

# AR-108

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**MINI HAND HELD TYPE  
AIR / VHF BAND RECEIVER**

USER'S OPERATION MANUAL



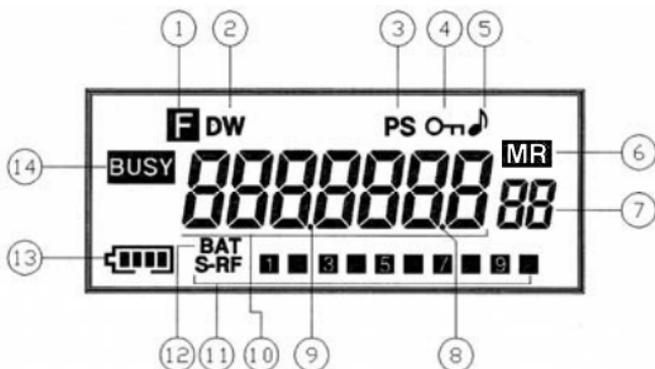
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**Caution** : Any changes or modifications in construction of this device which are not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

## DESCRIPTION OF FEATURES

### ● Display Panel Features



- 1. " F " (Function Mode)**  
Indicates the "FUNC" button has been selected.
- 2. " DW " (Dual Watch)**  
Indicates that the "Dual Watch" feature has been activated.
- 3. " PS " (Power Save)**  
Indicates that the radio is in the "Battery Save" or "Power Save" mode.
- 4. " Key Lock " (Key Lock)**  
Indicates the "Key Lock" feature has been activated.
- 5. " Beep " (Beep)**  
Indicates that "Beep" tone confirmation is on.
- 6. " MR " (Memory Mode)**  
Indicates that Memory Mode operation.
- 7. Memory channel indicator**  
Displays the memory channel number (99 memories available).
- 8. Dot No. 2**  
Not Used
- 9. Dot No. 1**  
This dot is used to display the RX Frequency (Unit : MHz).
- 10. Channel (Frequency) indicator**  
Displays Frequency Number.

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**11. " S-RF " (Signal strength indicator)**

The radio incorporates a ten segment incoming signal on the LCD. When receiving a signal, the meter will indicate how strong the signal is. A weak signal will be indicated by one or two segments, while a very strong signal will have 8 to 10 segments.

**12. " BAT " (Battery remainder level meter)**

Not Used

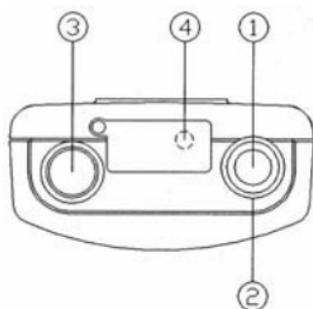
**13. "  " (Battery indicator)**

Indicates batteries are getting low. If the battery level is lower than the standard point, Battery Level Indicator will twinkle.

**14. "  " (Busy)**

Indicates that a signal is being received.

## ● Top Panel Features



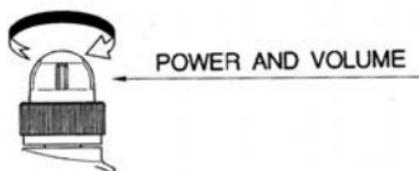
### 1. Power On/Off, Volume

Turn the Volume switch clockwise to turn power on and set desired volume. Turn the Volume button anti-clockwise to turn the power off.

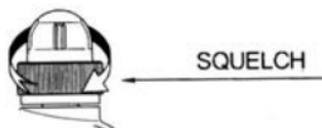
### 2. Squelch

This control is to cut off or eliminate receiver background noise in the absence of an incoming signal. For maximum receiver sensitivity, it is suggested that the control be adjusted only to the point where the receiver background or ambient background noise is eliminated. The incoming signals that are then received will be stronger than the background noise.

<Power and Volume>



<Squelch>



### 3. Antenna

This antenna provides good receiver performance given its overall size.

