



Wireless Call Systems

BN920

Instruction Manual V1.20

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

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1. Overview

1-1. Introduction

This instruction manual describes the information required for using this product including overview, installation, and operation of this product. Read this manual carefully before using this product. Keep this manual handy so that you can take it out immediately.

A wireless module "RN2903" built in this product obtained the transmitter approval of Federal Communication Commission (FCC), CFR 47 Telecommunication, Part 15.212 Modular Transmitters, and the module approval of Part 15, Subpart C "International Radiators" based on the above approval.

The "RN2903" module is also approved for use in Canada according to the Radio Standards Specification (RSS) RSS-210 and RSS-GEN of Industry Canada (IC).

■ FCC Warning

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 annunciator.
- Connect the equipment into an outlet on a circuit different from that to which the annunciator is connected.
- Consult the dealer or an experienced radio/TV technician for help.

■ IC Warning

This device complies with Industry Canada license exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada.

Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

This radio transmitter (identify the device by certification number, or model number if Category II) has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada.

Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

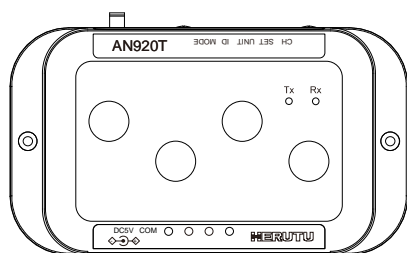
■ External Antenna Types

Type	Gain(dBi)	Impedance
Sleeve Dipole	Under 6dBi	50Ω

1. Do not use this product for the application that may cause harm to human body or damage to other devices and equipment.
Do not use this product near the devices that may malfunction due to radio waves emitted from this product.
2. Disassembly or modification of the device having an approval is prohibited by the law.
3. This product is available only in Canada and USA.
4. Because the communication performance is changed depending on the surrounding environment, be sure to confirm the communication is established before installation of this product and then use it.

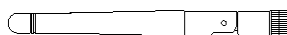
1-2.Main Unit and Accessories

■AN920T

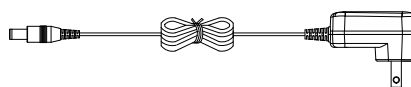


Transmitter main unit

“AN920T” ×1



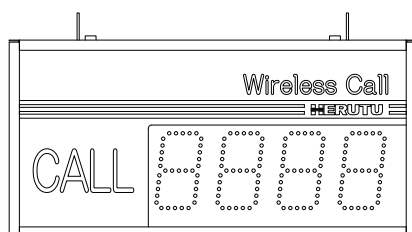
Antenna ×1



Cable Approx. 1.5 m

AC adapter ×1

■BN920R (Number Indicator Type)

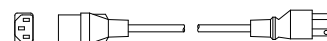
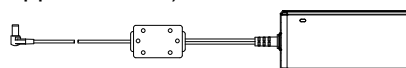


Receiver main unit BN920R



Antenna × 1

(Cable: DC-code approx. 1.5 m + AC-cord approx. 1.8 m)



AC adapter ×1

※BNW-920R is same.

1-3.Safety Precautions (Be Sure to Read This)

This section describes the matters to be observed in order to prevent harm to the users and other persons and damages to the property.

- The following marks and displays classify and describe the extent of harm and damage caused by failing to observe the display content and using this product wrongly.



Warning

This display column shows "a failure to do observe it could result in death or serious personal injury".



Caution

This display column shows "a failure to do observe it could result in only the personal injury or property damage".



Caution

- Common matters in handling

- Avoid using this product in the humid or dusty place. Dusts or water enters the product, which may cause the fault, fire, or electric shock.



- Handling this product

- This product is the wireless communication equipment made of precision parts. Do not disassemble or modify it. Or the accident or fault may occur.



Warning

- Handling this product

- Do not use this product for application that requires the extremely high reliability affecting the human life.



- Do not use this product in the area which the radio wave reaches or not.



- Handling the power supply

Be sure to observe the followings in order to prevent the accidents such as heat generation, damage, or ignition of AC adapter and power cord.

- Do not place the AC adapter and power cord close to fire or insert them into fire. Or they may be burst and ignited, resulting in the accident.










- Use the AC adapter and main body only at the specified power supply voltage in order to prevent burst and ignition accidents.





- Do not use the AC adapter and main body at the location where they easily get wet. Or the accidents including heat generation, ignition, or electric shock and faults may occur.



<ul style="list-style-type: none"> Do not touch the AC adapter, main body, power cord, and outlet with wet hands. Or the accident such as an electric shock may occur. 	
<ul style="list-style-type: none"> Do not damage the power cord. Short-circuit or heat generation may cause fire or electric shock. 	
<ul style="list-style-type: none"> Do not use the power plug with dusts attached. Short-circuit or heat generation may cause fire or electric shock. 	
<ul style="list-style-type: none"> Do not give a strong shock to the AC adapter. Or the accident or fault may occur. 	
<ul style="list-style-type: none"> If you find a deformation in the AC adapter, do not use it. Or the accident or fault may occur. 	
<ul style="list-style-type: none"> Do not charge the main body at the location where the flammable gas is generated. Or the ignition accident may occur. 	
<ul style="list-style-type: none"> Never disassemble the AC adapter. Or the accident or fault may occur. 	

■ Never disassemble the AC adapter.

Remove the power plug from the outlet because it may cause fire and electric shock. Request the dealer or our company to repair it.

<ul style="list-style-type: none"> When smoke comes or there is a strange smell, immediately stop usage and remove the power plug from the outlet because it may cause fire and electric shock. Request the dealer or our company to repair it. 	
<ul style="list-style-type: none"> If the cord is damaged, do not use it. Using the cord damaged continuously may cause fire or electric shock. 	

■ Reliability of wireless communication

As wireless communication has properties that are different from those of wired communication, communication errors may occur due to the following.

- Exceeds the communication distance.
- Enters a dead zone.
- Interfered by strong jamming

If signals are often jammed, or being jammed leads to operational problems, stop using the systems and restart using the systems after removal of the cause.

Radio waves may not be received due to various reasons other than the above. Please understand this before using the systems.

*A dead zone is an area where the radio wave transmitted from the transmitter becomes extremely weak due to radio waves reflected from walls or other objects.

1-4.General

BN920 series are wireless call systems using “LoRa Technology” for wireless communication.

The wireless call systems comprise a transmitter and a receiver. The transmitter transmits a code in response to a button input or a terminal block input. The receiver receives signals from each transmitter, and indicates numbers according to the input from the transmitter.

BN920 can be used for calling distant people and objects. Examples include operators notifying a shortage of parts or an abnormal event in the assembly process.

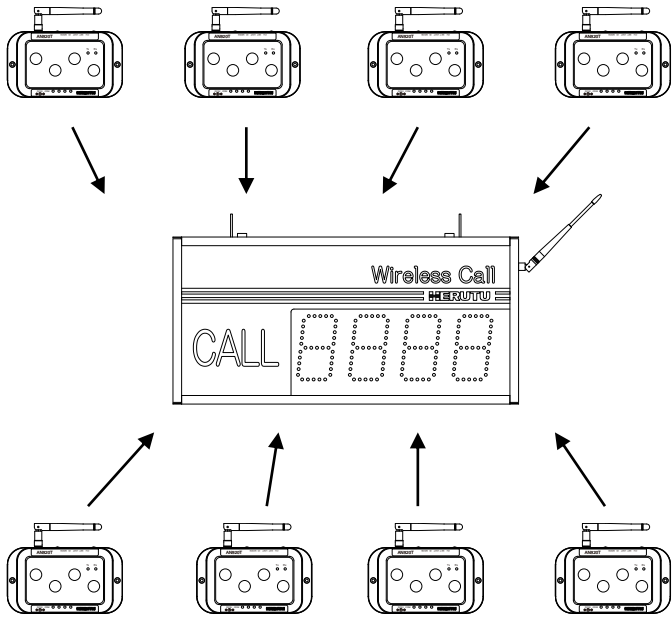
The receiver has two display modes: 1-Digit mode and 2-Digit mode. The number of corresponding transmitters is different depending on the display mode.

Display modes	Device configuration	Indicator numbers that can be indicated simultaneously	Indicator numbers
1-Digit	1 receiver supporting max. 8 transmitters	Max. 4	1 – 8
2-Digit	1 receiver supporting max. 64 transmitters	Max. 2	1 – 64

1. The communication distance is approx.500m indoors and approx. 1km outdoors.
It can be extended further by setting the wireless output settings to “Long Range”.
2. Set a desired communication method. (With/Without answerback)
3. Wireless channels can be selected from 16 types, and code settings can be selected from 100 types.
Totally, a maximum of 160 configurations can be set.
4. The transmitter is equipped with 4 buttons (Orange/Red/Green/White) and 4 external inputs (Orange/Red/Green/White). *Green(button and external input) is not available.
5. The included AC adapter is used for the power source for the transmitter and the receiver. (100 – 240 VAC)
6. There are Single-sided indicator type and Double-sided indicator type.
7. An optional speaker enabling sound notifications can be installed on the receiver.

