

TW-800R-EXS

Please use this operation manual correctly on reading well. Please keep it carefully to be able to read immediately, when required.

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■ General outline

This instruction manual describes "TW-800R-EXS" (hereinafter referred to as "receiver").

"TW-800R-EXS" is a receiver with RS-232C serial output specification of TW-800 series.

The RS-232C output extension unit is mounted to "TW-800R". Also, the receiver can communicate with multiple TW-800T (hereinafter referred to as transmitter).

This instruction manual mainly describes the functions of the extension unit. For details about the functions of "TW-800R" and "TW-800T", please refer to the "TW-800R Instruction Manual".

<Feature>

◆ The receiver can communicate with multiple transmitters by doing "pairing".

The number of transmitters which can register pairing to one set of a receiver does not have restriction.

Receiver doesn't remember ID number of transmitter. (It cannot read from a receiver ID of the transmitter which is registered pairing, and how many set pairing is registered.)

◆ Receiver outputs the RS-232C data receiving from transmitter for special protocol.

Receiver sounds a buzzer simultaneously, when doing RS-232C output and it turns on a relay output.

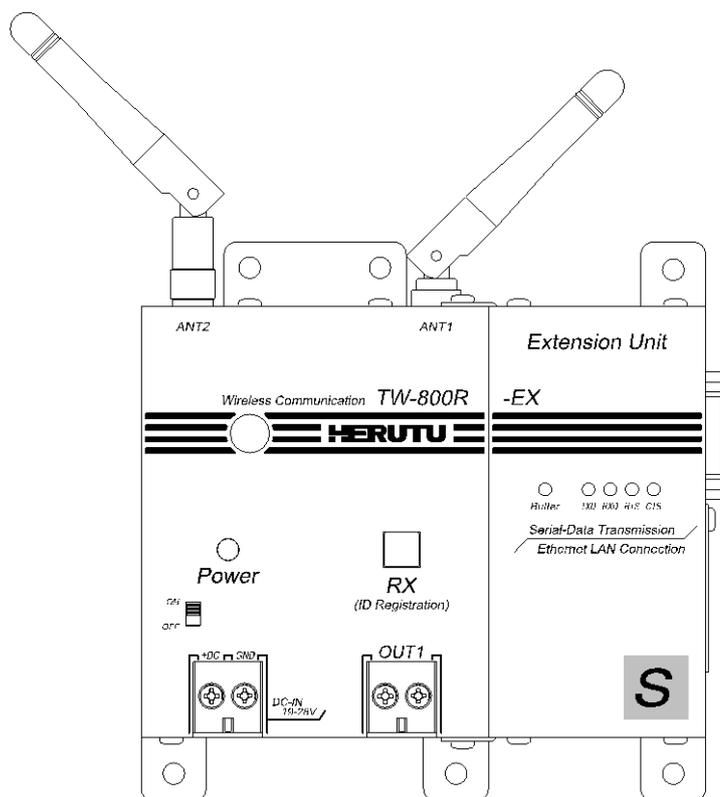
(Buzzer sounds or not and relay out time is set by DIP switch)

◆ The RS-232C output from a receiver is performed by effluence. A flow control (RTS/CTS) is performed with connection apparatus.

* "Pairing" used within this operation manual means the work which registers a transmitter and a receiver.

■Main part and accessories

Receiver TW-800R-EXS



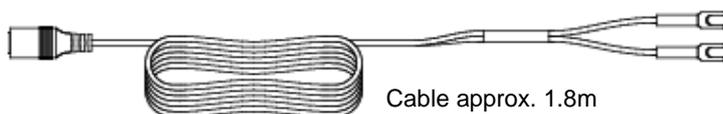
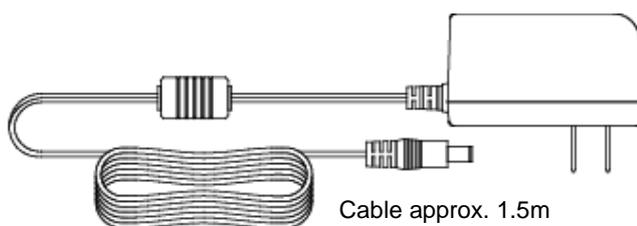
TW-800R-EXS x1

(Dipole antenna for ANT2 is set at shipment)

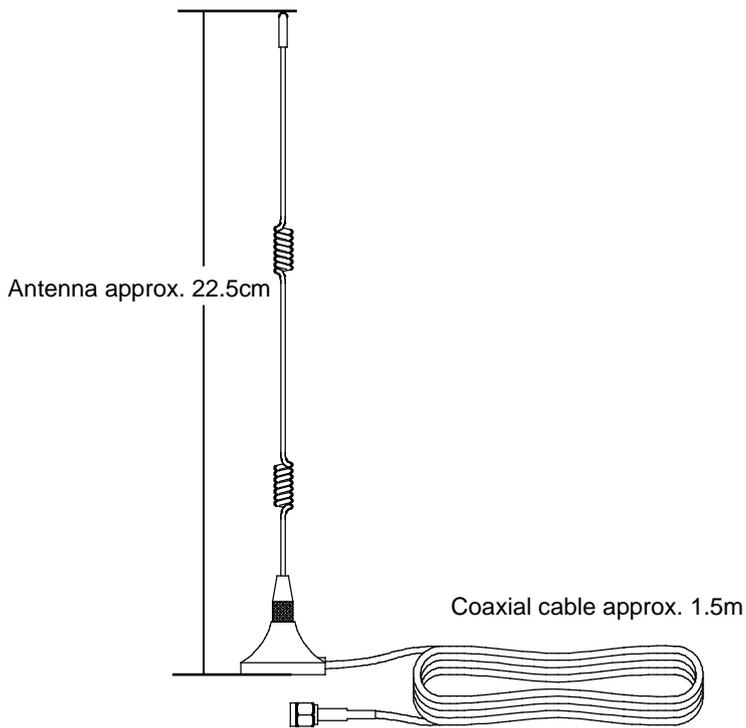
*ANT2 is fixed by resin before shipment by regulation of FCC/IC in an applicable country.

