FCC ID: K66FT-100
2.1033 (b)(3) MANUAL

Front Panel Controls

(1) PWR Switch

Press and hold the PWR switch for 1/2 second to turn the transceiver on and off.

(2) VFO/MR Key

Pressing this key changes the frequency control between the VFO and Memory systems.

(3) STEP Key

Press this key momentarily, to changes the tuning steps of the MAIN DIAL Knob and the VFO CH (SELECT) knob.

The STEP key toggles the tuning steps through the following sequence:

MAIN DIAL Knob

SSB/CW: 5 → 10 → 25 → 50 → 100 → 5 .....

AM: 25 → 50 → 100 → 1k → 9k → 25 .....

FM:100, W-FM:10k (fixed)

VFO CH (SELECT) knob:

FM: 10k → 12.5k → 20k → 25k → 10k .....

W-FM: 100k (fixed)

Note: Do not activate this knob in the SSB/CW/AM mode.

Press and hold this key for 1/2 second, increase the tuning steps of the VFO CH (SELECT) knob as follows:

SSB/CW: 1k, AM: 5k, FM: 10k, W-FM: 20 k.

(4) HOME Key

Pressing this key recalls a favorite frequency.

(5) LOCK Key

Pressing this key locks the MAIN DIAL Knob.

(6) MAIN DIAL Knob

This is main tuning dial for the transceiver. It is used for tuning, and function setting functions on the FT-100.

(7) FUNC Key

This key is used to select the one of eleven functions of the [A] ~ [D] keys (Function keys: located bottom of the LCD display).

(8) MODE Key

Pressing this key momentarily, selects the operating mode. The selections available are:

LSB → CW → AM → FM → LSB ....

Press and hold this key for 1/2 second, switch may cause the precise mode to be

selected from within a mode group (LSB ←→USB, CW ←→ CW-R(reverse), AM ←→ AFSK, FM ←→ W(wide)-FM).

(9) UP/DWN Keys

Pressing either of these keys [UP/DWN] momentarily steps the operating frequency up or down one ham band.

When first pressing and holding the [UP] key for 1/2 second, then pressing either of these keys [UP/DWN] momentarily steps the operating frequency 10 MHz up or down. Similarly, when first pressing and holding the [DWN] key for 1/2 second, then pressing either of these keys [UP/DWN] momentarily steps the operating frequency 1 MHz up or down.

(10) SRCH Key

Press and hold this key for 1/2 seconds, activates the Smart Search feature.

(11) Functions Keys

These four keys select many of most important operating features on the FT-100. The function of the key is determined via the FUNC key selecting, and indicated along the bottom edge of the display.

	[A] key	[B] key	[C] key	[D] key
"1"	**V>M** Press and hold this key for ½ second transfers the contents of VFO into a memory resister	**M>V** Press and hold this key for ½ second transfers the contents of the currently-selected memory channel into VFO	**A=B** Press and hold this key for ½ second causes the contents of VFO-A to be copied into VFO-B, so that the two VFO's contents will be identical.	**SPL** Press this key to activates split frequency operation between the VFO-A and VFO-B.
"2"	**A/B** Press this key to exchanges the contents of VFO-A and VFO-B.	**TRC** Press this key to activates the "VFO Tracking" operation, whereby VFO-A and VFO-B are "slaved" under control by the MAIN DIAL Knob.	**QMB** Press this key causes the QMB memories to recalled sequentially. Press and hold this key store the VFO frequency into the QMB memory registers.	**SKP** Press this key designate memory channels to be skipped during scanning.
"3"	**RPT** Press this key, while in the FM operating mode, causes a standard repeater shift to be applied to the operating	**REV** Press this key to reverses the transmit and receive frequencies when a repeater split is programmed.	**TON** Press this key to activate the CTCSS operation.	**DTMF** ???????

	frequency during transmission: additionally, a CTCSS encode tone will be superimposed on your transmitted signal.			
"4"	**DSC** Press this key to activate the DCS operation.	**ART** Press this key to selects the ARTS mode.	**STB**	**SET** Press this key to activate the ARTS operation.
"5"	**IPO** Press this key to set optimum receiver front end characteristics for strong signals. This bypasses the front end RF amplifier and feeds the received signals directly to the first mixer.	**ATT** Press this key to reduces the strength of all signals (and noise) by 12-dB.	**AGC** Press this key to selects the one of three recovery time (AGC First, AGC Slow, or AGC Auto) for the receiver AGC system.	**NB** Press this key to activates the Noise Blanker.
"6"	**DAL** Press this key to activates the Dual Watch feature.	**SCN** Press this key to start the upward scan.	**PRI** Press this key to activates the Priority feature.	**SQL** Press this key to selects the squelch between the Noise Squelch and RF Squelch..
"7"	**6.0** Press this key to selects the IF filter bandwidth to 6.0 kHz.	**2.4** Press this key to selects the IF filter bandwidth to 2.4 kHz.	**500** Press this key to selects the IF filter bandwidth to 500 Hz.	**300** Press this key to selects the IF filter bandwidth to 300 Hz.
"8"	**MET** Press this key to selects the display function of the meter in the TX mode.	**TUN** Press this key to activate the optional FC-20 Automatic Antenna Tuner or ATAS-100 Active Tuning Antenna System.	**PRC** Press this key to activate the speech processor. This feature activates only SSB and AM mode.	**VOX** Press this key to enables automatic voice-actuated transmitter switching in the SSB, AM, and FM modes.
"9"	**MET** Press this key to selects the display function of the meter in the TX mode.	**TUN** Press this key to activate the optional FC-20 Automatic Antenna Tuner or ATAS-100 Active Tuning Antenna System.	**SPT** Press this key to activate a spotting tone, used for precise zeroing in onto an incoming CW signal.	**KEY** Press this key to activate the built-in Electronic Keyer.
"10"	**MON** Press this key to review the CW message	**CH1**	**CH2**	**ID**
"11"	**NR** Press this key to activate the DSP noise reducer, and	**NOC** Press this key to activate the DSP Auto Notch filter.	**BPF** Press this key to activate the DSP bandpass filter.	**EQ** Press this key to activate the DSP receiver equalizer.

	also selects one of three noise reduction setting.		The passband characteristic adjust by SELECT knob.	and also selects one of three equalization setting.

