

# ENHANCING TRANSMIT SIGNAL QUALITY

## PARAMETRIC MICROPHONE EQUALIZER (SSB/AM/FM MODES)

The **FTdx5000** includes a unique Three-Band Parametric Microphone Equalizer, that provides precise, independent control over the low-, mid-, and treble-ranges in your voice waveform. You may utilize one group of settings when the speech processor is off, and an another independent group of settings when the speech processor is on.

### Setup of the Parametric Microphone Equalizer

1. Connect the microphone to the **MIC** jack.
2. Set the **[RF PWR]** knob to its minimum value, to reduce interference to other users during adjustment.

#### ADVICE:

- ❑ We recommend you consider connecting a dummy load to one of the Antenna jacks, and monitor your signal on a separate receiver, to prevent interference to other users.
  - ❑ You will have the best chance of hearing the effects of adjustments if you wear headphones (connected to the monitor receiver) while monitoring your transmitted signal.
3. To adjust the Parametric Microphone Equalizer while the speech processor is disabled, press the **[PROC]** button until the “**MICEQ**” icon appears (or blinks) in the display. To adjust the Parametric Microphone Equalizer with the speech processor engaged, press the **[PROC]** button until the “**MICEQ**” and “**PROC**” icon appears in the display.

#### ADVICE:

A blinking “**MICEQ**” icon indicates the Parametric Microphone Equalizer menu settings have all been set to “OFF”, as described later.

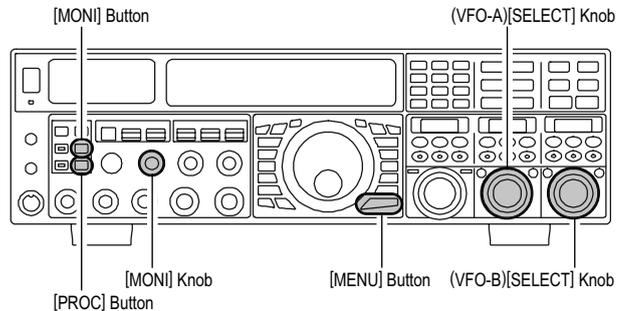
4. Press the **[MONI]** button, if you want to listen on the **FTdx5000**'s internal monitor. Adjust the monitor level using the **[MONI]** knob.
5. Press the **[MENU]** button briefly. The Menu list will appear in the display.
6. Rotate the **(VFO-A)[SELECT]** knob to find the “**TAUD**” Menu area, which contains Menu items “**151**” through “**159**”; these parameters apply to the adjustment of the Parametric Microphone Equalizer when the speech processor is disabled. Menu items “**160**” through “**168**” apply to the adjustment of the Parametric Microphone Equalizer when the speech processor is engaged.
7. Rotate the **(VFO-B)[SELECT]** knob to perform adjustments to a particular Menu item.

#### QUICK POINT:

The Parametric Equalizer is a unique system for adjusting the signal quality. Because the high, mid, and low audio ranges may be adjusted so precisely, it is possible to craft a response that provides a more natural and pleasant sound than you have ever experienced before. Or, the effective “talk power” can be significantly enhanced.

The aspects of configuration that you may adjust with the Parametric Equalizer are:

- Center Frequency:** The center frequency of each of the three bands may be adjusted.
- Gain:** The amount of enhancement (or suppression) within each band may be adjusted.
- Q:** The bandwidth over which the equalization is applied may be adjusted.



8. Press the **PTT** switch, and speak into the microphone while listening to the effects of the changes you are making (in step 6). Because the overall effect on the sound will change with each adjustment you make, you should make several passes through each adjustment area, to be sure that you are achieving the optimum setting.
9. When you have completed all adjustments, press and hold in the **[MENU]** button for two seconds to save the new settings and exit to normal operation. If you only press the **[MENU]** button momentarily to exit, any changes you performed will not be stored.

#### ADVICE:

To roll off excessive bass response in a wide-range studio microphone, try putting a 10 dB null at 100 Hz with a bandwidth of “1” or “2,” do about a 3 dB null centered on 800 Hz with a bandwidth of “3,” and then put an 8 dB peak centered on 2100 Hz with a bandwidth of “1.” These are starting recommendations; each microphone and user’s voice will be different, often requiring different settings.

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## PARAMETRIC MICROPHONE EQUALIZER (SSB/AM/FM MODES)

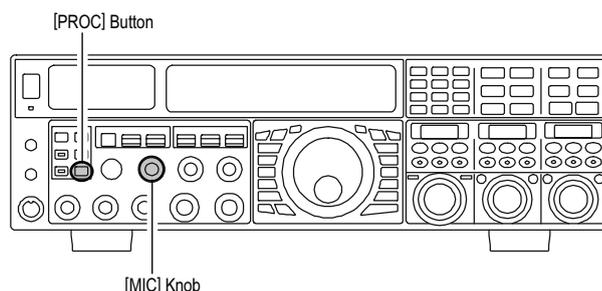
### Activating the Parametric Microphone Equalizer

1. Adjust the [MIC] (gain) knob for SSB use, as described on page 70.
2. Press the [PROC] button briefly. The “**MICEQ**” icon will appear in the display, confirming that the Parametric Microphone Equalizer is engaged.

#### ADVICE:

A blinking “**MICEQ**” icon indicates the Parametric Microphone Equalizer menu settings have all been set to “OFF” (“151 TAUD EQ1 FRQ”, “154 TAUD EQ2 FRQ”, and “157 TAUD EQ3 FRQ”).

3. Press the **PTT** switch on the microphone, and speak into the microphone in a normal voice level.
4. To switch the Parametric Microphone Equalizer off, press the [PROC] button repeatedly until the “**MICEQ**” icon disappears.

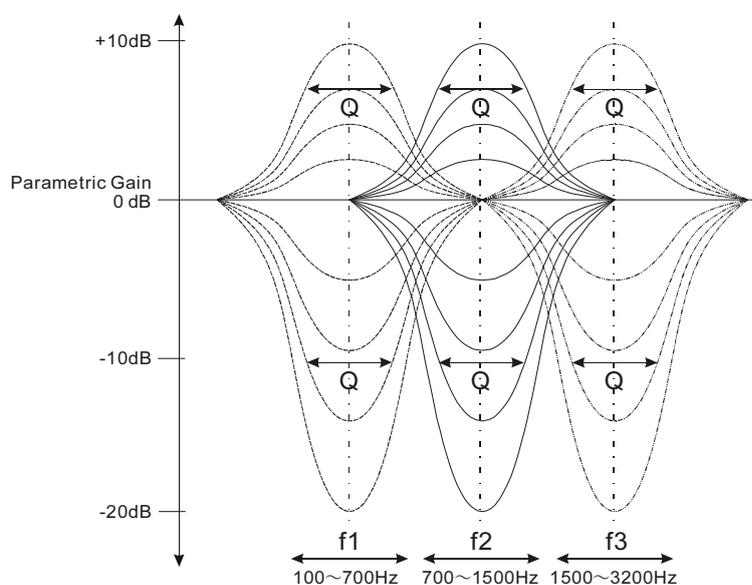


#### 3-STAGE PARAMETRIC EQUALIZER ADJUSTMENTS (SPEECH PROCESSOR: “OFF”)

Center Frequency	“151 TAUD EQ1 FRQ”	(Low) “100” (Hz) ~ “700” (Hz)
	“154 TAUD EQ2 FRQ”	(Mid) “700” (Hz) ~ “1500” (Hz)
	“157 TAUD EQ3 FRQ”	(High) “1500” (Hz) ~ “3200” (Hz)
Parametric Gain	“152 TAUD EQ1 LVL”	(Low) “-20” (dB) ~ “+10” (dB)
	“155 TAUD EQ2 LVL”	(Mid) “-20” (dB) ~ “+10” (dB)
	“158 TAUD EQ3 LVL”	(High) “-20” (dB) ~ “+10” (dB)
Q (Bandwidth)	“153 TAUD EQ1 BW”	(Low) “1” ~ “10”
	“156 TAUD EQ2 BW”	(Mid) “1” ~ “10”
	“159 TAUD EQ3 BW”	(High) “1” ~ “10”

#### 3-STAGE PARAMETRIC EQUALIZER ADJUSTMENTS (SPEECH PROCESSOR: “ON”)

Center Frequency	“160 TAUD PE1 FRQ”	(Low) “100” (Hz) ~ “700” (Hz)
	“163 TAUD PE2 FRQ”	(Mid) “700” (Hz) ~ “1500” (Hz)
	“166 TAUD PE3 FRQ”	(High) “1500” (Hz) ~ “3200” (Hz)
Parametric Gain	“161 TAUD PE1 LVL”	(Low) “-20” (dB) ~ “+10” (dB)
	“164 TAUD PE2 LVL”	(Mid) “-20” (dB) ~ “+10” (dB)
	“167 TAUD PE3 LVL”	(High) “-20” (dB) ~ “+10” (dB)
Q (Bandwidth)	“162 TAUD PE1 BW”	(Low) “1” ~ “10”
	“165 TAUD PE2 BW”	(Mid) “1” ~ “10”
	“168 TAUD PE3 BW”	(High) “1” ~ “10”



# ENHANCING TRANSMIT SIGNAL QUALITY

## USING THE SPEECH PROCESSOR (SSB MODE)

The Speech Processor is designed to increase “talk power” by increasing the average power output via a sophisticated compression technique. The result is improved intelligibility when conditions are difficult.

1. Adjust the **[MIC]** (gain) knob for SSB use, as described on page 70.
2. Press the **[PROC]** button repeatedly until the “**MICEQ**” and “**PROC**” icons appear in the display, confirming that the Speech Processor is engaged.

### ADVICE:

A blinking “**MICEQ**” icon indicates the Parametric Microphone Equalizer menu settings have all been set to “OFF” (“**160 TAUD PE1 FRQ**”, “**163 TAUD PE2 FRQ**”, and “**166 TAUD PE3 FRQ**”).

3. Set the **[PROC]** knob between the 9:00 to 12:00 o’clock position.

### ADVICE:

The relative compression level of the Speech Processor will show for 3 seconds in the lower right corner of the Main Display whenever the outer **[PROC]** knob is turned.

