigger improvement activities, and optimize operations. This application is not limited to production facilities and can be applied to other areas.

5.2 System Configuration

5.2.1 Glossary

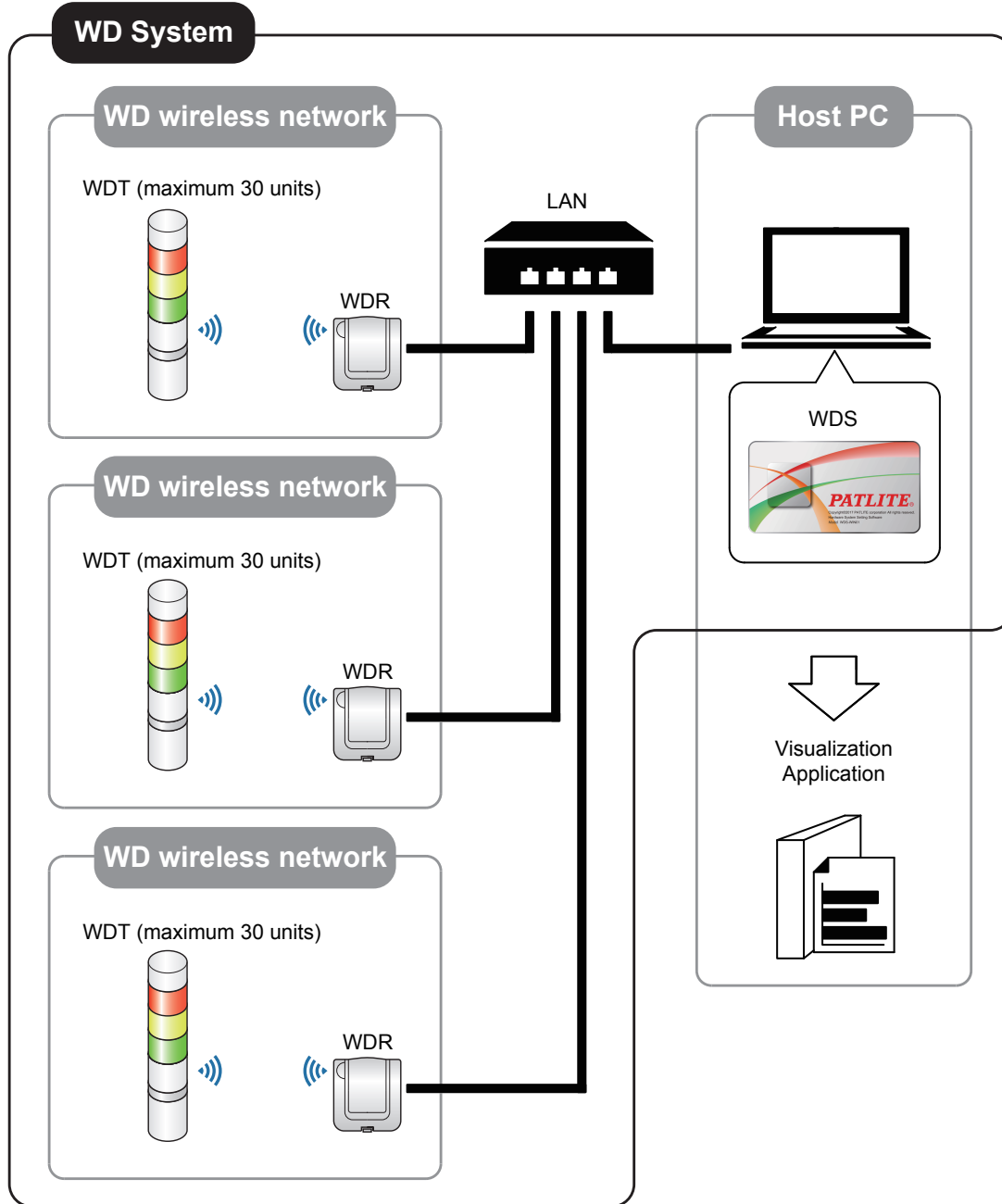
Term	Description
WD System	Name for the system as a whole. Can include multiple WD wireless networks and the host.
WD Wireless Network	A part of the wireless network that consists of one WDR and multiple WDT (up to 30 units).
WDR	Receiver on a WD wireless network. Receives information from multiple WDT and transmits to the host. Model: WDR-LE-Z2, WDR-L-Z2-PRO(-L), WDR-LE-Z2-PRO(-L)
WDS	Application software for WDT and WDR settings, and for collecting Signal Tower information in the WD system as CSV log data. Model: WDS-WIN01
WDT	Transmitter on a WD wireless network. Collects various information from a Signal Tower and transmits the information wirelessly to WDR. Models: WDT-5E-Z2, WDT-6M-Z2, WDT-4LR-Z2, WDT-5LR-Z2, WDT-6LR-Z2, WDT-6LR-Z2-PRO
WDT-LR	Transmitter on a WD wireless network. Connect and use with LR Signal Towers. Models: WDT-4LR-Z2, WDT-5LR-Z2, WDT-6LR-Z2
WDT-PRO	WD PRO transmitter on a WD wireless network. Information retrieved from a WD PRO Series Base Unit is wirelessly transmitted to WDR. Model: WDT-6LR-Z2-PRO
WDB-D80S	Contact Input - Serial Communication Base Unit on the WD wireless network. Transmits the status of the Signal Tower control line, status of the external input line, and serial communication data to WDT-PRO. Model: WDB-D80S-PRO
Signal Tower Input Information	Input information of the Signal Tower collected by the WD system.
Host	Equipment for operation of the WD system.
Visualization Application Software*	Application software installed on the host PC. Use this application to display information collected by the WD system in a gantt chart or graph. Must be provided by the customer.
Maintenance PC	At maintenance, personal computer for setting up the WDT, WDT-PRO, WDB-D80S, and WDR.

*For visualization application software, refer to "5.4 About Visualization Application Software(P.17)".

5.2.2 System Configuration

5.2.2.1 WD System Configuration at Run Time

• Configuration diagram



• Configuration

Item	Number of configuration items	Models
WDT	1 to 30 units* ¹ per receiver	WDT-5E-Z2/WDT-6M-Z2/WDT-4LR-Z2/ WDT-5LR-Z2/WDT-6LR-Z2/WDT-6LR-Z2- PRO (this product)
WDR	1 to 20 units* ²	WDR-LE-Z2 / WDR-L(E)-Z2-PRO(-L)
WDS	1	WDS-WIN01 *Version 1.03 or later
Host PC* ³	1 unit	-

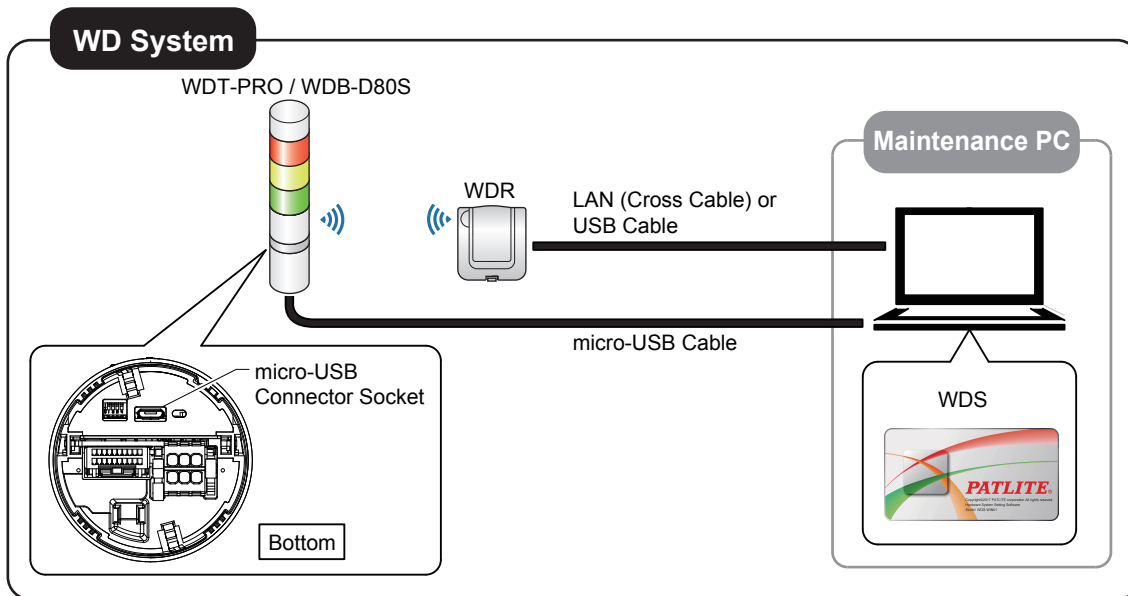
*1 For information, refer to “6.1.4 How many WDT you can connect to WDR(P.22)”.

*2 When collecting CSV log data with WDS-WIN01.

*3 When connecting the WDR directly to the host PC with a LAN cable, use a cross cable.

5.2.2.2 WD System Configuration at Maintenance

• Configuration diagram



• Configuration

Item	Number of configuration items	Models
WDT-PRO	Units as required	WDT-6LR-Z2-PRO
WDB-D80S		WDB-D80S-PRO
WDR	1 unit	WDR-LE-Z2 / WDR-L(E)-Z2-PRO(-L)
WDS	1	WDS-WIN01 *Version 1.03 or later
Maintenance PC	1 unit	-
LAN Cable*1 *2	1	-
USB Cable*3 *4	1	-
micro-USB Cable*3 *5	1	-

* 1 When configuring the WDR LAN settings, connect with a LAN cable.

* 2 When connecting the WDR directly to the host PC with a LAN cable, use a cross cable.

* 3 Use USB and micro-USB cables that are 3m or shorter.

* 4 Do not connect LAN and USB cables at the same time.

* 5 Use the micro-USB cable with this product's power supply only. The USB driver may be installed on the maintenance PC,

⚠ WARNING

❗ When using a USB connection between this product and a computer, do not let the product's power supply contact the computer or peripheral devices.

Failure to follow this instruction could result in burns and ignite the product. For example, when grounding the positive terminal of this product's power supply, do not frame ground the computer, which is connected to this product via USB. Depending on the computer, some negative terminals on the USB port are attached to the connector's outer shell. When such a computer is connected to this product, the computer's FG (housing) and negative terminal of this product's USB port are connected. In this state, if the computer is attached to the metal portions where the positive terminal of this product's power supply is grounded, 24 V will be applied to this product's negative terminal on the USB port, which will lead to fire.

5.3 WD System Operation Overview

- WDT transmits Signal Tower information via the WDR to the WDS on the host PC.
- WDS collects the information and stores it as CSV log data. Load the data into visualization application software.
- The visualization application software can also directly load the WDR Signal Tower information.

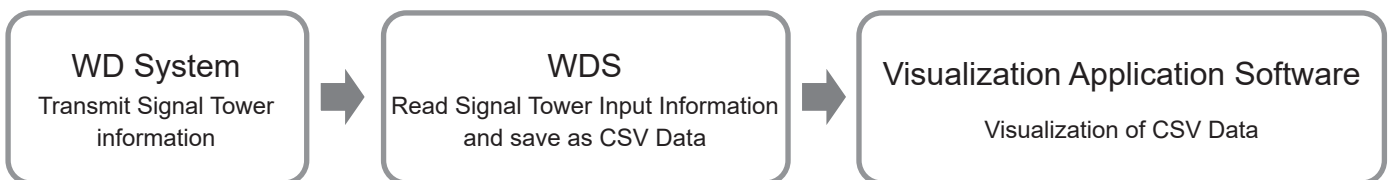
5.4 About Visualization Application Software

⚠ CAUTION

- ⚠ The customer needs to provide the visualization application software.
- ⚠ Select a visualization application software suitable for customer visualization requirements.

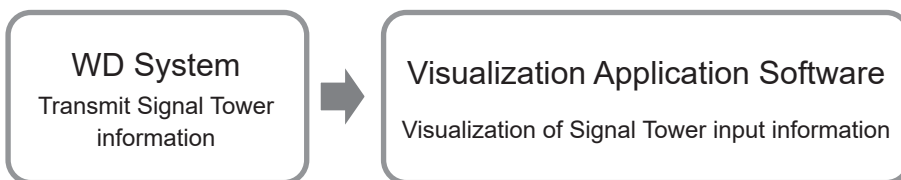
There are two ways the WD system passes collected information to the visualization application software:
 1) CSV Data 2) Socket Communication.

5.4.1 CSV Data



No.	Visualization Application Software Preparation	References
1	When using software packages from PATLITE partners that support the WD system	☞ Please contact our sales office.
2	When customer develops their own solution	Refer to ☞ this manual Refer to ☞ "WDS-WIN01 Instruction Manual"

5.4.2 Socket Communication



No.	Visualization Application Software Preparation	References
1	When using software packages from PATLITE partners that support the WD system	☞ Please contact our sales office.
2	When customer develops their own solution	Refer to ☞ this manual Refer to ☞ "Application Notes"

* For information, contact your nearest PATLITE sales representative.

5.5 Function List

5.5.1 LED Unit and Buzzer Unit Control Functions

Runs control of LED and buzzer units connected to WDT-PRO. There are two types: Control based on the Signal Tower control line, and remote control from the host.

Function	Description	References
Signal Tower Control Functions	Functions that control LED or buzzer units with the Signal Tower control line.	☞ 8.1.1. Signal Tower Control Functions (P. 47)
Remote Control Functions	Functions that perform remote control of LED or buzzer units from the host.	☞ 8.1.2 Remote Control Functions (P. 48)
Release Remote Control Functions	Function that enables operation transition from Remote Control Function to Signal Tower Control Function.	☞ 8.1.3 Release Remote Control Function (P. 49)

5.5.2 Contact Input Line Functions

Determines the input status of the Signal Tower control line, external input line, and clear input line.

Function	Description	References
Determine Signal Tower Control Input Function	Function for determining the signal input status of the Signal Tower control line.	☞ 8.2.1 Determine Signal Tower Control Input Function (P. 50)
Determine External Input Line Function	Function to detect changes in state of 8 external input lines and to save that information.	☞ 8.2.2 Determine External Input Line Function (P. 52)
Determine Simultaneous Input Function	Function to set the sensitivity for determining simultaneous input on the Signal Tower control line and external input line.	☞ 8.2.3 Function to Determine Simultaneous Input of Signal Tower Control Line and External Input Line (P. 53)
Determine Clear Input Line Function	Function to detect inputs on the clear input line and to save that information. Detects when the clear input line changes from OFF to ON.	☞ 8.2.4 Determine Clear Input Line Function (P. 53)
Simple Counter Function	Function for saving the accumulated value (counter value) of pulse inputs (incremented 1 at a time) on a signal wire.	☞ 8.2.5 Simple Counter Function (P. 54)

5.5.3 RS-232C Communication Functions

Runs communication with external equipment, such as a bar code reader, through the RS-232C interface.

Function	Description	References
Communication Setup Function	Function to set up RS-232C communication.	☞ 8.3.1 Communication Setup Function (P. 55)
Receive Data Function	Function for receiving data transmitted by external equipment, following the receive data file format settings.	☞ 8.3.2 Receive Data Function (P. 55)
Transmit Data Function	Function for transmitting to external equipment data received from the host.	☞ 8.3.3 Data Transmission Function (P. 56)

5.5.4 Wireless Data Communication Function

Wirelessly transmits to WDR the status information of each contact input line or the RS-232C data input. Also receives RS-232C data from the host and transmits to external equipment.

Function	Description	References
Mesh Network Transmission Function	Function that automatically connects the WDT over the optimum communication route to the WDR for transmitting information.	☞ 8.4.1 Mesh Network Transmission (P. 56)
Transmit Information Function	Function for WDT-PRO to wirelessly transmit to WDR the Signal Tower control line, external input line, data from RS-232C communication, and counter value.	☞ 8.4.2 Information Transmission Function (P. 57)
Retentive Status Function	When a transmission failure occurs between the Signal Tower information input and the actual transmission, this function temporarily retains the transmission information in the product.	☞ 8.4.3 Retentive Status Function (P. 59)
Receive Information Function	Function for the WDT-PRO to receive commands and data wirelessly transmitted from WDR.	☞ 8.4.4 Receive Information Function (P. 59)

6. Installation

6.1 Before Installation

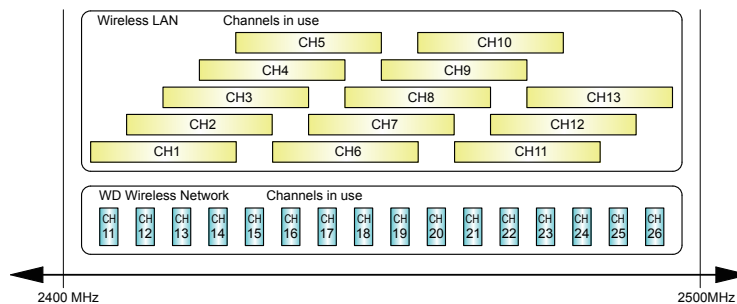
6.1.1 What is the WD Wireless Network?

6.1.1.1 About the WD Wireless Network

- The WD wireless network operates on the IEEE802.15.4 (ZigBee) compliant 2.4 GHz frequency. Although it runs on the same 2.4 GHz frequency as a wireless LAN (Wi-Fi), because it conforms to IEEE802.15.4 the WD wireless network can operate without a wireless LAN. However, if the frequencies you use overlap, the WD wireless network could experience transmission delays and other communication issues.
- The wireless communication is encrypted. The encryption standard used is AES-CCM (Advanced Encryption Standard-Counter with CBC-MAC), with an encryption key of 128 bits.

