



DUAL BAND FM TRANSCEIVER

# FTM-350 SERIES

## OPERATING MANUAL



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### RESET PROCEDURE

When key functions are lost, or erratic operation is encountered, you may *clear all settings* of the transceiver and set them to the factory default with the following procedures:

1. Turn the radio “off”.
2. Press and hold in the key located to the left of the **[POWER]** switch while turning the radio on, to enter the “Special Function” mode.
3. Rotate the *left side* **[DIAL]** knob to select “6 ALL RESET”.
4. Press the *left side* **[DIAL]** knob and confirm that **(OK? [SET])** is displayed on the LCD.
5. Press the *left side* **[DIAL]** knob once more to complete the reset procedure.

# FRONT PANEL CONTROLS & SWITCHES

## [FWD]/[BCK](PAGE) KEY

Press these keys briefly to select the operating function pages.

The available pages are: “Radio” page, “Timer” page, “Baro/Alti” page, “Navigation” page\*, and “GPS Status” page\*.

\*: Requires optional “FGPS-1” GPS Unit.

Press and hold in these keys to toggle the Dual Receive feature “on” and “off”.

## [SET](SET MODE) KEY

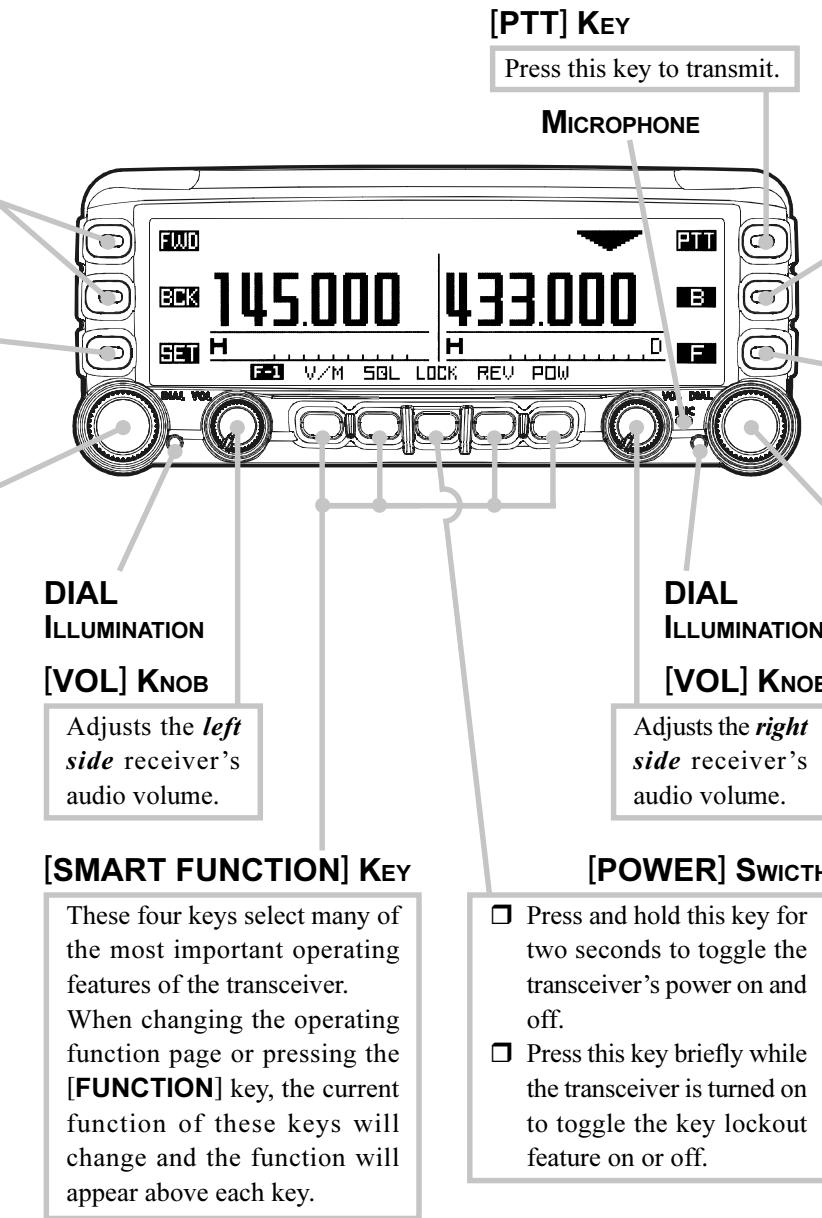
Press this key to access the Set Mode.

## [DIAL] KNOB

- Rotate this knob to select the operating frequency (or memory channel) of the *left side* receiver.
- Press and hold this knob for one second to enable tuning of the VFO frequency in 1 MHz step.
- When the *left side* receiver is set to “Main” band, press this knob briefly to activate the Band Scope feature.
- When the *left side* receiver is set to “Sub” band, press this knob briefly to change the *left side* receiver to “Main” band.

While using “Mono” band operating mode:

- When the *left side* receiver is set to “Main” band, press this knob briefly to activate the Band Scope feature.
- When the *left side* receiver is set to “Sub” band, press and hold this knob to toggle “Sub” band operation “on” and “off”.



## [B](BAND) KEY

Press this key to change the Main operating band. Available bands are:

**Left Band:** AM Radio, FM Radio, 144 MHz Band, 430 MHz Band, and Audio Line-In

**Right Band:** 144 MHz Band and 430 MHz Band

You may recall additional operating bands via Set Mode item “**B05: RX EXPANSION**”. See page 35.

## [F](FUNCTION) KEY

Press this key to change the current functions of the [SMART FUNCTION] keys.

## [DIAL] KNOB

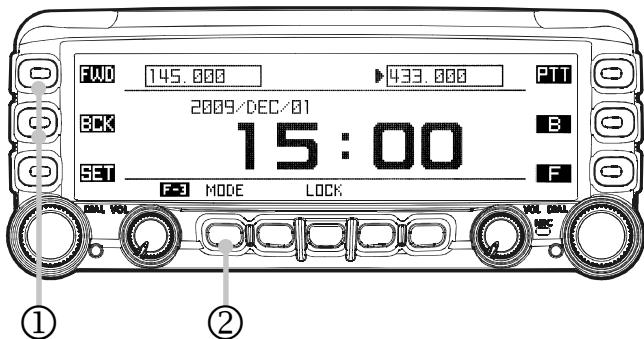
- Rotate this knob to select the operating frequency (or memory channel) of the *right side* receiver.
- Press and hold this knob for one second to enable tuning of the VFO frequency in 1 MHz step.
- When the *right side* receiver is set to “Main” band, press this knob briefly to activates the Band Scope feature.
- When the *right side* receiver is set to “Sub” band, press this knob briefly to change the *right side* receiver to “Main” band.

While using “Mono” band operating mode:

- When the *right side* receiver is set to “Main” band, press this knob briefly to activate the Band Scope feature.
- When the *right side* receiver is set to “Sub” band, press and hold this knob to toggle “Sub” band operation “on” and “off”.

# TIMER PAGE OPERATION

## “CLOCK”



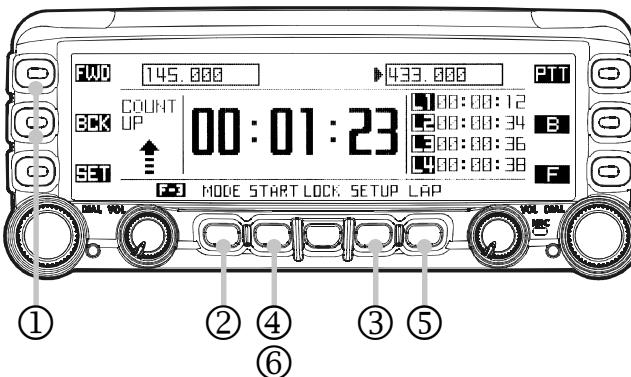
- ① Press the [FWD] or [BCK] key repeatedly, until the “Timer Page” appears.
- ② Press the [MODE] key repeatedly, until the “Clock” appears.

To return to the “Radio” page, press the [FWD] or [BCK] key repeatedly, until the “Radio” Page appears.

The transceiver’s clock is setup from the Set mode item “**I01 DATA&TIME ADJUST**” in the “**TIMER/CLOCK**” group.

See page 44 for details.

## “COUNT UP” TIMER

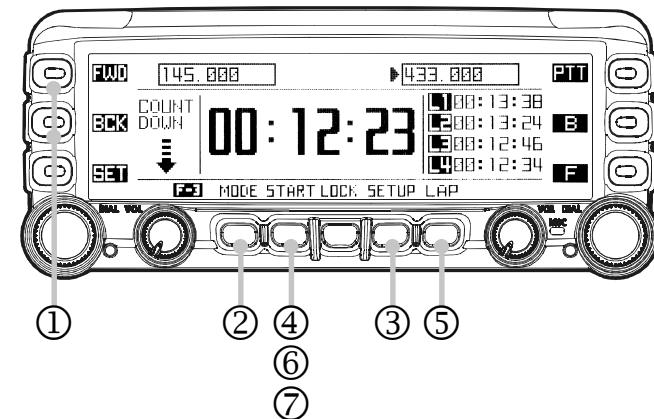


- ① Press the [FWD] or [BCK] key repeatedly, until the “Timer Page” appears.
- ② Press the [MODE] key repeatedly, until the “Count Up” timer appears.  
The “Count Up” timer has two modes: with Lap function and without Lap function.
- ③ Press the [SETUP] key to set the interval time of the timer beep: rotate the [DIAL] knob to select the interval time, then press the [SETUP] key.
- ④ Press the [START] key to initiate the “Count Up” timer.
- ⑤ Press the [LAP] key to save the lap time, if desired (up to four laps).
- ⑥ Press the [STOP] key to stop the “Count Up” timer.
- ⑦ Press and hold the [START] key for two seconds to reset the “Count Up” timer.

When the optional GPS antenna is connected, the average speed, or the maximum speed of your vehicle may be displayed instead of the lap function, by pressing the [MODE] key again. Press the [DISP] key to switch between average and maximum speed.

To return to the “Radio” page, press the [FWD] or [BCK] key repeatedly, until the “Radio” Page appears.

## “COUNT DOWN” TIMER



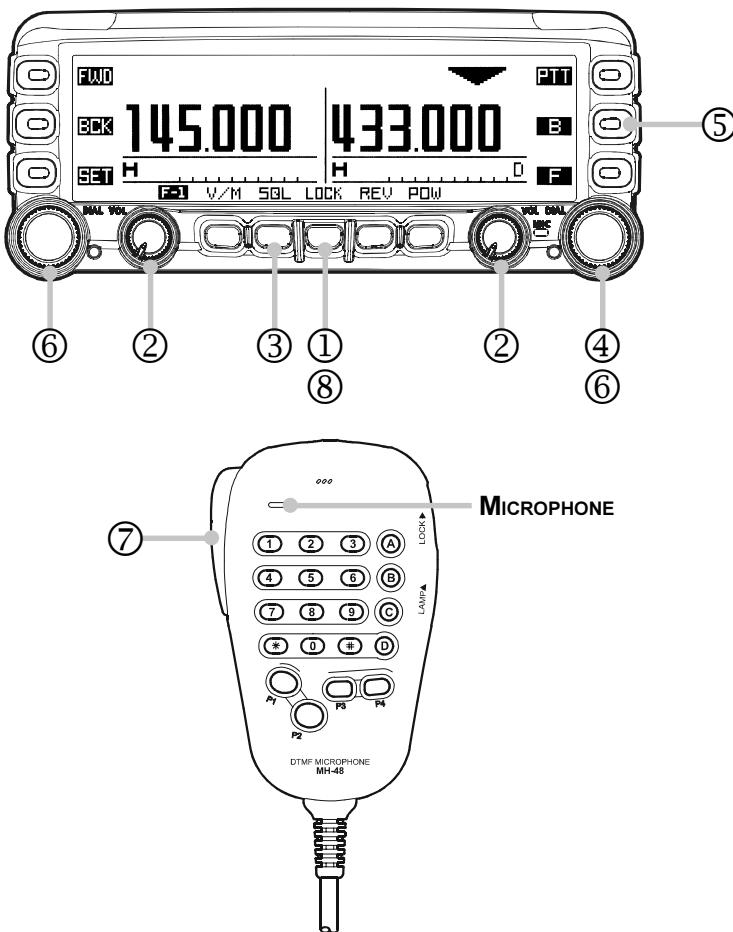
- ① Press the [FWD] or [BCK] key repeatedly, until the “Timer Page” appears.
- ② Press the [MODE] key repeatedly, until the “Count Down” timer appears.  
The “Count Down” timer has two modes: with Lap function and without Lap function.
- ③ Press the [SETUP] key to set the setup time: rotate the [DIAL] knob to select the setup time, then press the [SETUP] key.
- ④ Press the [START] key to initiate the “Count Down” timer.
- ⑤ Press the [LAP] key to save the lap time, if desired (up to four laps).
- ⑥ Press the [STOP] key to stop the “Count Down” timer.
- ⑦ Press and hold the [START] key for two seconds to reset the “Count Down” timer.

