

MIPRO®

ACT-2400 Series

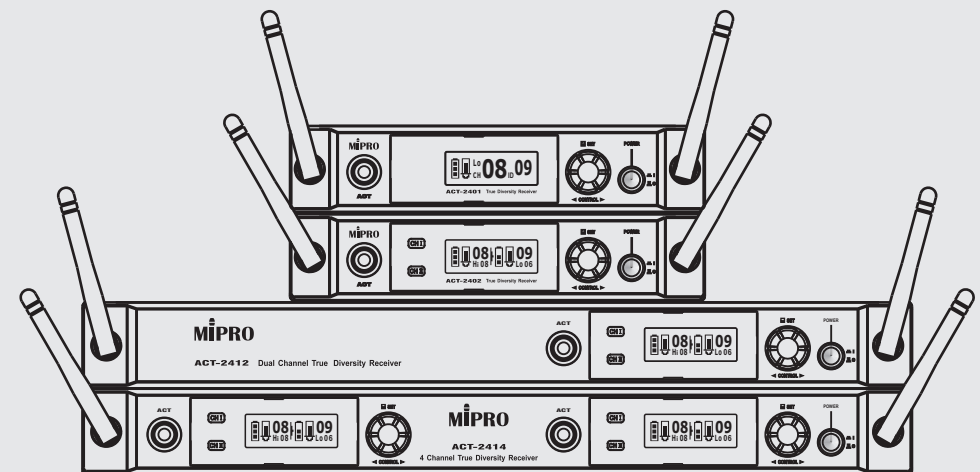
ACT-2401 1/2U Single-Channel Digital Receiver

ACT-2402 1/2U Dual-Channel Digital Receiver

ACT-2412 1U Dual-Channel Digital Receiver

ACT-2414 1U 4-Channel Digital Receiver

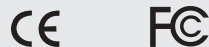
User Guide



MIPRO®
MICROPHONE PROFESSIONALS

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Specifications and design subject to change without notice.

! IMPORTANT SAFETY INSTRUCTIONS !

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with a dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarised or ground plug: A polarised plug has two blades with one wider than the other. The wide blade is provided for your safety. When the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plug, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Use only with a cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.
16. Apparatus should not be exposed to dripping or splashing and no objects filled with liquids, should be placed on the apparatus.
17. Use only with the battery which specified by manufacturer.
18. The power supply cord set is to be the main disconnected device.



Federal Communication Commission Interference Statement

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 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.

FCC Caution: To assure continued compliance, any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. (Example - use only shielded interface cables when connecting to computer or peripheral devices).

FCC Radiation Exposure Statement

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 0.5 cm between the radiator and your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

The antennas used for this transmitter must be installed to provide a separation distance of at least 0.5 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

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.

WARNING

1. **FOR OUTDOOR USE:**


To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.


2. **UNDER WET LOCATION:**


Apparatus should not be exposed to dripping or splashing and no objects filled with liquids, such as vases should be placed on the apparatus.

3. **SERVICE INSTRUCTIONS:**

CAUTION - These servicing instructions are for use by qualified service personnel only. To reduce the risk of electric shock, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so.



 This symbol indicates that dangerous voltage constituting a risk of electric shock is present within this unit.

 This symbol indicates that there are important operating and maintenance instructions in the literature accompanying this unit.

Disposal Dispose of any unusable devices or batteries responsibly and in accordance with any applicable regulations.



Disposing of used batteries with domestic waste is to be avoided!

Batteries / NiCad cells often contain heavy metals such as cadmium(Cd), mercury(Hg) and lead(Pb) that makes them unsuitable for disposal with domestic waste. You may return spent batteries/ accumulators free of charge to recycling centres or anywhere else batteries/accumulators are sold.

By doing so, you contribute to the conservation of our environment!

IC
This device complies with Industry Canada licence-exempt RSS-123 ISSUE 2 / RSS-310 ISSUE 3 standards. 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.

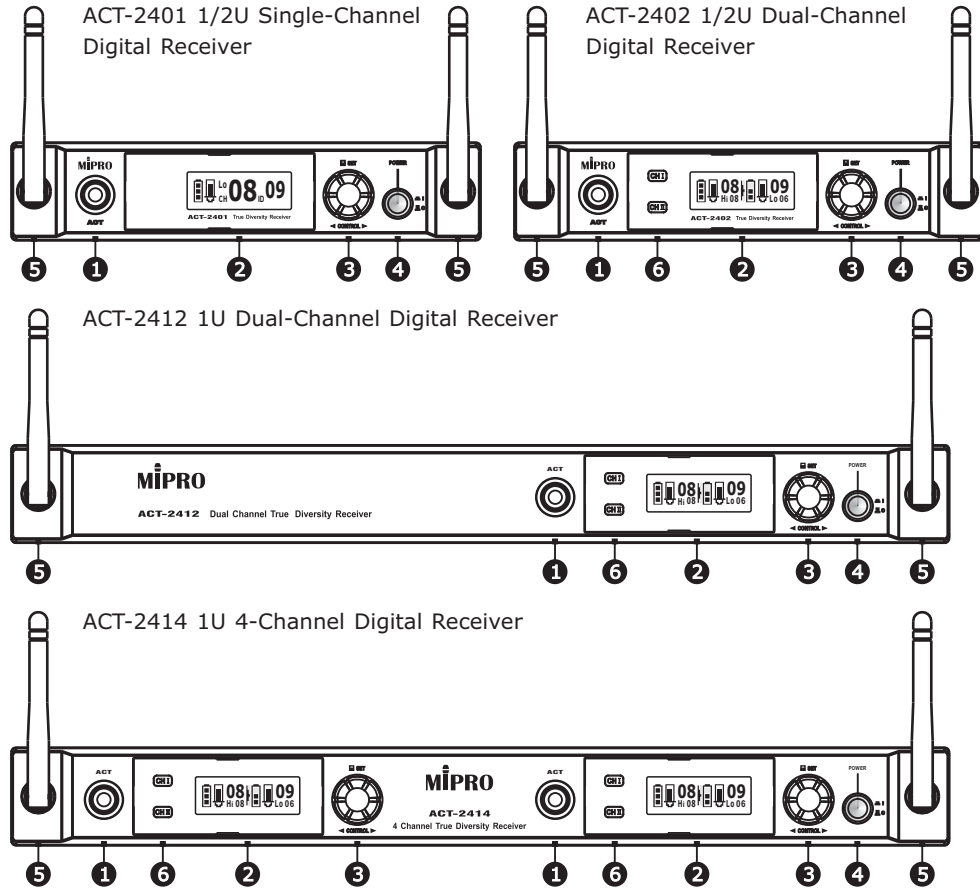
Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