### 4. Earphone Jack

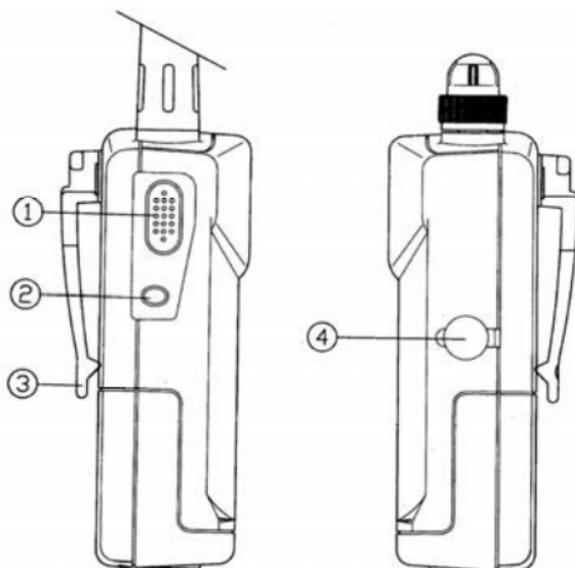
Lets the user listen to the conversation in privacy.

Dust Cover : When Earphone is not being used, this prevents dirt and moisture from getting inside the radio.

Please disregard the primed "MIC" on the dust cover.

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## ● Side and Back Panel Features



### 1. MON (Monitor)

Press and hold the "MON (Monitor)" button in the receiving mode to override squelch control. This is useful when a weak signal is to be monitored.

### 2. FUNC(Function) button

This button, when used in conjunction with the buttons on the front panel, allows for access of each function.

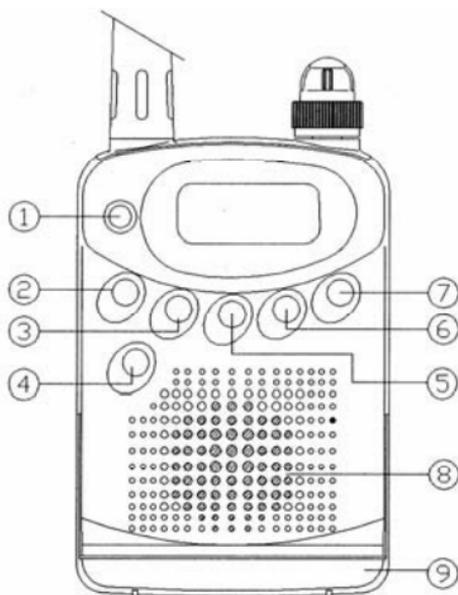
### 3. Belt Clip

Allows for ease of carrying while attached to user's belt.

### 4. DC Jack

Allows for using external DC Wall Charger.

## ● Front Panel Features



### 1. AI/WR button

Press the "AI/WR" button to change between air band and VHF band alternately. The AR-108 allows you to listen to Air band and VHF band. Press and release the "AI" button until you come to the band of your choice. Look at the right hand bottom corner of the LCD, a letter "A" is shown for air band and a letter "V" is shown for VHF band.

#### ► Display of the Air Band



#### ► Display of the VHF Band.



## 2. ▼(Channel Down) button

### 1) ▼(Channel Down) button

Press the "▼" button to move to a lower channel than is currently shown on the LCD.

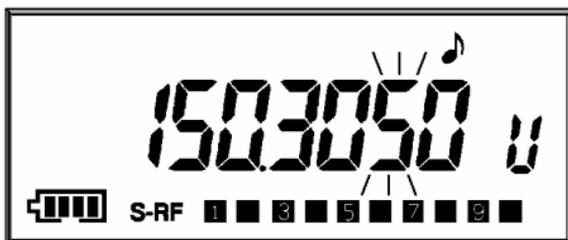
### 2) Left Cursor function button

Frequency Selection by Cursor function ("FUNC + ▼" button). The desired frequency can be directly entered using the cursor function in normal and memory mode. The desired frequency however should be in the allocated frequency range of the receiver. To enter the frequency directly using cursor function, follow the example:

### 3) Example of Frequency selection

Frequency desired is 145.4650 MHz on the VHF Band.

- Press the "AI/WR" button till the VHF Band is indicated, then press the "FUNC + ▲" button, the sixth digit of the frequency display will start to flash. Now press "▲ or ▼" button to set the value to "5":



- Press the "FUNC + ▲" button, the fifth digit of the frequency display will start to flash. Now press "▲ or ▼" button to set the value to "6":



- Continue this process for the remaining digits until you have entered the desired frequency (the first digit of the frequency will not be able to be changed from the number "1").
- Finish by pressing the "MON" button.
- The same procedure is followed for call and memory channels when selecting the desired frequency

**NOTES** : If you have selected a frequency which is above or below the frequency range allowed, the unit will automatically go to either the maximum or minimum frequency allowed.