Onerous option

•AC Adapter ADB24050-C (With connecting cable 1.8m)

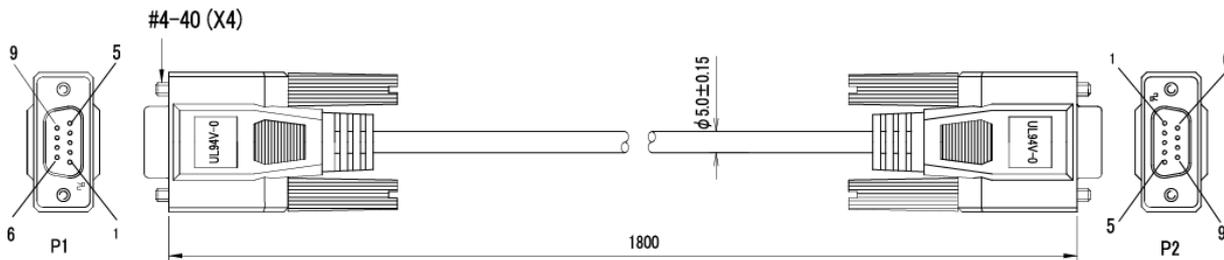


- External antenna MB-13F (With magnet base/Coaxial cable approx. 1.5m)



*ANT2 is fixed by resin before shipment by regulation of FCC/IC in an applicable country.

- RS-232C Cable (Straight) 6232-9F9F-06 (approx. 1.8m)
D-sub 9 pin (Female) <=> D-sub 9 pin (Female)



■ Safety concerns

Safety concerns (Be sure to read)

To prevent human injury of user or damage in property from occurring, be sure to observe the precautions shown below.

- The degree in safety hazard and damage generated by the wrong usage while ignoring the descriptions is classified by the following displays.



Warning

Using in an improper way while ignoring this pictorial symbol might cause a death or serious human injury.



Caution

Using in an improper way while ignoring this pictorial symbol might cause a human injury or property damage.

- About use environment and safekeeping environment

● Because it may cause trouble and malfunction, characteristic deterioration, a fire, the electric shock, please avoid the use at the following place and the safekeeping.

- The use at a place getting the direct rays of the sun and safekeeping
- The use at the place where a liquid and an alien substance, corrosive gas or flammable gas may be in in a product and safekeeping
- A place and lamp soot having high moisture, dust, the use at the place with much sand and safekeeping
- Use at the unstable place including the top of the stand which shook and the place that declined
- Use at the place with the vibration



Warning

- For handling this machine:

● In the use that extremely high reliability affecting human life is required, please do not become the use.



Warning

- During use, I outrun a power supply plug from an outlet, and, please ask store or us for repair because it causes a fire, the electric shock when abnormality occurred.

● Do not use this product for the application needing the high reliability related to human lives.



● Do not use this product in a place where it is uncertain about whether or not radio waves reach.



When you use this machine, please be sure to read "cautions on safety and use" of "TW-800 operation manual" before using it.

■ Specification

●TW-800 common specification

Items	Specification
Standard	2.4GHz Small electric power data communication system
Emission designation	F1D
Frequency band	2,403MHz-2,478MHz
Channel	76CH
Modulation way	GFSK
Communication way	Simplex
Power of antenna	2.1mW

●Receiver TW-800R-EXS

Items	Specification
Interface	RS-232C * 1
Output	Contact output * 1 point (Terminal block:M3(2P)) Contact mechanism MOS-FET/1a Rated load voltage AC/DC30V per point Rated load current 0.5A per point
Buzzer	Piezoelectric Buzzer 95dB/m
Display	LED for receiving (Green) * 1point (Combination lighting switch for pairing) Power LED (Red) * 1point Communication monitor LED * 5point
Power Source	DC24V±20% (DC19-28V) Terminal block: M3(2P)
Consumption Current	90mA or less (At receiving standby under 50mA)
Operating Environment	Temperature 0-50 degree Humidity Under 80%
Dimension	130W * 100H * 30D mm (Except projection)
Weight	Approx. 450g
Antenna	Dipole antenna (Diversity type) *ANT2 is fixed by resin before shipment by regulation of FCC/IC in an applicable country.
Switch	Power switch * 1point 6-position DIP switch for setting * 2point

*SMA Connector antenna type for ANT2 is "M3.5-S SMA-P-MALE"

■Communication

●Connector

It is used D-sub 9 pin (Male) connector.

Screw for fixed: Inch screw #4-40

Pin specification (For DCE)

Pin No.	Signal	Name	Reference
1	CD	Career	No using
2	RD	Data output	Data transmission(Receiver->connecting equipment)
3	TD	Data input	Data receiving (connecting equipment->Receiver) *No using
4	DTR	Data terminal ready	No using
5	SG	Signal ground	Signal ground
6	DSR	Data set ready	No using
7	RTS	Request to send	Connecting equipment input "ON" level at input data.
8	CTS	Clear to send	Receiver output "ON" level at input the data
9	RI	Ring indicator	No using

Receiver is DCE (Data Communication Equipment) type.

It is connected by straight cable with DTE (Data Terminal Equipment) equipment.

When it is not used flow control, "CTS" (8 pin) outputs "HIGH" signal continuously.

●Communication Specification

RS-232C protocol

Items	Contents
Baud rate	19200bps/38400bps
Parity	None
Data length	8 bit
Stop bit	1 bit
Flow sequence	RTS CTS/none

RS-232C output data types are classified into two types: "Short data" and "Long data".

Set the data type with DIP switch of the receiver. For details, refer to the setting of receiver in "Setting".

Long Data is short data added by extension region of 24bytes (Transmitter-specific data, etc.). When using the extended region, please set to "long data".

When not using the extended region, it is recommended set to "short data".

