ZEROMIC

Headset for Two-Way Radio

Wired version

STHD-F1

Bluetooth version

STHD-F2

Instruction manual

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Before using the product

- **Before using this product, please read the instruction manual carefully and operate it in the correct way.**
- **Please keep this instruction manual in case you need to consult.**
- **To improve the product's performance, sometimes its specifications are required to be changed.**
- **Please contact the vendors if you have any question about the instruction manual.**

⚠ WARNING If you ignore the mark and operate the machine in the wrong way, it may causes death or serious injuries.

⚠ CAUTION If you ignore the mark and operate the machine in the wrong way, it may causes injuries or material damage.

Product features

- **Communicate with loud background noise (~100dB).**
- **Even with the headset,two-way radio main speakers can also be used to play other's voice.(select by function buttons)**
- **The new technology does not require a microphone (sending and receiving signals through speake only). You can communicate even with gas masks.**

Basic operation of Zeromic

- **Call priority**
  "Press the PTT button to call" is the basic function of the two-way radio product. Any action mode does not affect the basic operation function.

- **LED lights indicate the operation of sound and tone recognition**
  Zeromic has two-color LED lights, used to represent the action status. In addition, when button operation function is switched, the change can be confirmed. Bluetooth connection status confirmed by inform voice.

- **Setting the necessary functions simply.**
  The frequently used button of Zeromic are single function button of on the left and right, and the combination of special function [F] button and other buttons are also prepared.

  In order to reduce miss operation of change for function and action status of Zeromic the effective operation is completed by a long time hold of the individual voices is set to confirm the change to be told.

  The LED does not display the usual operation function of Zeromic In order to complete a variety of operating functions, the voice wizard and voice recognition are enriched.

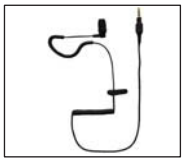
Products and Accessories

■ Wired type

Before using the products, please confirm the product and accessories. If anything is missing, Please consult the vendor.

① Host (Control Box) (1)
② Earphone mike (1)
③ Spare Earplug (1)
④ Wired Small PTT Switch (1)
⑤ Instruction Manual and Warranty Card (1)

①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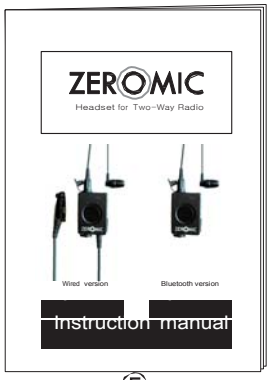

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Products and Accessories

■ Bluetooth type

Before using the products, please confirm the product and accessories. If anything is missing, Please consult the vendor.

① Host (Control Box) (1)
② Battery Cable (1)
③ Earphone mike (1)
④ Spare Earplug (1)
⑤ Wireless Small PTT Switch (1)
⑥ Instruction Manual and Warranty Card (1)