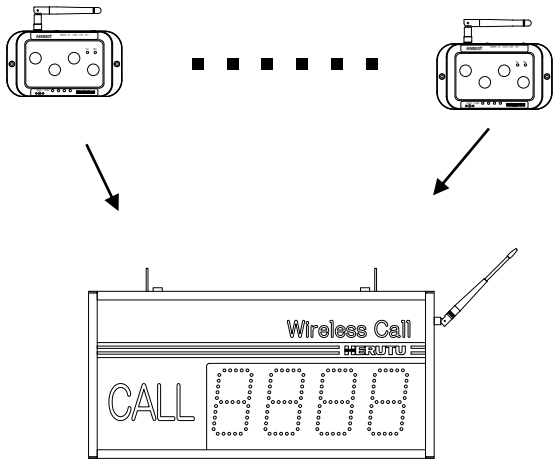
1-5.System Configuration

■1-Digit mode



AN920T Max. 8nit : BN920R 1 unit

■2-Digit mode



AN920T Max. 64 units : BN920R 1 unit

2.Specification

2-1. General Specification

Item	Specification
A destination country	U.S.A., Canada
Standard	FCC : Part15 Sub Part C § 15.247 IC : RSS-210/RSS-Gen
Frequency Band	903MHz~927MHz
Modulation Band	LoRa Technology
Antenna Power	Standard 3dBm(2.0mW) / Long Range 18.5dBm(70.79mW)
Modulation Speed	Approx.1170bps
Channel Step	1.6MHz
Antenna	External Dipole Antenna
Communication Method	Half Duplex

2-2. Transmitter AN920T

Item	Specification
Indicator Element	1 Red LED (Rx) 1 Green LED (Tx)
Input(s)	4 Button (Orange/Red/Green/White(Off)) 4 External-Input (Orange/Red/Green/White(Off)) *1
Power Source	AC 100-240V (Using included AC Adapter)
Wattage.	7W
External Dimensions	(W × H × D)150 × 85 × 25 mm (5.9 × 3.3 × 1.0")
Weight	Approx. 0.2kg (0.4lb)
Operating Environment	Temperature:0-+50°C(32-124°F) Humidity:20-85% (without condensation)
Switches	1 Switches (2-Position DIP each) 1 Switches (16-Position Rotary each) for Channel Setting 3 Switches (10P-Position Rotary each) for Set, Unit, ID
Included	1 AC adapter, 1 Antenna

*1 : Available Wire Range Single Line: ϕ 0.4mm(AWG26)~ ϕ 1.0mm(AWG18)

Twisted Line: ϕ 0.3mm²(AWG22)~ ϕ 0.75mm²(AWG20)

Wire Diameter: ϕ 0.18 more

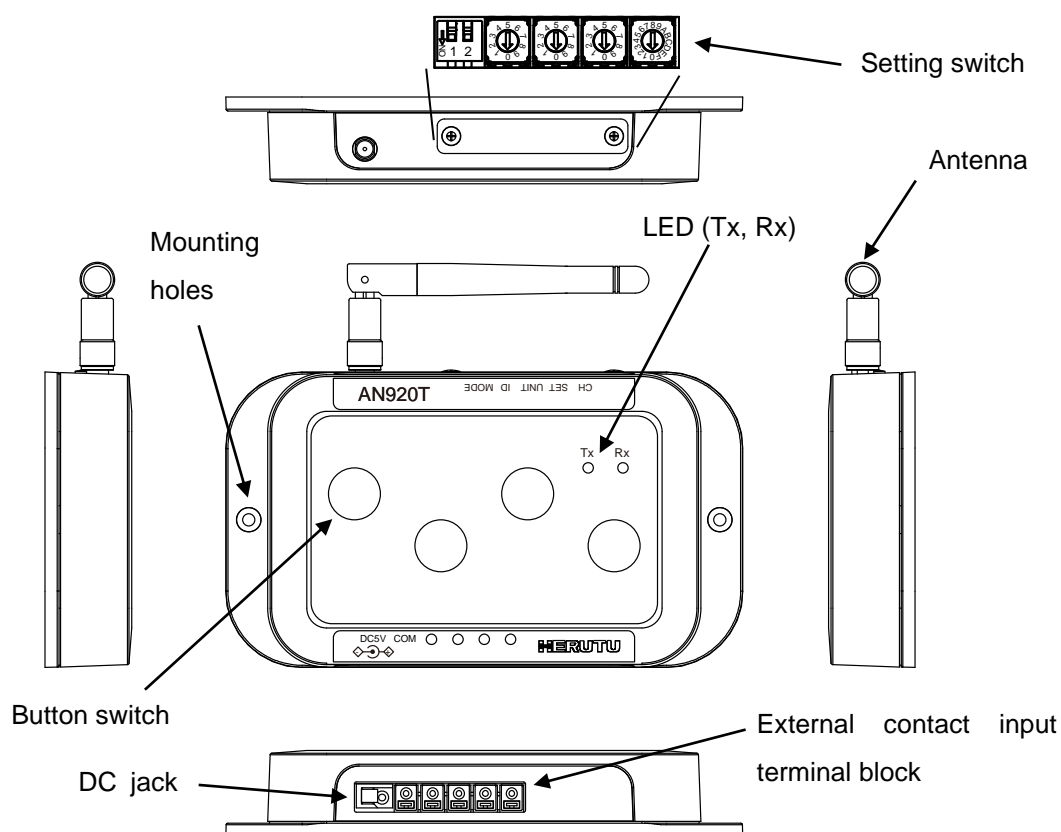
2-3. Receiver BN920R/BNW920R

Item	Specification	
Product type	BN920R	BNW920R
Indicator Element	4-Digit Indicator, High Brightness Red 7-Segment LED Single-Sided Indicator Indicator Letter Dimensions (H×W)110×60mm(4.3×2.4")	4-Digit Indicator, High Brightness Red 7-Segment LED Double-Sided Indicator Indicator Letter Dimensions (H×W)110×60mm(4.3×2.4")
Output(s)	2 Open Collector Outputs (Max. Rated Load DC 35V 50mA) 2 Relay Output (Max. Related Load AC125V 0.5A / DC 24V 1A)	
Input(s)	Optional Keyboard Unit (KE-2)	
Power Source	AC100-240V (Using included AC Adapter)	
Wattage	Max.25W	Max.35W
External Dimensions	(W×H×D)600 × 290 × 80mm (23.6×11.8×3.1") (except any protruding object such as an antenna)	
Weight	Approx.5.5kg (17.6lb)	Approx.5.8kg (18.1lb)
Operating Environment	Temperature : 0~+50°C(32-122° F) Humidity : 85% or less (without condensation)	
Setting Switch	1 Switches (8-Position Dip each) for Channel, Unit, Display Modes 1 Switches (4-Position Dip each) for Set	
Included	1 AC adapter, 1 Antenna	

• The weight of the receiver with a speaker is approx.1.7kg heavier than that of a receiver without a speaker.

