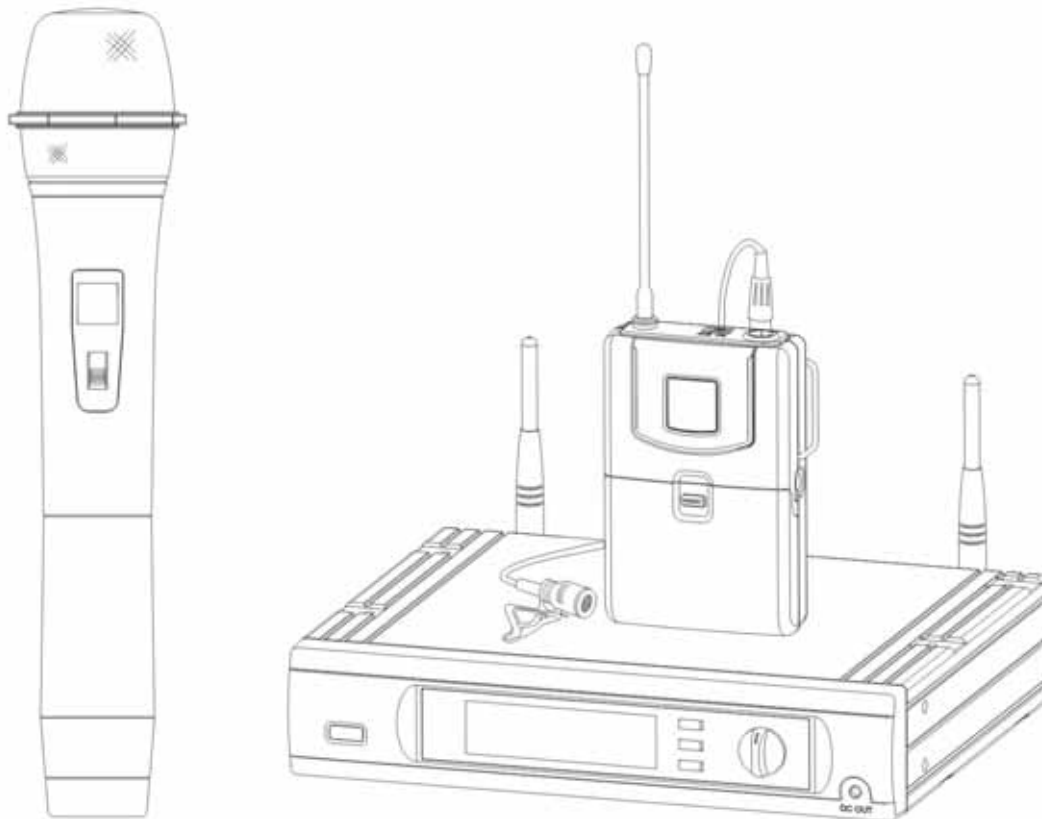


UHF

PLL SYNTHESIZED

USER'S MANUAL

UHF BAND WIRELESS MICROPHONE SYSTEM



WIRELESS MICROPHONE SYSTEM

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FCC Statement

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

Notice : The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

IMPORTANT NOTE: To comply with the FCC RF exposure compliance requirements, no change to the antenna or the device is permitted. Any change to the antenna or the device could result in the device exceeding the RF exposure requirements and void user's authority to operate the device.

1. Introduction

Thank you for purchasing our product. This wireless microphone system operates in UHF band frequency with synthesizer controlled. The system with 700 selectable frequencies via Phase Locked Loop (PLL) circuitry makes it easy to choose non-interfered channels. (The number of frequency channels depends on local regulations.) Please read this instruction manual carefully before operating the system. This manual covers the function and operation of the wireless microphone system.

2. Safety

- Do not spill liquid on the appliance and do not drop it on a hard concrete floor.
- Do not place the appliance near heat sources such as radiators, amplifier, or etc. Do not expose it to direct sunlight, extremely dust, excessive moisture, or vibration.
- Take out the battery from transmitter, if the appliance has been not used for a longer period. This will avoid the damage resulting from a defective leaking battery

3. Environment

- Do not throw used batteries into a fire or garbage bin with domestic rubbish. Be sure to dispose of used batteries in accordance with local waste disposal rules.
- When disposing the equipment, remove the batteries, separate the case, circuit boards, and cables, and dispose of all components in accordance with local waste disposal rules.

