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SPECIFICATIONS

Product Name
Wireless Data Acquisition System
WD PRO Base Unit Input/Serial Communication Unit
/WD PRO Transmitter

Model:WDB-D80S-PRO /WDT-6LR-Z2-PRO

PATLITE Corporation

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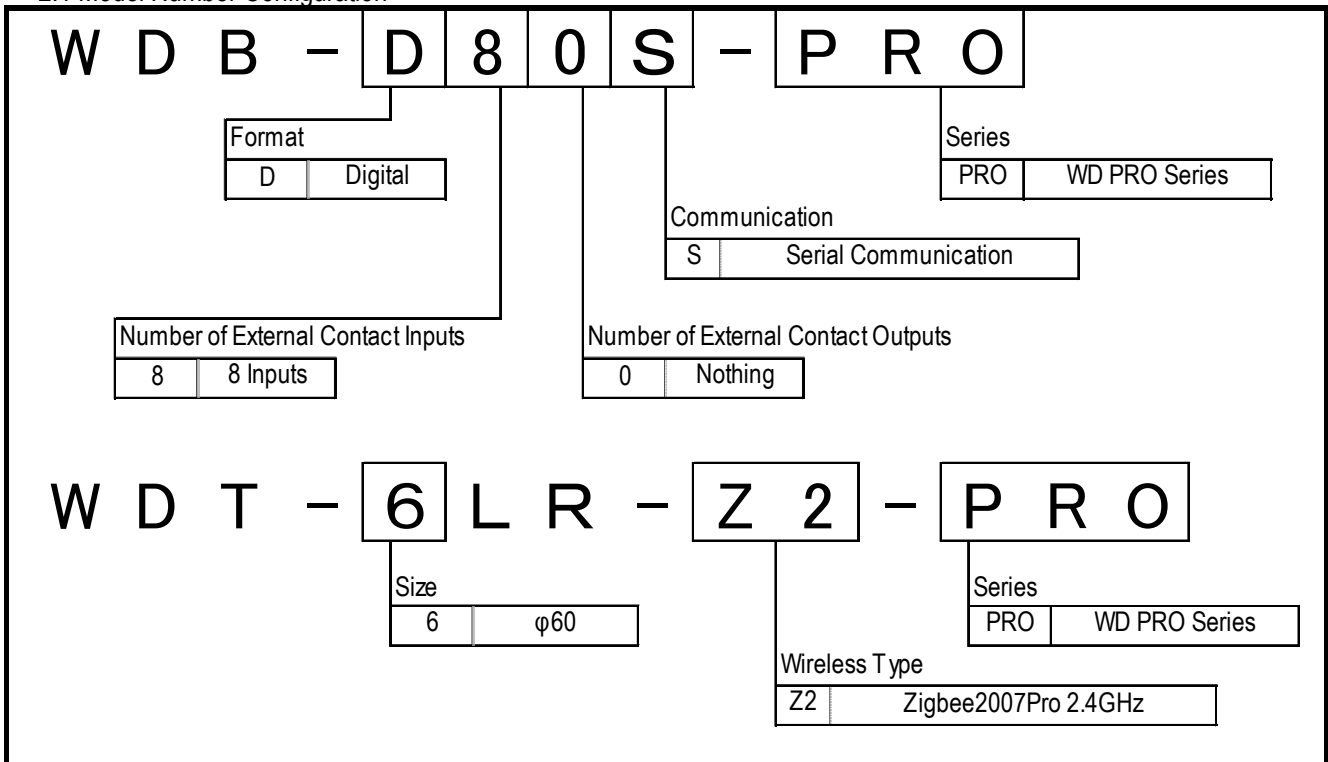
1. Product Overview

This product transmits not only signal tower information but also external input information and serial communication information to the host by wireless communication.

This document describes the general specifications of WD PRO Base Unit Input/Serial Communication Unit / WD PRO Transmitter, and functional specifications combining them.

2. Model

2.1 Model Number Configuration



2.2 Model Number List

WDB-D80S-PRO
WDT-6LR-Z2-PRO

※Please be sure to use the above models in combination.

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1. General Specifications

3.1 WD PRO Base Unit Input/Serial Communication Unit

Model	WDB-D80S-PRO	
Rated Voltage	24V DC	
Operating Voltage Range	Rated Voltage \pm 10%	
Rated Current Consumption	Main Unit	110mA or less ※When WDT-6LR-Z2-PRO is connected, Applied Voltage : 24V DC
	LED Unit	42mA or less *Applied Voltage 24V DC
	Buzzer Unit	42mA or less *Applied Voltage 24V DC
Operating Ambient Temperature	-10°C to +50°C	
Operating Ambient 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	Indoor Only	
Mounting Direction	Upright	
Protection Rating	IP65 (IEC 60529) / NEMA TYPE 4X,13	
Environmental Condition	Upright	
Insulation Resistance	More than 5M Ω at 500VDC between live part and non-current carrying metallic part	
Withstand Voltage	500VAC applied for 1min between live part and non-current carrying metallic part	
Mass(Tolerance: \pm 10%)	300g	
Outer Dimensions	Refer to the Outer Dimension Drawing	
Power Supply Wire	UL1061 AWG24x2(24VDC,GND)	
Signal Wire	UL1061 AWG24x17	
Contact Input Line	15 Contacts (external relay / NPN / PNP) *Input Reaction Time : 100ms or longer Signal Wire Current : 6mA or less	
Signal Tower Control Line	6 Contacts	
External Input Line	8 Contacts	
Clear Input Line	1 Contacts	
Flashing Common Line	1 Contact (60 \pm 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	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) *Use only for maintenance	
Status Lamp	LED x 2 (Lights turn red and green, installed on the device for displaying operation status)	
Operation Unit	DIP Switches	
Conformity 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	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	
Remark	<ul style="list-style-type: none"> • Conforms to the CE Requirements • UL/cUL Recognized Component (File No.E215660) 	