(12) AF Knob

The inner AF control adjusts the receiver volume level presented to the speaker or headphones. Clockwise rotation increases the volume level.

(13) SQL/RF Knob

In the FM mode, this outer knob determine the SQL control, may be used to silence background noise when no signal is present.

In the SSB,CW, or AM operation, this knob determine the RF GAIN control, may be used to adjust the gain of the receive's RF and IF.

(14) SELECT Knob

This 30-position detented rotary switch is used for most tuning, memory selection and function setting on the FT-100.

(15) CLAR Key

Pressing this key activate the RX Clarifier feature. When this feature is activated, the SELECT knob is used for Clarifier tuning up to an offset of ± 1.2 kHz

(16) Liquid Crystal Display

The Liquid Crystal Display (LCD)

Rear Panel Connectors

(1) Antenna Cable Pigtail 1

Connect HF/50 MHz antenna's 50 Ω cable to this M-type (SO-239) coaxial connector.

(2) Antenna Cable Pigtail 2

Connect 144/430 MHz antenna's 50 Ω cable to this M-type (SO-239) coaxial connector.

(3) DATA Jack

This six-pin mini-DIN jack accepts AFSK input or FSK input from a Terminal Node Controller (TNC) or Terminal Unit (TU); it also provides fixed level Audio Output, PTT, and Ground lines. The optimum AFSK Input level is 30 mV at 3 kΩ, while the Audio Output provided is fixed at 100 mV at 600 Ω.

(4) EXT SP Jack

This 3.5 mm, 2-pin jack provides speaker audio output for an external speaker. The

audio output impedance at this jack is 4 Ω ~ 16Ω, and the level varies according to the setting of the front panel's AF control.

(5) 13.8 VDC Cable Pigtail

This is the DC power supply connection 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 25 Amperes (continuous duty). Make certain that the RED lead connects to the Positive side of the power sourse, and that the BLACK lead connects to the Negative side of the power source.

(6) ACC Jack

This 3.5-mm 3-pin jack accepts external ALC (Automatic Level Control) voltage from a linear amplifier (tips), and connected to the TX/RX switching circuit for control of external device (ring).

(7) KET Jack

This 3.5-mm 3-pin jack is used for connection of a CW keyer paddle or a straight key. Use only a 3-pin (stereo) plug in this jack.

(8) BAND DATA Cable Pigtail

This 8-pin mini-DIN jack is for the FC-20 External Automatic Antenna Tuner and the ATAS-100 Active Tuning Antenna System.

Receiving

Power On/Off

Press and hold the PWR switch for 1/2 second to turn the transceiver on and off.

Mode Selection

1. Press the [MODE] key to toggle the operating mode between four settings:
   LSB → CW → AM → FM → LSB ....
2. In the LSB mode, press and hold the [MODE] key for 1/2 second, switch the LSB to USB.
3. Similarly, press and hold the [MODE] key for 1/2 second, switch the CW to CW-R(reverse), AM to AFSK, and FM to W(wide)-FM.

Bandwidth Selection

1. Press the [FUNC] key several times to recall the "FUNC MODE 7", then press the desired bandwidth key ([A(6.0)] to [D(300)] key).

2. Bandwidth are displayed in a row immediately above the each key along the bottom edge of the display.

Amateur Band Selection

Press the either of [UP] or [DWN] keys, up or down one Amateur Band.

10MHz Step Up/Down

1. Press and hold the [UP] key for 1/2 second, change the [UP]/[DWN] keys steps to 10MHz.
2. Press and hold the [UP] key again, change the [UP]/[DWN] keys steps to one Amateur Band.

1MHz Step Up/Down

1. Press and hold the [DWN] key for 1/2 second, change the [UP]/[DWN] keys steps to 1MHz.
2. Press and hold the [DWN] key again, change the [UP]/[DWN] keys steps to one Amateur Band.

Stacked VFO System

Press the [FUNC] key several times to recall the "FUNC MODE 2", then press the [A(A/B)] key toggles operation between VFO A and B.

Receiver Accessories

Clarifier (Offset Tuning)

1. Press the [CLAR] key momentarily to activate the Clarifier function.
2. Turn the SELECT knob to move the receiver frequency up to ±1.2kHz.
3. To turn the Clarifier off, press the [CLAR] key again.
4. To set the Clarifier offset to zero, turn the Clarifier off then turn the MAIN DIAL Knob one click.

CW Spot (CW mode only)

Press the [FUNC] key several times to recall the "FUNC MODE 9", then press the [C(SPT)] key to activate a constant audio "sidetone".

AGC (Automatic Gain Control) Selection

1. Press the [FUNC] key several times to recall the "FUNC MODE 5".
2. Press the [C(AGC)] key to toggle the AGC recovery time between three settings:
   AGC FAST → AGC SLOW → AGC AUTO → AGC FAST ....

Squelch (FM mode only)

Rotate the SQL/RF knob clockwise until the background noise just disappears.

RF Gain Control

When interference or background noise are severe, rotating the SQL/RF knob counter-clockwise may, in some instances, improve reception.

Noise Blanker

1. Press the [FUNC] key several times to recall the "FUNC MODE 5", then press the [D(NB)] key to activate the IF Noise Blanker.
2. Press the [D(NB)] key again to turn the IF Noise Blanker off.

Note: This feature does not activated on the FM mode.

DSP Noise Reduction (NR)

1. Press the [FUNC] key several times to recall the "FUNC MODE 11".
2. Press the [A(NR)] key to toggle the DSP NR between four settings:
   DSP NR (Level 1) → DSP NR (Level 2) → DSP NR (Level 3) → DSP NR (Off) → DSP NR (Level 1) .....

DSP Notch Filter

1. Press the [FUNC] key several times to recall the "FUNC MODE 11", then press the [B(NOC)] key to activate DSP Notch Filter.
2. Press the [B(NOC)] key again to turn the DSP Notch Filter off.

DSP Passband Filter

1. Press the [FUNC] key several times to recall the "FUNC MODE 11", then press the [C(BPF)] key to activate DSP Passband Filter, and a graphical representation of the relative width of the DSP passband displayed on the LCD.
2. Turn the SELECT knob to adjust the passband filter width.
3. Press the [C(BPF)] key again to turn the DSP passband filter off.