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### 3. ▲(Channel up) button

#### 1) ▲(Channel Up) button

Press the "▲" button to move to a higher Channel than is currently shown on the LCD.

#### 2) Right Cursor button

Frequency Selection by Cursor Function ("FUNC + ▲" button) the procedure for Cursor function using "FUNC + ▲" button is same for "FUNC + ▼" button. The only difference is that the second digit starts to flash first. Every time "FUNC + ▼" button is pressed the next digit on the right will start to flash.

### 4. ☀ (Lamp), BP (Beep) Button

#### 1) ☀ (Lamp) button

Press the "☀" button, the lamp will stay on for four seconds, after which it will turn itself off automatically. If you press another button on the front cabinet when the lamp is on, the lamp will stay on for four seconds from that time. If you press the "☀" button for more than one second, the lamp will stay on until you press the "☀" button once again.

#### 2) BP (Beep) button

This feature gives the user an audible confirmation through a short beep tone that the radio has been turned on. The AR-108 comes with this feature already turned on. If you would like to deactivate this feature, press "FUNC + LAMP (BP)" button. To reactivate the "Beep" feature, repeat the above process. When "Beep" feature is off, the key beep tone and the error beep tone will not sound.

### 5. MR (Memory Read), MW (Memory Writing) button

This receiver contains a total of 99 memory locations for each air band and VHF band where desired frequencies can be programmed by the user. Programming of the desired frequencies can be carried out in the following ways.

#### 1) Frequency selection by cursor function

Enter Memory Read mode by pressing the MR (MW) button so the "MR" icon appears on the right side of the LCD.

Select the memory location where you wish to store a setting by holding and pressing "▲" or "▼" buttons till the Memory Channel Indicator shows that location.

Use the cursor functions as described in the previous sections 2 and 3 to choose the frequency. The current digit of the frequency being set, the Memory Channel Number and the "MR" icon.



When frequency selection has been made, to store in to memory, press the MR (MW) or "MON" button.

2) While in the Memory Set mode, use up or down key to select the desired frequency. With this method the up or down key can only increment or decrement the frequency by the channel step value. The method is as follows:

Enter Memory Read mode by pressing the MR (MW) button so the "MR" icon appears on the right side of the LCD.

Select the memory location where you wish to store a setting by holding and pressing "▲" or "▼" buttons till the Memory Channel Indicator shows that location.

Enter Memory Set mode by pressing "FUNC + MR (MW)".

The "MR" icon and channel indicator will start to blink



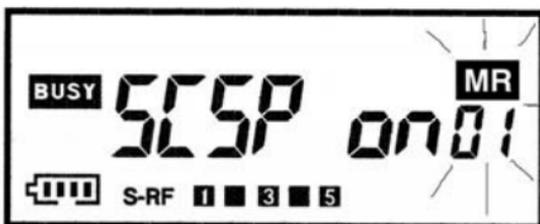
Change the memory frequency stored within the memory location by pressing the up or down button to select the desired frequency.

Store it to memory by pressing "MR (MW)" button.

※ Scan Skip function in memory mode

While in MR set mode, press "SC" button to select Scan Skip function. It allows the user to scan or skip a particular memory channel. While in Scan Skip function, press "▲" or "▼" button to switch Scan Skip function on or off.

▶ Display of Scan Skip message



## 6. SC(Scan), DW(Dual Watch) Button

### 1) SC (SCAN) button

To Activate : Press the "SC" button to start the scanning process. The AR-108 will stop at any active channel.

It will remain on that channel during scan delay time and reactivate scanning.

- If you want to stop scanning process, simply press the "Monitor" button.
- During the scanning process, the skipped channel will not be scanned.
- d1(dot 1) on the LCD will blink per 0.5 second.
- During the Down(Up) scanning process, press the "▼(▲)" button, then scanning direction will be changed to Down (Up) scanning process.
- If you press the "FUNC" button at stopping channel during the scanning process, this channel will be skipped in the next scanning process.

#### ► Display of Pass message



**NOTE :** The memory channels skipped from scanning process are automatically recovered when the radio is switched off and on again.