Formatting short data (19byte)

Preamble	STX	Transmitter ID number	Fastening information, test switch battery information	ETX	Checksum
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Data name	Description	Byte
Preamble	FFH,FFH,FFH	3
STX	02H	1
Transmitter ID number	ID number 10 digit is converted to ASCII data(Hexadecimal). Example) "010100004A" (30H,31H,30H,31H,30H,30H30H,30H,34H,41H)	10
Fastening information, test switch battery information	2 byte ASCII data Transmission Limit switch signal "01" (30H,31H) Transmission test switch (Battery voltage OK) "02" (30H,32H) Transmission test switch (Battery voltage low) "12" (31H,32H)	2
ETX	03H	1
Checksum	Calculated XOR from "Transmitter ID" to "ETX". And it is converted to ASCII data for 2byte.	2

*It takes 9.9ms at 19200bps baud rate.

*Sample of Check sum calculated

Transmitter ID number : 010100004A

Tightening information : Transmission Limit switch signal "01"(30H,31H)

Check sum→(37H,37H)

Formatting long data (43byte)

Preamble	STX	Transmitter ID number	Fastening information, test switch battery information	Data varied according to the type of transmitter used	Maintenance Data	Transmitter Data	ETX	Checksum
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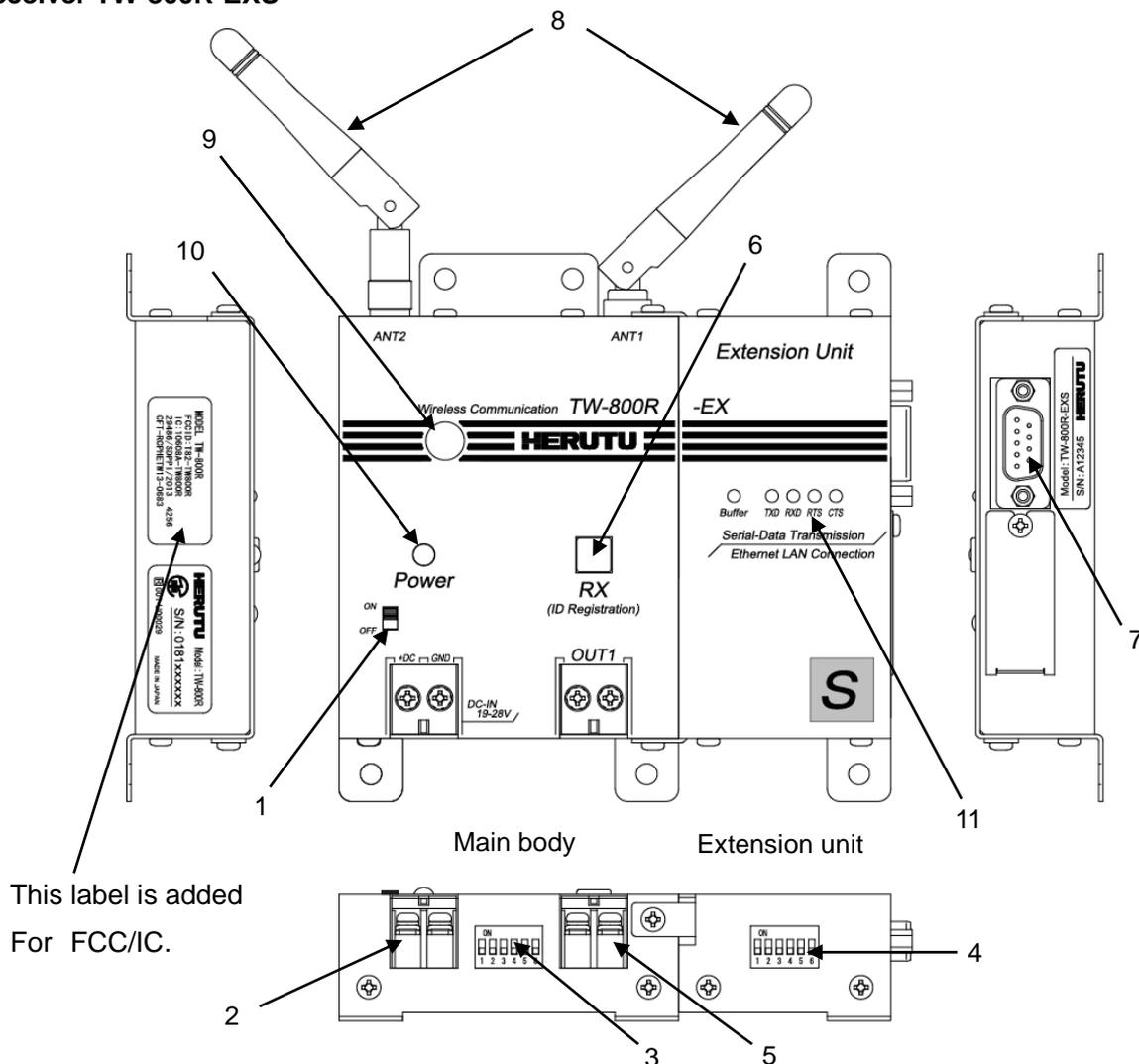
Data name	Description	Byte
Preamble	FFH,FFH,FFH	3
STX	02H	1
Transmitter ID number	ID number 10 digit is converted to ASCII data(Hexadecimal). Example) "010100004A" (30H,31H,30H,31H,30H,30H30H,30H,34H,41H)	10
Fastening information, test switch battery information	2 byte ASCII data Transmission Limit switch signal "01" (30H,31H) Transmission test switch (Battery voltage OK) "02" (30H,32H) Transmission test switch (Battery voltage low) "12" (31H,32H)	2
Data varied according to the type of transmitter used	Different depending on the transmitter type. TW-800T: "00000000000000000000" is displayed. (30H,30H,30H,30H,···,30H,30H,30H)	20
Maintenance Data※	2byte ASCII data "00"(30H,30H) -"FF"(46H,46H)	2
Transmitter Data	2byte ASCII data Normal "00"(30H,30H) Batteries need to be replaced "01"(30H,31H)	2
ETX	03H	1
Checksum	Calculated XOR from "Transmitter ID" to "ETX". And it is converted to ASCII data for 2byte.	2

※This information is exclusive to the manufacturer. Details will not be disclosed.

Regarding the output data from receiver about battery level, "Test switch transmission (battery voltage low)" is notified first, and then "Batteries need to be replaced" is notified when the battery level further drops.

