APPENDIX G:

INSTRUCTION MANUAL

Please see following pages

Front Panel Controls, Switches

1. **VOL - SQL** ("main" band) Controls

   The inner **VOL** control adjusts the speaker audio level from the "main" (*upper* side) band (default: VHF) receiver. Clockwise rotation increases the audio level.

   The outer **SQL** control is used to silence background noise on the "main" band receiver. It should advanced clockwise just to the point where the noise silenced (and the green "main" **BUSY/TX** Indicator turns off), so as to provide the best sensitivity to weal signals.

2. **VOL - SQL** ("sub" band) Controls

   The inner **VOL** control adjusts the speaker audio level from the "sub" (*lower* side) band (default: UHF) receiver. Clockwise rotation increases the audio level.

   The outer **SQL** control is used to silence background noise on the "sub" band receiver. It should advanced clockwise just to the point where the noise silenced (and the green "sub" **BUSY** Indicator turns off), so as to provide the best sensitivity to weal signals.

3. **BUSY/TX** Indicator ("main" band)

   This dual-color LED glows Green when a signal is being received on the "main" (*upper* side) band channel. This LED glows Red when you are transmitting.

4. **BUSY** Indicator ("sub" band)

   This LED glows Green when a signal is being received on the "sub" (*lower* side) band channel.

5. Command Keys

   These four keys select many of the most important operating features on the FT-7100M.

   1. **BAND** Key

      Pressing this key switches "main" band control between the VHF band and UHF band.

      Press and hold this key for 1/2 second to activate the "Menu" mode.

   2. **V/MR** Key

      Pressing this key switches frequency control on the "main" band between the VFO and Memory System.

      Press and hold this key for 1/2 second to activate Memory write mode.

3. **HOME** Key

   Pressing this key recalls a favorite "Home" frequency memory.

   Press and hold this key for 1/2 second to activate the VHF-VHF or UHF-UHF operation, as opposed to "normal" VHF-UHF operation.

4. **MHz** Key

   When this key is pressed in momentarily during *VFO and Memory Tune mode*, the **Main Dial** knob tunes in 1 MHz steps, and if pressed and held for 1/2 second, the **Main Dial** knob tunes in 10 MHz steps, thus allowing quick frequency change.

   When this key is pressed in momentarily during *Memory mode*, activates the Memory Tune feature.

6. **Main Dial** Knob

This 24-position detended rotary switch is the main tuning dial for the transceiver. It used for most tuning, memory selection, and function setting tasks on the FT-7100M.

7. Function Keys

These four keys operate in a manner similar to the Command Keys just described.

1. **POWER** Key

   This is main On/Off switch for the FT-7100M.

   Press this key momentarily to turn the transceiver on. Press and hold this key for 1/2 second to turn off the transceiver.

2. **REV** Key

   Pressing this key reverse the transmit and receive frequencies when a repeater split is programmed.

3. **LOW** Key

   Pressing this key repeatedly allows selection of the transmit power. The selections available are:

   LOW (5 W) → MID2 (10 W) → MID1 (20 W)→ HIGH (35 W: UHF, 50 W: VHF)→ LOW ……

4. **TONE** Key

   Pressing this key repeatedly allows selection and its setting of the CTCSS and DCS operations.

   The selections available are:

   ENC → ENC/DEC (TONE SQL) → DCS → ENC ……

Rotating the Main Dial knob select CTCSS frequency or DCS code.

8. LCD (Liquid Crystal Display)
   The display consists of segmented digits for frequency readout and various icons representing enabled transceiver features, as well as for viewing menu programming and alphanumeric names.

Rear Panel Connections

1. **13.8 V DC** Cable Pigtail w/Fuse
   This is the DC power supply connections for the transceiver. Use the supplied DC cable to connect this pigtail to the car battery or base station DC power supply capable of at least 15 Amperes (continuous duty). Make certain that the RED lead connects to the Positive side of the power source, and BLACK lead connects to the Negative side of the power source.

2. **ANT** Jack
   Connect a dual-band antenna's 50 Ω cable to this M-type (SO-239) coaxial connector. European versions are equipped with a Type-N connector. Be certain to use the proper type of plug for connection of the coaxial cable.

3. **DATA** Jack
   This 6-pin mini-DIN connector provides simple interfacing to a packet Terminal Node Controller (TNC) for 1200 bps or 9600 bps operation.

4. **EXT SP** Jack
   This 2-conductor, 3.5-mm mini phone jack provide audio output for an optional speaker (impedance is 4 ~ 16 Ω). Inserting a plug into this jack disables audio from the internal speaker.

MH-48$_{A6J}$ Microphone

1. **PTT** Switch
   Press this switch to transmit, and release it to receive.

2. **ACC** Button
   Pressing this button switches "main" band control between the VHF band and UHF

band.

Press and hold this button for 1/2 second to activate the "Menu" mode.

3. **P/P1/P2** Buttons

   The **P** button replicates the functions of the transceiver **V/M** key.

   The **P1** button replicates the functions of the transceiver **TONE** key.

   The **P2** button replicates the functions of the transceiver **LOW** key.

   You can reprogram the **P**, **P1**, and **P2**, buttons for other functions, if desired.

4. **LOCK** Switch

   This switch locks out the **MH-48$_{A6J}$** controls and buttons.

5. **UP/DWN** Button

   Press or held in either of these buttons to tune or scan up or down the band or through the memory channels. In many way, these buttons emulate the function of the (rotary) **Main Dial** knob.

6. Keypad

   These 16 keys generate DTMF tones during transmission.

   In the receive mode, these 16 keys can be used for direct frequency entry and/or direct numeric recall of the Memory channels.

MH-42$_{B6JS}$

The **MH-42$_{B6JS}$** is similar to the **MH-48$_{A6J}$**, but the **MH-42$_{B6JS}$** does not include a DTMF keypad.

Basic Operation/Reception

Turning the Power On/Off

Press the **PWR** switch momentarily to turn the radio on.

To turn the radio off, press and hold in the **PWR** switch for 1/2 second.

Adjusting the Volume and Squelch

Volume and Squelch are set independently for the "main" and "sub" bands of the transceiver.

The *upper* **VOL** and **SQL** controls provide adjustment for the *upper* side (MAIN Band) of

the FT-7100, while the *lower* **VOL** and **SQL** controls provide adjustment for the *Lower* side (SUB Band).

Advance the setting of the appropriate **VOL** control for a comfortable listening level on the back-ground noise or signals present on the band of interest.

When no signal is present, advance the **SQL** control of each band just to the point where the background noise is just silenced. The Green **BUSY** indicator for the current band will disappear when the background noise is silenced.

Do not advance the setting of the **SQL** control too far, as you will only be able to hear very strong local signals if the squelch is set too "tight." Leaving the squelch just past the threshold of noise silencing results in the best sensitivity.

RF Squelch

A special ***RF Squelch*** feature is provided on the FT-7100M. This feature allows you to set the squelch so that only signals exceeding a certain S-meter level will open the squelch. To set up the RF Squelch circuit for operation, use the following procedure:

1. Press and hold the **BAND** key for 1/2 second to activate the "Menu" mode.
2. Rotate the **Main Dial** knob to select the Menu # 24 (**RF SQL**).
3. Press the **BAND** key momentarily to enable changing of this Menu item.
4. Rotate the **Main Dial** knob to select the desired signal strength level for the squelch threshold (**S-1**, **S-5**, **S-9**, or **S-FULL**). The default setting is **OFF**.
5. Press and hold the **BAND** key for 1/2 second to save the new setting and exit to normal operation.
6. Finally, rotate the **SQL** control to the 3-o'clock position.