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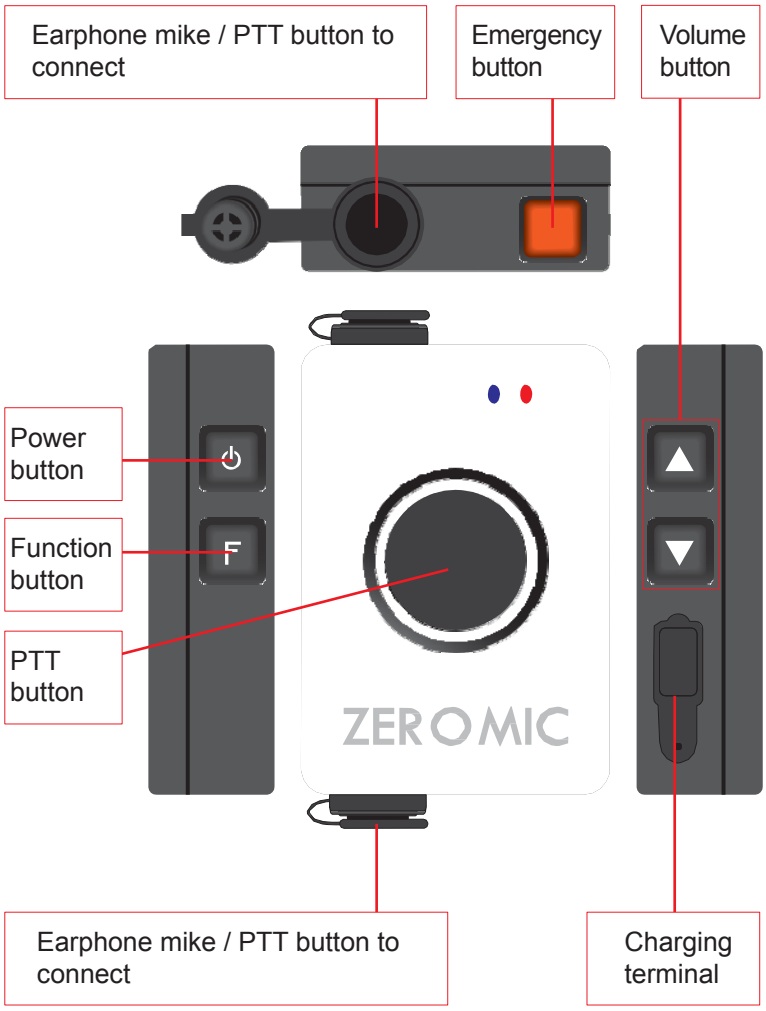
Appearance and function of Zeromic



- **Earphone mike / PTT button to connect**
  Socket, no matter which can connect the Earphone mike or PTT button. Please select the installation interface of the two-way radio you can choose to connect the Earphone mike or PTT button on the according to the situation.
- **PTT button**
  When the PTT button is pressed, the two-way radio enters transmitting status. The PTT button of the two-way radio has the same function.
- **Emergency button**
  Long press 3 seconds to enter the status of emergency communications, Earphone mike's communication status will last for more than 30 seconds. In addition, the emergency warning tone will also be sent at the same time.
- **Power button (Battery built-in / Bluetooth) Two-way radio power supply dispatch model:** Along with the two- way radio's starting, no need to operate, the power is on.

  The built-in battery model：
  Long press the button to start the power, after starting, by long press button 10 seconds to cut off the power.

  Bluetooth model：
  Press the button for more than 2 seconds, the power is on, and press more than 7 seconds to pairing. press the button for more than 10 seconds to cut off the power.
- **Function [F] button**
  Additional function settings for Zeromic, can be used in combination with other buttons or long press this button to set additional functions.
- **Volume button [▲] / [▼]**
  Used to adjust the volume of earphone. pressing▲, can increase the voice, pressing▼, can decrease the voice.
- **Charging terminal**：(**Battery built-in / Bluetooth**)
  The built-in battery models equipped with charging terminal, can be charged through the Micro USB and the USB terminal of the computer. When charging, the red light is on, the blue light indicate that the charging is finished.

LED display function (common specifications)

Zeromic has the mode LED lamp (blue) and transmitting LED lamp(red) 2 LED lights to be loaded. Two LED lighting can confirm the operation state of Zeromic.

- **When starting Zeromic**
  Power on of two-way radio connecting with Zeromic, or press the power button of Zeromic, red and blue LED lights lit up at the same time, after the start of the self-check, start to confirm the Earphone mike to hear the sound and LED lamp is off. For built-in battery models, more than 2 seconds in case if there is no starting tone or no response, please recharge the battery.

- **Red LED light: Transmitting / Battery charging while transmitting:**
  Press the PTT button to transmitting mode, the red LED lights on. In addition, the emergency button on to the "continuous transmitting mode", repeatedly flashing.