6.1.1.2 About Selecting a Wireless Channel

- The WD wireless network uses 16 wireless channels (CH11 to CH26).
- Select a wireless channel to avoid conflict with the frequency band of the LAN wireless channels in your installation environment.
- The relationship between frequency bands of channels on the WD wireless network and on the wireless LAN is as follows.



- The frequency of each channel on the WD wireless network is as follows.

Channel	Mid-range frequency (MHz)	Bandwidth (MHz)
CH11	2,405	2
CH12	2,410	2
CH13	2,415	2
CH14	2,420	2
CH15	2,425	2
CH16	2,430	2
CH17	2,435	2
CH18	2,440	2

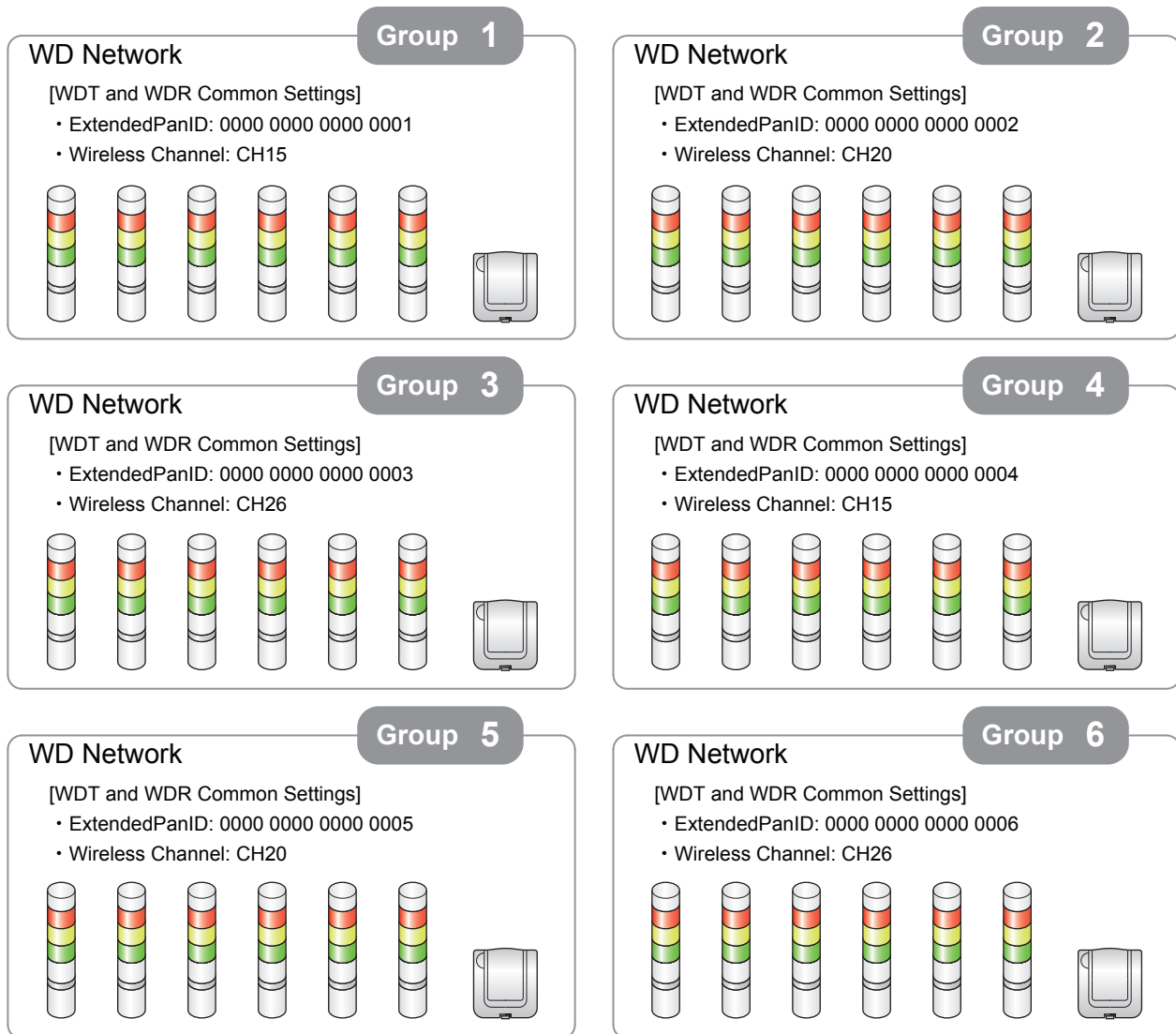
Channel	Mid-range frequency (MHz)	Bandwidth (MHz)
CH19	2,445	2
CH20	2,450	2
CH21	2,455	2
CH22	2,460	2
CH23	2,465	2
CH24	2,470	2
CH25	2,475	2
CH26	2,480	2

6.1.1.3 Example Wireless Channel Selection

- When the wireless LAN uses three channels (CH1, CH6, and CH11), select either CH15, CH20, CH25, or CH26.
- In most cases, selecting CH25 or CH26 will enable you to avoid the wireless LAN channels.

6.1.2 About Grouping and ExtendedPanID

- The WD system requires grouping each WD wireless network (one WDR with multiple connected WDT). You can define the group by setting the ExtendedPanID property on the WDR and WDT to the same value. The ExtendedPanID consists of 16 single-byte, alphanumeric characters. Setup range: 0000 0000 0000 0000 to FFFF FFFF FFFF FFFE.
- You can use any combination of WDT-5E-Z2, WDT-6M-Z2, WDT-4LR-Z2, WDT-5LR-Z2, and WDT-6LR-Z2.
- The following illustrate how you can set the ExtendedPanID and wireless channels for devices in multiple groups.



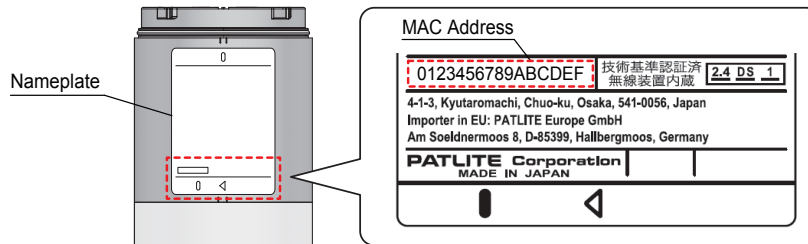
- If there are multiple channels available for selection, you should use separate wireless channels for each group. By distributing groups over multiple channels, you can reduce the load concentrated on a single wireless channel.

CAUTION

- ⊘ When there are multiple WDR in your system, do not use duplicate ExtendedPanID values. The product may not operate properly.
- ❗ When the WDT ExtendedPanID is 0000 0000 0000 0000, regardless of the ExtendedPanID setting all the WDR may be grouped together. In this scenario, because the grouped wireless network is not stable, set any value other than 0000 0000 0000 0000 during configuration.

6.1.3 About the MAC Address

- Static address assigned to WDT-PRO for identification. This address is called a MAC address (IEEE address).
- The MAC address is printed on a nameplate on the back of the WDT-PRO.



6.1.4 How many WDT you can connect to WDR

The number of WDT units you can connect to a WDR is limited by the frequency of information sent to the WDR. The total transmissions from all WDT connected to the WDR is limited to 120 or less per minute (transmission interval of 0.5 seconds or longer) (When WDR-L(E)-Z2-PRO(-L), limited to 240 or less per minute (transmission interval of 0.25 seconds or longer)). To satisfy this condition, use the following table as a guide and determine the number of connected units.

WDT connection limit	Estimated number of Contact Input Information, RS-232C Input Information, and Clear Input Information transmissions / 1 WDT
30 unit	4 times per minute (8 times per minute *WDR-L(E)-Z2-PRO(-L))
20 unit	6 times per minute (12 times per minute *WDR-L(E)-Z2-PRO(-L))
10 unit	12 times per minute (24 times per minute *WDR-L(E)-Z2-PRO(-L))
5 unit	24 times per minute (48 times per minute *WDR-L(E)-Z2-PRO(-L))
1 unit	120 times per minute (240 times per minute *WDR-L(E)-Z2-PRO(-L))

6.2 About the Installation Environment

6.2.1 Installation Environment Main Points

There are five essential points to consider at installation.

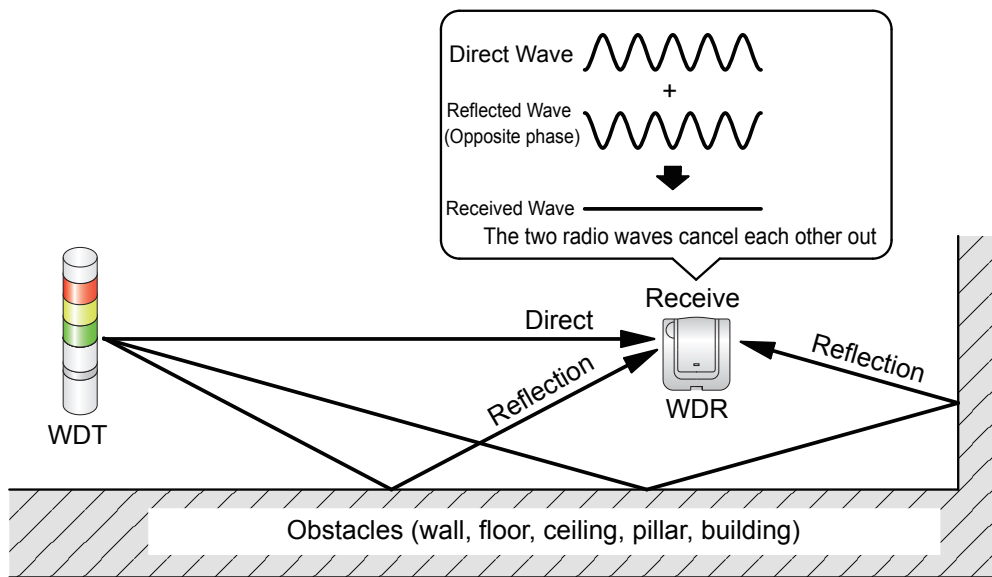
No.	Description	References
1	There is no influence in radio waves at the installation site. Also, the radio waves at the installation site do not change over time.	☞ 6.2.2 About the Influence of Surrounding Radio Waves (P. 23)
2	The distance between devices (WDR, WDT) does not exceed recommendations. The recommended distance between all WDT and WDR is within line of sight.	☞ 6.2.3 Distance Between Devices (P. 24)
3	Each device (WDR and WDT) is in line of sight. To ensure good line of sight, the location should not be cluttered and should be free of any obstacles.	☞ 6.2.4 Ensuring Line of Sight (P. 24)
4	WDR placement is appropriate. <ul style="list-style-type: none"> • Install in a location as high as possible. • Install away from obstacles that could disrupt radio waves. 	☞ 6.2.5 WDR Installation Position and Obstacles (P. 24)
5	Each device is always powered, and the mesh network is always available. If power is not available for one of the WDT, the communication path could get interrupted and information may not be transmitted.	-

6.2.2 About the Influence of Surrounding Radio Waves

If the WD wireless network is affected by radio interference from electronics, microwave ovens, or other manufacturing equipment, normal operation may not be possible. Check the radio wave environment before installation and confirm there is no radio interference on the wireless radio bands you are planning to use.

Causes of Radio Interference	Description
Other wireless devices	Wireless devices using the same frequency or frequencies in the same neighborhood.
Noise from other equipment	Noise caused by power supply circuits, electronic circuits, or oscillators.
Noise from the surroundings	<ul style="list-style-type: none"> • Noise from motors and engine equipment • Noise from transmission lines, power supply equipment, and industrial equipment. • Noise from microwave ovens and fluorescent lamps.
Surrounding obstacles*	Interference caused by phasing with own radio waves.

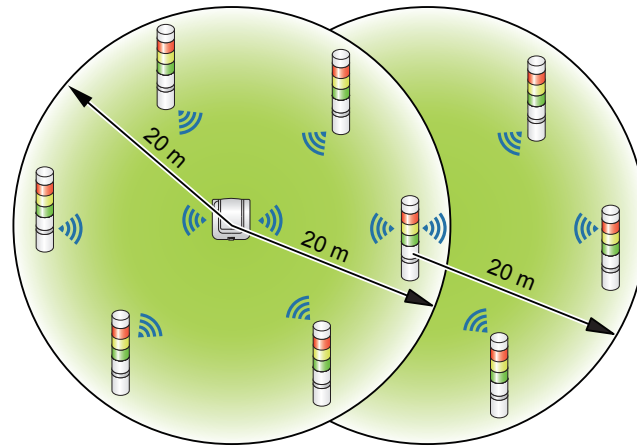
*Various obstacles (wall, floor, ceiling, pillar, equipment) may exist in the installation environment. The reception of radio waves changes depending on the relationship between the position of each device (WDR, WDT), obstacles, and the surrounding environment. As shown in the figure below, radio waves transmitted from a single point are delivered to each device (WDR, WDT) from multiple directions, such as when radio waves travel in a direct line, and when radio waves reflect off obstacles. Radio wave interference could be caused by this scenario, and operation may not be possible due to canceling radio waves.



When wireless LAN and in-house PHS access points are installed in the surrounding environment, install WDR so they are 5 to 10 m or more away from access points.

6.2.3 Distance Between Devices

Place the WDT within a 20 m radius (recommended line-of-site distance) of the WDR. If more distance is required, add another WDT.



6.2.4 Ensuring Line of Sight

- Good line of sight for each device (WDR, WDT) and free of any obstacles – hereafter referred to as the Fresnel Zone – is required. The Fresnel zone is a three-dimensional space, whose size is estimated as shown in the following illustration.
- If you cannot establish the Fresnel zone, sometimes the available communication distance may be shorter than usual due to obstacles inhibiting communication.

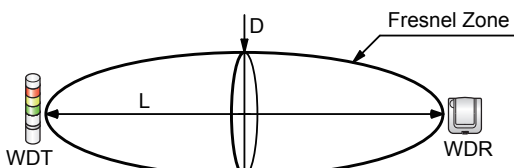


Figure 1

L	D
Line of sight distance	Fresnel zone diameter
20 m	1.6 m
10 m	1.2 m

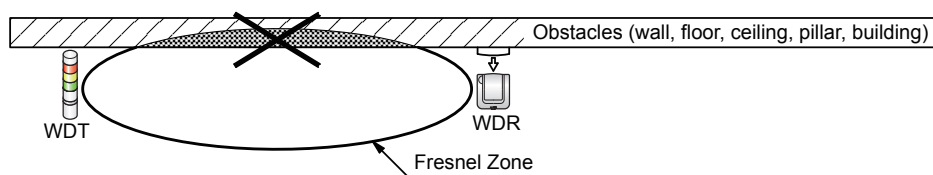


Figure 2

⚠ CAUTION

❗ When installing on a metal plate or concrete wall, install the devices in the Fresnel zone so they are free of any obstacles.

6.2.5 WDR Installation Position and Obstacles

- When onto a pillar such as the I-beam in a building, install the WDR in a direction that promotes the propagation of radio waves.
- When using the WDR in a box, use a resin box with radio wave permeability.

6.2.6. About the Signal Tower Power Supply Status

To operate this product, you need to constantly supply power to the power line. For information, refer to “7.1.4 WDB-DB0S wiring(☞ P.34)”.

6.3 Equipment Settings

This section describes the steps for setting up and installing equipment. Refer to ☞ "7 Operation", as well as instruction manuals of related products.

6.3.1 Setup Information

Have the information for the settings below prepared beforehand.

Information required	Description		References
Information about the equipment to connect	Equipment name and other equipment identification information		-
Information about the Signal Tower	Model, operation information		-
WDT-PRO and WDR common setup information	Wireless Settings	ExtendedPanID Settings	☞ 6.1.2 About Grouping and ExtendedPanID (P. 21)
		Frequency Channel Settings	☞ 6.1.1 What is the WD Wireless Network? (P. 20)
WDT-PRO setup information	Operation Settings	Format of Signal Tower Settings	☞ 8.4.2 Information Transmission Function (P. 57)
		Input Information Transmission Timing Setting	
WDB-D80S setup information	Operation Settings	RS-232C Communication Settings	☞ 8.3.1 Communication Setup Function (P. 55)
		Simple Counter Settings	☞ 8.2.5 Simple Counter Function (P. 54)
		Determine Signal Tower Input Setting	☞ 8.2.1 Determine Signal Tower Control Input Function (P. 50)
		Power Supply Settings	*1
		Determine Simultaneous Input Sensitivity Setting	☞ 8.2.3 Function to Determine Simultaneous Input of Signal Tower Control Line and External Input Line (P. 53)
		Input Information Transmission Format Setting	☞ 8.4.2 Information Transmission Function (P. 57)
		Receive Data File Format Setting	☞ 8.3.2 Receive Data Function (P. 55)
WDR setup information	Wireless Settings	Network Startup Method	*2
	LAN Communication Setting	IP Address	
		Subnet Mask	
		Default Gateway DNS Server Port Number	

* 1 For this product's settings, use [Power Supply Wire]. For information, refer to ☞ "WDS-WIN01 Instruction Manual".

* 2 For WDR setup information, refer to ☞ "WDT-4LR-Z2/WDT-5LR-Z2/WDT-6LR-Z2 Instruction Manual", "WDT-4LR-Z2/WDT-5LR-Z2/WDT-6LR-Z2/WDR- L(E)-Z2-PRO(-L) Instruction Manual".