■Name and function of each part

●Receiver TW-800R-EXS



1.Power switch	For power ON and OFF
2.Terminal block of power source	Terminal block for power source of DC24V(M3)
3.DIP switch 1	DIP switch for setting (6 selection)
4.DIP switch 2	DIP switch for setting (6 selection)
5.Output terminal block	Photo-mos relay output terminal block(M3)
6.RX light switch : Green (for Paring switch)	Led lights at receiving the signal from transmitter for OUT1 normally. Also RX light switch is used for paring.
7.RS-232C connector	Connector for RS-232C .D-sub 9 pin (Male)
8.Antenna	2 antennas for Diversity type. Antennas is dipole type. One is all-in-one, one is possible to take off. When it is set external antenna, it is set by means of taking off ANT2. *ANT2 is fixed by resin before shipment by regulation of FCC/IC in an applicable country.
9.Buzzer	Buzzer sounds at receiving the signal from transmitter. It is possible to set sounds on and off, or big and small. Sound pressure 95dB/m
10.Led of Power (Red)	It lights at power ON.
11.LED of communication monitor	It is LED for monitoring communication situation.

■Setting

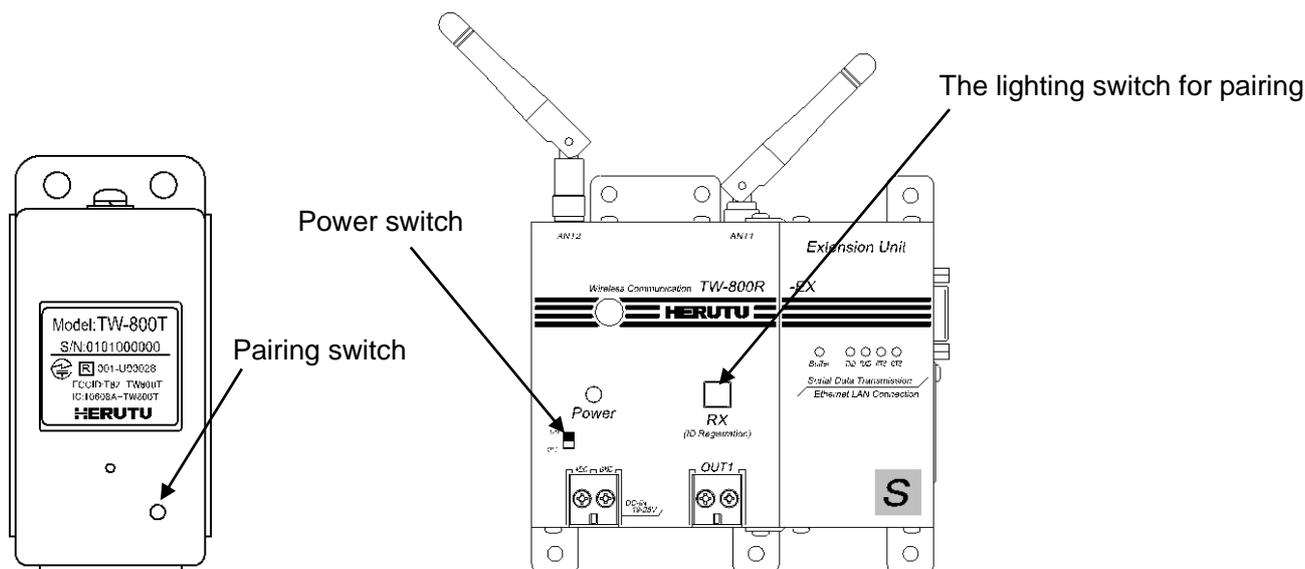
It needs doing “pairing” a transmitter and a receiver before using. The number of transmitters which can register pairing to one set of a receiver does not have restriction.

ID number of receiver is memorized in transmitter. Transmitter transmits the signal included ID number of receiver. Receiver can receive the signal attached ID number itself.

●Pairing (Registration)

1. Power Switch is turned on pushing the lighting switch.

To enter “Pairing mode” only 10 seconds with flashing the lighting switch for pairing.



2. You continue pushing the “pairing switch” over 3seconds of transmitter by a long and slender thing.

3. It is completed the pairing between transmitter and receiver, then the lighting switch of receiver is turned off.

4. It can communicate with transmitter being pairing, you turn off the power switch of receiver once.

It needs to do a “Pairing” for every transmitter when you need to register a number of transmitters.

●Delete the pairing

At receiver is not “Paring situation”, transmitter cancels the paring information (registration information on a receiver) when the paring switch is pushed over 3 seconds continuously. By this operation, transmitter can not communicate a receiver is registered “Paring”.

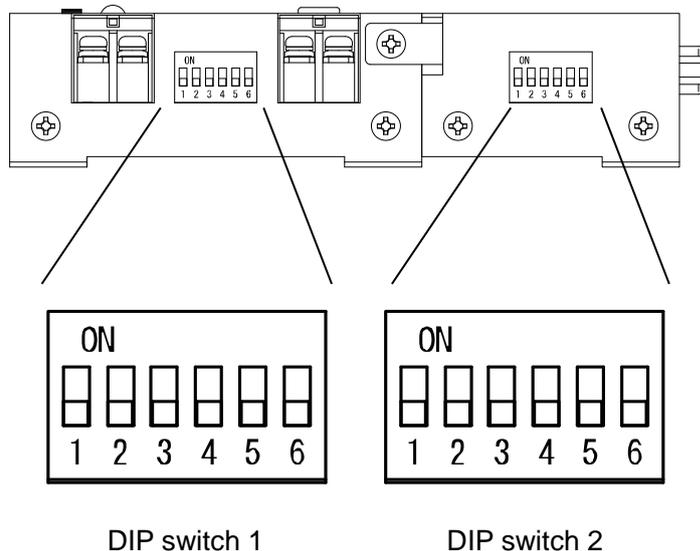
DIP switch 1 (Main body side)

●Setting of receiver

You can set “relay output time”, “Double count protect time”, “Behavior of buzzer” by 6-position DIP switch.
Please set by your operation.