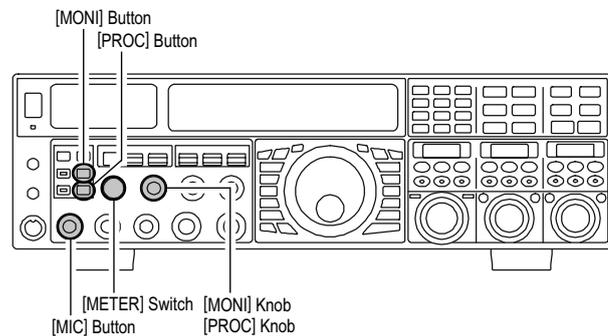
Alternately, the 3-second display feature may be changed to show in the **SUB DISPLAY-III** window via Menu item “**018 DISP INDI**”. Additionally, you may disable the 3-second display feature via Menu item “**017 DISP LVL IND**” See page 122 for details.

4. Rotate the **[METER]** switch fully to the left, to select “COMP” (Compression).
5. Press the **PTT** switch on the microphone, and speak into the microphone in a normal voice level. Confirm that the compression level is within the 5 dB to 10 dB range.

### ADVICE:

We recommend that you set the **[PROC]** knob between 9:00 to 12:00 o’clock position as described previously.

5. To switch the Speech Processor off, press the **[PROC]** button repeatedly until the “**MICEQ**” and “**PROC**” icons disappear.



### ADVICE:

- Excessive advancement of the **[PROC]** knob will result in a degradation of the transmitted signal-to-noise ratio, thereby reducing intelligibility at the other end of the circuit.
- The Transmit Monitor provides a helpful way of verifying proper adjustment of the compression level. Pressing the **[MONI]** button then adjusting the **[MONI]** knob for a comfortable listening level while you are transmitting, allows you to hear the difference in sound quality as you make adjustments.
- The **[RF PWR]** knob still controls the RF power output, whether or not the Speech Processor is engaged.
- When the optional **DMU-2000** Data Management Unit is connected, you may observe the effect of your compression level adjustments by viewing the wave-form on the “Oscilloscope” page.

# ENHANCING TRANSMIT SIGNAL QUALITY

## ADJUSTING THE SSB TRANSMITTED BANDWIDTH (SSB MODE)

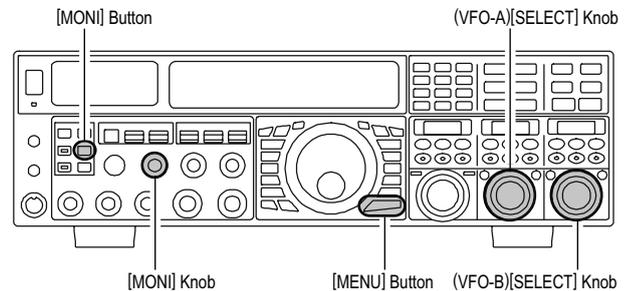
For SSB transmission, a default bandwidth of 2.4 kHz is provided. This bandwidth provides reasonable fidelity along with good talk power, and is typical of the bandwidth used for decades during SSB transmission. However, the bandwidth may be varied by the operator, when preferred, to provide different levels of fidelity or increased talk power.

Here's how to adjust the transmitted bandwidth on SSB:

1. Press the **[MENU]** button briefly, to engage the Menu.
2. Rotate the **(VFO-A)[SELECT]** knob, and select Menu item "104 A3J TX BPF".
3. Rotate the **(VFO-B)[SELECT]** knob to select the desired bandwidth. The available selections are 50-3000, 100-2900, 200-2800, 300-2700, 400-2600, and 3000WB. The default is 300-2700 Hz. A wider bandwidth will provide greater fidelity, while a narrow bandwidth will compress the available transmitter power into less spectrum, resulting in more "talk power" for DX pile-ups.
4. Press and hold in the **[MENU]** button for two seconds to save the new setting and exit to normal operation.

### ADVICE:

- The Transmit Monitor is very helpful way of verifying the effects on fidelity of changing the bandwidth. Pressing the **[MONI]** button then adjusting the **[MONI]** knob for a comfortable listening level while you are transmitting, you will be able to hear the difference in sound quality as you make changes.
- When the optional **DMU-2000** Data Management Unit is connected, you may verify the effect of your adjustments of the transmitted bandwidth by observing the Audio Scope on the "Oscilloscope" page.



### QUICK POINTS:

- The higher fidelity associated with wide bandwidth will be particularly enjoyable on the low bands, during local rag-chew QSOs.
- The "3000WB" setting is a special hi-fidelity setting, whereby the transmitted bandwidth is in excess of 3 kHz. This selection, in conjunction with judicious adjustment of the Parametric Microphone Equalizer (see next chapter) can provide truly outstanding fidelity and very natural-sounding audio.
- When using the wider bandwidth selections (especially "3000WB"), the apparent power output from the transmitter may seem lower. This is because the available power from the transmitter is being distributed over a wider bandwidth, and the power detection circuitry does not compensate for the effect of the bandwidth selection (it is calibrated in the default 2.4 kHz bandwidth).

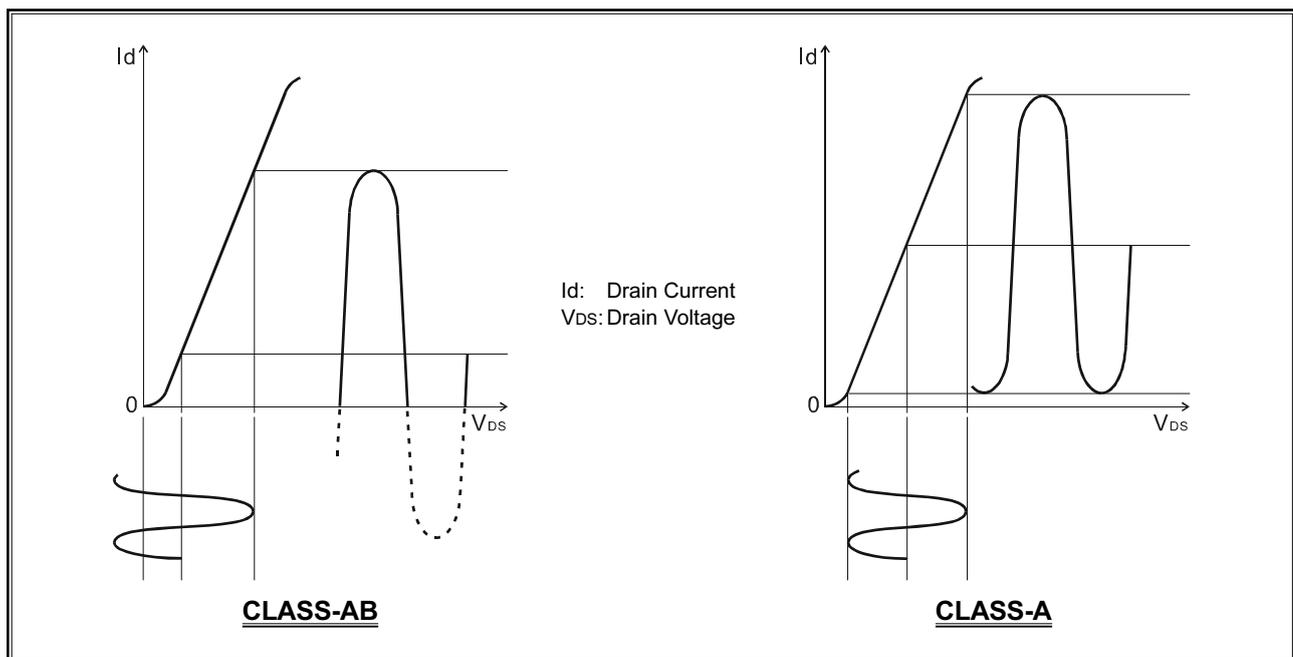
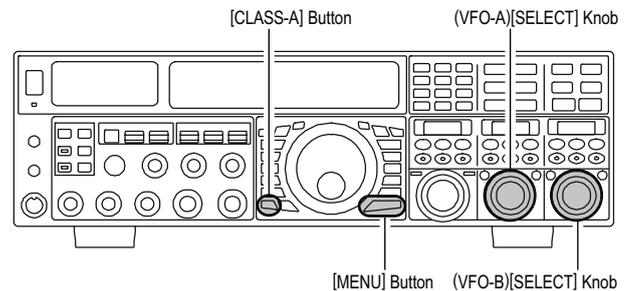
# ENHANCING TRANSMIT SIGNAL QUALITY

## LOW-DISTORTION CLASS-A OPERATION (SSB MODE)

Class-A operation of the FTdx5000 transmitter is provided, yielding ultra-low distortion products during SSB operation. Power output during Class-A operation is 75 Watts.

1. To engage Class-A operation, press the **[CLASS-A]** button. The “**CLASS-A**” icon will appear in the display, confirming that Class-A operation has been selected.
2. Engaging the “Class-A” mode actually places the transceiver in a condition whereby the Bias level may be adjusted, via the Menu mode.
  - 1) Press the **[MENU]** button briefly, to engage the Menu.
  - 2) Rotate the **(VFO-A)[SELECT]** knob, and select Menu item “169 TGEN BIAS”.
  - 3) Rotate the **(VFO-B)[SELECT]** knob to select the desired BIAS level “1 - 100” to set the transceiver for operation anywhere between Class-A and Class-AB (Class-AB has lower heat dissipation but higher distortion products).

A menu setting of “100” will place the transmitter fully in Class-A operation. Counter-clockwise rotation of the **(VFO-B)[SELECT]** knob will move the transmitter toward Class-AB operation. The menu setting “1” will place the transmitter fully in Class-AB operation.
  - 4) Press and hold in the **[MENU]** button for two seconds to save the new setting and exit to normal operation.
3. To exit from the CLASS-A mode, press the **[CLASS-A]** switch once more. The “**CLASS-A**” icon disappears, confirming that the CLASS-A mode has been disengaged.