When the optional GPS antenna is connected, the average speed, or the maximum speed of your vehicle may be displayed instead of the lap function, by pressing the [MODE] key again. Press the [DISP] key to switch between average and maximum speed.

To return to the “Radio” page, press the [FWD] or [BCK] key repeatedly, until the “Radio” Page appears.

# RADIO PAGE BASIC OPERATION

The basic operations are listed numerically in the illustration below.

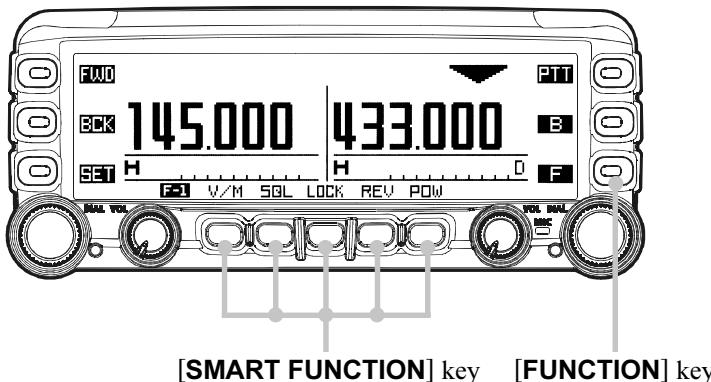


- ① Press and hold the **[POWER]** key for two seconds to turn the transceiver on.
- ② Rotate the **[VOL]** knob to adjust the audio volume level.
- ③ Press the **[SQL]** key briefly then rotate the **[DIAL]** knob carefully to adjust the squelch threshold level.
- ④ Press the **[DIAL]** knob briefly to set the “Main” band.
- ⑤ Press the **[B]** key to select the operating band of the “Main” band.
- ⑥ Rotate the **[DIAL]** knob to select the operating frequency.
- ⑦ Press and hold the **[PTT]** key, and speak into the microphone in a normal voice level.
- ⑧ Press and hold the **[POWER]** key for two seconds to turn the transceiver off.

# [SMART FUNCTION] KEY

## GENERAL

The **FTM-350** Series Transceiver operations are performed using the [**SMART FUNCTION**] keys. The various functions of the keys are changed by pressing the [**F**] key.



Pressing the [**F**] key repeatedly will change the function command of each [**SMART FUNCTION**] key as shown in the following tables. It is easy to recall and perform a desired operation. The current function of each key is shown in the display above the key button.

### ◎ Default

<b>F-1</b>	V/M	SQL	LOCK	REV	POW
<b>F-2</b>	SCAN	DW	LOCK	SKIP <sup>*1</sup>	AD-F <sup>*2</sup>

### ◎ When the optional Voice Guide Unit is installed.

<b>F-1</b>	V/M	SQL	LOCK	REV	POW
<b>F-2</b>	SCAN	DW	LOCK	SKIP <sup>*1</sup>	AF-D <sup>*2</sup>
<b>F-3</b>	●REC	X CLR	LOCK	▶PLAY	VOICE

### ◎ When the optional Voice Guide Unit is installed and the APRS feature is activated.

<b>F-1</b>	V/M	SQL	LOCK	REV	POW
<b>F-2</b>	SCAN	DW	LOCK	SKIP <sup>*1</sup>	AF-D <sup>*2</sup>
<b>F-3</b>	S•LIST	MSG	LOCK	BCON	B-TX
<b>F-4</b>	●REC	X CLR	LOCK	▶PLAY	VOICE

### ◎ Press and hold the [**F**] key for two seconds.

<b>SQL</b>	TYPE	T•FRQ	LOCK	D•COD	P•FRQ
------------	------	-------	------	-------	-------

\*1: The [**SKIP**] command appears only in memory mode.

\*2: You may change the [**AD-F**] command to another command with Set Mode item "**G05 F KEY**". See page 40.

# [SMART FUNCTION] KEY

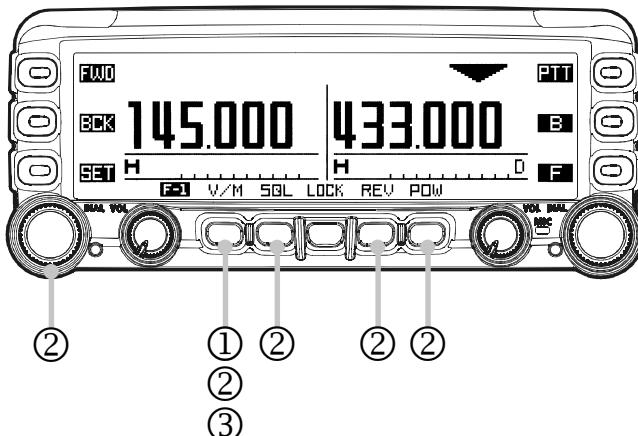
## [SMART FUNCTION] KEY COMMAND DETAILS

<b>F-1</b>	V/M	Press Key	Switches frequency control between the "VFO" and "Memory System".
		Press & Hold Key	Activates the "Memory Write" mode (for memory channel storage).
	SQL	Press Key	Activates the Squelch threshold level.
		Press & Hold Key	No Action.
	LOCK	Press Key	Toggles the key lockout feature "on and "off".
		Press & Hold Key	Toggles the transceiver power "on and "off".
	REV	Press Key	Reverses transmit and receive frequencies while working through a repeater.
		Press & Hold Key	No Action.
<b>F-2</b>	POW	Press Key	Selects the desired transmit power output level ("LOW", "MID", and "HIGH")
		Press & Hold Key	No Action
	SCAN	Press Key	Activates the Scanner.
		Press & Hold Key	No Action.
	DW	Press Key	Activates the Dual Watch feature.
		Press & Hold Key	No Action.
	LOCK	Press Key	Toggles the key lockout feature "on and "off".
		Press & Hold Key	Toggles the transceiver power "on and "off".
<b>F-3</b>	SKIP	Press Key	Selects the "scan flag" to the current memory channel.
		Press & Hold Key	No Action.
	AD-F	Press Key	Activates the AF Dual function.
		Press & Hold Key	No Action.
	S•LIST	Press Key	Opens the "Station List" window.
		Press & Hold Key	No Action.
	MSG	Press Key	Opens the "Message List" window.
		Press & Hold Key	No Action.
<b>F-4</b>	LOCK	Press Key	Toggles the key lockout feature "on and "off".
		Press & Hold Key	Toggles the transceiver power "on and "off".
	BCON	Press Key	Changes the APRS beacon: ON, OFF or AUTO.
		Press & Hold Key	No Action.
	B-TX	Press Key	Transmits the APRS beacon.
		Press & Hold Key	No Action.
<b>SQL</b>	●REC	Press Key	Initiates the recording of the incoming receiver audio.
		Press & Hold Key	No Action.
	X CLR	Press Key	Clears the recording data.
		Press & Hold Key	No Action.
	LOCK	Press Key	Toggles the key lockout feature "on and "off".
		Press & Hold Key	Toggles the transceiver power "on and "off".
	▶PLAY	Press Key	Plays back the recorded data.
		Press & Hold Key	Selects the Voice Memory Register (slot 1 - 8, or ALL).
<b>SQL</b>	VOICE	Press Key	Announces the operating frequency of the "Main" band.
		Press & Hold Key	No Action.
	TYPE	Press Key	Selects the Squelch type.
		Press & Hold Key	No Action.
	T•FRQ	Press Key	Selects the CTCSS Tone frequency.
		Press & Hold Key	No Action.
	LOCK	Press Key	Toggles the key lockout feature "on and "off".
		Press & Hold Key	Toggles the transceiver power "on and "off".
<b>SQL</b>	D•COD	Press Key	Selects the DCS code.
		Press & Hold Key	No Action.
	P•FRQ	Press Key	Selects the User Programmed Reverse CTCSS Tone frequency..
		Press & Hold Key	No Action.

# MEMORY OPERATION

## MEMORY STORAGE

Before beginning the Memory Storage operation, select the desired frequency while operating in the “Main” band VFO. Be sure to set up any desired CTCSS or DCS tones, as well as any repeater offset. The power level setting is also stored in the memory.



- ① Press and hold in the **[V/M]** key for two seconds to display the “Memory Edit” window.
- ② If you wish to append an Alpha/numeric “Tag” to this channel, press and hold the **[V/M]** key again. Then enter the desired name “Tag” (up to 8 characters) one of the methods shown in the following examples. Otherwise, skip to the next step.

**Example 1:** Enter the characters/numbers by pressing the microphone keypad buttons; or use the microphone **[UP]/[DWN]** keys to select them. Press the **[B]** key to move the cursor to the next digit. Press the **[A]** key to backspace the cursor, and press the **[C]** key to delete all data after the cursor. You may change the character (uppercase, lowercase, numeric, or symbol) by pressing the **[\*]** key.

**Example 2:** Rotate the *left side* **[DIAL]** knob to select a character/number and press the **[→]** key to move the cursor to the next digit. Press the **[BS]** key to backspace the cursor. You may change the character (capital, small, numeric, or symbol) by pressing the **[FONT]** key.

- ③ Press the **[V/M]** key to store the frequency and settings into memory.

### Important Note

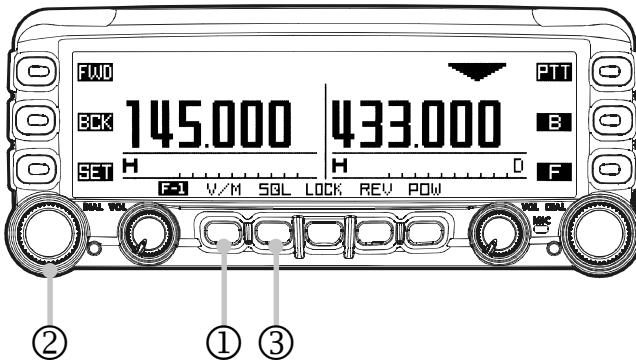
On rare occasions the stored data may become corrupted by miss operation, or static electricity. When repairs are made, the memory data may be lost. Please write down or record the memory information so you will be able to restore it if needed.

# MEMORY OPERATION

## STORING INDEPENDENT TRANSMIT FREQUENCY (“ODD SPLIT”)

All memories can store an independent transmit frequency, for operation on repeaters with non-standard shift.

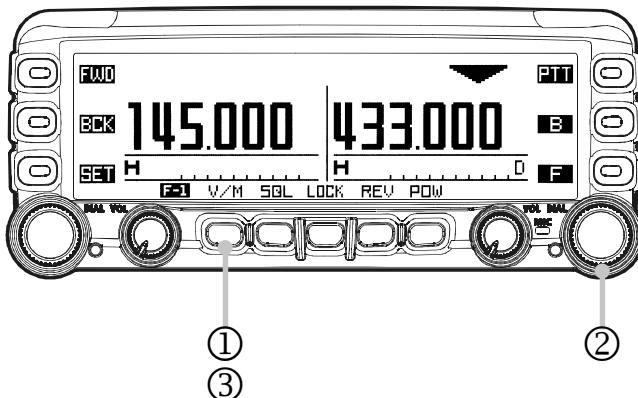
To store the “Odd Split” transmit frequency, first store the receive frequency using the method already described on the previous page. Then follow the below procedures:



- ① Tune the desired transmit frequency on the “Main” band, then press and hold in the **[V/M]** key for two seconds.
- ② Rotate the **left side [DIAL]** knob to select the same memory channel number as used in step 1 above.
- ③ Press the **[TXIN]** key to store the independent transmit frequency into memory.