NOTICE

- Information about settings is required not only for installing equipment, but also when adding equipment, maintaining the system, relocating, and for efficient and accurate work. Prepare the setup information before starting installation.

6.3.2 Equipment Settings

- "6.3.1 Setup Information" Use the setup information, refer to "6.3.1.Setup Information", to prepare the equipment. For system configuration when setting up equipment, refer to "5.2.2.2 WD System Configuration at Maintenance(P.16)".

Use the system configuration software WDS-WIN01 for equipment settings. Install WDS-WIN01 on the maintenance PC and set up the equipment. For using WDS-WIN01, refer to "WDS-WIN01 Instruction Manual".

- The setup procedure is as follows.

Step	Operation	References
1	Prepare required equipment and create the maintenance environment.	Refer to "WDS-WIN01 Instruction Manual"
2	Set up communication settings between WDR and maintenance PC.	Refer to "WDT-4LR-Z2/WDT-5LR-Z2/WDT-6LR-Z2 Instruction Manual"
3	Set up WDB-D80S and WDT-PRO.	Refer to "WDT-4LR-Z2/WDT-5LR-Z2/WDT-6LR-Z2/WDR-L(E)-Z2-PRO Instruction Manual"
4	Set up the WDR settings.	7.3.1 Setting up WDB-D80S, WDT-PRO Main Unit(P.41)

6.4 Equipment Installation

CAUTION

- ❗ When deciding the installation location of each device, carefully review the following procedure regarding installation location. The installation location could cause problems such as unstable operation or communication failure.
- ❗ Install devices only after equipment setup is complete.

6.4.1 WDB-D80S, WDT-PRO Installation

The installation process is as follows.

Step	Operation	References
1	Install WDB-D80S to the mounting surface.	7.1.1 Installing and Removing WDB-D80S (P.27)
2	Wire the WDB-D80S.	7.1.4 WDB-DB0S wiring (P.34)
3	Attach WDT-PRO to WDB-D80S.	7.2.1.1 Installing and Removing WDB-D80S (P.38)
4	Attach the LED and buzzer units to WDT-PRO.	7.2.1.2 Attaching the LED Unit and Buzzer Unit (P.39)

6.4.2 Checking Connections to WDR

The checking process is as follows.

Step	Operation	References
1	Check the product's wireless status. <ul style="list-style-type: none"> • Turn on this product and WDR. • Use the WDT-PRO indicator to check the wireless status. 	7.3.4 Checking Operations with WDT-PRO Indicator (P.44)
2	Check the settings for this product and WDR. <ul style="list-style-type: none"> • Use WDS-WIN01 to check the content of setup items. 	Refer to "WDS-WIN01 Instruction Manual"

7. Operation

7.1 WDB-D80S Installation

7.1.1 Installing and Removing WDB-D80S

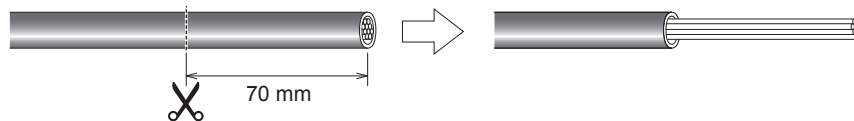
NOTICE

- Requirements for the mounting location.
 - Minimal vibration • Strong • Level
- Install this product in the upright position.
- If you need to install on an uneven surface and waterproofing is required, use a sealant in the gap between the product and mounting surface.
- For IP65 rating requirement, when clamping brackets to the mounting surface, apply sealant to the screw or nut portion and the wire distribution hole.
- When using the RS-232C cable, fix it in place so it is not subjected to bending or pulling.

About the RS-232C Cable

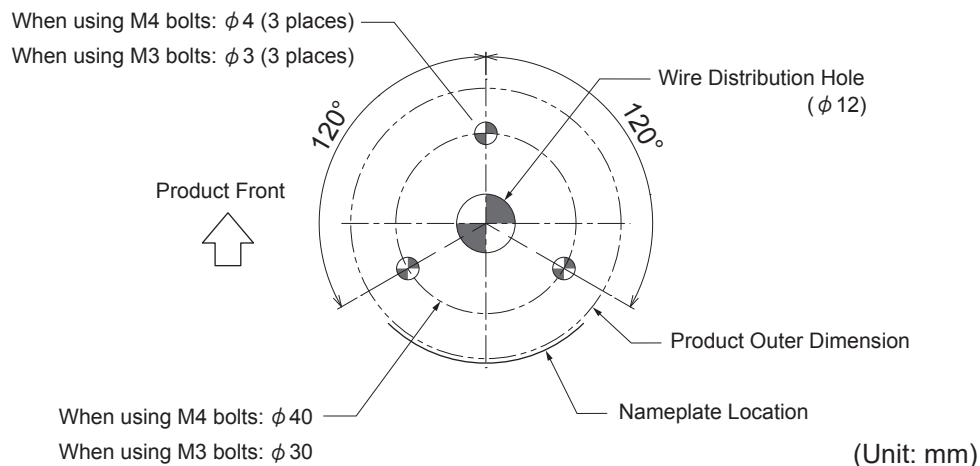
- There are two wiring methods for the RS-232C cable, "Wiring RS-232C Cable from Bottom of Main Unit" and "Wiring RS-232C Cable from Cable Gland".
- The RS-232C cable is offered as an accessory (Part number WDX-SC01) but you can use any commercially available product. Use a cable with lead wires that have a wire diameter of AWG24 to 28. When using the cable gland wiring method, use a cable with a ϕ 4.5 to 6.5 mm diameter.

*When providing your own, strip one end of the cable as shown below.



Mounting Hole Dimension Diagram

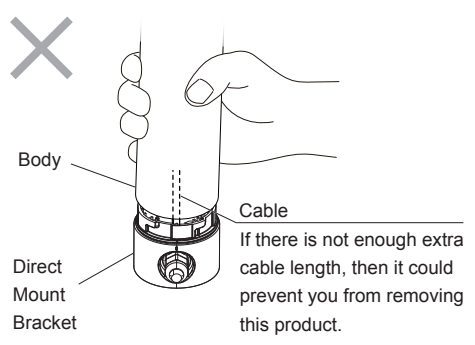
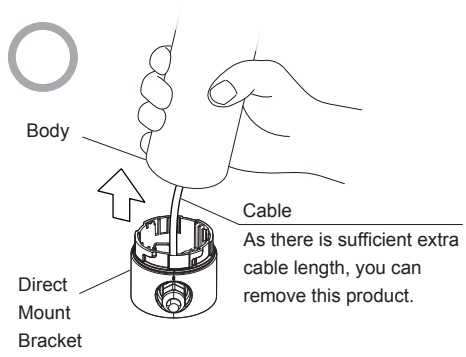
The position of the mounting holes is different between using M4 bolts and M3 bolts.



Wiring Caution

! CAUTION

! When securing the cable, secure with extra cable length. If there is not enough extra cable length, then it could prevent you from removing this product from the direct mount bracket.



7.1.1.1 Wiring RS-232C Cable from Bottom of Main Unit

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

☞ Mounting Hole Dimension Diagram (P. 27)

* When using a pole bracket and pole, drilling holes is unnecessary.

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

3 Apply the sealing plug and cap to the cable gland, and rotate the cap clockwise to attach.

* When the sealing plug pops out of the cap, use your hand to push the sealing plug back in.

Recommended Torque
0.6 N•m (approximate)

4 Use nuts to secure the direct mount bracket in the mounting position.

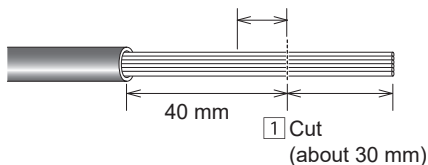
Recommended Torque
0.6 N•m (approximate)

☞ 7.1.2 Replacing Mounting Bolts (M4 → M3) on the Main Unit (P. 33)

* Do not secure when using a pole bracket and pole.

5 Cut the RS-232C cable's lead wires so 40 mm remains, then strip them.

2 Strip 6 to 7 mm



6 Pass the wires (gray or black) and RS-232C cable through the wire distribution hole.

* When using a pole bracket and pole, refer to "7.1.1.4 Wiring Method When Using Pole Bracket and Pole (Accessories)" (P.32).

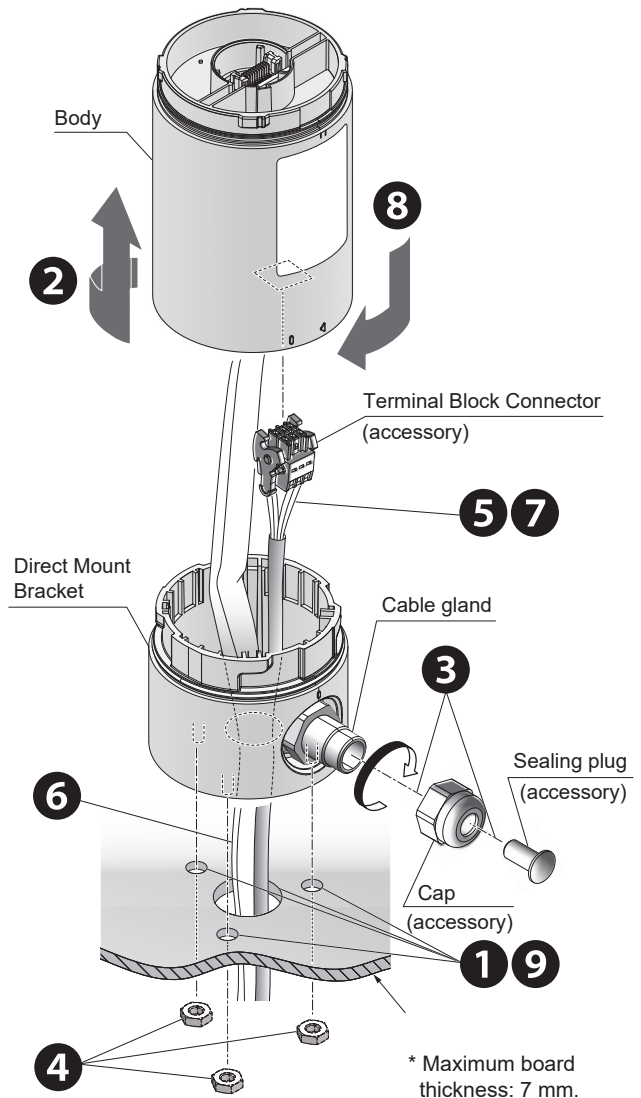
7 Wire the RS-232C cable to the terminal block connector and attach to the body.

☞ 7.1.3 Detaching the Terminal Block Connector (P. 33)

☞ 7.1.4 WDB-DBOS wiring (P. 34)

8 Attach the body to the direct mount bracket, reversing the steps for detaching.

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



* This illustration presents an overview of installation and does not reflect the installation status at each step.

* RS-232C cable is not included.

7.1.1.2 Wiring RS-232C Cable from Cable Gland

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

☞ Mounting Hole Dimension Diagram (P. 27)

* When using a pole bracket and pole, drilling holes is unnecessary.

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

3 Use nuts to secure the direct mount bracket in the mounting position.

Recommended Torque
0.6 N•m (approximate)

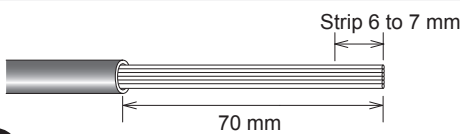
☞ 7.1.2 Replacing Mounting Bolts (M4 → M3) on the Main Unit (P. 33)

*Do not secure when using a pole bracket and pole.

4 Pass the wires (gray or black) through the wire distribution hole.

* When using a pole bracket and pole, refer to "7.1.1.4 Wiring Method When Using Pole Bracket and Pole (Accessories)" (P.32)".

5 Strip the RS-232C cable's lead wires.



6 Pass the cap through to the RS-232C cable, and push in from the cable gland.

7 Wire the RS-232C cable to the terminal block connector and attach to the body.

☞ 7.1.3 Detaching the Terminal Block Connector (P. 33)

☞ 7.1.4 WDB-DBOS wiring (P. 34)

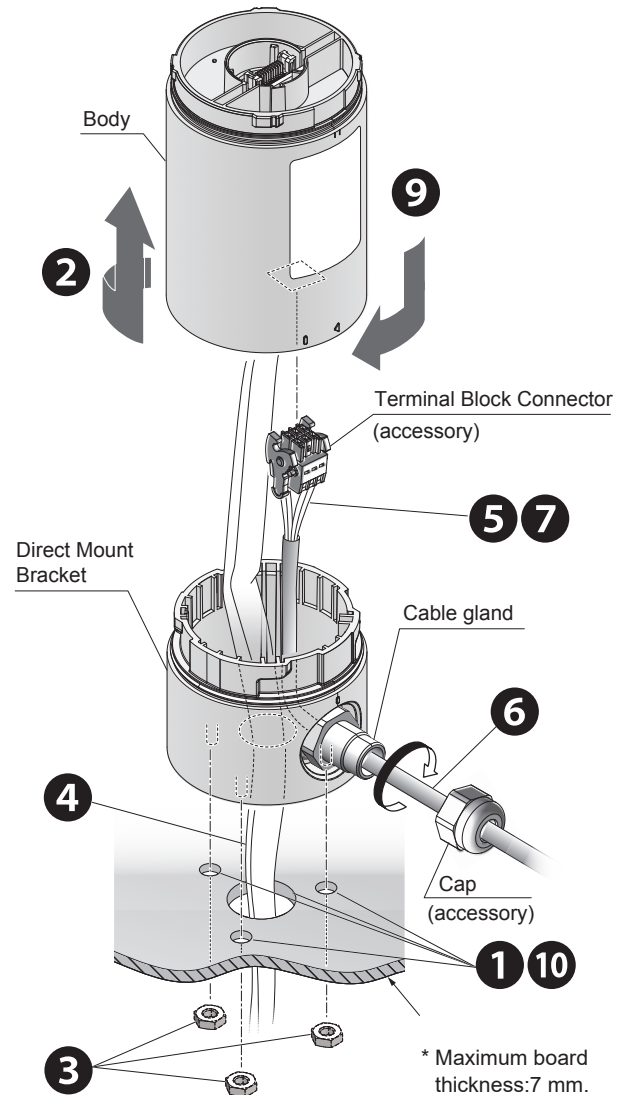
8 Tighten the cap clockwise on the insulation portion of the RS-232C cable, with 5 mm of the insulation portion protruding from the direct mount bracket.

Recommended Torque
0.6 N•m (approximate)

Caution: Attaching using any other method than that shown above may reduce waterproofing performance.

9 Attach the body to the direct mount bracket, reversing the steps for detaching.

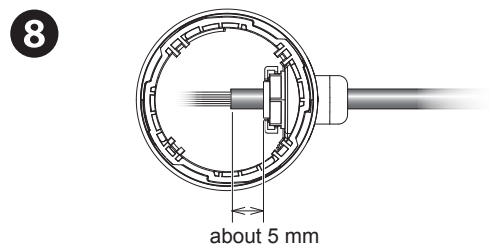
10 If required, apply sealant around the mounting and wire distribution holes.



* This illustration presents an overview of installation and does not reflect the installation status at each step.

* RS-232C cable is not included.

■ Fixed position of RS-232C sheathed cable



Caution: If the rubber bushing in the cable gland comes off, carefully re-attach to return it to its original state.

CAUTION

⚠ When using the SZK-003W wall bracket (accessory), wiring from the cable gland is not possible.

7.1.1.3 When Not Using the RS-232C Cable

1 In the mounting location, drill holes for mounting and wiring the product.
 ☞ Mounting Hole Dimension Diagram (P. 27)
 * When using a pole bracket and pole, drilling holes is unnecessary.

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

3 Apply the sealing plug and cap to the cable gland, and rotate the cap clockwise to attach.
 * When the sealing plug pops out of the cap, use your hand to push the sealing plug back in.

Recommended Torque
0.6 N•m (approximate)

4 Use nuts to secure the direct mount bracket in the mounting position.

Recommended Torque
0.6 N•m (approximate)

☞ 7.1.2 Replacing Mounting Bolts (M4 → M3) on the Main Unit (P. 33)

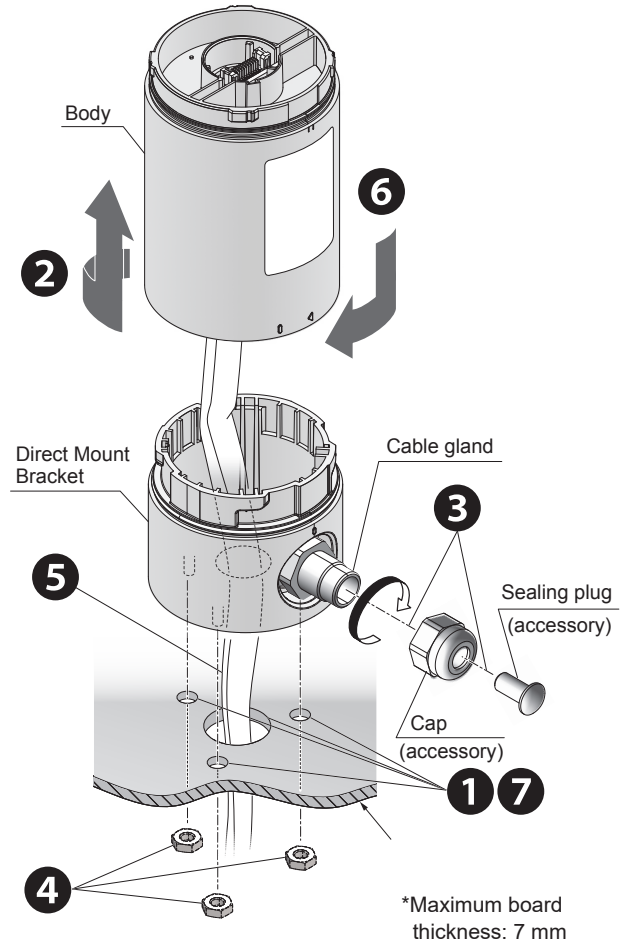
* Do not secure when using a pole bracket and pole.