DSP Equalizer

1. Press the [FUNC] key several times to recall the "FUNC MODE 11".
2. Press the [D(EQ)] key to toggle the DSP Equalizer between four settings:
   DSP EQ 1 → DSP EQ 2 → DSP EQ 3 → DSP EQ (Off) → DSP EQ 1 .....

IPO (Inter Point Optimization)

1. Press the [FUNC] key several times to recall the "FUNC MODE 5", then press the [A(IPO)] key to reduces the receiver front end gain bypassing the RF preamplifier.
2. Press the [A(IPO)] key again to re-activate the receiver front end's preamplifier.

Note: This feature does not activated on the 144MHz and 430MHz bands.

ATT (Front End Attenuator)

1. Press the [FUNC] key several times to recall the "FUNC MODE 5", then press the [B(ATT)] key to reduces the strength of all signals (and noise) by 12-dB.
2. Press the [A(ATT)] key again to represents "ATT off".

Note: This feature does not activated on the 144MHz and 430MHz bands.

Transmitting

SSB Transmission

Basic Operation

1. Press (or press and hold for 1/2 second) the [MODE] key to recall the LSB or USB mode (depending on band; use USB on 14 MHz & higher bands).
2. Press the Microphone's PTT switch, and speak into the microphone at a normal voice level.
   Note: The microphone gain level can be adjusted via the Menu Item 4-1.
3. Release the PTT switch to return to the receive mode.

VOX Operation

1. Press the [FUNC] key several times to recall the "FUNC MODE 8", then press the [D(VOX)] key to activate the VOX circuitry.
2. Without pressing the PTT switch on the microphone, speak into the microphone at a normal voice level. The FT-100 should automatically switch into the transmit mode, and should return to receive when you quit talking.
3. To cancel VOX and return to PTT operation, press [D(VOX)] key once more.

Note: The VOX gain level and VOX delay time can be adjusted via the Menu Item 7-8 & 7-9.

Digital Speech Processor Operation

1. Press the [FUNC] key several times to recall the "FUNC MODE 8", then press the [C(PRC)] key to activate the Digital Speech Processor.
2. Press the PTT switch, and speak into the microphone in a normal voice level. Increases your transceiver's average power output.
3. To deactivate the Digital Speech Processor, press [C(PRC)] key once more.
   Note: The compression level of the Digital Speech Processor can be adjusted via the Menu Item 4-2.

CW Transmission

Straight Key Operation

1. Insert your key's plug into the KEY jack on the rear panel.
2. Press the [MODE] key several times to recall the CW mode.
3. When you press on the key, the transmitter will automatically activated and you will hear the CW side tone in the background.
4. When you quite sending, the FT-100 will return to the receive mode.
   Note: The CW hang time can be adjusted via the Menu Item 7-5.

Electronic Keyer Operation

1. Connect your keyer paddle's cable to the KEY jack on the rear panel.
2. Press the [MODE] key several times to recall the CW mode.
3. Press the [FUNC] key several times to recall the "FUNC MODE 9", then press the [D(KEY)] key to activate the electronic keyer.
4. Close the "Dot" contact on the paddle, and rotate the ??? knob to set the electronic keyer's speed to the desired level.
5. The weight (proportion of dots to dashes) may be adjusted (each parameter individually) in the event you wish to modify the relationship from the default 1:1:3 Dot/Space/Dash ratio. Use the Menu Item 7-1 & 7-2.
6. A programmable delay in the keyer transmission may be added, when using an amplifier, so as to allow the amplifier's relays a few extra milliseconds in order to become properly seated. This delay shifts the entire stream of dots and dashes without changing the weight. Use the Menu Item 7-4.

7. The function of the electronic keyer may be changed from "Keyer Without Space" to "Keyer With Auto-Space" to "Bug Keying" via the Menu Item 7-0.

Memory Keyer Operation

The FT-100 includes an easy-to-use CW Message memory system, which allows automated CW sending of repetitive messages. The following functions are available through the CW Message Memory System:

- Up to three messages may be stored (two may contain up to 50 characters, while one may contain up to 20 characters.
- A sequential contest number (0001, 0002, ...) may be imbedded in a message, if desired.
- The stored messages may be reviewed without transmission so the contents may be checked for accuracy.
- The message(s) may be transmitted so as to reduce operator fatigue during long operating sessions, such as in a contest.

Message Memory Storage

1. Press the [FUNC] key several times to recall the "FUNC MODE 10", then press and hold one of the keys numbered [B(CH1)], [C(CH2)] or [D(ID)] for 1/2 second to store a message in one of those slots. Memories [B(CH1)] and [C(CH2)] will accommodate messages of up to 50 characters in length, while memory [D(ID)] will accommodate messages of up to 20 characters in length. Additionally, Memory [D(ID)] can accommodate a message within which a sequential contest number may be imbedded.
2. After pressing one of the numbered keys, start sending the desired message. The storage process will be terminated automatically.
3. To imbed a contest serial number in a message, send three Question Marks (???) at the desired point in a message assigned to the [D(ID)] key. For example, to send "5990001," "5990002," and so forth, store "5NN???" into the special "Contest Number Memory Register ([D(ID)] key). If the number gets out of sequence during the contest, you may set the number to an arbitrary value via the Menu Item 7-4.

Review of Stored Message

To review messages previously stored without sending them over the air, press the [A(MON)] key momentarily then press the desired key ([B(CH1)], [C(CH2)] or [D(ID)]) momentarily. You will hear the message via the Sidetone circuit, so as to check it for accuracy.

Transmission of Stored Messages

Press the desired key ([B(CH1)], [C(CH2)] or [D(ID)]) momentarily to play the message stored in that memory register. The transmitter will automatically be activated for message generation, after which the transceiver will automatically revert to the receive mode.

FM Operation

Simplex (Non-Repeater) Operation

1. Press (or press and hold for 1/2 second) the [MODE] key to recall the FM mode.
2. Close the microphone's PTT switch to activate the transmitter. Speak into the microphone in a normal voice level.
   Note: The microphone gain level can be adjust via the Menu Item 4-1, and FM deviation can be adjust via the Menu Item 5-3..
3. Release the PTT switch to return to the receive mode.
4. The VOX feature is operational during FM transmission.