# ENHANCING TRANSMIT SIGNAL QUALITY

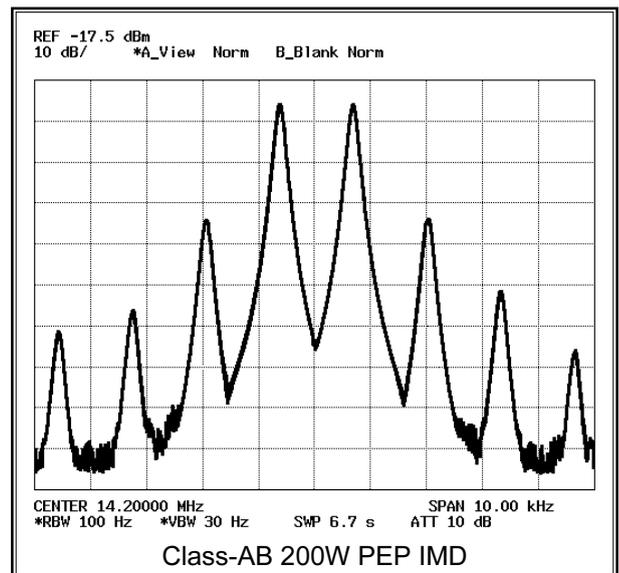
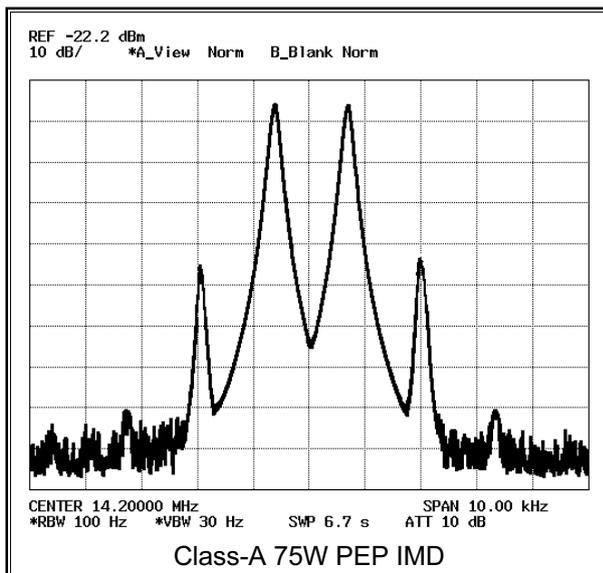
## LOW-DISTORTION CLASS-A OPERATION (SSB MODE)

### ADVICE

- During Class-A operation, 10-Amps of Bias current will be flowing, regardless of the modulation level that leads to actual power output. Therefore, if the ambient temperature in your operation location is high, the transceiver temperature may rise as well, due to the high bias level (which must be dissipated as heat). Depending on the temperature, you may wish to reduce the BIAS level using menu item “169 TGEN BIAS”, to reduce the amount of heat being generated.
- When the optional **DMU-2000** Data Management Unit and a video monitor are connected, you can monitor the heat sink temperature on the video monitor; thus, you can always be aware of a rise in temperature during Class-A operation. Normally, the temperature is below 80 °C. If the temperature rises to near or above this value, however, we recommend you adjust the BIAS level toward Class-AB via menu item “169 TGEN BIAS” (decrease the numerical value to reduce the heat being dissipated).
- An innovative aspect of the “Class-A” mode is that the actual power output is always limited to 75 Watts. So even though you might adjust the BIAS in the direction of Class-AB operation, the power output will not rise; this eliminates the need to re-tune your linear amplifier, if used.

### QUICK POINT

- Class-A operation provides a significant improvement in transmitter distortion suppression. During Class-A operation, the 3rd-order IMD products are typically suppressed 45 dB. The 5th- and higher-order IMD products that can cause “splatter” and interfere with others, will typically be suppressed 70 dB or more.
- If you are using a linear amplifier such as the **VL-1000**, the low distortion produced by the **FTdx5000**’s transmitter means these intermodulation distortion products will not exist to be amplified by your linear.



- The High-Power 200-Watt Final Amplifier Stage of the **FTdx5000** utilizes a pair of ST Micro Electronics Corp. SD2931 MOSFET devices operating at 50 Volts. The push-pull configuration provides low distortion along with high power output. The 92 mm thermostatically-controlled cooling fan directs forced air across the heat sink, when triggered by a rise in heat sink temperature.

# TRANSMITTER CONVENIENCE FEATURES

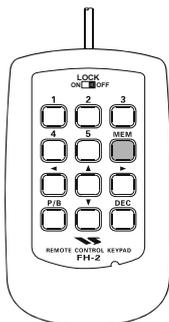
## VOICE MEMORY (SSB/AM/FM MODES)

You may utilize the Voice Memory capability of the **FTdx5000** by plugging in the supplied **FH-2** Remote Control Keypad into the rear panel **REMOTE** jack.

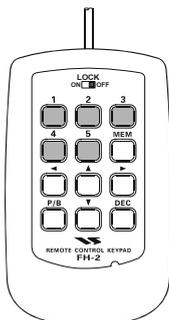
The Voice Memory system includes five memories capable of storing up to 20 seconds of voice audio each. The maximum that any memory can hold is 20 seconds.

### Recording Your Own Voice in Memory

1. Select the LSB, USB, AM, or FM mode using the front panel **[MODE]** buttons.
2. Press the **[MEM]** key on the **FH-2** briefly. A blinking "**REC**" icon will appear in the display



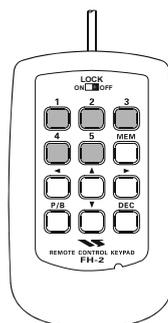
3. Press any of the **FH-2**'s keys numbered **[1]** through **[5]** to select that memory storage register. If you do not press the **PTT** key (see next step) within five seconds, the memory storage process will be cancelled.



4. Press the microphone's **PTT** switch briefly, the "**REC**" icon will glow steadily, and recording will begin.
5. Speak into the microphone in a normal voice level to record the message (such as "CQ DX, CQ DX, this is W 6 Delta X-Ray Charlie, W 6 Delta X-Ray Charlie, Over"). Remember that the time limit for recording any message is 20 seconds.
6. Press the **FH-2**'s **[MEM]** key to terminate the message storage process.

### Checking Your Recording

1. Be sure that the front panel **[MOX]** and **[VOX]** buttons are both "Off" (the LED imbedded in the button must be off).
2. Press the **FH-2**'s **[1]** ~ **[5]** key (whichever one you just recorded in), and you will hear the contents of the voice memory you just recorded.

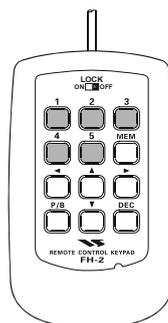


#### ADVICE:

You may adjust the playback level of the recording via Menu item "**020 DVS RX LVL**".

### Transmitting the Recorded Message

1. Select the LSB, USB, AM, or FM mode using the front panel **[MODE]** buttons.
2. Press the front panel **[BK-IN]** button briefly.
3. Press the **FH-2**'s **[1]** ~ **[5]** key, depending on which memory register message you wish to transmit. If you hit the key again during playback, the message will be terminated.



#### ADVICE:

You may adjust the transmit (audio) level of the recording via Menu item "**021 DVS TX LVL**".

# TRANSMITTER CONVENIENCE FEATURES

## VOX (AUTOMATIC TX/RX SWITCHING USING VOICE CONTROL: SSB/AM/FM MODES)

Instead of using the microphone's PTT switch or the front panel [MOX] switch to activate the transmitter, the VOX (Voice Operated TX/RX Control) system provides hands-free, automatic activation of the transmitter, based on voice input into the microphone. Setup of the VOX system takes only a few seconds.

1. Adjust the [MIC] (gain) knob for SSB use, as described on page 70.
2. Set the [VOX] and [DELAY] knobs fully counter-clockwise (to the left).
3. Press the [VOX] button briefly, to engage VOX operation. The [VOX] button will glow red.
4. Speak into the microphone in a normal voice level, and rotate the [VOX] knob clockwise (to the right) until the point where your voice input activates the transmitter.

### ADVICE:

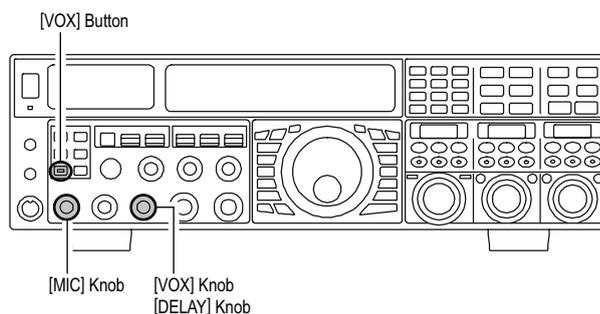
Do not advance the setting of the [VOX] knob too far, as this will make the transmitter respond to minor background noises in your station.

5. Now stop speaking, and note the amount of time it takes for the receiver to recover. If the hang time is too long or too short; rotate the [DELAY] knob, while speaking briefly into the microphone, and then pausing, to set the desired hang time. Clockwise rotation of the [DELAY] knob will increase the hang time.

### ADVICE:

The hang time of the VOX circuit will show for 3 seconds in the lower right corner of the Main Display whenever the outer [DELAY] knob is turned.

Alternately, the 3-second display feature may be changed to show in the **SUB DISPLAY-III** window via Menu item "018 DISP INDI". Additionally, you may disable the 3-second display feature via Menu item "017 DISP LVL IND" See page 122 for details.



6. To exit from VOX operation, press the [VOX] button once more. We recommend doing this if you are going to leave your station, to prevent inadvertent activation of the VOX system by a ringing nearby telephone, speaker audio from a TV, etc.

### ADVICE:

- The Anti-Trip setting sets the negative feedback of receiver audio to the microphone, to prevent receiver audio from activating the transmitter (via the microphone) can be adjusted via Menu item "175 TGEN ANTI VOX".
- VOX operation may be engaged on voice modes (SSB/AM/FM) and on AFSK-based data modes. Use Menu item "174 TGEN VOX SEL" (the selections are "MIC" and "DATA").

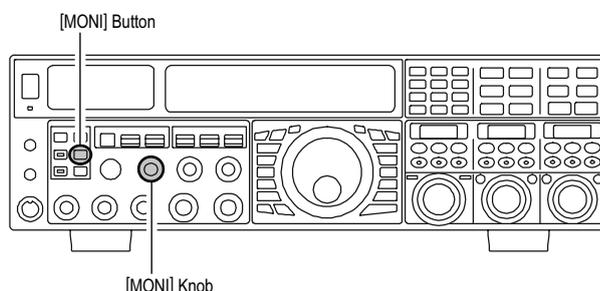
## MONITOR (SSB/AM/FM MODES)

You may listen to the quality of your transmitted signal using the Monitor feature.

1. Press the [MONI] button. The "[MONI]" icon will appear in the display, indicating that the Monitor is turned on.
2. During transmission, rotate the [MONI] knob to adjust the audio level from the Monitor. Clockwise rotation of this knob will increase the volume level.
3. To switch the Monitor off again, press the [MONI] button briefly once more. The "[MONI]" icon will turn off, confirming that the Monitor is now disengaged.