4. Wireless Note

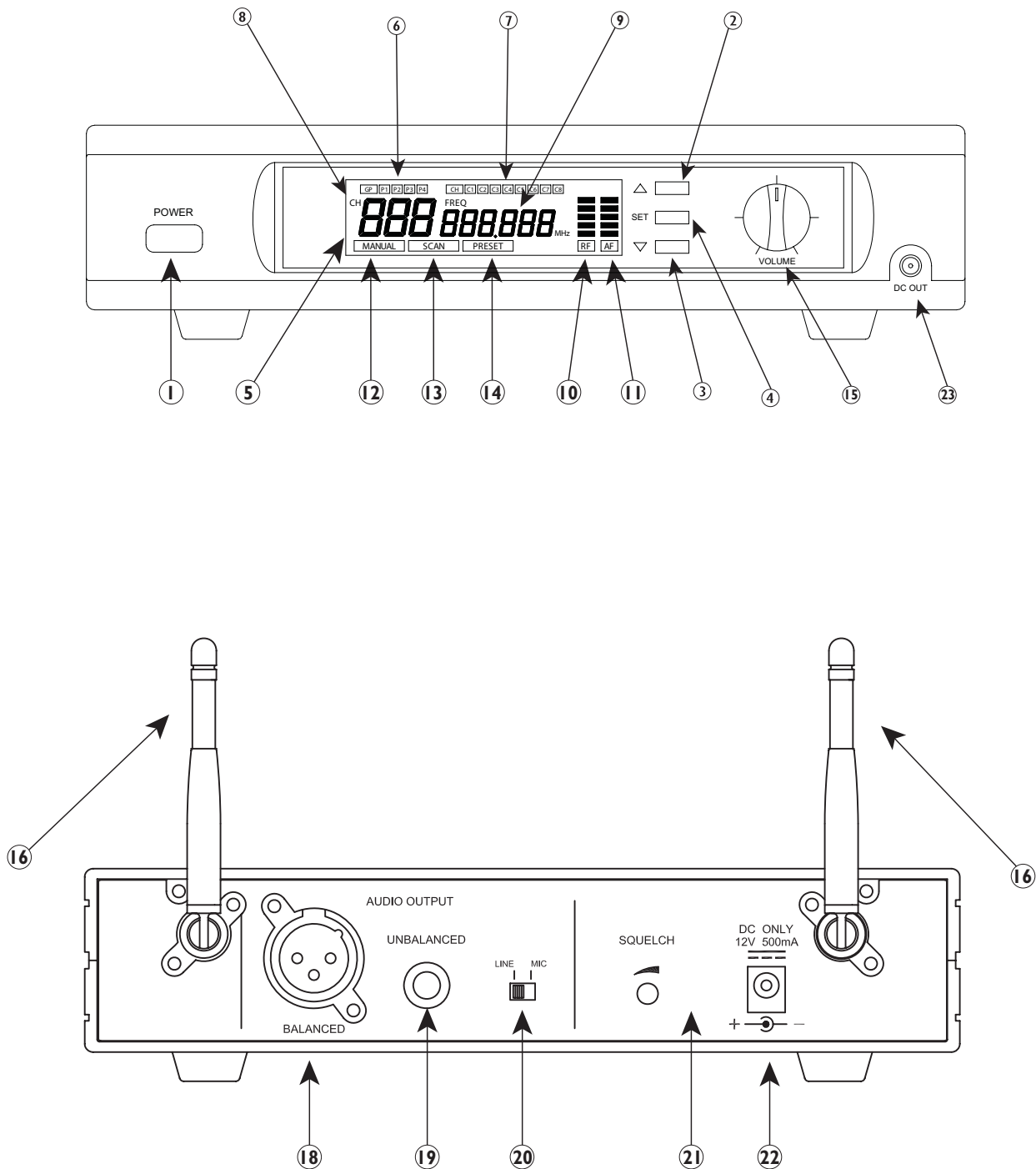
- Before setting up, make sure that the transmitter and receiver are tuned to the same frequency. Do not use two or above transmitters operating in the same frequency.
- Use good quality batteries to avoid the damage resulting from a defective leaking battery.
- Turn the volume control on the receiver to adjust receiver output level to match input level requirements of an audio mixer or amplifier.
- Use the gain control to adjust the sensitivity of the transmitter's audio to the level of the connected lapel microphone or instrument.
- To avoid interference, do not put the receiver too near metal object and avoid obstructions between transmitter and receiver.
- While checking sound, move the transmitter around the area where you use the system to look for dead spots. If you find any dead spot, change the receiver position. If it does not work, avoid such places.
- Avoid the interference from TV, radio, other wireless appliances and etc.