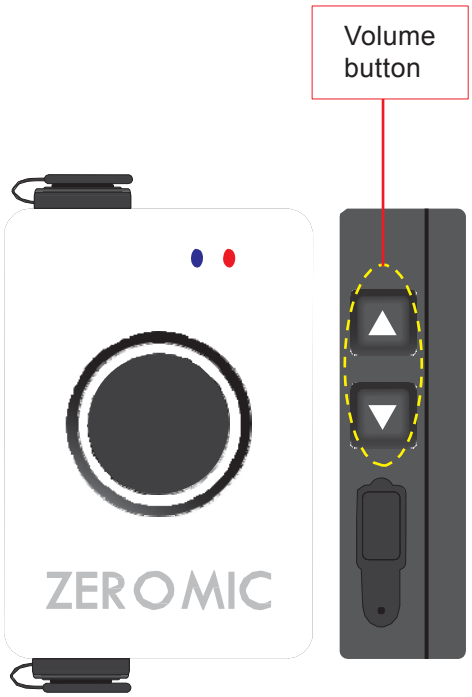
  While battery charging (built-in battery version):
  While battery charging from connecting with USB terminal, red LED lights on.

- **Blue LED lights: power on and start / end of battery charge / two-way radio's main speaker**
  After the power switch is on, the Zeromic connection is started, blue LED lights begins to flash.
  ●●● ●●● ●●● ●●● (3 times repeatedly on and off)

  Indicate the two-way radio's main speaker mode:
  When two-way radio's main speaker is available, blue light is flashing. From the speaker of two-way radio, receiving voice can be heard. In this status, press the Function button , the Earphone mike receiving the voice of Zeromic.

  Indicate the end of battery charging (built-in battery version):
  When battery charging is completed, continuously blue lights on.

Headset volume adjustment function (common specifications)



Press the volume button, you can adjust the volume. (when you power on the Zeromic, volume is settled the 1/2 of maximum volume.)

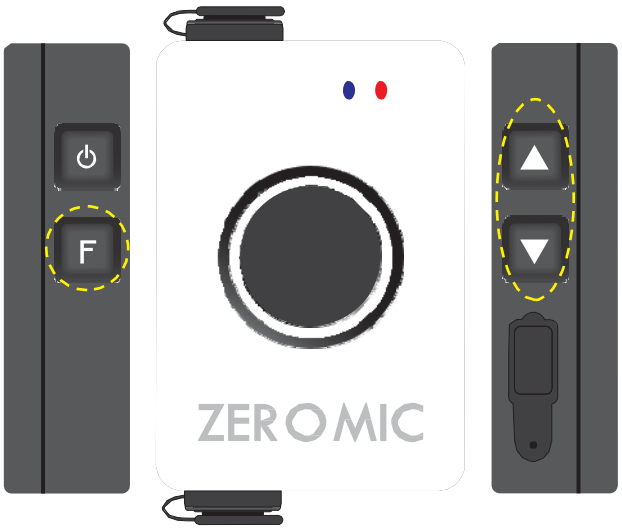
- **Headset Volume increasing [▲]**
  Pressing▲, the volume increased.
  Continuously press▲, continuously increases the volume.

- **Headset Volume decreasing [▼]**
  Pressing▼, the volume decreased.
  Continuously press▲, continuously decreases the volume.

- **Headset volume adjustment of standard volume [▲]+[▼]**
  Pressing▲and▼, go back to the standard volume.

- **The volume confirmation tone**
  Increasing the volume, (880Hz) of soprano tone, reducing the volume, (440Hz) of bass tone can be heard.
  In addition, increasing to the maximum volume, (1760Hz) of soprano tone, when return to the standard volume, 1000Hz of tone can be heard.

The noise cancellation function (common specifications)



Zeromic have incorporated voice processing special DSP (digital signal processor), and noise cancellation functions.
When you power on the Zeromic, noise canceller is settled ON, and you can operate button to set the noise canceller for ON and OFF anytime.