Repeater Operation

1. Press the [FUNC] key several times to recall the "FUNC MODE 3", then press the [A(RPT)] key to activate repeater operation. Pressing the [A(RPT)] key causes two important functions to become activated:
   - The transmitter frequency will be shifted by a default value so as to access the repeater input frequency;
   - A repeater access tone will be superimposed on your signal, as many repeaters on these bands use CTCSS to prevent false activation of the repeater by random noise. Both Subaudible (CTCSS) and Burst (1750 Hz) tones are available.
2. If the above repeater shifts and/or access tone are not appropriate for your area, they may be set independently for each band. The menu selections which perrtain to these functions are shown below.
   - To set the CTCSS Tone, use the Menu Item 6-0.
   - To set the 29 MHz repeater shift, use the Menu Item 6-2.
   - To set the 50 MHz repeater shift, use the Menu Item 6-3.
   - To set the 144 MHz repeater shift, use the Menu Item 6-4.
   - To set the 430 MHz repeater shift, use the Menu Item 6-5.
3. One press of the [A(RPT)] key will have set the FT-100 for "Minus Shift" operation. In this situation, you will observe the "-" indicator on the display. If your repeater uses a positive shift (instead of negative), press the [A(RPT)] key again; the "+"

indicator will replace the "-" indicator on the display.

4. Set the FT-100's receiver to the repeater output (downlink) frequency.
5. Close the PTT switch and speak into the microphone. You will observe that the transmitted frequency has shift according to the setting of the [A(RPT)] key.
6. Release the PTT switch to return to the receiver mode.

CTCSS Tone Squelch Operation

The CTCSS Tone Squelch operation is available to silently monitor for calls on busy channels, with your receiver's squelch only opening up when a signal bearing the matching CTCSS tone appears on your frequency.

1. Set the Encoder and Decoder Tone frequency via the Menu Item 6-6 (Decoder) and 6-7 (Encoder).
2. Press the [FUNC] key several times to recall the "FUNC MODE 3", then press the [C(TON)] key twice to activate the CTCSS Tone Squelch. The receiver will become silent, unless a station bearing a CTCSS tone matching that of your transceiver appears on frequency. When this happens, the squelch will open and normal reception will commence.
3. Press the [C(TON)] key once to cancel the CTCSS Tone Squelch.

DSC Operation

Another from of tone access control is Digital Code Squelch, or DCS. It is a newer, more advanced tone system that is less susceptible to false triggering than CTCSS. A DCS encoder/decoder is built into your FT-100, and operation is very similar to that just described for CTCSS.

1. Set the DCS code via the Menu Item 2-6.
2. Press the [FUNC] key several times to recall the "FUNC MODE 4", then press the [A(DCS)] key to activate the DCS encoder/decoder. The receiver remains muted until a matching DCS code is received on an incoming signal.
3. Press the [A(DCS)] key once to cancel the DCS.

ARTS Auto Range Transpond System

This system uses DCS signaling to inform you when you and another ARTS-equipped station are within communications range.

1. Press the [FUNC] key several times to recall the "FUNC MODE 4", then press the [B(ART)] key to select desired current ARTS mode (RX:receive-only, TX:transmit-only, or TRX:transceive).

2. Press and hold the [D(SET)] key for 1/2 second to activate the ARTS.
3. To cancel the ARTS operation, press the [B(ART)] key again.

Memory Channel Operation

QMB Channel Programming/Recall

QMB Channel Storage

1. Tune in the desired frequency.
2. Press the [FUNC] key several times to recall the "FUNC MODE 2", then press and hold the [C(QMB)] key for 1/2 second until the double beep is heard. The double beep provides audible confirmation that the memory storage was successful.
3. As you dial up other frequencies, repeating the procedure in, above causes the QMB memory system to cycle through the QMB channels in the following sequence:

   Q-01 → Q-02 → Q-03 → .....(up to Q-10)

   Frequency data will be stored and purged on a first-in, first-out basis.

QMB Channel Recall

1. Press the [C(QMB)] key momentarily to recall the currently active QMB channel.
2. Press the [C(QMB)] key repeatedly to cycle though the QMB channels, in the same sequence as shown for QMB Channel Storage.
3. While operating in the QMB Channel Recall mode, you are not "fixed" on the QMB channel; you may tune away from the QMB channel frequency, using the Main Tuning Dial, as though you were in the VFO mode. In this situation, the "M-TUNE" will be indicate in the display. To return to the originally-stored QMB channel, press the [C(QMB)] key once.

Memory Operation on "Regular" Memory Channels (channel # 1-001 to 1-200)

Memory Channel Storage

1. Tune in the desired frequency, and set the operating mode and bandwidth.
2. Press the [FUNC] key several times to recall the "FUNC MODE 1", then press the [A(V>M)] key momentarily to enter the "Memory Check" mode, which is used to find an unused memory channel. The frequency stored (if any) on the current memory channel will be shown in the display.
3. Use the SELECT knob to increment through the main channel bank. If you have restricted memory operation to one channel group, memory storage will similarly

be limited to the currently-selected memory group; just press SELECT knob to allow unrestricted access to all memory channels for storage of your frequency data.

4. When you have selected the channel location into which to store the frequency information, press and hold the [A(V>M)] key for 1/2 second, until you hear a double beep, which confirms that the frequency information was successfully stored.

Memory Channel Recall

1. If you currently are in the VFO tuning mode, press the VFO/MR key once to enter the "Memory" mode (the "MR" icon will appear in the display).
2. To select another memory channel, turn the SELECT knob.
3. To restrict your memory channel selection just to one memory group, press the SELECT knob once. Now, only those channels within the current memory group will be available for recall via step 2. above. To change memory groups, press the SELECT knob again, then turn the SELECT knob to step through the channels until you enter another group. You may now press the SELECT knob again to restrict memory channel access to the newly-selected group.
4. Once you are operating on a memory channel, you may tune off of the original frequency (as though you were in the VFO mode). Just rotate the MAIN DIAL Knob; the "MR" icon will be replaced by one which indicates "M TUNE," indicating that you have now shifted into the "Memory Tuning" mode. When operating the Memory Tuning mode, if you find another frequency you wish to store into another memory channel, just press the [A] key momentarily, select a new memory channel via the SELECT knob, then press and hold the [A(V>M)] key for 1/2 second (until you hear the double beep). To exit the Memory Tuning mode, press the VFO/MR key as follows:
   - One touch of the VFO/MR key returns you to the original memory frequency.
   - A second touch of the VFO/MR key will cause you to exit the Memory mode and return to the VFO mode (the "MR" indicator will be replaced by "VFO-A" or "VFO-B").