- (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.

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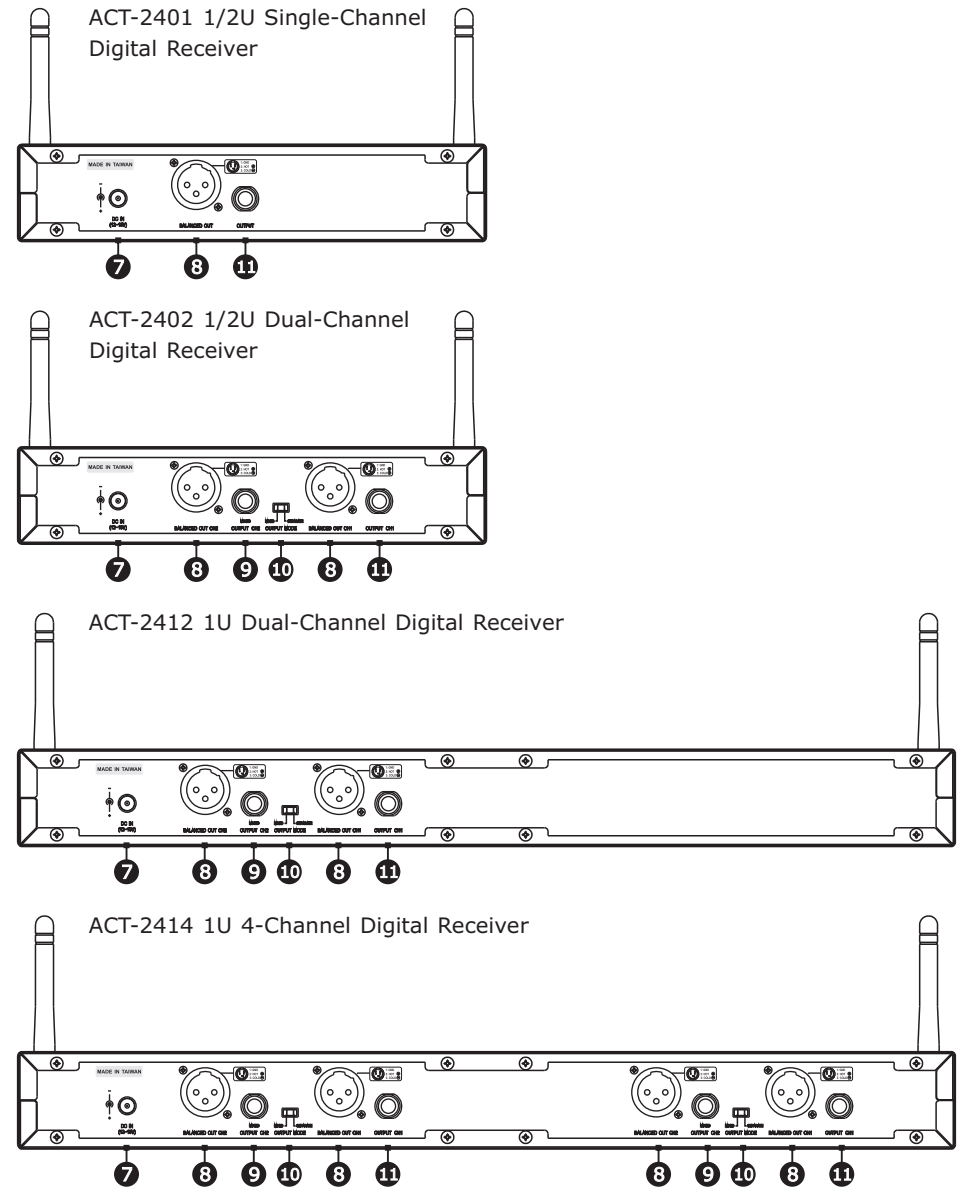
1	Receiver Controls and Indicators
4	Receiver Installation
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Receiver Controls and Indicators Front Panel