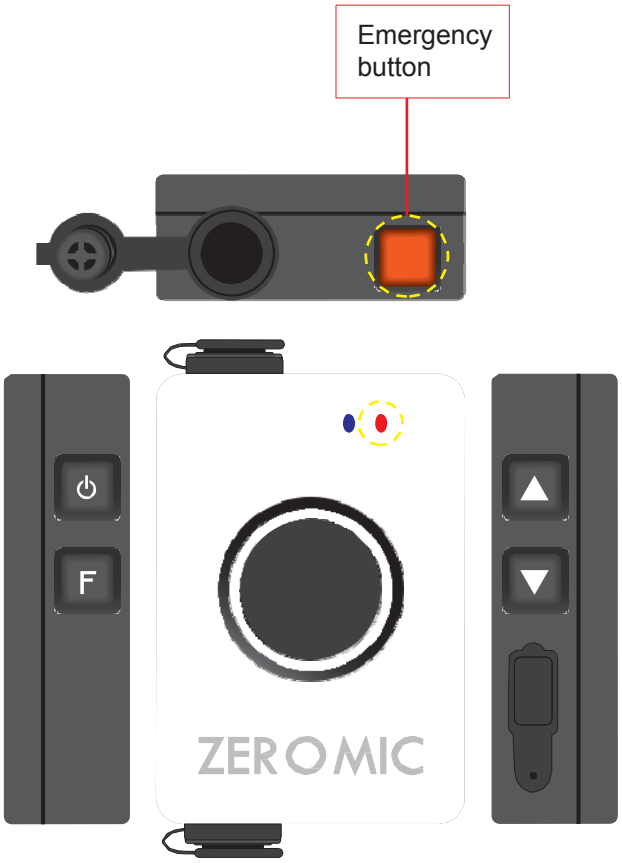
- **Setting the Noise Canceller**
  While pressing the [F] button, press the volume button to set the noise canceller.

  To set the Noise Canceller ON：function [F] + ▲
  While pressing the [F] button, press the volume button ▲

  To set the Noise Canceller OFF：function [F] + ▼
  While pressing the [F] button, press the volume button▼

- **Confirmation tone for switching the Noise Canceller**
  Setting the Noise Canceller ON, 440Hz and 880Hz of confirmation tone can be heard.
  And setting the Noise Canceller OFF, 880Hz and 440Hz of confirmation tone can be heard.

Emergency call function (common specifications)



Pressing emergency button, Zeromic enter into the transmitting state without pressing PTT button. While this transmitting state, Zeromic generate intermittent emergency warning sound to notify for the opposite party for emergency.

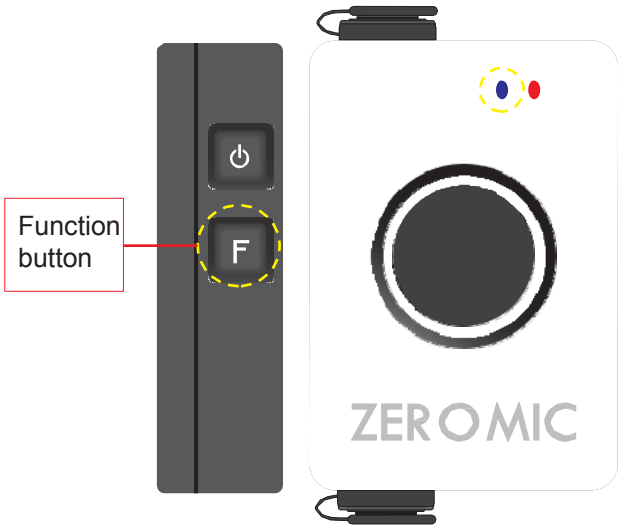
● Operation of emergency mode

Press the emergency button for 3 seconds or more, Zeromic enter into "Emergency mode".
"Emergency mode" continues 30 seconds with 3 times of warning sound intermittently, also you can send your voice to opposite party at the same time.
While "Emergency mode", red LED light flashing repeatedly.
● ● ● ● ● ● ● ● ● ● ● ● (High speed flash repeatedly)

● Cancel the emergency mode

Press the PTT button to cancel the emergency mode.
Zeromic return to normal state.

Switching Two-way radio main speaker / Earphone mike (common specifications)



Whether the Zeromic is connected with the two-way radio, speaker and microphone of two-way radio can be used. In this way, you can share the information from opposite party with plural people.
Also transmitting and receiving call will be made normally by pressing PTT button of two-way radio.
And you can communicate with earphone mike by pressing the PTT button of Zeromic.