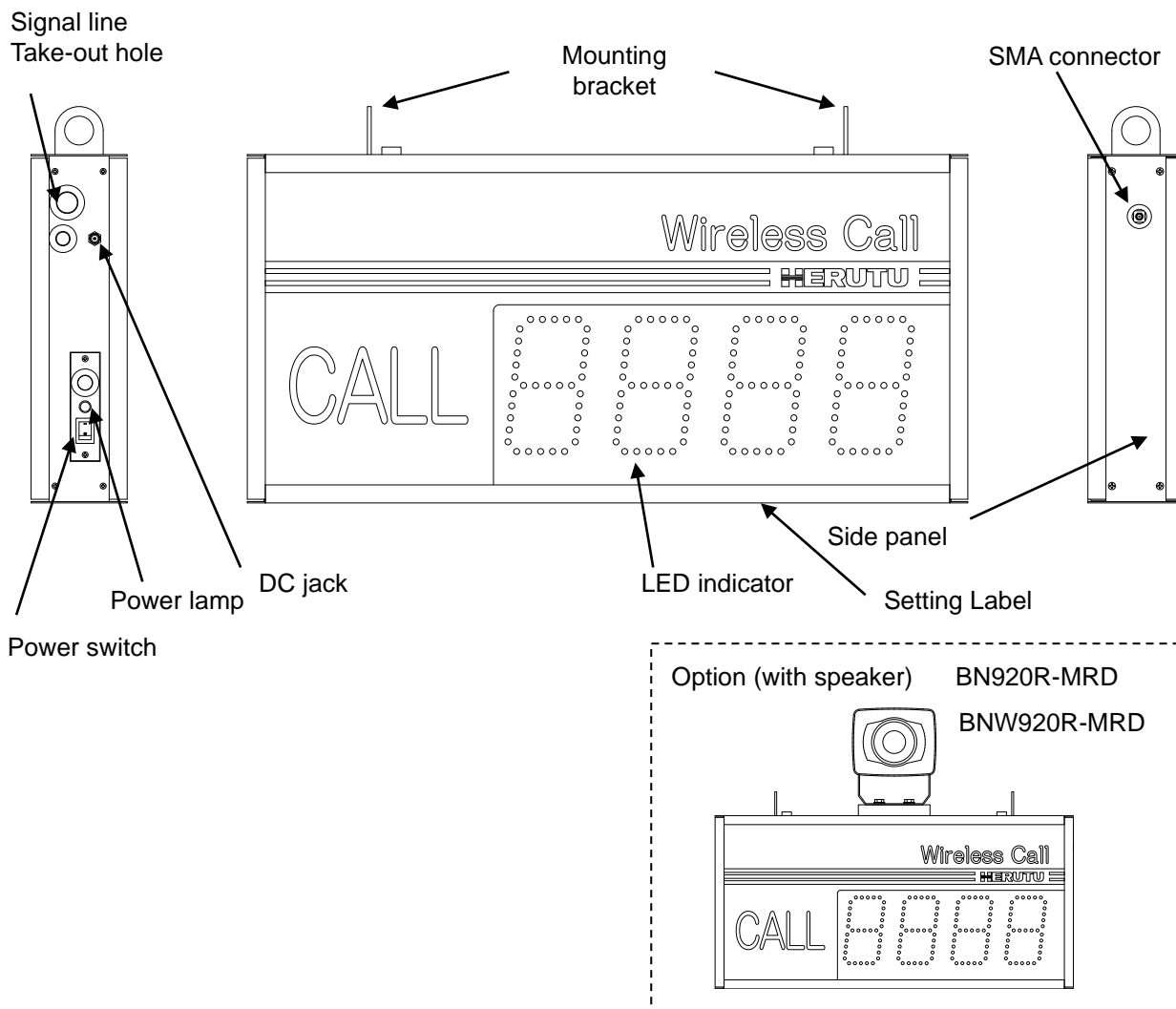
3.Part Names And Descriptions

3-1.AN920T



Item	Description
Setting switch	Configures the settings for the channels, sets, units and IDs. and communication settings.
Antenna	Connects the included antenna.
Mounting holes	Mounting hole of $\phi 3.5 \times 2$
LED	Green LED (Tx) for transmitting and red LED (Rx) for receiving.
Button switch	Button switches in Orange/Red/Green/White. Do not press more than one switch at the same time.
Input terminal block for external contact	External inputs in Orange/Red/Green/White. The white button switch is for clearing LEDs (Off). Input a no-voltage contact signal. Do not press more than one switch at the same time.
DC jack	DC jack for connection of the included AC adapter

3-2. BN920R/BNW920R

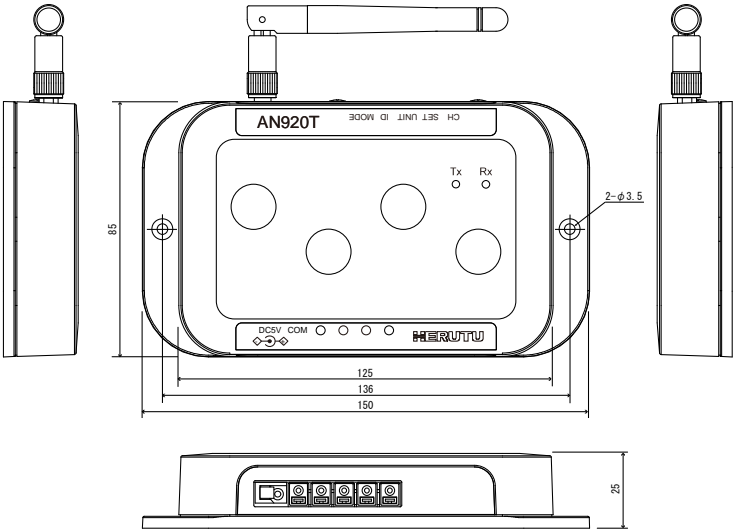


*BNW920R has a double sided LED indicator.

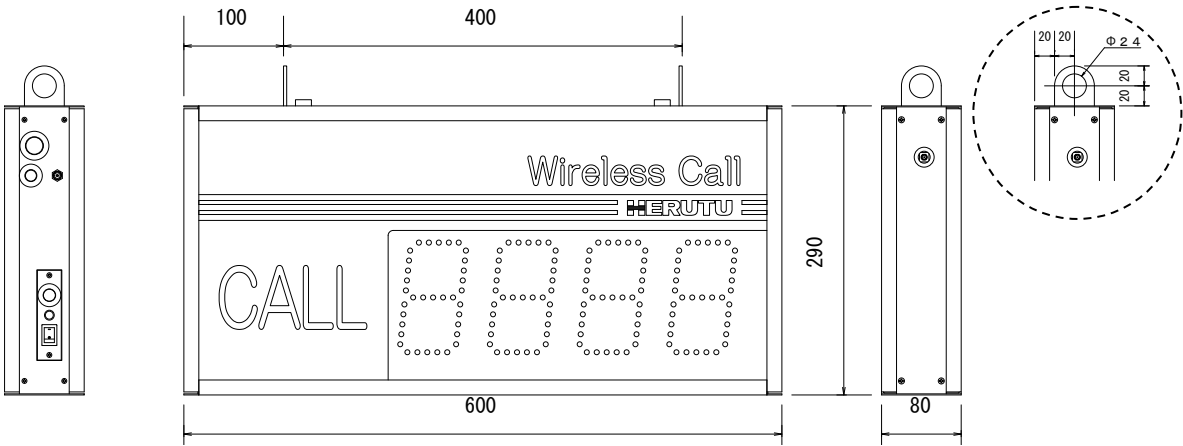
Item	Description
Mounting bracket	Use the mounting metal fittings for fixing the receiver.
SMA connector	Connects the included antenna.
Signal line take-out hole	Connect the signal lines to the internal input/output terminal block by drawing them through this takeout hole.
DC jack	DC jack for connection of the included AC adapter
Power lamp	Lamp for the power source. Lights up when the power source is switched on.
Power switch	Power switch of the main unit
LED Indicator	4-digit 7-segment high brightness LED. The number corresponding to the transmitter ID received illuminates (or blinks).
Side panel	Remove the side panel to connect signal lines to the input/output terminal block or configure channels/ indication mode/ unit/ set.
Setting label	Label showing factory default channel/ set/ unit. e.g. "1-0-2": Channel 1/ Set 1/ Unit 2
Speaker	An optional speaker can be installed on BN920R-MRD and BNW920R-MRD.

4. Drawing

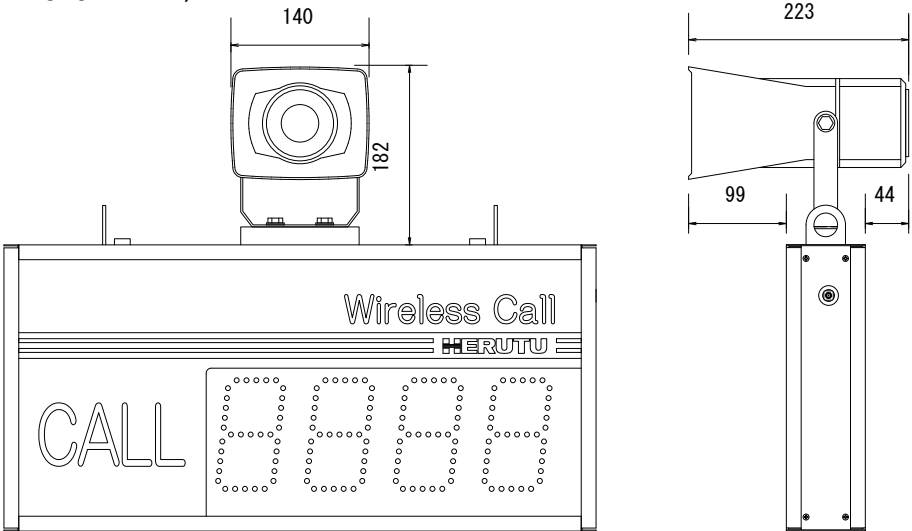
4-1. AN920T



4-2. BN920R/BNW920R



(BN920R-MRD/BNW-920R-MRD)



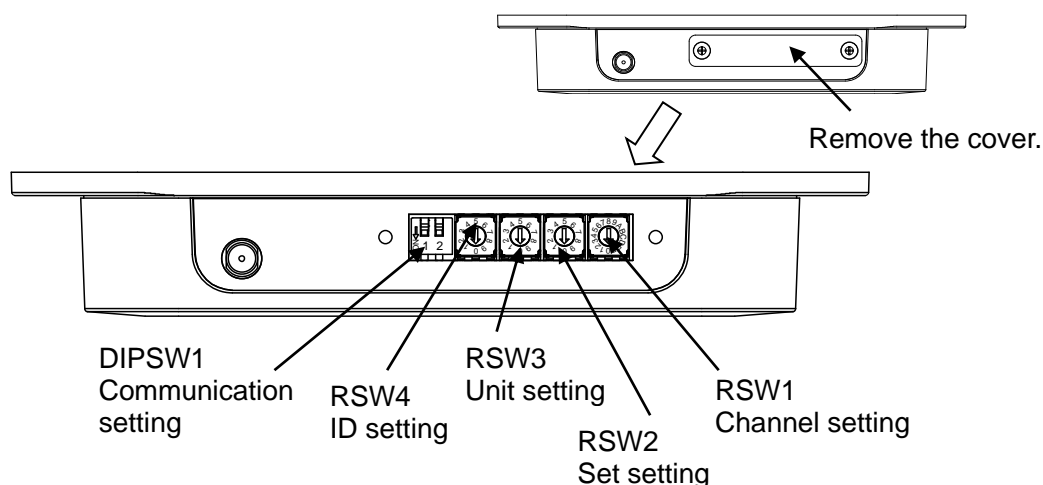
5. Settings

Channel numbers (1-16)/Set numbers (1-8)/Unit numbers (1-8) can be set for the receiver.

