

**INVOTONE**

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User Manual

**WM-250**

UHF Wireless Microphones

## Delivery Includes:

Receiver	1pc
Handheld microphone	2pcs
Audio connecting cable	2pcs
Power adaptor	1pc
Antenna	2pcs
Rack Mount	1set
1.5V AA batteries	4pcs
User Manual	1pc

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## Annoucement:

- **INVO**TONE is a protected and registered trademark
- Product and contents described in the user manual are subject to change without prior notice

## Security:

- Use the supplied power adaptor only and make sure that the power is same as requirement of power adaptor. The system may be damaged if other power adaptor is used.
- The external power adaptor uses AC 220V, it may cause trouble if other voltage is applied.
- Do not expose the system to high temperatures, humidity, dust or liquids.
- Do not apply any strong shock to it.
- Do not dismantle the system.
- If there are any troubles such as fume or strange smell during using, please unplug the power adaptor and get in contact with your local retailer for further checking immediately.
- Please place the batteries according to correct polarities. Take out the batteries when not using it for a long time.
- Batteries with broken surface are not allowed to use.
- Please turn off the system and unplug the power adaptor if the system is not used for a long time.

## Specification:

Frequency Range: 716MHz-726MHz  
Frequency Control: PLL synthesized function  
Bandwidth: 50MHz  
Frequency Precision:  $\pm 5\text{ppm} < 10\text{kHz}$   
Frequency Steadiness:  $\pm 0.005\%$   
Modulation Mode: FM  
Number of Frequencies: 200  
Number of Channels: 2 Channels  
Frequency Spacing: 250KHz  
Frequency Response: 80Hz-18KHz(-3dB)  
Max. Frequency Deviation:  $\pm 45\text{KHz}$   
S/N Ratio:  $> 105\text{dB}$   
Receiving Sensitivity: 12dBuV(80dB/S/N)  
Total Harmonic Distortion:  $< 0.5\%$ (at 1kHz)  
Dynamic Range:  $> 100\text{dB}$   
Harmonic Interference Rate:  $\geq 50\text{dB}$   
False Image Interference Rate:  $\geq 60\text{dB}$   
Transmit Power: 10mW at high power, 3mW at low power  
Transmitter  
Power Supply: 2pcs 1.5V AA batteries  
Playtime: 10hrs(depending on batteries)  
Operating Range: 50m(depending on environment)  
Operating Temperature:  $-20^\circ - 60^\circ$   
Output Type: Independent Balanced and Unbalanced Outputs

## Trouble Shooting:

Troules	Possible reasons
No indication on transmitter and receiver	Running out of batteries or bad connection between receiver and power supply
No RF signal on receiver	Frequency of transmitter and receiver is not the same or out of operating range
With RF signal, but no audio signal	Microphone is not connected or squelch level of receiver is too high
Background noise of audio signal is too loud	Frequency deviation is too low; output level of receiver is too low; check if there is an interfering signal
Audio signal distortion	Frequency deviation is too high; output level of receiver is too high
Operating distance is too short, signal is not stable	Transmitter is set at low power; squelch level of receiver is too high; receiver antenna is wrong placed; there is a strong electro-magnetic interference

If there are other troubles, please contact us or your local distributor or retailer. Please do not dismantle the products as it will void warranty.

## Features:

- Dual channel UHF wireless microphone system designed for the various professional and semi-professional applications
- Digital PLL circuit guarantees a reliable sound synthesis and more than 200 optional frequency settings provide the freedom to setup multiple systems at one venue
- Microphone synchronization via infrared data transmission
- Adjustable transmitter power makes it suitable for various applications like on-stage performances, universities as well as KTV clubs
- Key lock function on receiver and transmitter avoids misoperation
- Squelch function ensures optimal performance tailored to the demands of the application
- LC-displays on receiver and transmitters enable an intuitive handling of the system

## Adjusting Instruction:

- Correct audio sensitivity of transmitter is very important. Higher sensitivity will cause signal distortion, lower sensitivity will cause low S/N ratio. The sensitivity of handheld mic is set to a reasonable level when it is manufactured and we recommend to adjust it according to the need of the user.
- If the frequencies are set reasonably, 12 transmitters within one frequency range can be used at same place with high RF-power setting.
- Avoid putting one receiver on top of another if several systems are used in the same place.
- For small room like KTV room or classroom, please use transmitter with low power to avoid interference.