### ADVICE:

- If you are using the speaker for monitoring, instead of headphones, excessive advancement of the [MONI] knob can cause feedback to occur. Additionally, this feedback can cause the VOX system to hang up in a loop, making it impossible to return to receive. Therefore, we recommend the use of headphones, if at all possible, or the minimum usable setting of the [MONI] knob, if the speaker must be used.
- Because the monitor feature utilizes a sampling of the transmitter's IF signal, it can be very useful for checking the adjustment of the Speech Processor or Parametric Equalizer on SSB, and for checking the general signal quality on AM and FM.



# TRANSMITTER CONVENIENCE FEATURES

## SPLIT OPERATION USING THE TX CLARIFIER (VFO-A OPERATION)

For split TX/RX operation in “casual” pile-ups, where the split is less than 10 kHz, the TX Clarifier (Offset Tuning) feature may be utilized.

1. Press the [TX CLAR/LOCK] button briefly. The “CLAR” and “TX” icon will appear in the display, and the programmed offset will be applied to the receive frequency.



### ADVICE:

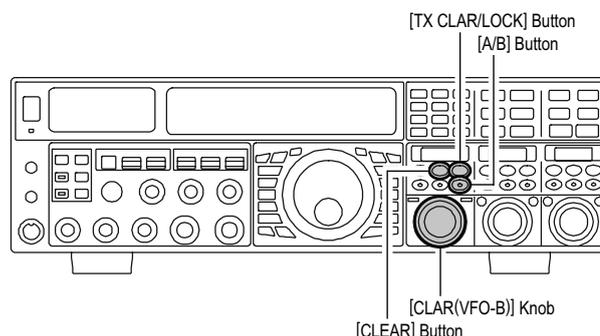
If the “CLAR” and “TX” icon does not appear, check to see if the LED imbedded in the [A/B] button glows orange. If so, pressing the [A/B] button briefly, will cause the [A/B] button to go out. Now, press the [TX CLAR/LOCK] button briefly, to begin clarifier operation.

2. Rotate the [CLAR(VFO-B)] knob to set the desired transmitter offset. A maximum split of  $\pm 9.999$  kHz may be set.
3. To exit from TX Clarifier operation, press the [TX CLAR/LOCK] button once more. The “TX” icon will disappear from the display.



### QUICK POINT:

When attempting to work a DX station on CW, in a split-frequency pile-up, remember that a large number of other stations may also be using Yaesu transceivers with capabilities similar to your FTdx5000. On the DX side of the pile-up, everyone calling precisely on the same CW frequency will sound like a single tone! So you may have more success if you use the RX Clarifier to find a hole in the pile-up, instead of trying to zero-beat the last station worked by the DX station.



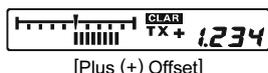
### ADVICE:

- ❑ The frequency step of the TX clarifier depends on the Main Tuning Dial knob.
- ❑ To listen to the pile-up calling the DX station, to find the station currently being worked, you may press the [RX CLAR/FAST] button. Once you have zeroed in on the station calling the DX (use the SPOT function on CW for precise alignment of your frequency), you may then briefly press the [RX CLAR/FAST] button again to cancel the RX Clarifier, and return to reception on the DX station’s frequency.
- ❑ Just as with receiver clarifier operation, the amount of offset from the original VFO frequency will appear in the small display window.
- ❑ As with receiver clarifier operation, when you turn the TX clarifier off the last-used offset is not lost, and will be available if you turn the TX Clarifier back on. To clear the Clarifier offset, briefly press the [CLEAR] button.

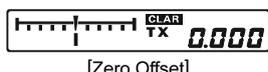
### Clarifier Offset Bar Indicator

A visual depiction of the relative offset of the Clarifier may be displayed, using the Bar Indicator.

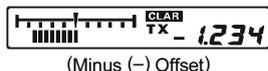
1. Press the [MENU] button briefly, to enter the Menu mode.
2. Rotate the (VFO-A)[SELECT] knob to select Menu item “012 DISP BAR SEL”.
3. Rotate the (VFO-B)[SELECT] knob to select “CLAR (Clarifier)” (replacing the default “CW TUNE (CW TUNING)” selection).
4. Press and hold in the [MENU] button for two seconds to save the new setting and exit to normal operation.



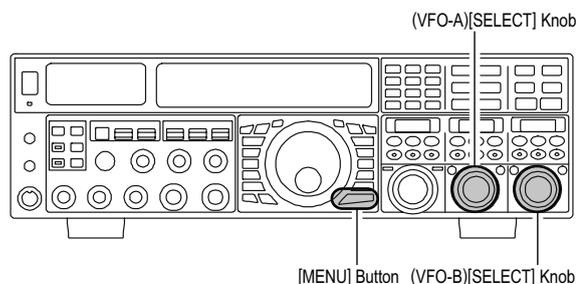
[Plus (+) Offset]



[Zero Offset]



[Minus (-) Offset]



# TRANSMITTER CONVENIENCE FEATURES

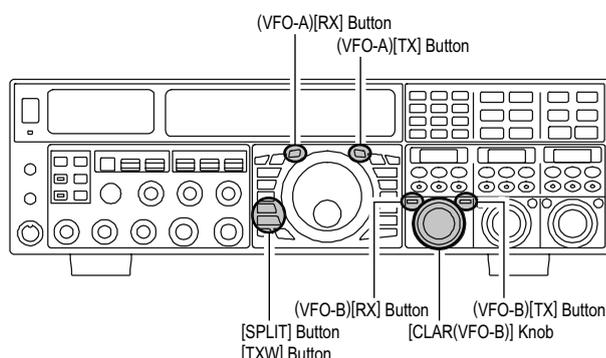
## SPLIT-FREQUENCY OPERATION

A powerful capability of the **FTdx5000** is its flexibility in Split Frequency operation, using the Main (VFO-A) and Sub (VFO-B) frequency registers. This makes the **FTdx5000** especially useful for high-level DX-pedition use, as the Split operation capability is very advanced and easy to use.

1. Set the VFO-A frequency as desired.
2. Set the VFO-B frequency.
3. Now press the **[SPLIT]** button briefly. The front panel switch/LEDs will look like this:
  - (VFO-A)[RX] button: LED glows green
  - (VFO-A)[TX] button: LED off
  - (VFO-B)[RX] button: LED off
  - (VFO-B)[TX] button: LED glows red
3. During Split operation, the VFO-A register will be used for reception, while the VFO-B register will be used for transmission. If you press the **[SPLIT]** button once more, Split operation will be cancelled.
  - (VFO-A)[RX] button: LED glows green
  - (VFO-A)[TX] button: LED glows red
  - (VFO-B)[RX] button: LED off
  - (VFO-B)[TX] button: LED off
4. You may also press the (VFO-A)[TX] button to return transmit frequency control to the VFO-A side, thereby canceling split operation.

### ADVICE:

- During normal (non-split) VFO-A operation, you may simply press the (VFO-B)[TX] button (located above and to the right of the [CLAR(VFO-B)] knob) to engage Split operation. The (VFO-B)[TX] button will glow red when you press the button.
- During Split operation, pressing the [A↔B] button will reverse the contents of VFO-A and VFO-B. Press the [A↔B] button once more, to return to the original frequency alignment.
- During Split operation, if you press the (VFO-B)[RX] button above and to the right of the [CLAR(VFO-B)] knob, you will engage Dual Receive operation. Now you can listen to both sides of the DX pile-up, and transmit on the VFO-B frequency. This is very useful to determine the timing of your calls, while also monitoring both sides of the pile-up.
- During Split operation, you may also listen to the TX frequency temporarily, by pressing the [TXW] button (just below the [SPLIT] button).
- It is possible to set different operating modes (for example, LSB and USB) on the two VFOs used during Split operation.
- During Split operation, it is also possible to set VFO-A and VFO-B to different amateur bands. But, remember that Dual Reception must be within the same band.



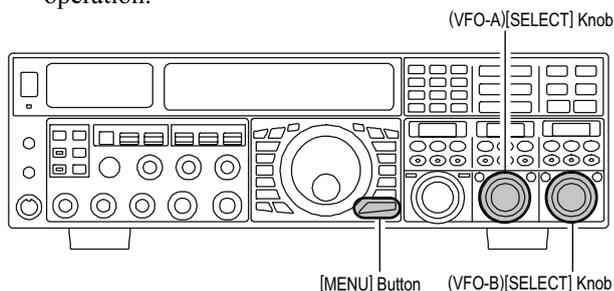
### VFO Tracking Feature

In the default setting, the VFO-A frequency and VFO-B frequency are changed individually using the Main Tuning Dial knob and the [CLAR(VFO-B)] knob.

If you want to tune the VFO-A frequency and VFO-B frequency together, the VFO Tracking feature is very useful.

Here is the procedure for activating the VFO Tracking feature:

1. Press the [MENU] button briefly, to engage the Menu mode.
2. Rotate the (VFO-A)[SELECT] knob to select Menu item "038 GENE TRACK".
3. Rotate the (VFO-B)[SELECT] knob to select the desired Tracking mode.
  - OFF: Disables the VFO Tracking feature.
  - BAND: When you change the band on the VFO-A side, the VFO-B band will automatically change to be the same band as VFO-A.
  - FREQ: This function is similar to the "BAND" setting, and will additionally "lock" VFO-A and VFO-B together. Turning the Main Dial will tune both VFO-A and VFO-B simultaneously.
4. Press and hold in the [MENU] button for two seconds to lock in the new configuration and exit to normal operation.



# TRANSMITTER CONVENIENCE FEATURES

## SPLIT-FREQUENCY OPERATION

### Quick Split Operation

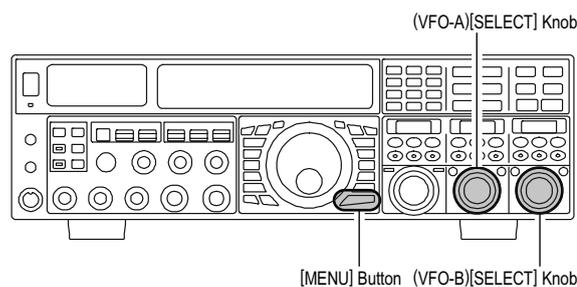
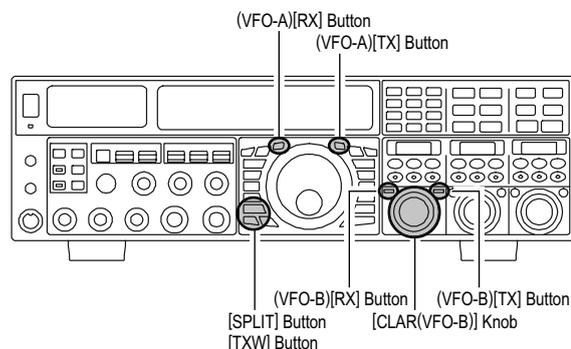
The Quick Split feature allows you to set a one-touch offset of +5 kHz, to be applied to the transmit frequency on VFO-B, as compared to the VFO-A frequency.