Channel numbers (1-16)/Set numbers (1-8)/Unit numbers (1-8) and ID numbers (1-8) can be set for each transmitter. The transmitter and receiver with the same Channel/ Set/Unit numbers can communicate with each other. Determine the numbers to be indicated for each transmitter Unit and ID. Customers who purchased the transmitter and receiver as a set do not need to configure the settings, as they are configured at factory.

5-1. Transmitter Setting

For settings of the transmitter, remove the cover shown below and use the DIP switch and rotary switches.



■ Communication settings

Set the communication method and antenna power.

< Communication method >

When setting the transmitter to “With answerback”, the receiver sends an answerback to the transmitter in response to a signal from the transmitter. It is possible to confirm whether or not communication has been performed when the receiver is placed where it cannot be seen from the transmitter.

When installing several receivers indicating the same status for the signal from one transmitter, set the transmitter to “Without answerback”.

DIPSW1-1	Settings
OFF	With answerback
ON	Without answerback

< Wireless output setting >

The transmission output can be set to either standard or long range.

Standard 3dBm (2.0 mW): Communication distance Indoor Approx. 500 m Outdoor Approx. 1 km
 Long range 18.5dBm (70.79 mW): Communication distance Indoor Approx. 1 km Outdoor Approx. 2 km

DIPSW1-2	Settings
OFF	Standard
ON	Long range

■ Channel / Set / Unit / ID

Match the settings for Channel/Set/Unit with those of the receiver to communicate with. For the settings of the receiver, see the configuration label affixed to the lower part of the receiver. The indicator to be illuminated is determined by ID setting.

< Channel >

RSW1	Channel	Frequency (MHz)	RSW1	Channel	Frequency (MHz)
1	1	903.0	9	9	915.8
2	2	904.6	A	10	917.4
3	3	906.2	B	11	919.0
4	4	907.8	C	12	920.6
5	5	909.4	D	13	922.2
6	6	911.0	E	14	923.8
7	7	912.6	F	15	925.4
8	8	914.2	0	16	927.0

< Set >

RSW2	Set
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8

< Unit >

RSW3	Unit
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8

< ID >

RSW4	ID
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8

The numbers indicated on the receiver in the 1-Digit mode or 2-Digit mode are as described below.

1-Digit: ID numbers are indicated.

2-Digit: The numbers to be indicated are as below.

Unit	ID	Indicator Number	Unit	ID	Indicator Number	Unit	ID	Indicator Number	Unit	ID	Indicator Number
1	1	1	2	1	9	3	1	17	4	1	25
1	2	2	2	2	10	3	2	18	4	2	26
1	3	3	2	3	11	3	3	19	4	3	27
1	4	4	2	4	12	3	4	20	4	4	28
1	5	5	2	5	13	3	5	21	4	5	29
1	6	6	2	6	14	3	6	22	4	6	30
1	7	7	2	7	15	3	7	23	4	7	31
1	8	8	2	8	16	3	8	24	4	8	32

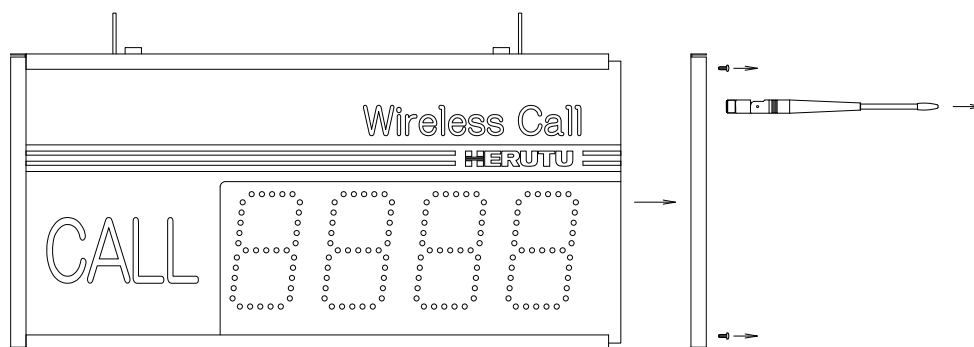
Unit	ID	Indicator Number	Unit	ID	Indicator Number	Unit	ID	Indicator Number	Unit	ID	Indicator Number
5	1	33	6	1	41	7	1	49	8	1	57
5	2	34	6	2	42	7	2	50	8	2	58
5	3	35	6	3	43	7	3	51	8	3	59
5	4	36	6	4	44	7	4	52	8	4	60
5	5	37	6	5	45	7	5	53	8	5	61
5	6	38	6	6	46	7	6	54	8	6	62
5	7	39	6	7	47	7	7	55	8	7	63
5	8	40	6	8	48	7	8	56	8	8	64

5-2.Display Setting

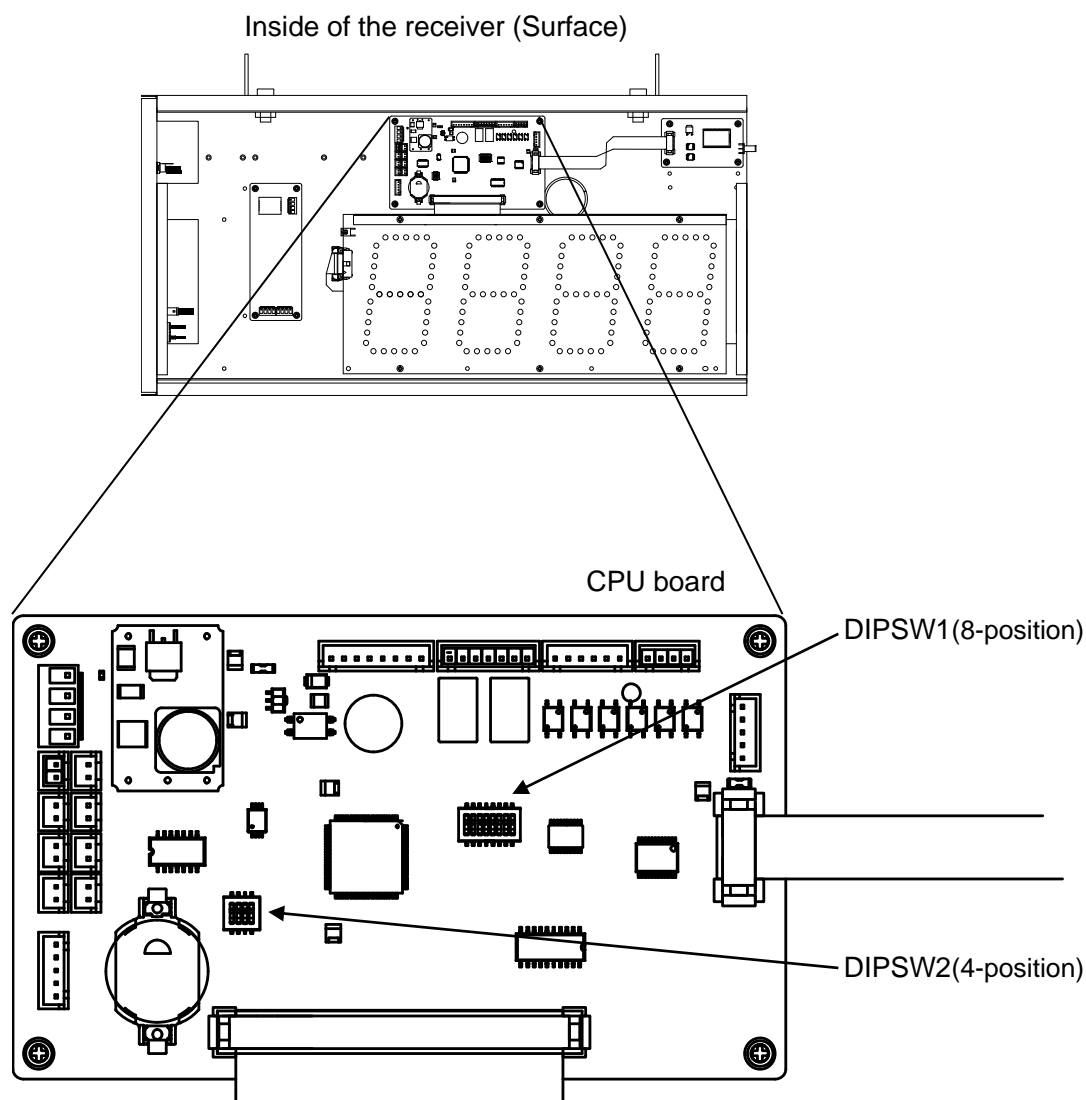
Set the receiver using the DIPSW1 (Dip Switch 1) and the DIPSW2 (DIP switch 2) on the CPU board inside the receiver. Set the antenna vertical to the side panel and remove the screws (4) securing the side panel. Move the side panel so that it does not get caught in the antenna and remove the side panel.