Memory Group Information

The FT-100's main memory area may be divided into as many as eight groups. These groups may, in some instances, provide more efficient or intuitive memory operation.

Once you have determined how many memories are to be designated in each group (see menu selection 0-1 ~ 0-8, you may restrict memory operation just to one group, or you

may allow the memory channels to be selected without regard to memory group boundaries.

The complete memory channel number is composed of two sets of numbers, separated by a hyphen. The single digit before the hyphen is the memory group number (1, 2, 3, ...8). The second, two digit number is the channel number itself (1 to 200). Therefore, if channel #34 is assigned to group #1, its channel number is "1-34." If you have created eight channel banks of 24 ~ 25 channels each, channel #34 would be designated "2-34" since it falls within channel group #2.

Memory Mode Accessories

Moving Memory Data to VFO

Data stored on memory channels can easily be moved to VFO, if you like.

1. Select the memory channel containing the frequency data to be moved to VFO.
2. Press the [FUNC] key several times to recall the "FUNC MODE 1", then press and hold the [B(M>V)] key for 1/2 second until you hear a double beep. The data will now have been copied to VFO, although the original memory contents will remain intact on the previously-stored channel.

Deleting Data from a Memory Channel

Frequency data stored on a memory channel can be deleted from a memory channel, if desired. The deletion process is not a "hard" erasure, so if you erase a channel by mistake using this procedure, the memory channel contents can be recovered.

1. Select the memory channel containing the frequency data to be deleted.
2. Press the [FUNC] key several times to recall the "FUNC MODE 1", then press and hold the [A(V>M)] key for 1/2 second until you hear a double beep. At this point, the memorized frequency and other data will disappear. The data is now "masked" and will not be available for operation.
3. To restore the masked frequency data, repeat steps 1., and 2. Above. However, if you store new frequency information on a channel containing masked data, the masked data will be over-written and lost.

Smart Search Operation

The Smart Search automatically stores the frequencies where activity is encountered on the selected band. When Smart Search is engaged, the transceiver quickly searches

above and below your current frequency, storing active frequencies as it goes (without stopping on them even momentarily). These frequencies are stored in a special Smart Search memory bank, consisting of 50 memories (25 above the current frequency, 15 below the current frequency).

1. Set the SQL knob to the point where background noise is silenced. A typical setting, for effective Smart Search operation, will be at 12 o'clock or slightly clockwise from this position.
2. Set the transceiver into the operating configuration in which you wish to search (VFO, Memory, QMB, etc.).
3. Press and hold the [SRCH] key for 1/2 second to activate Smart Search scanning.
4. The transceiver sweeps the current band once in each direction starting on the current frequency. All channels where activity is present (up to 25 in each direction) are loaded into the Smart Search memories. Whether or not all 50 memories are filled, the search stops after one sweep in each direction.
5. To recall Smart Search memories, press the [SRCH] key momentarily. Now you can turn the SELECT knob to select the Smart Search memories.

Scanning Operation

The FT-100 contains a wide variety of scanning capabilities. Whether you are in the VFO mode or one of the memory modes, scanning operation is fundamentally identical in all modes of operation, but with the following differences:

- In the VFO mode, scanning causes the transceiver to sweep up or down the band, pausing or halting on any signal encountered;
- In the QMB mode, the scanner will scan only the QMB memory bank;
- In the Memory mode, the scanner will scan the programmed memories, and can be instructed to skip certain memories during scanning;
- In the Programmable Memory Scan (PMS) mode, the scanner will scan the band within user-programmed frequency limits.

Scanning operation is easy to perform:

1. Set the SQL knob to the point where background noise is silenced. A typical setting, for effective scanning operation, will be at 12 o'clock or slightly clockwise from this position.

2. Set the transceiver into the operating configuration in which you wish to scan (VFO, Memory, QMB, etc.).
3. Press the [FUNC] key several times to recall the "FUNC MODE 6", then press the [B(SCN)] key momentarily to start upward scan. Rotate the MAIN DIAL Knob counter clock wise to toggle scanning direction downward.
   Note: Press and hold either the microphone's [UP] or [DWN] key for 1/2 second will cause upward or downward scanning, respectively, to begin.
4. The scanner will now cause the transceiver to increment in the chosen direction until a signal is detected. When a signal is encountered which opens the Squelch, the scanner will pause until the signal disappears (at the end of the other station's transmission), at which point the scanner will resume. While the transceiver is in the "Pause" condition, the "SCAN" icon (located above the [B(SCN)] key) will blink. See "Scan-Resume Choices" for details of how to customize the resumption of scanning.
5. Press PTT switch on the microphone to cannel scanning.

Note: VFO scan speed is determined via the Menu Item 2-2, memory channel scan speed is determined via the Menu Item 2-1.

Scan Skip Programming (Memory Mode Only)

Among the memories you have programmed, there may be some stations which you do not wish to scan.

To remove a channel from the scanning loop:

1. Recall the memory channel to be skipped.
2. Press the [FUNC] key several times to recall the "FUNC MODE 2", then press the [D(SKP)] key momentarily, the "SKIP" icon appears in the display; this shows that this channel is now not eligible for scanning.
3. Repeat steps 1. and 2. as many times as necessary to skip all the channels you do not wish to scan.
4. Initiate memory scanning, you will observe that the channels you marked to be skipped are not included in the scanning loop. Press the PTT switch to stop the scan; now use the SELECT knob to step through the channels manually - one at a time – and you will observe that the "skipped" channels are, nonetheless, available for recall by manual means.
5. You may restore a previously-skipped channel to the scanning loop by selecting the channel manually; then press the [D(SKP)] key momentarily so that the "SKIP"

icon is disappears.

Programmable Memory Scan (PMS) Operation

To limit scanning (or tuning) to within a particular frequency range, you can use Programmed Memory Scanning (PMS) provided with nine special-purpose memories (P1 ~ P9). First, store the upper and lower frequency limits of the range in a consecutive pair of PMS memories (i.e., P1 & P2, P2 & P3, etc.). For example, P2 might contain the lower edge and P3 the upper. Next recall the first memory of the pair that hold the range you want to scan or tune, then turn the Main Tuning Knob to activate memory tuning ("M-TUNE" appears). Tuning and scanning are now within the limits of the selected PMS memory pair, keeping operation inside this programmed range.