5. Product Description

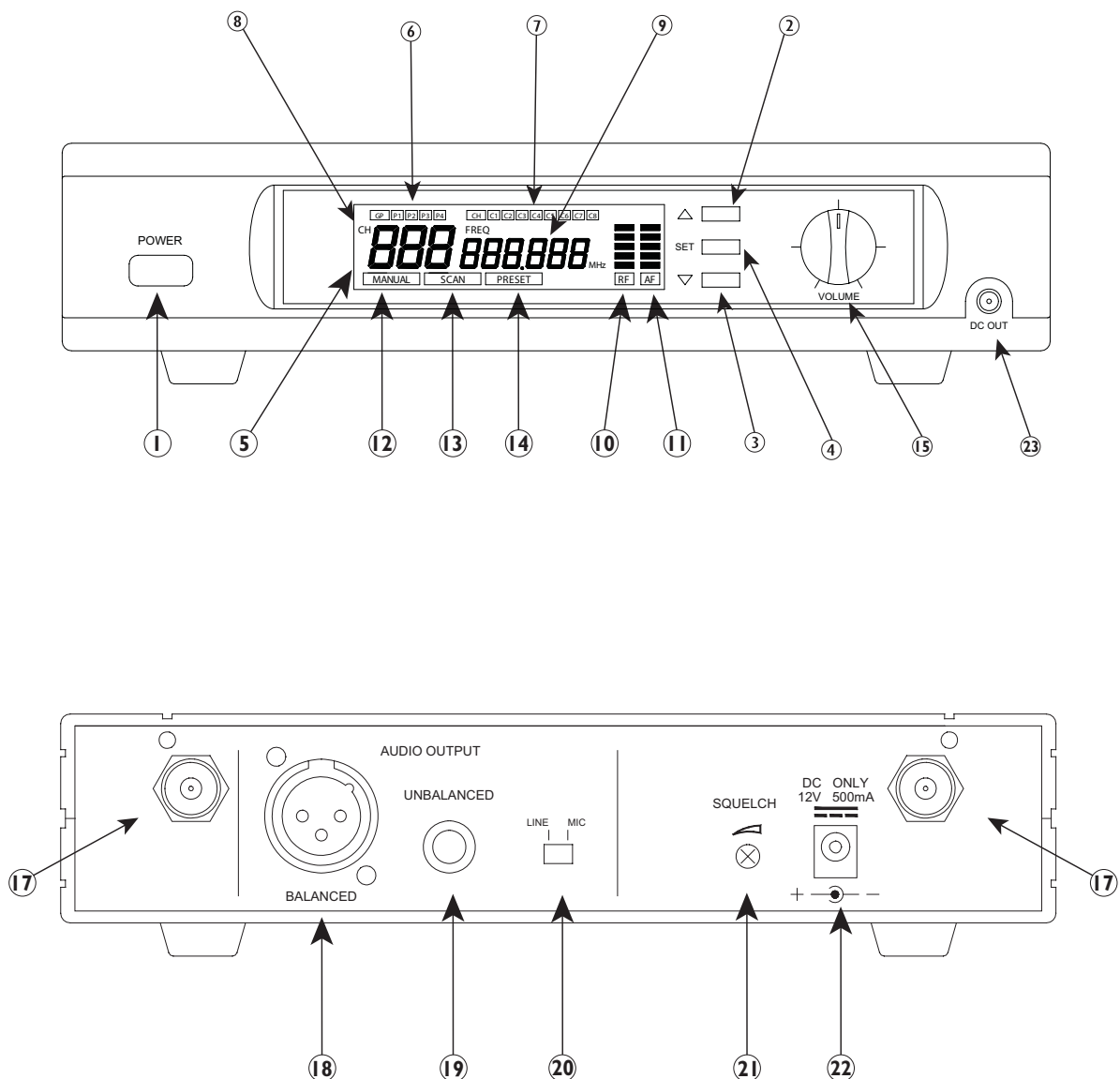
5.1 Receivers

The receivers are used with our 700 selectable channels transmitters. (The number of frequency channels depends on local regulations.) The receiver operates in UHF band frequency with PLL synthesized control. Powered by 12V DC.

5.1.1 Fixed Antenna Type



5.1.2 Detachable Antenna Type

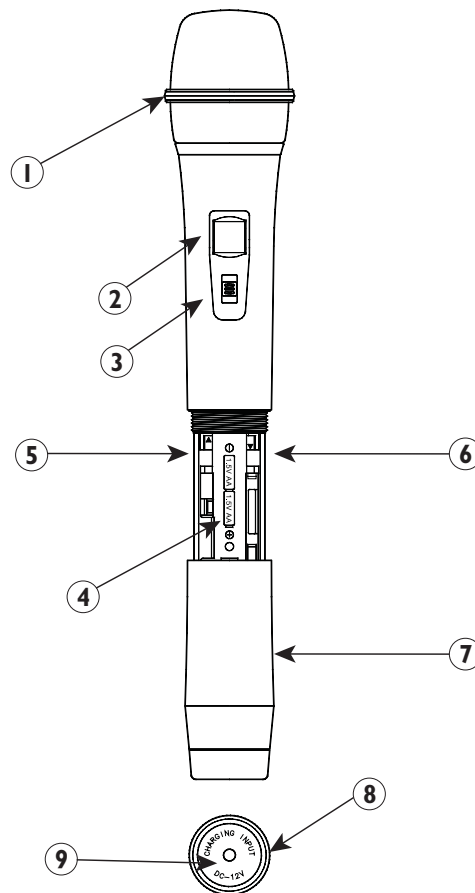


1. **Power:** Press for 4 seconds to power the receiver on or off.
2. **Button $\triangle$:** Used to select your desired mode, and search channel forward.
3. **Button ∇ :** Used to select your desired mode, and search channel backward.
4. **Set Button:** Press for 2 seconds, until "MUTE" is displayed, release the button, LCD display flashing, press button $\triangle$ or ∇ to change the channel. Stop pressing button and let LCD display flashing five times and then lock the setting.
5. **LCD Display:** Showing the channel number, frequency level, RF & AF signal strength, and set-up mode.
6. **GP:** Indicating the preset group number, ex. P1 or P2...
7. **CH:** Indicating the preset channel number, ex C1 or C2...
8. **CH:** Indicating the channel number, ex 001 or 128...
9. **FREQ:** Indicating the frequency.

10. **RF Level Indicators:** 5-segment meter glows to indicate RF signal strength. The more segment glow, the stronger the received signal. If none of these segments glow, no signal is being received.
11. **AF Level Indicators:** 5-segment meter glows to indicate audio signal strength. The more segment glow, the stronger the received signal. If none of these segments glow, no signal is being input.
12. **MANUAL:** Use this mode to select an interference-free channel by manual.
13. **SCAN:** Use this mode to select an interference-free channel by auto-scan function.
14. **PRESET:** Use this mode to select an interference-free channel from preset-groups. There are 4 preset groups. In each group there are sited 8 preset channels which are suitable for 8 transmitters using simultaneously. .
15. **Volume Control:** Use this rotary control to adjust the receiver output level to match the input sensitivity of an audio mixer or an amplifier.
16. **Antenna:** Fixed-length UHF antenna permanently mounted.
17. **Antenna Input Connector:** TNC-type connectors provide connection to the supplied antennas or to coaxial cable used with an antenna divider, antenna boosters or remote antennas.
18. **Balanced Output:** 3-pin XLR connector provides balanced low-impedance output
19. **Unbalanced Output:** Unbalanced 6.3mm mono jack audio output for connecting to, e.g., a guitar amplifier.
20. **Mic/Line Switch:** Use this to adjust output (XLR balanced connector and 6.3φ unbalanced phone jack) for microphone (-20dB) or line-level (0dB).
21. **Squelch:** Use the squelch to adjust the output level to suppress the noise. The higher squelch control, the lower the sensitivity of the receiver and smaller the service area of the system. Set the squelch to minimum before turning the receiver on.
22. **DC IN:** DC Input connector for the supplied AC adapter.
23. **DC OUT:** Use this to connect the supplied cable to the receiver and the microphone, and it takes around 10 hours to charge.

