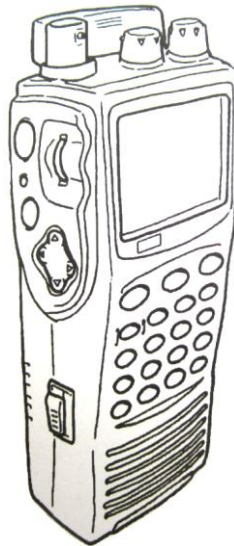# AR8200D
(Upgraded AR8200MK3)

Wide Range Handheld Receiver

Operating manual addendum

AOR, LTD.

ADDITIONAL FUNCTIONS

The AR8200D (or upgraded AR8200MK3) includes the following additional functions:

1. Voice recording
2. CTCSS decoder
3. Voice inverter (for Government version only)
4. APCO25 (P25) decoder
5. USB interface

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1 VOICE RECORDING

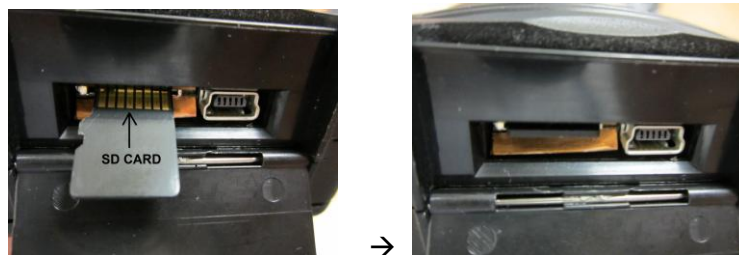The AR8200D has a built-in SD memory card interface used for voice recording.
The recording may be played back over and over. The recorded files are in wav format and can be played back using a PC.

Recording specifications:

- Maximum recording time: About 68 hours
- Sampling frequency: 18 kHz, 16 bit, monaural
- File name format: 00000000.wav ~ 99999999.wav
- Extended recording times (more than about 1.7 hours) will be saved as separate files with 100MB size.
- Card type: SD, SDHC
- File system: FAT16, FAT32

1-1 Recording

1. Before recording is started, be sure that the supplied micro SD memory card has been inserted into the card slot located on the bottom of the receiver.

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2. Power the receiver on and wait for the first beep, then wait for the second high pitched beep.
3. Press and hold the **[CONTROL]** switch located on the lower left side of the receiver for <u>two seconds</u>. The red LED above the **[CONTROL]** switch will start blinking to indicate the recording process is started.

4. To stop recording, press and hold the **[CONTROL]** switch again for <u>two seconds</u>. The red LED will go off.
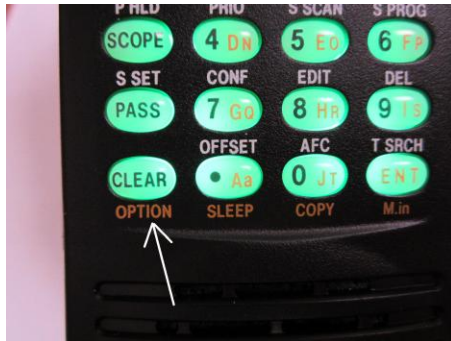
1-2 Playback

Before playing back audio files, perform the following steps:
1. Set the receiver to "Voice Inverter" mode.
   [Note: The voice inverter function is disabled with US consumer version even though the menu is displayed on the LCD].
   Press and hold the **[CLEAR]** key for two seconds.

2. "VOICE INVERT ON / OFF" will appear on the LCD.
3. Press the **[ENT]** key.

4. On the bottom left of the LCD, "v nnn" will be displayed. (nnn: 3 digit number)

5. Rotate the squelch knob counterclockwise to display "S" icon on the center bottom of the LCD.
   The background squelch noise will be heard.
   (If the squelch is closed, no audio will be heard while playing back audio.)

Press the **[CONTROL]** switch key located on the lower left side of the receiver once. The red LED above the **[CONTROL]** switch will start blinking and the first recorded audio file will play.
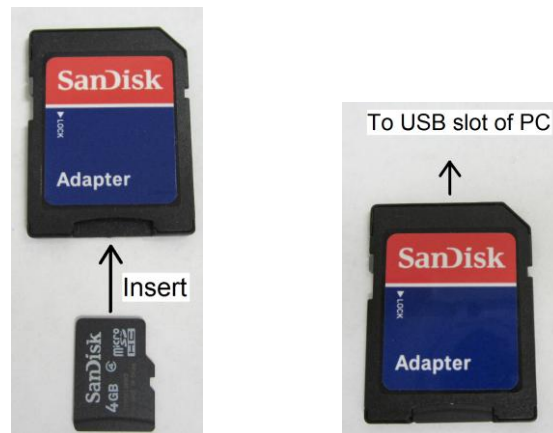
To play the <u>next file</u>, press the **[CONTROL]** switch while the current file is being played.

To play the <u>previous file</u>, double click the **[CONTROL]** switch.

To **stop**, press and hold the **[CONTROL]** key for two seconds. The red LED will go off.