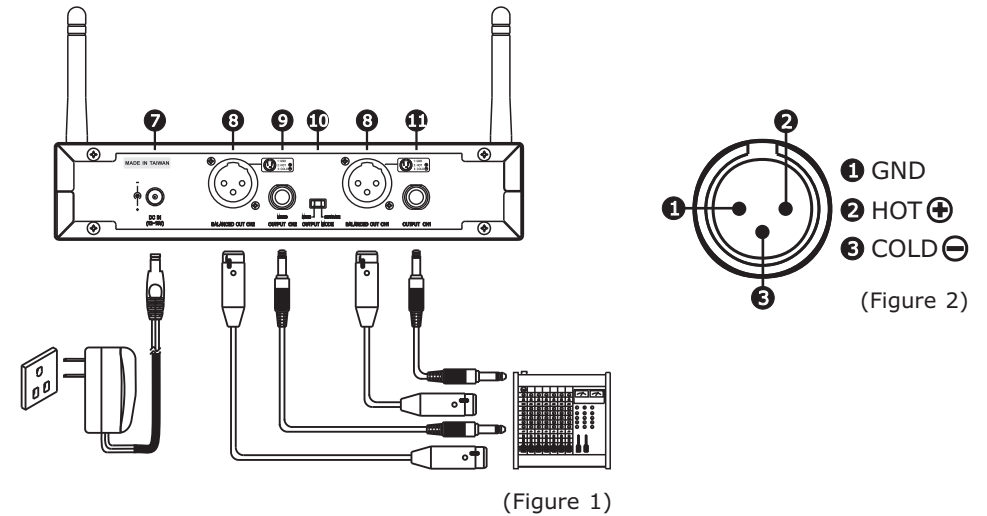
- 1 **ACT button:** Press ACT to activate the frequencies synchronization from receiver to transmitter.
- 2 **OLED display:** Display current and programmed parameters.
- 3 **Rotary Knob:** Set-up programmable parameters.
- 4 **Power button:** Power on & off.
- 5 **Receiver Antenna.**
- 6 **Channel Selector:** CH I (channel 1), CH II (channel 2) buttons. CH II appears on ACT-2402, ACT-2412 & ACT-2414 receivers.

Receiver Controls and Indicators Rear Panel



- 7 DC Input Jack:** Accepts +12V DC to +15V DC. (center pin is positive and sleeve is ground)
- 8 Balanced Audio Output Socket (CH2/CH1):** 3 pin XLR type connector provides balanced audio output signal same as microphone sensitivity level.
- 9 Unbalanced Audio Output Jack (CH2/CH1):** 6.3mm (1/4") phone-jack type connector provides unbalanced audio output signal. (Dual Channel)
- 10 Mixed and Separate Output Switch:** Switch to "MIXED" mode, audio from both channels will be mixed out from OUTPUT CH2. Switching to "SEPARATE" mode (available in dual & quad channels only) and each channel has individual output.
- 11 Unbalanced Audio Output Jack:** 6.3mm (1/4") phone-jack type connector provides unbalanced audio output signal from this jack to the mixer.

Receiver Installation



1. Connecting the power supply:

Plug DC plug into the DC-input jack and the power cord, into a power outlet. (Various outlets fitting the standards of various countries are available for this unit) (Standard Taiwan Voltage: 110V)

2. Audio Output Connection:

• Connection Method of Unbalanced Output:

When receiver and mixer's line input or karaoke mixing amplifier's microphone input are connected are not far from each other. Or both ends are using 6.3mm "PHONE" jack types. Using audio output cable attached with "PHONE PLUG" type, connect one end from the unbalanced output jack, of the receiver, and the other end to the "LINE-IN" input jack of the mixer/amplifier, Using 2 "6.3" to "6.3" signal cables connect for "SEPARATE MODE", Using 1 "6.3" to "6.3" signal cable connect from receiver's CH 2 "6.3" output to Mixer/Amplifier "Line in" for "MIXED MODE", as shown in Figure 1.

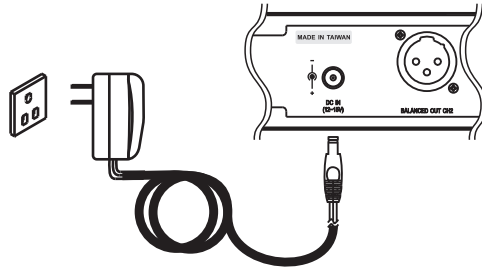
• Connection Method of Balanced Output:

When receiver and karaoke mixing amplifier is under long distance. Or the connectors of receiver/mixer/amplifier are "XLR" types. Using audio output cables with "XLR" or "Cannon" type connectors, connect one end to the balanced output jacks, of the receiver, and the other end to the "MIC IN" input jack of the mixer or amplifier, as shown in Figure 1. (The configuration of the 3-pin connector is as shown in Figure 2.)

Operating Instructions

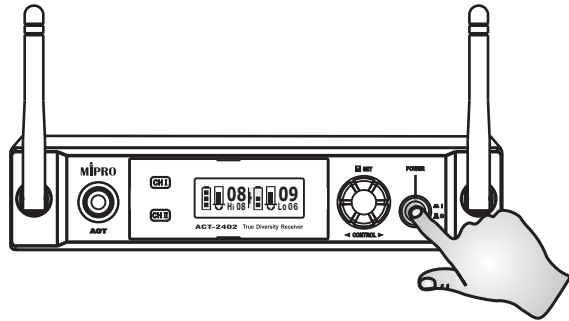
1. Power Installation

- Plug one end to DC IN and the other to an AC outlet.