※ In order to achieve this function, it's depend on the two-way radio. Please refer to the details of each two-way radios)

● Switching Two-way radio main speaker / Earphone mike

Each time when you press the function [F] button for 3 seconds or more, speaker and microphone of two-way radio and earphone mike of Zeromic switches in turn.

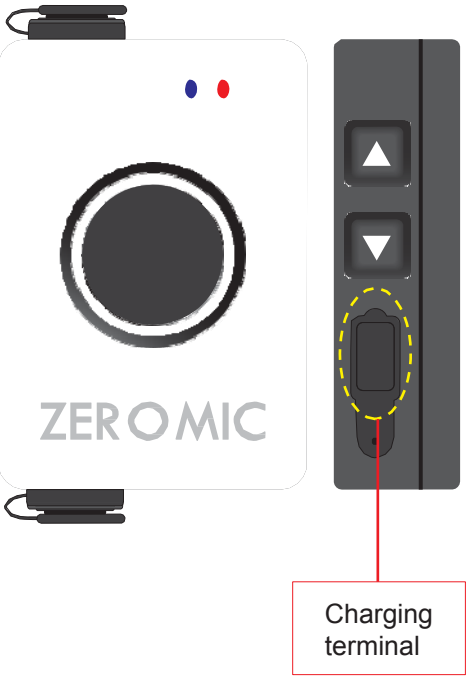
● LED display of two-way radio mode

Switch to the two-way radio mode, blue LED light flashing rapidly.
● ● ● ● ● ● ● ● ● ● ● ● (high speed flashing)
Returning to normal mode, blue LED light is turn off.

● Confirmation tone for switching the noise canceller

Switch to two-way radio mode, 1kHz of soprano confirmation tone can be heard.
Return to normal mode, 500Hz of bass confirmation tone can be heard.

Battery mounting version



Bluetooth version or Battery mounted version (two-way radio does not supply the power) ,has loaded the rechargeable batteries.

- **Charging method**

  Open the waterproof cover of charging terminal, insert the Micro USB cable into charging terminal of Zeromic and USB power station. While charging, LED display of Zeromic inform youthe state of charging. The maximum charging current of USB cable for 500mA.

Display of LED

Charge state	Red LED	Blue LED
In charging	Continuously light on	
Charging done		Continuously light on
Abnormal	Continuously light on	Continuously light on

Battery voltage drop warning:

Zeromic detected battery voltage decreases, intermittent LED flashing and warning tone (low tone[220Hz]) can be heard. Please stop using and recharge the battery.

● ● ● ● ● ● Stop 3 seconds ● ● ● ● ● ● Stop 3 seconds (intermittent flash of red and blue LED in turn and warning tone)

LED display function (Bluetooth version)

In addition to common specifications,Bluetooth version of Zeromic contains "mode LED light" (Blue) and "transmitting LED lights" (red) , indicate Bluetooth connection status.

- **LED display of Bluetooth mode**

(Bluetooth connection waiting status)

While Bluetooth connection has not been completed, the red LED lights flashing.

●● ●● ●● ●● (Repeated two times flash on and off)

(Bluetooth connection completed)

Bluetooth connection has been completed and ready to use, the blue LED lights flashing.

●●● ●●● ●●● ●●● (Repeated three times flash on and off)

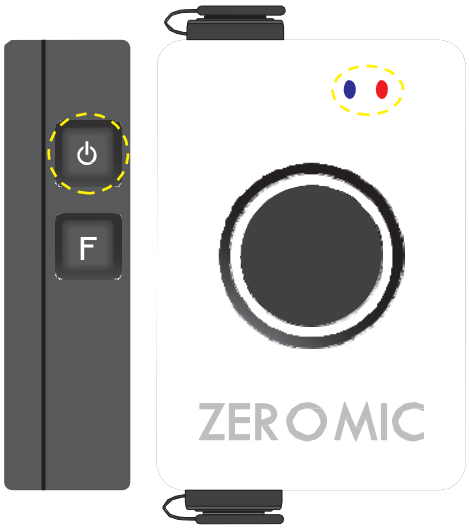
(Pairing Indication)

During the pairing action, the red and blue LED light flashes alternately.