# MEMORY OPERATION

## MEMORY RECALL



- ① Press the **[V/M]** key, to set the “Main” band to the memory mode.
  - ② Rotate the **[DIAL]** knob to select the desired memory channel.
  - ③ To return to the VFO mode, press the **[V/M]** key.
- 
- When the radio is in the memory mode, you may recall a memory to the main memory display by entering the memory number using the microphone keypad.  
For example, to recall memory channel #14, press **[0] → [1] → [4]**.
  - When an “Odd Split” memory channel is recalled, the “**■**” indication will appear in the display.
  - When a “Tagged” memory channel is displayed with the Alpha/numeric “Tag”, a small frequency indication will also be shown. You may change the display between “Tag” indication and “Frequency” indication via Set Mode item “**D01 MEMORY DISPLAY**” in the “**MEMORY**” group.

# MEMORY OPERATION

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## MEMORY EDIT

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The memory channels may be edited using Set Mode item “**D02 MEMORY EDIT**” in the “**MEMORY**” group.

### LABELING MEMORIES

1. Rotate the *left side [DIAL]* knob to select a memory channel to append or change the label.
2. Press the **[V/M]** key for two seconds, and then add or change the label in the same manner as step ② of the “Memory Storage” procedure (see page 6).

### COPYING MEMORIES

1. Rotate the *left side [DIAL]* knob to select the memory channel to be copied.
2. Press the **[SEL]** key. The selected column will blink.
3. Rotate the *left side [DIAL]* knob to select a memory channel to store the data.
4. Press the **[CPY]** key to copy the memory channel data.
5. Press the **[SEL]** key to save the data and stop the column blinking.

### DELETING MEMORIES

1. Rotate the *left side [DIAL]* knob to select the memory channel to delete.
2. Press the **[SEL]** key. The selected column will blink.
3. Press the **[DEL]** key to delete the memory channel data.

# MEMORY OPERATION

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## MEMORY CHANNEL SORT

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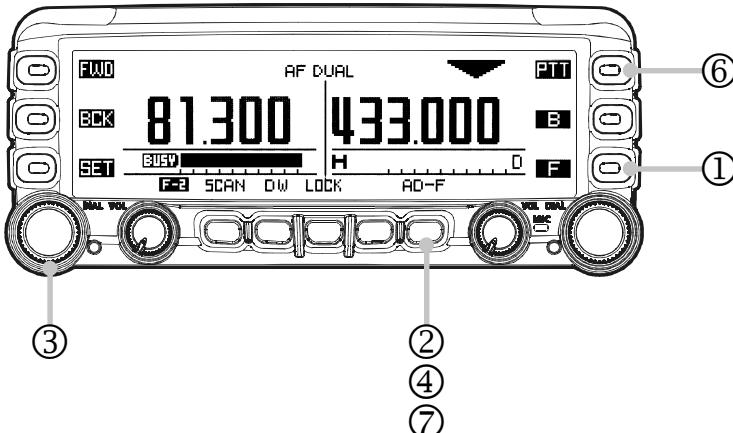
The memory channels may be sorted and renumbered by frequency, from low to high using the “Special Function” mode.

1. Turn the radio off.
2. To enter the “Special Function” mode, turn the radio on while pressing and holding the key located at the left of the [**POWER**] switch.
3. To sort the memory channels in the *left band*, rotate the *left side [DIAL]* knob to select function menu item “3 L-MEMORY SORT”. To sort the memory channels in the *right band*, rotate the *left side [DIAL]* knob to select function menu item “4 R-MEMORY SORT”.
4. Press the *left side [DIAL]* knob, to display the confirmation message “OK? [SET]” on the display. If you decide to cancel the memory channel sort, press the [**ESC**] key.
5. Press the *left side [DIAL]* knob again. After several seconds, sorting is complete, and the transceiver will reset automatically.

# AF DUAL OPERATION

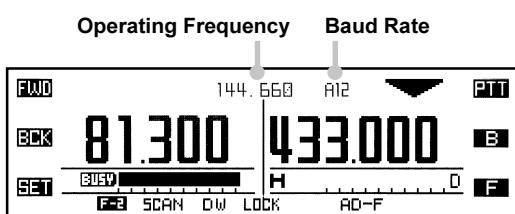
The AF Dual function permits monitoring an amateur band frequency while listening to an FM broadcast station.

**Important Note:** The AF Dual function will not activate while the radio is in “Mono” band mode.



- ① Press the **[F]** key repeatedly, until the **[SMART FUNCTION]** keys change to the “**F-2**” mode.
- ② Press the **[AD-F]** key to activate the AF Dual function.  
The **left side** receiver switches to FM Broadcast. The **right side** receiver will monitor the amateur frequencies, while you listen to the FM Broadcast station.
- ③ Rotate the **left side** **[DIAL]** knob to tune the desired FM broadcast stations.
- ④ To change the audio source to the AM Broadcast band, or Line-In audio, press and hold the **[AD-F]** key for two seconds to access the Set Mode. Select the desired audio source by rotating the **left side** **[DIAL]** knob, and then press the **[ESC]** key.
- ⑤ When a signal is received in the amateur band, the amateur band audio is output to the speaker. The FM or AM broadcast station will no longer be heard.
- ⑥ When the **right side** receiver is set in the amateur band by “Main” band, you may transmit on the amateur band by pressing the **[PTT]** key.
- ⑦ Press the **[AD-F]** key to disable the AF Dual function and return to normal operation.

When operating with APRS or Packet on the **left side** band, the operating frequency and baud rate of the APRS or Packet operation will appear on the display.

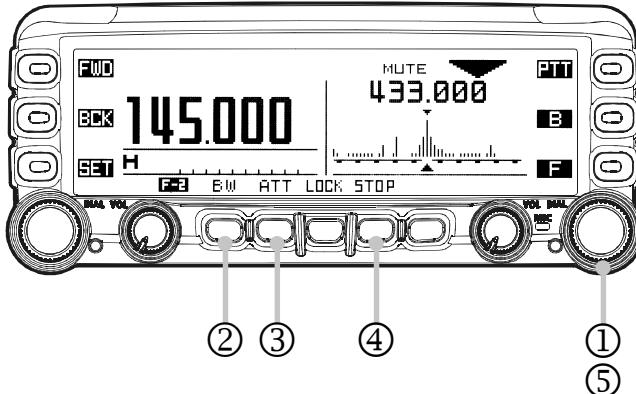


# BAND SCOPE OPERATION

## GENERAL

The Band Scope permits viewing operating activity on channels above and below the current operating channel, in the VFO mode.

**Important Note:** The Band Scope feature will not activate while the radio is in Dual Band receive with the “Mono” band mode.

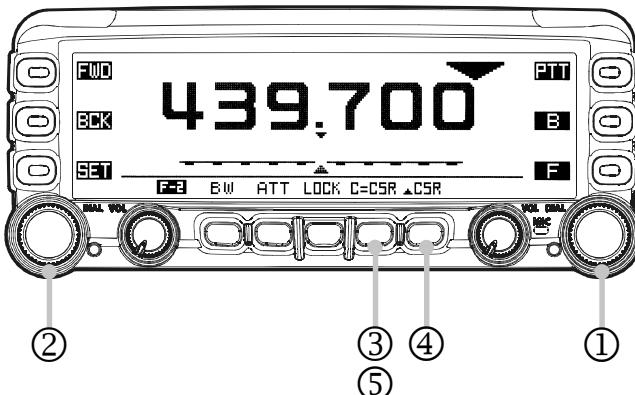


- ① Press the “Main” band [DIAL] knob to activate the Band Scope.
- ② Press the [BW] key to toggle the visible bandwidth to “±22 channels” and “±50 channels”.
- ③ Press the [ATT] key to reduce the receiving signal by approximately 10 dB, if desired (except the AM and FM Broadcast bands).
- ④ Press the [STOP] key to stop the sweep of the Band Scope temporarily, if desired. Press the [START] key to start the sweep of the Band Scope again.
- ⑤ Press the “main” band [DIAL] knob to disable the Band Scope and return to normal operation.

# BAND SCOPE OPERATION

## ENHANCED MODE

When in **Mono-Band** mode, the Enhanced Band Scope “Special Function” features may be activated. (See “Switching to the Enhanced Mode” below).



- ① Rotate the “Main” band [DIAL] knob to tune the operating frequency.
- ② Rotate the “Sub” band [DIAL] knob to move the cursor (▲).
- ③ Press the [C=CSR] key to return the cursor to band center.
- ④ Press the [▲CSR] key, to change the “▲” cursor to “△”. In this case, you may tune the operating frequency by moving cursor, or by rotating the “Sub” band [DIAL] knob.
- ⑤ Press the [C=CSR] key to return to the current frequency, and the cursor to band center, and change the “△” cursor to “▲”.

### Switching to the Enhanced Mode

1. Turn the radio off.
2. Turn the radio on while holding the key, which is located left of the [POWER] switch, to enter the “Special Function” mode.
3. Rotate the *left side* [DIAL] knob to select the function menu item “8 BAND SCOPE”.
4. Press the *left side* [DIAL] knob, and then rotate the *left side* [DIAL] knob to select “SPECIAL”.
5. Press the *left side* [DIAL] knob to save the new setting.
6. Press the [ESC] key, the transceiver is reset automatically.

# CTCSS/DCS/EPCS OPERATION

## CTCSS OPERATION

1. Press and hold in the [F] key for two seconds to change the [SMART FUNCTION] key category to the “SQL” functions.
2. Press the [TYPE] key repeatedly, until the “TONE SQL” notation appears; this activates the CTCSS operation.
3. Press the [T•FRQ] key, then rotate the “Main” band’s [DIAL] knob to select the desired CTCSS frequency.
4. Press the [ESC] key to save the new setting and exit to normal operation.
5. To end the CTCSS operation, press the [TYPE] key repeatedly, until the “OFF” notation appears.

You may customize the CTCSS operation so that a ringing “bell” sound alerts you when a call is coming in. Use Set Mode item “**J01 BELL RINGER**” in the “**SIGNALING**” group. See page 45 for details.

## DCS OPERATION

1. Press and hold in the [F] key for two seconds to change the [SMART FUNCTION] key category to the “SQL” functions.
2. Press the [TYPE] key repeatedly, until the “DCS” notation appears; this activates the DCS operation.
3. Press the [D•COD] key, then rotate the “Main” band’s [DIAL] knob to select the desired DCS code.
4. Press the [ESC] key to save the new setting and exit to normal operation.
5. To end the DCS operation, press the [TYPE] key repeatedly, until the “OFF” notation appears.

You may customize the DCS operation so that a ringing “bell” sound alerts you when a call is coming in. Use Set Mode item “**J01 BELL RINGER**” in the “**SIGNALING**” group. See page 45 for details.

### Important Note

When operating the APRS with the Voice Alert function (see page 79 on the **FTM-350** Series APRS Manual for details), the CTCSS frequency/DCS code which is set on the left side band will replace the CTCSS frequency/DCS code which is set by the Voice Alert function automatically.

# CTCSS/DCS/EPCS OPERATION

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## EPCS OPERATION

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The EPCS (Enhanced Paging & Code Squelch) feature allows addressing calls to a specific station (Paging), and choosing to receive only the calls directed to your station (Code Squelch).

The EPCS feature uses two pairs of (alternately switched) CTCSS tones, which are stored in the pager memories. The receiver remains silent until it receives the CTCSS tone pair that matches those stored in the receiving pager memory.

1. Store the CTCSS tone pairs using Set Mode item “**J04 PAGER CODE**” in the “**SIGNALING**” group. The Sub menus “**1: RX**” and “**2: RX**” set the receiving tone codes, and Sub menus “**3: TX**” and “**4: TX**” set the transmit tone codes.
2. Press and hold in the **[F]** key for two seconds to change the **[SMART FUNCTION]** key category to the “**SQL**” functions.
3. Press the **[TYPE]** key repeatedly, until the “**PAGER**” notation appears; this activates the EPCS feature.
4. To end the EPCS operation, press the **[TYPE]** key repeatedly, until the “**OFF**” notation appears.

You may customize the EPCS operation so that a ringing “bell” sound alerts you when a EPCS call is received. Use Set Mode item “**J01 BELL RINGER**” in the “**SIGNALING**” group. See page 45 for details.