2. Power on the receiver

- Press & hold ON button until the OLED display is lit.

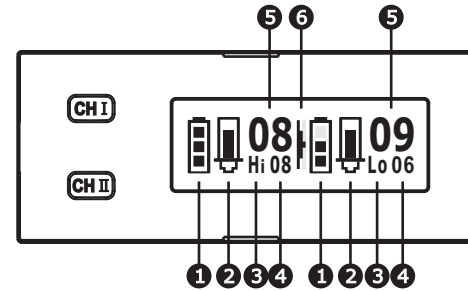


3. Prior to powering on the receiver, ensure all transmitters are turned off and the mixer's volume control is set to a minimized setting.
4. Normally, once the transmitter is power on, the battery indicator on the receiver display will be lit. Bars displayed indicate remaining battery life. Once an audio signal is received from the transmitter, the AF (audio) meter level glows based on signal strength. If the meter or indicator does not glow or there is no audio output, the system may not be set up properly. Re-check that the transmitter is turned on and the receiver and transmitter are on the same frequency (if not, the transmitter will need to be reset via the ACT function).
5. There is no volume control on the receiver. Volume needs to be adjusted from mixer or karaoke mixing amplifier.

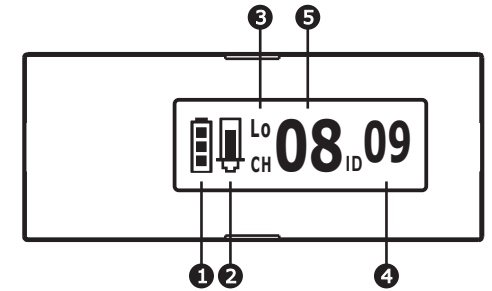
OLED Display

1. Display Information

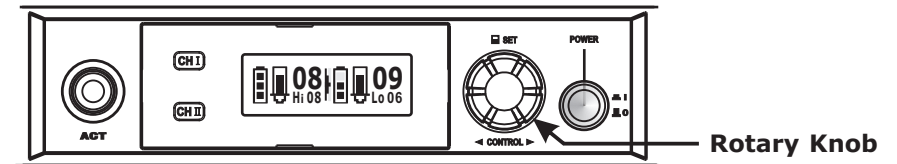
Dual Channel



Single Channel



- 1 Transmitter Battery Indicators
- 2 Audio Signal Strength
- 3 Transmitter Output Power Status
- 4 Transmitter ID code
- 5 Receiver Channel
- 6 Channel Arrow (Left side is CHI; Right side is CHII)

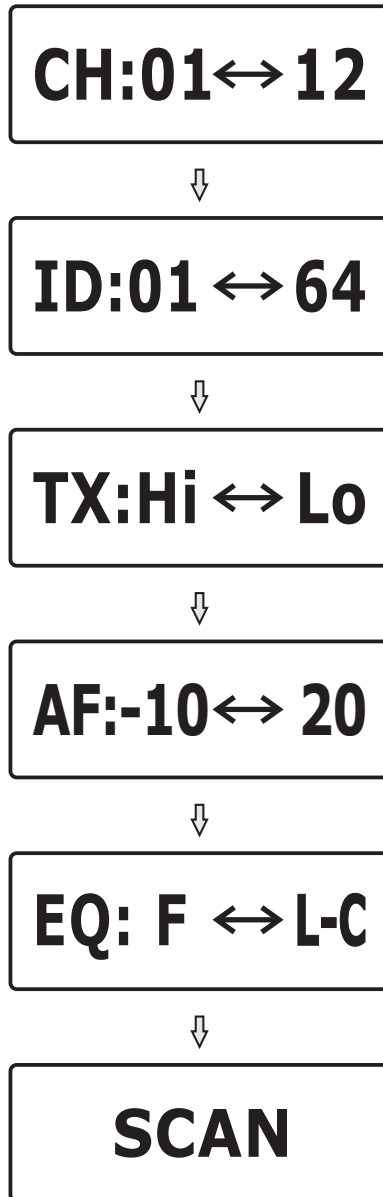


2. Rotary Knob: The receiver has a main menu for setup of functions and parameters.

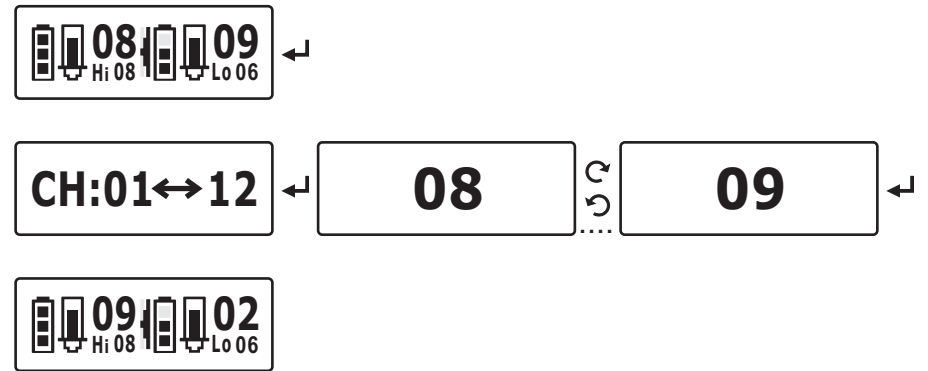
Operating Instructions:

- Press rotary knob to activate setup mode. Turn rotary knob right will advance to the next menu screen in the following order (see below graphs).
- Turn rotary knob right or left for desired function or parameter change. Press rotary knob to save the change and display returns to the main menu. Press ACT (sync) button to automatically sync changes from receiver to the transmitter.