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3.2 WD PRO Transmitter

Model	WDT-6LR-Z2-PRO
Operating Ambient Temperature	-10°C to +50°C
Operating Ambient 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	Indoor Only
Mounting Direction	Upright
Protection Rating	IP65 (IEC 60529) / NEMA TYPE 4X,13
Environmental Condition	Upright
Insulation Resistance	More than 5MΩ at 500VDC between live part and non-current carrying metallic part
Withstand Voltage	500VAC applied for 1min between live part and non-current carrying metallic part
Mass(Tolerance: ± 10%)	90g
Outer Dimensions	Refer to the Outer Dimension Drawing
WirelessCommunication	-
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
Conformity 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 301489-1/-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
Supported Countries and Regions ※1	Japan, United States, Europe, China, Korea, Taiwan, Thailand, Mexico
References	• Conforms to the CE Requirements • UL/cUL Recognized Component (File No.E215660)

*1 Do not use outside of supported countries and regions.

You could be violating laws and regulations when using in countries outside of supported countries and regions.

*2 Built-in certified wireless module

3.3 Supported Unit

LED Unit	LR6-E-□,LR6-E-□Z,LR6-E-MZ *Maximum number of 5 tiers for LED Units
Buzzer Unit	LR6-BW

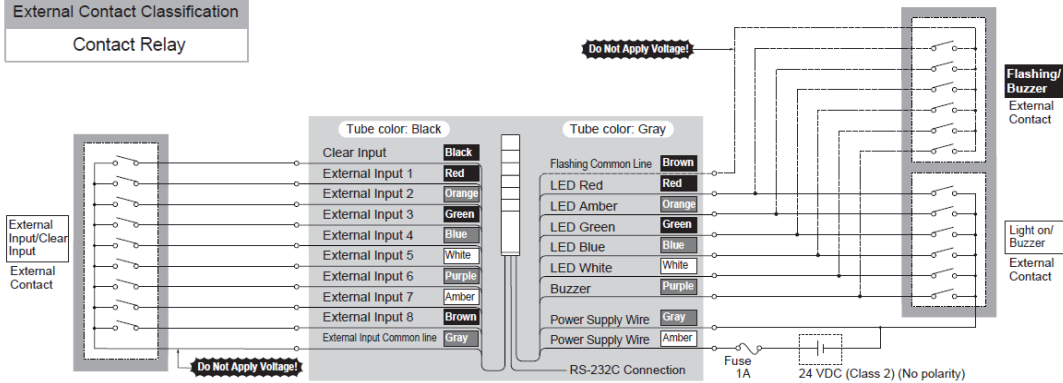
3.4 Supported Option

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

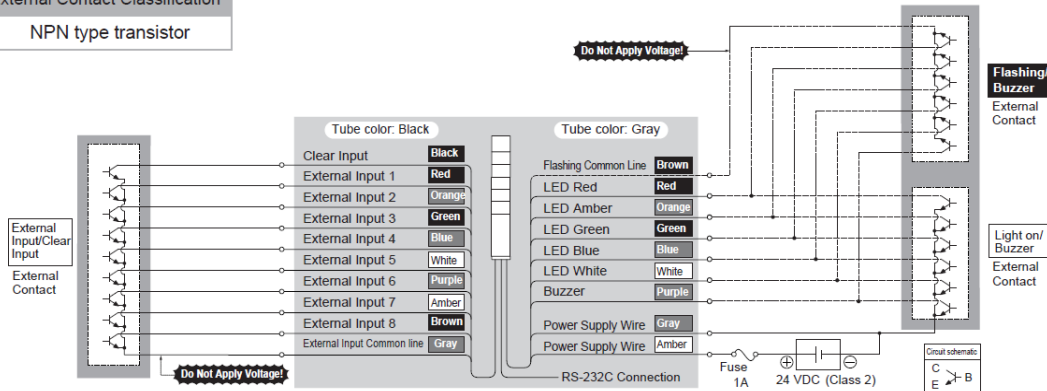
4. Wiring Diagram

4.1 Power/Contact Input Wiring Diagram

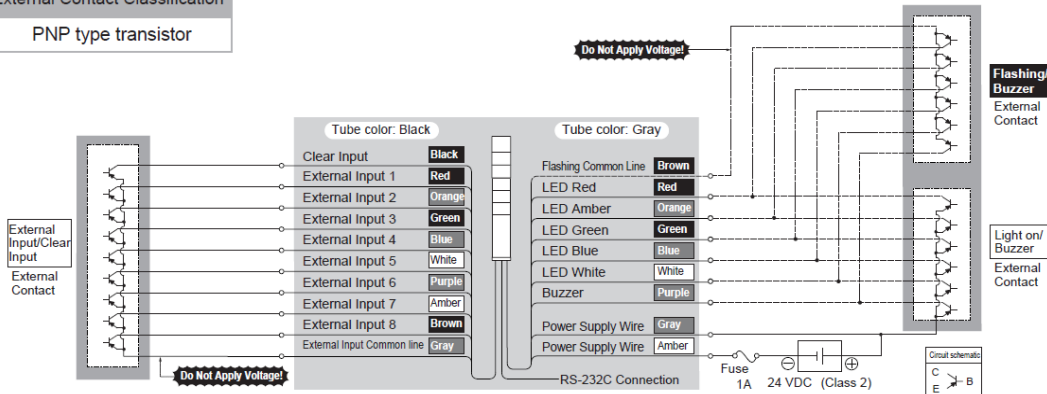
External Contact Classification
Contact Relay



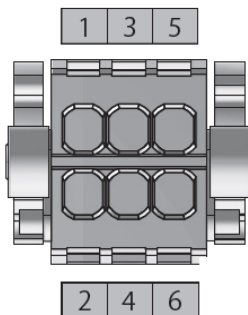
External Contact Classification
NPN type transistor



External Contact Classification
PNP type transistor



4.2 RS-232C Wiring Diagram



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

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5. Function Specification

5.1 Glossary

Term	Description
WDB-D80S	WD PRO Base Unit Input/Serial Communication Unit on the WD wireless network. Model: WDB-D80S-PRO
WDT-PRO	WD PRO transmitter on a WD wireless network. Model: WDT-6LR-Z2-PRO
WDT	Transmitter on a WD wireless network. 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. Models: WDT-4LR-Z2, WDT-5LR-Z2, WDT-6LR-Z2
WDR	Receiver on a WD wireless network. Model: WDR-L-Z2 WDR-LE-Z2, WDR-L-Z2-PRO(-L), WDR-LE-Z2-PRO(-L)
WD PRO Base Unit	Base Unit used in combination with WDT-6LR-Z2-PRO (In this document WDB-D80S-PRO is shown.)
Host	Equipment for operation of the WD system.

5.2 Function Overview

Term	Description	Reference
Signal Tower Control Functions	Runs control of LED and buzzer units. There are two types: Control based on the Signal Tower control line, and remote control from the host.	5.3.1
Contact Input Line Functions	Determining the signal input status of the Signal Tower control line.	5.3.2
	Saving the accumulated value (counter value) of pulse inputs (incremented 1 at a time) on a signal wire.	
	Detect changes in state of 8 external input lines and to save that information.	