5.2 Handheld Microphone

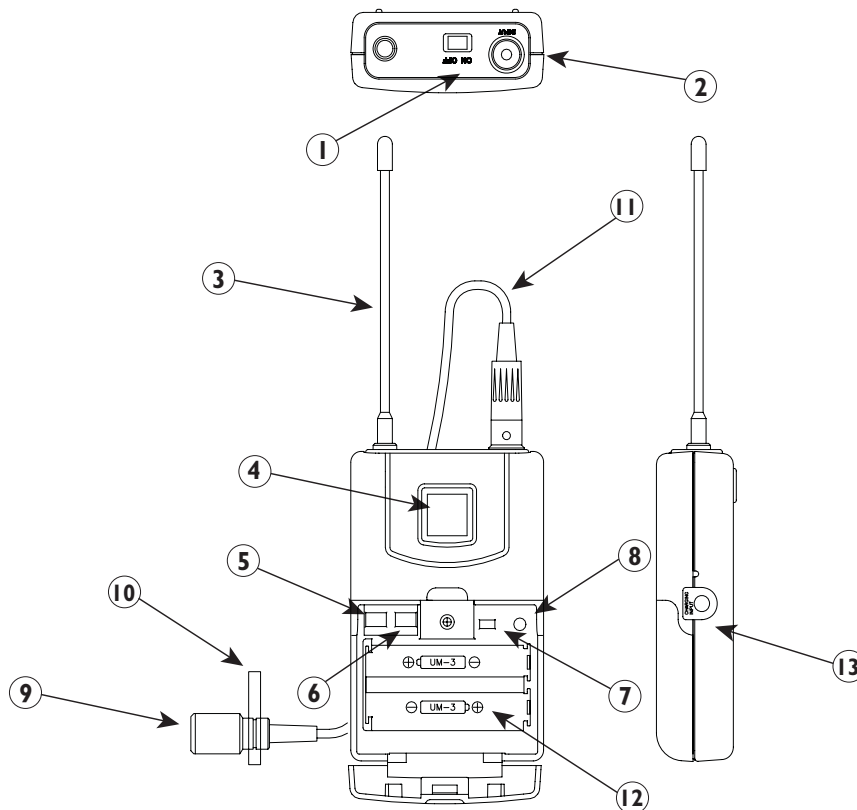
The handheld microphone operates in UHF band frequency with PLL synthesized control. UHF 700 preprogrammed selectable frequencies to avoid interference. (The number of frequency channels depends on local regulations.) Uni-directional dynamic or uni-directional electret condenser cartridges feature different characters for various choices. Use 1.5V x 2 AA size dry or rechargeable batteries for cost-saving and environmental protection.



1. **Grille:** Protects the microphone capsule and helps reduce breath sounds and wind noise.
2. **Programmable Display:** Displays channel number and battery power level
3. **On/off Switch:** Turns transmitter power on and off.
4. **Battery Compartment:** Insert two AA dry or rechargeable batteries into the compartment and make sure that the polarity of batteries is correct.
5. **Channel + Button:** Press this button to change channel forward.
6. **Channel – Button:** Press this button to change channel backward.
7. **Battery Cover:** Unscrew to expose battery compartment and channel selector.
8. **Color Clip:** This color clip helps to identify the frequency for multi-channel operation.
9. **Charging Input:** The inserted rechargeable batteries are charged by using the supplied DC-plug cable connection to DC out on the receiver. It takes up to 10 hours for charging.

5.3 Bodypack Transmitter

The bodypack transmitter operates in UHF band frequency with PLL synthesized control. UHF 700 preprogrammed selectable frequencies to avoid interference. Various uni-directional electret condenser cartridge options. Use 1.5V x 2 AA size dry or rechargeable batteries for low operating cost.



1. **On/Off Switch:** Turns transmitter power on and off.
2. **Mini XLR Connector:** The included electret lapel microphone is inserted into the connector on transmitter.
3. **Antenna:** Permanently connected, helical antenna.
4. **Programmable Display:** Displays channel number and battery power level
5. **Channel + Button:** Press this button to change channel forward.
6. **Channel – Button:** Press this button to change channel backward.
7. **Mic/Line Selector:** The switch sets the audio input either to microphone level or line level.
8. **Gain:** The rotary control adjusts the sensitivity of the transmitter's audio to the level of the connected lapel microphone or instrument.
9. **Mic Unit:** The uni-directional electret condenser unit features the wide frequency response for warm, rich bass and clear sound.
10. **Tie Clip:** To clip on the tie or lapel for free-movement.
11. **Cable:** With mini XLR connector cable to connect the transmitter.
12. **Battery Compartment:** Insert two AA dry or rechargeable batteries into the compartment and make sure that the polarity of batteries is correct.
13. **Charging Input:** The inserted rechargeable batteries are charged by using the supplied DC-plug cable connection to DC out on the receiver. It takes up to 10 hours for charging.

6. Setting Up

NOTICE: Prior to setting up, please check that the transmitter and receiver are tuned to the same frequency. Two or more transmitters operating in the same frequency can not be used at the same time and area. So for each extra transmitter, please select a different frequency which can be used simultaneously at local area.

6.1 Connecting the receiver to power

- Plug the antennas into the TNC socket on the receiver, if the antennas are detachable and point them upward.
- Check that the voltage of the supplied AC adapter conforms to the voltage available (AC110 or 220) in local area. Using the wrong AC adapter may cause irreparable damage to the unit.
- Plug the feeder cable of the supplied AC adapter into DC IN socket on the receiver. Then plug the AC adapter into a power outlet.