◆Buzzer ON/OFF

DIPSW	1
Buzzer does not sound	ON
Buzzer sounds	OFF



◆Relay output time (4 kinds)

DIPSW	2	3
50ms	OFF	OFF
200ms	ON	OFF
400ms	OFF	ON
1S	ON	ON

◆Double count protect time (4 kinds)

DIPSW	4	5
10ms	OFF	OFF
200ms	ON	OFF
1S	OFF	ON
2S	ON	ON

*When “Relay output time” is set 50ms and “Double count protect time is set 10ms, Buzzer sounds 50ms.
Buzzer sounds 100ms ordinarily.

◆Buzzer sounds Big/Small

DIPSW	6
Small	ON
Big	OFF

DIP switch2 (Extension unit side)

◆Baud rate setting

DIP SW	1
38400bps	ON
19200bps	OFF

◆Flow control

DIP SW	2
Flow control no using	ON
Flow control(RTS/CTS) using	OFF

◆RS-232C output data type setting

The data size varies depending on the set values.

For details of each data format, refer to "Communication".

DIP SW	5
Long data	ON
Short data	OFF

*DIP switch 2 - 3, 4 and 6 are not used.

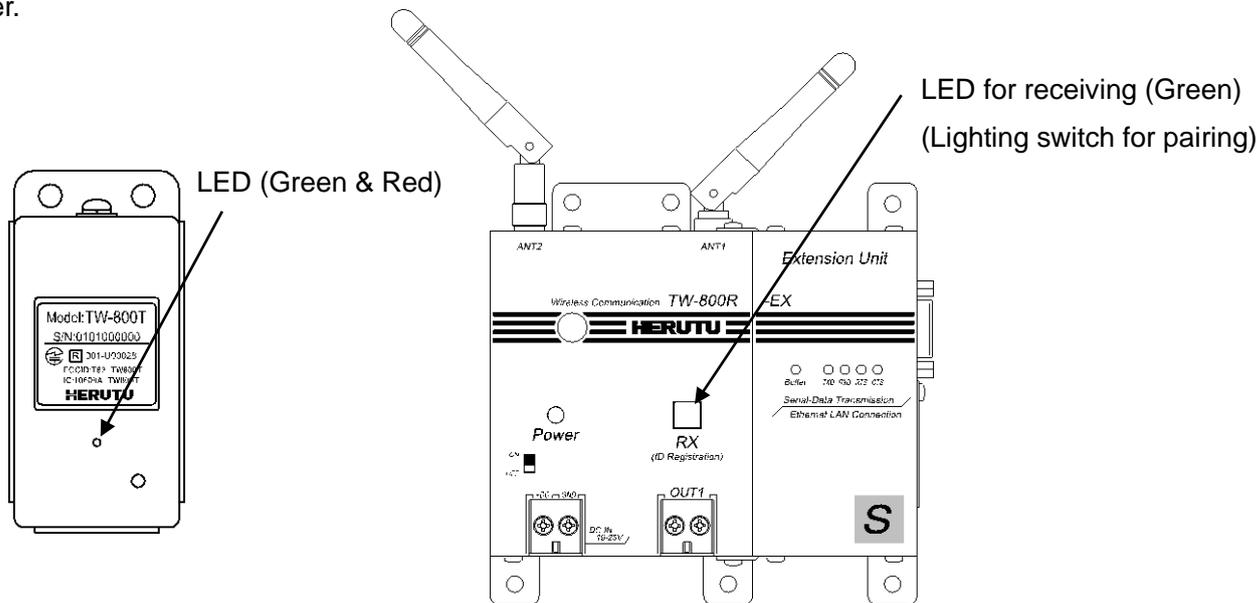
***Caution**

- When the signal from another transmitter is received while the receiver was carrying out the relay output, the relay output for transmitters received later is not performed. RS-232C output is performed respectively.
 - When a receiver receives the signal from same transmitter during double count prevention time, relay output time, and buzzer sound, a receiver does not process a signal but transmits the "BUSY" signal to a transmitter. When a transmitter receives "BUSY" signal to a receiver, Green LED of transmitter flashes 4 times.
 - When the signal from another transmitter is received while buzzer of receiver sounds, the buzzer sounds for transmitters received later is not performed. RS-232C output is performed respectively.
 - The receiver holds the data from a transmitter until each processing (a relay output and the prevention from a double count) is completed. A limit is among the quantity which a receiver can hold temporarily, and when the signal from the transmitter exceeding the number of maintenance limits of another ID is transmitted before each processing was completed, a receiver may transmit the "BUSY" signal to a transmitter.
(When a transmitter receives "BUSY" signal to a receiver, Green LED of transmitter flashes 4 times.)
- When you set up relay output time and double count prevention time in long time, please be careful.

■How to use

1. Power switch of receiver is turned on. Please confirm the LED situation as turning off.

When the LED for receiving turns on, the transmitter is not registered by pairing. Please make a pairing with transmitter.



2. Transmitter transmits the signal at striking the limit switch by tightening the bolts from torque wrench.

When the communication is done normally, receiver output RS-232C output and receiver sounds the buzzer and output relay output according to setting. Green LED of transmitter turns on 1 time.

When the communication is not done normally, receiver doesn't move.

Red LED of Transmitter flashes 10 times

While the receiver output relay output or while receiver is in double count protect time or while buffer of receiver is full, receiver transmit the "BUSY" signal to transmitter. When the transmitter receives the "BUSY" signal, the Green LED of transmitter is flashed 4 times.

	Transmitter	Receiver
Communication OK	Green LED 1 time flashing	LED 1 time flashing
Communication NG	Red LED 10 times flashing	—
BUSY	Green LED 4 times flashing	—

Buzzer sound time is usually for 100ms. When the relay output is set 50msec and double count protect time is set 10msec, Buzzer sound time is 50msec.

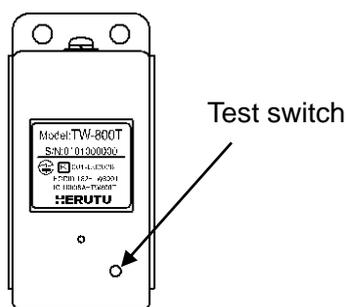
*When the transmitter is not done "Pairing" transmits, Red LED will be flashing 3 times.