	Detect inputs on the clear input line and to save that information.	
RS-232C Communication Functions	Runs communication with external equipment, such as a bar code reader, through the RS-232C interface.	5.3.3
Wireless Data Communication Functions	Wirelessly transmits to WDR the status information of data input.	5.3.4
	Receives RS-232C data from the host and transmits to external equipment.	

5.3 Function Details

5.3.1 LED Unit and Buzzer Unit Control Functions

Term	Description
Signal Tower Control Functions	Functions that control LED or buzzer units with the Signal Tower control line.
	LED unit control Individually controlled for each color. Light on/Flashing (control with flashing common line) / Light off
	Buzzer unit control Buzzer on/Continuous(control with flashing common line) /Buzzer off
Remote Control Functions	Functions that uses specific commands from the host to perform remote control of LED or buzzer units. These Functions operate with a higher priority than Signal Tower Control Functions.
	LED unit control Individually controlled for each color. Light on/Flashing/Light off/Triple flash/control from Signal Tower control line
	Buzzer unit control Buzzer on/Continuous/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.
	Release Remote Control Function Function that enables operation transition from "Remote Control Function" to "Signal Tower Control Function".
Release Remote Control Function	How to Release Set the clear input line from OFF to ON. When the command is started (refer to "Remote Control Functions") specify the enable control time. Remote control is released after the enable control time elapses from when control started. Remote control is released after a specific command is received from the host.
	Release Control Notification The remote control function is released, and a release control notification is transmitted to the host.

5.3.2 Contact Input Line Functions

Term	Description
Determine Signal Tower Control Input Function	Function that determine the signal input status of the Signal Tower control line.
	Determination Lighting : Light on / Light off / Flashing Buzzer : Buzzer on / Buzzer off
	Setting Normal / Flashing(short) / Flashing(medium) / Flashing(long)
Function to Determine Simultaneous Input	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.
	Setting High sensitivity / Medium sensitivity / Low sensitivity
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). When the power is shut down, the counter value is cleared to 0.
	Count Up The determine count up operation occurs when the input line changes from OFF to ON. When counting up exceeds the upper limit, the counter value returns to 1.
	Pulse Input Condition OFF : 100ms or longer, ON : 100ms or longer
	Upper Limit Value "4,294,967,295"
	Initial Value "0"
	How to Initialize Value From the host, write "0" with the command to change the count value.
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.
Determine Clear Input Line Function	On detecting a change in state in the clear input line, this function determines the input status.