This adjustment can be set independently for each band.

Frequency Display and Band Change

If the transceiver has not been used before, the display will look something like this:

<<Illustration>>

We call the *upper* frequency the "main" band, and the *lower* frequency the "sub" band. Transmission is possible only on the "main" band, but you can select both bands to receive different frequencies *on the same band* (V-V or U-U operation; describe later).

To change the "main" band between VHF and UHF, simply press the **BAND** key momentarily (default; "main" band is VHF, "sub" band is UHF).

Main Dial Tuning

This mode is used for choosing a frequency within the "main" band.

In the VFO mode, the **Main Dial** knob and microphone **UP/DWN** button allows the Variable Frequency Oscillator (VFO) to tune in the selected step size. When scanning in the VFO mode, the same step sizes are used as in manual tuning.

To select the 1 MHz range in which you wish to operate, press the **MHz** key momentarily, then rotate the **Main Dial** knob. All the "MHz" digits of the frequency display will blink while "1 MHz Tuning" is enabled. Press the **MHz** key again (momentarily), then rotate the **Main Dial** knob to tune around the "main" band in the normal synthesizer step.

To select the 10 MHz range in which you wish to operate, Press and hold the **MHz** key for 1/2 second, then rotate the **Main Dial** knob. The 10 MHz and 100 MHz digits of the frequency display will blink while "10 MHz Tuning" is enabled. Press and hold the **MHz** key again (for more than 1/2 second), then rotate the **Main Dial** knob to tune around the "main" band in the normal synthesizer step.

Direct Keypad Frequency Entry (requires **MH-48$_{A6J}$**)

The desired operating frequency may be entered directly from the microphone's keypad. To enter a frequency from the keypad, just press the numbered digits on the keypad in the proper sequence. To round all digits to the right of the current digit to "0," press the [**#**] key.

Example:

To enter 146.520 MHz, press [**1**] → [**4**] → [**6**] → [**5**] → [**2**] → [**0**].

To enter 433.000 MHz, press [**4**] → [**3**] → [**3**] → [**#**].

Channel Step Selection

Tuning steps are factory preset to default increments which are appropriate for the country to which this radio is exported. Different steps may be present for VHF and UHF, as well, if appropriate for your area. For example, on the U.S. version, the default steps for VHF are 5 kHz, while on UHF the default steps are 25 kHz.

To change to another step size, use the following procedure:

1. Press and hold the **BAND** key for 1/2 second to activate the "Menu" mode.
2. Rotate the **Main Dial** knob to select the Menu # 27 (**STEP**).
3. Press the **BAND** key momentarily to enable changing of this Menu item.
4. Rotate the **Main Dial** knob to select a desired step size. The available steps are **5.0/10.0/12.5/15.0/20.0/25.0/50.0** (kHz/step).
5. Press and hold the **BAND** key for 1/2 second to save the new setting and exit to normal operation.

The step size can be set independently for each band.

VFO Tracking

The "main" and "sub" VFOs may be "slaved" together, so that rotation of the **Main Dial** knob (or stepping of the microphone **UP/DWN** buttons) causes *both* VFOs to move in tandem. Each VFO will increment in the step sizes that have been established by you previously, i.e. one step on VHF might be 5 kHz and one step on UHF might be 25 kHz, and VFOs will advance by those increments during VFO Tracking operation.

To activate VFO tracking, use the following procedure:

1. Press and hold the **BAND** key for 1/2 second to activate the "Menu" mode.
2. Rotate the **Main Dial** knob to select the Menu # 33 (**VFOTR**).
3. Press the **BAND** key momentarily to enable changing of this Menu item.
4. Rotate the **Main Dial** knob to select "**ON**."
5. Press and hold the **BAND** key for 1/2 second to save the new setting and exit to normal operation.

To disable the VFO tracking, select "**OFF**" in step 4 above.

Receiver Muting

The Mute feature is useful in situations where reduce the audio level of the "sub" receiver while receiving the signal on the "main" band.

To activate the Mute feature:

1. Press and hold the **BAND** key for 1/2 second to activate the "Menu" mode.
2. Rotate the **Main Dial** knob to select the Menu # 17 (**MUTE**).
3. Press the **BAND** key momentarily to enable changing of this Menu item.
4. Rotate the **Main Dial** knob to select "**ON**."
5. Press and hold the **BAND** key for 1/2 second to save the new setting and exit to normal operation.

To disable the Mute feature, select "**OFF**" in step 4 above.

The Tx-Mute feature may also be used to reduce the audio level of the "sub" receiver whenever you transmit on the "main" band. This will help reduce feed through of UHF audio, for example, while talking on a VHF repeater.

To activate the Tx-Mute feature:

1. Press and hold the **BAND** key for 1/2 second to activate the "Menu" mode.
2. Rotate the **Main Dial** knob to select the Menu # 18 (**MUTET**).
3. Press the **BAND** key momentarily to enable changing of this Menu item.
4. Rotate the **Main Dial** knob to select "**ON**."

5. Press and hold the **BAND** key for 1/2 second to save the new setting and exit to normal operation.

To disable the Tx-Mute feature, select "**OFF**" in step 4 above.

VHF-VHF (V-V) or UHF-UHF (U-U) Operation

The **FT-7100M** typically operate the VHF and UHF frequency. However, the **FT-7100M** is possible to operate either in a V-V or U-U mode, if needed. Operation in either of these modes is easily enabled:

- ❒ The "main" band is VHF, press and hold the **HOME** key for 1/2 second. The transceiver will now display replicate its VHF frequency on both *upper* and *lower* channels, and will be operating in the "V-V" mode.
- ❒ The "main" band is UHF, press and hold the **HOME** key for 1/2 second. The transceiver will now display replicate its UHF frequency on both *upper* and *lower* channels, and will be operating in the "U-U" mode.
- ❒ To return to "normal" VHF-UHF operation, press and holding the **HOME** key for 1/2 second. The original VFO or Memory frequency for the "sub" band will be restored.

During V-V or U-U operation, receive sensitivity and intermodulation rejection of the "sub" receiver will be degraded slightly. However, this usually will not be noticeable except during operation in highly RF congested areas.

Lock Feature

The Lock function prevents accidental changes to the frequency setting and the key/button controls.

1. Press and hold the **BAND** key for 1/2 second to activate the "Menu" mode.
2. Rotate the **Main Dial** knob to select the Menu # 15 (**LOCK**).
3. Press the **BAND** key momentarily to enable changing of this Menu item.
4. Rotate the **Main Dial** knob one click to change the display to "**ON**."
5. Press and hold the **BAND** key for 1/2 second to save the new setting and exit to normal operation.

To unlock the key/button, select "**OFF**" in step 4 above.

Keypad Beeper

A key/button beeper provides useful audible feedback whenever a key/button is pressed. If you want to turn the beeper off (or back again):

1. Press and hold the **BAND** key for 1/2 second to activate the "Menu" mode.
2. Rotate the **Main Dial** knob to select the Menu # 4 (**BEEP**).

3. Press the **BAND** key momentarily to enable changing of this Menu item.
4. Rotate the **Main Dial** knob to select "**OFF**."
5. Press and hold the **BAND** key for 1/2 second to save the new setting and exit to normal operation.

Display Brightness

The orange display illumination has been specially engineered to provide high visibility over a wide range of ambient lighting situations.