3. Main Functions



(1) Setting Channel Code



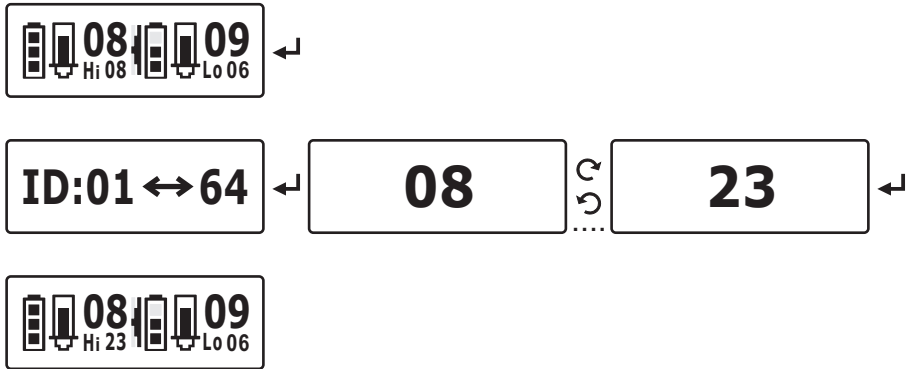
Operating Instructions:

- Press rotary knob to activate setup mode.
- Press rotary knob when **CH:01↔12** (CHANNEL) mode is located. Turn to make a change.
- Turn clockwise to increase the channel number.
- Turn counter clockwise to decrease the channel number.
- Press rotary knob to save the change and display returns to the main menu.

Rotary Knob illustrations



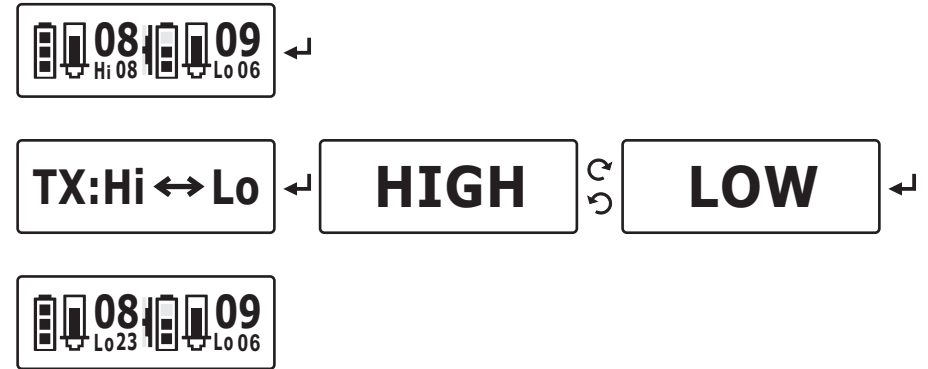
(2) Setting ID Code



Operating Instructions:

- Press rotary knob to activate setup mode.
- Press rotary knob when **ID:01↔64** (ID-CODE) mode is located. Turn to make a change.
- Turn clockwise to increase the ID-CODE number.
- Turn counter clockwise to decrease the ID-CODE number.
- Press rotary knob to save the change and display returns to the main menu.

(3) Setting TX-POWER Output Status



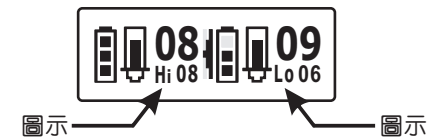
Operating Instructions:

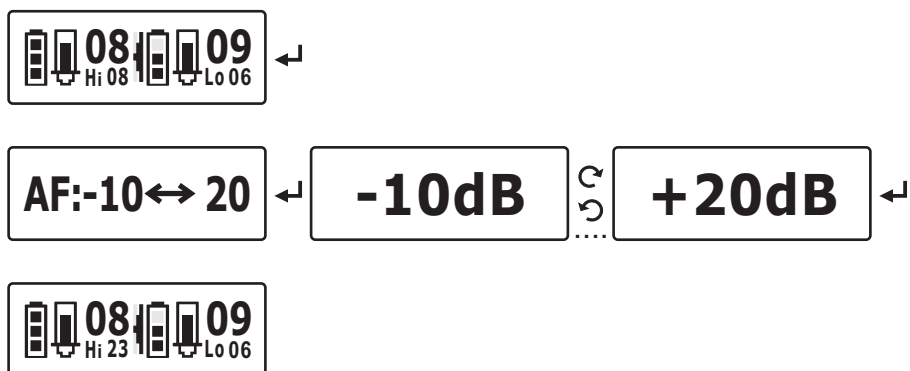
- Press rotary knob to activate setup mode.
- Press rotary knob when **TX:Hi↔Lo** mode is located. Turn to make a change.
- Turn to HIGH or LOW option.
- Press rotary knob to save the change and display returns to the main menu.

Caution:

- **HIGH** power setting maybe changed to adhere local telecom regulations.
- **Hi** icon denotes system is in HIGH power mode in transmitter power setting.
- **Lo** icon denotes system is in LOW power mode in transmitter power setting.