5 Pass the wires (gray or black) through the wire distribution hole.

* When using a pole bracket and pole, refer to “7.1.1.4 Wiring Method When Using Pole Bracket and Pole (Accessories) (☞ P.32)”.

6 Attach the body to the direct mount bracket, reversing the steps for detaching.

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



* This illustration presents an overview of installation and does not reflect the installation status at each step.

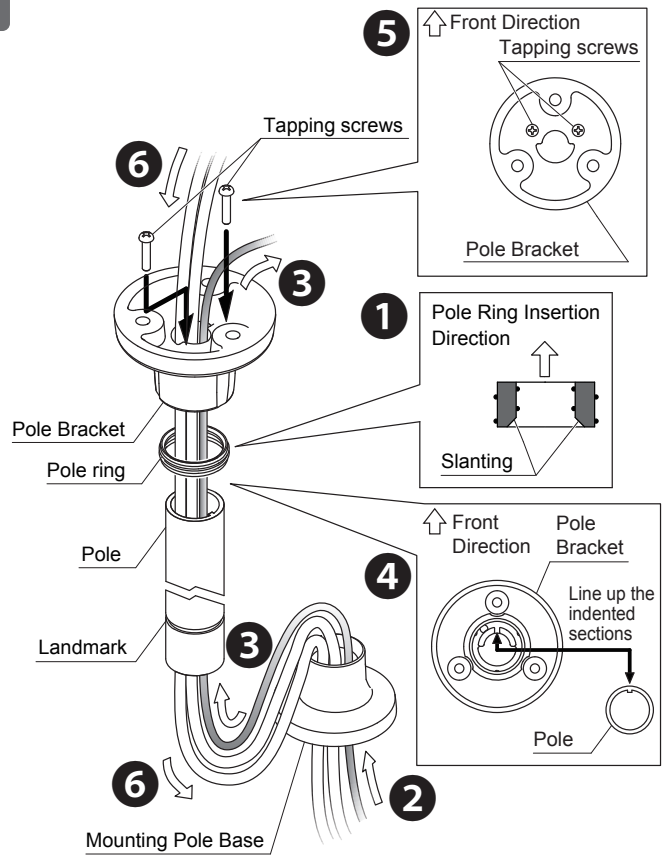
7.1.1.4 Wiring Method When Using Pole Bracket and Pole (Accessories)

Wiring RS-232C Cable from Bottom of Main Unit

- 1** Insert the pole ring into the pole bracket.
- 2** Pass the RS-232C cable below the pole mount.
- 3** Pass the RS-232C cable in from the pole marker side, and pull out the cable from the pole bracket side.
- 4** Insert the pole into the pole bracket, lining up the indentations.
- 5** In two positions, use the tapping screws to secure the pole bracket and pole.

Recommended Torque
1.4 N•m

- 6** Thread the wire (gray or black) in the pole bracket side, and pull out the wire from the pole marker side.



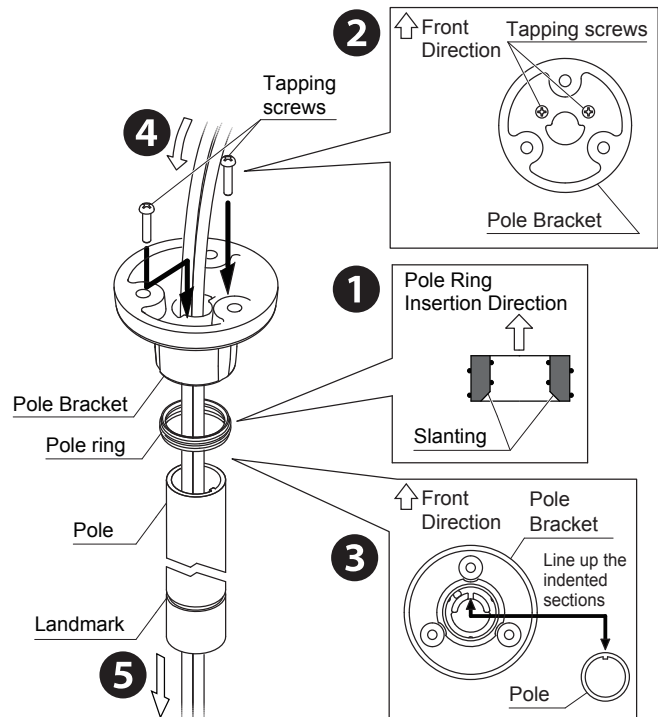
* This illustration presents an overview of installation and does not reflect the installation status at each step.

When Not Using the RS-232C Cable

- 1** Insert the pole ring into the pole bracket.
- 2** Insert the pole into the pole bracket, lining up the indentations.
- 3** In two positions, use the tapping screws to secure the pole bracket and pole.

Recommended Torque
1.4 N•m

- 4** Thread the wire (gray or black) in the pole bracket side.
- 5** Pull out the wire (gray or black) from the pole marker side.

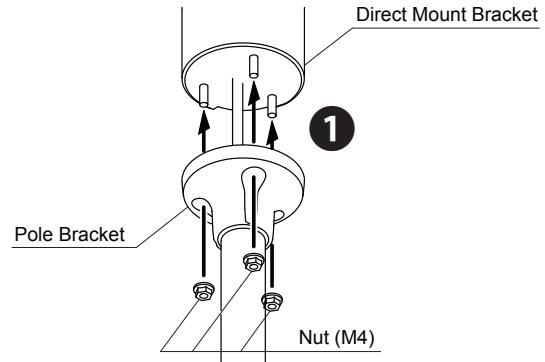


* This illustration presents an overview of installation and does not reflect the installation status at each step.

How to Attach the Pole Bracket and Direct Mount Bracket

1 Use nuts in 3 places to affix the pole bracket and direct mount bracket.

Recommended Torque
0.6N·m



7.1.2 Replacing Mounting Bolts (M4 → M3) on the Main Unit

M4 bolts are attached to the direct mount bracket by factory default. When using M3 bolts to attach this product, follow the instructions below to replace the M4 bolts with M3 bolts.

1 Remove the waterproof packing at the bottom of the direct mount bracket.

2 Detach the M4 nuts (3 locations) and M4 bolts (3 locations) with a nut driver.*

* Criteria: 7mm across, outer dimension of socket 11 mm or less

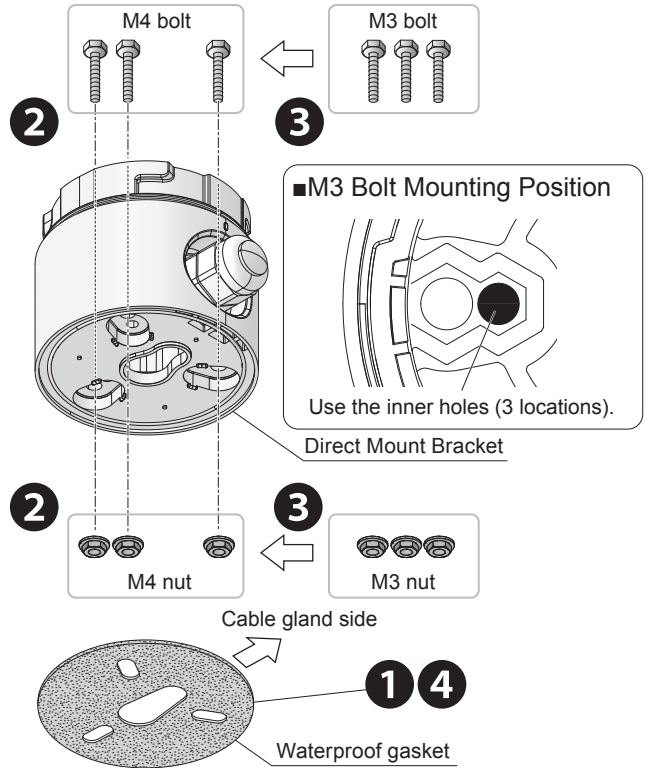
3 Detach the M3 nuts (accessory, 3 locations) and M3 bolts (accessory, 3 locations) with a nut driver.*

* Criteria: 5.5 mm across, outer dimension of socket 9 mm or less

Recommended Torque
0.6 N·m (approximate)

4 Attach the waterproof packing.

Caution: When attaching the waterproof packing, pay close attention to set the correct orientation and cause no damage. This will lower waterproofing performance. Failure to follow this instruction could result in product failure.

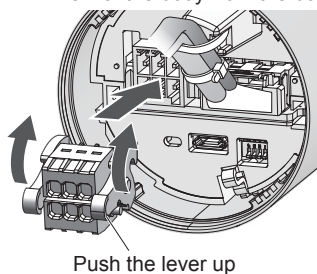


* This illustration presents an overview of installation and does not reflect the installation status at each step.

7.1.3 Detaching the Terminal Block Connector

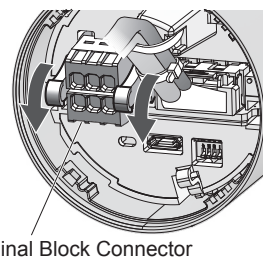
■ Attach

View of the body from the bottom



With its levers pushed up, push the terminal block connector into the body. When pushing the terminal block connector in place, the lever temporarily moves down, before it moves back up and locks in place.

■ Detach



As illustrated, lower the levers on the left and right sides of the terminal block connector to release the lock, then pull out the terminal block connector.

7.1.4 WDB-DB0S wiring

There are two types of wiring for this product, lead wiring and terminal connector wiring.

⚠ CAUTION

- ⊘ Unused lead wires do not have to be connected to external contacts. But in so doing, insulate the leads of unconnected lead wires, one by one. Failure to follow this instruction could result in a short-circuit and product damage.
- ⊘ Do not pull lead wires, or stuff them into the main body. Failure to follow this instruction will result in product failure.
- ❗ To protect external equipment, install a fuse on the power supply side.
- ❗ Be sure wiring is carried out correctly. Failure to follow these instructions could result in burning internal circuits or fire.

NOTICE

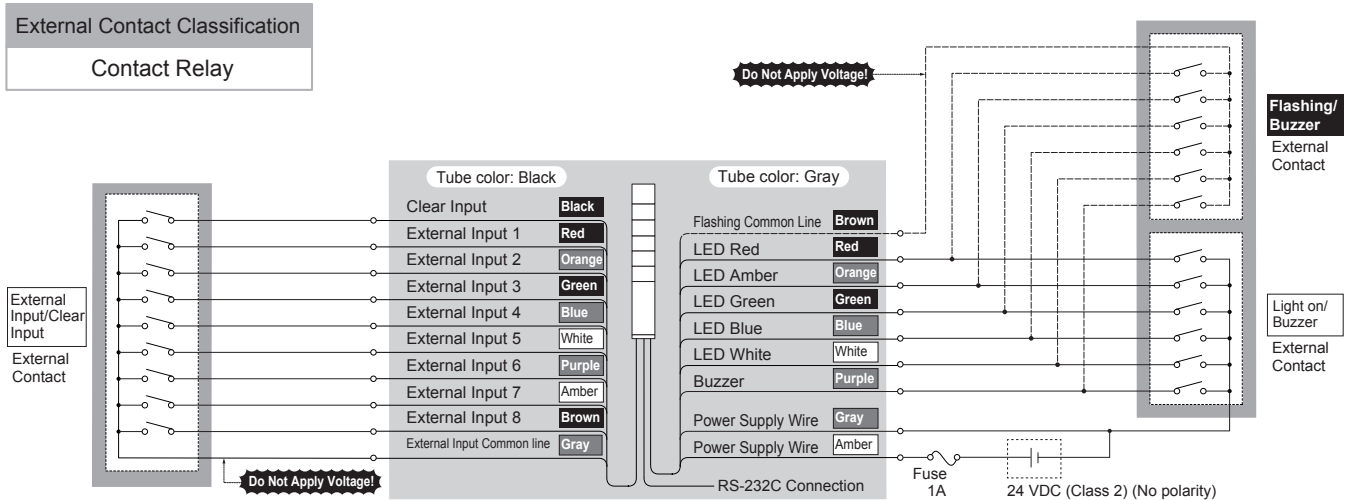
- When extending the wires, consider the voltage drop along with appropriate length and diameter of wires.
- Be sure the power is disconnected before any wiring.
- When using an external contact with a transistor, consistently use either NPN type or PNP type transistors.
- You cannot use a mix of NPN type and PNP type transistors.

7.1.4.1 Wiring When Lighting Control and External Input, and Clear Input Control are on Different Equipment

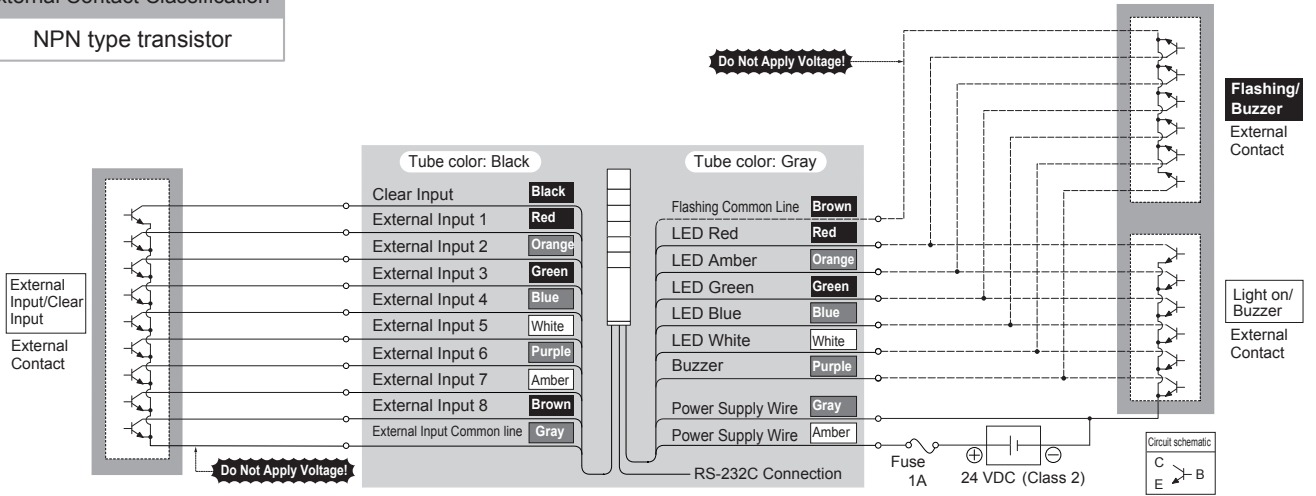
Wiring example for each type of external contact. If you have any questions about a special application for this product, please contact your nearest PATLITE sales representative.

* Wiring example for attaching LED and buzzer units.

* To both turn on the lamp and flash the lamp, you need to prepare separate external contacts for turning the lamp on and for flashing the lamp.



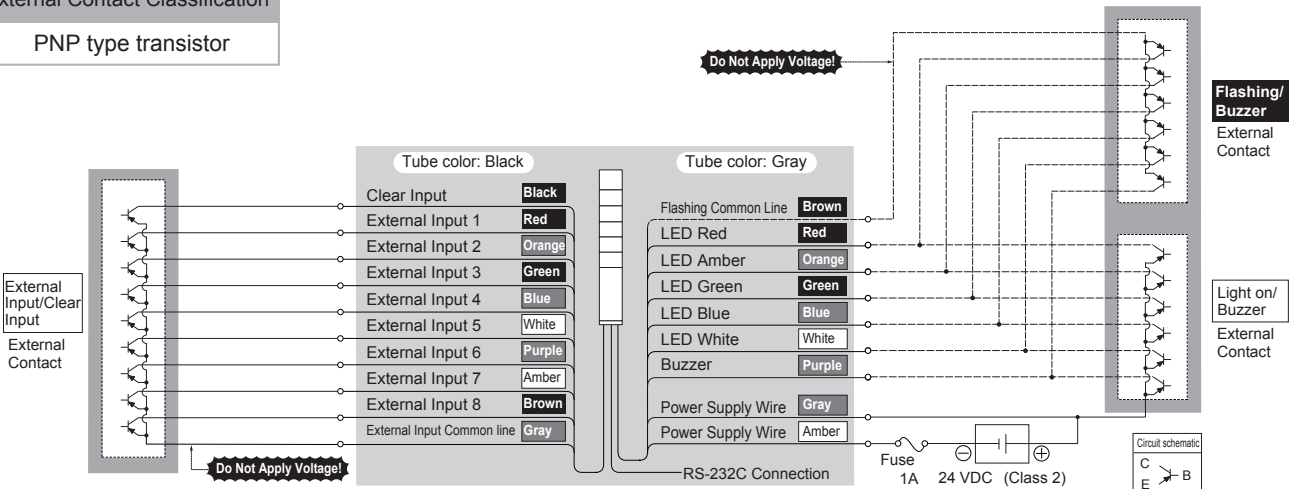
External Contact Classification
NPN type transistor



*You can replace each transistor with a contact relay.