# SCAN OPERATION

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## VFO SCAN

---

1. Press the [F] key repeatedly until the [SMART FUNCTION] keys “F-1” category is displayed. Then, if necessary, set the “Main” band to VFO mode by pressing the [V/M] key on the “F-1” category.
2. Press the [F] key briefly to change the [SMART FUNCTION] keys to the “F-2” category.
3. Press the [SCAN] key on the “F-2” category to initiate the VFO scan.
4. Press the [SCAN] key again to stop the VFO scan.

You may customize the functions of the VFO Scan using the following Set Mode items: “F02 SCAN DIRECTION”, “F03 SCAN RESUME”, “F04 SCAN STOP BEEP” in the “SCAN” group and “G08 RX COVERAGE” in the “SYSTEM” group.

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## MEMORY SCAN

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1. Press the [F] key repeatedly until the [SMART FUNCTION] keys change to the “F-1” category. Then, if necessary, set the “Main” band to memory mode by pressing the [V/M] key.
2. Press the [F] key briefly to change the [SMART FUNCTION] key category to “F-2”.
3. Press the [SCAN] key on the “F-2” category to initiate the memory scan.
4. Press the [SCAN] key again to stop the memory scan.

You may customize the functions of the Memory Scan using Set Mode items “D03 MEMORY SCAN TYPE” in the “MEMORY” group, “D04 MEMORY SKIP/SELCT”, “F03 SCAN RESUME”, “F04 SCAN STOP BEEP” in the “SCAN” group, and “G08 RX COVERAGE” in the “SYSTEM” group.

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## PROGRAMMABLE MEMORY SCAN (PMS)

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This feature allows scanning with sub-band limits.

1. Store the lower sub-band limit into the memory channel “P1L”.
2. Store the upper sub-band limit into the memory channel “P1U”.
3. Set the “Main” band to memory mode, if necessary, by pressing the [V/M] key on the “F-1” category.
4. Recall memory channel “P1L” or “P1U”.
5. Press the [F] key briefly to change the [SMART FUNCTION] keys to the “F-2” category.
6. Press the [SCAN] key on the “F-2” category to initiate the scanning within the programmed range.
7. Press the [SCAN] key again to stop the scanner.
8. Press the [V/M] key on the “F-1” category to change between the memory mode and the VFO mode.
9. Nine pairs of band limit memories, labeled “P1L/P1U” through “P9L/P9U” are available. Upper and lower operation limits may be set on a number of bands.

You may customize the functions of the Memory Scan via Set Mode items “D03 MEMORY SCAN TYPE” in the “MEMORY” group, “D04 MEMORY SKIP/SELCT”, “F03 SCAN RESUME”, “F04 SCAN STOP BEEP” in the “SCAN” group, and “G08 RX COVERAGE” in the “SYSTEM” group.

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## PRIORITY CHANNEL SCAN (DUAL WATCH)

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This feature is a two-channel scanning function, which allows operation on a VFO or Memory channel, while periodically checking the “Priority” memory channel “000” for activity.

1. Store the frequency which you wish to check periodically into the “Priority” memory channel “000”.
2. Press the [F] key repeatedly until the [SMART FUNCTION] keys change to the “F-2” category.
3. Press the [DW] key in the “F-2” category to initiate the Dual Watch feature. A “P” icon will appear on the display when Dual Watch is activated.
4. Press the [DW] key again to stop the Dual Watch feature.

You may customize the functions of the Dual Watch feature via Set Mode items “F01 DUAL WATCH STOP” and “F03 SCAN RESUME” in the “SCAN” group.

# **BLUETOOTH® OPERATION**

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When the optional **BU-1 Bluetooth®** Unit is installed, the **FTM-350** Series Transceiver can use wireless links to send/receive voice message with the optional **BH-1A** or **BH-2A Bluetooth®** Headset.

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## **PAIRING**

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1. Turn both the radio and **Bluetooth®** Headset off.
2. To enter the “Special Function” mode, turn the transceiver on while press and holding the key located at the left of the **[POWER]** switch.
3. Rotate the *left side* **[DIAL]** knob to select the function menu item “**9 B-T PAIRING**”.
4. Press the *left side* **[DIAL]** knob.
5. Press and hold the power switch on the **Bluetooth®** Headset for five seconds, until the **Bluetooth®** Headset indicator blinks red/blue alternately.
6. Press the *left side* **[DIAL]** knob to initiate the pairing.
7. If the pairing is successful (requires 20 to 30 seconds), the “**PAIRING OK !**” notation will appear on the display. The transceiver will turn off and back on again.  
When the **Bluetooth®** Headset is correctly recognized by the **FTM-350** Series Transceiver, the **Bluetooth®** Headset’s indicator will blink blue.
8. Set up the various functions of the **Bluetooth®** via Set Mode items “**K01 BLUETOOTH**”.

# **BLUETOOTH® OPERATION**

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## **OPERATION**

1. When the **Bluetooth®** Headset is correctly recognized by the **FTM-350** Series Transceiver, “” icon will appear on the transceiver’s display, and the LED indicator on the **Bluetooth®** Headset will blink blue.
2. Adjust the receiver audio level using the [**VOLUME(+)**]/[**VOLUME(-)**] switches on the **Bluetooth®** Headset.
3. Press the **PTT** switch on the **Bluetooth®** Headset to transmit. Release the **PTT** switch to return to receive.
4. If the **BH-2A Bluetooth®** Headset is used, the microphone gain may be adjusted in five steps, by pressing the [**VOLUME(+)**] or [**VOLUME(-)**] switches on the **Bluetooth®** Headset while holding the **PTT** switch.
5. The communication range between the **Bluetooth®** Headset and the transceiver is around 1 m (3 ft). If you move out of range, a beep will be heard from the **Bluetooth®** Headset to alert you. If you move back into range, the **Bluetooth®** Headset will beep to alert you that you are back within range.
6. When the battery voltage of the **Bluetooth®** Headset is low;
  - a. the LED on the **Bluetooth®** Headset will blink Red and Blue.
  - b. a beep will be heard from the **Bluetooth®** Headset.
  - c. the “” icon on the transceiver’s display will be blinking fast.

Charge the battery of the **Bluetooth®** Headset.

In the factory default setting of the **FTM-350** Series Transceiver, the internal and external speakers, the front panel microphone, and front panel MIC jack are all disabled when the **Bluetooth®** Headset is correctly recognized. However, the microphone connected to the transceiver’s **MIC** jack is still alive.

You may customize the **Bluetooth®** operation via Set Mode items “**K01 BLUETOOTH**” in the “**OPTION**” group. See page 47.

# INTERNET CONNECTION FEATURE

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The **FTM-350** Series Transceiver can be used to access a “node” (repeater or base station), which is tied into the Vertex Standard WiRESTM (Wide-Coverage Internet Repeater Enhancement System) network, operating in the “SRG” (Sister Radio Group) mode. Details may be found at the WiRES-II Web site: <http://www.vxstd.com/en/wiresinfo-en/>.

To begin using the Internet Connection feature, first change the [**AD-F**] key to the [**WiRES**] key function using the following procedure:

1. Press the [**F**] key repeatedly until the [**SMART FUNCTION**] keys change to the “**F-2**” category.
2. Press and hold the [**AD-F**] key for two seconds to access the Set Mode, then select the “WiRES” item by rotating the *left side* [**DIAL**] knob.
3. Press the [**ESC**] key to exit from the Set Mode.

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## SRG (“SISTER RADIO GROUP”) MODE

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1. Press the [**SET**] key to enter the Set Mode, choose the “**SIGNALING**” group, choose the “**J06 WiRES**” item, and then choose “SRG”. See page 46.
2. Press the [**ESC**] key three times, to exit from the Set Mode, and activate the Internet Connection feature in the “SRG” mode. The “” icon will appear on the display.
3. Press the [**WiRES**] key to access the Set Mode. Rotate the *left side* [**DIAL**] knob to select the access number (“**CODE 0**” ~ “**CODE #**”) corresponding to the WiRES™ repeater, then press the [**ESC**] key to exit from the Set Mode.
4. With the Internet Connection feature activated, the transceiver will generate a brief (0.1 sec) DTMF tone according to your selection in step 3. This DTMF tone is sent at the beginning of every transmission to establish or maintain the link to the remote WiRES™ repeater operating in the “SRG” mode.
5. To disable the Internet Connection feature, select the “**OFF**” selection in the Set Mode item “**J06 WiRES**”.

# INTERNET CONNECTION FEATURE

## FRG (“FRIENDLY RADIO GROUP”) MODE

1. Press the [SET] key to enter the Set Mode, choose the “SIGNALING” group, choose the “J02 DTMF MEMORY” item, and then choose “FRG”. Store the access code of the Internet link to the DTMF memory register. See page 45.
2. Then set item “J06 WiRES” in the “SIGNALING” group to “FRG”. See page 46.
3. Press the [ESC] key three times to exit from the Set Mode and activate the Internet Connection feature in the “FRG” mode. The “” icon will appear on the display.
4. To access an FRG node, perform the following procedures:
  - 1) Press the [WiRES] key to access the Set Mode.
  - 2) Rotate the *left side* [DIAL] knob to select the WiRES memory register corresponding to the WiRESTM repeater you wish to establish an internet link with.
  - 3) Press the [ESC] key to exit from the Set Mode.
  - 4) Press the [] key (located at the left edge of the [SMART FUNCTION] key while transmitting) while pressing the PTT switch to transmit the access code.
5. To disable the Internet Connection feature, select the “OFF” selection in the Set Mode item “J06 WiRES”.

# DTMF OPERATION

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## MANUAL DTMF TONE GENERATION

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1. Press the microphone **PTT** switch to begin transmission.
  2. While transmitting, press the desired number keys on the microphone.
  3. When you have sent all the digits desired, release the **PTT** switch.
- 

## DTMF AUTODIALER

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1. To store a telephone number to a DTMF memory register, press the [**SET**] key and choose the “**SIGNALING**” group, then choose item “**J02 DTMF MEMORY**”. Choose a DTMF register and enter the telephone number. See page 45.
2. Then Set Mode item “**J03 DTMF MODE**” in the “**SIGNALING**” group to “**ON**”. See page 45.
3. Press the [**ESC**] key three times, to exit from the Set Mode, and activate the DTMF Autodialer.
4. To send the telephone number, perform the following procedure while pressing the **PTT** switch:
  - 1) Press the [**DTMF**] key (located at the left side of the [**POWER**] key while transmitting).
  - 2) Rotate the [**DIAL**] knob to select the DTMF memory register corresponding to the telephone number you wish to send.
  - 3) Press the [**DTMF**] key again to transmit the telephone number.
5. To disable the DTMF Autodialer, select the “**OFF**” selection in the Set Mode item “**J06 DTMF MODE**”.

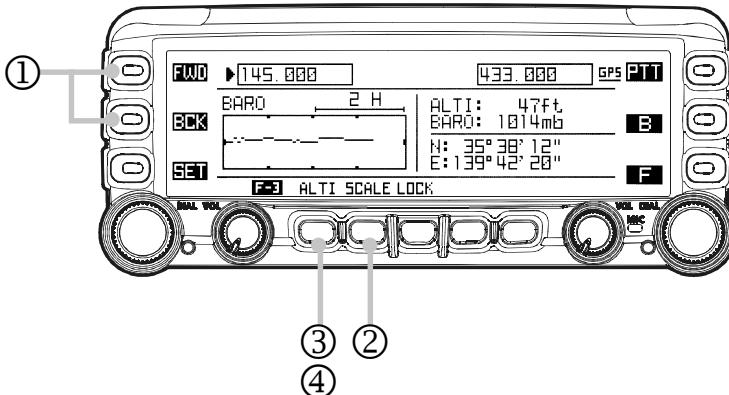
You may send a telephone number by pressing the microphone numeric keys ([**1**] through [**9**]) corresponding to the DTMF memory string you wish to send.

# BARO/ALTI PAGE OPERATION

The **FTM-350** Series Transceiver can display the current Barometric Pressure and relative changes in the pressure. Furthermore, when an optional **FGPS-1** or **FGPS-2<sup>2</sup>** GPS Unit is installed, the **FTM-350** Series Transceiver can display the current altitude and relative changes in the altitude.

First, enable the “BARO/ALTI” page, by pressing the [**SET**] key and choosing the “**DISPLAY**” group. Then select the Set Mode item “**C01 DISPLAY SELECT**” and set the “BARO/ALTI” page to ON. Press the [**ESC**] key three times to exit the Set Mode. See page 37.