HI > LO sequence diagram



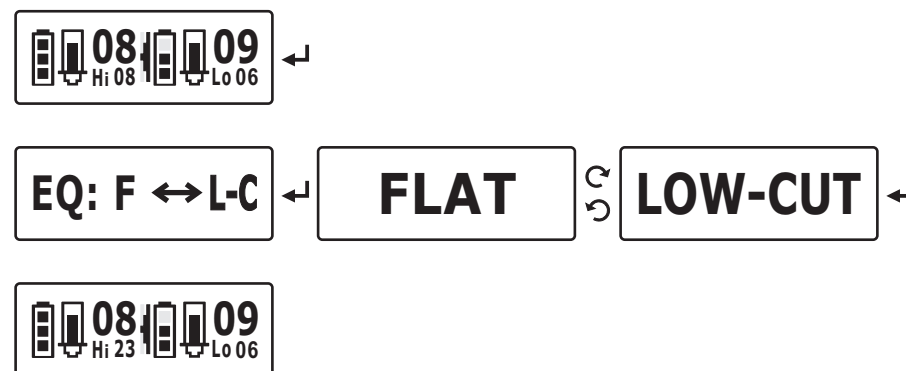
(4) Setting AF-OUTPUT

Operating Instructions:

- Press rotary knob to activate setup mode.
- Press rotary knob when **AF:-10↔20** mode is located. Turn to make a change.
- Turn clockwise increases in 1 dB increments.
- Turn counter clockwise decreases in 1 dB increments.
- Setting Recommendation: Microphone Output: 0dB, Line Output: + 14 ~ 16dB.
- Press rotary knob to save the change and display returns to the main menu.

Caution:

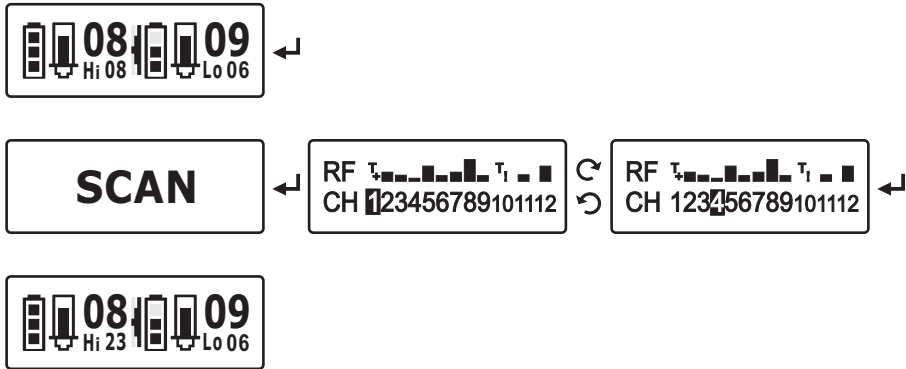
Audio Frequency Output (AF OUTPUT) of CH.1 and CH.2's setting is recommended at + 14dB ~ +16dB during Mixed Out or Separate mode when using a 6.3mm phone jack output connector.

(5) Setting EQUALIZER

Operating Instructions:

- Press rotary knob to activate setup mode.
- Press rotary knob when **EQ:F↔L-C** (EQUALIZER) mode is located. Press to make a change.
- Turn to FLAT or LOW-CUT option.
- Press rotary knob to save the change and display returns to the main menu.

(6) Setting CHANNEL SCAN



Operating Instructions:

- Press rotary knob to activate setup mode.
- Press rotary knob when **SCAN** mode is located. Press the rotary knob again enables receiver scans automatically for the best available preset frequency continuously.
- A status icon may appear on top of a channel during SCAN process.
- Select a clean or lower interference channel by turning, locating and pressing rotary knob for the desired channel.
- Press rotary knob to save the change and display returns to the main menu.



Caution:

- "T₊" denotes current MIPRO transmitter is in operation and with an identical ID Code.
- "T_!" denotes other MIPRO transmitter is in operation and with a different ID code.
- "■" denotes this channel has a severe environmental interference.
- "▬" denote this channel has a minor environmental interference.

NOTE: Scan and select best available interference-free receiver channel. If possible, avoid using channel showing minor or severe interference.

(7) Transmitter Muting icon



When the MUTE function on the transmitter is enabled, a " M " icon is illuminated on the receiver display to denote audio is muted.

MIPRO's Proprietary ACT Sync Function

1. What is ACT ?

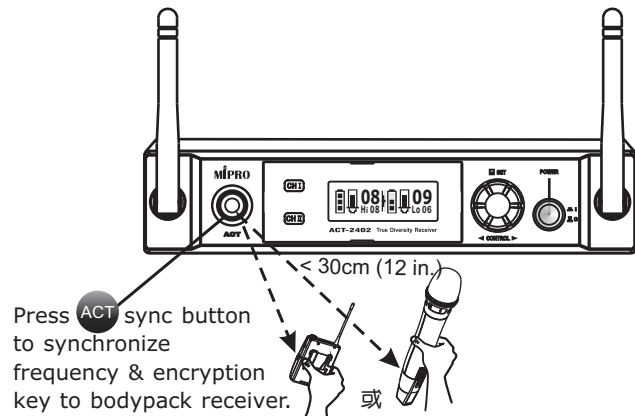
- ACT is short for Automatic Channel Targeting. ACT is a proprietary sync technology developed first by MIPRO in the professional audio industry. Consequently, ACT sync has become an industry-standard for fast, easy and precise frequency synchronization between transmitter and receiver.