1. Start with regular transceiver operation on the VFO-A.  
(VFO-A)[RX] button: LED glows green  
(VFO-A)[TX] button: LED glows red  
(VFO-B)[RX] button: LED off  
(VFO-B)[TX] button: LED off
2. Press and hold in the [SPLIT] button for two seconds to engage the Quick Split feature, and apply a frequency 5 kHz above the VFO-A frequency to the VFO-B frequency register.  
The VFO configuration will then be:  
(VFO-A)[RX] button: LED glows green  
(VFO-A)[TX] button: LED off  
(VFO-B)[RX] button: LED off  
(VFO-B)[TX] button: LED glows red
3. Press and hold in the [SPLIT] switch for two seconds to increment the VFO-B frequency another +5 kHz.

#### Quick Points:

- ❑ The operating mode applied to the VFO-B register will be the same as that in use on the VFO-A register.
- ❑ The offset of the VFO-B from the VFO-A is programmed via the Menu, and is set to +5 kHz at the factory. Other offsets may be selected using the following procedure:

1. Press the [MENU] button briefly, to enter the Menu mode.
2. Rotate the (VFO-A)[SELECT] knob to select Menu item "037 GENE Q SPLIT".
3. Rotate the (VFO-B)[SELECT] knob to select the desired offset.  
The available selections are -20kHz ~ +20kHz (factory default: +5 kHz).
4. When you have completed all adjustments, press and hold in the [MENU] button for two seconds to save the new setting and exit to normal operation. If you only press the [MENU] button briefly to exit, any changes you performed will not be stored.



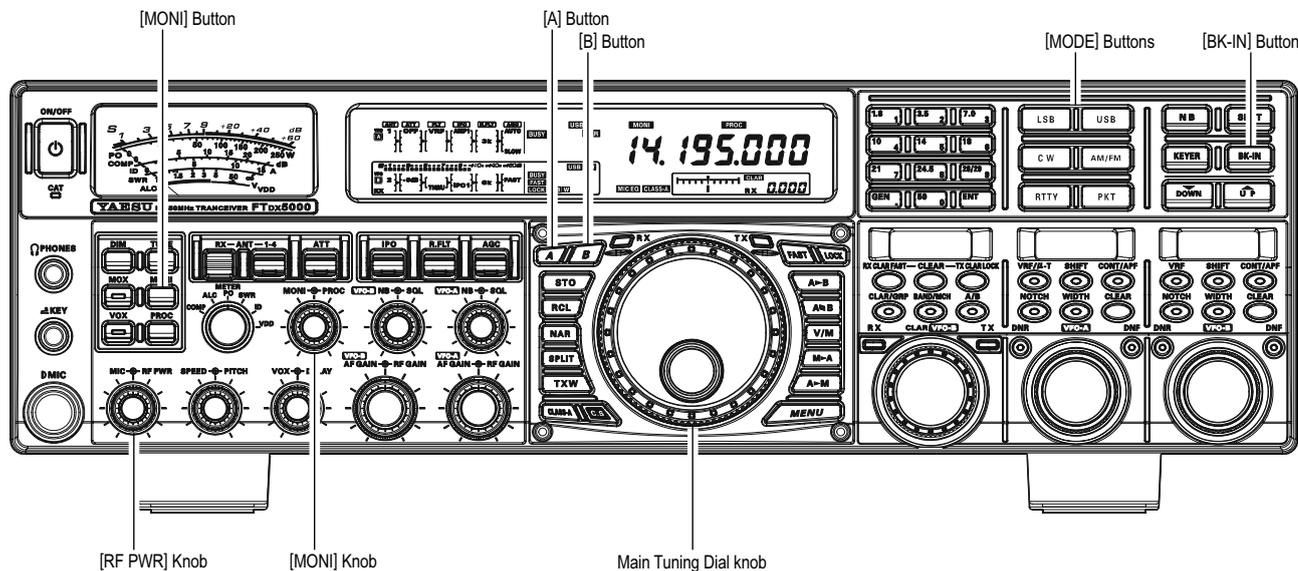


# CW MODE OPERATION

The powerful CW operating capabilities of the **FTdx5000** include operation using both an electronic keyer paddle and a “straight key” or emulation thereof, as is provided by a computer-based keying device.

## SETUP FOR STRAIGHT KEY (AND STRAIGHT KEY EMULATION) OPERATION

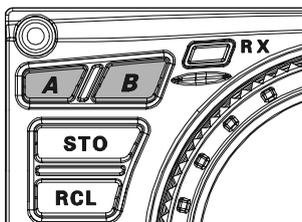
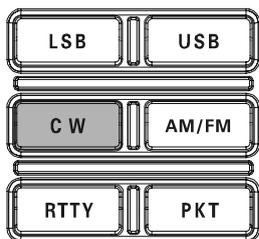
Before starting, connect your key line(s) to the front and/or rear panel **KEY** jack(s). Be sure the **[KEYER]** button on the front panel is turned off for now.



1. Press the **[CW]** mode button to engage CW operation. The “**CW**” and “**USB**” icons will appear in the display. The “**MONI**” icon will also appear in the display; and the CW monitor is activated.

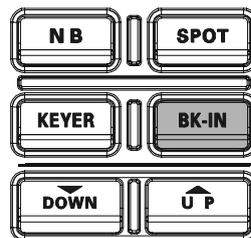
### ADVICE:

- The operating mode is selected using the **[MODE]** button. The VFO, to which the selection is applied, is selected by the **[A]** or **[B]** button (located to the upper left of the Main Tuning Dial knob). Usually, the **[A]** button glows red, signifying VFO-A is being adjusted. Alternately, pressing the **[B]** button will cause its indicator to glow orange, signifying VFO-B adjustment. Therefore, press the **[A]** or **[B]** button to select the desired VFO, then press the **[CW]** button to select the CW mode.
- After initially selecting CW, if you press the **[CW]** button once more, you will engage the “CW Reverse” mode (see page 92). Normally, the upper sideband (USB) is used in conjunction with CW. In reverse CW the lower sideband (LSB) is used.



2. Rotate the Main Tuning Dial knob to select the desired operating frequency.

3. Press the **[BK-IN]** button briefly, to engage automatic activation of the transmitter when you close the CW key. The “**BK-IN**” icon will appear in the display.



### ADVICE:

- When you close your CW key, the transmitter will automatically be activated, and the CW carrier will be transmitted. When you release the key, transmission will cease after a brief delay; the delay time is user-programmable, per the discussion on page 93.
- As shipped from the factory, the **FTdx5000** TX/RX system for CW is configured for “Semi-break-in” operation. However, using Menu item “**063 A1A BK-IN**”, you may change this setup for full break-in (QSK) operation, whereby the switching is quick enough to hear incoming signals in the spaces between the dots and dashes of your transmission. This may prove very useful during contest and traffic-handling operations.

4. Operation using your CW key may now proceed. A CW sidetone sounds from a speaker in accordance with your keying. Adjust the **[MONI]** knob for a comfortable listening level of the CW sidetone.



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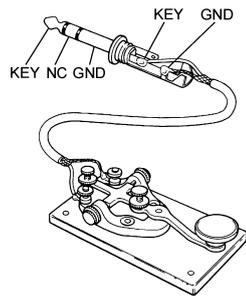
## SETUP FOR STRAIGHT KEY (AND STRAIGHT KEY EMULATION) OPERATION

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### ADVICE:

- ❑ You may disable the CW sidetone by pressing the [MONI] button. The “MONI” icon will turn off, confirming that the Monitor is now disengaged.
- ❑ If you set the [BK-IN] button to off, you may practice your sending without having the signal go out over the air (sidetone only).
- ❑ If you reduce power using the [RF PWR] knob, the ALC meter reading will increase. This is normal and does not indicate any problem whatsoever (because increased ALC voltage is being used to lower the power).



### TERMINOLOGY:

#### Semi-break-in

This is a pseudo- “VOX” mode used on CW, where the closure of the CW key will engage the transmitter. Releasing the key, will allow the receiver to recover after a short delay. No signals will be heard between the spaces between dots and dashes (unless the sending speed is extremely slow).

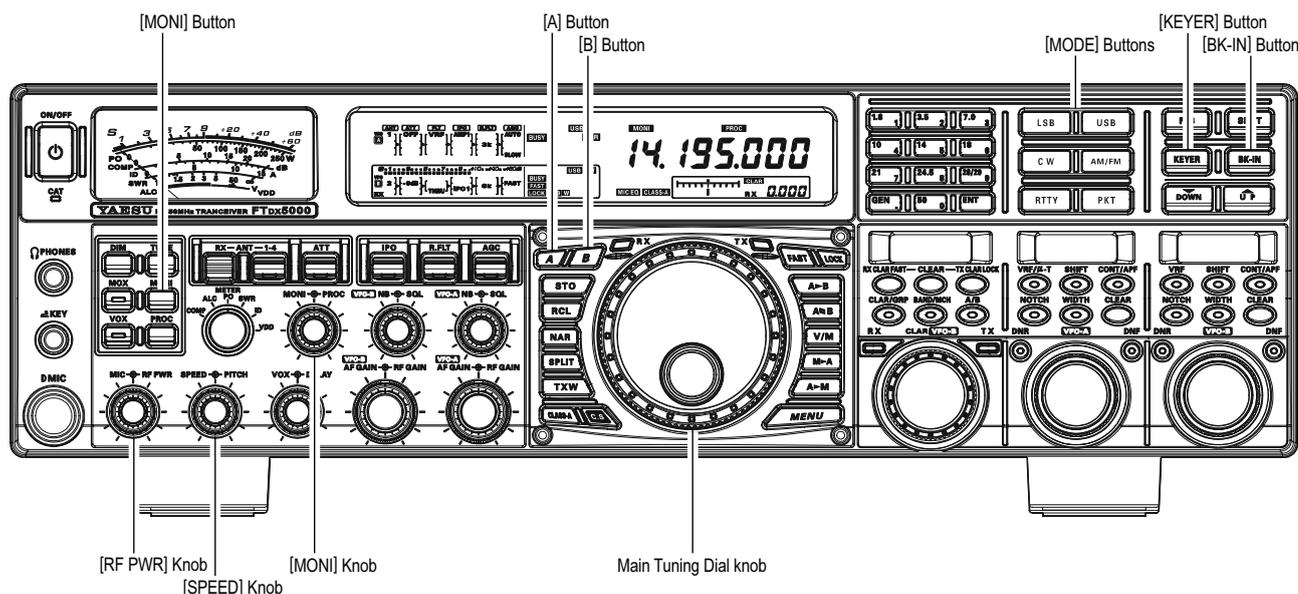
#### Full break-in

Full break-in (Also known as “Full QSK”) involves very fast switching between transmit and receive, such that incoming signals may be heard between the dots and dashes as you send them. This allows you to hear a station that suddenly starts transmitting on your frequency, while you are in the midst of sending a message.