## Parts Name and Functions:

Front Panel:



(1) (5) (2) (3) (2) (5) (1) (4)

- (1) Volume control: adjust the output volume of receiver.
- (2) LCD display: indicate working status, frequency/channel, squelch, receiving signal level, etc.
- (3) Infra-red data synchronization window: transmitting frequency signal to transmitters by pressing "SET".
- (4) On/off power switch: turn on or off the power supply. The LCD display lights when it is turned on.

## 3 .How to use several systems at one venue:

- (1) First, please choose an interference free RF-frequency. Usually 12 transmitters can be used within 50MHz bandwidth.
- (2) If the transmitter is set at low power, 200 transmitters can be used within the same frequency range in close proximity. Most popular applications are KTV and classroom.
- (3) The distance between transmitters with different frequencies should be at least 20cm while using together.
- (4) When using several receivers together, please install high gain antenna, antenna amplifier and receiver multi-coupler.

## Usage and Maintenance:

Cleaning:

Unplug the adaptors, clean it with a wet cloth. To protect the surface, do not use any detergent or dissolved liquid.

Power Supply:

Make sure the power supply is within the required limit. Please place the batteries into the transmitter according to correct polarity.

Maintenance:

If there are any troubles of the system, please contact us or your local distributor for maintenance.

Accessories:

Please use the supplied accessories or Invask authorized accessories for best performance.

Warranty:

Any dismantling without authorization may lead to cancellation of the warranty.

## 1.How to use handheld microphone:

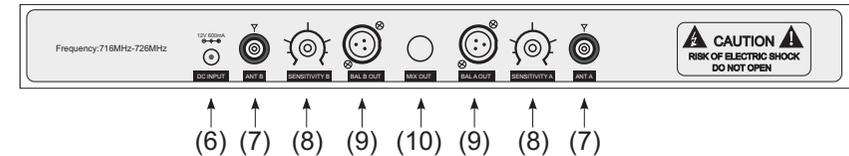
- (1) Hold the middle part of microphone. If the hand is too close to the wire mesh, the sound will be influenced; if the hand is too close to the antenna at bottom, the operating distance will be shortened.
- (2) By changing the distance between microphone head and mouth, the sound volume will be increased or reduced.

## 2.How to use receiver:

- (1) Receivers can be divided into two categories, diversity and non-diversity receivers. Non-diversity receivers are usually the economic solution while diversity-receivers provide a better RF transmission.
- (2) If omni-directional antenna is used, the antennas should be at least 0.5m away from walls or metal parts.
- (3) Receiving range is related to many factors. Usually metal parts and other RF-signals at the venue are the reason for performance limitations.
- (4) If the receiving performance is not good enough, please use extension cable to connect with the external high gain antenna or antenna amplifier.
- (5) When the receiver is pointed to using direction or the receiver is put inside the metal box, please place antennas on the front panel for better performance results.

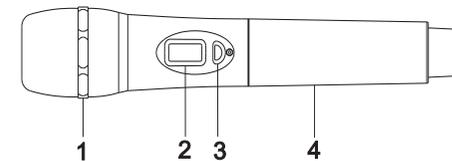
- (5) Function button: press "SET" to choose menu, stop for 2-3 seconds, the menu is selected and display. Press "▲" "▼" to change the menu, then press "SET" for confirmation.