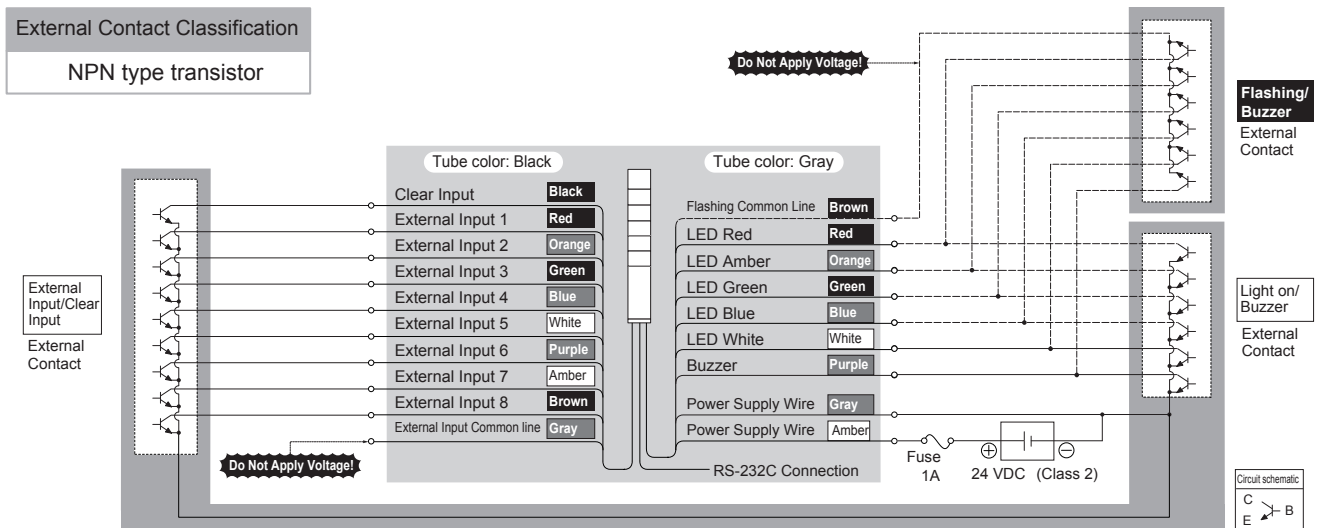
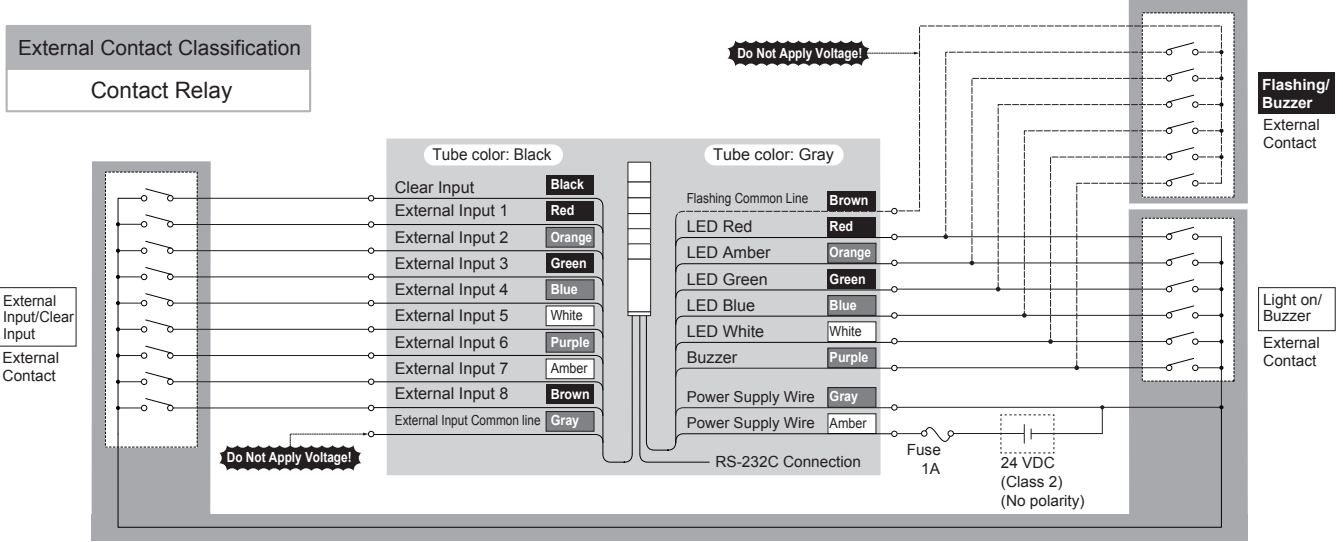
Possible to replace with a contact relay

External Contact Classification
PNP type transistor

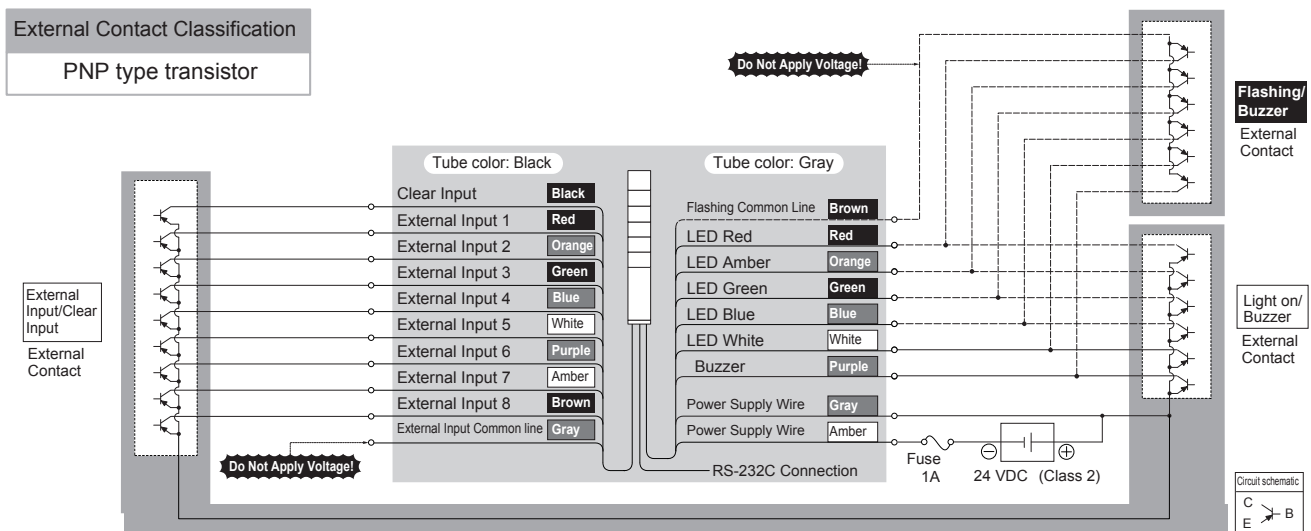


*You can replace each transistor with a contact relay.

7.1.4.2 Wiring When Lighting Control and External Input, and Clear Input Control are on Different Equipment



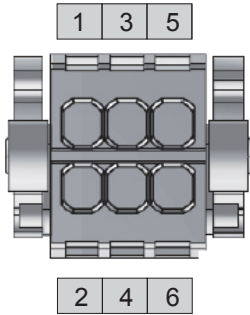
*You can replace each transistor with a contact relay.



*You can replace each transistor with a contact relay.

7.1.4.3 Terminal Block Connector (RS-232C Interface) Wiring

Terminal Block Connector Pin Arrangement

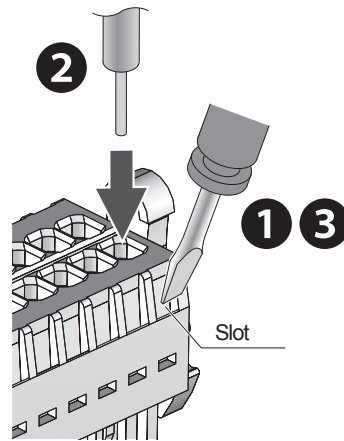


1	TXD	Transmit Data
2	RXD	Receive Data
3	RTS	Request To Send
4	CTS	Clear To Send
5	GND (SG)	Signal Ground
6	NC	Not Connected (do not use)

Terminal Block Connector Wiring

- 1** In the slot of the terminal block, insert a flat-blade screwdriver and push. (At a slight angle)
- 2** Insert the stripped lead wire* into the insertion slot.
 - * Recommended specifications for lead wires are as follows.

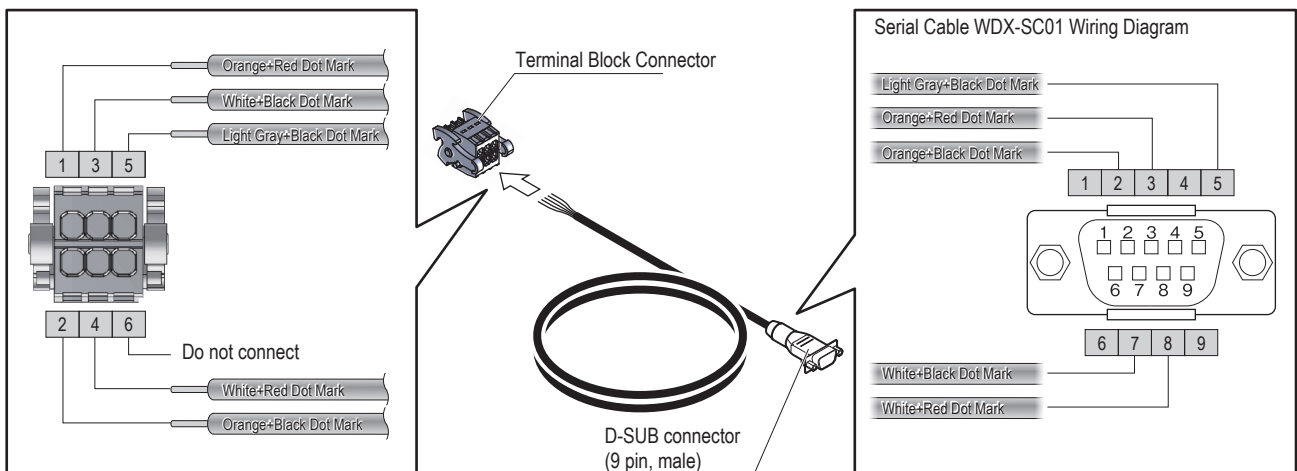
Linear (stranded wire)	AWG24 to 28
------------------------	-------------
 - Use copper wires with temperature rating of 75 °C or higher.
- 3** Pull out the screwdriver from the slot. Check if the lead wire is locked into place.



NOTICE

- Use a flat-blade screwdriver with a blade-edge width of 2.5 mm or less and thickness of 0.4 mm or less.
- Do not push the slot harder than necessary with the screwdriver. Failure to follow this instruction could result in product damage.
- Strip 6 to 7 mm of the insulation from the lead wire.
- When removing the lead wire, do not simply pull the wire to remove it. Make sure you first push the slot down with a flat-blade screwdriver to release the lock.

Wiring When Using WDX-SC01 Serial Cable (accessory)



7.2 WDT-PRO Installation

7.2.1 Installing and Removing WDT-PRO

When installing or removing WDT-PRO, follow the instructions below to attach and detach parts (such as the LED unit and buzzer unit) from the LR Signal Tower.

WARNING

- ❗ Before any work is done, disconnect the power.

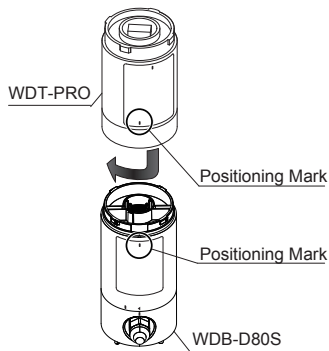
CAUTION

- ❗ Attach the WDT-PRO directly on top of WDB-D80S. Other units cannot be connected.
- ❗ The maximum number of attachments per Signal Tower is five LED units + one buzzer unit. Do not attach units beyond that.
- ❗ Do not apply excessive force to units. Failure to follow this instruction could result in product damage.
- ❗ Do not touch the connectors on the units or the LED in LED units. Failure to follow this instruction could result in product damage.
- ❗ Securely lock each unit when attaching. Failure to secure units could result in product damage.

7.2.1.1 Installing and Removing WDB-D80S

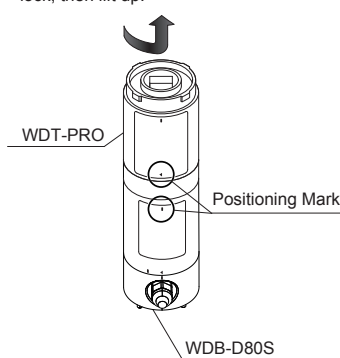
■ Attach

Align WDT-PRO with the positioning mark on the WDB-D80S and turn clockwise to lock.



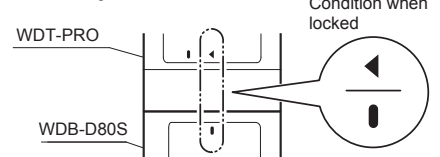
■ Detach

While holding the WDB-D80S, turn WDT-PRO counterclockwise to release the lock, then lift up.

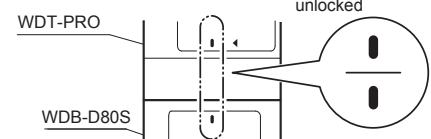


■ How to Read the Positioning Mark

[When Locked]



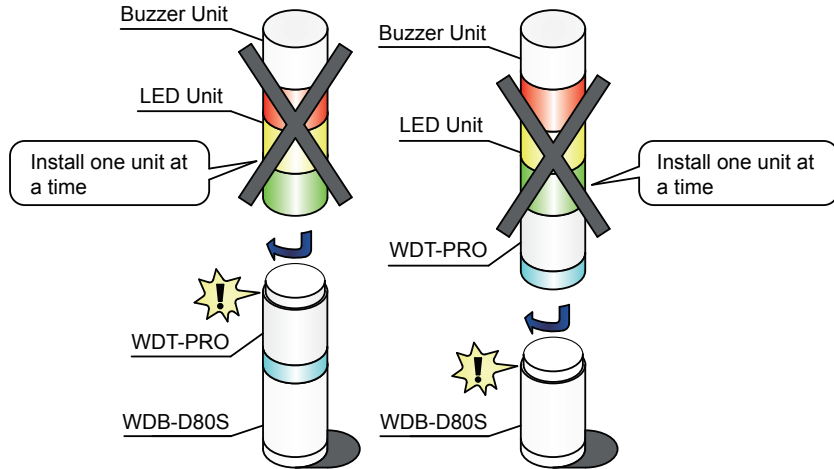
[When Unlocked]



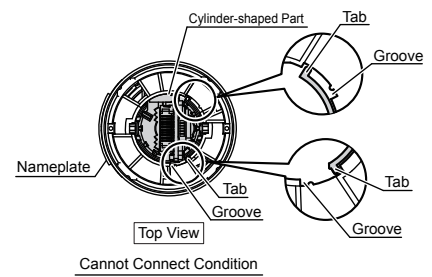
7.2.1.2 Attaching the LED Unit and Buzzer Unit

CAUTION

❗ Attach or detach units one at a time.

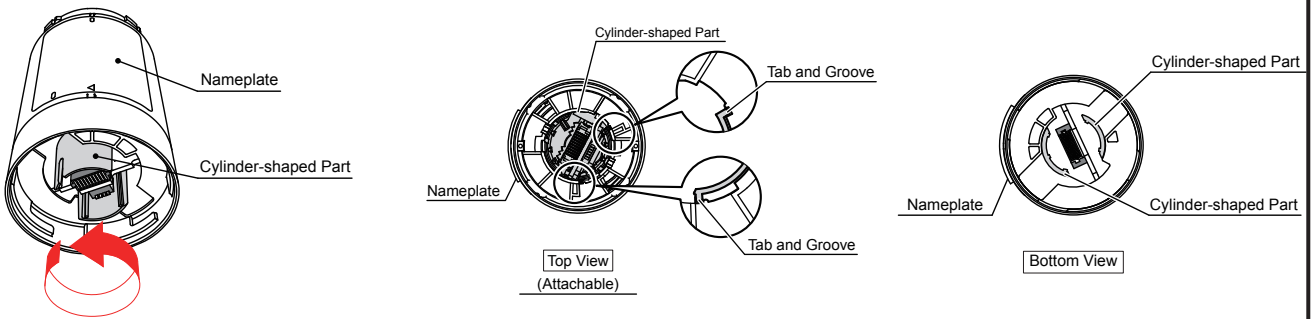


⚠ If WDT-PRO does not attach properly to WDB-D80S, confirm the tab of the cylinder-shaped part at the top of WDT-PRO is fitted correctly into the groove. If the tab is outside the groove as shown in the figure (right), refer to the figure below on how to reposition it. Additionally, depending on how it is detached, the tab may come out of the groove as shown in the figure (right) when detaching the WDT-PRO from WDB-D80S. Attaching while the tab is still in this state may cause damage.