●Test switch

There is a test switch for checking the battery and communication. When the transmitter transmits the signal by test switch not limit switch, receiver doesn't output relay output. But LED of receiver only turns on.

Also transmitter make a checking the battery at pushing the test switch. You can know the battery situation by transmitter LED and Receiver LED.

The test switch also can be used as a pairing switch. A long press on the test switch (3 seconds or more) resets the pairing with the receiver and prevents communication with the registered receiver. When pairing is reset by mistake, perform the pairing procedure again.



	Transmitter	Receiver
Communication check	OK: Green LED 1 time flashing NG: Red LED 10 times flashing	LED 1 time flashing
Battery power low level	Red LED 1 seconds lighting	LED 2 times flashing

*Transmitter displays the situation of battery power low level after transmitter displays communication check result (OK or NG).

- Battery level notification function

The battery level notification function notifies the battery level status in two stages.

①Notification of low battery level with test switch: It is possible to check the battery level with the test switch.

When the battery is low, the red LED will light for 1 second.

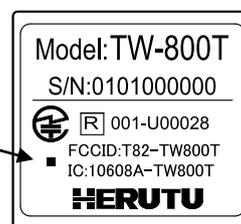
②Battery replacement notice: If the battery level is lower than in ① and the battery needs to be replaced, the green LED flashing after transmission will change to an orange LED flashing.

When the orange LED blinks, please replace it with a new battery immediately.

When you replace the battery with a new one, the LED on the transmitter will return to green from the second and subsequent transmissions.

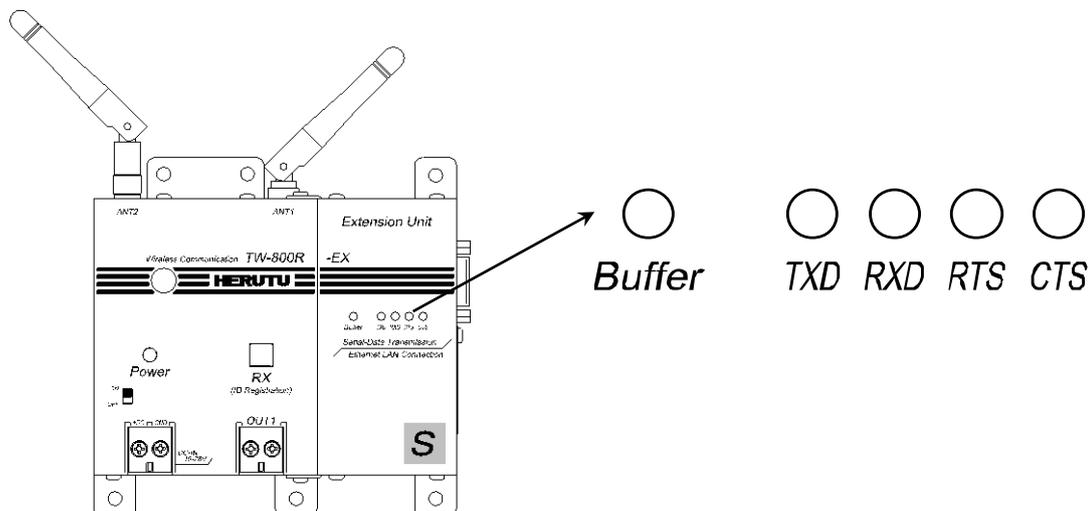
Regarding the output data from receiver about battery level, "Test switch transmission (battery voltage low)" is notified first, and then "Batteries need to be replaced" is notified when the battery level further drops.

For transmitters that support the battery level notification function(battery replacement notice), ■ is printed on the sticker.



●Communication monitor

Receiver has a monitor LED of RS-232C output situation. It is displayed below according to communication situation.



LED	Explanation
Buffer(Red)	Red LED is turned on when data remains in the buffer.
TXD(Green)	Green LED is turned on when data is transmitting.
RXD(Red)	Red LED is turned on when data is receiving. *no using. If the data is received from connecting equipment, LED will be turned on. But the data is canceled.
RTS(Red)	Green LED is turned on when the situation is to be able to transmit.
CTS(Red)	Red LED is turned on when the situation is to be able to receive.

■Note on use

■Caution for communication

•If the transmitters transmit at the same time without any difference of 1 msec, one receiver can receive up to four transmitters.

•The receiver has a buffer that temporarily holds the data sent from the transmitter. The buffer can hold up to 5 data. While buffer of receiver is full, receiver transmit the “BUSY” signal to transmitter. Even if the transmitter transmits the data in this state, the data can not be output to RS-232C from the receiver, so it is necessary for the connected external device to receive the data promptly.

■Caution for “Pairing”

The number of transmitters which can register pairing to one set of a receiver does not have restriction.

Receiver doesn't remember ID number of transmitter. It cannot read from a receiver ID of the transmitter which is registered pairing, and how many set pairing is registered.

■Caution for wireless Law

○Radio device in this product has been certified by the Radio Law. It does not need a license of radio stations according to using this product.

○Do not use it close to a person with a cardiac pacemaker.

Electromagnetic interference may affect it, putting his/her life at risk.

○Do not use it close to medical equipment.

Electromagnetic interference may affect the cardiac pacemaker to cause loss of human life.

○Do not use it close to an electric oven.

Electromagnetic interference may affect the medical equipment to cause loss of human life.

○Radio device in this product has been certified by the Radio Law. Do not disassemble or modify this product.

■Caution for Radio Interference with 2.4GHz Wireless communication

Take the following precautions for communication by 2.4GHz wireless communication.