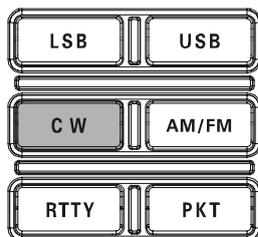
# CW MODE OPERATION

## USING THE BUILT-IN ELECTRONIC KEYS

Connect the cable from your keyer paddle to the front or rear panel **KEY** jack.

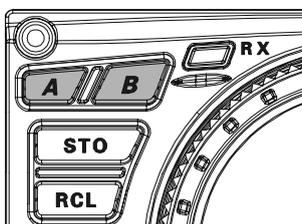


1. Press the **[CW]** mode button to engage CW operation. The “**CW**” and “**USB**” icons will appear in the display, and the CW monitor will be activated.



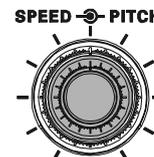
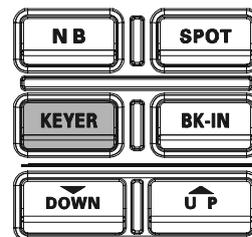
**ADVICE:**

- The operating mode is selected using the **[MODE]** button. The (A or B) VFO to which the selection is applied, is selected by the **[A]** or **[B]** button, located to the upper left of the Main Tuning Dial knob. Usually, the **[A]** button glows red, signifying VFO-A is being adjusted. Alternately, pressing the **[B]** button will cause its indicator to glow orange, signifying VFO-B adjustment. Therefore, press the **[A]** or **[B]** button to select the desired VFO, then press the **[CW]** button to select the CW mode.



- After initially selecting CW, If you press the **[CW]** button once more you will engage the “CW Reverse” mode (see page 92), whereby the “opposite” sideband injection is used. Normally, the upper sideband (USB) is used in conjunction with CW. In reverse CW the lower sideband (LSB) is used. The “**CW**” and “**LSB**” icons will appear if you select CW Reverse.
2. Rotate the Main Tuning Dial knob to select the desired operating frequency.

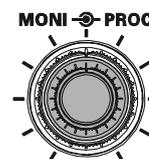
3. Press the **[KEYER]** button. The “**KEYER**” icon will appear in the display, confirming that the built-in Electronic Keyer is now active.
4. Rotate the **[SPEED]** knob to set the desired sending speed (4 ~ 60 wpm). Clockwise rotation of the **[SPEED]** knob will increase the keying speed.



**ADVICE:**

- The keying speed will show for 3 seconds in the lower right corner of the Main Display whenever the outer **[SPEED]** knob is turned. Alternately, the 3-second display feature may be changed to show in the **SUB DISPLAY-III** window via Menu item “**018 DISP INDI**”. Additionally, you may disable the 3-second display feature via Menu item “**017 DISP LVL IND**” See page 122 for details.
  - When you press either the “Dot” or “Dash” side of your paddle, the transmitter will automatically be activated.
5. If you press the **[BK-IN]** button briefly, “semi-break-in” operation (discussed previously) will be engaged.
  6. CW operation utilizing your paddle may now commence.

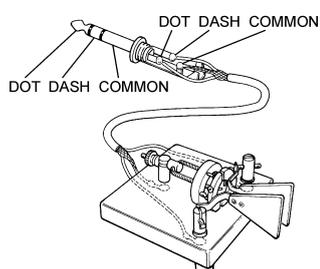
A CW sidetone sounds from a speaker in accordance with your keying. Adjust the **[MONI]** knob for a comfortable listening level of the CW sidetone.



## USING THE BUILT-IN ELECTRONIC KEYS

### ADVICE:

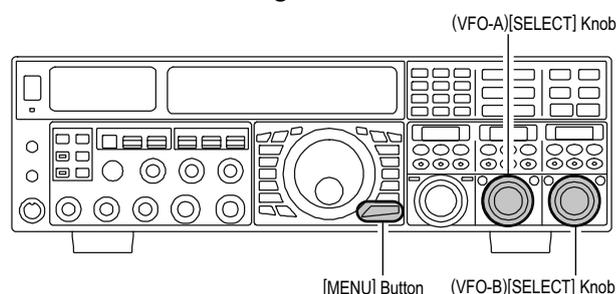
- ❑ You may disable the CW sidetone by pressing the [MONI] button. The “MONI” icon will turn off, confirming that the Monitor is now disengaged.
- ❑ When you utilize your keyer paddle, the transmitter will automatically be activated, and the CW characters (or a string of dots and dashes) will be transmitted. When you release the keyer paddle contacts, transmission will cease after a brief delay. The delay time is user-programmable, per the discussion on page 93.
- ❑ If you reduce power using the [RF PWR] knob, the ALC meter reading will increase. This is normal and does not indicate any problem whatsoever (because increased ALC voltage is being used to lower the power).



### Full Break-in (QSK) Operation

As shipped from the factory, the FTdx5000 TX/RX system for CW is configured for “Semi-break-in” operation. However, using Menu item “063 A1A BK-IN”, you may change this setup for full break-in (QSK) operation, whereby the switching is quick enough to hear incoming signals in the spaces between the dots and dashes of your transmission.

1. Press the [MENU] button to enter the Menu mode.
2. Rotate the (VFO-A)[SELECT] knob to select Menu item “063 A1A BK-IN”.
3. Rotate the (VFO-B)[SELECT] knob to set this Menu item to “FULL”.
4. Press and hold in the [MENU] button for two seconds to save the new setting and exit.



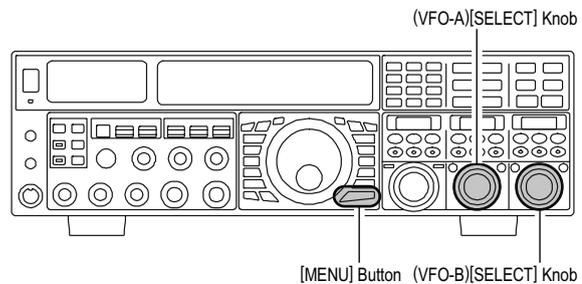
## USING THE BUILT-IN ELECTRONIC KEYS

A number of interesting and useful features are available during Electronic Keyer operation.

### SETTING THE KEYS WEIGHT (DOT/SPACE:DASH) RATIO

The Menu may be used to adjust the Weight for the built-in Electronic Keyer. The default weighting is 3:1 (a dash is three times longer than a dot or space).

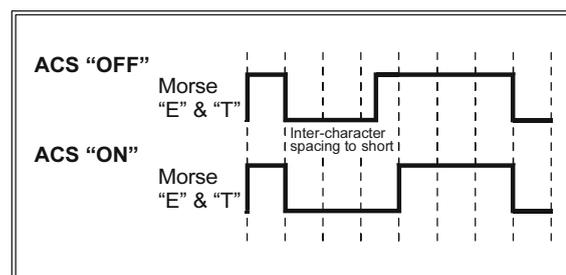
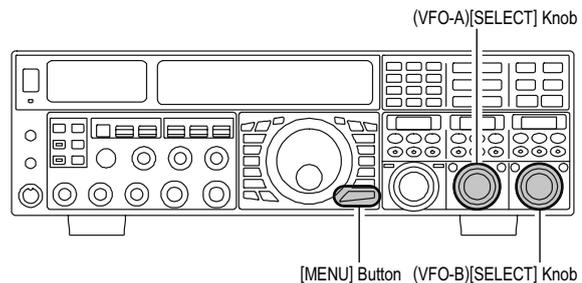
1. Press the **[MENU]** button briefly, to enter the Menu mode.
2. Rotate the **(VFO-A)[SELECT]** knob to select Menu item “**065 A1A WEIGHT**”.
3. Rotate the **(VFO-B)[SELECT]** knob to set the weight to the desired value. The available adjustment range is for a Dot/Space:Dash ratio of “2.5” ~ “4.5” (default value: “3.0”).
4. When you are finished, press and hold in the **[MENU]** button for two seconds to save the new setting and exit to normal operation.



### SELECTING THE KEYS OPERATING MODE

The configuration of the Electronic Keyer may be customized independently for the front and rear **KEY** jacks of the **FTDX5000**. This permits utilization of Automatic Character Spacing (ACS), if desired, as well as the use of the electronic keyer via the front jack and a straight key or computer-driven keying line via the rear panel.

1. Press the **[MENU]** button briefly, to enter the Menu mode.
2. Rotate the **(VFO-A)[SELECT]** knob to select Menu item “**057 A1A F-TYPE**” (for the front **KEY** jack) or “**059 A1A R-TYPE**” (for the rear-panel **KEY** jack).
3. Rotate the **(VFO-B)[SELECT]** knob to set the keyer to the desired mode. The available selections are:
  - OFF: The built-in Electronic Keyer is turned off (“straight key” mode).
  - BUG: Dots will be generated automatically by the keyer, but dashes must be sent manually.
  - ELEKEY: Both dots and dashes will be generated automatically when you use your paddle.
  - ACS: Same as “ELEKEY” except that the spacing between characters is precisely set by the keyer to be the same length as a dash (three dots in length)
4. When you are finished, press and hold in the **[MENU]** button for two seconds to save the new setting and exit to normal operation.



# CW CONVENIENCE FEATURES

## CW SPOTTING (ZERO-BEATING)

“Spotting” (zeroing in on another CW station) is a handy technique for ensuring that you and the other station are precisely on the same frequency.

For everyday operation, the (CW) [PITCH] knob allows you to set the center of the receiver passband, as well as the offset pitch of your CW carrier signal, to the tone pitch you prefer to listen to.

The Tuning Offset Indicator in the display may also be moved so you can adjust your receiver frequency to center the incoming station on the pitch corresponding to that of your transmitted signal.