When you set and change the setting of receiver, please set it after turning off the power.

Customers who purchased the transmitter and receiver as a set do not need to configure the settings, as they are configured at factory. Label showing factory default channel/ set/ unit.



As the CPU board is in the front, remove the front acrylic sheet by sliding it out.



■ Channel / Set / Unit

Configure the settings of Channel/Set/Unit to match those of the transmitter to communicate with.

< Channel > DIPSW1(1-4) *"Channel" is set by DIPSW1(8-position)

Channel	DIPSW1 1~4				Channel	DIPSW1 1~4			
	1	2	3	4		1	2	3	4
1	OFF	OFF	OFF	OFF	9	OFF	OFF	OFF	ON
2	ON	OFF	OFF	OFF	10	ON	OFF	OFF	ON
3	OFF	ON	OFF	OFF	11	OFF	ON	OFF	ON
4	ON	ON	OFF	OFF	12	ON	ON	OFF	ON
5	OFF	OFF	ON	OFF	13	OFF	OFF	ON	ON
6	ON	OFF	ON	OFF	14	ON	OFF	ON	ON
7	OFF	ON	ON	OFF	15	OFF	ON	ON	ON
8	ON	ON	ON	OFF	16	ON	ON	ON	ON

<Set> DIPSW2 1~3 *"Set" is set by DIPSW2(4-position)

Set	DIPSW2 1-3		
	1	2	3
1	OFF	OFF	OFF
2	ON	OFF	OFF
3	OFF	ON	OFF
4	ON	ON	OFF
5	OFF	OFF	ON
6	ON	OFF	ON
7	OFF	ON	ON
8	ON	ON	ON

<Unit> DIPSW1 6~8 *"Unit" is set by DIPSW1(8-position)

Unit	DIPSW2 6-8		
	6	7	8
1	OFF	OFF	OFF
2	ON	OFF	OFF
3	OFF	ON	OFF
4	ON	ON	OFF
5	OFF	OFF	ON
6	ON	OFF	ON
7	OFF	ON	ON
8	ON	ON	ON

The settings for the Units are invalid in the 2-Digit mode.

■Display modes

Sets the display modes of the receiver.

1-Digit...Indicates 1-Digit indicator numbers for maximum 4 transmitters.

2-Digit...Indicates 2-Digit indicator numbers for maximum 2 transmitters.

Display modes	DIPSW1 5
1-Digit	OFF
2-Digit	ON

6. Installation

6-1. Installation of Transmitter

When installing the product, pay attention to the following

- ① Install the transmitter in a location where the antenna is not surrounded by metal or shielding and stable communication is possible.
- ② Mount the antenna away from metal objects to prevent them from becoming parallel to each other.

Do not install the transmitter in the following locations:

- Locations exposed to direct sunlight.
- Locations with high humidity.
- Near a television or radio.
- Near machines that spark, such as a welding machine.
- Locations where strong magnetic field is generated.
- Locations surrounded by steel frames or metal walls.
- Near any devices that could malfunction due to radio waves from the systems.

- ③ When fixing the transmitter to a panel, etc., use mounting holes.

6-1-1. External Input

When using external inputs (Orange/ Red/ Green/ White), connect no-voltage contact inputs to the external contact input terminal block. Connect no-voltage contact inputs to the external contact input terminal block, which allows "DC3.3/5mA" to be turned ON/OFF stably.

Set the input signal to 50ms or more.

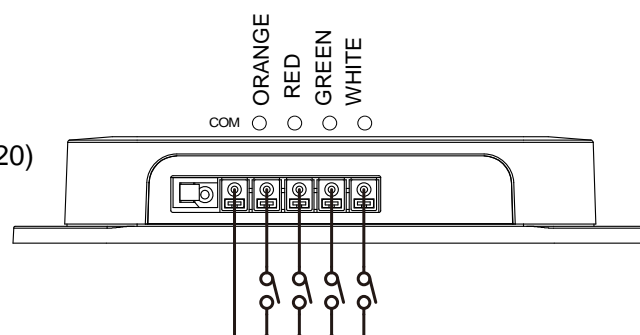
(Screwless terminal block)

Applicable wire range:

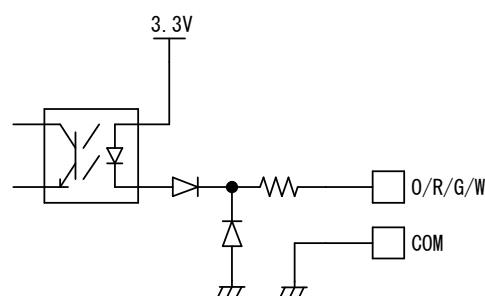
Single wire: $\phi 0.4$ mm (AWG26) – $\phi 1.0$ mm (AWG18)

Stranded wire: $\phi 0.3$ mm² (AWG22) – $\phi 0.75$ mm² (AWG20)

Strand diameter of $\phi 0.18$ or more



6-1-2. Input Circuit



When installation and connection to the external input are completed, connect the included AC adapter to the transmitter main unit. Supply voltage input range: 100 - 240 VAC

6-2.Installation of Receiver

Install the receiver following the precautions below.

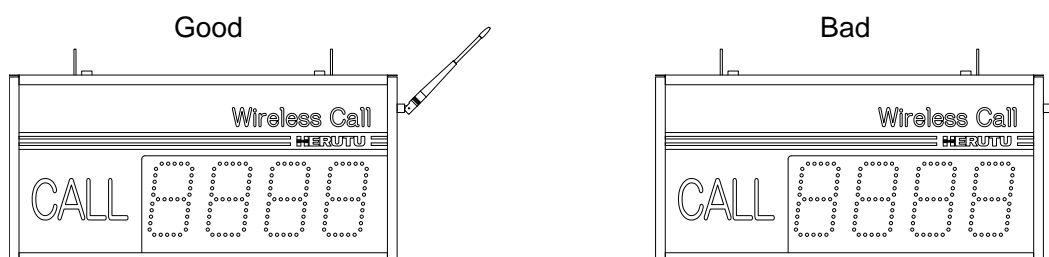
- ①Keep the antenna away from metal sheets or wires.
- ②Keep the antenna away from noise sources.
- ③Select a location where there are no shielding objects between the antennas of the transmitter and the receiver.
- ④The communication performance varies depending on the installation environment. Make sure communication is possible before installation.
- ⑤The receiver is neither dust-proof nor drip-proof.

*Do not install the receiver in the following locations:

- Locations exposed to direct sunlight.
- Locations with high humidity.
- Near a television or radio.
- Near machines that spark, such as a welding machine.
- Locations where strong magnetic field is generated.
- Locations surrounded by steel frames or metal walls.
- Near any devices that could malfunction due to radio waves from the systems.

- ⑥Place the receiver where it can be seen easily and clearly from the transmitter. When using the mounting fittings, secure the receiver to a location stable enough to support the weight (approx. 8kg).

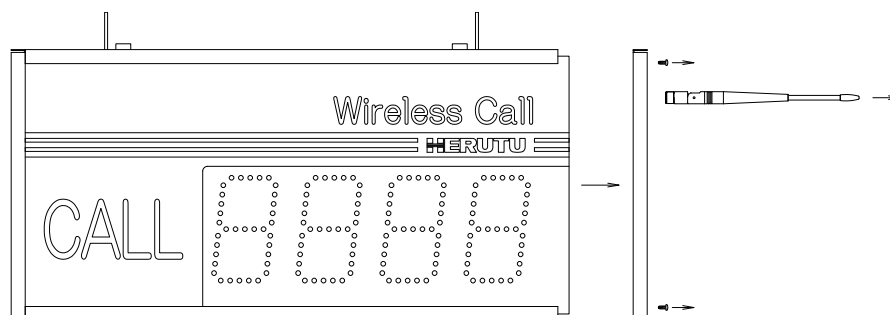
Direct the antenna diagonally upward. Do not direct it downward in parallel with the side of the receiver.