The brightness of the display is manually adjustable, using the following procedure:

1. Press and hold the **BAND** key for 1/2 second to activate the "Menu" mode.
2. Rotate the **Main Dial** knob to select the Menu # 7 (**DIM**).
3. Press the **BAND** key momentarily to enable changing of this Menu item.
4. Rotate the **Main Dial** knob to select a comfortable brightness level (**DIM 1** ~ **DIM 7**, or **OFF**).
5. Press and hold the **BAND** key for 1/2 second to save the new setting and exit to normal operation.

Transmission

To transmit, simply close the **PTT** (**P**ush **T**o **T**alk) switch on the microphone when the frequency is clear. Hold the microphone approximately 25 mm (1") from your mouth, and speak into the microphone in a normal voice level. When your transmission is complete, release the **PTT** switch; the transceiver will revert to the receive mode.

During transmission, the "main" band **BUSY/TX** indicator changes from Green to Red, and the S&PO meter segments rise up according to the power output selected.

Power Output Setting

Four power output levels are available on this transceiver: 5 watts (LOW), 10 watts (MID 2), 20 watts (MID 1) and 50 watts (VHF) or 35 watts (UHF) on HIGH.

To change the power level, press the **LOW** key. Each time you press the **LOW** key, the new power level will be displayed for a few seconds, then the regular display mode will reappear.

The power level can be set independently for each band. Also, the power level may be stored in a memory register, if desired.

PTT Locking

The **PTT** circuitry may be locked out, so as to prevent unauthorized or otherwise undesired transmission.

To lock out the **PTT** and prevent transmission as following:

1. Press and hold the **BAND** key for 1/2 second to activate the "Menu" mode.
2. Rotate the **Main Dial** knob to select the Menu # 16 (**LOCKT**).
3. Press the **BAND** key momentarily to enable changing of this Menu item.
4. Rotate the **Main Dial** knob to select the desired locking mode:
   BAND A: **PTT** disable on VHF only;
   BAND B: **PTT** disable on UHF only;
   BOTH: **PTT** disable on both the VHF and UHF bands; or
   OFF: **PTT** locking feature is off
5. Press and hold the **BAND** key for 1/2 second to save the new setting and exit to normal operation.

To cancel the **PTT** locking feature, select "**OFF**" in step 4 above.

Repeater Splits

This transceiver offers three methods of setting up split frequency operation on repeaters:

- Automatic Repeater Shift (ARS), providing automatic activation of repeater shifts during designated repeater frequency subbands;
- Independently stored transmit and receive frequencies (typically not corresponding to established repeater frequency shifts); and
- Manual selection of preset repeater shifts.

Automatic Repeater Shift (ARS)

The ARS (Automatic Repeater Shift) feature in the FT-7100M allows easy and convenient repeater operation by automatically activating the repeater shift function whenever you tune a standard repeater sub-band. The ARS function is preset at the factory to conform to the band-plans for the country to which it is exported.

The ARS function is enabled at the factory. To disable it:

1. Press and hold the **BAND** key for 1/2 second to activate the "Menu" mode.
2. Rotate the **Main Dial** knob to select the Menu # 2 (**ARS**).
3. Press the **BAND** key momentarily to enable changing of this Menu item.
4. Rotate the **Main Dial** knob one click to change the display to "**OFF**."
5. Press and hold the **BAND** key for 1/2 second to save the new setting and exit to

normal operation.

To enable the ARS function again, select "**ON**" in step 4 above.

The ARS function can be set independently for each band.

Separate Transmit Frequency Memories

All memory channels can store independent receive and transmit frequencies; to accommodate occasional non-standard offsets with greater frequency resolution than is available using the "standard" shift feature.

Here is the procedure for storing an "odd split" frequency pair into a memory. A full discussion of memory channel storage and recall is found in the "Memory Operation" section.

1. First store the receive (repeater output) frequency. In the VFO mode, turn the transceiver to the desired receive frequency. Now, press and hold the **V/M** key for 1/2 second.
2. Within five seconds of pressing the **V/M** key, use the **Main Dial** knob (or the microphone's **UP**/**DWN** buttons) to select the memory channel number on which you wise to store the frequency pair.
3. Now press and hold the **V/M** key again, to store the receive frequency into the selected memory.
4. Next, store the transmit (repeater input) frequency. Since you are still in the VFO mode, tune the transceiver to the desired transmit frequency.
5. Now, press and hold the **V/M** key for 1/2 second.
6. Within five seconds of pressing the **V/M** key, use the Main Dial knob (or the microphone's **UP**/**DWN** buttons) to select the same memory channel number as used in step 2 above.
7. Press and hold the **PTT** switch, then press and hold the **V/M** key for 1/2 second while holding the **PTT** switch. This will not cause transmission, but rather it will instruct the transceiver that you are programming a separate transmit frequency into a memory.

When an "odd split" memory is recalled, when you press the PTT switch you will observe the display changing to indicate the repeater's uplink frequency. Note also that the display shows "–+" icon on the display; this indicates that an "odd" (non-standard) shift has been stored on this channel.

Standard Repeater Shifts

If you assign the RPTR () feature to the any of

To activate the repeater shift, just press the programmable key.

1750 Hz Tone Calling (European Versions)

In the European versions of the **FT-7100M**, press the **P1** key on the microphone to transmit a 1750 Hz Burst Tone for repeater access.

If you own a non-European version of the **FT-7100M**, but plan on visiting a country which requires a 1750 tone for repeater access, you may use menu #20 to set up the **P1** key for 1750 Hz Tone operation. See page ?? for details.

Tone Squelch System

These systems allows silently monitoring until a call directed to you is received, and offer privacy on an otherwise busy channel.

- ❒ CTCSS (Continuous Tone Coded Squelch System): This system superimposes a continuous, subaudible (low-frequency) tone on your transmitted audio. When decoded at the other station, this allows their squelch to open so as to receive your transmission. Some "closed" repeaters use this to limit access, or to prevent signals intended for other repeaters (with the same input frequency) in fringe areas from locking up the repeater. There are 50 selectable CTCSS tones.
- ❒ DCS (Digital Code Squelch): DCS operation modulates a subaudible tone according to a digital protocol (continuous 32-bit synchronous code). DCS is widely used in the commercial land-mobile industry because of its superior performance, and its104 unique codes offer greater tone selection than CTCSS.

To use either CTCSS or DCS, both stations must be on the same operating frequency, and must have selected the same CTCSS tome or DCS code.

Select and activate CTCSS or DCS operation

1. Pressing the **TONE** key to select the desire squelch type from the following:
   - ❒ "**ENC**" (Encode) appears when the CTCSS tone generator is activated for *transmission* only.
   - ❒ "**ENC/DEC**" (Encode & Decode) appears when the CTCSS tone squelch is activated for both TX & RX (only sgnals "encoded" with the matching tone will

open the squelch; your radio will remain silent otherwise).

- ❒ "BELL (icon)" (CTCSS Bell Paging) appears when CTCSS Bell Paging is activated, as descried in detail later.
- ❒ "**DCS**" (Digital Code Squelch) appears when Digital Code Squelch system (TX & RX) is active.
- ❒ "**OFF**" (Tone or digital code system is disabled).

2. Within three seconds of releasing the **TONE** key, use the **Main Dial** knob (or the microphone's **UP/DWN** buttons) to select the tone frequency (when "**ENC**" or "**ENC/DEC**" is activated) or DCS code (when "**DCS**" is activated).
3. Wait a few seconds: the display will revert to its normal status, and your new CTCSS operation/frequency or DCS operation/code will be saved.