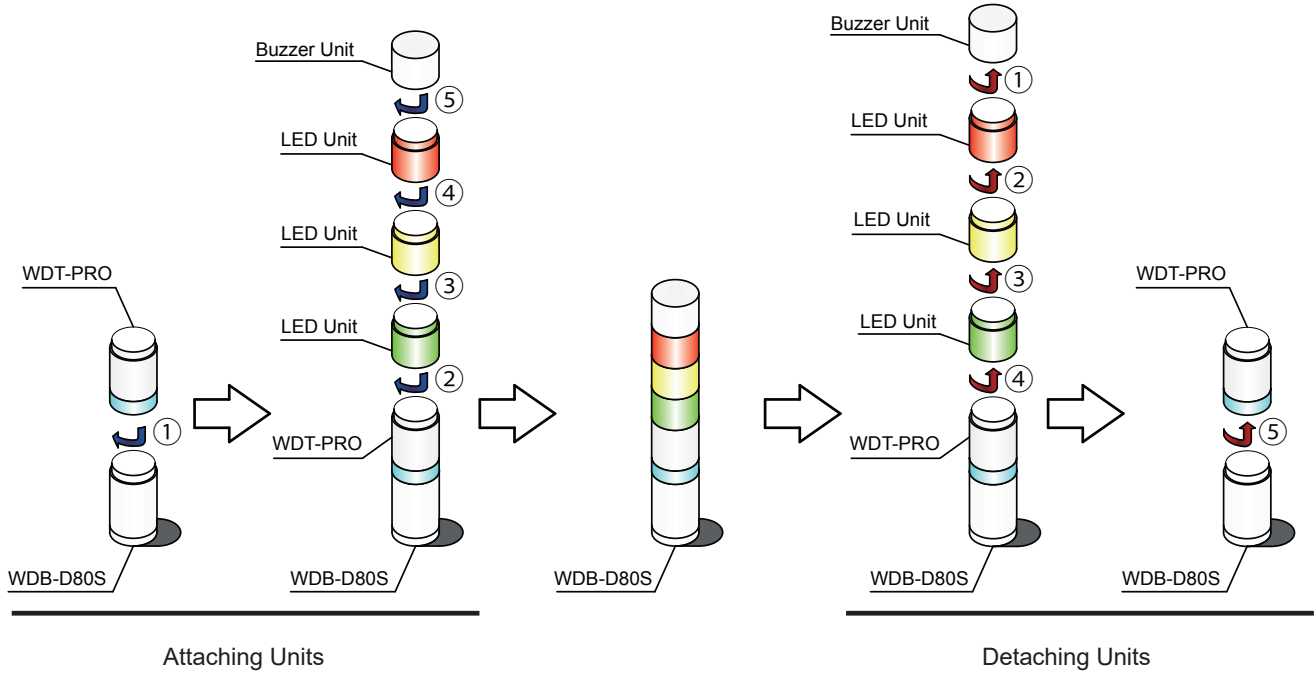
NOTICE

● If WDT-PRO does not attach properly to WDB-D80S, turn the cylinder-shaped part in the middle of the bottom surface counterclockwise. Next, turn the cylinder-shaped part until it snaps into place, then attach it to WDB-D80S.



Order of Attaching/Detaching Units


Attach and detach units in the following order.



7.3 Using WDB-D80S, WDT-PRO










7.3.1 Setting up WDB-D80S, WDT-PRO Main Unit

7.3.1.1 Setting up the Main Unit

- WDS-WIN01 configuration software is required. Download the software from our website. Install the software on the computer that will be used to set up and configure the system. (Member registration is required for downloading from the home page.)
- For information about usage and setup, refer to  "WDS-WIN01 Instruction Manual".

7.3.1.2 Setup Items

Setup items are as follows.

Setup Item		WDS-WIN01 Setup Items	Default Value	Save Destination*2	References	
Wireless Settings	ExtendedPanID Settings	ExtendedPanID	0000 0000 0000 0000	WDT-PRO	 6.1.2 About Grouping and ExtendedPanID (P. 21)	
	Frequency Channel Settings	Frequency Channel	Select all		 6.1.1 What is the WD Wireless Network? (P. 20)	
Operation Settings	Format of Signal Tower Settings	Format of Signal Tower	Standard	WDT-PRO	 8.4.2 Information Transmission Function (P. 57)	
	Input Information Transmission Timing Setting	Transmission mode	On change			
	Periodic Transmission	Periodic Transmission	None			
	RS-232C Communication Settings		-	-	WDB-D80S	 8.3.1 Communication Setup Function (P. 55)
		Baud rate	Baud rate	9600		
		Data Length	Data Length	8		
		Parity	Parity	None		
	Stop Bit	Stop Bit	1			
	Simple Counter Settings	Counter Settings	Do not use	 8.2.5 Simple Counter Function (P. 54)		
	Determine Signal Tower Input Setting	Determine Signal Tower Input	Flashing (medium)	 8.2.1 Determine Signal Tower Control Input Function (P. 50)		
	Power Supply Settings	Power Supply Settings	Power Supply Wire	*1		
	Determine Simultaneous Input Sensitivity Setting	Determine Simultaneous Input Sensitivity Setting	High sensitivity	 8.2.3 Function to Determine Simultaneous Input of Signal Tower Control Line and External Input Line (P. 53)		
Input Information Transmission Format Setting	Input Information Transmission Method	WDT-LR Format	 8.4.2 Information Transmission Function (P. 57)			
Receive Data File Format Setting	Receive Data File Format	Direct Communication Format	 8.3.2 Receive Data Function (P. 55)			

* 1 For this product's settings, select [Power Supply Wire]. For information, refer to  "WDS-WIN01 Instruction Manual".

* 2 Save destination is different for each setting.

7.3.1.3 Required Equipment

- For system configuration when setting up equipment, refer to "5.2.2.2 WD System Configuration at Maintenance(P.16)". Use the system configuration software WDS-WIN01 for equipment settings.
- Install WDS-WIN01 on the maintenance PC and set up the equipment. For information about using WDS-WIN01, refer to "WDS-WIN01 Instruction Manual".
- The setup procedure is as follows.

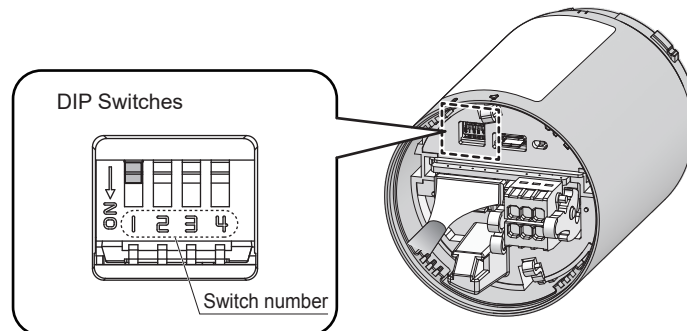
Step	Operation	References
1	Prepare required equipment and create the maintenance environment.	Refer to "WDS-WIN01 Instruction Manual"
2	Set up communication settings between WDR and maintenance PC.	Refer to "WDT-4LR-Z2/WDT-5LR-Z2/WDT-6LR-Z2 Instruction"
3	Set up the WDT-PRO and WDB-D80S settings.	Refer to "WDT-4LR-Z2/WDT-5LR-Z2/WDT-6LR-Z2/WDR-L(E)-Z2-PRO Instruction Manual"
4	Set up the WDR settings.	7.3.1 Setting up WDB-D80S, WDT-PRO Main Unit(P. 41)

7.3.2 WDB-D80S DIP Switch Operations

CAUTION

- Do not use excessive force on this product. Failure to follow this instruction could result in deformed frame and product damage.
- Do not use sharp tipped objects with this product. Operation may become impossible as scratches develop on switches and switch contacts are interfered with.
- Do not set ON switches 2 to 4.

The product's DIP switches are located where you detach the direct mount bracket from the WDB-D80S.

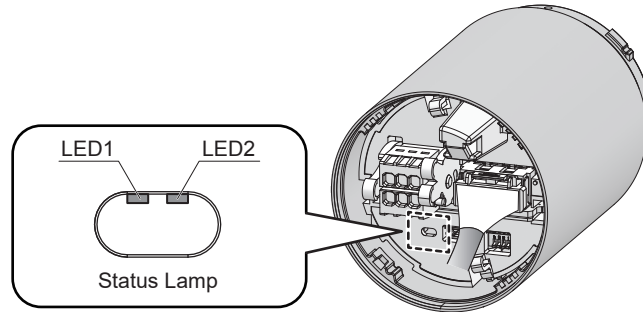


•DIP Switch Settings

Switch number	Description	Initial Settings
1	Initialize setting values <ul style="list-style-type: none"> OFF: Normally use with this setting OFF. ON: Initializes the value for various settings. 	OFF
2	OFF (static) * Do not change.	OFF
3	OFF (static) * Do not change.	OFF
4	OFF (static) * Do not change.	OFF

7.3.3 Checking the WDB-D80S Status Lamp

The product's status lamp is located where you detach the direct mount bracket from the WDB-D80S.



●Status Lamp States

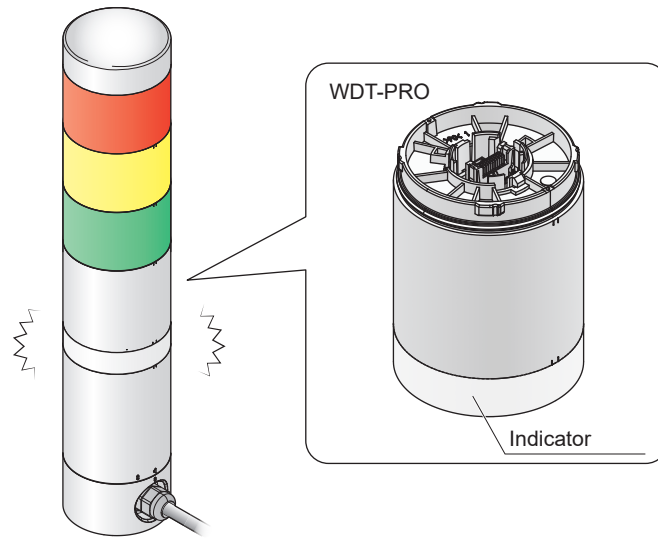
State*	LED1	LED2	Status
Normal Status	Green light on	Light off	Operating in normal mode.
	Red light on	Green light on	Operating in initialization mode.
Error Status	Flashing green	-	WDB-D80S DIP switches set up incorrectly.
	Alternating Red→Green→Red→Green	Alternating Red→Green→Red→Green	
	Light off	Green light on	
	Light off	Flashing red	Error has occurred in WDB-D80S.
	Green light on	Flashing red	Error has occurred in WDT-PRO.

* Operation modes shown by the status lamp are [Normal Status] and [Error Status].

* When the status lamp lights indicate an error status, refer to "9.1 Troubleshooting(P.60)".

7.3.4 Checking Operations with WDT-PRO Indicator

Check this product's indicator on the WDT-PRO main unit.



●Indicator Light Status

Status	Indicator Light	Status
Display Quality of Wireless Communication	Green pulse* ¹	Indicates a good status. This status indicates the product can communicate directly with the WDR without relying on other WDT. (If the WDT and WDR are close together (within tens of centimeters), WDT may display a red pulse. For an accurate display, use units with a separation of about 1 m.)
	Amber pulse* ¹	Direct wireless connection with the WDR is not good, but the connection with nearby WDT is good. If nearby WDT have a green pulse, that WDT is used as a repeater for communication.
	Red pulse* ¹	Connection is not good with any WDR or WDT in the WD wireless network.
	Red light on	Product is waiting to join the WD Network.
Operation Status	Flashing blue	When the WDT-PRO receives a specific command from the host, flashes blue for approximately 10 seconds.
	Light blue light on	When WDB-D80S receives data from external equipment via RS-232C communication, indicator is light blue for about 2 seconds.
	Flashing light blue* ²	When WDT-PRO completes transmission of data received via RS-232C communication to the host, indicator flashes light blue for about 2 seconds.
	Alternating Red→Green→Red→Green	Operating in initialization mode.
Error Status* ³	Flashing red	WDB-D80S DIP switches set up incorrectly or error has occurred in WDT-PRO.
	Flashing amber	Error has occurred in the connected base unit.
	Purple light on	WDB-D80S DIP switches set up incorrectly.

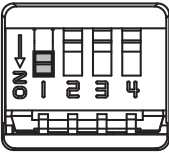
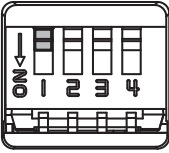
* 1 Pulse is where the lamp fades between bright and dark repeatedly.

* 2 Flashes light blue only when the input information transmission timing is set to [On change]. ("8.4.2 Information Transmission Function(☞ P.57)")

* 3 When the indicator light shows an error status, refer to "9.1 Troubleshooting(☞ P.60)".

7.3.5 Initializing WDB-D80S, WDT-PRO

The initialization procedure is as follows.




Step	Operation
1	Set WDB-D80S DIP switch 1 ON. 
2	Turn ON the power supply. After a few seconds, the WDT-PRO indicator alternates Red→Green→Red→Green... Status lamps on the WDB-D80S, LED1 is red and LED2 is green.
3	Turn OFF the power supply.
4	Set WDB-D80S DIP switch 1 OFF. 
5	Initialization is complete.

* For the list of settings that are initialized, refer to "7.3.1 Setting up WDB-D80S, WDT-PRO Main Unit(P.41)".

7.3.6 Differences with WDT-LR Setup Items

There are some differences in the setup items and setup methods between this product (WDB-D80S, WDT-PRO) and WDT-LR.

For WDT-LR setup information, refer to  "WDT-4LR-Z2/WDT-5LR-Z2/WDT-6LR-Z2 Instruction Manual".

Item	Description	Setup Item / Setup Method		References
		WDT-4LR-Z2 WDT-5LR-Z2/WDT-6LR-Z2	This Product (WDB-D80S, WDT-PRO)	
Simple Counter	Specify Signal Tower control line to count	<ul style="list-style-type: none"> Use WDS-WIN01 to select a Signal Tower control line. With the Main Unit DIP switches you can select the blue signal line. 	<ul style="list-style-type: none"> Use WDS-WIN01 to select a Signal Tower control line. There is no function with the product DIP switches to select the blue signal line. 	 8.2.5 Simple Counter Function (P. 54)
Transmit Information	Select format of Signal Tower information	Using the Main Unit DIP switches, you can select either Standard Format or Extended Format.	In WDS-WIN01, when using WDT-LR Format, you can select either [Standard Format] or [Extended Format].	 8.4.2 Information Transmission Function (P. 57)
Transmit Information	Periodic Transmission Setting	Using the Main Unit DIP switches * you can select one of the following items. <ul style="list-style-type: none"> No Yes 	Using the Main Unit DIP switches you can select one of the following items. <ul style="list-style-type: none"> No Unit Information Input Information/Signal Tower Information (compatible with WDT-LR Periodic Transmission [ON]) 	 8.4.2 Information Transmission Function (P. 57)
	Input Information Transmission Format Setting	This function is not available. Same as setting this product (WDB-D80S, WDT-PRO) to [WDT-LR Format].	Using WDS-WIN01 you can select one of the following items. <ul style="list-style-type: none"> WDT-LR Format WDT-PRO Format 	

*Unit information cannot be selected with WDT-LR DIP switches.

8. Function Details

8.1 LED Unit and Buzzer Unit Control Functions

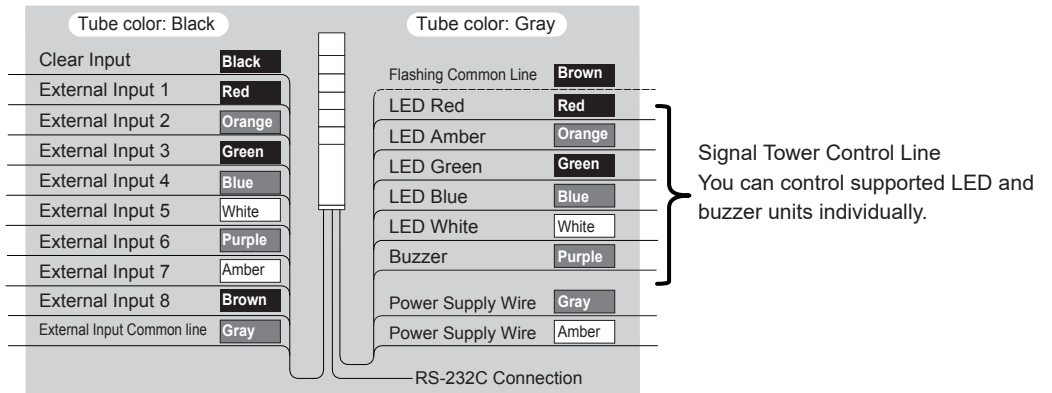
8.1.1. Signal Tower Control Functions

Functions that control LED or buzzer units with the Signal Tower control line. For wiring methods, refer to “7.1.4 WDB-DB0S wiring(P.34)”.

LED unit control	Light on/Flashing (control with flashing common line* ¹) / Light off
Buzzer unit control	Buzzer on/Continuous* ² (control with flashing common line* ¹) / Buzzer off

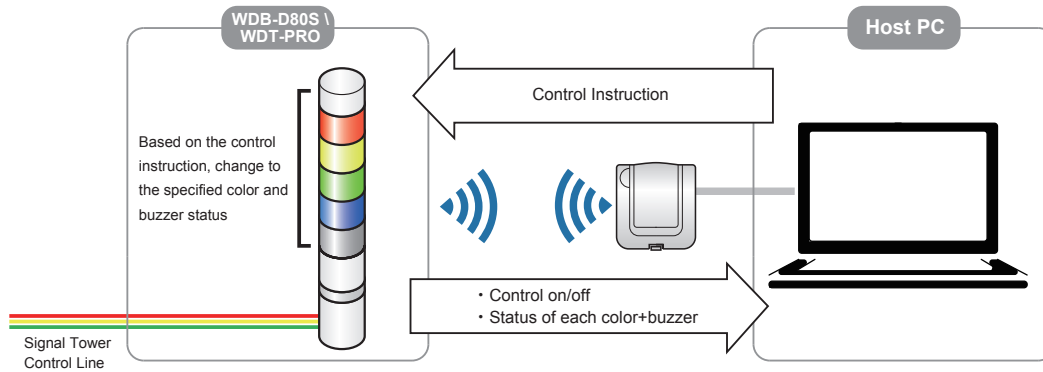
* 1 Repeatedly 500ms light on / 500 ms light off.