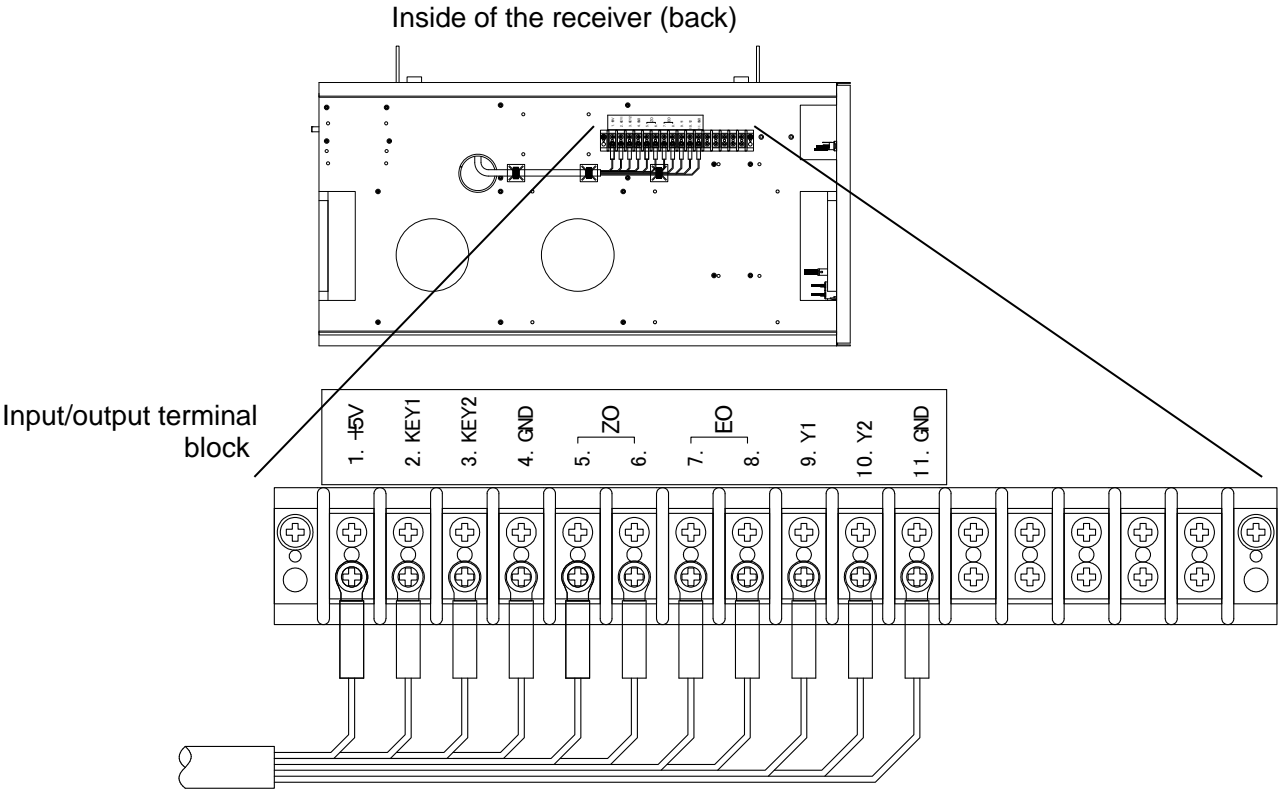
6-2-1. Input / Output Terminal Block

External output in synchronization with LED illumination is generated at the input/output terminal block inside. Remove the antenna and remove the screws (4) securing the side panel.

Move the side panel and remove the side panel.



As the input/output terminal block is on the back side, remove the acrylic sheet on the back by sliding it out.



Terminal block	Description
1.+5V	Connected when using the optional keyboard unit (KE-2).
2.KEY1	
3.KEY2	
4.GND	
5/6. Z0	Synchronized with relay output (Orange).
7/8. E0	Synchronized with relay output (Red).
9.Y1	Synchronized with open collector output (Orange).
10.Y2	Synchronized with open collector output (Red).
11.GND	GND

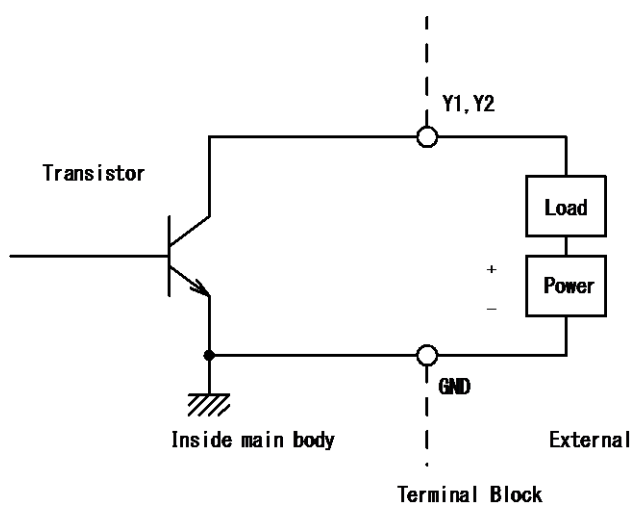
Pass the signal line through the signal line takeout hole before connecting it to the terminal block.

*Input/output terminal block: M3 screw

6-2-2. Output circuit

Open Collector Output

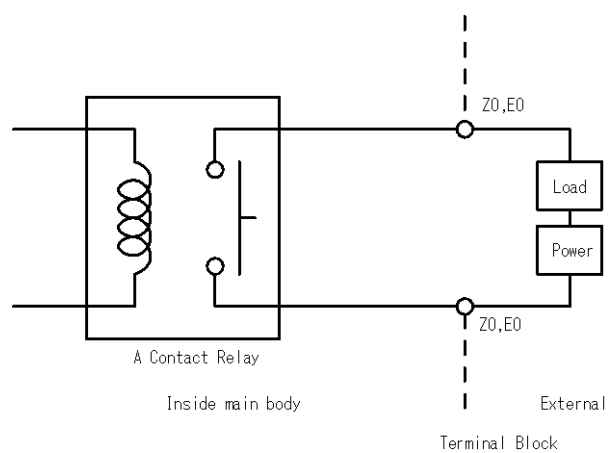
Max. Rated Load DC35V 50mA



Relay Output

Max. Rated Load AC125V 0.5A

DC24V 1A



When installation and connection to the external input and output are completed, connect the included AC adapter to the receiver main unit. Supply voltage input range: 100 – 240 VAC

7. Description of Operation

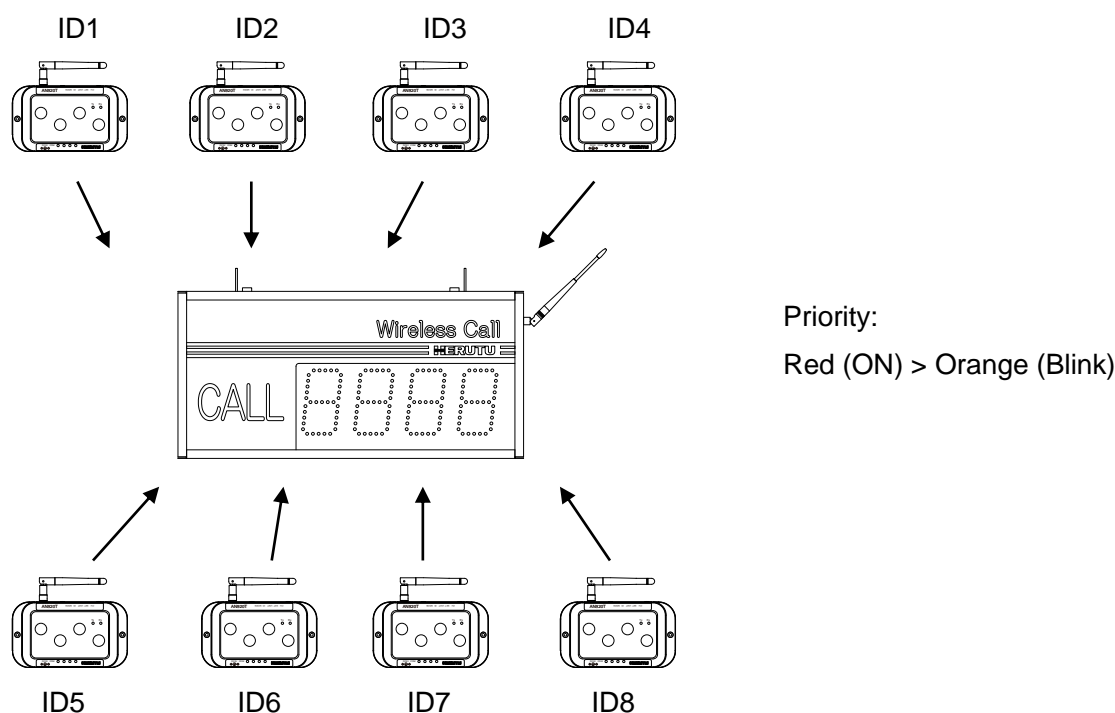
When the receiver receives a signal sent from the transmitter, it indicates the number corresponding to the set unit/ID and produces a relay output and an open collector output.