Tone Search Scanning

In operating situations where you don't know the CTCSS or DCS code being used by another station or stations, you can command the radio to listen to the incoming signal and scan in search of the tone being used.

To scan for the tone in use:

1. Set the radio up for either CTCSS or DCS Decoder operation (see the previous discussion). In the case of CTCSS, "**ENC/DEC**" will appear on the display; in the case of DCS, "**DCS**" will appear on the display.
2. Press and hold the **TONE** key for 1/2 second, to start scanning for the incoming CTCSS or DCS tone/code.
3. When the radio detects the correct tone or code, it will halt on that tone/code, and audio will be allowed to pass. Press the **BAND** key to lock in that tone/code and exit to normal operation.

CTCSS Bell Paging

Bell Paging adds an alert ringer to CTCSS tone squelch operation, for added convenience. When you receive a call with a matching CTCSS tone, the ringer sounds to alert you to presence of the incoming call.

To activate CTCSS Bell operation, press the **TONE** key until "BELL (icon)" appears on the display.

As before, calls without a matching CTCSS tone will be ignored. Those *with* a matching tone will cause the transceiver to ring as the squelch opens while the caller transmits. Note that other stations do not need to have the CTCSS *Bell* function to call you; they can just use standard CTCSS encoding.

When you reply to a CTCSS Bell call, you may want to turn off the Bell function, or else the transceiver will ring every time your squelch opens.
You can store CTCSS Bell Paging as a "tone mode" in a memory, as you can do with different CTCSS/DCS tone and encode/decode status.

DTMF Tone Generation (MH-48$_{A6J}$ only)

The white keys (with numbers, letters, or the ∗/# characters printed on them) on the microphone may be used for manual sending of DTMF tones for autopatch or repeater control use. Just press the PTT switch, and hold it in, while pressing the desired keys.

DTMF Autodialer Operation

16 DTMF Autodialer memories are available on the **FT-7100M**. These DTMF Autodialer memories can store up 16 digits of a telephone number for repeater autopatch or other use.

To load DTMF Autodialer memories, use following procedure:

1. Press and hold the **BAND** key for 1/2 second to activate the "Menu" mode.
2. Rotate the **Main Dial** knob to select the Menu # 14 (**DTMFW**).
3. Press the **BAND** key momentarily to enable changing of this Menu item.
4. Rotate the **Main Dial** knob to select the DTMF Autodialer memory channel number into which you wish store a telephone number ("**CH-01**" ~ "**CH-16**").
5. Press the **BAND** key momentarily.
6. Use the **Main Dial** knob (or the microphone's **UP/DWN** buttons) to select the first digits of the telephone number you wish to store.
7. When you have selected the correct digit, press the **LOW** key momentarily.
8. Now, use the **Main Dial** knob (or the microphone's **UP/DWN** buttons) to select the second of 16 available digits in the current DTMF Autodialer memory. Press the **LOW** key momentarily.
9. Repeat this procedure for each digit in the telephone number.
10. If you mistake an error during programming, you may pressing the **REV** key ***momentarily*** as a backspace key. If you wish erase all digits before current digits, ***press and hold*** the **REV** key for 1/2 second. You may now press the **TONE** key momentarily to review your entry for accuracy.
11. When entry of all digits is complete, press the **BAND** key. This locks the DTMF string into the current resistor.
12. Use the **Main Dial** knob (or the microphone's **UP/DWN** buttons) to select another

DTMF Autodialer memory channel, and repeat the precess described above, beginning in step 4. When you are done programming all desired DTMF Autodialer memory channel, press and hold the **BAND** key for 1/2 second to exit normal operation.

To transmit the memorized telephone number, used the following procedure:

1. Press the **PTT** switch to begin transmission.
2. While press and holding the **PTT** switch, rotate the **Main Dial** knob to select the DTMF Autodialer memory channel you wish to send, then press the **HOME** key. The DTMF string will be transmitted automatically.
3. One the string begins, you may release the **PTT** switch, as the transmitter will be held "on the air" until the DTMF string is completed.

The speed at which the DTMF digits are sent can be changed. Three speed levels are available: 50 ms (20 digits per second, the default setting), 75 ms (13 digits per second), and 100 ms (10 digits per second).

To select the DTMF sending speed, use the following procedure:

1. Press and hold the **BAND** key for 1/2 second to activate the "Menu" mode.
2. Rotate the **Main Dial** knob to select the Menu # 13 (**DTMFS**).
3. Press the **BAND** key momentarily to enable changing of this Menu item.
4. Rotate the **Main Dial** knob to select the desired speed ("**50ms**," "**75ms**," and "**100ms**").
5. Press and hold the **BAND** key for 1/2 second to save the new setting and exit normal operation.

You can also set a longer delay between the time the HOME key is pressed and the first DTMF digit is send.

To set the delay time, use the following procedure:

1. Press and hold the **BAND** key for 1/2 second to activate the "Menu" mode.
2. Rotate the **Main Dial** knob to select the Menu # 12 (**DTMFD**).
3. Press the **BAND** key momentarily to enable changing of this Menu item.
4. Rotate the **Main Dial** knob to select the desired speed from the available choices ("**50ms**," "**250ms**," "**450ms**," "**750ms**," and "**1000ms**").
5. Press and hold the **BAND** key for 1/2 second to save the new setting and exit normal operation.

Transmitter Time-Out Timer (TOT)

The "Time-Out Timer" (TOT) feature is designed to force the transceiver into the "receive" mode after a present time period of continuous transmission (the default is 6 minutes). This feature prevents your transceiver from transmitting a "dead carrier" for a long period of time in the event that the microphone PTT switch is accidentally locked in the "TX" condition.

The Time-Out Timer's "switch-to-receive" time may be adjusted, in one minute increments, for any period between 1 and 30 minutes. To change the default (6 minutes) time setting:

1. Press and hold the **BAND** key for 1/2 second to activate the "Menu" mode.
2. Rotate the **Main Dial** knob to select the Menu # 31 (**TOT**).
3. Press the **BAND** key momentarily to enable changing of this Menu item.
4. Rotate the **Main Dial** knob to select the desired time interval (between **1** and **60** minutes, or **OFF**."
5. Press and hold the **BAND** key for 1/2 second to save the new setting and exit to normal operation.

Memory Operation

Memory Storage

1. Select the desired frequency, while operating in the VFO mode. Be sure to set up any CTCSS or DCS tones as well as any desired repeater offset. The power level also be set at this time, if you wish to store it.
2. Press and hold the **V/M** key for 1/2 second.
3. Within the three seconds of releasing the **V/M** key, use the **Main Dial** knob (or the microphone's **UP**/**DWN** buttons) to select the desired memory channel.
4. To attach an alpha/numeric name (label) to the memory, press the **V/M** key ***momentarily***, otherwise ***press and hold*** the **V/M** key for 1/2 second to save the entry and exit.
5. To label a memory with an alpha/numeric name, use the **Main Dial** knob (or the microphone's **UP**/**DWN** buttons) to select any of the 80 available characters (including letters, numbers, and special symbols). When the desired first character appears, press the **LOW** key momentarily to move on to the next character.
6. Select succeeding characters in the same manner, pressing the **LOW** key momentarily after each selection.

7. After entering the entire name (eight characters maximum), press and hold the **V/M** key for 1/2 second to save all data for the channel and exit.