To display the “Baro/Alti” Page, enable the “BARO/ALTI” page via Set Mode item “**C01 DISPLAY SELECT**” in the group, beforehand. See page 37.



- ① Press the [**FWD**] or [**BCK**] key repeatedly, until the “BARO/ALTI” Page appears. The current Barometric Pressure appears at the upper right of the display. A chart that indicates the relative changes in the pressure (barometric chart) is presented in the left half of the display. Additionally, if you install the optional GPS Unit, your current altitude appears at the upper right of the display, and your current position (Longitude/ Latitude) appears at the lower right of the display.
- ② Press the [**SCALE**] key to change the time scale of the barometric chart. Available selections are “2H”, “6H”, “12H”, and “24H”.
- ③ Press the [**ALTI**] key to change the “barometric” chart to the “altitude” chart. You may also change the time scale of the altitude chart by pressing the [**SCALE**] key.
- ④ To return to the “barometric” chart, press the [**BARO**] key.

To return to the “Radio” page, press the [**FWD**] or [**BCK**] key repeatedly, until the “Radio” Page appears.

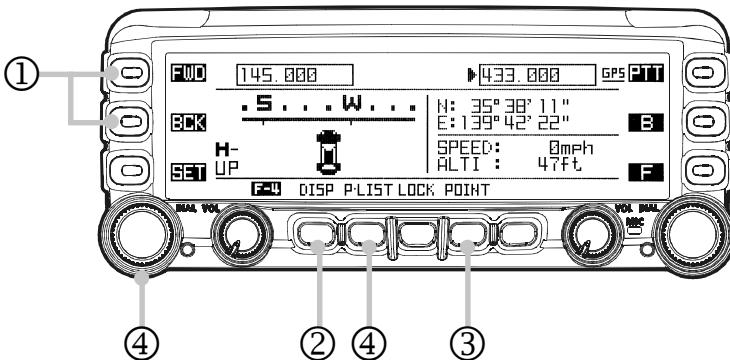
You may change the barometric and altitude measurement units via Set Mode item “**G10 UNIT SELECT**” in the “**SYSTEM**” group (see page 42).

※: The **FGPS-2** GPS Unit requires **CT-133** GPS Antenna Cable and **CT-136** GPS Antenna Adapter.

# GPS OPERATION (REQUIRES OPTIONAL GPS ANTENNA UNIT)

When the optional **FGPS-1** or **FGPS-2\*** GPS Antenna Unit is installed, the transceiver permits the display of your position (Longitude/Latitude).

Before beginning GPS operation, enable the “GPS” page via the Set Mode item “**C01 DISPLAY SELECT**” in the “**DISPLAY**” group. See page 35.



- ① Press the **[FWD]** or **[BCK]** key repeatedly, until the “GPS” Page appears. Your current position (Longitude/Latitude) appears at the upper right of the display, and your current altitude and vehicle speed appears at the lower right of the display. Additionally, your course direction (compass) displays in the left half of the display.
- ② Press the **[DISP]** key to change the compass. Available selections are “Compass Rose (North Up)”, “Compass Rose (Heading Up)”, and “Compass Tape”.
- ③ Press the **[POINT]** key to store the current position and date into the “Point” memory, if desired. Available “Point” memories are in four groups, and there are four Channels for each group.
- ④ Press the **[P•LIST]** key to open the “Point” memory list. Rotate the *left side* **[DIAL]** knob to scroll the list and press the **[BCK]** key to close the list. You may delete an unwanted point from the “Point” memory list by pressing the **[DEL]** key, if desired.

To return to the “Radio” page, press the **[FWD]** or **[BCK]** key repeatedly, until the “Radio” Page appears.

You may change the measurement units of the altitude and vehicle speed via Set Mode item “**G10 UNIT SELECT**” in the “**SYSTEM**” group (see page 42), and also change the time format via Set Mode item “**I02 DATE&TIME FORMAT**” in the “**TIMER/CLOCK**” group (see page 44).

※: The **FGPS-2** GPS Antenna Unit requires **CT-133** GPS Antenna Cable and **CT-136** GPS Antenna Adapter.

## “Point” memory

The **FTM-350** Series Transceiver has 16 “point” memories (four channels in each of four groups), which store the position (Longitude/Latitude) and the date.

When your vehicle nears one of the “Point” memories, the “Nav” pop-up window will open for ten seconds even if another page is being displayed.

You may customize the length of time the window opens via Set mode item “**H03 NAVI POPUP**” in the “**NAVI**” group. In addition, the “date” may be changed to a place or name, using the following procedure:

1. Press the [**P•LIST**] key to open the “Point” memory list.
2. Rotate the *left side* [**DIAL**] knob to select the “Point” memory “date” to be changed.
3. Press the *left side* [**DIAL**] knob to show the detail data of the “Point” memory.
4. Press the *left side* [**DIAL**] knob again to enable editing of the stored data.
5. Rotate the *left side* [**DIAL**] knob to toggle the point alarm function ON/OFF. When this selection is set to “OFF”, the “Nav” pop-up window does not open even if your vehicle nears that “Point” memory location.
6. Press the [**→**] key to move the cursor to the “date” area, and then press the [**CLR**] key to clear previous data.
7. To enter the desired name, rotate the *left side* [**DIAL**] knob to select a character/number, and press the [**←**] or [**→**] key to move the cursor.
8. Press the [**ENT**] key to overwrite the date setting.
9. Press the [**BCK**] key to return to the “GPS” page, and then press the [**NAVI**] key again to initiate navigation.



**Important Note:** You cannot change the “Point” memory of the APRS station that is designated as the destination.

## Important Note

When the GPS Antenna Unit is first turned on, it may take several minutes to complete a fix of your position. This is normal, as the GPS unit is downloading “almanac” information from the GPS satellites.

# GPS OPERATION (REQUIRES OPTIONAL GPS ANTENNA UNIT)

## Advice

You may acquire your current position (Longitude/Latitude) from an aftermarket GPS receiver by connecting an aftermarket GPS receiver to the **DATA** jack, and setting Set Mode item “**E16 COM PORT SETTING**” in the “**APRS/PKT**” group to “**GPS IN**”. See page 72 on the APRS manual for details.

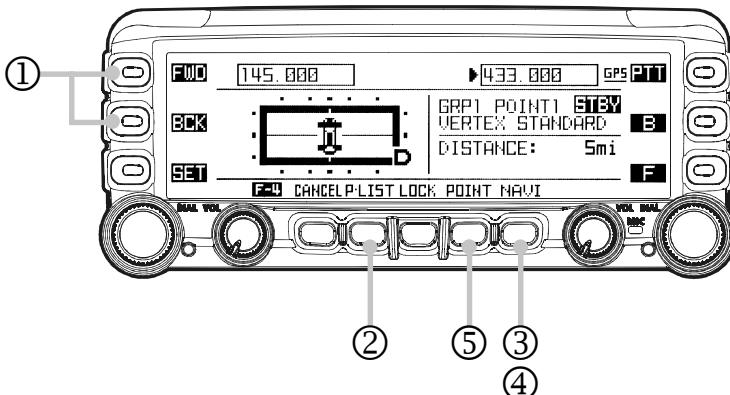
# NOTE

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# NAVI OPERATION (REQUIRES OPTIONAL GPS ANTENNA UNIT)

The **FTM-350** Series Transceiver enables navigating to any destination previously entered into the “Point” memory. Furthermore, you may enable navigating to the location of another APRS station by using the APRS feature. See page 32 in the APRS manual for details.

Before beginning Navigation, the “NAVI” page must be enabled via Set Mode item “**C01 DISPLAY SELECT**” in the “**DISPLAY**” group. See page 37.



- ① Press the **[FWD]** or **[BCK]** key repeatedly, until the “NAVI” Page appears.
- ② Press the **[P•LIST]** key to open the “Point” memory list, then rotate the *left side* **[DIAL]** knob to select the desired destination.
- ③ Press the **[NAVI]** key to return to the “NAVI” Page. The destination appears at the upper right of the display, and the distance between your current position and destination appears at the lower right of the display. Additionally, your course direction (compass) is shown in the left half of the display.
- ④ Press the **[NAVI]** key to initiate navigation. Drive your vehicle so that the “CAR” icon turns to a “**D**” symbol in the Compass display.
- ⑤ If desired, while navigating, the current position and date may be stored into the “Point” memory by pressing the **[POINT]** key. Four groups of “Point” memories are available with four channels for each group.

When your vehicle nears the destination, emits the alarm beep and the “**GOAL!**” notation appears in the Compass display.

To return to the “Radio” page, press the **[FWD]** or **[BCK]** key repeatedly, until the “Radio” Page appears.

You may customize the NAVI operation via the “**NAVI**” group of the Set Mode (see page 43).

## To Navigate to the New Point

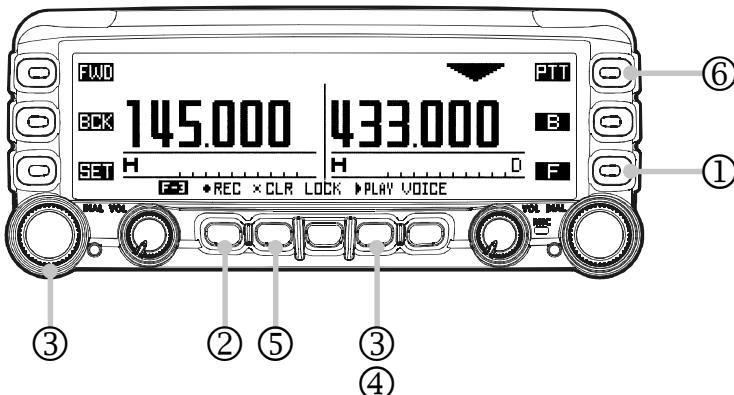
To navigate to a place that has not been previously stored in the “Point” memory, determine the longitude/latitude of that place from the map, then overwrite that data into one of the previously stored “Point” memories.

1. Press the [**P•LIST**] key to open the “Point” memory list.
2. Rotate the *left side* [**DIAL**] knob to select the “Point” memory you wish to overwrite.
3. Press the *left side* [**DIAL**] knob to show the detail data of the “Point” memory.
4. Press the *left side* [**DIAL**] knob again to enable editing of the stored data.
5. Enter the new point by turning the *left side* [**DIAL**] knob to select the character/number, and press the [ $\leftarrow$ ] or [ $\rightarrow$ ] key to move the cursor.
6. Press the [**ENT**] key to overwrite the setting.
7. Press the [**NAVI**] key to return to the “NAVI” Page, then press the [**NAVI**] key again to initiate navigation.

# AUDIO PLAYBACK OPERATION (REQUIRES OPTIONAL VOICE GUIDE UNIT)

The **FTM-350** Series Transceiver can record an incoming signal. The recording mode has two types; (a) automatic recording of the last 30 seconds of incoming signal (“Last” mode), or (b) eight recording memories of variable length (“Free” mode; capable of storing up to five minutes of total recording time).

Before beginning the Audio Playback Operation, set each parameter of the Voice Guide Unit, via Set Mode item “**K03 VOICE**” in the “**OPTION**” group. See page 48.



- ① Press the [**F**] key repeatedly until the [**SMART FUNCTION**] key changes to the “**F-3**” category (or “**F-4**”: when the APRS function is activated).
- ② Press the [**●REC**] key to initiate recording.
- ③ Press the [**■STOP**] key to terminate the recording process.
- ④ To play back the recorded data:  
“Last” mode: press the [**▶PLAY**] key. The last 30 seconds of the recorded audio will be heard from the speaker.  
“Free” mode: press and hold the [**▶PLAY**] key repeatedly, until the “recording slot” you wish to hear appears, then press the [**▶PLAY**] key briefly. You will hear the recorded audio.
- ⑤ Press the [**✖CLR**] key to clear all the recorded audio, if desired.



# MISCELLANEOUS SETTING (SET MODE OPERATION)

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The **FTM-350** Series Transceiver has 89 items in the Set Mode, and they are arranged in 8 groups (A-K). It is convenient to initially select the group by rotating the *left side [DIAL]* knob. Then briefly press the *left side [DIAL]* knob and rotate it again to select the desired operating item. When you have finished making your adjustment, press the **[ESC]** key repeatedly, until the transceiver returns to normal operation.