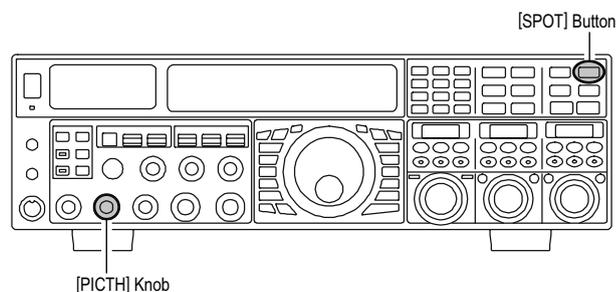
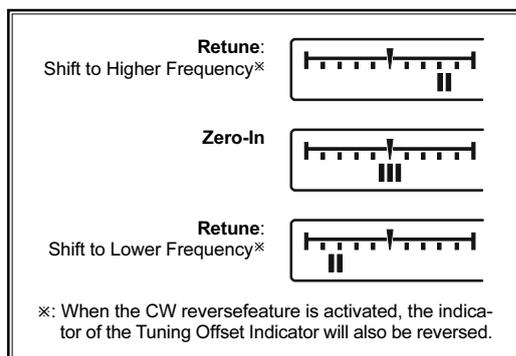
### Using the SPOT System

While pressing the front panel [SPOT] button, the spot tone will be heard in the speaker, and the spot tone frequency will show in the lower right corner of the Main Display. This tone corresponds to the pitch of your transmitted signal, and if you adjust the receiver frequency to match the pitch of the received CW signal to that of the spot tone, your transmitted signal will be precisely matched to that of the other station.

Release the [SPOT] button to turn the spot tone off.

#### ADVICE:

- ❑ In a tough DX pile-up, you may actually want to use the SPOT system to find a “gap” in the spread of calling stations, instead of zeroing in precisely on the last station being worked by the DX station. From the DX side, if a dozen or more operators (also using Yaesu’s SPOT system) all call precisely on the same frequency, their dots and dashes merge into a single, long tone that the DX station cannot decipher. In such situations, calling slightly higher or lower may get your call through.
- ❑ The Tuning Offset Indicator in the display may be utilized for CW frequency adjustment, as well. Its configuration is set via Menu item “012 DISP BAR SEL” at the factory, and the Tuning Offset Indicator is already set to the “CW TUNE” selection.



#### QUICK POINTS:

- ❑ The CW spotting process utilizes the spot tone or the Tuning Offset Indicator, with the actual offset pitch being set by the [PITCH] knob on the front panel. The offset pitch may be set to any frequency between 300 Hz and 1050 Hz, in 50 Hz steps, and you can either match tones audibly (using the [SPOT] button) or align the receiver frequency so that the central red bar on the Tuning Offset Indicator lights up. Note that there are 21 “dots” on the Tuning Offset Indicator, and depending on the resolution selected, the incoming CW signal may fall outside the visible range of the bar indicator, if you are not reasonably close to the proper alignment of tones.
- ❑ The displayed frequency on CW, normally reflects the “zero beat” frequency of your offset carrier. That is, if you were to listen on USB on 14.100.70 MHz to a signal with a 700 Hz offset, the “zero beat” frequency of that CW carrier would be 14.000.70 MHz. The latter frequency is what the FTdx5000 displays, by default. However, you can change the display to be identical to what you would see on SSB by using Menu item “066 A1A FRQ DISP” and setting it to “FREQ” instead of its default “PITCH” setting.

# CW CONVENIENCE FEATURES

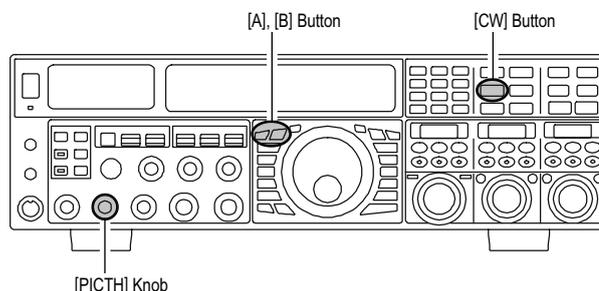
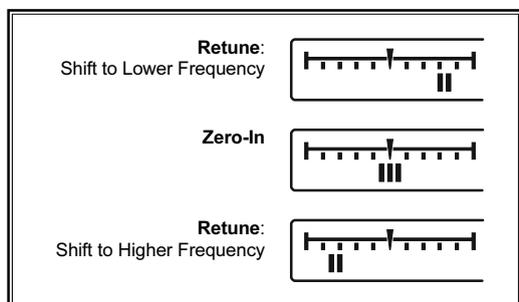
## USING CW REVERSE

If you experience a difficult interference situation, where an interfering station cannot readily be eliminated, you may wish to try receiving using the opposite sideband. This may move the interfering station's frequency in a direction that may lend itself more readily to rejection.

1. To start, let's use a typical example where you have set the CW mode (using the default "USB" injection) on the VFO-A receiver.
2. Now be sure your mode selection is still set for the VFO-A register, and press the [CW] mode button once more. The "CW" and "LSB" icons will appear in the display, indicating that the "LSB" injection side has now been selected.
3. When using Dual Receive, press the [B] button, which is located to the upper left of the Main Tuning Dial knob. Then press the [CW] button to engage CW Reverse on the VFO-B receiver, in exactly the same way as for the VFO-A receiver.
4. Press the [CW] mode button once more to return to the normal (USB) injection side and cancel CW Reverse operation (the "CW" and "USB" icons will appear in the display).

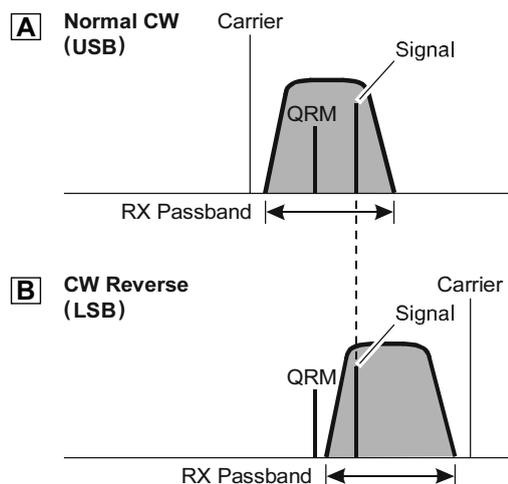
### NOTES:

- When CW Reverse is engaged, the Tuning Offset Indicator action will concurrently be reversed.
- When the incoming signal pitch tone is properly aligned, the central red marker lights up whether or not CW Reverse is engaged.



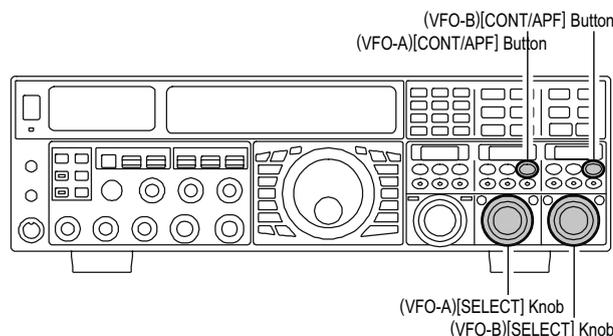
In the illustration, Figure "A" demonstrates the normal CW injection setup, using the USB side. In Figure "B", CW Reverse has been engaged. LSB-side injection is being used to eliminate interference.

The beneficial effect of switching sidebands can be clearly seen in this example.



## AUDIO PEAK FILTER

1. Where you have set the CW mode on the VFO-A receiver, press the (VFO-A)[CONT/APF] button briefly, to activate the APF (Audio Peak Filter) which provides a very narrow audio bandwidth. The peak position of the APF will appear in the **SUB DISPLAY-II** window, and the (VFO-A)[SELECT] knob will now function as the APF knob.
2. Rotate the (VFO-A)[SELECT] knob to the left or right to reduce any interference.
3. To disable the APF, press the (VFO-A)[CONT/APF] button briefly, again.
4. To activate the APF (Audio Peak Filter) on VFO-B, press the (VFO-B)[CONT/APF] button briefly, and adjust the (VFO-B)[SELECT] knob to reduce any interference. The peak position of the APF will be indicated in the **SUB DISPLAY-III** window.



# CW CONVENIENCE FEATURES

## CW DELAY TIME SETTING

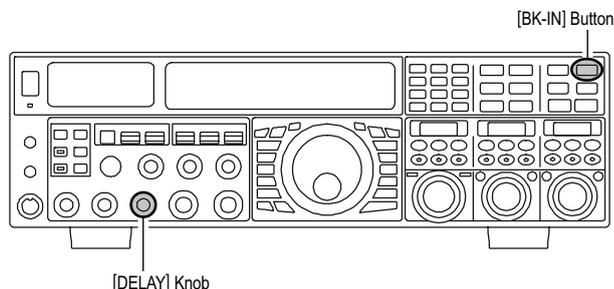
During semi-break-in (not QSK) operation, the hang time of the transmitter, after you have finished sending, may be adjusted to a comfortable value consistent with your sending speed. This is the functional equivalent to the “VOX Delay” adjustment used on voice modes, and the delay may be varied anywhere between 20 milli-seconds with the ([**DELAY**] knob set fully counter-clockwise) and 5 seconds (fully clockwise).

1. Press the [**BK-IN**] button to enable CW transmission (Menu item “**059 A1A BK-IN**” must be set to “SEMI”).
2. Start sending, and adjust the [**DELAY**] knob so that the hang time is as you prefer for comfortable operation.

### ADVICE:

The delay time will show for 3 seconds in the lower right corner of the Main Display whenever the outer [**DELAY**] knob is turned.

Alternately, the 3-second display feature may be changed to show in the **SUB DISPLAY-III** window via Menu item “**018 DISP INDI**”. Additionally, you may disable the 3-second display feature via Menu item “**017 DISP LVL IND**” See page 122 for details.



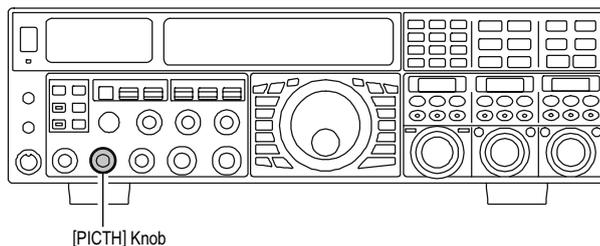
## CW PITCH ADJUSTMENT

Rotation of the front panel's [**PITCH**] knob will allow adjustment of the center frequency of the receiver pass-band, as well as the pitch of your offset CW carrier, to the tone you prefer. The tone may be varied between 300 Hz and 1050 Hz, in 50 Hz steps.