Example: Limit tuning & scanning to the 17-m band.

1. Press [VFO/MR] key as necessary, to recall the VFO mode. Tune to the low edge of the 17-m band: 18.068 MHz and select the desired mode (here, USB/CW).
2. Press the [FUNC] key several times to recall the "FUNC MODE 1". Press the [A(V>M)] key momentarily, then turn the SELECT knob to select the memory channel "P1".
3. Press and hold the [A(V>M)] key for 1/2 second to write the VFO into "P1".
4. Tune to the high edge of the 17-m band (18.168 MHz), then select the desired mode.
5. Press the [A(V>M)] key momentarily, then turn the SELECT knob to select the memory channel "P2".
6. Press and hold the [A(V>M)] key for 1/2 second to write the VFO into "P2".
7. Recall the memory channel P1, and turn the MAIN DIAL Knob to activate memory tuning.
8. Tuning and scanning are now limited to the 18.068- to 18.168-MHz range until you press [VFO/MR] key to return to memory channel operations.

Scan-Resume Choices

Scanning operation requires that you have the FT-100's audio squelched. The transceiver then assumes that the opening of the squelch corresponds to the discovery of a signal you may wish to listen to.

Once the scan has been halted, one of four things may happen:

- The default action is that the transceiver pauses on the signal and stays locked on its frequency for five seconds. Thereafter, scanning will resume whether or not the other station's transmission has ended.

- One of another option is that the scanner halt until the other station's transmission ceases (at which point the squelch will close). Five second after the squelch closes, scanning resumes automatically. The resumption interval is adjustable from 0 to 10 seconds via the Menu Item 2-4.
- One of another option is that the scanner finds a signal, and lock on that frequency without resuming the scan at some point.
- The scanner can also be scanning slows down (but doesn't stop) for a five second , when activity is detected.

The scan-resume choices may be selected via the Menu Item 2-0.

Dual Watch Operation

Dual Watch is similar, in some respects, to scanning. In Dual Watch, however, the transceiver monitors (squelched) on the VFO-A frequency while periodically checking the VFO-B for activity. A typical example might be for you to set VFO-A to 50.110 MHz, watching for DX stations who might call CQ on that frequency, while periodically checking 28.885 MHz for stations reporting band openings on 6 meters.

To activate Dual Watch:

1. Set up transmit and receive operation on VFO-A, establishing your primary monitoring frequency. Set up the frequency to be checked periodically on VFO-B.
2. Recall VFO-A, then rotate the SQL control until the background noise is silenced.
3. Press the [FUNC] key several times to recall the "FUNC MODE 6", then press the [A(DAL)] key momentarily to activate Dual Watch.
4. If a station is detected on the VFO-B frequency, the FT-100 will pause on the VFO-B frequency, and stay there according to the menu selections you made per the "Scan-Resume Choices" earlier.
5. Press the [A(DAL)] key again to cancel Dual Watch. Note that pressing the PTT switch on the microphone does not cannel Dual Watch operation.

Priority Operation

The Priority feature initiates a two frequency scanning process, whereby Memory Channel #1-01 is checked every five seconds to see if there is activity.

1. Adjust the SQL knob so that the background noise is just silenced.
2. Press the [FUNC] key several times to recall the "FUNC MODE 6", then press the [C(PRI)] key to initiate the Priority mode. The FT-100 will continue to operate normally on the current frequency, but every five seconds will switch briefly to Memory Channel #1-01, locking for activity. If no activity is found, operation will resume on the current frequency.
3. If activity is found on the Priority channel (Memory #1-01), the transceiver will lock on the Priority Channel for a interval set via the Menu Item 2-4.
4. If you press the PTT switch while "pausing" on the Priority Channel, operation will be locked on the Priority Channel.
5. Press the [C(PRI)] key to exit the Priority mode.

Menu Operation

The FT-100's Menu System allows you, the owner, to customize a wide variety of transceiver performance aspects and operating characteristics.

Menu Selections

1. Press and hold the [FUNC] key for 1/2 second. The Menu Item number and a brief title for the Menu Item will appear in the display.
2. Rotate the MAIN DIAL Knob to select the Menu Item you wish to work on.
3. When you have chosen the desired Menu Item number.
4. Rotate the SELCT knob to change the value or condition for the Menu Item.
5. When you have made your selection, press and hold the [FUNC] key for 1/2 second to exit and resume normal mode.

Menu Mode Selections and Settings

Menu Item 0-1

Function: Select the number of Memory Channels in Group 1.

Available Values: 1 ~ 99

Default: 99 (All memory channels are in Group 1 by default)

Memory Group 1 may be left at 99 channels, in which case there will be no partitioning of the Memory System. Otherwise, you may set any number less than 99 for inclusion in Group 1 if you wish to partition the memories.

Menu Item 0-2

Function: Select the number of memories in Group 2

Available Values: The last digit in Group 1 plus 1 is the bottom end of Group 2; 99 maximum
Default: OFF
If, for example, there are 25 memories in Group 1, Group 2 starts at Memory # 26.

Menu Item 0-3
Function: Select the number of memories in Group 3
Available Values: The last digit in Group 2 plus 1 is the bottom end of Group 3; 99 maximum
Default: OFF
If, for example, Group 2 contains Memory Channels 26 through 40, Group 3 starts at Memory # 41.

Menu Item 0-4
Function: Select the number of memories in Group 4
Available Values: The last digit in Group 3 plus 1 is the bottom end of Group 4; 99 maximum
Default: OFF

Menu Item 0-5
Function: Select the number of memories in Group 5
Available Values: The last digit in Group 4 plus 1 is the bottom end of Group 5; 99 maximum
Default: OFF

Menu Item 0-6
Function: Select the number of memories in Group 6
Available Values: The last digit in Group 5 plus 1 is the bottom end of Group 6; 99 maximum
Default: OFF

Menu Item 0-7
Function: Select the number of memories in Group 7
Available Values: The last digit in Group 6 plus 1 is the bottom end of Group 7; 99 maximum
Default: OFF

Menu Item 0-8

Function: Select the number of memories in Group 8

Available Values: The last digit in Group 7 plus 1 is the bottom end of Group 8; 99 maximum

Default: OFF

Menu Item 0-9

Function: Auto Channel Up

Available Values: ON/OFF

Default: OFF

When programming memories from the VFO, this feature automatically increments selection to the next higher memory channel. This allows programming sequential memories more easily (you don't have to manually select the next memory to be written). This also prevents inadvertently overwriting stored memories.