Storing Independent Transmit Frequency ("Odd Split")

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

1. Store the receiving frequency (and label an alpha/numeric name, if desired) using the method already described under "**Memory Storage**" (it does not matter if a repeater offset is active).
2. Turn to the desired transmit frequency, then press and hold the **V/M** key for 1/2 second.
3. Within the three seconds of releasing the **V/M** key, rotate the **Main Dial** knob (or pressing the microphone's **UP**/**DWN** buttons) to select the same memory channel number as used in step 1 above.
4. Press and hold the **PTT** switch then press and hold the **V/M** key for 1/2 second once more (this does not key the transmitter).

Recalling Memory

From the VFO mode, momentarily press the **V/M** key to activate the "Memory" mode.

When more than one memory has been stored, use the **Main Dial** knob to select a memory for operation. Alternatively, the microphone's **UP**/**DWN** buttons may be select or scan through the available memories. When using the microphone's **UP**/**DWN** buttons, press and release the button to move one step up or down; press and hold the **UP** or **DWN** button for 1/2 second to begin memory scanning.

When you recall a memory which contains independently-stored transmit and receive frequencies, the "+" "-" indication will appear in the display.

If you recall a memory which add an alpha/numeric name, press and hold the **LOW** key for 1/2 second to display the alpha/numeric tag. Repeatedly pressing and holding the **LOW** key will toggle operation between "**Frequency only**" display and "**Frequency + Tag**" display.

To return to the VFO mode, just press the **V/M** key again.

Direct Keypad Memory Recall (Requires **MH-48$_{A6J}$**)

Which begins the "The desired memory channel may be recalled directly from the microphone's keypad".

To recall a memory channel from the keypad, just press the digits on the keypad in the

proper sequence, followed by the [∗] key.

Examples:

To recall memory channel #5, press [**5**] → [∗].

To recall memory channel #100, press [**1**] → [**0**] → [**0**] → [∗]

Memory Offset Tuning

Once you have recalled a particular memory channel, you may easily tune off that channel, as though you were in the "VFO" mode.

1. With the **FT-7100M** in the "MR" (Memory Recall)mode, select the desired memory channel.
2. Now press the **MHz** key momentarily, The "**MT**" icon will be appeared on the display.
3. Rotate the **Main Dial** knob (or pressing the microphone's **UP**/**DWN** buttons), as desired, to tune to a new frequency. The synthesizer steps selected for VFO operation on the current band will be the steps used during Memory Tuning.
4. If you wish to return to the *original* memory frequency, press the **V/M** key momentarily. The "**MT**" icon will be disappeared.
5. If you wish to store a new frequency set during Memory Tuning, just press and hold the **V/M** key for 1/2 second, select a new memory (if desired), then press and hold the **V/M** key for 1/2 second again.

Masking Memory

There may be situations where you want to "mask" memories so they are not visible during memory selection or scanning. For example, several memories used only in a city you visit infrequently may be store, then "Masked" until you visit that city, at which time you can "Unmask" them for normal use.

1. Press and hold the **V/M** key for 1/2 second.
2. Rotate the **Main Dial** knob (or pressing the microphone's **UP**/**DWN** buttons) to select the memory channel to be "Masked" from view.
3. Press the **REV** key momentarily. The display will revert to memory channel #1, and the previously-selected memory will now be "Masked."
4. To unmask the hidden memory, repeat the above procedure: press and hold the **V/M** key for 1/2 second, select the masked memory's number, then press the **REV** key momentarily to restore the memory channel's data.

Memory Only Mode

Once memory channel programming has been completed, you may place the radio in a

"Memory Only" mode, whereby VFO operation is impossible. This may be particularly useful during public-service events where a number of operators may be using the radio for first time, and ultimate simplicity of channel selection is desired.
To place the radio into the Memory Only mode, turn the radio off. Now press and hold in the **V/M** key while turning the radio on.
To return to normal operation, repeat the above power-on procedure.

Scanning Feature

Scanning Operation

The **FT-7100M**'s microprocessor-based scanning feature allows quick scanning of the memory channels, or sweeping of a band, looking for activity.
Before activating the scanner, make sure that the **SQL** control is set to silence the background noise when no signal is present. If the noise is not squelched, the transceiver will "think" that it has found a signal, and will not scan.
Scanning may be started or stopped with the microphone's **UP** or **DWN** button.

The following techniques are used for scanning:

1. Press and hold either the **UP** or **DWN** button for 1/2 second *in the VFO mode* will cause upward or downward *band scanning*, respectively, to begin.
2. Press and hold either the **UP** or **DWN** button for 1/2 second in the *Memory mode* will cause *memory channel scanning* toward a higher- or lower-numbered memory channel, respectively.
3. Scanning pauses when a signal opens the squelch, and the decimal point on the display will blink. You can choose one of two scan-resume modes (described below).
4. To halt the scan manually, the easiest way is to push the **PTT** switch on the microphone momentarily (no transmission will occur while you are scanning).
5. The scan may also be halted manually by pressing the microphone's **UP/DWN** button, or the front panel's **V/M** key.

Scan-Resume Options

Two scan-resume modes are available on the radio:

- ❒ In the **BUSY** mode, the scanner will remain stopped for as long as there is carrier present on the channel; after the carrier drops at the end of the other station's transmission, the scanner will resume.
- ❒ In the **TIME** mode, the scanner will halt for five seconds only, after which scanning

will resume (whether or not the other station is still transmission).

To change the scan-resume mode, use the following procedure:

1. Press and hold the **BAND** key for 1/2 second to activate the "Menu" mode.
2. Rotate the **Main Dial** knob to select the Menu # 25 (**SCAN**).
3. Press the **BAND** key momentarily to enable changing of this Menu item.
4. Rotate the **Main Dial** knob to select the desired scan-resume mode (**BUSY** or **TIME**).
5. Press and hold the **BAND** key for 1/2 second to save the new setting and exit to normal operation.

Memory Skip Scanning

When you have some continuously-active channels in memories, you may wish to skip them for scanning, but still have them available for manual selection.

To mark a memory to be skipped during scanning, use the following procedure:

1. Recall the memory channel to be skipped.
   Note that Memory Channel "1" may not be skipped.
2. Press and hold the **TONE** key for 1/2 second. A small "▲" icon will appear to the bottom of the memory channel number, indicating it is to ignored during scanning.
3. To re-enable a "skipped" memory channel, repeat the above procedure: recall the skipped memory channel, then press and hold the **TONE** key for 1/2 second to re-enable a "skipped" memory channel.

Temporary Memory Skip

If the scanner repeatedly stops on a channel due to temporary noise or interference, you can temporarily mark it to be skipped (except the Memory Channel "1"). The channel will be skipped until you manually stop the scan (by pressing the **PTT** switch, for example).

To skip a channel temporarily, press the **TONE** key momentarily while the scanner has stopped on the channel to be skipped. The scanner will instantaneously resume, and that channel will not be scanned during this scanning session.

Programmable Band-Scan Limits

This feature allows you to set sub-band limits for wither scanning or manual VFO operation. For example, you might wish to set up a limit (in North American) of 144.300 MHz to 148.00 MHz so as to prevent encroachment into the SSB/CW "Weak Signal" portion of the band below 144.300 MHz. Here's how to do this:

1. Set the radio to the VFO mode by pressing the **V/M** key, if necessary.

2. Using the techniques learned earlier, store (per above example) 144.300 MHz into Memory Channel "**L1**" (the "**L**" designates the **L**ower sub-band limit).
3. Likewise, store 148.000 MHz into Memory Channel "**U1**" (the "**U**" designates the **U**pper sub-band limit).
4. Switch to the Memory Recall mode by pressing the **V/M** key once, then recall the Memory Channel "**L1**".
5. Press the **MHz** key momentarily.
6. You may now rotate the **Main Dial** knob, or begin scanning by press and hold the microphone's **UP/DWN** button for 1/2 second. The transceiver will behave as though it is in the standard VFO mode, but operation will be restricted to the range between Memory channels "**L1**" and "**U1**".