6.2 Connecting the receiver to an audio mixer or an amplifier

In order to make sure the sound quality and avoid distortion, please adjust the volume level according to following instructions.



- When using a standard audio cable with 3-pin XLR connectors or 6.3φ phone plugs to plug into the MIC IN on the audio mixer or on the amplifier, please turn the Volume Level Control of the receiver to around 1 o'clock position, the output level for balanced and unbalanced output is about at 77mV.



- When using a standard audio cable with 3-pin XLR connectors or 6.3φ phone plugs to plug into the LINE IN on the audio mixer or on the amplifier, please turn the Volume Level Control of the receiver to around MAX. position, the output level for balanced and unbalanced output is about at 770mV.

Never use the balanced and unbalanced audio outputs at the same time! This may cause signal loss or increased noise.

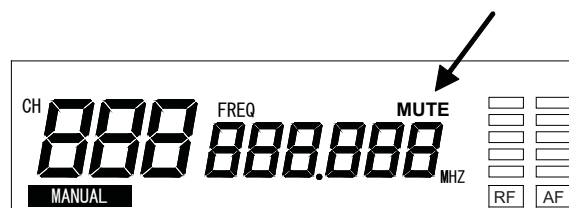
6.3 Setting up channel on receiver

Notice: Do not put two or more transmitters operating nearby when setting up the frequency channel. Please keep transmitter at least one meter away from receiver.

6.3.1 Manual Mode

Setting interference-free channel by manual operation.

- Press button $\triangle$ or ∇ for 2 seconds to "MANUAL" mode.
- Press button "SET" for 2 seconds, until "MUTE" would show up; release the button, LCD display is flashing.

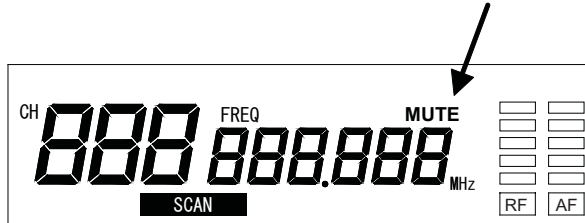


- Press button $\triangle$ or ∇ to change the channel forward or backward to an free-interference channel.
- Stop pressing button and let LCD display flashing five times to lock the setting.

6.3.2 Auto-Scan Mode

Setting interference-free channel by auto-scan programmed search.

- Press button $\triangle$ or ∇ for 2 seconds to “SCAN” mode.
- Press button “SET” for 2 seconds, until “MUTE” would show up; release the button, LCD display is flashing.

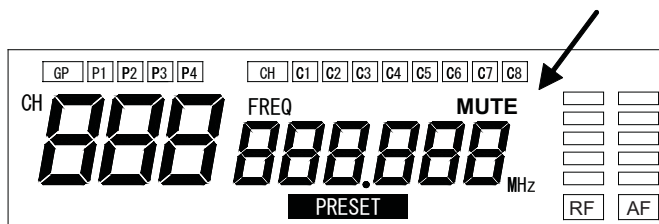


- Press button $\triangle$ or ∇ to scan in forward or backward direction. The auto-scan system would stop at the next free-interference channel.
- Stop pressing button and let LCD display flashing five times to lock the setting.
- If user need to set up a multi-receiver system, please keep your previous receiver-microphone pair power on. Then go on to next scanning procedure.

6.3.3 Preset Mode

Setting channel by using a default setting channels. There are 4 preset groups. In each group, there are 8 default setting channels. Using a preset group, user can easily set up an 8 receiver-microphone system according the default setting channels of a preset group. Excluding the interference from outside environment, the default setting channels are interference-free to any one of them. User does not need to worry about how to scan 8 channels for a multi-receiver system. User can use a preset group to set up in few steps.

- Press button $\triangle$ or ∇ for 2 seconds to unlock and move to “PRESET” mode.
- Press button “SET” for 2 seconds, until “MUTE” would show up; release the button, LCD display is flashing.



- Press channel button $\triangle$ to change the programmable group forward.
- Press channel button ∇ to change the programmable 8 channel forward.
- Stop pressing button and let LCD display flashing five times to lock the setting.
- When there is any outside interference on the current preset group, please switch to use next preset group. If 4 preset groups are all under interference, please use auto-scan mode or manual mode to set up system.

6.4 Inserting batteries into the handheld / bodypack transmitter

- Open the battery cover and insert batteries into the battery compartment conforming to the polarity (+)(-) marks. The transmitter can not work with incorrectly inserted batteries.
- When push the ON/OFF switch to “ON” to switch the power on, LCD shows battery power level. If it displays insufficient power, the inserted rechargeable batteries can be charged by using the supplied DC plug cable directly connection to DC out on the receiver and charging input on the transmitter. It should take up to 10 hours for charging.
- Close the battery cover.

6.5 Setting up the handheld transmitter

- Switch the receiver power on and check the frequency and volume level.
- Switch the transmitter and hi-fi appliance (amplifier, tape deck etc.) power on.
- Adjust the channel setting of the transmitter according to the receiver’s channel setting.
- Test the microphone and adjust the levels on your audio mixer or amplifier.