2. Features

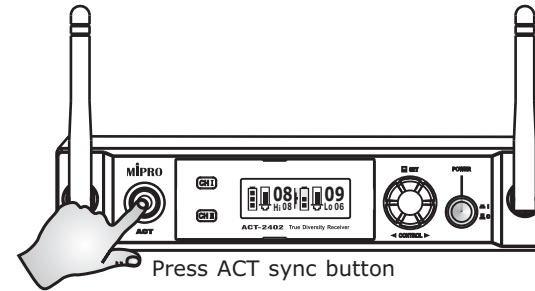
- Frequency do not require an external tool for adjustment.
- Precise and fast synchronization.
- Frequency is synchronized and saved and ready for repeat usage.

3. Operating Instructions?

- Press the ACT sync button on the rack transmitter to start the synchronization.
- ACT SYNC word with moving "....." appears on the rack transmitter screen.
- Align the ACT sync windows of both receiver & transmitter within 30cm.
- ACT SYNC word with moving "....." disappears during a successful sync and returns back to main OLED screen.
- ACT FAIL appears during a failed sync.
- Repeat step 1 to 5.



4. ACT Synchronization



Receiver to transmitter synchronization in process...



FAIL appears during a failed synchronization.
If sync fails, repeat the sync procedure.

Operating Instructions:

- Turn on the transmitter. Ensure transmitter has fresh battery inserted.
- Press the ACT (sync) button on the receiver. The word ACT appears and ---- starts flashing to denote synchronization is now activated and sync is in progress.
- Align the ACT sync windows of both transmitter and receiver within 30cm (12-inch) and wait for 3-5 seconds.
- Once synchronization is complete and successful the display returns to the main menu.
- If synchronization is not complete and not successful, the word FAIL appears in about 10 seconds and the display returns to the main menu.
- If failed, repeat the sync procedure, carefully maintain alignment between the ACT sync windows of both transmitter and receiver.

NOTE: During syncing, ensure the ACT sync windows of both transmitter and receiver are within 30cm (12-inch) and align of each other.

Transmitter Battery Meter (receiver display)



- The battery meter illuminates when the transmitter is powered ON. The OLED battery meter gives an estimated percentage (%) indication of remaining battery life, as shown above. Recharge the transmitter battery (or replace with a charged battery pack) immediately when battery indicators fall to 10% (1 bar showing as indicated above).

** Refer to transmitter user manual for battery capacity of each battery bar or indicator

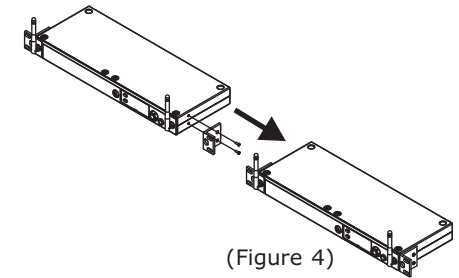
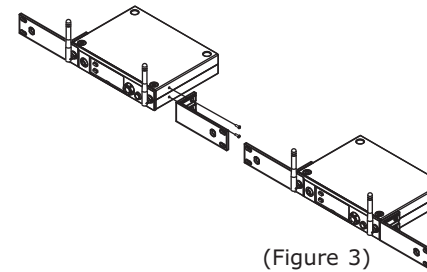
Rackmount Installation for Receivers

1. Half-Rack Unit Receiver

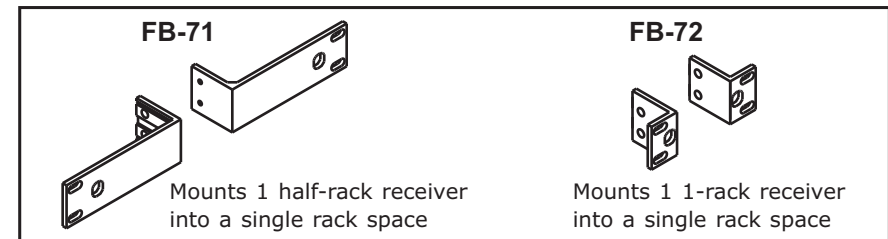
Install the optional FB-71 rackmount kit & fasten with screws on both sides. (Figure 3)

2. 1-Rack Unit Receiver

Install the optional FB-72 rackmount kit & fasten with screws on both sides. (Figure 4)

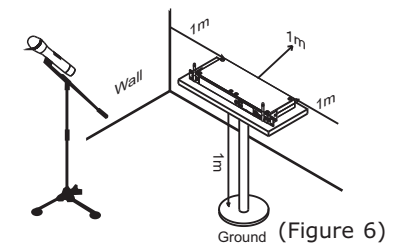
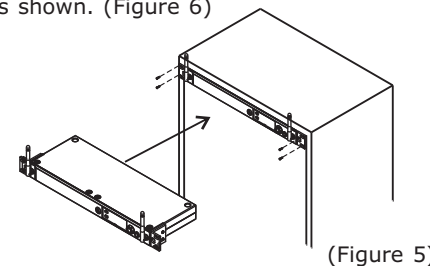