5.3.3 RS-232C Communication Functions

Term	Description		
RS-232C Communication Functions	Function for transmitting and receiving data between external equipment and the RS-232C interface.		
	Communication Setup	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	
	Receive Data	Following the data file format settings, this product receives data via RS-232C communication. You can select supported file formats from 3 types.	
		Receiving Data Size	Maximum data size is 60 bytes. (Only the first 60 bytes are received when the data size exceeds 60 bytes.)
	Receive Data File Format	Direct Communication Format	Data received from RS-232C devices is transmitted directly to WDR.
		Bar Code Reader (Denso Wave) Communication Format	Exclusive receive format for Denso Wave [models AT20B-SM(R) and AT21BSM(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	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.
Data Transmission	This product transmits to external equipment data received from the host.		
	Transmission Data Size	Maximum data size is 40 bytes. (Transmitting data sizes greater than that will return an error.)	

5.3.4 Wireless Data Communication Functions

Term	Description		
Information Transmission Function	Function for wirelessly transmitting to WDR the status information of each contact input line or the RS-232C data		
	Timing of Input Information Transmissions	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.
	Periodic Transmissions	Automatically transmit information at defined intervals.	
		Setting	None/Unit Information/Input Information・Signal Tower Information
	Input information transmitted	Status of Signal Tower Control Line : 6 contacts	
		Status of External Input Line : 8 contacts	
		RS-232C Communication Data : Maximum 60 bytes	
		Counter value of Signal Tower control line inputs	
	Format of input information transmitted	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)	
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.		
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 connected external equipment.		

5.3.5 Settings and Installation Functions

Term		Description	
Settings	WDS-WIN01	WDT-PRO Setup Items	<ul style="list-style-type: none"> Wireless Settings Operation Settings <ul style="list-style-type: none"> ▪ ExtendedPanID Settings ▪ Frequency Channel Settings ▪ Format of SignalTower Settings ▪ Input InformationTransmission TimingSetting ▪ Periodic Transmission
		WDB-D80S Setup Items	<ul style="list-style-type: none"> Operation Settings <ul style="list-style-type: none"> ▪ RS-232C Communication Settings ▪ Simple Counter Settings ▪ Determine Signal Tower Input Setting ▪ Power Supply Settings ▪ Determine Simultaneous Input Sensitivity Setting ▪ Input Information Transmission Format Setting ▪ Receive Data File Format Setting
	DIP Switches	Initializing Function	Restore Wireless Settings and Operation Settings to factory default
Installation	Wireless Data Communication Functions		Automatically connects the WDT over the optimum communication route to the WDR for transmitting information.
	Periodic Transmission Functions		Automatically transmit information at defined intervals. If the number of information transmissions is low, the communication is more stable.
	Operations with Indicator		Display each status with the indicator mounted on WDT-PRO.
	Display Quality of Wireless Communication	Display Quality of Wireless Communication by Indicator	
		Indicator Light	<ul style="list-style-type: none"> Green pulse Amber pulse Red pulse Red light on
	RS-232C Received		When WDB-D80S receives data from external equipment via RS-232C communication, indicator is light blue for about 2 seconds. When WDT-PRO completes transmission of data received via RS-232C communication to the host, indicator flashes light blue for about 2 seconds.
	Called Transmitter		When the WDT-PRO receives a specific command from the host, flashes blue for approximately 10 seconds.
	Initializing		If initializing, the WDT-PRO indicator alternates Red→Green→Red→Green...
	Operations with Status Lamp		Display each status with the indicator mounted on WDB-D80S.
Display Operation Status		The product's status lamp is located where you detach the direct mount bracket from the WDB-D80S. Normal mode LED1 : Green light on, LED2 : Light off Initialization mode LED1 : Red light on, LED2 : Green light on	

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[Handling Precaution]

◆About handling this product

- This product (including software) is shipped only after undergoing strict quality controls and inspections. However, should you encounter any issues, please contact your PATLITE sales representative.
- This product (including software) is developed, designed and manufactured for general usage, such as office use, personal use, standard industry, and other related systems. Do not use, either directly or indirectly, in applications where a high level of safety is required, such as where human life is involved. We shall not be held liable for any damages or losses, nor be held responsible for any claims by a third party, as a result of using this product.
- The suitability of this product in the system, with other machines and equipment, shall be tested and confirmed by the customer. We assume no responsibility regarding this. Design safety into the system to cope with misoperation, misuse, going offline, and other unforeseen operation of this product.
- We bear no responsibility for damages, lost opportunities, lost profits, compensation for accidents, or other costs including but not limited to personnel, construction, transportation, and shipping costs, related to using this product. We bear no responsibility for defects in other products, regardless of the other product's connection to this product (such as a communication line), or for the cost of repairing damages, losses, defects, or recovering lost data related to using the other products, including but not limited to personnel, construction, transportation, and shipping costs.
- To improve the functionality in the software for this product, we will update the software at our own discretion. We bear no responsibility for the results of software updates, such as damages, lost opportunities, lost profits, compensation for accidents, or other costs including but not limited to personnel, construction, transportation, and shipping costs, related to using this product. We bear no responsibility for defects in other products, regardless of the other product's connection to this product (such as a communication line), or for the cost of repairing damages, losses, defects, or recovering lost data related to using other products, including but not limited to personnel, construction, transportation, and shipping costs.
- Note the following statements regarding the software for this product, which require prior written consent from PATLITE:
 - * Do not duplicate the software for this product.
 - * Do not alter, combine, reverse-engineer, decompile, or disassemble the software for this product.
 - * Do not license, rent, or resell the software for this product to a third party.
 - * Do not store the software of this product on a network so it can be transmitted to a third party.
 - * Do not remove the copyright notice or other trademark and company rights attached to the software for this product.