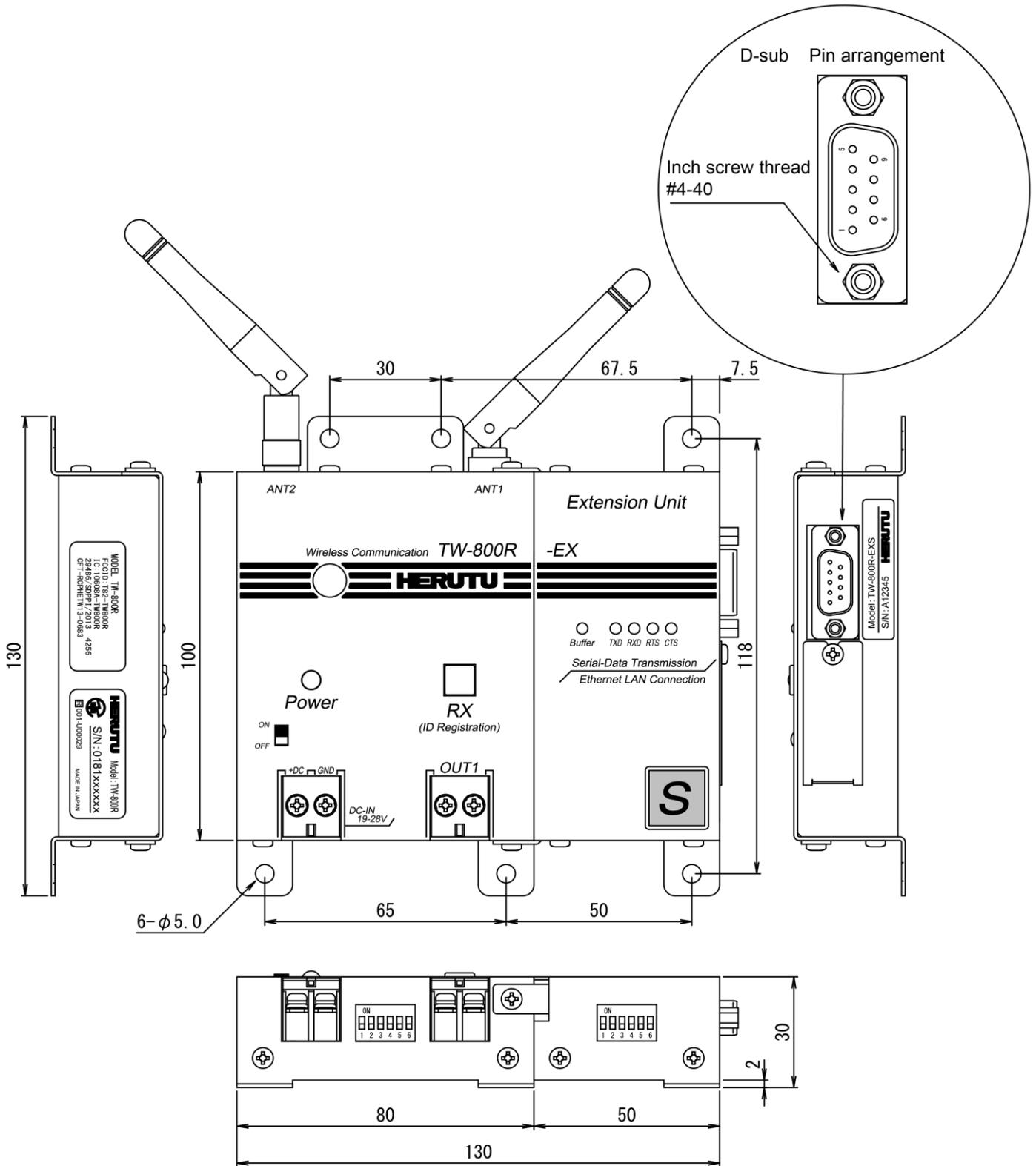
Within this product's frequency range, industrial, scientific, and medical equipment, such as electric oven, as well as RFID premises radio stations (license required) and specified low power radio station and ham radio station (license not required) used in factory manufacturing lines are operated.

○Before using this device, confirm that no RFID premises radio station, specified low power radio station, or ham radio station is operating close to it.

○If this product caused radio interference with an RFID premises radio station, immediately change the product's frequency or stop radio emission, and contact representative for actions to take to prevent cross talk.

■ Dimensional drawing

● Receiver TW-800R-EXS



■ After service and Warranty

If something is wrong. If you should find anything wrong with the machine when using it under normal conditions, check the warranty and repair regulations and contact the outlet store through which you purchased the product or our Sales Office. The latest warranty and repair regulations can be found on our website.

[Warranty Regulation]

This regulation (hereinafter referred to as the "Regulation") is for post-shipment warranty provided by HERUTU ELECTRONICS CORPORATION (hereinafter referred to as the "Company") so that you can use the Company's product you have purchased with confidence. The Regulation does not apply to special order products (custom products). In addition, purchased products shall be subject to the relevant manufacturer's warranty regulations, and the Regulation shall not apply.

Please note that in the event that the product you purchased comes with an instruction manual that describes the Company's old repair regulation, the latest Regulation will still apply.

1. Warranty period

Unless otherwise specified, the warranty period shall be "up to thirteen months from the date of shipment of the product by the Company". During the warranty period, the Company will replace the product with a new one or repair it free of charge in accordance with the provisions of the Regulation.

In addition, if a failure occurs during the warranty period due to the Company's responsibility and the product with the failure (hereinafter referred to as the "Product") is replaced with a new one or repaired free of charge, the warranty period of the Product will be "thirteen months from the date of initial shipment of the Product, or six months from the date of shipment of the Product that has been replaced or repaired, whichever comes later".

The warranty period for paid repairs shall be in accordance with the provisions of the Company's repair regulation.

2. Warranty scope

If a failure occurs during the warranty period due to the Company's responsibility, the Company will replace the product with a new one or repair it free of charge.