The indicator number corresponding to the call received first is indicated in the highest digit (leftmost), and the numbers corresponding to the calls received after that are indicated to the right of the highest digit in the order received. A “Red” call prioritizes an “Orange” call. When an “Orange” call has been received and a “Red” call is made from the same transmitter, the indicator switches from blinking (Orange) to lit (Red). During indication of the indicator number for the Orange call, when the receiver receives a Red call from a different transmitter, the indicator number for the Orange call is decreased by one digit (by two digits in the 2-Digit mode) and the indicator number for the Red call is indicated in the digit position. This indicator number is cleared by pressing the white button on the transmitter that transmitted the call.

If the receiver indicates a number other than the cleared indicator number, the number is shifted to the left by one or two digits. Any indicator number stored internally is indicated on the right. Even when no indicator number is indicated (when being held in the memory), the white button is valid.

■1-Digit mode

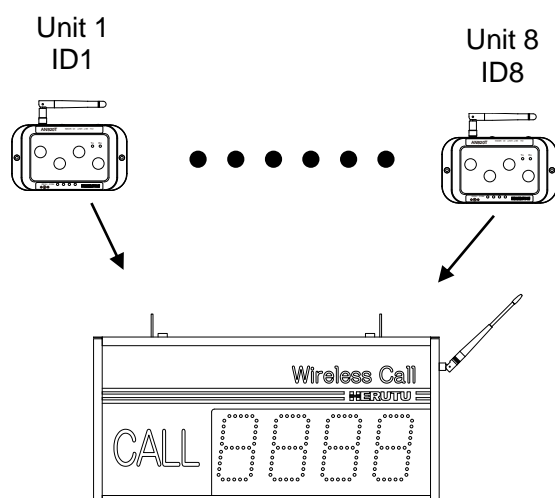
In addition to indicating the indicator numbers corresponding to calls from maximum 4 transmitters, the receiver holds data of 4 transmitters internally, making it possible to receive calls from maximum 8 transmitters.



* BNW920R also performs the same action.

■2-Digit mode

In addition to indicating the indicator numbers corresponding to calls from maximum 2 transmitters, the receiver holds data of 62 transmitters internally, making it possible to receive calls from maximum 64 transmitters.



Priority:
Red (ON) > Orange (Blink)

AN920T Max. 64: BN920R 1

*BNW920R also performs the same action.

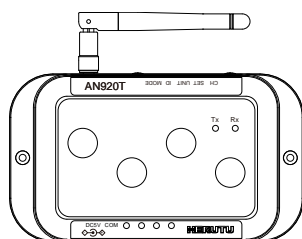
■Action of the receiver when the transmitter is operated.

Transmitter ID1	Receiver		
	Display	Relay output	Open collector output
Orange Button	Number blinks every second	Z0 terminal turns ON (Output continuation)	Y1 terminal turns ON (Output continuation)
Red Button	Number is illuminated	E0 terminal turns ON (Output continuation)	Y2 terminal turns ON (Output continuation)
White Button	Number OFF	OFF	OFF
Orange External input (Holding the ON state)	Number blinks every second	Z0 terminal turns ON (Output continuation)	Y1 terminal turns ON (Output continuation)
Red External input (Holding the ON state)	Number is illuminated	E0 terminal turns ON (Output continuation)	Y2 terminal turns ON (Output continuation)
White External input (Holding the ON state)	-	-	-

*Green button / green External input is not used.

- While the external input signals are ON, the receiver stays active.
When the external input signals turn OFF, the transmitter automatically sends an OFF signal to the receiver.
- Pressing several buttons on a single transmitter simultaneously becomes invalid.
- When several external inputs on a single transmitter turn ON simultaneously, it becomes invalid.

■Monitoring of transmitter communication status



<Monitoring of communication status>

Transmitting: Tx (Green) LED illuminates

Receiving: Rx (Red) LED illuminates

(In the "With answerback" setting)

1 second illumination: Normal

1 second blinking: Invalid

No illumination: Communication error

8.Speaker (Optional)

8-1.Speaker Operation

A speaker can be installed on the receiver (top) and it produces sound in synchronization with illumination (or blinking) of the LED indicators.

The speaker generates sounds corresponding to 3-color LED indication.

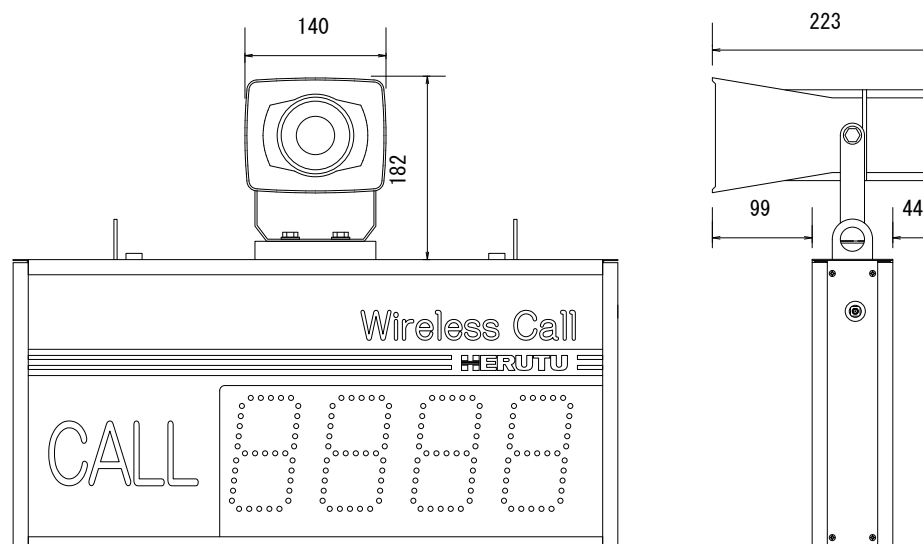
*The speaker sounds are prioritized.

*As the sounds are generated by using the open collector outputs, the open collector outputs cannot be used for connection of other devices.

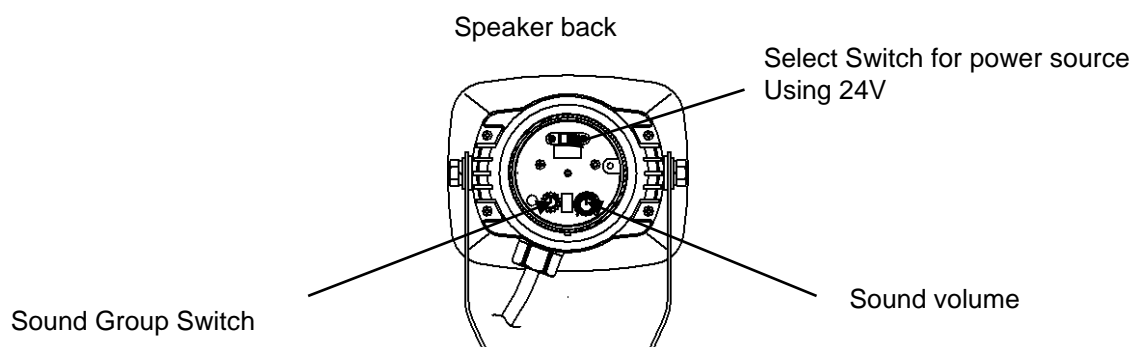
The models with a speaker are as follows.

Receiver	With speaker
Number Indicator Type Single-Sided	BN920R-MRD
Number Indicator Type Double-Sided	BNW920R-MRD

8-2.Dimensions of Receiver with Speaker



*The weight of the receiver with a speaker is approx.1.7kg heavier than that of a receiver without a speaker. Be careful when installing these models.



8-3.Sound Selection

The speaker sounds can be selected from 15 groups.

The receiver is shipped with a Shneider' s speaker "ST-25MM" (or "ST-25MM2") connected as follows.

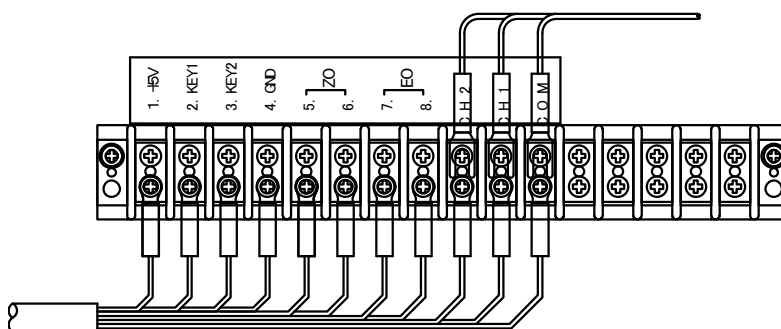
Output Y1: In synchronization with orange LED indication ⇒ Connected to CH2 of the speaker

Output Y2: In synchronization with red LED indication ⇒ Connected to CH2 of the speaker

The speaker is prioritized. When signals are input simultaneously, the speaker sounds in the following priority order.