◆Things you should always do for your safety

- Avoid spilling liquids (such as water or chemicals) into this product. Avoid dropping foreign metallic objects (such as copper wire) into this product. Failure to follow these instructions could result in electric shock or equipment damage.
- Do not drop or hit this product. Failure to follow these instructions could result in electric shock or equipment damage.
- Do not apply too much force to switches and buttons on this product. Failure to follow this instruction could result in equipment damage.

◆Installation

- Turn off the power when wiring, inspecting, or repairing this product. Failure to follow this instruction could result in equipment damage.
- Do not install in locations near fire, or environments with high temperature and humidity. Do not install this product where corrosive or flammable gas is present.
- Do not install on an unstable surface. Failure to follow these instructions could result in injury or equipment damage.
- This product is rated for indoor use only. Please install and use this product indoors only.
- Avoid the following locations for installation of this product.
 - * Places exposed to direct sunlight.
 - * Places near fire or environments with high temperatures and humidity.
 - * Environments where temperature changes are severe, and where there is condensation.
 - * Environments with poor breathability and ventilation.
 - * Places where external vibrations are directly transmitted to this product.
 - * Environments where corrosive gas is present.
 - * Locations exposed to salty sea air.
 - * Locations near strong magnetic fields.
 - * Environments where there is dust, iron powder, and so on.
 - * Environments where chemicals and oil mist are present.

◆About maintenance

- Do not clean this product with volatile chemicals such as benzene or thinners, or with chemical wiping cloths as it could damage the product.
- Please clean this product with a soft, dry cloth.
- If the dry cloth is unable to clean off any dirt and grime, wipe the product firmly with a slightly water-moistened cloth.

指定公差 General Tolerance	角度公差 ±[°] Angular tolerance ±[°]			寸法公差 ±[mm] Dimensional tolerance ±[mm]					図番 Drawing No. WDB-D80S-PRO-W18		
	短辺長さ Length of short side	~	~100	6	30	120	300	1000	改訂 Rev. 年月日 Date	改訂履歴 Revisions	
	精 f	1	0.5	0.3	0.1	中 m	0.1	0.3			
	粗 v	3	1.5	1	0.5	粗 c	0.3	0.5	1	1.2	2