● ● ● ● ● ● ● ● ● ● ● ● ● ● (red and blue LED light flashes)

Completion of paring, the connection state indicates.

Paring function (Bluetooth version)



- **Pairing mode**
  Pressing the power button for 7 seconds or more, starting the Bluetooth pairing mode. Once pairing action has started, you can hear the voice guide of "Pairing mode active", and after the pairing action has successed,you can hear the voice guide of "Pairing successful" to complete the pairing mode.

- **Bluetooth connection**
  After the pairing is completed, every time when you put the power on for Zeromic, Zeromic will automatically connected with Bluetooth and you can hear the voice guide of "Headset is connected"

- **Display of Mode LED light**
  (Bluetooth connection waiting status)
  While Bluetooth connection has not been completed, the red LED lights flashing.
  ●● ●● ●● ●● (Repeated two times flash on and off)

  (Bluetooth connection completed)
  Bluetooth connection has been completed and ready to use, the blue LED lights flashing.
  ●●● ●●● ●●● ●●● (Repeated three times flash on and off)

  (Pairing indication)
  During the pairing action, the red and blue LED light flashes alternately.
  ● ● ● ● ● ● ● ● ● ● ● ● ● (red and blue LED light flashes)
  Completion of paring, the connection state indicates.

Pairing with wireless PPT

- **Starting method of pairing with wireless PPT** The power of Zeromic is a state of OFF, the following operation can start pairing for Zeromic and wireless PTT.

The wired version of Zeromic (two-way radio with power supply type):
While pressing the [F] button, start power of two-way radio.

Bluetooth version, battery built-in version：
While pressing the [F] button, press the power button of Zeromic.

When pairing action start, you can hear the “melody of pairing start” from earphone mike.

Paring process:
During the pairing action, the red and blue LED light flashes, and you can hear the 440Hz of continues sound for 10 seconds.

Within 10 seconds, press the PPT button of wireless PTT several times.
During this 10 seconds, Zeromic will seek the strongest wave of wireless PTT and start pairing it.
If the pairing is successful, LED● will light, and 880Hz of confirmation tone can be heard.
If the wireless PTT is not detected, LED● will light, and 220Hz of confirmation tone can be heard.
When you want to give up the pairing, press the power button of Zeromic to abort.

After the pairing of the wireless PTT is completed, you can use a pair of wireless PTT and Zeromic.

The registration number of wireless PTT:
Max of 2 wireless PTT can be registered. (Latest two pairing are registered in Zeromic)

Voice guide function (Bluetooth version)

- **Bluetooth version of Zeromic has built-in voice guide function. Corresponding to the situation of Zeromic, you can hear the voice guide from earphone mike. Without checking the LED light during operation of Zeromic, you can know the present status.**

Bluetooth state	Voice guide	Explanation
Power on	[Power ON]	Voice guide inform the power input.
End of use	[Power OFF]	Voice guide inform the power out.
Notice of connection done	[Headset is connected]	Voice guide inform Bluetooth connection, is completed.
Start paring mode	[Pairing mode active]	Voice guide inform pairing action started.
End paring mode	[Paring Successful]	Voice guide inform pairing is completed.

List of LED display mode

General actionmode display	Red LED	Blue LED	Remarks
Transmitting (PTT ON)	Continuous lighton	--	Highest priority
Emergency mode	High speed flash (0.2 second cycle)	--	Release by PTT ON
External speaker mode	--	High speed flash (0.2 second cycle)	ON/OFF by F key
Headset mode	--	Light out	--
Battery voltage drop	Every 3 seconds, red andblue LED interactive flash		Overlapping on above mode

Additional features of Bluetooth version

Action state of Bluetooth version	Red LED	Blue LED	remarks
Waiting for connection	Continuous2times flash and out	--	In starting
Connection is done	--	Continuous 3times flash and out	In connecting
In paring	Every 3 seconds, red and blue LED interactive flash		After paring operation