Five pairs of Band Limit memories, labeled "**L1/ U1**" through "**L5/ U5**" are available. You therefore can set upper and lower operation limits on a number of bands, if you like.

Priority Channel Scan

The Priority function allows automatic checking for activity on the Memory channel every five second while operating on the VFO or a HOME channel.??

Smart Search

The Smart Search feature may be used to load - automatically with no operator Intervention - a special bank of up to 50 memory channels (per band) based on activity. Smart Search will sweep either the entire band or the portion of the band within the Programmable Band-Scan Limits and will load the Smart Search memory bank with the frequency data pertaining to those channels on which activity is found. The channels are loaded in the order in which they are encountered, not according to signal strength or by ascending frequency.

The Smart Search feature is especially useful when visiting a city for the first time, where you may be unfamiliar with the repeater frequencies; Smart Search discovers where the local activity is to be found, and automatically loads those frequencies for you.

Smart Search operation is simple to activate:

1. Press and hold the **TONE** key for 1/2 second.
2. The Smart Search process will now cause the radio to scan upward on current band, loading channels on which it encounters a signal strong enough to open the squelch.
3. When 50 channels are loaded or the scanner reaches the band edge, the scanner

will stop and the transceiver will revert to the starting frequency.

4. To recall the Smart Search Memories just stored, rotate the **Main Dial** knob.
5. Press the **V/M** key momentarily to exit the Smart Search mode.

Note that these memories are so-called "soft" memories; they will be lost if you exit Smart Search to a VFO/Memory, or if you initiate a new Smart Search. Smart Search also does not store CTCSS or DCS information; if you cannot access a repeater found during Smart Search, you may need to investigate possible access tones.

ARTS: Auto Range Transpond System

This system uses DCS signaling to inform you when you and another ARTS-equipped station are within communications range. Both stations must first select DCS operation using the same DCS code.

Whenever you press the **PTT** switch, or every 30 seconds after ARTS is activated, your radio will transmit a (subaudible) DCS signal. If the other radio is in range, the beeper (if enabled) will sound and "**ARTS IN**" will appear on the display. Whether you talk or not, the radios will continue to poll each other every 30 seconds while ARTS is activated.

You can also have your radio transmit your callsign via CW every nine minutes, to comply with identification requirements.

If you move out range for more than one minute (two polls), your radio will sense that no signal has been received. A beep will sound, and the display will change to "**ARTS OUT**" (out of range). If you move back into range, your radio will again beep, and the display will change back "**ARTS IN**".

During ARTS operation, the microprocessor makes it impossible to change the operating frequency or other settings; you must first terminate ARTS to resume normal operation. This is a safety feature to prevent accidental loss of contact due to channel change, etc.

Here is how to activate ARTS:

1. Press and hold the **BAND** key for 1/2 second to activate the "Menu" mode.
2. Rotate the **Main Dial** knob to select the Menu # 3 (**ARTS**).
3. Press the **BAND** key momentarily to enable changing of this Menu item.
4. Rotate the **Main Dial** knob to select the desired ARTS operating mode: "**RX**" (receive-only), "**TX**" (transmit-only), "**TRX**" (transceive), or "**OFF**". The operating descriptions assume that both radios are set to "**TRX**".
5. Press and hold the **BAND** key for 1/2 second to save entry and exit. The display will now show "**ARTS OUT**". After two pollings (one minute), if a re-sponse is not detected,

"**ARTS OUT**" will appear continuously; otherwise "**ARTS IN**" will be displayed as long as both stations remain in range.

6. To cancel ARTS operation, select "**OFF**" in step 4 above.

ARTS Modes

In the previous ARTS description, both transceivers were set to the "**TRX**" (transceive) mode. There are two other ARTS modes available via the MENU sys-tem, as outlined below:

RX: Use this mode if you only want your radio to listen, and not poll the other station (in which case their radio should be set to the "**TX**" mode). Here, your radio will beep and display "**ARTS IN**" or "**ARTS OUT**" to indicate the state of connection.

TX: Likewise, this puts your radio into a transmit-only "beacon" mode where you won't hear the polling beeps (but you can still hear when the other station talks). When activated, you have no display of whether or not the other station is in range ("**ARTS IN**" and "**ARTS OUT**" do not appear). You should have your CW IDer enabled when this mode is activated.

CW ID (Morse Identifier) Set up

The ARTS feature includes a CW identifier, as mentioned previously. The radio can be instructed to send "DE (your callsign) K" in Morse code every nine minutes during ARTS operation. The callsign may contain up to 6 characters.

Here's how to program the CW Ider:

1. Press and hold the **BAND** key for 1/2 second to activate the "Menu" mode.
2. Rotate the **Main Dial** knob to select the Menu # 6 (**CWIDW**).
3. Press the **BAND** key momentarily to enable changing of this Menu item.
4. You will notice the first character's entry slot blinking. While it is blinking, rotate the **Main Dial** knob to select the desired character, then press the **LOW** key to move on to the next character to the right.
5. Rotate the **Main Dial** knob to select the next number or letter, then press the **LOW** key to move on the next character.
6. When the callsign is complete, press and hold the **BAND** key for 1/2 second to save the CW ID entry and exit to normal operation.

To activate the CW Ider for use during ARTS operation:

1. Press and hold the **BAND** key for 1/2 second to activate the "Menu" mode.
2. Rotate the **Main Dial** knob to select the Menu #5 (**CWID**).

3. Press the **BAND** key momentarily to enable changing of this Menu item.
4. Rotate the **Main Dial** knob to change the display to "**ON**."
5. Press and hold the **BAND** key for 1/2 second to save the new setting and exit to normal operation.
6. To disable the CW IDer, select "**OFF**" in step 4 above.

Miscellaneous Settings

Sub-Display Options

The Sub-Display can be set to one of four modes by "Menu" mode.

1. Press and hold the **BAND** key for 1/2 second to activate the "Menu" mode.
2. Rotate the **Main Dial** knob to select the Menu #11 (**DISP**).
3. Press the **BAND** key momentarily to enable changing of the Menu item.
4. Rotate the **Main Dial** knob to select the new setting. The options include
   DC IN: Display and monitor the battery or DC power supply voltage.
   CW ID: Display the CW ID (your call sign).
   FREQ: Display the "sub" band frequency.
   OFF: Turn off the Sub-Display.
5. Press and hold the **BAND** key for 1/2 second to save the new setting and exit to normal operation.

Automatic Power-OFF

The "Automatic Power-Off" (APO) feature will turn the radio completely off after a user-defined period of **PTT** or key/button inactivity. If you do not press any front panel keys or buttons, do not rotate the **Main Dial** knob, do not use the microphone's keys and buttons, do not transmit, and so long as the transceiver is not scanning or engaged in priority monitoring, the radio will shut itself off after the specified time period. This feature is useful in minimizing battery drain in a mobile installation if you forget to turn the transceiver off when you leave your vehicle.