6.6 Setting up the bodypack transmitter

A. Connecting a microphone

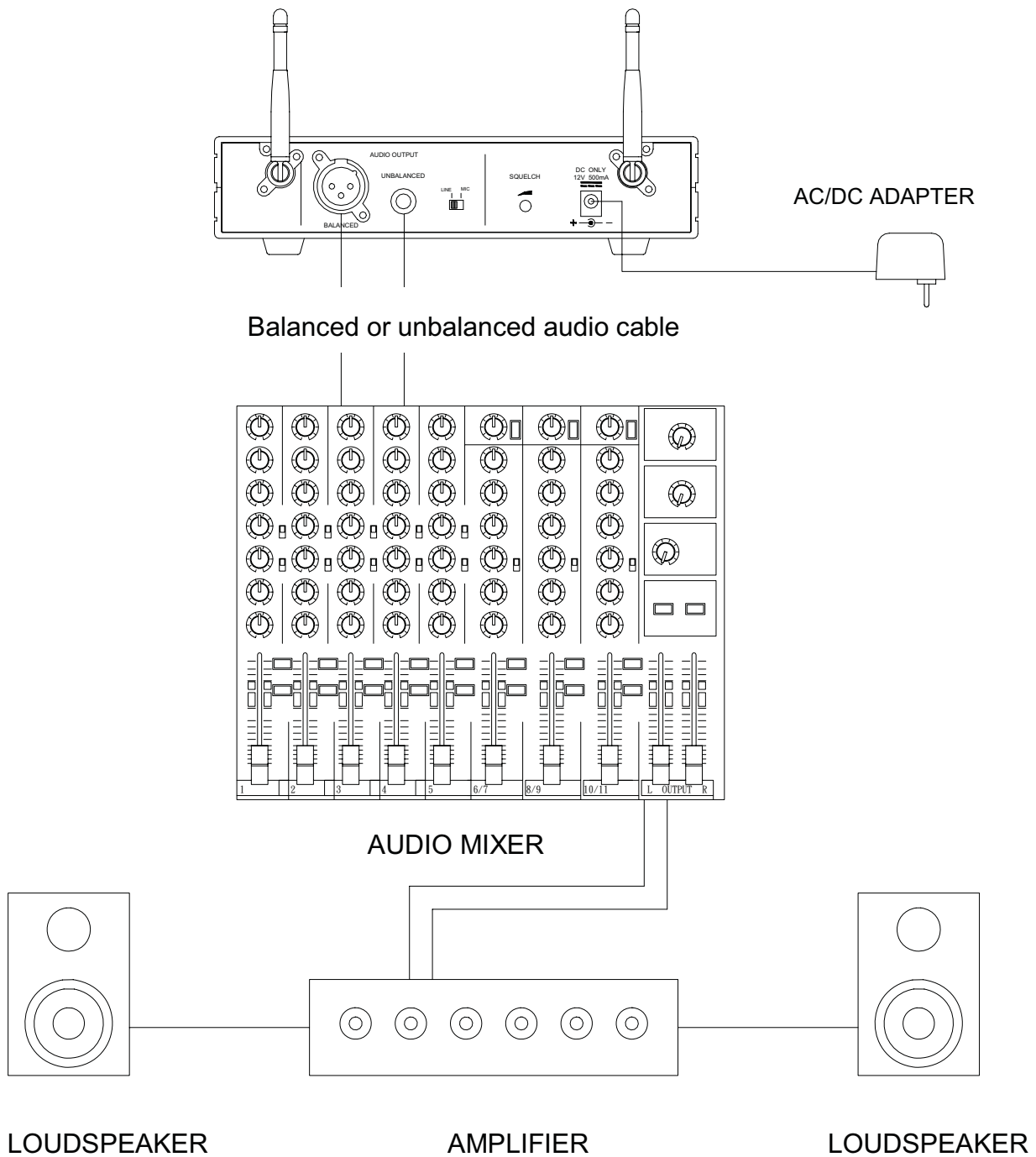
- Open the battery cover. Push the MIC/LINE switch to “MIC” and use the supplied screw- driver to adjust the GAIN at appropriate position.
- Plug the mini XLR connector of the microphone cable into the audio input connector on the bodypack transmitter.
- Switch the transmitter and hi-fi appliance (amplifier, tape deck etc.) power on.
- Adjust the channel setting of the transmitter according to the receiver’s channel setting.
- Test the microphone and adjust the levels on your audio mixer or amplifier.

B. Connecting an instrument

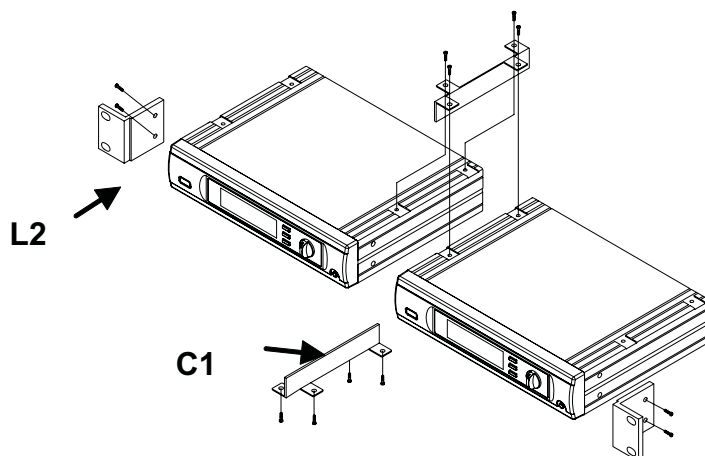
- Open the battery cover. Push the MIC/LINE switch to “LINE” and use the supplied screwdriver to adjust the GAIN at appropriate position.
- Plug the 6.3φ phone plug of the optional guitar cable to the output jack on the instrument and the mini XLR into audio input connector on the bodypack transmitter.
- Switch the transmitter and hi-fi appliance (amplifier, tape deck etc.) power on.
- Adjust the channel setting of the transmitter according to the receiver’s channel setting.
- Play the instrument for testing and adjust the levels on your audio mixer or amplifier.