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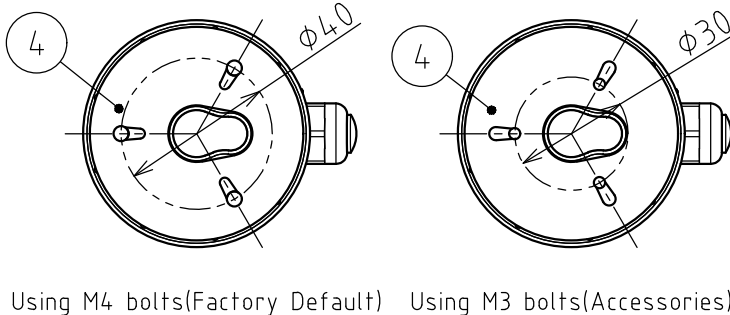
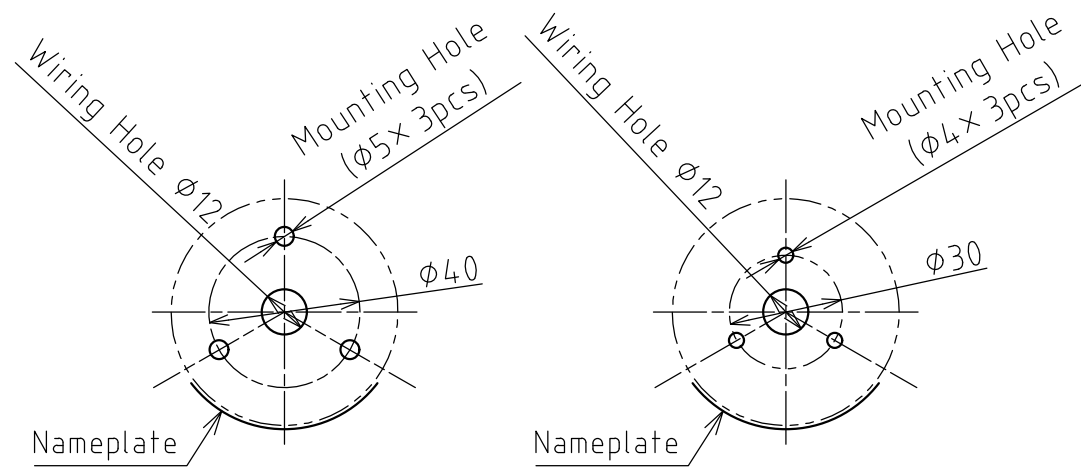
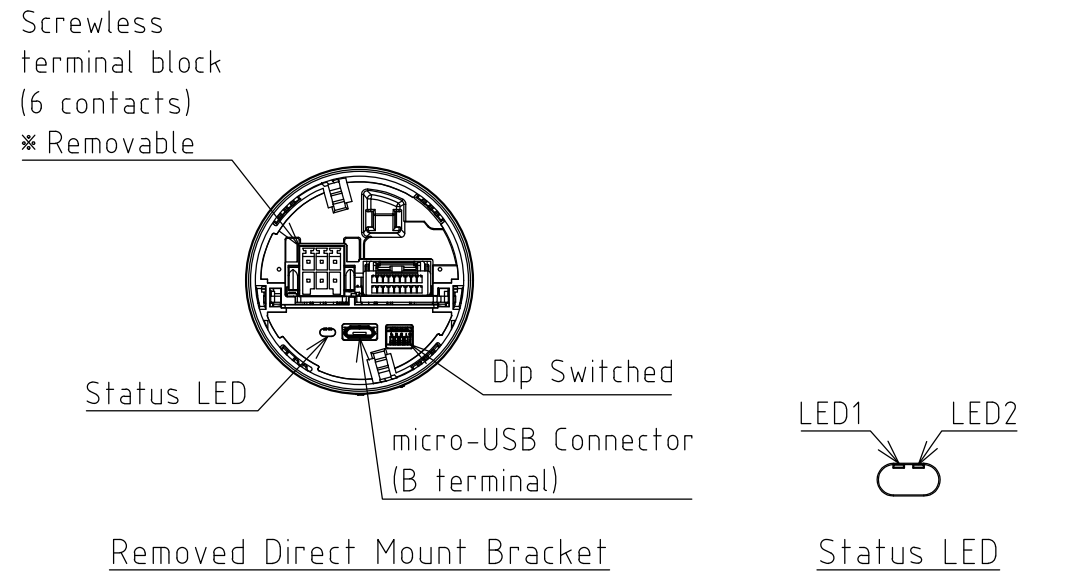
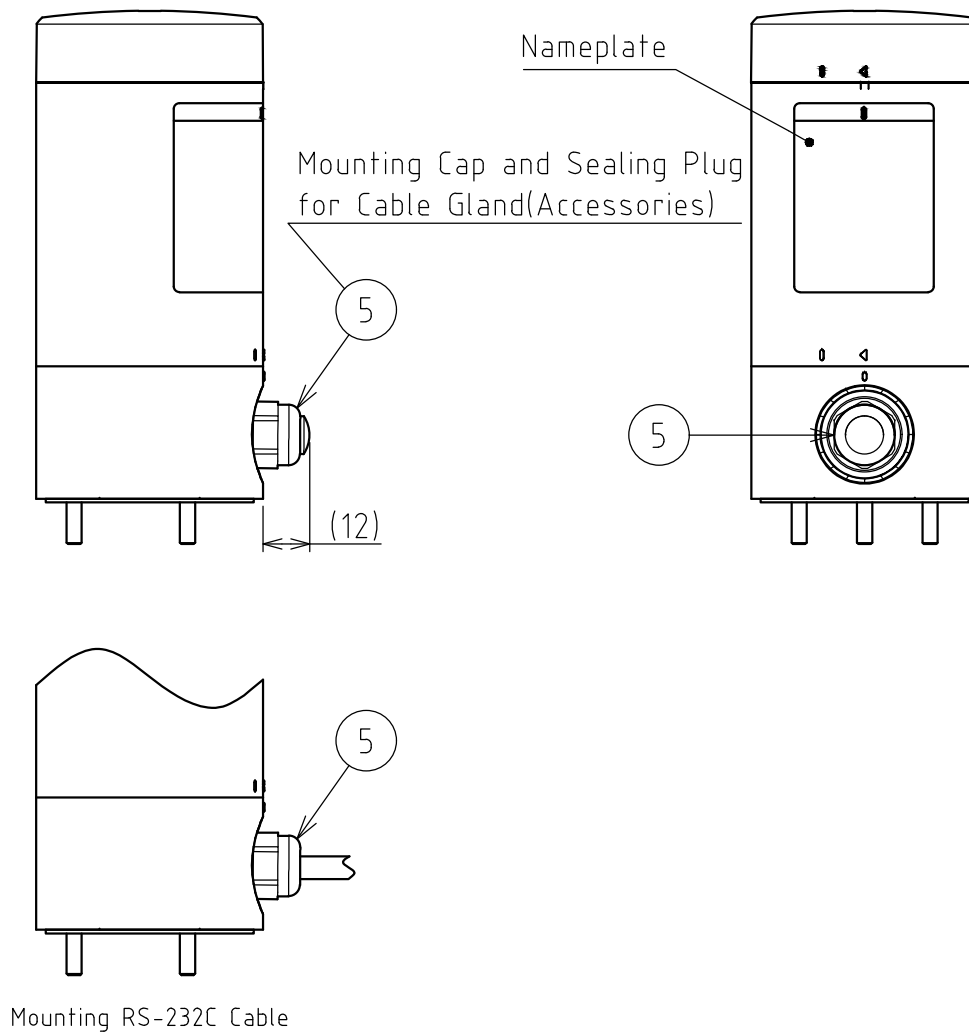