### Rear panel:

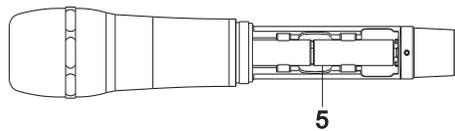


- (6) Power socket: connect 12V DC to the socket. Central electrode of socket connects positive voltage.
- (7) Antenna input socket.
- (8) Sensitivity adjusting switch :adjust from 0 to 40dBm. The less the value is, the lower sensitivity/shorter distance/smaller interference it will get, and vice versa.
- (9) Balance audio output: "XLR" socket, two independent outputs.
- (10) Unbalanced audio output: "P" socket, one mixed output.

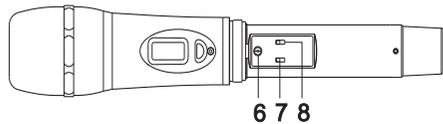
### Handheld Microphone:



- (1) Wire-mesh cap and capsule: wire-mesh cap protects the capsule, eliminates "pop" noise and avoids rolling when laid flat.
- (2) LCD display: indicate frequency/channel and battery power level.



- (3) Power switch: press once, it is on; press again, it is off.
- (4) Microphone housing: assemble wire-mesh capsule and capsule on the top, with batteries, PCB board inside, and antenna at the rear.
- (5) Battery compartment: put in 2pcs AA batteries.

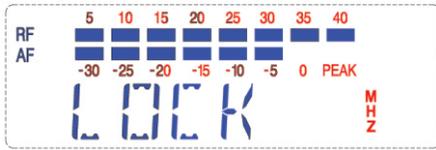


- (6) Infra-red data synchronization window: send frequency signal to transmitters by pressing "SET" on receiver.
- (7) Lock switch: if it is set at "ON" position, the power switch is locked and can only be used for mute function.
- (8) Power adjusting switch: choose high or low transmit power.

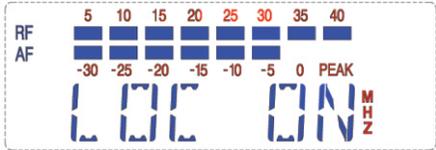
## Operation:

- Make sure that the transmitter is turned off; adjust the volume of receiver to minimum position. Turn on the receiver, the LCD display will light and shows all the info. By pressing "set" you can start the selection.
- Before turning on the transmitter, check the RF and AF level. If there is strong interference, please change the frequency.
- Turn on the transmitter, RF will light. Adjust the volume of receiver to your desired level, speak to the microphone, AF will light according to the volume set. If there is no output or the AF doesn't light, please contact your retailer or distributor.
- Press the power switch for 3 seconds, the receiver will be turned off.

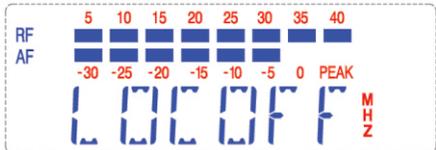
### C. System Lock Operation



⑨



⑩

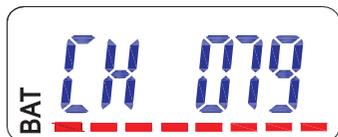


⑪

Under the initial interface ①, press "SET" thrice, it shows ⑨ and then ⑩, press "▲" or "▼", it shows ⑩ (lock) or ⑪ (unlock) and glitters, press "SET" to confirm. When it is on lock status, all the function is locked except the power switch.

To unlock, press "SET" until it shows ⑨, it will unlock by repeating the above operation.

### D. Microphone LCD Display



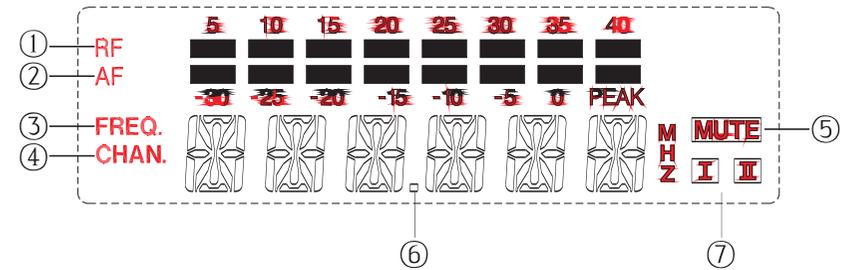
⑫

Turn on the switch, LCD lights as ⑫ and shows the current channel/frequency and the battery power level. If need to change the frequency, first change the receiver frequency, and follow the operation of B (Infrared Frequency Transmission Operation).