To activate the APO feature:

1. Press and hold the **BAND** key for 1/2 second to activate the "Menu" mode.
2. Rotate the **Main Dial** knob to select the Menu #1 (**APO**).
3. Press the **BAND** key momentarily to enable changing of the Menu item.
4. Rotate the **Main Dial** knob to select the desired "switch-off" time (between 1 and 12 hours, or OFF).
5. Press and hold the **BAND** key for 1/2 second to save the new setting and exit to

normal operation.

Programming the Microphone Button Functions

Default **FT-7100M** button functions have been assigned (at the factory) to the microphone's **ACC**, **P**, **P1**, and **P2** buttons. These may be changed by the user, if you wish to define another function for a particular button or buttons

To change the assignment of a button's function:

1. Press and hold the **BAND** key for 1/2 second to activate the "Menu" mode.
2. Rotate the **Main Dial** knob to select the Menu # corresponding to the button to be assigned a function (20: **PG ACC**, 21: **PG P**, 22: **PG P1**, or 23: **PG P2**).
3. Press the **BAND** key momentarily to enable changing of the Menu item.
4. Rotate the **Main Dial** knob to select the function you wish to assign the button you selected in the previous step. The available choices are:
   SQL OFF: Disable the Noise and Tone Squelch.
   TCALL: Activates 1750 Hz Tone Burst.
   RPTR: Selects Repeater Shift Direction.
   PRI: Activates Priority Channel monitoring.
   LOW: Selects Power Output Level.
   TONE: Selects CTCSS or DCS mode and tone/code.
   MHz:
   REV: Reverses Repeater Uplink/Downlink frequencies.
   HOME: Switches frequency to the "Home" channel.
   BAND: Selects "main" band of operation: VHF or UHF.
   VFO/MR: Switches frequency control between VFO and Memory.
5. Press and hold the **BAND** key for 1/2 second to save the new setting and exit to normal operation.

DCS Code Inversion

The DCS system was first introduced in the commercial LMR (Land Mobile Radio) service, where it is now in widespread use.

DCS uses a codeword consisting of a 23-bit frame, transmitted (subaudible) at a data rate of 134.4 bps (bit/sec). Occasionally, signal inversion can result in the complement of a code being sent or received. This prevents the receiver squelch from opening with DCS enabled, as the decoded bit sequence would not match that selected for operation.

Typical situations that might cause inversion to occur are:

- Connection of an external receiver preamplifier.

- Operating through a repeater.
- Connection of an external linear amplifier.

Note that code inversion does not mean that any of the above listed equipment is defective! In certain amplifier configurations, the output signal (phase) is inverted from the input. Small signal or power amplifiers having an odd number (1, 3, 5, etc.) of amplification stages may result in inversion of a transmitted or received DCS code.

While under most circumstances this should not occur (amplifier designs and industry standards take this into account), if you find that your receiver squelch does not open when both you and the other station are using a common DCS code, you or the other station (but not both) can try the following:

1. Press and hold the **BAND** key for 1/2 second to activate the "Menu" mode.
2. Rotate the **Main Dial** knob to select the select the Menu #10 (**DCSNR**)
3. Press the **BAND** key momentarily to enable changing of the Menu item.
4. Rotate the **Main Dial** knob to select one of the following modes:
   TRX N: Encoder; Normal, Decoder; Normal
   RX R: Encoder; Normal, Decoder; Reverse (Inverted)
   TX R: Encoder; Reverse (Inverted), Decoder; Normal
   TRX R: Encoder; Reverse (Inverted), Decoder; Reverse (Inverted)
5. Press and hold the **BAND** key for 1/2 second to save the new setting and exit to normal operation.

External Speaker Selection

You can selects the receiving audio from the external speaker when connect the external speaker to the **EXT SP** jack on the rear panel.

To select the receiving audio:

1. Press and hold the **BAND** key for 1/2 second to activate the "Menu" mode.
2. Rotate the **Main Dial** knob to select the Menu #28 (**SPCNT**).
3. Press the **BAND** key momentarily to enable changing of the Menu item.
4. Rotate the **Main Dial** knob to select the new setting. The options include
   BAND A: Output the "main" band audio from the external speaker, and output the "sub" band audio from the internal speaker.
   BAND B: Output the "sub" band audio from the external speaker, and output the "main" band audio from the internal speaker.
   BOTH: Output the "main" and "sub" band audio from the external speaker, and turn off the internal speaker.
   OFF: Turn off the external speaker, output the "main" and "sub" band audio from the

internal speaker.

5. Press and hold the **BAND** key for 1/2 second to save the new setting and exit to normal operation.

Power-on Microprocessor Reset Procedure

Some or all transceiver settings can be reset to their factory-default states using one of the following power-on routines.

Reset for all memories

Press and hold the **V/M** and **REV** keys while turning the transceiver on.

Reset for menu setting

Press and hold the **LOW** and **REV** keys while turning the transceiver on.

CPU master reset for all memories and menu setting

Press and hold the **V/M**, **MHz**, and **REV** keys while turning the transceiver on.

Transceiver Cloning

You can transfer all data stored in one **FT-7100M** to another **FT-7100M** by utilizing the handy "Cloning" feature. This requires a user-constructed Cloning cable which connects the **DATA** jacks on the two transceivers, as shown below.

To clone from one transceiver to another, use the following procedure:

1. Insert the Clone Cable into the **DATA** jack of each transceiver.
2. Turn both transceivers off, then press and hold in the **HOME** key (on each radio) while turning the power on again.
3. On the "*destination*" radio, press the **REV** key. The "**CLONE RX**" indicator will appear on the display.
4. Now, on the "*source*" radio, press the **TONE** key. The "**CLONE TX**" indicator will appear on the display, and the cloning data transfer will immediately begin.
5. If there is a problem during the cloning process, "**ERROR**" will be displayed. Check your cable connections, and try again.
6. If cloning was successful, turn the "**CLONE RX**" and "**CLONE RX**" indicator is disappeared.
7. Turn both transceivers off, then remove the Clone Cable. Channel and operating data for both radios are now identical. They both may be turned on now for normal

operation.

Menu System

The **FT-7100M**'s Menu System allows a number of transceiver operating parameters to be custom-configured for your operating requirements.

The Menu is easy to active and set, using following procedure:

1. Press and hold the **BAND** key for 1/2 second to activate the "Menu" mode.
2. Rotate the **Main Dial** knob to select the Menu item to be adjusted.
3. Press the **BAND** key momentarily to enable changing of the Menu item.
4. Rotate the **Main Dial** knob to adjust or select the parameter of the Menu item.
5. After completing your adjustment, press and hold the **BAND** key for 1/2 second to save the new setting and exit to normal operation.

Menu Selection Details

Menu Item 1 [APO]

Function: Enable/disable the Automatic Power Off feature.

Available Values: 0.5 ~ 12.0 hours (0.5 hour step), or OFF

Default Setting: OFF

Menu Item 2 [ARS]

Function: Enable/disable the Automatic Repeater Shift function.

Available Values: ON/OFF

Default Setting: ON

Note: This Menu item can be set independently for each band.

Menu Item 3 [ARTS]

Function: Select the ARTS mode.

Available Values: RX/TX/TRX/OFF

Default Setting: TRX

Note: This Menu item can be set independently for each band.

Menu Item 4 [BEEP]

Function: Enable/disable the key/button beeper.

Available Values: ON/OFF

Default Setting: ON

Menu Item 5 [CWID]

Function: Enable/disable the CW IDer during ARTS operation.
Available Values: ON/OFF
Default Setting: ON

Menu Item 6 [CWIDW]

Function: Programming a callsign into the CW IDer.