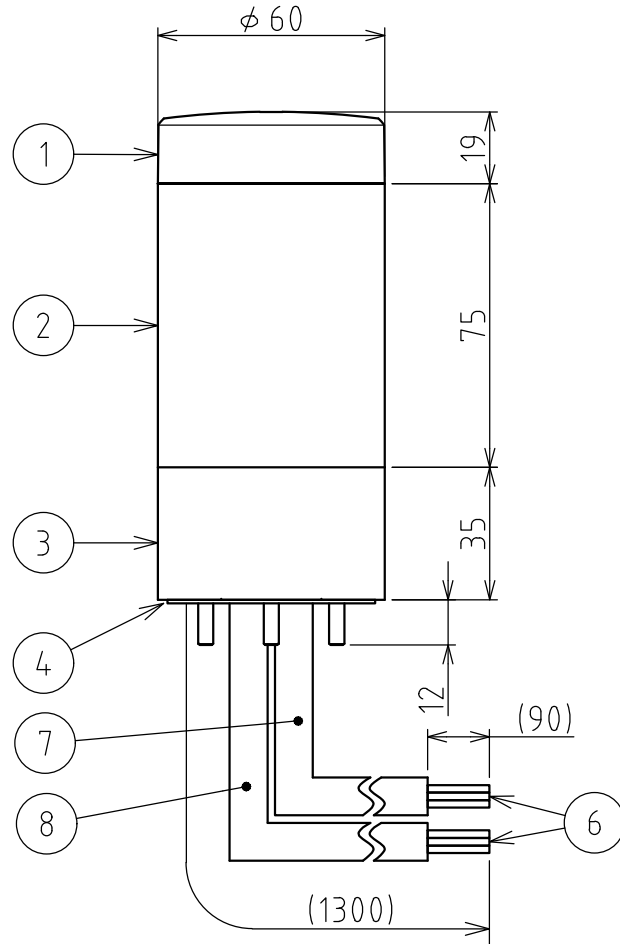
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[Note]
 1. Maximum Board Thickness : 7mm
 2. Recommended Tighten Torque : 0.6N·m
 3. Cable Gland compatible cable outer diameter : φ4.5~6.5