1-3 File management

To edit or delete recorded files, remove the SD card from the AR8200D and insert it into your PC using the adapter. The AR8200D unit does not have the file management function.

2 CTCSS DECODER

CTCSS (Continuous Tone Controlled Squelch System) function enables the AR8200D to selectively receive only specifically modulated sub-audible tones or to verify the CTCSS frequency used.

[Note]: This FUNCTION operates only in NFM mode.

To activate CTCSS, perform the following steps:

1. In normal receive mode, double click the **[CONTROL]** switch located on the digital control unit.
    (In the other modes, press and hold the **[CLEAR]** key for two seconds to remove "v nnn" from the LCD.)
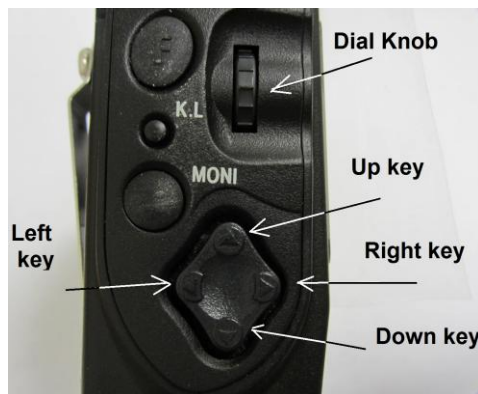

2. Double clicking the **[CONTROL]** switch will toggle through the APCO25 mode (one beep), Voice Inverter mode (two beeps, not available for US consumer model), and CTCSS mode (three beeps).

APCO25 → Voice Inverter → CTCSS → APCO25 → ………

3. To select the CTCSS mode, press and hold the **[CLEAR]** key for two seconds.
4. "CTCSS OFF ON SRCH" will appear on the LCD.

5. Use the UP / DOWN arrow key to select "ON".
6. Rotate the dial knob or use the RIGHT / LEFT ARROW key to select the desired CTCSS tone from the range of 67.0 Hz ~ 254.1 Hz as shown on the chart. The current CTCSS tone is displayed on the LCD.

7. To accept the data input, press the **[ENT]** key.
8. "CTC" will appear on the bottom left of the LCD while CTCSS is activated.

To deactivate CTCSS,

Double click the **[CONTROL]** switch.

| 94.8 | 100.0 | 103.5 | 107.2 | 110.9 |

114.8	118.8	123.0	127.3	131.8
136.5	141.3	146.2	151.4	156.7
162.2	167.9	173.8	179.9	186.2
192.8	203.5	210.7	218.1	225.7
233.6	241.8	250.3	67.0	71.9
74.7	77.0	79.7	82.5	85.4
88.5	91.5	97.4	69.4	159.8
165.5	171.3	177.3	183.5	189.9
196.6	199.5	206.5	229.1	254.1

CTCSS frequencies   (in Hz)

3 VOICE INVERTER (ANALOG VOICE DESCRAMBLER)

(_Not available for US consumer version_)

Analog voice descrambler mode is used to decode scrambled analog voice transmission by frequency inversion.

[Note]: This FUNCTION operates only in NFM mode.

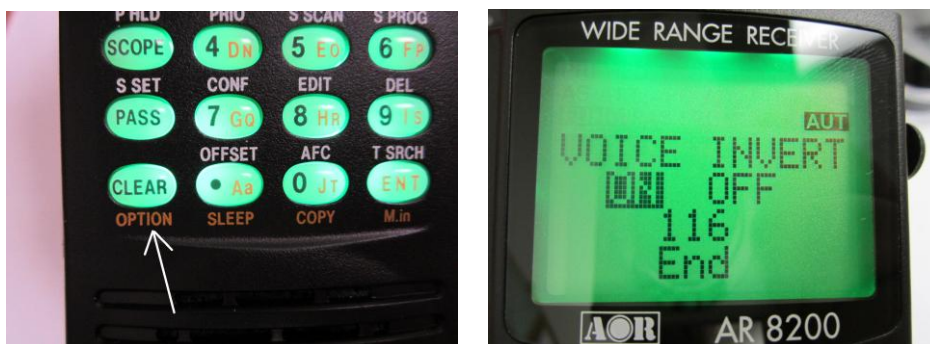To activate the function, perform the following steps:

1. In normal receive mode, double click the **[CONTROL]** switch located on the digital control unit. (In the other modes, press and hold the **[CLEAR]** key for two seconds to remove "v nnn" from the LCD.)