CH1>CH2>CH3

To change the LED indicator color (Orange, Red) and sound (and priority order), change the connection of the terminal block inside the receiver.



The speaker sound can be selected from 15 sound groups A-O. Select your desired sound group and set the sound using the sound group switch of the speaker.

Speaker(ST-25MM) sounds list

Group	Color of line from speaker			
	1CH(Green)	2CH(Yellow)	3CH(Brown)	4CH(Blue)
A	ASHITA GA ARUSA	ELECTRICAL PARADE	SAZAE-SAN	TOUTCH
B	CHIME	PiPiPiPi	KINJIRARETA ASOBI	KATSUSHYA
C	KINJIRARETA ASOBI	KATSUSHYA	SHEEP OF MERY	KUSAKEIBA
D	CHIME	PiPiPiPi	SHEEP OF MERY	KUSAKEIBA
E	CHIME	PiPiPiPi	FLICKER	PiLaLa
F	CHIME	PiPiPiPi	AMARYLLIS	MOZART'S 40TH
G	AMARYLLIS	MOZART'S 40TH	ASHITA GA ARUSA	ELECTRICAL PARADE
H	CHIME	PiPiPiPi	ASHITA GA ARUSA	ELECTRICAL PARADE
I	PiLaLa	DOWN	EMERGENCY	FLICKER
J	CHIME	PiPiPiPi	SAZAE-SAN	TOUTCH
K	SHEEP OF MERY	KUSAKEIBA	AMARYLLIS	MOZART'S 40TH
L	EMERGENCY	FLICKER	CHIME	PiPiPiPi
M	DOWN	EMERGENCY	CHIME	PiPiPiPi
N	PiLaLa	FLICKER	SHEEP OF MERY	KUSAKEIBA
O	DOWN	EMERGENCY	SAZAE-SAN	TOUTCH

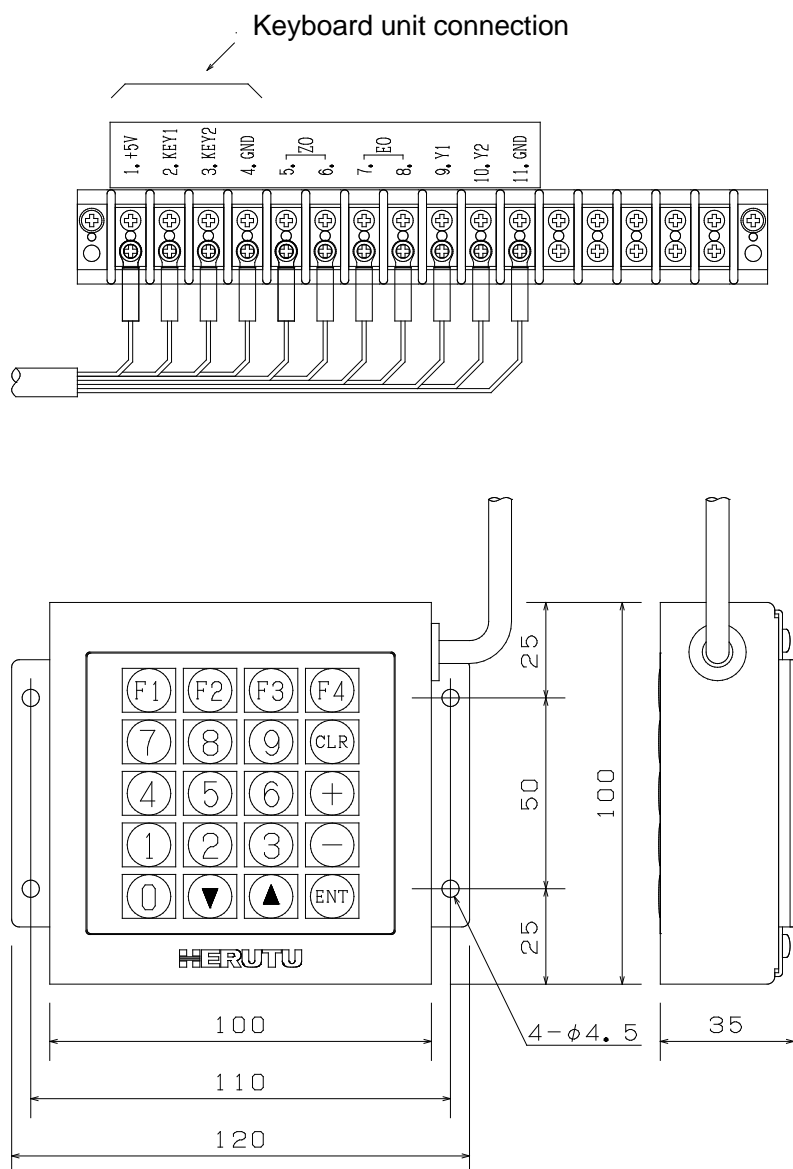
3CH and 4CH are no connected at shipment.

9. Keyboard

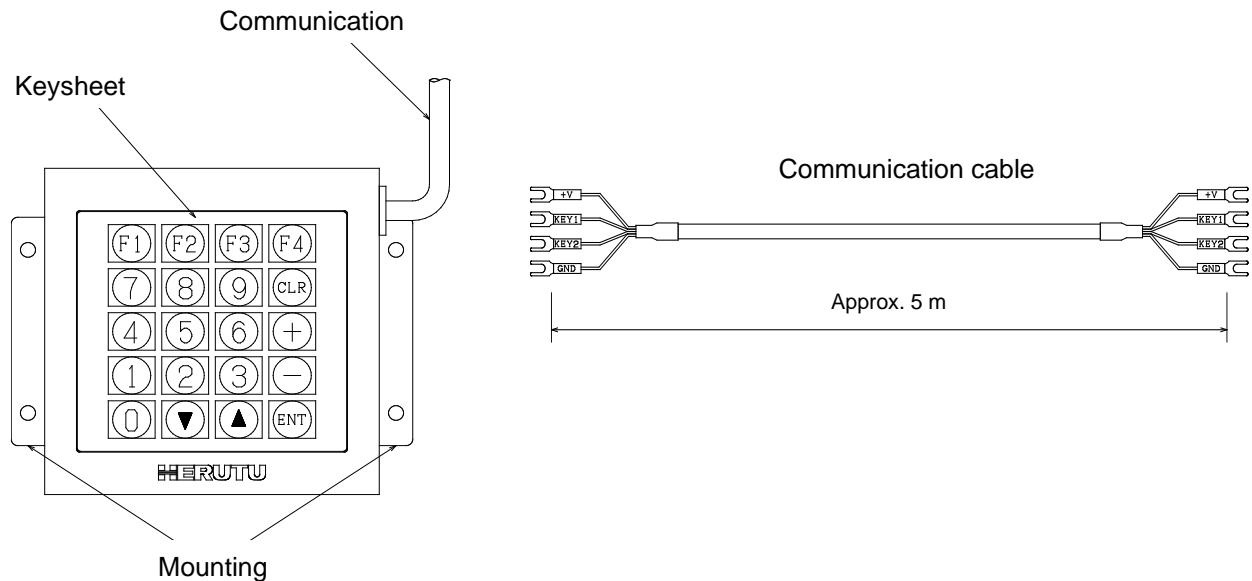
9-1.Connect Keyboard Unit

Connect the keyboard unit to the output terminal block.

The keyboard unit comes with an approx. 5m cable. As described in “6-2-1. I/O terminal block”, remove the side panel and acrylic sheet and connect the cable to the terminal block after passing it through the signal line take-out hole.



9-2.Name and Function of Keyboard Unit



Mounting bracket...Used for fixing the keyboard unit.

Communication cable...Communication cable to the receiver. (Cable length Approx. 5 m)

Keysheet...20 key membrane switch.

9-3.Operation of Keyboard Unit

The indicator numbers on the receiver can be cleared by the keyboard unit.

- ① Enter the clear command [1] from the keyboard, and the receiver moves to "Indicator Number Clear Mode". (All indicators become blank.)
- ② Enter an indicator number to be cleared. The entered indicator number is indicated on the right side of the receiver. To correct the entered indicator number, press the [CLR] key and enter an indicator number again.
- ③ Press [ENT] to confirm the entry. The screen of the receiver returns to the normal screen. When the entered indicator number is not called or it is for an unused ID, the value [00] blinks for 3 seconds and the screen returns to the normal screen. Also, press the [ENT] key without entering anything to return to the normal screen.

10. 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.

The user is prohibited by law from disassembling or making modification to the unit or otherwise may be subject to punishment.

[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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