#### ► Display of EMPTY message



If only one channel will remain due to the skipping of channels from the scanning process, the process will stop and "EMPTY" message will appear on the LCD.

**NOTE :** Other buttons located on the front of the radio will not operate. If you press these buttons, error beep tone will sound.

## 2) DW (Dual Watch) Button

To operate Dual Watch :

- (1) Not in the Scan Mode, select the channel in which you want to monitor which we will refer to as your "A" channel.
- (2) Press the "FUNC + SC/DW" button, then "DW" will appear on the LCD.
- (3) Use Up/ Down key to select the "B" channel which you want to monitor. Once "B" channel has been selected, the radio will begin its dual watch monitoring.

### ► Display of Dual Watch Feature.



To turn off the "Dual Watch" channel, simply press the "FUNC + SC/DW " button. Note that the radio will return to the "A" channel for normal operation. If you press the "FUNC + SC/DW" button when a signal is receiving on the channel "A" or "B", the "Dual Watch" feature will be turned off, on the "A" or "B". If a signal is being received at A channel, Unit will stay on channel A until the signal disappears. But, if a signal is being received at B channel, the unit will switch to A channel to check the signal of A channel every 3 seconds. Even though a signal is disappear at A (B) channel, which will be remaining there to check another receiving signal during scan delay time. After that A (B) channel will be changed to other channel.

If you press the "▲ or ▼" button in dual watch mode, B channel will move to higher (lower) channel than is currently chosen In dual watch feature, power save function does not operate.

## 7. ST(Channel Step), LOCK Option

To enter channel space setting mode press "ST(Channel Step)" button. This option lets the user select from the following channel steps using Up or Down button. Channel steps 5KHz, 10KHz, 12.5KHz, 15KHz, 25KHz and 1MHz.

To store the channel step value and enter the normal operational mode press "ST" button again. Press "FUNC + ST(LOCK)" to lock all the buttons apart from monitor and function button from taking any action.

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- Display of Channel Step message.



### 8. Speaker

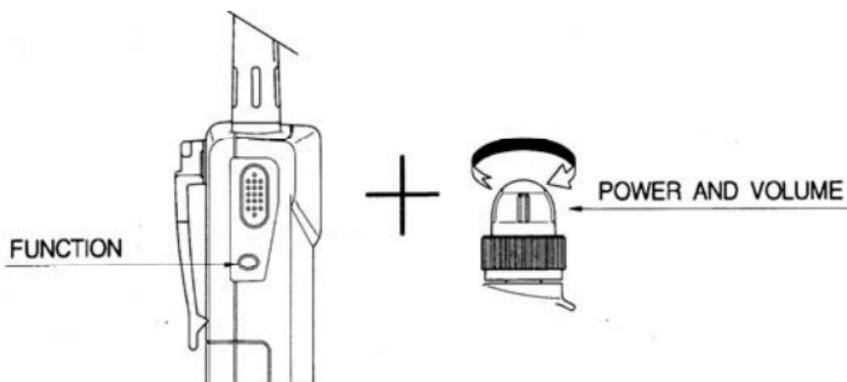
If there is any unforeseen fault in the microphone connections the unit will switch off power to the audio amplifier and it will display "SHORT" to indicate short circuit.

### 9. Battery Case

See "Batteries" for installation instruction. (Page 17)

## ■ OPTION SETTING MODE

Press and hold "FUNC" button under the condition of Power off, and then turn on the radio. To enter each option setting mode, press "FUNC + ▲ or ▼" button.



### 1. Setting of Power Save mode

This feature allows you to increase the useful life of your battery significantly.

- ▶ Display of Operating Power save On/Off setting Mode.



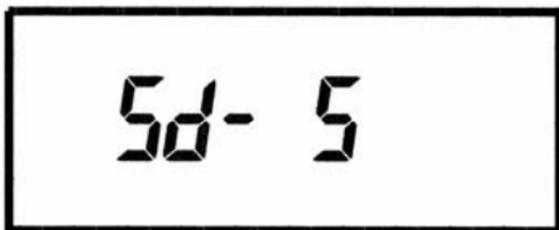
If you press the "▲ or ▼" button in this setting mode, power save On/Off will toggle on the LCD.

### 2. SCAN Delay Time

To select SCAN Delay Time, press "FUNC" and "▲" button in Power Save mode. The Scan Delay feature allows the scanning process to stop for the fixed time when a signal is received at the radio. After this time, the scanning process will continue.