Menu Item 7 [DIM]

Function: Setting the front panel display's illumination level.
Available Values: DIM1 ~ DIM7, or OFF
Default Setting: DIM1

Menu Item 8 [DCS C]

Function: Setting the DCS code #.
Available Values: 104 standard DCS codes
Default Setting: 023
Note: This Menu item can be set independently for each band.

Menu Item 9 [DCS S]

Function: Activate the DCS Code Search Scanner.

Menu Item 10 [DCSNR]

Function: Select "Normal" or "Inverted" DCS coding.
Available Values: TRX N/RX R/TX R/TRX R
Default Setting: TRX R
Note 1: This Menu item can be set independently for each band.
Note 2: "N" is "normal," "R" is "inverted."

Menu Item 11 [DISP]

Function: Select the "sub" band display.
Available Values: FREQ/OFF/DC IN/CW ID
Default Setting: FREQ
FREQ: Display the "sub" band frequency.
OFF: No display.

DC IN: Display the supply voltage.
CW ID: Display the CW ID while the ATRS feature is activated.

Menu Item 12 [DTMFD]
Function: Setting the DTMF Autodialer delay time.
Available Values: 50/250/450/750/1000 ms
Default Setting: 450 ms

Menu Item 13 [DTMFS]
Function: Setting the DTMF Autodialer sending speed.
Available Values: 50/100 ms
Default Setting: 50 ms (High Speed)

Menu Item 14 [DTMFW]
Function: Loading the DTMF Autodial memory.

Menu Item 15 [LOCK]
Function: Enable/disable the key/button lock.
Available Values: ON/OFF
Default Setting: OFF

Menu Item 16 [LOCKT]
Function: Enable/disable the PTT lock.
Available Values: BAND A/BAND B/BOTH/OFF
Default Setting: OFF
Note: “BAND A” is “VHF,” “BAND B” is “UHF.”

Menu Item 17 [MUTE]
Function:
Available Values: ON/OFF
Default Setting: OFF

Menu Item 18 [MUTET]
Function:
Available Values: ON/OFF
Default Setting: OFF

Menu Item 19 [PCKT]

Function: Set the transceiver's circuitry for the Packet baud rate.

Available Values: 1200/9600 bps

Default Setting: 1200 bps

Note: This Menu item can be set independently for each band.

Menu Item 20 [PG P1]

Function: Programming the microphone's **ACC** key assignment

Available Values: SQL OFF, TCALL, RPTR, PRI, LOW, TONE, MHz, REV, HOME, BAND, VFO/MR

Default Setting: BAND

Menu Item 21 [PG P2]

Function: Programming the microphone's **P** key assignment

Available Values: SQL OFF, TCALL, RPTR, PRI, LOW, TONE, MHz, REV, HOME, BAND, VFO/MR

Default Setting: VFO/MR

Menu Item 22 [PG P3]

Function: Programming the microphone's **P** key assignment

Available Values: SQL OFF, TCALL, RPTR, PRI, LOW, TONE, MHz, REV, HOME, BAND, VFO/MR

Default Setting: TONE

Menu Item 23 [PG P4]

Function: Programming the microphone's **P** key assignment

Available Values: SQL OFF, TCALL, RPTR, PRI, LOW, TONE, MHz, REV, HOME, BAND, VFO/MR

Default Setting: LOW

Menu Item 24 [RFSQL]

Function: Adjust the RF SQL threshold level.

Available Values: S-1/S-5/S-9/S-FULL/OFF

Default Setting: OFF

Note: This Menu item can be set independently for each band.

Menu Item 25 [SCAN]

Function: Select the Scan-Resume mode

Available Values: BUSY/TIME

Default Setting: TIME

Note: This Menu item can be set independently for each band.

Menu Item 26 [SHIFT]

Function: Set the magnitude of the Repeater Shift.

Available Values: 0.00 ~ 99.50 MHz (50 kHz step)

Default Setting: Depends on transceiver version.

Note: This Menu item can be set independently for each band.

Menu Item 27 [STEP]

Function: Setting the synthesizer steps.

Available Values: 5.0/10.0/12.5/15.0/20.0/25.0/50.0 kHz

Default Setting: Depends on transceiver version.

Note: This Menu item can be set independently for each band.

Menu Item 28 [SPCNT]

Function:

Available Values: BAND A/BAND B/BOTH/OFF

Default Setting: BOTH

Menu Item 29 [TONEF]

Function: Setting the CTCSS Tone Frequency.

Available Values: 50 Standard CTCSS Tones

Default Setting: 100 Hz

Note: This Menu item can be set independently for each band.

Menu Item 30 [TSRCH]

Function: Activate the CTCSS Tone Search Scanner.

Menu Item 31 [TOT]

Function: Set the Time-Out Timer

Available Values: 1 ~ 30 minutes or OFF

Default Setting: 6 minutes

Menu Item 32 [TXNAR]

Function: Reducing the MIC Gain

Available Values: ON/OFF

Default Setting: OFF (Normal Deviation)

Note: This Menu item can be set independently for each band.

Menu Item 33 [VFOTR]

Function: Enable/disable the VFO Tracking feature.

Available Values: ON/OFF

Default Setting: OFF

Menu Item 34 [AM]

Function: Select the receiving mode.

Available Values: AUTO/INH/AM

Default Setting: AUTO (AM in Aeronautical Bands, FM elsewhere)

Note: The "INH" option locks reception in the FM mode.

Specifications

General

Frequency Range:	RX:	108.00 – 180.00 MHz,
		320 – 480 MHz,
		810 – 999.990 MHz (Cellular Blocked)
	TX:	144 – 146 MHz or 144 – 148 MHz
		430 – 440 MHz or 430 – 450 MHz

Channel Steps: 5/10/12.5/15/20/25/50 kHz

Mode of Emission: F3, F2, F1

Antenna Impedance: 50 Ω, unbalanced (Antenna Duplexer built-in)

Frequency Stability: ±5 ppm (–10 °C ~ +60 °C)

Operating Temperature Range: –20 °C ~ +60 °C

Supply Voltage: 13.8 VDC (±15%), negative ground

Current Consumption (Approx.): RX: 0.5 A (Squelched)

TX: 11.5 A (VHF), 10.0 A (UHF)

Case Size (WxHxD): 140 x 38 x 166 mm (5.8 x1.9 x 6.9 inch)

	(w/o knobs & connectors)
Weight (Approx.):	1 kg (2.2 lb)

Transmitter

Output Power:	50/20/10/5 W (VHF), 35/20/10/5 W (UHF)
Modulation Type:	Variable Reactance
Maximum Deviation:	±5 kHz
Spurious Radiation:	better than –60 dB
Modulation Distortion:	less than 3%
Microphone Impedance:	2 kΩ
DATA Jack Impedance:	10 kΩ

Receiver

Circuit Type:	Double-conversion superheterodyne
Intermediate Frequency:	21.7 MHz/450 kHz (VHF), 450.05 MHz/455 kHz (UHF)
Sensitivity (for 12dB SINAD):	better than 0.16 μV
Squelch Sensitivity:	0.1 μV
Image Rejection:	70 dB
Selectivity (–6dB/–60dB):	12 kHz/24 kHz
Maximum AF Output:	2 W @4 Ω for 5% THD)
AF Output Impedance:	4-16 Ω

Specification are subject to change without notice, and are guaranteed within amateur bands only.

Frequency ranges are vary according to transceiver version; check with your dealer.