Menu Item 1-0

Function: MAIN DIAL Speed

Available Values: 100/200

Default: 200

You may choose between two speeds for the MAIN DIAL Knob. Selecting "100" cuts the tuning rate in halt compared to the default value.

Menu Item 1-1

Function: IF Shift Tuning Step Size

Available Values: 10/20/50 (Hz/step)

Default: 20 Hz/step

Selects 10 Hz, 20 Hz, or 50 Hz tuning steps used with the IF Shift control.

Menu Item 1-2

Function: Clarifier Tuning Step Size

Available Values: 5/10/20/50 (Hz/step)

Default: 10 Hz/step

Selects 5 Hz, 10 Hz, 20 Hz, or 50 Hz tuning steps used with the SELCT (CLAR) control.

Menu Item 1-3

Function: Memory Tuning

Available Values: ON/OFF

Default: ON

Enables/disables the memory tuning feature.

Menu Item 1-4

Function: VFO link

Available Values: ON/OFF

Default: OFF

Enables/disables the VFO link feature.

Menu Item 1-7

Function: Auto AGC

Available Values: FULL/MODE

Default: MODE

Menu Item 1-8

Function: Key and Panel Beeper

Available Values: ON/OFF

Default: ON

Enables/disables the beep that sounds when a front panel key or button is pressed.

Menu Item 1-9

Function: Beep Frequency

Available Values: 200 ~ 5000 Hz

Default: 880 Hz

This Menu Item allows you to set the tone of the front panel key beep tone generator to whatever value is comfortable.

Menu Item 2-0

Function: Select the desired Scan-Resume mode.

Available Values: STOP/PAUSE/5S(second)/SLOW

Default: BUSY

This Menu Item allows you to select your favorite method of scan-restart after the scanner has stopped on an incoming signal (when the squelch opens). The choice are:

STOP: The scanner will stop when a signal is received, and will not restart.

PAUSE: The scanner will hold until the signal disappears, then will resume after a delay set via the Menu Item 2-4

5S (second): The scanner will hold for five second, then resume whether or not the other station is still transmitting.

SLOW: The scanner will slows down for five seconds after detecting activity, then resumes to normal scan rate.

Menu Item 2-1

Function: Memory Scan Speed

Available Values: 100/200/500/1000 ms

Default: 200 ms

This sets the scan dwell time, which is the duration that scanning samples each memory channel.

Menu Item 2-2

Function: VFO Scan Speed

Available Values: 1/10/50/100 ms

Default: 10 ms

This sets the scan dwell time that scanning samples each VFO.

Menu Item 2-3

Function:

Available Values:

Default:

Menu Item 2-4

Function: Scan Delay Time

Available Values: 1/2/5/10 second

Default: 5 second

Selects a scanning delay time. This determines how long scanning pauses on activity before resuming.

Menu Item 2-5

Function: Smart Search

Available Values: BAND/SCH/MCH

Default: BAND

Menu Item 2-6

Function: DCS Code

Available Values: See chart XX

Default: 023

Menu Item 2-7

Function: DCS Polarity

Available Values: NOR/INV

Default: NOR

Keep this selection set to "NOR" unless you are certain that the other station(s) will be using "Inverted" DCS cpdimg.

Menu Item 2-8

Function:

Available Values:

Default:

Menu Item 2-9

Function:

Available Values:

Default:

Menu Item 3-0

Function: Frequency Display Format

Available Values: CARRIER/OFFSET

Default: CARRIER

CARRIER: Displays the actual carrier frequency, without any offset added. When changing modes, the frequency display remains constant.

OFFSET: When changing modes, the frequency display changes to reflect the added BFO offset.

Menu Item 3-1

Function: Display Resolution

Available Values: 10/100/1000 Hz

Default: 10 Hz

Selects 10 Hz, 100 Hz, or 1 kHz display frequency resolution for the VFO display. Note that this setting does not affect tuning step size.

Menu Item 3-2

Function: LCD Display Brightness

Available Values: AUTO/INTRG/MANU

Default: AUTO

Menu Item 3-3

Function: S/PO Meter Peak-Hold

Available Values: OFF/500ms/1sec./2sec.

Default: 500 ms

Enables/disables peak-hold feature, and selects display bar/segment persistence (delay time) from 500ms, 1 sec., or 2 sec..

Menu Item 3-4

Function:

Available Values:

Default:

Menu Item 3-5

Function:

Available Values:

Default:

Menu Item 3-6

Function:

Available Values:

Default:

Menu Item 3-7

Function:

Available Values:

Default:

Menu Item 3-8

Function:

Available Values:

Default:

Menu Item 3-9

Function:

Available Values:

Default:

Menu Item 4-0

Function: RF Power Output Range

Available Values: VAL/10/50/100 W

Default: 100 W

Selects a maximum RF power output limit of 10 W, 50 W, 100 W.

Menu Item 4-1

Function: MIC Gain

Available Values:

Default:

Menu Item 4-2

Function:

Available Values:

Default:

Menu Item 4-3

Function:

Available Values:

Default:

Menu Item 4-4

Function:

Available Values:

Default:

Menu Item 4-5
Function:
Available Values:
Default:

Menu Item 4-6
Function:
Available Values:
Default:

Menu Item 4-7
Function:
Available Values:
Default:

Menu Item 4-8
Function:
Available Values:
Default:

Menu Item 4-9
Function:
Available Values:
Default:

Menu Item 5-0
Function:
Available Values:
Default:

Menu Item 5-1
Function:
Available Values:
Default:

Menu Item 5-2
Function:

Available Values:

Default:

Menu Item 5-3

Function:

Available Values:

Default:

Menu Item 5-4

Function:

Available Values:

Default:

Menu Item 5-5

Function: RTTY Frequency Shift

Available Values: 170/425/850 Hz

Default: 170 Hz

Selects 170, 425, or 850 Hz standard frequency shift for FSK RTTY operation.