* 2 When using the flashing common line to control the buzzer unit, set the buzzer pattern to [Continuous beep].



8.1.2 Remote Control Functions

Remote Control Functions*² uses specific commands from the host to perform remote control of LED or buzzer units. Control is possible when receiving specific commands from the host. These functions operate with a higher priority than Signal Tower Control Functions.



LED unit control	Control the following states individually for each color. Light on/Flashing/Light off/Triple flash* ¹ /control from Signal Tower control line
Buzzer unit control	Buzzer on/Continuous* ³ /Buzzer off/control from Signal Tower control line
Control Status Response	When a specific command is received from the host, response command that includes the status of the LED unit or buzzer unit that is under remote control.

* 1 Triple flash does not work on LR6-E-MZ.

* 2 Cannot use with WDS-WIN01.

* 3 When using continuous buzzer to control the buzzer unit, set the buzzer pattern to [Continuous beep].

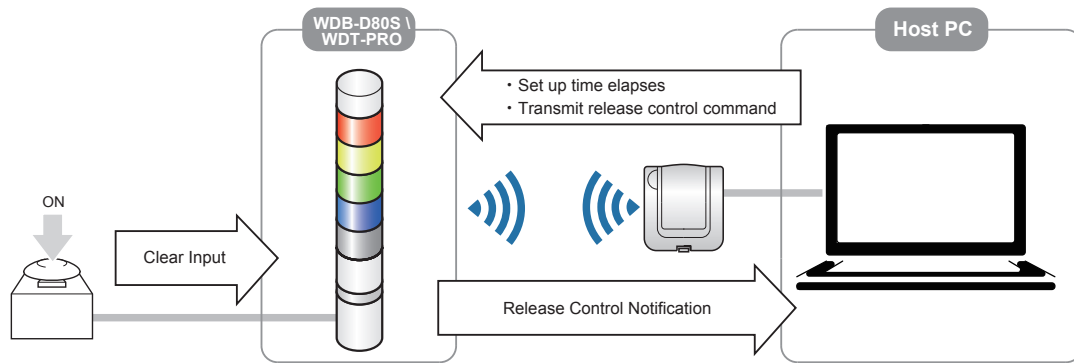
NOTICE

- The operation status of LED and buzzer units, controlled with remote control functions from the host, is not transmitted back to the host as Signal Tower information as the control is not carried out by Signal Tower control inputs.
- While LED and buzzer units are controlled with remote control functions from the host, and inputs change on the Signal Tower control line, that Signal Tower information is transmitted to the host.

8.1.3 Release Remote Control Function

Function that enables operation transition from "8.1.2 Remote Control Function" to "8.1.1 Signal Tower Control Function". Run this function using one of the following methods.

No.	Operation	Result
1	Set the clear input line from OFF to ON.	The remote control function is released, and a release control notification is transmitted to the host.
2	When the command is started (refer to "8.1.2 Remote Control Functions") specify the enable control time. Remote control is released after the enable control time elapses from when control started.	
3	Remote control is released after a specific command is received from the host. And when release remote control is run, a specific command is transmitted to the host notifying it no longer has control.	



8.2 Contact Input Line Functions

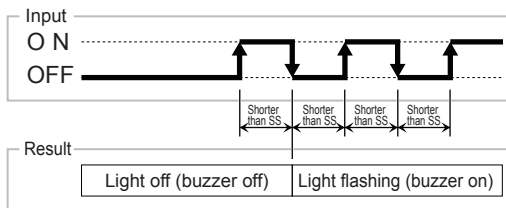
8.2.1 Determine Signal Tower Control Input Function

There are two types for determining Signal Tower control line inputs, [Normal] and [Flashing]. Select the setting in WDS-WIN01. If there is no flashing state to get, use [Normal].

Setting* ¹	Determination	Description
Normal	Light on	When the Signal Tower control line input status changes OFF→ON, the result is "light on" and the information is transmitted.
	Light off	When the Signal Tower control line input status changes ON→OFF, the result is "light off" and the information is transmitted.
Flashing Determination* ² * ³	Flashing	When the Signal Tower control line input status repeatedly alternates ON→OFF→ON→OFF..., the result is "flashing" and the information is transmitted. Select from the following 3 determination speeds in WDS-WIN01. • Flashing (short) • Flashing (medium) • Flashing (long)
	Light on	When the Signal Tower control line input status changes OFF→ON, the result is "light on" and the information is transmitted.
	Light off	When the Signal Tower control line input status changes ON→OFF, the result is "light off" and the information is transmitted.

* 1 The default setting is [Flashing (medium)].

* 2 Flashing is determined when there are two status changes within a defined period. This period is called "SS seconds". You can select "SS seconds" from three different time periods.



- Flashing (short): SS seconds = 0.7 seconds
- Flashing (medium): SS seconds = 1.5 seconds
- Flashing (long): SS seconds = 2.5 seconds

* 3 There is not [Flashing] status in the buzzer signal. When determined as flashing, the buzzer on information is transmitted.

• The status and determination operations are as follows. Information in brackets "()" represent buzzer operation.

Setting	Determination	Description	
		Change in state	Operation result
Normal	Light on	Light off → light on	
	Light off	Light on → light off	

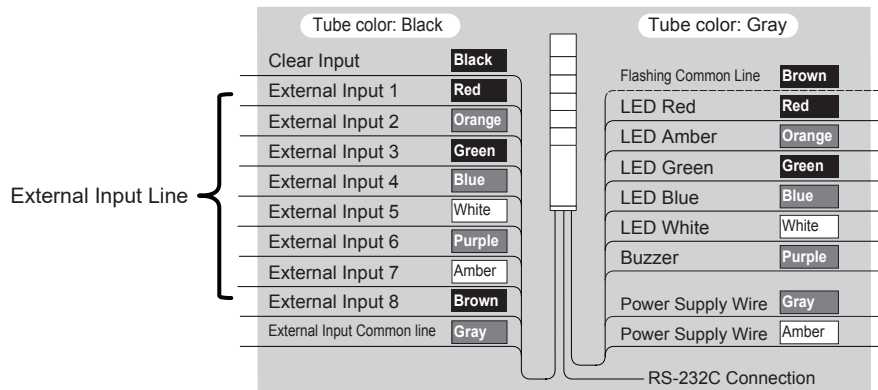
Setting	Determination	Description	
		Change in state	Operation result
Flashing Determination	Flashing	Light off → flashing	
		Light on → flashing	
	Light on	Light off → light on	
		Flashing → Light on	
	Light off	Light on → light off	
		Flashing → light off	

CAUTION

❗ Input a signal based on the above timing for the determination operation. Determination may not be possible using any other timing than the above determination operation.

8.2.2 Determine External Input Line Function

On detecting a change in state in one of the 8 external input lines, this function determines the input status.



Even though external input lines cannot be determined as "flashing", the timing for determination differs depending on the setting of Determine Signal Tower Control Line Input. The determination operation for each setting is as follows.

Setting	Description	
	Change in state	Operation result
Normal	External Input 1 OFF→ON	
	External Input 1 ON→OFF	
Flashing Determination	External Input 1 OFF→ON	
	External Input 1 ON→OFF	

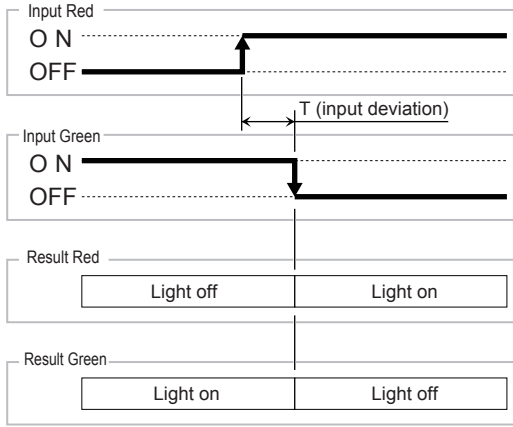
* "SS" refers to the determine flashing period as used in "8.2.1 Determine Signal Tower Control Input Function(P.50)".

⚠ CAUTION

⚠ Input a signal based on the above timing for the determination operation. Determination may not be possible using any other timing than the above determination operation.

8.2.3 Function to Determine Simultaneous Input of Signal Tower Control Line and External Input Line

When multiple changes in Signal Tower control lines and external input lines occur at the same time, use this function to adjust the period for determining simultaneous input. Select from 3 levels of adjustment [High sensitivity], [Medium sensitivity], and [Low sensitivity].



Result*	T
High sensitivity	up to 20ms
Medium sensitivity	up to 40ms
Low sensitivity	up to 60 ms

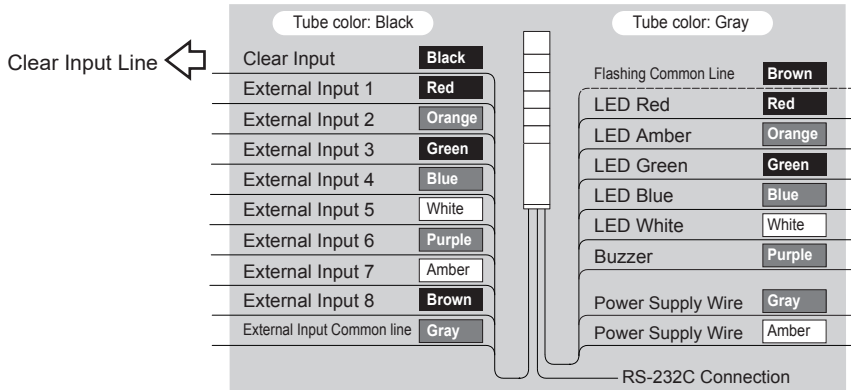
* The default setting is [High sensitivity].

⚠ CAUTION

⚠ When state changes of multiple inputs are not determined to be simultaneous, make adjustments with this function. Even after adjustments, if simultaneous input does not occur, adjust by making a change in the actual input.

8.2.4 Determine Clear Input Line Function

- On detecting a change in state in the clear input line, this function determines the input status. Use with "8.1.3 Release Remote Control Function(P.49)".



- The determine clear input operation occurs when the clear input line changes from OFF to ON.

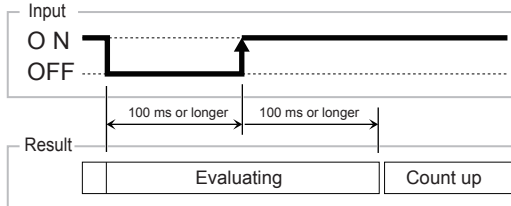
⚠ CAUTION

⚠ Maintain each of the clear input line's OFF and ON states for 100 ms or longer. It is difficult to determine state changes when they occur faster than 100 ms.

* The timing for clear input line determination does not change, regardless of the setting of Determine Signal Tower Control Line Input.

8.2.5 Simple Counter Function

- Count up the number of pulse inputs (increment 1 at a time) on a single Signal Tower control line and store the accumulated value (counter value) on WDT-PRO.
- At startup the counter value is 0 (initial value).
- The value range of the counter is 0 to 4,294,967,295.
- Pulse inputs are determined using the following criteria.



NOTICE

- When counting up exceeds the upper limit, the counter value returns to 1.
- When the power is shut down, the counter value is cleared to 0.
- In WDS-WIN01, you can reset the counter value to 0 (initial value).
- Regardless of changes in states, the Signal Tower information in the counter settings is not transmitted. The Signal Tower information is treated as if the light is off and buzzer is off.

* Use WDS-WIN01 to select the Signal Tower control line for a simple counter.

* The default setting for the simple counter is [Do not setup].

8.3 RS-232C Communication Functions

Function for transmitting and receiving data between external equipment and the RS-232C interface.

8.3.1 Communication Setup Function

Sets up RS-232C communication. Parameters you can set are as follows.

Item*	Setup Value	Initial Settings
Baud rate	4800/9600/19200/38400/57600/115200 bps	9600 bps
Data Length	7 bits/8 bits	8 bits
Parity	None/Even/Odd	None
Stop Bit	1 bit/2 bits	1 bit

* Select the settings in WDS-WIN01.

8.3.2 Receive Data Function

- Following the data file format settings, this product receives data via RS-232C communication. You can select supported file formats from 3 types*¹.
- Maximum receive data size is 60 bytes. Only the first 60 bytes are received when the data size exceeds 60 bytes. When the receive data size is greater than 30 bytes, the data is divided into 2 and transmitted to the host.

●Receive Data File Format

Direct Communication Format* ²	Data received from RS-232C devices is transmitted directly to WDR.
Bar Code Reader (Denso Wave) Communication Format* ³	Receive format compliant with Denso Wave [models AT20B-SM(R) and AT21B-SM(R)]. With this format, the header code, terminator code, and BCC are deleted from the received data and transmitted to WDR.
Bar Code Reader (generic) Communication Format* ³	Communication format for other bar code readers. With this format, the header code and terminator code are deleted from the received data and transmitted to WDR.

* 1 Select the setting in WDS-WIN01.

* 2 The default setting is [Direct Communication Format].

* 3 When using the bar code reader communication format, set up bar code readers as follows. The following is a set up example with a Denso Wave bar code reader.

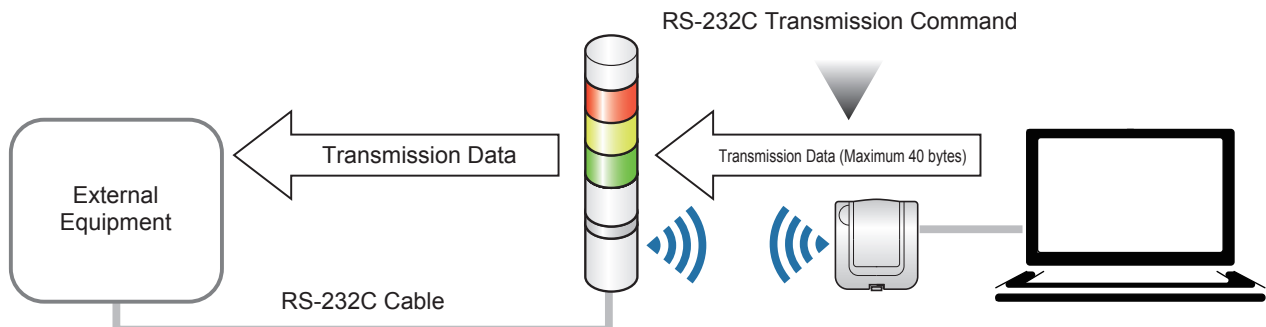
Communication method	Header	Terminator	BCC Transfer
Bar Code Reader (Denso Wave) Communication Format	STX	CR	Allow Transfer
Bar Code Reader (generic) Communication Format	STX	CR	Prevent Transfer

CAUTION

- Do not use this product in applications where data is continuously transmitted. This product does not respond (such as ACK) to transmissions sent to the host.
- Use with sufficient spacing between data transmissions. (Approximately once every 5 seconds)

8.3.3 Data Transmission Function

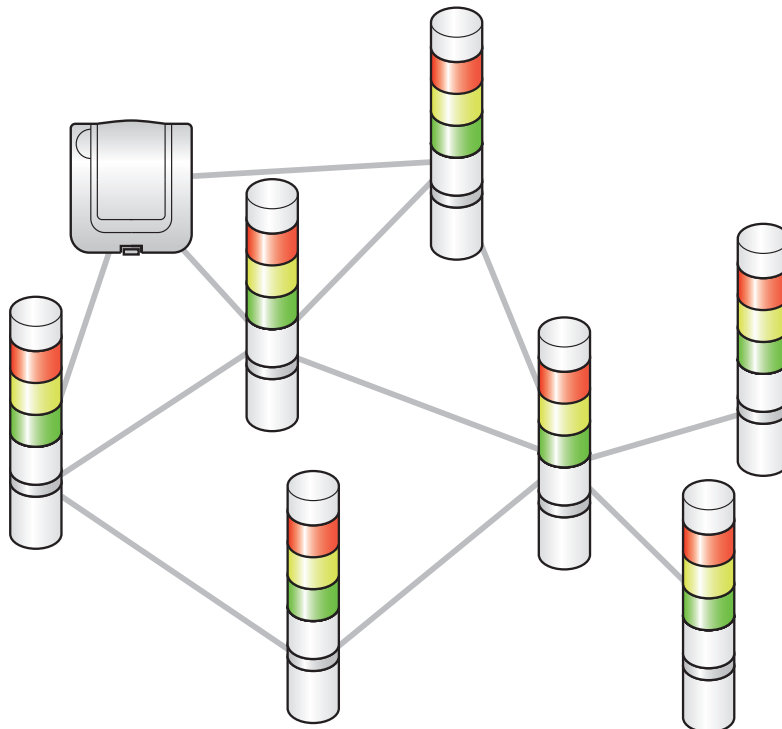
- This product transmits to external equipment data received from the host.
- Maximum transmission data size is 40 bytes. Transmitting data sizes greater than that will return an error.
- The following is an illustration of transmissions to external equipment.