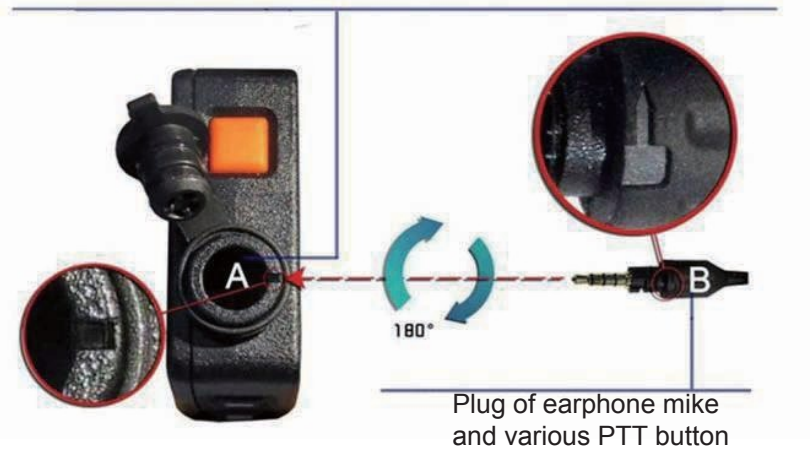
Additional features of Bluetooth and Battery built-in version

Battery in charging	Red LED	Blue LED	remarks
In charging	Continuous light	--	In case of battery chargerIs connected with interface (Micro USB terminal)
Charging completed	--	Continuous light	
Abnormal charging	Continuous light	Continuous light	

The connection method of earphone mike and various PTT button

① **Take off the rubber lids of earphone mike and PTT button connection jack**

② **Insert the plug of earphone mike or PTT button into connection jack with matching the mark as picture below, and push it further down, and rotate the plug clockwise until it stop.**



Plug of earphone mike
and various PTT button

Various of optional PTT switch (sold separately)

❶ Wired large PTT switch

❷ Wireless large PTT switch

❸ Wireless small PTT switch

Method of wearing the product

1. **Turn off the two-way radio power.**
2. **Turn the two-way radio volume to minimum.**
3. **Connect the plugs of earphone mike to the port of two-way radio firmly.**
4. **Fix the host to your pocket / belt using the clip.**
5. **Wear the earphone mike in the most appropriate position on the right or left ear.**
6. **Turn on the two-way radio power and adjust the two-way radio volume to an appropriate level.**

【 IMPORTANT 】

There is individual difference in the shape and size of the ear hole, Please put into the earphone mike firmly to the bottom of ear canal for interrupting the noise from outside and best sound quality of call.

Using large sound volume continuously will cause ear pain or even hearing loss. Please increase the volume of the two-way radio slowly to the most appropriate level.

Method of taking off the earphone mike

- **Please take the earphone mike off from your ear slowly. Taking earphone mike off suddenly may causes ear injuries.**
- **Tugging the earphone mike cable may cause the damage to the earphone mike.**

Method of transmitting and receiving a call

- **Press and hold the PTT button to transmitting a call.**
- **Release the PTT button, two-way radio turns into receiving mode.**

※ **Method of using the various of optional PTT switch is same as above.**

Product storage and maintenance

- Please do not leave the product in direct sunlight, high temperature, humidity or dusty places. It will causes parts aging and damage the product.
- Please put the product in the box when you don't use it.
- It may causes in trouble when you disassemble, modify or clean the product with water. Please clean it in dry places with dry cloth.
- When the ear plug becomes dirty, please wash it with water and use it again after it's completely dry.

Replacement of ear plug

- You can take off the ear plug from the earphone mike. Please operate as follows when maintenance is necessary.

【 Replacement of ear plug 】

※ Please be sure to hold the earphone mike to operate. Holding the cable may causes damage to the product.

- Please pull the ear plug off from root gently.
- Please insert the ear plug into earphone mike firmly when you install it.

For your more comfortable use

- **To protect your ears, please do not turn the volume up too high.**

- **If there are howling phenomena in receiving call, adjust the volume.**
  Please stop using it temporarily if howling phenomenon doesn't disappear after volume adjustment.

- **Please stop using this product immediately and consult with the doctor when your skin feels uncomfortable.**

- **Remove the ear plug and wash away the dirt with water when the ear plug becomes dirty.**

- **We recommend to clean or replace the ear plug for sanitary purpose when you share this product with others.**

Request for handling

For your safety, please obey the following items.