8	Tube(Black)	1	-
7	Tube(Gray)	1	-
6	Lead Wire	19	UL1061 AWG24
5	Cable Gland	1	-
4	Waterproof Packing	1	Foamed Urethane
3	Direct Mount Bracket	1	PC Off-white
2	Body	1	PC Off-white
1	Head Cover	1	PC Off-white
番号 No.	部品名 Part Name	数量 Qty.	記事 Remarks

機種 Model	WDB-D80S-PRO	特注 No. S.P.No.	-	図名 Name	Outer Dimension Drawing
品目コード Part No.	-	尺度 Scale	1:2	三角法 3rd Angle P.	単位 Unit mm
				株式会社 PATLITE Corporation	Ver.2.0

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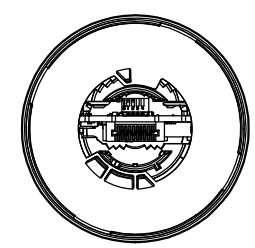
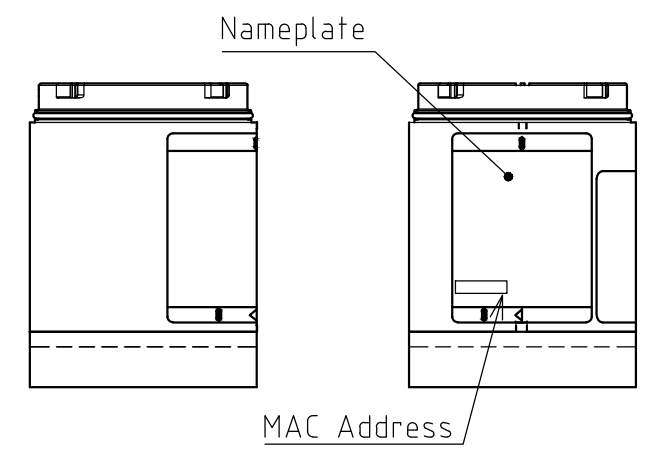
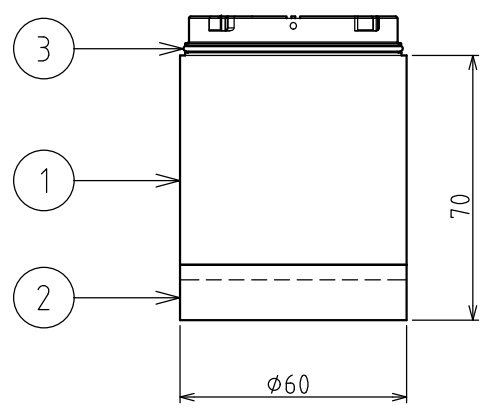
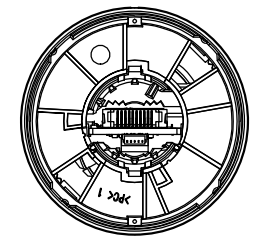
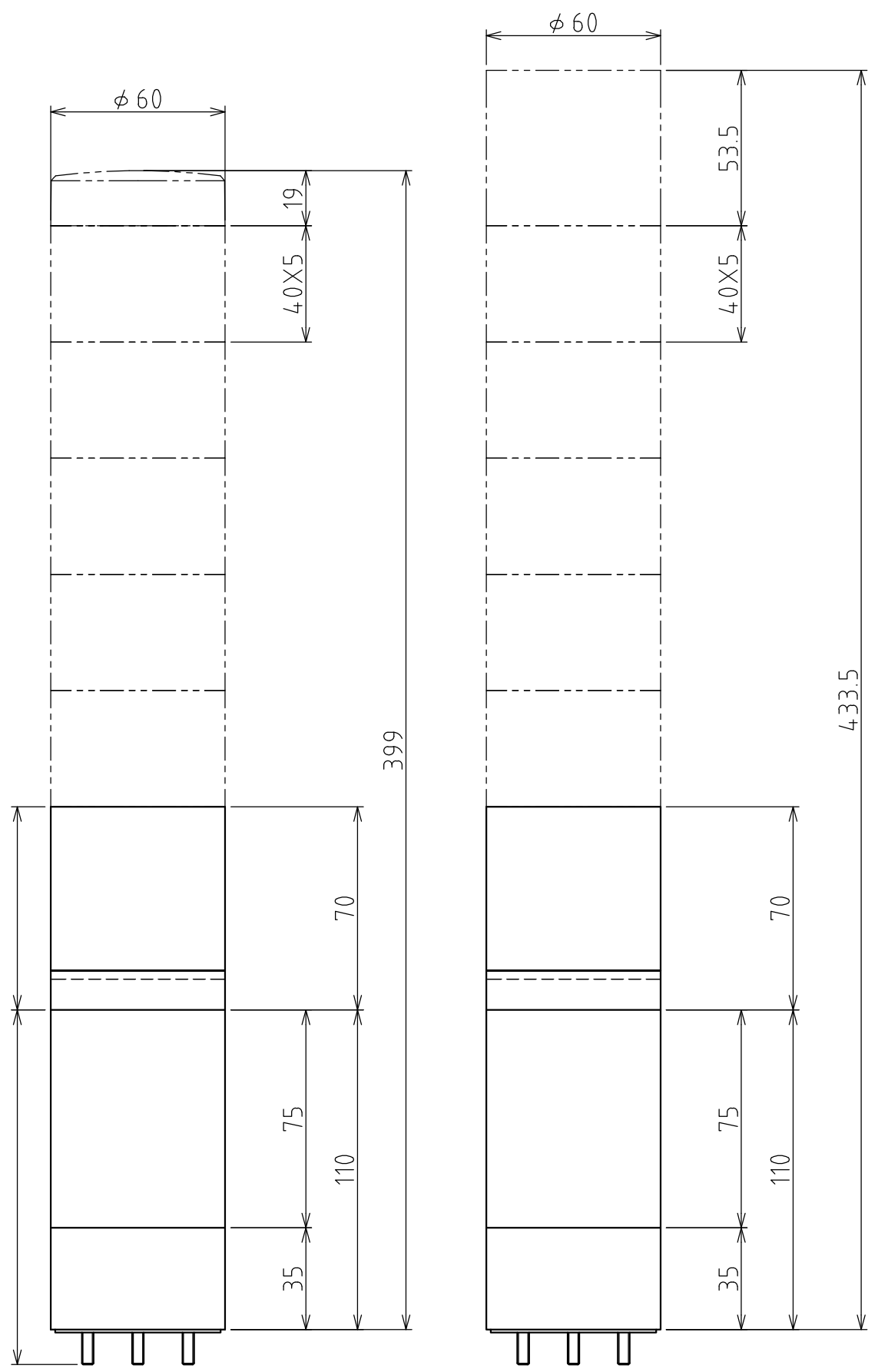
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指定公差 General Tolerance	角度公差 ±[°] Angular tolerance ±[°]			寸法公差 ±[mm] Dimensional tolerance ±[mm]					図番 Drawing No.		ページ Page	
	短辺長さ Length of short side	~	~100	6	30	120	300	1000	WDB-D80S-PRO-W18		12 / 12	
	精 f	1	0.5	0.3	0.1	中 m	0.1	0.3	0.5	0.7	1	改訂履歴 Revisions
	粗 v	3	1.5	1	0.5	粗 c	0.3	0.5	1	1.2	2	改訂履歴 Revisions
改訂 Rev.	年月日 Date											
△												



WD PRO
Transmitter
WDT-6LR-Z2
-PRO

WD PRO Base Unit
Input/Serial
Communication Unit
WDB-D80S-PRO

Installation for WDB-D80S-PRO
+LED Units(5 Tiers)

Installation for WDB-D80S-PRO
+LED Units(5 Tiers)
+Buzzer Unit

Installation Reference Drawing

番号 No.	部品名 Part Name	数量 Qty.	記事 Remarks
3	O-ring	1	Silicon Rubber
2	Indicator	1	PC Clear
1	Case	1	PC Off-white

機種 Model	WDT-6LR-Z2-PRO	特注No. S.P.No.	-	図名 Name	Outer Dimension Drawing		
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品目コード Part No.	-	尺度 Scale	1:2	三角法 3rd Angle P.	単位 Unit	mm	株式会社 PATLITE Corporation
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