## Operating Instruction of LCD Panel:

1.

### LCD Indication



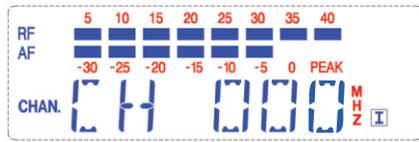
- (1) RF lever indication: indicates the received RF signal strength
- (2) AF level indication: indicates the audio signal
- (3) Frequency menu: when FREQ lights, the 6 characters on the menu will indicate the current frequency
- (4) Channel menu: when CHAN lights, the 6 characters on the menu will indicate the current channel
- (5) Mute: when Mute lights, the receiver is in mute status
- (6) 6 characters indication: indicates the current status
- (7) Channel selection indication: indicates the current selected channel.

2.

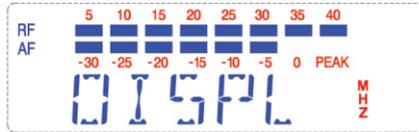
### Function and Operation of the Buttons

Press SET for choosing menu or confirm the setup. Press "▲" "▼" for adjusting the current selected menu, then press "SET" again to confirm it. Press "▲" "▼" to choose frequencies or channels.

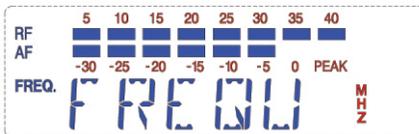
### 3. LCD



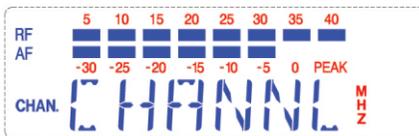
①



②



③



④

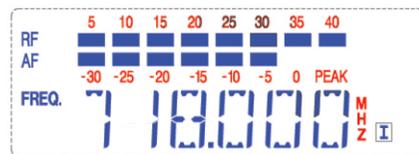
#### A. Channel/Frequency Indication and Adjustment

##### 1. Channel/Frequency Adjustment

Under the initial interface ①, press “▲” or “▼” for adjusting the channel or frequency, once selected, LCD glitters, press “SET” to confirm and the glitter will stop, channel or frequency adjustment is finished.

##### 2. Channel/Frequency Indication Switch

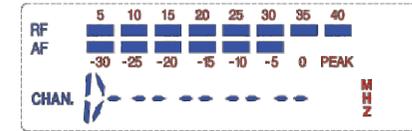
Under the initial interface ①, press “SET” twice, LCD shows ② (current status info.), press “▲”, it shows ③; press “▼”, it show ④. Once selected, press “STE” twice to confirm and the LCD shows the current channel or frequency like ⑤.



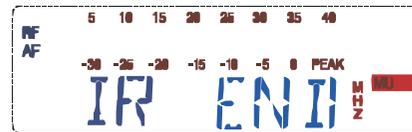
⑤



⑥



⑦



⑧

#### B. Infrared Frequency

##### Transmission Operation

Under the initial interface ①, select the frequency, turn on the power of the transmitter, open the tail of the transmitter and point the “IR” frequency reception window to the “ACT” frequency transmitting window in line (distance between transmitter and receiver is 10cm -1m), press “SET”, it shows ⑥ and then ⑦, it will automatically change into the actual frequency/channel display interface after successfully transmitting the frequency. It shows ⑧ if it fails, press “▲” or “▼” to continue the frequency transmission until it succeeds.