The groups are as follows.

- A: AUDIO, see page 33.
- B: TX/RX, see page 35.
- C: DISPLAY, see page 37.
- D: MEMORY, see page 38.
- E: APRS/PKT, refer to the “APRS Manual”.
- F: SCAN, see page 39.
- G: SYSTEM, see page 40.
- H: NAVI, see page 43.
- I: TIMER/CLOCK, see page 44.
- J: SIGNALING, see page 45.
- K: OPTION, see page 47.

# MISCELLANEOUS SETTING (SET MODE OPERATION)

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## AUDIO GROUP

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### A01: AF DIFFERENTIAL

**Function:** Enables/Disables the AVC (Automatic Audio Volume Controller).

The AVC allows the most comfortable and/or effective reception in noisy environment.

**Available Values:** OFF, MIN, MID, or MAX

**Default:** OFF

OFF: Disables the AVC.

MIN: Activates the AVC with the low effect level.

MID: Activates the AVC with the medium effect level.

MAX: Activates the AVC with the high effect level.

### A02: AF TONE CONTROL

**Function:** Selects the tone pitch of the received audio.

**Available Values:** LOW-3, LOW-2, LOW-1, NORMAL, HIGH-1, or HIGH-2

**Default:** NORMAL

LOW-3: The received audio is enhanced in the low frequency range with a high level effect.

LOW-2: The received audio is enhanced in the low frequency range with a medium level effect.

LOW-1: The received audio is enhanced in the low frequency range with a low level effect.

NORMAL: The received audio does not pass through the tone pitch control.

HIGH-1: The received audio is enhanced in the high frequency range with a low level effect.

HIGH-2: The received audio is enhanced in the high frequency range with a high level effect.

### A03: SPEAKER

**Function:** Selects the speaker to be used:

**Available Values:** FRONT+REAR, FRONT, OFF, or REAR

**Default:** FRONT+REAR

FRONT+REAR: Receiver audio is routed through the FRONT (located in the front panel) and REAR (located in the transceiver body) speakers.

FRONT: Output the receiving audio from the FRONT speaker.

OFF: Disable the FRONT and REAR speakers.

REAR: Output the receiving audio from the REAR speaker.

# MISCELLANEOUS SETTING (SET MODE OPERATION)

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## AUDIO GROUP

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### **A04: STEREO/MONO**

**Function:** Selects audio output mode.

**Available Values:** MONAURAL or STEREO

**Default:** MONAURAL

### **A05: SUB BAND MUTE**

**Function:** Selects the operation method of the MUTE function during dual receive operation.

**Available Values:** OFF, TX MUTE, RX MUTE, or TRX MUTE

**Default:** OFF

OFF: Disable the MUTE function.

TX MUTE: Disables the sub band's receiver audio output while transmitting on the main band.

RX MUTE: Disables the sub band's receiver audio output when receiving a signal on the main band.

TRX MUTE: Disables the sub band's receiver audio output while transmitting on the main band, and when receive the signal on the main band.

# MISCELLANEOUS SETTING (SET MODE OPERATION)

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## TX/RX GROUP

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### **B01: MIC GAIN**

**Function:** Adjust the microphone gain level.

**Available Values:** MIN, LOW, NORMAL, HIGH, or MAX

**Default:** NORMAL

### **B02: PTT MODE**

**Function:** Selects the front panel's PTT key function.

**Available Values:** MOMENTARY / TOGGLE

**Default:** MOMENTARY

### **B03: RPT SHIFT DIREC**

**Function:** Sets the repeater shift direction.

**Available Values:** SHIFT OFF, SHIFT-, or SHIFT+

**Default:** OFF

### **B04: RPT SHIFT FREQ**

**Function:** Sets the magnitude of the repeater shift.

**Available Values:** 0.00 - 99.95 MHz (50 kHz/step)

**Default:** Depends on the operating band.

### **B05: RX EXPANSION**

**Function:** Enables/Disables band expansion.

**Available Values:** GENERAL or WIDE COVERAGE

**Default:** GENERAL

When this item is set to "WIDE COVERAGE", the following receiving bands are added to the *left side* receiver when pressing the [B] key (center key on the right edge of the display).

108 - 137 MHz band

174 - 250 MHz band

300 - 400 MHz band

480 - 999.9875 MHz bands (Cellular blocked)

# **MISCELLANEOUS SETTING (SET MODE OPERATION)**

---

## **TX/RX GROUP**

---

### **B06: VOX**

**Function:** Enables/Disables VOX operation.

**Available Values:** OFF, REAR HAND-MIC, FRONT HAND-MIC, or INTERNAL MIC

**Default:** OFF

OFF: Disable VOX operation.

REAR HAND-MIC: Enable VOX operation for the microphone that is connected to the rear panel MIC jack (located in the transceiver's body).

FRONT HAND-MIC: Enable VOX operation for the microphone that is connected to the front panel MIC jack (located in the control head).

INTERNAL MIC: Enable VOX operation for the microphone that is connected to the front panel microphone.

### **B07: VOX SENSITIVITY**

**Function:** Sets the VOX sensitivity.

**Available Values:** MIN, LOW, NORMAL, HIGH, or MAX

**Default:** NORMAL

### **B08: WIDE / NARROW AUTO**

**Function:** Selects the receiving mode.

**Available Values:** AUTO, WIDE FM, FM, NARROW FM, or AM

**Default:** AUTO

### **B09: WX ALERT**

**Function:** Enables/Disables the weather alert scan feature.

**Available Values:** ON or OFF

**Default:** OFF

# MISCELLANEOUS SETTING (SET MODE OPERATION)

---

## DISPLAY GROUP

---

### **C01: DISPLAY SELECT**

**Function:** Enables/Disables the operating function pages recalled with the **[FWD]/[BCK]** key.

**Available Values:** FREQUENCY: ON or OFF,  
TIMER/CLOCK: ON or OFF,  
BARO/ALTI: ON or OFF,  
GPS: ON or OFF,  
NAVI: ON or OFF,  
GPS INFO\*: ON or OFF

**Default:** FREQUENCY: ON,  
TIMER/CLOCK: ON,  
BARO/ALTI: OFF,  
GPS: ON,  
NAVI: OFF,  
GPS INFO\*: OFF

\*: Requires optional GPS Antenna Unit

### **C02: LCD BRIGHTNESS**

**Function:** Sets the displays illumination level.

**Available Values:** MIN, 2, 3, 4, 5, 6, 7, or MAX

**Default:** MAX

### **C03: LCD COLOR**

**Function:** Selects the displays backlight color.

**Available Values:** WHITE-BLUE, SKY-BLUE, MARINE-BLUE, GREEN,  
YELLOW-GREEN, ORANGE, UMBER or WHITE

**Default:** SKY-BLUE

### **C04: LCD CONTRAST**

**Function:** Sets the display's contrast level.

**Available Values:** MIN, 2, 3, 4, 5, 6, 7, or MAX

**Default:** 4

# MISCELLANEOUS SETTING (SET MODE OPERATION)

---

## MEMORY GROUP

---

### **D01: MEMORY DISPLAY**

**Function:** Selects the memory channel indication between the “Frequency” and the channel’s “Alpha-numeric Tag”.

**Available Values:** FREQUENCY or ALPHA

**Default:** FREQUENCY

### **D02: MEMORY EDIT**

**Function:** Access to the memory edit window.

### **D03: MEMORY SCAN TYPE**

**Function:** Selects what action will be performed on a “flagged” memory channel.

**Available Values:** ALL MEMORY or SELECT MEMORY

**Default:** ALL MEMORY

ALL MEMORY: The scanner will “skip” the flagged (SKIP) channels during scanning.

SELECT MEMORY: The scanner will “only scan” the flagged (SELECT) channels during scanning.

### **D04: MEMORY SKIP / SELCT**

**Function:** Selects the “scan flag” to the current memory channel.

**Available Values:** OFF, SKIP, or SELECT

**Default:** OFF

OFF: All memory channels will be scanned

SKIP: The current memory channel is set to scan “SKIP” channel.

SELECT: The current memory channel is set to scan “SELECT” channel.

# **MISCELLANEOUS SETTING (SET MODE OPERATION)**

---

## **SCAN GROUP**

---

### **F01: DUAL WATCH STOP**

**Function:** Selects the Dual Watch resume mode.

**Available Values:** AUTO or HOLD

**Default:** AUTO

**AUTO:** The Dual Watch feature will stop when a signal is received on the priority channel. When the signal drops, the Dual Watch will resume.

**HOLD:** The Dual Watch feature will stop when a signal is received on the priority channel. It will not restart automatically.

### **F02: SCAN DIRECTION**

**Function:** Select the scan start direction while initiating the scanner using the scan command by pressing the **[SCAN]** key.

**Available Values:** UP START or DOWN START

**Default:** UP START

### **F03: SCAN RESUME**

**Function:** Selects the scan resume mode.

**Available Values:** BUSY, HOLD, TIME 1 sec, TIME 3 sec, or TIME 5 sec

**Default:** TIME 5 sec

**BUSY:** The scanner will hold on a signal it encounters. When the signal drops, the scanner will resume.

**HOLD:** The scanner will hold on a signal it encounters. It will not restart automatically.

**TIME 1 sec:** The scanner will hold on a signal it encounters, and scanner will resume after one second.

**TIME 3 sec:** The scanner will hold on a signal it encounters, and scanner will resume after three seconds.

**TIME 5 sec:** The scanner will hold on a signal it encounters, and scanner will resume after five seconds.

### **F04: SCAN STOP BEEP**

**Function:** Enables/Disables the scan stop beep.

**Available Values:** ON or OFF

**Default:** OFF

# MISCELLANEOUS SETTING (SET MODE OPERATION)

## SYSTEM GROUP

### G01: APO

**Function:** Sets the Automatic Power-Off time.

**Available Values:** OFF, 0.5 hour, 1.0 hour, 1.5 hour, 2.0 hour ~ 12.0 hour (1.0 hour/step)

**Default:** OFF

### G02: ARS

**Function:** Enables/Disables the Automatic Repeater Shift function.

**Available Values:** ON or OFF

**Default:** ON

### G03: AUTO STEP

**Function:** Selects the DIAL frequency step.

**Available Values:** AUTO, 5.00 kHz, 6.25 kHz, 8.33 kHz, 9.00 kHz, 10.00 kHz, 12.50 kHz, 15.00 kHz, 20.00 kHz, 25.00 kHz, 50.00 kHz, 100.00 kHz, or 200.00 kHz

**Default:** AUTO

### G04: BEEP

**Function:** Adjusts the beep volume level.

**Available Values:** OFF, LOW, or HIGH

**Default:** LOW

### G05: F KEY

**Function:** Selects the function of the front panel “**F-2**” key that is located at the right-side end of the “**F-2**” category [**SMART FUNCTION**] keys.

**Available Values:** MHz, AF DUAL 1 (LINE-IN), AF DUAL 2 (AM), AF DUAL 3 (FM), PA, SQL OFF, T-CALL, or WiRES

**Default:** AF DUAL 3 (FM)

MHz: Enables tuning of the operating frequency in 1 MHz steps using the **DIAL** knob.

AF DUAL 1 (LINE-IN): Activates the AF Dual function while listening to the Line-In audio.

AF DUAL 2 (AM): Activates the AF Dual function while receiving an AM broadcast station.

AF DUAL 3 (FM): Activates the AF Dual function while receiving an FM broadcast station.

PA: Activates the PA (Public Address) function which sends your voice audio (microphone input) to the transceiver’s speaker.

SQL OFF: Disables the SQL temporarily.

T-CALL: Activates a 1750 Hz burst tone, used for repeater access in many countries (especially in Europe).

WiRES: Recalls the WiRES™ memory.

# MISCELLANEOUS SETTING (SET MODE OPERATION)

## SYSTEM GROUP

### G06: MIC P KEY

**Function:** Selects the function of the microphone's **[P1]/[P2]/[P3]/[P4]** programmable keys.

**Available Values:** OFF, S-LIST, MSG, REPLY, M-EDIT, BAND SCOPE, SCAN, SQL TYPE, DCS CODE, TONE FREQ, RPT SHIFT, REVERSE, TX POWER, SQL OFF, T-CALL, WiRES, VOICE, PR FREQ, or WX

**Default:** P1: SQL OFF, P2: SQL TYPE, P3: PRI SHIFT, P4: TX POWER

OFF: Not active.