3. Receiver Rack-Mount Kits



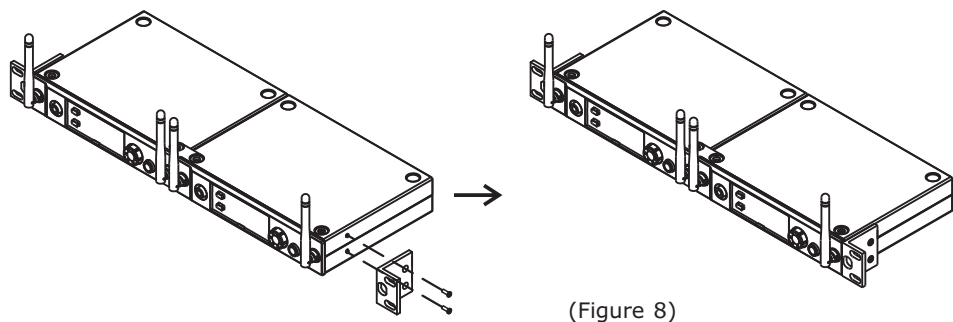
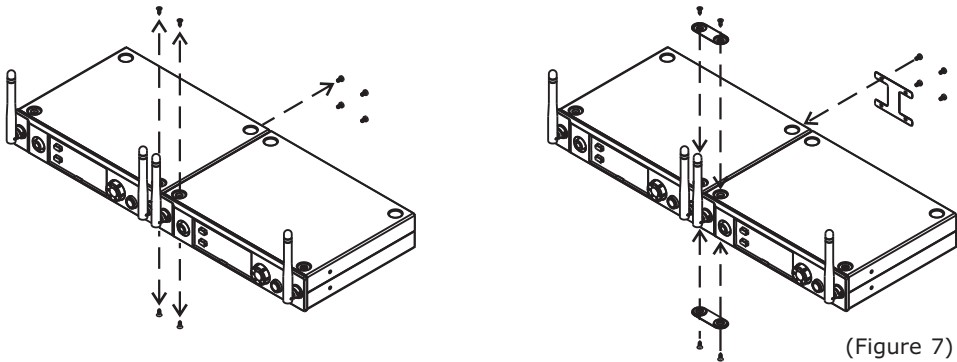
4. The rack mountable kits are pre-drilled with 4 opening holes to be fitted on an EIA standard 19-inch rack case. (Figure 5)

5. For ideal reception and performance, install the receiver at least 1 meter (3 feet) above the ground and away from EMI / RFI "noise" sources. In addition, place the transmitter/microphone at least 1 meter (3 feet) away from the receiving antenna, as shown. (Figure 6)



6. Installation for dual half-rack receivers into a 1-rack unit for rackmount purpose

- Unfasten screws for each receiver. Push the receivers next to each other.
- Place holding plates on top and bottom of the two receivers first, and following the directions, slide both plates into position over the screw holes. Then tighten screws. Place another holding plate on the rear panel and repeat same procedures. (screws should be used in their original location; i.e., top screws for top holding plate and bottom screws for bottom holding plate).
- After both receivers are fixed together, fasten the optional rack mount kit on both sides of the joined receivers as shown in Figure 7.
- Align and install the optional rack mount kit and fasten with screws on both sides. Figure 8



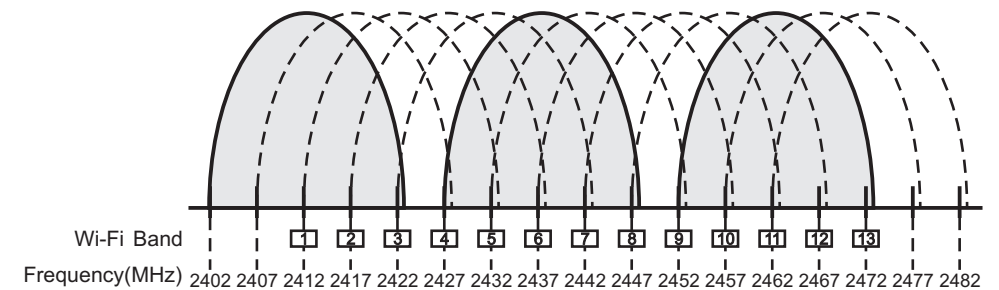
Cautions & Recommendations

1. Position the receiver at least 5-meter away from WiFi, Bluetooth or other 2.4GHz transmitting devices.
2. Line-of-sight provides the ideal reception range between the transmitter and receiver.
3. Power supply voltage should not be less than 12V and not higher than 15V. Ensure at least 1A. Deficient current causes operating voltage instability or malfunction and exceeding current causes shorter the product life cycle and possible short or damaging circuits.

4. User can scan environment for WiFi devices with smartphone app, normally WiFi channel selections are 1, 6, 11.

- When there is WiFi channel selection 1, receiver channels can be set at 01 and 10 for non-interfering channels. Or select a lesser interference channels like 02, 03, 04, 05, 06, 07, 08, 09.
- When there is WiFi channel selection 6, receiver channels can be set at 01 and 11 for non-interfering channels. Or select a lesser interference channels like 02, 03, 04, 05, 06, 07.
- When there is WiFi channel selection 11, receiver channels can be set at 01 and 10 for non-interfering channels. Or select a lesser interference channels like 02, 03, 04, 05, 06, 07, 08, 09.

5. Wi-Fi Channel Distribution:



Note

- Refer to actual product in the event of product description discrepancy.
- Frequency range and maximum deviation comply with the regulations of different countries.