7. Basic Connections

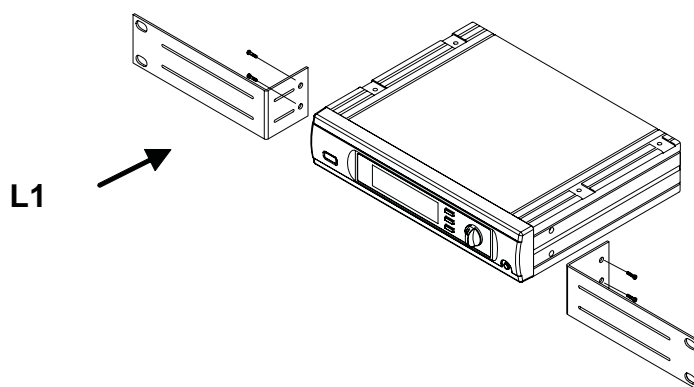
Connect the receiver output to the audio mixer or amplifier input, using a standard audio cable with 3-pin XLR connectors or 6.3 ϕ phone plugs. Never use the balanced and unbalanced audio outputs at the same time! This may cause signal loss or increased noise.



To combine two receivers in a 19" standard rack by using 2 short L type plastics racks (L2) and 2 metal connecting plates (C1). (Each system includes a L2 and a C1.)



To mount a receiver in a 19" standard rack by using 2 L type long metal racks (L1). (L1 is an optional product, so please purchase extra in local shops.)

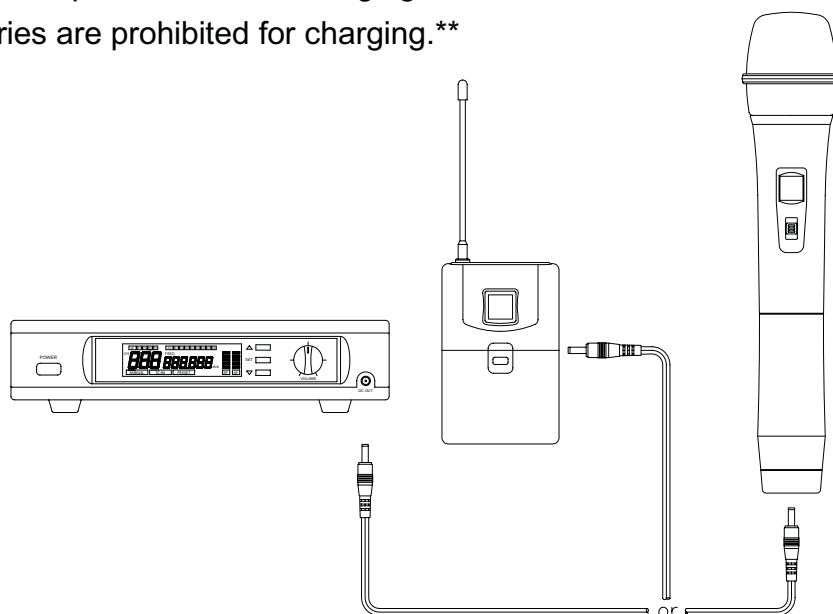


Charging Connecting Diagram

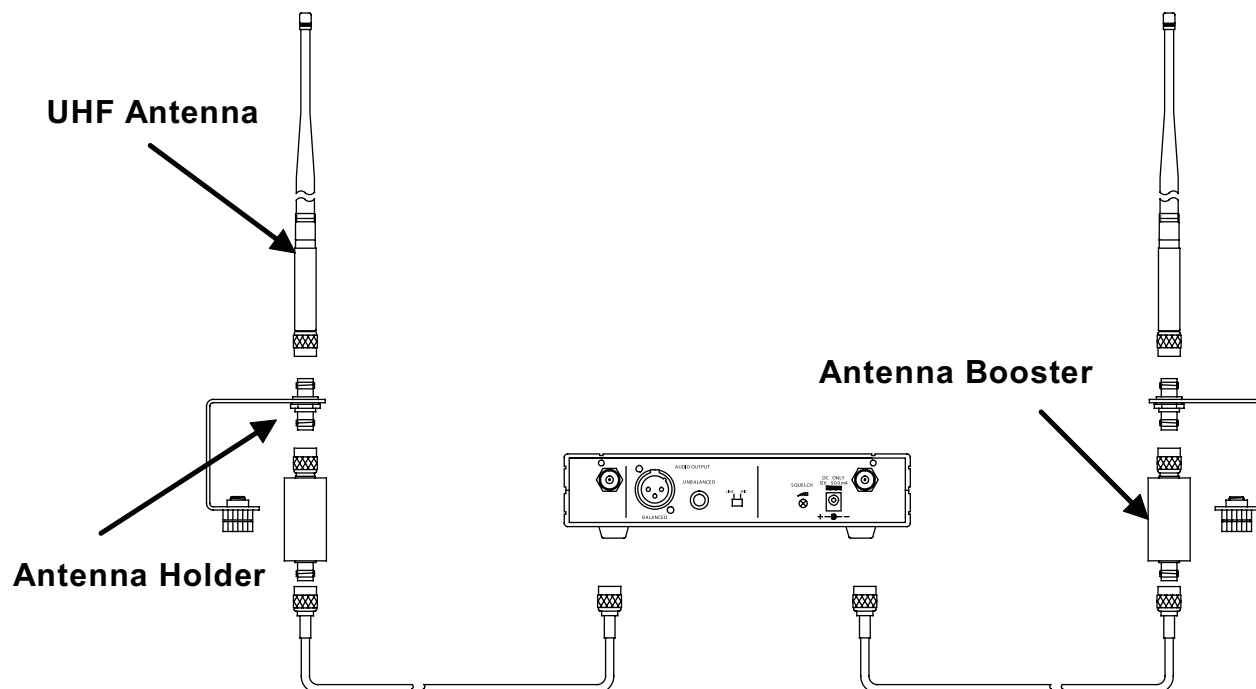
Connect the supplied DC1.5 cable to the receiver and the microphone, and it takes around 10 hours to charge. The LED of transmitter is flashing all the time until charging completed.