S-LIST: Opens the "APRS Station List" window.

MSG: Opens the "APRS Message List" window.

REPLY: Opens the "TX MESSAGE EDIT" window with reply operation.

M-EDIT: Opens the "TX MESSAGE EDIT" window.

BAND SCOPE: Activates the Band Scope.

SCAN: Activates the Scanner.

SQL TYPE: Selects the Squelch type.

DCS CODE: Selects the DCS code.

TONE FREQ: Selects the CTCSS tone frequency.

RPT SHIFT: Selects the repeater shift direction.

REVERSE: Reverses transmit and receive frequencies while working through a repeater.

TX POWER: Selects the desired transmit power output level.

SQL OFF: Disables the SQL temporarily.

T-CALL: Activates a 1750 Hz burst tone, used for repeater access in many countries (especially in Europe).

WiRES: Recalls the WiRESTM memory.

VOICE: Announces the operating frequency of the "Main" band.

PR FREQ: Selects the User Programmed Reverse CTCSS Tone frequency.

WX: Recalls the Weather channel.

### G07: OPERATION MODE

**Function:** Shifting of CPU clock frequency.

**Available Values:** A or B

**Default:** A

This Set Mode item is only used to move a spurious response "birdie", should it fall on a desired frequency.

# **MISCELLANEOUS SETTING (SET MODE OPERATION)**

---

## **SYSTEM GROUP**

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### **G08: RX COVERAGE**

**Function:** Enables or disables band limiting for the VFO frequency selection and memory channel recalling.

**Available Values:** VFO: IN BAND or ALL, MEMORY: IN BAND or ALL

**Default:** VFO: IN BAND, MEMORY: ALL

VFO IN BAND: When the VFO frequency reaches the high band edge of the current band, the VFO frequency will jump to the low band edge of the current band (or vice versa).

VFO ALL: When the VFO frequency reaches the high band edge of the current band, the VFO frequency will jump to the low band edge of the next band (or vice versa).

MEMORY IN BAND: Recalls only the memory channels, which are stored in the same band as the current memory channel.

MEMORY ALL: Recalls all memory channels regardless of the band.

### **G09: TOT**

**Function:** Sets the TOT time. When your transmission time reaches the selected time, the transceiver returns to the RX mode automatically.

**Available Values:** OFF, 5 min, 10 min, 15 min, 20 min, or 30 min

**Default:** OFF

### **G10: UNIT SELECT**

**Function:** Selects the measurement units of the environment sensor.

**Available Values:** METER or YARD-POUND

**Default:** YARD-POUND

## NAVI GROUP

---

### **H01: ALARM VOLUME**

**Function:** Select the volume level of the alarm when the transceiver arrives at its destination.

**Available Values:** OFF, LOW, or HIGH

**Default:** LOW

### **H02: DESTINATION AREA**

**Function:** Select the threshold range of the destination.

**Available Values:** 0.05 mile, 0.1 mile, 0.2 mile, 0.3 mile, 0.5 mile, 1.0 mile, or 2.0 mile

**Default:** 0.1 mile

### **H03: NAVI POPUP**

**Function:** Selects the “NAVI” Pop-up function.

**Available Values:** OFF, 1 sec ~ 30 sec, or CONTINUOUS

**Default:** 10 sec

# **MISCELLANEOUS SETTING (SET MODE OPERATION)**

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## **TIMER/CLOCK GROUP**

---

### **I01: DATE&TIME ADJUST**

**Function:** Sets the clock time.

1. Press the *left side* [DIAL] knob to enable adjustment of this item.
2. Enter your local time using the 24-hour system. Use the [←] / [→] key to navigate to each column, then rotate the *left side* [DIAL] knob to select the desired numbers in each column.
3. Press the *left side* [DIAL] knob again to save the new setting.

### **I02: DATE&TIME FORMAT**

**Function:** Selects the display format for date and time.

**Available Values:** DATE: yyyy/mm/dd, yyyy/dd/mm, mm/dd/yyyy, or dd/mm/yyyy

TIME: 12 hour or 24hour

**Default:** DATE: mm/dd/yyyy, TIME: 24hour

### **I03: TIME SIGNAL**

**Function:** Enables/Disables the Timer Signal “on” and “off”.

**Available Values:** OFF or ON

**Default:** OFF

### **I04: TIME ZONE**

**Function:** Sets the time offset between local time and UTC.

**Available Values:** UTC-14:00 ~ UTC+14:00 (0.5H/step)

**Default:** UTC±0:00 LONDON

# MISCELLANEOUS SETTING (SET MODE OPERATION)

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## SIGNALING GROUP

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### **J01: BELL RINGER**

**Function:** Enables/Disables the Bell ringer function and selects Bell ringer repetitions.

**Available Values:** OFF, 1 time, 3 times, 5 times, 8 times, or CONTINUOUS

**Default:** OFF

When this item is enabled, the transceiver emits a “bell” sound when a signal is received that contains a CTCSS tone, DCS code or CTCSS tone pair that matches the setting of the decoder.

### **J02: DTMF MEMORY**

**Function:** Programs the DTMF string used in the DTMF autodialer and FRG DTMF commands for the WiRES system. There are nine memories available.

1. Rotate the *left side* [DIAL] knob to select the DTMF memory register (1 - 9) into which you wish to store.
2. Press the *left side* [DIAL] knob briefly.
3. Rotate the *left side* [DIAL] knob, or press one of the microphone’s keypad buttons, to select the first digit of the DTMF string.
4. When you have selected the first digit of the DTMF string using the *left side* DIAL knob, press the [→] key to move to the next digit.
5. Repeat steps 3 and 4 to program the remainder of the DTMF string.
6. You may backspace the cursor by pressing the [←] key.
7. Press the [CLR] key to clear any previously stored data, if desired.
8. Press the [ENT] key to save the setting.

### **J03: DTMF MODE**

**Function:** Enables/Disables the DTMF autodialer feature. See page 22 for details.

### **J04: PAGER CODE**

**Function:** Sets the Pager Code for Enhanced CTCSS Paging & Code Squelch. See page 15 for details.

# MISCELLANEOUS SETTING (SET MODE OPERATION)

---

## SIGNALING GROUP

---

### **J05: SQL EXPANSION**

**Function:** Enables/Disables the split CTCSS/DCS coding.

**Available Values:** OFF or ON

**Default:** OFF

When this item is set to “ON”, the following parameters are added to the squelch selections available when pressing the [TYPE] key in the SQL category buttons

DCS ENC: DCS Encoder only. “**DC**” icon will appear while operating.

TONE DCS: Encodes a CTCSS tone and decodes a DCS code.

“**T-D**” icon will appear while operating.

DCS TSQ: Encodes a DCS code and decodes a CTCSS tone.

“**D-T**” icon will appear while operating.

### **J06: WiRES**

**Function:** Enables/Disables the Internet Connection feature (WiRES™) and its operating mode selection.

**Available Values:** OFF, FRG, or SRG

**Default:** OFF

### **J07: WiRES MEMORY**

**Function:** Selects the access number (DTMF digit) for SRG operation of the Internet Connection feature (WiRES™).

**Available Values:** CODE 0 ~ CODE 9, CODE A ~ CODE D, CODE \*, or CODE #

**Default:** CODE 1

# MISCELLANEOUS SETTING (SET MODE OPERATION)

## OPTION GROUP

### K01 BLUETOOTH

**Function:** Sets up the optional **BU-1 Bluetooth® Unit**.

**Available Values:** 1 AUDIO: MANUAL or AUTO

2 MODE: MONAURAL or STEREO

3 SAVE: OFF or ON

4 VOX: OFF, PTT, VOX HIGH, or VOX LOW

**Default:** 1 AUDIO: AUTO, 2 MODE: MONAURAL, 3 SAVE: ON, 4 VOX: PTT

**AUDIO MANUAL:** The transceiver's internal/external speaker function follows the setting of Set Mode item "A03 SPEAKER" in the "AUDIO" group, even if the **Bluetooth® Headset** is correctly recognized

**AUDIO AUTO:** When the **Bluetooth® Headset** is correctly recognized, the transceiver's internal and external speakers are disabled.

**MODE MONAURAL:** Outputs monaural receive audio while listening to the FM Broadcast band, if you use the **BH-2A Bluetooth® Headset**.

**MODE STEREO:** Outputs stereo receive audio while listening to the FM Broadcast band.

Note: When this mode is selected, the VOX function does not work even if the VOX function is selected in item 4 above, if you use the **BH-2A Bluetooth® Headset**. The TX/RX switching is performed by pressing the PTT switch.

**SAVE OFF:** Disable the Battery Saver in the **Bluetooth® Headset**.

**SAVE ON:** Activates the Battery Saver in the **Bluetooth® Headset**.

**VOX OFF:** Disable the TX/RX switching circuit of the **Bluetooth® Headset**.

**VOX PTT:** Activates the **Bluetooth® Headset** for use with the PTT circuit.

**VOX VOX HIGH:** Activates the **Bluetooth® Headset** with the VOX feature (VOX Gain: High).

**VOX VOX LOW:** Activates the **Bluetooth® Headset** with the VOX feature (VOX Gain: Low).

# MISCELLANEOUS SETTING (SET MODE OPERATION)

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## OPTION GROUP

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### **K02 FPR-1**

**Function:** Sets up the optional **FPR-1** Monitor Unit.

**Available Values:** 1 BATT SAVE: OFF, MIN, MID, or MAX

2 SQL LEVEL: OFF, MIN, 2 ~ 7, or MAX

**Default:** 1 BATT SAVE: MIN, 2 SQL LEVEL: 2

### **K03 VOICE**

**Function:** Sets up the optional **FVS-2** Voice Guide Unit.

**Available Values:** 1 PLAY/REC: FREE 5min or LAST 30sec

2 ANNOUNCE: OFF, MANUAL, or AUTO

3 LANGUAGE: JAPANESE or ENGLISH

4 VOLUME: LOW, MID, or HIGH

**Default:** 1 PLAY/REC: FREE 5min, 2 ANNOUNCE: AUTO, 3 LANGUAGE: ENGLISH,

4 VOLUME: MID

PLAY/REC “FREE 5min”: Records up to the eight receive audio segments, of variable length (capable of storing up to five minutes total).

PLAY/REC “LAST 30sec”: Records the last 30 seconds of incoming signal.

ANNOUNCE “OFF”: Disables the Voice Guide feature (Audio Playback feature only).

ANNOUNCE “MANUAL”: Announces the operating frequency of the “Main” band when the **[ENT]** key is pressed.

ANNOUNCE “AUTO”: Announces the operating frequency of the “Main” band when the operating band is changed.

The **FTM-350** Series Transceiver includes a convenient “Clone” feature, which allows the memory and configuration data from one transceiver to be transferred to another **FTM-350** Series Transceiver. This can be particularly useful when configuring a number of transceivers for a public service operation. Here is the procedure for Cloning one radio’s data to another:

1. Turn both radios “off”.
2. Connect the optional **CT-135** Clone Cable between the **DATA** jacks of the two radios.
3. Turn the radio on while pressing and holding the key which is located to the left of the **[POWER]** switch to enter the “Special Function” mode. Do this for both radios (the order of switch-on does not matter).
4. On the “Destination” radio, rotate the *left side* **[DIAL]** knob to select function menu item “**1 CLONE RX**”, then press the *left side* **[DIAL]** knob *twice*.
5. On the “Source” radio, rotate the *left side* **[DIAL]** knob to select function menu item “**2 CLONE TX**”, then press the *left side* **[DIAL]** knob. The data from this radio will be transferred to the other radio.
6. If there is a problem during the cloning process, “**ERROR**” will be displayed. Check your cable connections and battery voltage, and try again.
7. If the data transfer is successful, the “Destination” radio displays “**RECEIVED....**” then turns “off” automatically and turns “on” again.
8. Press the **[DIAL]** key of the “Source” radio. The “Source” radio will now automatically turn “off” and turn back “on” again.
9. Turn both radios “off” and disconnect the Clone Cable.

*Can not perform the cloning operation between the FTM-350AR and FTM-350AE.*

# INSTALLATION

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This chapter describes the installation procedure for integrating the transceiver into a typical amateur radio station. It is presumed that you possess technical knowledge and conceptual understanding consistent with your status as a licensed radio amateur. Please take some extra time to make certain that the important safety and technical requirements detailed in this chapter are followed closely.