Even within the warranty period, the warranty does not apply in the following cases:

- A) In the event of failure or damage caused by improper handling by the customer, such as dropping or impact during transportation or movement by the customer
- B) In case of failure due to disassembly or modification of the main unit by the customer
- C) In case of natural disasters such as fires, earthquakes, floods, and in case of failure or damage due to abnormal voltage
- D) In case of failure caused by failure of equipment other than the Company's designated equipment connected to the Product
- E) In case of failure of the Product's accessories (AC adapter, antenna, connection cable, etc.)
- F) If damage is caused by the failure of consumables or limited-life parts included in the Product:
 1. Consumables: Batteries (rechargeable, batteries, dry batteries, button batteries, etc.), recording media (SD cards, etc.)
 2. Limited-life parts: Various switches (limit switches, push button switches, etc.) and various sensors

3. Other items that are worn out or have a service life due to use

If consumables or limited-life parts fail, we will replace or repair the parts for a fee.

- G) In case of failure caused by handling contrary to the usage and precautions described in the instruction manual of the Product
- H) If repaired, adjusted, or improved by elsewhere other than the Company
- I) If the Company is unable to reproduce the failure

3. About repair of the Product

Please note that repairing the Product requires equipment such as measuring instruments and tools, so the Company will handle it as a pick-up repair service at the Company.

4. About the shipping cost for replacement or repair of the Product

Shipping charges for sending the Product to the Company or a distributor, as well as shipping charges for sending the Product that has been replaced or repaired by the Company or the distributor to the customer, will be borne by the Company or the distributor.

5. Disclaimer

The Company is not responsible for any direct or indirect damages or monetary loss caused by failure of the Product or its use.

6. Additional notes

Please note in advance that the information of the Product described on the Company's website and in the catalogs, instruction manuals, technical materials, and other materials provided by the Company are subject to change without notice to customers.

[Repair Regulation]

This regulation (hereinafter referred to as the "Regulation") shall be applied to paid repair service (hereinafter referred to as the "Service") provided by HERUTU ELECTRONICS CORPORATION (hereinafter referred to as the "Company"). The Regulation does not apply to special order products (custom products). In addition, purchased products shall be subject to relevant manufacturer's repair regulations, and the Regulation shall not apply.

Please note that in the event that the product you purchased comes with an instruction manual that describes the Company's old repair regulation, the latest Regulation will still apply.

1. Subject of the Regulation

The Service is provided for the Company's products that are "beyond the scope of the warranty specified in the warranty regulation" and "from the sales start date to the end date of the repair period (seven years from the production end date)". However, please note that the end date of the repair implementation period may be earlier depending on the availability and procurement status of repair parts.

2. Establishment of contract

The contract shall be established when the customer approves the quotation presented by the Company and

issues an order form before the end of the repair implementation period.

3. Purpose of the Service

The Company will provide the Service for the purpose of repairing the function and performance of the Company's product used by the customer if it fails beyond the scope of the warranty specified in the warranty regulation. Please note that the Service requires equipment such as measuring instruments and tools, so the Company will handle it as a pick-up repair service at the Company.

4. Usage fee for the Service

The usage fee for the Service shall be the total of the following fees:

A) Repair service fee

The repair service fee is the total amount of technical fees, parts costs, other expenses incurred, and applicable taxes associated with repairing the Company's product (hereinafter referred to as the "Product for repair") that the customer wishes to repair.

B) Shipping fee (including the cost of packaging boxes)

The Company kindly asks that customers bear the shipping costs for sending the Product for repair to the Company and for returning it from the Company. However, in the event that the Product for repair is sent by payment on delivery by the customer, the shipping cost will be included in the Service charge.

5. Warranty period and scope of the Product for repair

The warranty period for the Product for repair is "up to six months from the date of repair completion". However, please note that failures other than the repaired parts (repaired places or replaced parts) are not covered by the warranty of the Product for repair. In addition, if a failure occurs due to the Company's responsibility within the warranty period, the Company will again repair the product free of charge.

6. Handling of repair parts

A) In order to provide the Service stably for a long time and to promote environmental protection, etc., the Company may use recycled parts or alternative parts at the time of repair at its discretion.

B) The Company may, at its own discretion, collect the removed parts for the purpose of recycling or analysis at the time of parts replacement through the regulation of the Service. Please note that the collected parts are the property of the Company and will be recycled, used or discarded at its discretion.

7. Estimate for the Service

The estimate for the Service is basically free of charge. However, if the Company is unable to reproduce the failure, it will not be able to carry out repairs and will not provide an estimate. If a technical investigation is required to reproduce the failure, the Company will estimate the cost of reproducing the failure.

8. Return of unrepaired product

If the Company does not estimate the cost of the Service due to reasons such as being unable to reproduce the failure, it will return the Product for repair to the customer.

In addition, if the customer does not place an order within three months from the date of creation of the quotation, or if the customer does not accept the quotation and the customer expresses an intention not to carry

out the repair, the Company will assume that the customer has canceled the request for the Service, and the Company will return the Product for repair to the customer without carrying out the repair.

In addition, if a shipping fee is incurred for returning the product, it will be borne by the customer.

9. Handling of personal information

The Company will properly handle personal information such as names and addresses being provided in accordance with the privacy policy posted on the Company's website.

10. Compensation for damages

- A) The responsibility of the Company for providing the Service shall be limited to the matters and contents specified in the repair regulation, and shall not include any damages incurred by the customer due to special circumstances (including loss of profits of the customer and damages based on claims for compensation made by third parties against the customer) and damages caused by the customer being unable to use the product due to a failure or defect of the Product for repair. However, this does not apply if the damage was caused by the Company's willful misconduct or gross negligence.
- B) Even if the Company is liable to the customer for damages in connection with the regulation of the Service, the Company's liability shall not exceed the amount equivalent to the value of the Product for repair, except in cases of willful misconduct or gross negligence on the part of the Company. The value of the Product for repair shall be calculated based on the residual value after depreciation or the price of products with equivalent performance sold in the market at the time of damage.

11. Additional notes

- A) The Company cannot restore stickers, LCD protective sheets, and coloring applied to the outer casing parts that you have attached yourself. In addition, if advertisement stickers were affixed at the time of sale, they cannot be newly prepared as repair parts when replacing the outer casing parts. After replacing the outer casing parts, the advertisement stickers will be returned without being affixed.
- B) Please note in advance that the information of the Product on the Company's website and in the catalogs, instruction manuals, technical materials, and other materials provided by the Company are subject to change without notice to customers.



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