2. Double clicking the **[CONTROL]** switch will toggle through the APCO25 mode (one beep), Voice Inverter mode (two beeps), and CTCSS mode (three beeps).
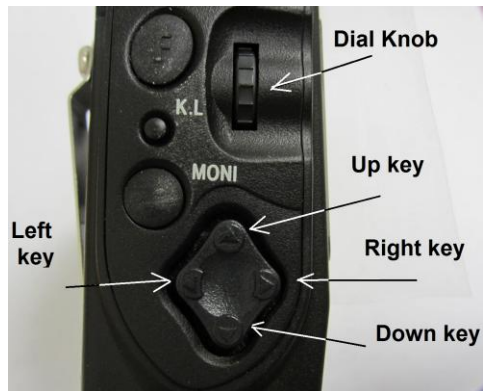
APCO25 → Voice Inverter → CTCSS → APCO25 → ………

3. To select the VOICE INVERTER mode, press and hold the **[CLEAR]** key for two seconds.
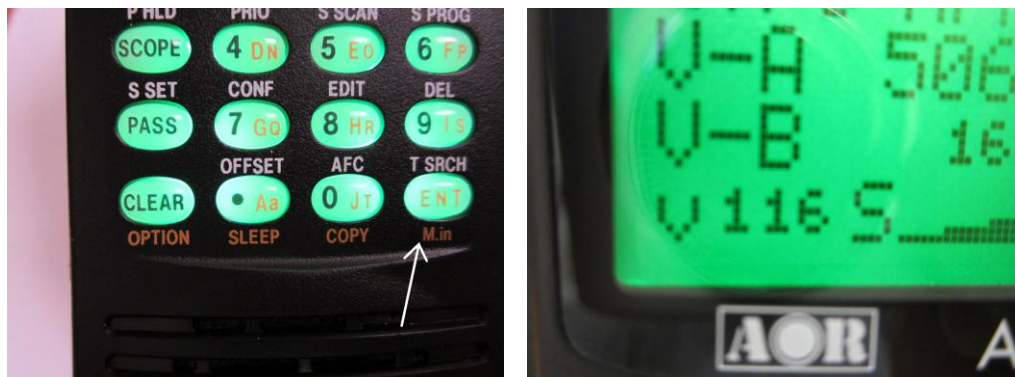

4. "VOICE INVERT ON / OFF" will appear on the LCD.

5. Rotate the dial knob or use the RIGHT / LEFT ARROW key to select the desired inversion frequency / value from the list below.
The selected inversion value will be displayed on the LCD.

7. To accept the data input, press the **[ENT]** key.
8. "v nnn" will appear on the bottom left of the LCD while the VOICE INVERTER function is activated.

Refer to the relationship table between value and inversion frequency:

Frequency (kHz)	2.4	2.8	3.2	3.6	4.0	4.4	4.8	5.2	5.6	6.0	6.15
Inverter value	0	37	64	86	102	116	128	138	146	154	156

To deactivate the function:
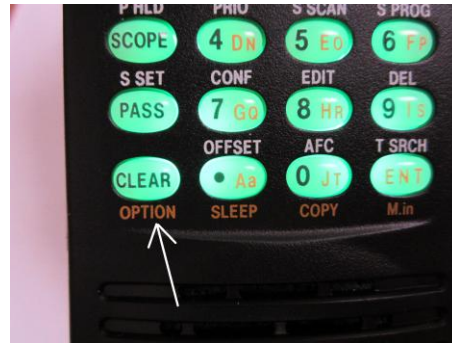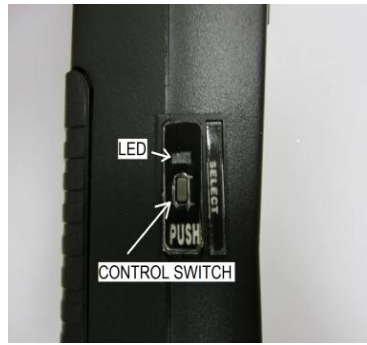
Press and hold the **[CLEAR]** key for two seconds.

4 APCO25 (P25) DECODER

When the APCO25 (P25) function is activated, the digital format signal (non-encrypted, conventional mode) may be monitored.

1. In normal receive mode, double click the **[CONTROL]** switch located on the digital control unit.
(In the other modes, press and hold the **[CLEAR]** key for two seconds to remove "v nnn" from the LCD.)

2. Double clicking the **[CONTROL]** switch will toggle through the APCO25 mode (one beep), Voice Inverter mode (two beeps, not available for US consumer model), and CTCSS mode (three beeps).

APCO25 → Voice Inverter → CTCSS → APCO25 → ………

3. To select the APCO25 mode, press and hold the **[CLEAR]** key for two seconds.
4. "VOICE INVERT ON / OFF" will appear on the LCD.

5. Press the **[ENT]** key.

To activate the function, perform the following steps:

Press and hold the **[CLEAR]** key for two seconds.

5 USB INTERFACE

The mini USB connector located on the digital control unit is designed to connect directly to the USB port of a PC.
All FUNCTIONs of the AR8200D can be controlled by a PC by using the USB interface.

5-1 USB driver

Before connecting the AR8200D to a PC, the USB driver for the AR8200D must be installed.
The USB driver can be downloaded from the manufacturer's website.

http://www.ftdichip.com/ftdrivers.htm

Click "VCP Drivers", and then select the device name "FT232B".
Specifications for the communication protocol are:
      Communication speed: 19,200 bps, 9,600 bps, 4800 bps
      Data: 8 bit
      Stop bit: 1
      Parity: None
      Flow control: None or RTS/CTS
      Echo: Off