** Turns transmitter power off when charging.**

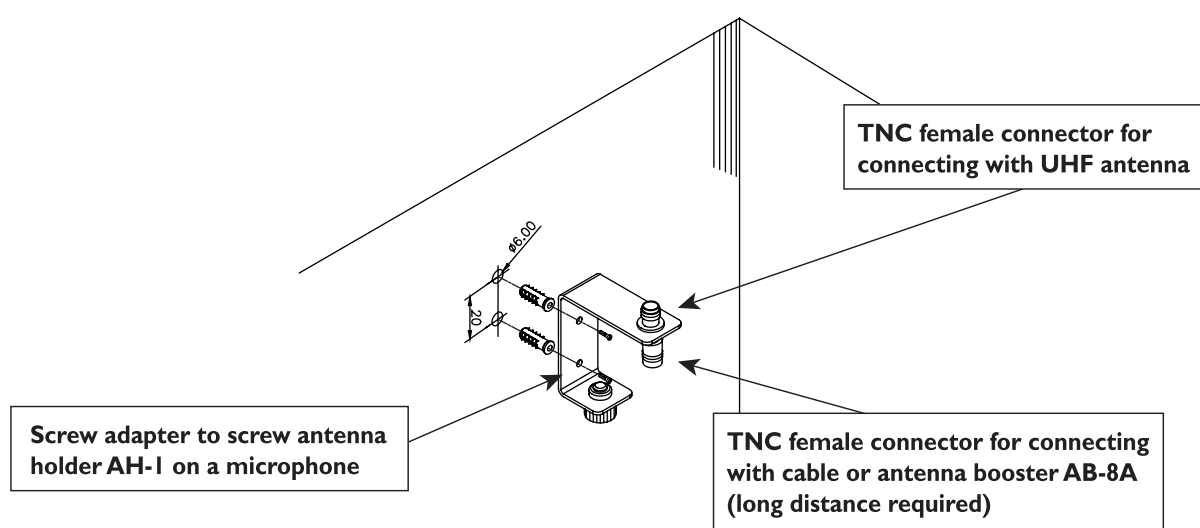
** AA dry batteries are prohibited for charging.**



The antenna booster is highly recommended for long-distance purpose, such as in stadium or in auditorium. By means of antenna holder, the antenna and booster can put wherever you want. It is ideal design for multi-channel application. Antenna boosters are applied to the receivers, which have detachable antennas.



Antenna holder makes it easy to fix wherever for connection antenna and booster. It can be assembled on the mic stand or on the wall.



8. Trouble-shooting

Problem	Solution
No sound	➤ Check the power supply of the microphone and receiver. ➤ Check that the transmitter and receiver are tuned to the same frequency. ➤ Check whether the hi-fi appliance is switched on and the receiver output is connected to audio mixer or amplifier input. ➤ Check whether transmitter is too far away from receiver or SQUELCH control set too high. ➤ Check whether receiver is located too near metal object or there are obstructions between transmitter and receiver.
Sound interference	➤ Check the antenna location. ➤ When using 2 or above microphone sets simultaneously, make sure that the chosen frequencies are not interfered. ➤ Check whether the interference comes from other wireless microphones, TV, radio and etc.
Distortion	➤ Check the receiver volume level is set too high or too low. ➤ Check whether the interference comes from other wireless microphones, TV, radio and etc.

9. System Feature

- The flexibility and the professional performance are specifically designed for stages, places of worship, and professional sound installations.
- The UHF wireless microphone system with 700 selectable frequencies via Phase Locked Loop (PLL) circuitry makes it easy to choose non-interfered channels.
- Super high sensitivity, extremely low noise transmission and reception.
- SMT assembled PCB module ensures the quality and stability.

10. System Specification

Receiver

- Carrier Frequency Range : UHF band 520~930MHz
- Oscillator : PLL synthesized
- Modulation : FM
- Frequency Stability : $\pm 0.005\%$
- S/N ratio : $> 94\text{dB}$, at 48KHz deviation and 60dB μV antenna input
- Maximum Deviation : $\pm 48\text{KHz}$
- Image and Spurious Rejection : 80 dB minimum
- Receiving Sensitivity : 6 dB μV .
- Selectivity : $> 50\text{dB}$
- AF Response : 80Hz to 12KHz ($\pm 3\text{dB}$)
- T.H.D. : $< 1\%$ (at 1KHz)
- IF Frequency : 1st: 56MHz 2nd: 10.7MHz
- Dynamic Range : $> 96\text{dB}$
- Tone Signal : 32.768KHz
- Audio Output : Balanced and unbalanced audio outputs
- Power Supply : 12V DC
- Current Consumption : Single Channel: About 150mA

Handheld/Bodypack Transmitter

- Carrier Frequency Range : UHF band 520~930MHz
- RF Power Output : 10mW (max.)
- Oscillator : PLL synthesized
- Frequency Stability : $\pm 0.005\%$
- Maximum Deviation : $\pm 48\text{KHz}$
- Spurious Emission : $> 60\text{dB}$ below carrier frequency
- T.H.D. : $< 1\%$ (at 1KHz)
- Microphone Cartridge : **Handheld**: uni-directional dynamic or uni-directional electret condenser unit
Lavalier: uni-directional electret condenser unit
- Operating voltage : DC1.5V x 2 AA size dry or rechargeable batteries
- Current consumption : 120mA (MAX.)