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## PRELIMINARY INSPECTION

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Inspect the transceiver visually immediately upon opening the packing carton. Confirm that all controls and switches work freely, and inspect the cabinet for any damage. Gently shake the transceiver to verify that no internal components have been shaken loose due to rough handling during shipping.

If any evidence of damage is discovered, document it thoroughly and contact the shipping company (or your local dealer, if the unit was purchased over-the-counter) so as to get instructions regarding the prompt resolution of the damage situation. Be certain to save the shipping carton, especially if there are any punctures or other evidence of damage incurred during shipping. If it is necessary to return the unit for service or replacement, use the original packing materials. Then put the entire package inside another packing carton to preserve the evidence of shipping damage for insurance purposes.

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## INSTALLATION TIPS

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To ensure long life of the components, be certain to provide adequate ventilation around the cabinet of the transceiver.

Do not install the transceiver on top of another heat-generating device (such as a power supply or amplifier) and in a location exposed to dust and/or high humidity. Avoid heating vents and window locations that could expose the transceiver to excessive direct sunlight, especially in hot climates. This transceiver should not be used in an environment where the ambient temperature exceeds +140 °F (+60 °C).

## SAFETY INFORMATION

This transceiver is an electrical apparatus, as well as a generator of High RF (Radio Frequency) energy. You should exercise all safety precautions that are appropriate for this type of device. These safety tips apply to any device installed in a well-designed amateur radio station.

-  Never allow unsupervised children to play in the vicinity of your transceiver or antenna installation.
  -  Be certain to wrap any wire or cable splices thoroughly with insulating electrical tape, to prevent short circuits.
  -  Do not route cables or wires through doorjambs or other locations where they may become frayed and shorted to ground or to each other.
  -  Do not stand in front of a directional antenna while you are transmitting into that antenna.
  -  Do not install a directional antenna in any location where humans or pets may walk in the main directional lobe of the antenna's radiation pattern.
  -  In mobile installations, it is preferable to mount the antenna on top of the vehicle, if feasible, this will utilize the car body as a counterpoise and raise the radiation pattern as far away from passengers as possible.
  -  During mobile operation when stopped (in a parking lot, for example), make it a practice to switch to Low power if there are people walking nearby.
  -  Never wear dual-earmuff headphones while driving a vehicle.
  -  Do not attempt to drive your vehicle while making a telephone or auto patch call while using the optional DTMF microphone. Pull over to the side of the road, whether dialing manually or using the auto-dial feature.
  -  Do not connect the modular connector of the telephone line to MIC jack.
-  **Warning!**: High RF voltage is present in the TX RF section of the transceiver while transmitting. Do not touch the TX RF section while transmitting.

# **SPECIAL FUNCTION MENU**

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Static electricity may occasionally cause erratic or unpredictable operation of the microprocessor. If this happens, resetting of the microprocessor may restore normal operation. Note that resetting the microprocessor will erase all memories.

1. Turn the radio “off”.
2. Turn the radio on while pressing and holding the key which is located to the left of the **[POWER]** switch to enter the “Special Function” mode.
3. Rotate the *left side* **[DIAL]** knob to select one of the following items:  
**1 CLONE RX:** Uses this item for transceiver cloning. See the next page for details.  
**2 CLONE TX:** Uses this item for transceiver cloning. See the next page for details.  
**3 L-MEMORY SORT:** Sorts and renames the memory channels of the left side memory bank by frequency, from low to high. See page 10 for details.  
**4 R-MEMORY SORT:** Sorts and renames the memory channels of the right side memory bank by frequency, from low to high. See page 10 for details.  
**5 SYSTEM RESET:** Resets the Set Mode item settings (except “APRS/PKT” group) to their factory defaults.  
**6 ALL RESET:** Clears all memories and other settings to factory defaults.  
**7 APRS RESET:** Resets only the Set Mode item setting of the “APRS/PKT” group to their factory defaults.  
**8 BAND SCOPE:** Switches the Band Scope operation to the Enhanced Mode. See page 13 for details.  
**9 B-T PAIRING:** Set up the **Bluetooth®** device. See page 18 for details.  
**10 GPS DATUM:** Select the GPS datum to be used.  
**11 XBAND REPEATER:** Activates Cross Band Repeater operation. Set the right band to a 144 MHz frequency and the left band to a 430MHz frequency (or vice versa) before beginning this procedure.
4. Once you have made your selection in step 3, press the *left side* **[DIAL]** knob and confirm that **(OK? [SET])** is displayed on the LCD. Press the *left side* **[DIAL]** knob once more to complete the reset procedure. (To cancel the reset procedure, press the **[ESC]** key before pressing the *left side* **[DIAL]** knob.)

# ACCESSORIES & OPTIONS

## SUPPLIED ACCESSORIES

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DTMF Microphone ( <b>MH-48A6JA</b> ) .....	1
Mobile Mounting Bracket for Front Panel ( <b>MMB-98</b> ) .....	1
Mobile Mounting Bracket for Rear Chassis ( <b>MMB-36</b> ) .....	1
DC Power Cord W/Fuse .....	1
Control Cable (3 m) .....	1
Speaker Cable .....	1
Spare Fuse (15 A, 32 V) .....	1
FTM-350 Series Operating Manual .....	1
FTM-350 Series APRS Manual .....	1
Connection and Setting Manual .....	1
Warranty Card .....	1

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## OPTIONAL ACCESSORIES

DTMF Microphone	<b>MH-48A6JA</b>
Hand Microphone	<b>MH-42C6J</b>
Control Cable (6m)	<b>CT-132</b>
<b>Bluetooth®</b> Headset (Monaural)	<b>BH-1A</b>
<b>Bluetooth®</b> Headset (Stereo)	<b>BH-2A</b>
<b>Bluetooth®</b> Unit	<b>BU-1</b>
Charger Sleeve for the <b>BH-1A/BH-2A</b>	<b>CAB-1</b>
Earphone for <b>BH-1A</b>	<b>FEP-4</b>
High-Power External Speaker	<b>MLS-200-M10</b>
AC Power Supply (25 A: USA only)	<b>FP-1025A</b>
AC Power Supply (30 A)	<b>FP-1030A</b>
GPS Extension Cable (3 m)	<b>CT-133</b>
Voice Guide Unit	<b>FVS-2</b>
Monitor Unit	<b>FPR-1</b>
Internal GPS Receiver Unit	<b>FGPS-1</b>
External GPS Receiver Unit	<b>FGPS-2</b>
Mobile Mounting Bracket for Front Panel	<b>MMB-98</b>
Mobile Mounting Bracket for Rear Chassis	<b>MMB-36</b>
External GPS Adapter	<b>CT-136</b>
Clone Cable	<b>CT-135</b>
Packet Cable (DIN 8-pin ↔ Din 6-pin + Dsub 9-pin)	<b>CT-140</b>
Packet Cable (DIN 8-pin ↔ Din 6-pin)	<b>CT-141</b>
Packet Cable (DIN 8-pin ↔ Dsub 9-pin)	<b>CT-142</b>

# SPECIFICATIONS

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## General

<b>Frequency Ranges:</b>	RX: 0.5-1.8 MHz (AM Radio) 76-108 MHz (FM Radio) 108-137 MHz (Air Band) 137-174 MHz (144 MHz HAM Band) 174-250 MHz (VHF TV Band) 300-420 MHz (General 1) 420-470 MHz (430 MHz HAM Band) 470-800 MHz (UHF TV Band) 800-1000 MHz (General 2: USA Cellular Blocked)
<b>TX:</b>	144-146(148) MHz (Ham Band) 222-225 MHz (USA version only) 430-440(450) MHz (Ham Band)
<b>Channel Steps:</b>	5, 6.25, 8.33, (9), 10, 12.5, 15, 20, 25, 50, 100, 200 kHz (9): AM Radio Only
<b>Frequency Stability:</b>	±5ppm (+14 °F to +140 °F [-10 °C to +60 °C])
<b>Repeater Shift:</b>	±600 kHz (144 MHz) ±1.6 / 5.0 / 7.6 MHz (430 MHz)
<b>Emission Type:</b>	F1, F2, F3
<b>Antenna Impedance:</b>	50 Ω
<b>Supply Voltage:</b>	Nominal: 13.8 V DC, Negative Ground Operating: 11.7 - 15.8 V, Negative Ground
<b>Current Consumption:</b>	0.5 A (Receive) 10 A (TX, 144 MHz 50W) 12 A (TX, 430 MHz 50W)
<b>Operating Temperature:</b>	-4 °F to +140 °F (-20 °C to +60 °C)
<b>Case Size (WxHxD):</b>	Panel: 6.2" x 2.6" x 1.3" (157 x 66 x 33.5 mm) w/o knob & connectors Rear Chassis: 5.5" x 1.8" x 5.9" (140 x 46 x 150 mm) w/o connectors
<b>Weight (Approx.)</b>	4.6 lbs (2.1 kg) Panel + Rear Chassis + Connection Cable

*Specifications are subject to change without notice, and are guaranteed within the 144/222/430 MHz amateur bands only.*

*Cellular Blocked per FCC rule Part 15.121, may not receive 900 MHz Amateur band.*

## SPECIFICATIONS

## Transmitter

<b>RF Power Output:</b>	50 / 20 / 5 W
<b>Modulation Type:</b>	Variable Reactance F1, F2, F3
<b>Maximum Deviation:</b>	±5 kHz
<b>Spurious Emission:</b>	At least 60 dB below (USA/EXP version) -36dBm ≤ 1 GHz, -30dBm > 1 GHz (European version)
<b>Microphone Impedance:</b>	2 kΩ

## Receiver

<b>Sensitivity:</b>	5 $\mu$ V TYP for 10 dB SN (0.5-1.7 MHz, AM) 2 $\mu$ V TYP for 12 dB SINAD (76-108 MHz, WFM) 0.8 $\mu$ V TYP for 10 dB SN (108-137 MHz, AM) 0.2 $\mu$ V for 12 dB SINAD (137-140 MHz, FM) 0.2 $\mu$ V for 12 dB SINAD (140-150 MHz, FM) EXP 0.25 $\mu$ V for 12 dB SINAD (150-174 MHz, FM) 1 $\mu$ V TYP for 12 dB SINAD (174-222 MHz, WFM) 0.8 $\mu$ V TYP for 10 dB SN (300-336 MHz, AM) 0.25 $\mu$ V TYP for 12 dB SINAD (336-420 MHz, FM) 0.2 $\mu$ V for 12 dB SINAD (420-470 MHz, FM) EXP 5 $\mu$ V TYP for 12 dB SINAD (470-540 MHz, WFM) 5 $\mu$ V TYP for 12 dB SINAD (540-800 MHz, WFM) 0.4 $\mu$ V TYP for 12 dB SINAD (800 -900 MHz, FM) 0.8 $\mu$ V TYP for 12 dB SINAD (900 -999.99 MHz, FM)
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<b>Squelch Sensitivity:</b>	0.16 $\mu$ V (144 / 430 MHz Band)
<b>Selectivity (NFM, AM):</b>	12 kHz / 30 kHz (-6 dB / -60 dB)
<b>AF Output:</b>	8 W @ 4 $\Omega$ for 10 % THD (@ 13.8 V) BTL EXP SP 4 W @ 4 $\Omega$ for 10 % THD (@ 13.8 V) Normal EXP SP
<b>AF Output Impedance:</b>	4-16 $\Omega$

# FCC NOTICE

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1. Changes or modifications to this device not expressly approved by VERTEX STANDARD could void the user's authorization to operate this device.
2. 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 including received, interference that may cause undesired operation.
3. The scanning receiver in this equipment is incapable of tuning, or readily being altered, by the User to operate within the frequency bands allocated to the Domestic public Cellular Telecommunications Service in Part 22.

Part 15.21: Changes or modifications to this device not expressly approved by Vertex Standard could void the user's authorization to operate this device.

## DECLARATION BY MANUFACTURER

The Scanner receiver is not a digital scanner and is incapable of being converted or modified to a digital scanner receiver by any user.

**WARNING:** MODIFICATION OF THIS DEVICE TO RECEIVE CELLULAR RADIOTELEPHONE SERVICE SIGNALS IS PROHIBITED UNDER FCC RULES AND FEDERAL LAW.





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