8.4 Wireless Data Communication Functions

8.4.1 Mesh Network Transmission

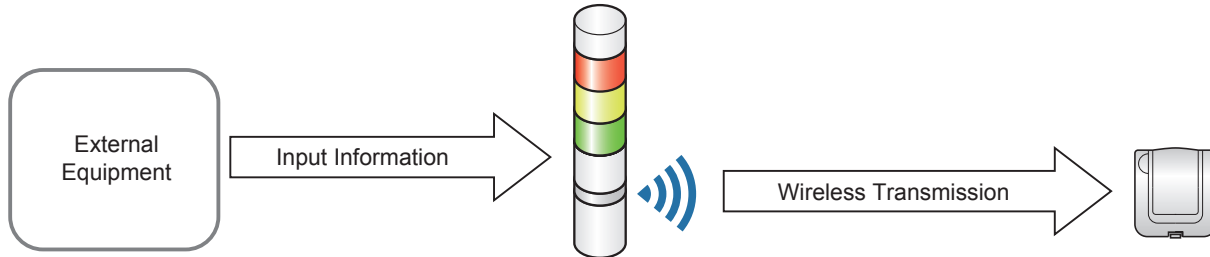
Function that automatically connects the WDT over the optimum communication route to the WDR for transmitting information. A dense mesh status increases communication redundancy. The following is an illustration showing the mesh status.



8.4.2 Information Transmission Function

Function for wirelessly transmitting to WDR the status information of each contact input line or the RS-232C data input.

The following is an illustration showing the wireless transmission.



8.4.2.1 About Timing of Input Information Transmissions

For the timing of input information transmissions, you can select from the following two types of settings.

Setting*	Description
On change	Directly transmit the change in status on each contact input line or the information input over RS-232C.
Response	Transmit information as a response to a request from the host.

* Select the settings in WDS-WIN01.

* The default setting is [On change].

8.4.2.2 About Periodic Transmissions

- WDT-PRO can be set up to automatically transmit information at defined intervals. About 40 seconds when the input information transmission format is [WDT-PRO format]. About 10 seconds when the input information transmission format is [WDT-LR format].
- If the number of information transmissions is as low as a few times per hour, the communication is more stable if you select [Unit Information] or [Input Information/Signal Tower Information]. With this setting, you can select from the following 3 types.

Setting	Description
None	Periodic transmissions are not performed.
Unit Information	Periodically transmits product information such as the firmware version.
Input Information/ Signal Tower Information	Periodically transmits input information such as the Signal Tower control line, external input line, and counter value of Signal Tower control line inputs.

8.4.2.3 About Information Transmitted to WDR

Input information transmitted by WDT-PRO to WDR is as follows.

Status of Signal Tower Control Line	6 contacts (red, amber, green, blue, white, and buzzer)
Status of External Input Line	8 contacts (external inputs 1 to 8)
RS-232C Communication Data	Maximum 60 bytes
Counter value of Signal Tower control line inputs	0 to 4,294,967,295

8.4.2.4 About Format of Information Transmitted to WDR

The format of input information transmitted by WDT-PRO to WDR is as follows.

Setting*	Description
WDT-PRO Format	In a single operation this command can get the Signal Tower control line, external input line, and counter value of Signal Tower control line inputs. This command can also get RS-232C communication data information.
WDT-LR Format	From the input information transmission contents, this command can get 1 of the sets of information. (WDT-LR compatible format)

* Select the settings in WDS-WIN01.

* The default setting is [WDT-LR Format].

8.4.2.5 About WDT-LR Format

When the input information transmission format is [WDT-LR Format], select from the following 2 types of formats.

Setting*	Description
Extended Format	You can set 6 types for the Signal Tower control line input status.
Standard Format	<ul style="list-style-type: none"> • Format compatible with WDT-5E-Z2 and WDT-6M-Z2. • From the 5 types (red, amber, green, blue, and white), you can set 4 for the Signal Tower control line input status.

* Select the setting in WDS-WIN01.

* The default setting is [Standard].

8.4.3 Retentive Status Function

Retentive Status Function is for temporarily saving transmission information in this product. Temporarily saved information is transmitted to WDR, in order, from oldest to newest. The maximum amount of information that can be saved temporarily is as follows.

- When Input Information Transmission Format is [WDT-LR Format]

Signal Tower Control Line Information	32
External Input Line Information	32
RS-232C Communication Data (60 byte transmission)	5

- When Input Information Transmission Format is [WDT-PRO Format]

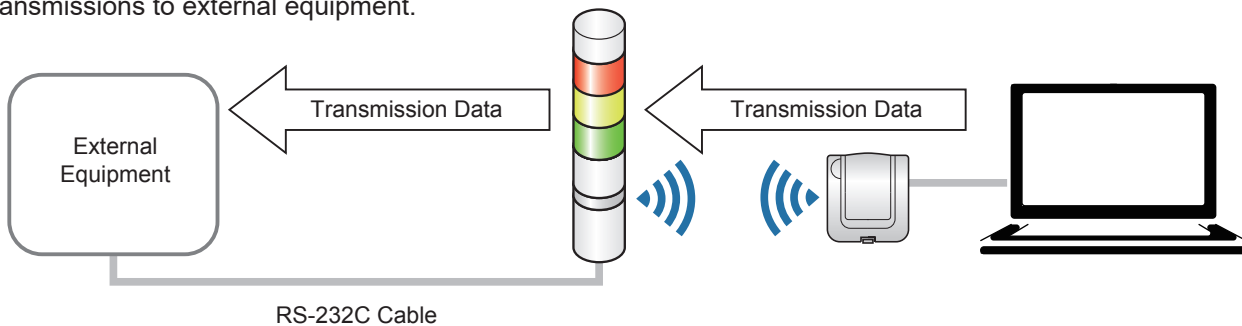
Signal Tower Control Line and External Input Line Information	32
	32
RS-232C Communication Data (60 byte transmission)	5

NOTICE

- When the maximum size of information is exceeded, information is deleted beginning with the oldest.

8.4.4 Receive Information Function

Function for the WDT-PRO to wirelessly receive from the host remote control commands for the LED and buzzer unit, or data to transmit to external equipment connected to WDB-D80S. The following is an illustration of transmissions to external equipment.



9. Troubleshooting

9.1 Troubleshooting

9.1.1 Contact Input - Serial Communication Base Unit

Issue	Checklist
Cannot attach the WDT-6LR/5LR-Z2.	You can attach the WD PRO transmitter (WDT-6LR-Z2-PRO) to WDB-D80S-PRO, but not other transmitters.
Cannot control LED or buzzer units with the Signal Tower control line input.	"8.1.2 Remote Control Functions" may be running operations. To release remote control, refer to "8.1.3 Release Remote Control Function".
Status lamp does not turn on.	Check if the main unit is installed correctly.
	Check if wiring for the power supply is correct.
Status lamp LED1 is red and LED2 is green.	Starting up in initialization mode. If operations are normal, turn off DIP switch 1.
The status lamp lights up as one of the following. <ul style="list-style-type: none"> • LED1: Flashing green • LED1, LED2: Alternating Red→Green→Red→Green • LED1: Light off, LED2: Green light 	Running in mode that is not normal. For normal operation, turn off all DIP switches.
Status lamp LED1 is off and LED2 is red.	Turn off the power on this product's main unit then turn the power back on. If the lighting condition of the status lamp still does not change, there may be an issue with the configuration on WDB-D80S. Initialize the product and set up again. If the lighting condition of the status lamp still does not change, the WDB-D80S may have failed. Please contact your local sales representative.
Status lamp LED1 is green and LED2 is flashing red.	Turn off the power on this product's main unit then turn the power back on. If the WDT-PRO lighting condition still does not change, there may be an issue with the configuration on WDT-PRO. Initialize the product and set up again. If the lighting condition of the status lamp still does not change, the WDT-PRO may have failed. Please contact your local sales representative.

9.1.2 WDT-6LR-Z2-PRO (WD PRO Transmitter)

Issue	Checklist
Indicator does not light up.	<ul style="list-style-type: none"> • Check if it is installed correctly. • Check if WDB-D80S wiring for the power supply is correct.
The indicator is flashing red. (not pulsing)	<p>WDB-D80S DIP switches may be set up incorrectly. For normal operation, turn off all DIP switches then turn the power back on.</p> <p>If it continues to flash red, it may be an indication that the WDT-PRO settings are corrupted. Initialize the product and set up again.</p> <p>If it continues to flash red, it may be an indication that the WDT-PRO may have failed. Please contact your local sales representative.</p>
The indicator is flashing amber. (not pulsing)	<p>WDB-D80S DIP switches may be set up incorrectly. For normal operation, turn off all DIP switches then turn the power back on.</p> <p>If it continues to flash amber, it may be an indication that the WDB-80S settings are corrupted. Initialize the product and set up again.</p> <p>If it continues to flash amber, it may be an indication that the WDB-D80S may have failed. Please contact your local sales representative.</p>
The indicator does not change from a red light to a red pulse.	<p>Wireless connection with WDR is in progress.</p> <ul style="list-style-type: none"> • Depending on the radio wave environment, it may take some time to complete the connection. Check the indicator again after about 5 minutes. • Check if the WDR is working properly. • The ExtendedPanID in the WDR must match the wireless channel setting for a connection. Make sure the settings are correct. • Check for any sources of noise (such as microwave ovens) in the surrounding area that could impede wireless communication.
The indicator flashes blue.	<p>When the host transmits a call out command to the WDT, the indicator flashes blue for about 10 seconds.</p>
The indicator flashes alternating between green and red.	<p>Starting up in initialization mode. If operations are normal, set the WDB-D80S DIP switch 1 to [OFF].</p>
The indicator light is purple.	<p>Running in mode that is not normal. For normal operation, turn off all WDB-D80S-PRO DIP switches.</p>
The host cannot determine if the WDT is available.	<p>If a wireless connection cannot be completed, the host cannot check if the WDT is available. Check if the indicator on the target WDT is pulsing, to indicate connection is complete.</p>
Cannot get the buzzer input information.	<p>Cannot get buzzer input information with [Standard Format] when the Input Information Transmission Format is [WDT-LR Format]. Either use [Extended Format] or change the Input Information Transmission Format to [WDT-PRO Format].</p>
Counter value is not increasing.	<p>In WDS-WIN01, select the Signal Tower control line for the simple counter.</p>
Cannot get RS-232C communication data.	<p>Make sure the communication settings and receive data file format settings are correct. To check if WDT-PRO is transmitting RS-232C communication data, see if the indicator light changes light blue→flashing light blue. If it does not flash light blue, RS-232C communication data is not being transmitted to the host. Check if the WDT-PRO and WDR have a wireless connection. If you still cannot get RS-232C communication data, make sure the communication settings and receive data file format settings are correct.</p>

10. Specifications

10.1. Specifications

10.1.1 Contact Input - Serial Communication Base Unit

Item	Description
Model	WDB-D80S-PRO
Rated Voltage	24 VDC
Operating Voltage Range	21.6 to 26.4 VDC
Rated Current Consumption (Maximum)	<ul style="list-style-type: none"> • Main Unit: 110 mA *When WDT-6LR-Z2-PRO is connected at 24 VDC • Each LED unit color: 42 mA • Buzzer unit: 42 mA
Ambient Operating Temperature	-10 °C to +50 °C
Ambient Operating Humidity	85% RH or less, no condensation
Storage Ambient Temperature	-20 °C to +60 °C
Storage Ambient Humidity	85% RH or less, no condensation
Mounting Location	Indoors
Mounting Direction	Upright
Protection Rating	IP65 (IEC 60529)/ NEMA TYPE 4X, TYPE 13
Environmental Conditions	Upright
Insulation Resistance	5 MΩ or more at 500 VDC between the live part and non-current carrying metallic part
Withstand Voltage	500 VAC for 1 minute, between the live part and non-current carrying metallic part
Mass (Tolerance: ±10%)	300 g
Status Lamp	LED x 2 (Lights turn red and green, installed on the device for displaying operation status)
Operation Unit	DIP Switches
Compliance Standards	UL 508, CAN/CSA C22.2 No.14-18 FCC Part 15 Subpart B Class B EN 55032 Class B, EN 55035, EN IEC 63000 KN 61000-6-2 /6-4
Accessories	<ul style="list-style-type: none"> • Hexagon Nut with Flange (M4) x 3 • Hexagon Nut with Flange (M3) x 6 • Hexagon Bolt (M3) x 3 • Cap for cable gland x 1 • Sealing plug for cable gland x 1 • Terminal Block Connector x 1
References	<ul style="list-style-type: none"> • Conforms to the CE Requirements • UL/cUL Recognized Component (File No.E215660)

●External Interface

Item		Description
Power Supply Wire		UL1061 AWG24 x 2 (24 VDC, GND)
Signal Wire		UL1061 AWG24 x 17
Contact Input Line	Signal Tower Control Line	6 contacts (external relay/NPN/PNP) * ¹
	External Input Line	8 contacts (external relay/NPN/PNP) * ¹
	Clear Input Line	1 contacts (external relay/NPN/PNP) * ¹
Flashing Common Line		1 contact (60±2/minute)
External Input Common Line		1 contact
RS-232C		Screwless terminal block (6 contacts) supported lead wire: AWG24 to 28 (stranded wire)
Communication method		<ul style="list-style-type: none"> ▪ Transmission method: Full duplex ▪ Synchronization method: Asynchronous ▪ Baud rate: 4800/9600/19200/38400/57600/115200 bps ▪ Data length: 7 bits/8 bits ▪ Parity: None/Even/Odd ▪ Stop Bit: 1 bit / 2 bits ▪ Maximum cable length possible for connection: 15 m
USB		micro-USB connector (B terminal)* ²

* 1 Input Reaction Time: 100 ms or longer, Signal Wire Current: 6 mA or less

* 2 Use only for maintenance. ☞ 5. 2. 2. 2 WD System Configuration at Maintenance (P. 16)

10.1.2 WD PRO Transmitter

Item		Description
Model		WDT-6LR-Z2-PRO
Ambient Operating Temperature		-10 °C to +50 °C
Ambient Operating Humidity		85% RH or less, no condensation
Storage Ambient Temperature		-20 °C to +60 °C
Storage Ambient Humidity		85% RH or less, no condensation
Mounting Location		Indoors
Protection Rating		IP65 (IEC 60529)/ NEMA TYPE 4X, TYPE 13
	Environmental Conditions	Upright
Mass (Tolerance: ±10%)		90 g
Wireless Communication	Wireless Standard	IEEE 802.15.4 compliant
	Communication Frequency	2405 to 2480 MHz (16 channels)
	Transmission/Receiving Method	Direct Sequence (DS-SS) Format
	Communication Method	Zigbee2007 compliant, with ZigbeePro Stack
	Transmission Output	Maximum 3 m or less (at the antenna feed)
	Communication Distance	Line of sight, approximately 30 m (reference value)
Display Unit		Indicator for status display
Operation Unit		None
Compliance Standards		Japan Radio Law (ARIB STD-T66 Conformity)*2 UL 508, CAN/CSA C22.2 No.14-18 FCC Part 15 Subpart B Class B, Subpart C*2 EN 55032 Class B, EN 55035, EN 62368-1 EN 300328, EN 301 489-1/-17, EN 62479, EN 50663, EN IEC 63000 KN 301 489-1/-17, NCC*2 NBTC announcement on telecommunication equipment that has exempted for certificate date 18 December 2017 NOM-208-SCFI-2016, IFT-008-2015
References		<ul style="list-style-type: none"> • Conforms to the CE Requirements • UL/cUL Recognized Component (File No.E215660)

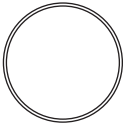
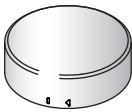
*1 Maximum number of tiers for LED Units

*2 Built-in certified wireless module

11. Replacement and Optional Parts

11.1 Replacement Parts


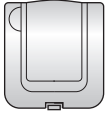
Various parts are available to the customer for exchange or replacement.

O ring 60	Head cover 60W
	
5 pieces	1 pieces

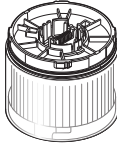
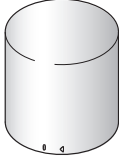
11.2 Optional Parts

This product includes the following related products, compatible units, and optional parts.

●Related products


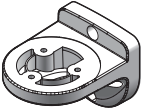

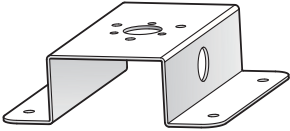
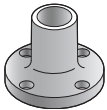
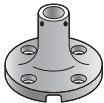
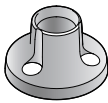
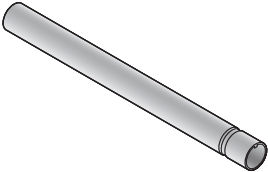
Software	Receiver
WDS-WIN01	WDR-LE-Z2 WDR-L(E)-Z2-PRO(-L)
	

●Compatible Units

LED Unit	Buzzer Unit
LR6-E- □ */ LR6-E- □ *Z / LR6-E-MZ	LR6-BW
	

* Replace the square □ with R, Y, G, B, or C.

●Optional parts

Serial Cable	Wallmount Bracket		Mounting Bracket
WDX-SC01	SZK-003W	SZK-001U	SZW-002W
			
Mounting Pole Base		Pole Bracket	Pole
SZ-016A	SZ-010	SZP-004W	POLE- □ 00A21
			

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