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► Display of Operating SCAN Delay Time Mode



If you press the "▲ or ▼" button in this setting mode, Scan Delay Time will Increase (or decrease) 1 second per press of the button and changed value will appear on the LCD.

**NOTE :** In the option setting mode,

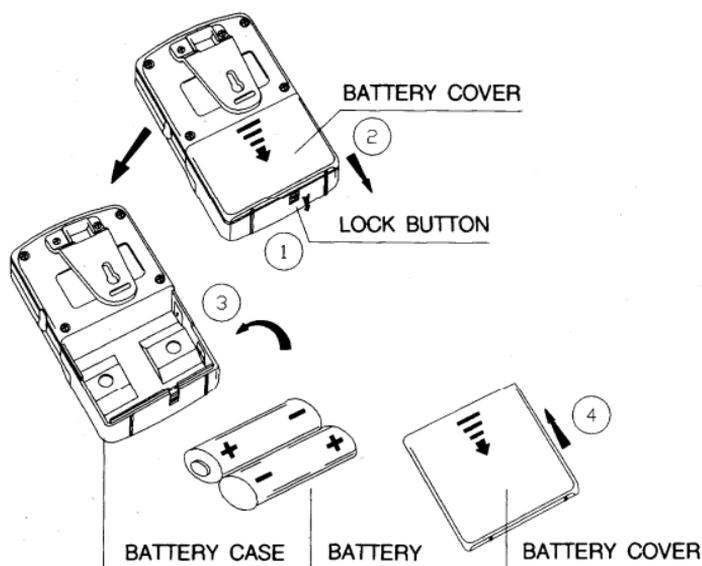
- A. If you hold "FUNC" button and then press "▲ or ▼" button, the next (or previous) setting mode will appear on the LCD.
- B. If you press the "Monitor " button, all changed contents will be stored and the radio will return for normal operation.
- C. Other buttons located on the front of the radio will not operate. If you press these buttons, error beep tone will sound.

## BATTERY PACK INSTRUCTION

1. Press down the battery lock button on the bottom side of the radio.(①)
2. Open the battery cover on the back side of the radio.(②)
3. Install the battery as like shown.(③)
4. Put on the battery cover.(④)
5. Press the battery lock button upward to lock the battery case.

To supply the power, use the DC charge adapter.

**CAUTION** : Please use only rechargeable battery with DC charge adapter.  
(Do not use dry battery with DC charge adapter)



## ■ TO RECEIVE

Keep the radio turned on and select the channel you want to listen to. If the Squelch is activated more than 20ms in the receiving mode, BUSY will appear on the LCD and speaker mute will be removed and the audio on that channel will be heard through speaker.

## ■ SPECIFICATION

### 1. GENERAL

|                           |  |
|---------------------------|--|
| FREQUENCY -----           | AIR BAND : 108MHz TO 136.975MHz<br>VHF BAND : 136MHz TO 180MHz |
| FREQUENCY GENERATION ---  | PLL SYNTHESIZER  |
| FREQUENCY STABILITY ----- | +/- 10ppm  |
| OPERATING TEMPERATURE --  | -10°C TO +55°C   |
| POWER SOURCE -----        | INT : 3.0V<br>EXT : 7.0 TO 20V                                 |
| MODULATION -----          | F3E, A3E   |
| IMPEDANCE -----           | 50 ohm   |
| DIMENSIONS -----          | 58(W) x 85(H) x 26.5(D)mm                                      |
| WEIGHT -----              | 98.5g, W/O BATTERY   |

### 2. RECEIVER SECTION

|                           |  |
|---------------------------|--|
| CIRCUIT TYPE -----        | DUAL CONVERSION<br>SUPERHETERODYNE                           |
| IF FREQUENCY -----        | 1'st IF: 21.4MHz 2'nd IF: 455KHz                             |
| SENSITIVITY -----         | FM : 0.25 $\mu$ V FOR 12dB SND<br>AM : 1 $\mu$ V for 10dB NQ |
| SELECTIVITY -----         | 50dB Min.  |
| S/N RATIO -----           | 40dB Min.  |
| AUDIO OUTPUT @10%THD ---- | 120mW 16 $\Omega$ , BTL                                      |



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