WARNING	When you ride a bicycle, a motorcycle or a car, please don't use the product. It may impedes driving safety and becomes the cause of the accident.
WARNING	Please don't turn the volume too high. It's difficult to hear the environment noise and this may triggers the accident.
WARNING	Please turn the volume to minimum when you install the product then adjust the volume to suitable condition. A sudden loud noise may causes hearing loss.
WARNING	Don't use the product where the cables are easily linked or rolled up. It can cause the accident.
WARNING	Do not disassemble or modify the product. It may causes a damage of product.

- **Please keep out the product from direct sunlight, high temperature and humidity places.**
- **Please do not give the strong shock to this product.**
- **Please don't tug the cables. It may causes a damage of product.**

General specification of Zeromic

Items	Type	Remarks
Type	Air conduction earphonemike	Patent granted
Control method	Microprocessor control	16bit Micro Power MPU
Sound signal processing	DSP sound signal processing	24bit Digital Signal Processor
Weight	About 65g	Zeromic + cable
Dimensions	About 38mm(W) x 55mm(H) x16mm(D)	Not include convex part
Earphone mike	1.5φ Carle code about 20g	Standard style
Operating temperature range	-20℃ ~ 60℃	Battery built-in version -20℃ ~ 40℃
Dust and water proof level	IP67	---
Optional parts	Small / Large remote PTT-SW	Wired and Wireless

The connection method of earphone mike and various PTT button

items	Type	remarks
Operating voltage range	15.0V ~ 3.7V	7.5V standard (GL2000)
Consumption current	Below 20mA	7.5V standard (GL2000)
Connection of two-way radio	7cable /8 cable connection	(1) power input, (2, 3) speaker BTL input, (4) GND, (5, 6) microphone differential output, (7) PTT, (8) option output power
Speaker input impedance	400Ω (receiving)/ above 10kΩ(emitting)	Impedance can be adjusted
Speaker input signal level	1Vrms /Maximum input 3VP-P	Volume can be adjusted
Microphone output impedance	Below 2kΩ (emitting)/above 10kΩ(receiving)	Impedance can be adjusted
Microphone output signal level	-30dBV	Adjusting range : -25dBV ~ -60dBV
PTT signal / optional mode	RON<0.5Ω / ID<100mA / VD<10V	Independent loop system
Control method	Microprocessor control	Function buttons can be changed

Specification of Bluetooth version

items	Type	remarks
Bluetooth basic specification	Bluetooth 4.1 Class 2 is matched	BLE(Bluetooth Low Energy) function is contained
Bluetooth matches with	Bluetooth HSP / HFP / SPP	Android end/ i-OS (iPhone/iPad)
PTT application matches with	Bluetooth SPP and BLE method	PTT requires custom applications
Power mode	Built in lithium battery 3.7V/250mAH	Micro USB terminal charge
Charging time	Less than 2 hour	Full recharge
Continuous action time	More than 12 hour	In full recharge

Warranty of product

- Thank you very much for purchasing our product.
- Under normal use, and trouble due to deficiency in the stage of production, you can receive free repair within 1 year with the receipt shows date of purchase, and this product warranty card.

※ Please fill in a necessary information or stamped on this product warranty card.

- The repairing cost will be charged in the following case.

1) Warranty period is expired.
2) Improper use or other external causes whether in the warranty period or not.
3) The damage caused by the use of the method other than this manual.
4) The damage caused by customers' disassembling/ modification.
5) Lost of the receipt and this product warranty card.

Product warranty card

Sales store	
Purchase date	

Manufacturer

Mlcro M's Inc.

http://www.mlcro-ms.com

§ 15.19 Labelling requirements.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The device has been evaluated to meet general RF exposure requirement. The device can be used in portable exposure condition without restriction.

§ 15.21 Information to user.

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

§ 15.105 Information to the user.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a

residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-Reorient or relocate the receiving antenna.

-Increase the separation between the equipment and receiver.

-Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

-Consult the dealer or an experienced radio/TV technician for help.