Menu Item 5-6

Function: RTTY Frequency Display

Available Values: MARK F/CARR

Default: MARK

Menu Item 5-7

Function:

Available Values:

Default:

Menu Item 5-8

Function: Packet Frequency Display Offset

Available Values:

Default:

Menu Item 5-9

Function: Packet Tones

Available Values: 1170/1700/2125/2210 Hz

Default: 2125 Hz

Selects one of four available packet tone pairs (1170:1070/1270 Hz, 1700:1600/1800 Hz, 2125:2025/2125 Hz, 2210:2110/2130 Hz). The frequency displayed is actually the center frequency of the selected tone pair.

Menu Item 6-0

Function: CTCSS Repeater Tone

Available Values: See chart below

Default: 88.5 Hz

Select one of 38 CTCSS (Continuous Tone Coded Squelch System) tones to be transmitted to access repeaters that require them.

Menu Item 6-1

Function: Repeater Tone Setting

Available Values: Continuous/Burst

Default: Continuous

Selects continuous tone or burst tone mode for CTCSS operation.

Menu Item 6-2

Function: 29 MHz Repeater Shift

Available Values: 0 ~ 200 Hz

Default: 100 Hz

Selects the desired TX frequency offset (shift) from the displayed RX frequency to access 29 MHz FM repeater.

Menu Item 6-3

Function: 50 MHz Repeater Shift

Available Values: 0 ~ 1000 Hz

Default: 100 Hz

Selects the desired TX frequency offset (shift) from the displayed RX frequency to access 50 MHz FM repeater.

Menu Item 6-4

Function: 144 MHz Repeater Shift

Available Values: 0 ~ 1000 Hz

Default: 600 Hz

Selects the desired TX frequency offset (shift) from the displayed RX frequency to access 144 MHz FM repeater.

Menu Item 6-5

Function: 430 MHz Repeater Shift

Available Values: 0 ~ 10 MHz

Default: 5 MHz

Selects the desired TX frequency offset (shift) from the displayed RX frequency to access 430 MHz FM repeater.

Menu Item 6-6

Function: CTCSS Tone Decoder Frequency

Available Values: See Chart below

Default: 88.5 Hz

Selects the frequency of your decoding tone for CTCSS Tone Squelch Operation.

Menu Item 6-7

Function: CTCSS Tone Encoder Frequency

Available Values: See Chart below

Default: 88.5 Hz

Selects the frequency of your encoding tone for CTCSS Tone Squelch Operation.

Menu Item 6-8

Function:

Available Values:

Default:

Menu Item 6-9

Function:

Available Values:

Default:

Menu Item 7-0

Function: Keyer Mode Selection

Available Values: EL1/EL2/BAG

Default: EL1

Selects the desired keyer emulation mode for the built-in electronic keyer:

EL1: Iambic keyer with ACS (Automatic Character Spacing) disabled. Weighting is user-selectable via the Menu Items 7-1 and 7-2.

EL2: Iambic keyer with ACS enabled. Weighting is user-selectable via the Menu Items 7-1 and 7-2.

BUG: Mechanical "bug" keyer emulation. One paddle produces "dits" automatically, while the other paddle manually produces "dahs".

Menu Item 7-1

Function: CW "Dot" Weighting

Available Values: 0.5 ~ 2.0

Default: 1.0

Adjusts dot character weight from 0.5:1 ~ 2.0:1

Menu Item 7-2

Function: CW "Dash" Weighting

Available Values: 2.0 ~ 4.5

Default: 3.0

Adjusts dash character weight from 2.0:1 ~ 4.5:1

Menu Item 7-3

Function: Starting value for the Contest Number

Available Values: 0000 ~ 9999

Default: 0001

Menu Item 7-4

Function: Break-In Time Delay

Available Values: 0 ~ 30 ms

Default: 5 ms

Selects the time delay when the PTT is keyed and the carrier is transmitted during QSK operation.

Menu Item 7-5

Function: Keyer Delay

Available Values: 0 ~ 5.1 seconds

Default: 0.5 seconds

Selects the time delay during which the transmitter remains keyed after you stop sending.

Menu Item 7-6

Function: CW Playback Style (for Contest Number)

Available Values: ---

Default: ---

Menu Item 7-7

No Function

Menu Item 7-8

Function: VOX Gain

Available Values: 0 ~ 100 %

Default: 50 %

Set the gain of the VOX circuitry's input audio detector.

Menu Item 7-9

Function: VOX Delay

Available Values: 0 ~ 2 seconds

Default: 0.5 seconds

Set the "hang time" for the VOX circuitry.

Menu Item 8-0

Function: SQL/RF knob

Available Values: SQL/RF GAIN/AUTO

Default: AUTO

Selects the operation of the SQL/RF knob front panel control. When select to AUTO, SQL/RF knob

Menu Item 8-1

Function: LOCK Button Operation

Available Values: DIAL/PRIMARY/PANEL

Default: DIAL

Selects front panel [LOCK] key action:

DIAL:	Locks MAIN DIAL Knob only.
PRIMARY:	Locks front panel primary function keys (refer to drawing)
PANEL:	Locks front panel keys (refer to drawing).

Menu Item 8-2

Function:

Available Values:

Default:

Menu Item 8-3

Function:

Available Values:

Default:

Menu Item 8-4

Function:

Available Values:

Default:

Menu Item 8-5

Function: Squelch mode

Available Values: NOISE/RF/DSP AUTO

Default: NOISE

Menu Item 8-6

Function: Antenna Tuner

Available Values: TUNER/A-ANT/OFF

Default: OFF

Select the device (FC-20 or ATAS-100) to be controlled via the [B(TUN)] key.

TUNER:The [B(TUN)] key will activate the optional FC-20.

A-ANT: The [B(TUN)] key will activate the optional ATAS-100.

OFF: Disable the [B(TUN)] key.

Menu Item 8-7

Function:

Available Values:

Default:

Menu Item 8-8

Function:

Available Values:

Default:

Menu Item 8-9

Function:

Available Values:

Default:

CAUTION !

Changes or modifications to this device not expressly approved by Yaesu Musen could void the user's authorization to operate this device.

1. Changes or modifications to this device not expressly approved by Yaesu Musen 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 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 the Part 22.

This device complies with RSS-210 of Industry Canada. Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesirable operation of this device.