### ADVICE:

The spot tone frequency will show for 3 seconds in the lower right corner of the Main Display whenever the outer [**PROC**] knob is turned.

Alternately, the 3-second display feature may be changed to show in the **SUB DISPLAY-III** window via Menu item “**018 DISP INDI**”. Additionally, you may disable the 3-second display feature via Menu item “**017 DISP LVL IND**” See page 122 for details.



### TERMINOLOGY:

**CW Pitch:** If you tuned to an exact “zero beat” on an incoming CW signal, you could not copy it (“Zero beat” implies a 0 Hz tone). Therefore, the receiver is offset several hundred Hz (typically), to produce an audio tone your ear can detect. The BFO offset associated with this tuning (that produces the comfortable audio tone) is called the CW Pitch.

# CW CONVENIENCE FEATURES

## CONTEST MEMORY KEYS

The **FTdx5000** is capable of the automatic sending of CW messages (as you might do in a contest) by plugging the supplied **FH-2** Remote Control Keypad into the rear panel **REMOTE** jack. Two techniques for message storage are available: you may either send the desired message contents using your keyer paddle (“*Message Memory*”), or you may input the text characters using the **(VFO-A)[SELECT]** knob and **(VFO-B)[SELECT]** knobs (“*Text Memory*”).

### MESSAGE Memory

Five memory channels capable of retaining 50 characters total are provided (using the PARIS standard for character and word length).

*Example:* CQ CQ CQ DE W6DXC K (19 characters)

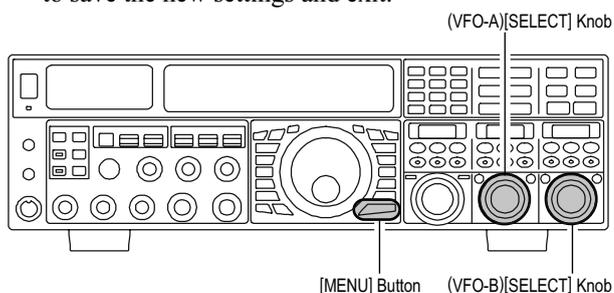
· · · · ·   · · ·   · · ·   · · ·   · · ·   · · ·   ·   · · · · ·   · ·   · · ·   · · ·   · · ·  
 (C) (Q) (C) (Q) (C) (Q) (D) (E) (W) (6) (D) (X) (C) (K)

### STORING A MESSAGE INTO MEMORY

1. Press the **[MENU]** button briefly, to enter the Menu mode.
2. Rotate the **(VFO-A)[SELECT]** knob to select the CW Memory Register you wish to store the message into. For now we are just selecting the message entry technique (Keyer entry).

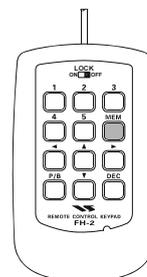
- 025 KEY CW MEM1
- 026 KEY CW MEM2
- 027 KEY CW MEM3
- 028 KEY CW MEM4
- 029 KEY CW MEM5

3. Rotate the **(VFO-B)[SELECT]** knob to set the selected Memory Register to “MESSAGE”. If you want to use your keyer paddle for message entry on all memories, set all five Menu items (#025 ~ 029) to “MESSAGE”.
4. Press and hold in the **[MENU]** button for two seconds to save the new settings and exit.

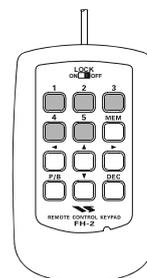


### MESSAGE MEMORY PROGRAMMING (USING YOUR PADDLE)

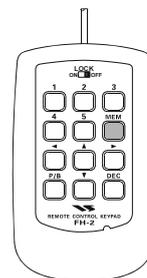
1. Set the operating mode to CW.
2. Set the **[BK-IN]** button to Off.
3. Turn the internal Electronic Keyer “on” by pressing the **[KEYER]** button briefly, if necessary.
4. Press the **FH-2’s [MEM]** key.



5. Press the **[1] ~ [5]** key on the **FH-2** to begin the memory storage process.



6. Send the desired message using your keyer paddle.
7. Press the **[MEM]** key on the **FH-2** once more at the end of your message. Up to 50 characters may be stored among the five memories.



### NOTE:

- You must exercise care in sending to ensure that the spaces between letters and words are accurately done. If your timing is off, the spacing may not come out right in the stored message.
- For ease in setting up the keyer memories, we recommend you set Menu item “**057 A1A F-TYPE**” and/or “**059 A1A R-TYPE**” to “ACS” (Automatic Character Spacing) while you are programming the keyer memories.

### TERMINOLOGY:

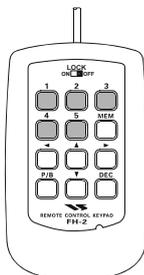
**PARIS Word Length:** By convention in the Amateur industry (utilized by ARRL and others), the length of one “word” of CW is defined as the length of the Morse Code characters spelling the word “PARIS.” This character (dot/dash/space) length is used for the rigorous definition of code speed in “words per minute.”

# CW CONVENIENCE FEATURES

## CONTEST MEMORY KEYER

### CHECKING THE CW MEMORY CONTENTS

1. Be sure that Break-in is still turned “off” by the [**BK-IN**] button.
2. Press the [**MONI**] button to enable the CW monitor.
3. Press the **FH-2**'s [**1**] ~ [**5**] key to check your work. You will hear the results in the sidetone, but no RF energy will be transmitted.



#### NOTE:

Adjust the monitor level using the [**MONI**] knob.

### ON-THE-AIR CW MESSAGE PLAYBACK

1. Press the [**BK-IN**] button to enable transmission. Either Full- or Semi-break-in will be engaged, depending on the setting of Menu item “**063 A1A BK-IN**”.
2. Press an **FH-2**'s [**1**] ~ [**5**] key to transmit the programmed message.



#### NOTE:

If you subsequently decide to use the “Text Memory” technique for message storage, on a particular memory register, the contents of a message stored using the keyer paddle input will not be transferred over when the Menu Mode Setting is changed to “TEXT”).

### Transmitting in the Beacon Mode

It is possible to automatically transmit a “Beacon” message repetitively. The message may be input either with the keyer paddle, or programmed using the MENU “TEXT” input method. The time delay between message repeats may be set anywhere between 1 ~ 255 seconds via Menu item “**022 KEY BEACON**”. If you do not wish the “Beacon” message to repeat, then, set this Menu item to “OFF”. Press a [**1**] ~ [**5**] key on the **FH-2** Remote Control Keypad, to select the register into which the Beacon message was stored. Repetitive transmissions of the Beacon message will begin. Press one of these keys once more to halt the Beacon transmissions.

# CW CONVENIENCE FEATURES

## CONTEST MEMORY KEYS

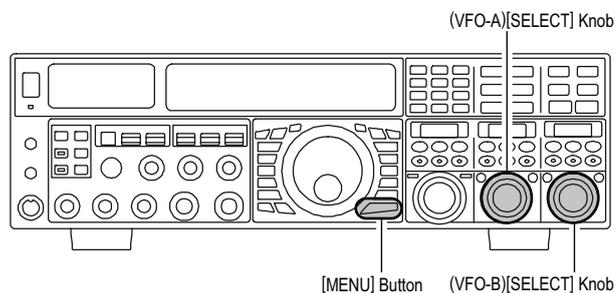
### TEXT Memory

The four channels of CW message memory (up to 50 characters total) may also be programmed using the text-entry technique. This is somewhat slower than sending the message directly from your keyer paddle, but accuracy of character spacing is ensured. **Example 1:** CQ CQ CQ DE W6DXC K} (20 characters)

You may also utilize another powerful feature of the CW Memory Keyer, the sequential Contest Number (“Countup”) feature. **Example 2:** 599 10 200 # K} (15 characters)

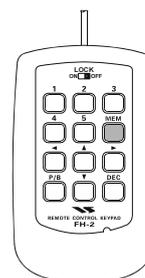
### STORING TEXT INTO MEMORY

1. Press the **[MENU]** button briefly, to enter the Menu mode.
2. Rotate the **(VFO-A)[SELECT]** knob to select the CW Memory Register you wish to store the message in. For now, you are just selecting the message entry technique (Text entry).
  - 025 KEY CW MEM1**
  - 026 KEY CW MEM2**
  - 027 KEY CW MEM3**
  - 028 KEY CW MEM4**
  - 029 KEY CW MEM5**
3. Rotate the **(VFO-B)[SELECT]** knob to set the selected Memory Register to “TEXT”. If you want to use the Text method for message entry on all memories, set all five Menu items (#025 ~ 029) to “TEXT”.
4. Press and hold in the **[MENU]** button for two seconds to save the new settings and exit.

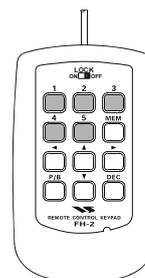


### TEXT MESSAGE PROGRAMMING

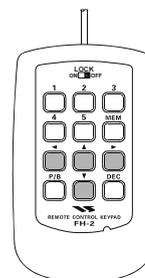
1. Set the operating mode to CW.
2. Set the **[BK-IN]** button to “off”.
3. Turn the internal Electronic Keyer “on” by briefly pressing the **[KEYER]** button.
4. Press the **FH-2**'s **[MEM]** key.



5. Press the **[1] ~ [5]** key on the **FH-2** to begin the memory storage process.

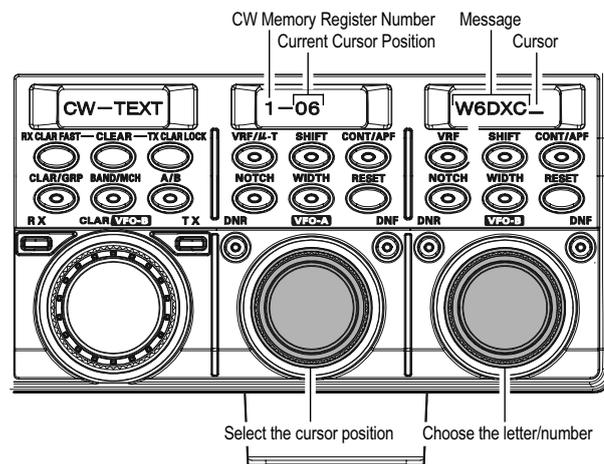


6. Use the **FH-2**'s **[◀]** and **[▶]** keys to set the cursor position and use the **[▲]** and **[▼]** keys to choose the letter/number to be programmed in each slot of the memory. In the case of the second example above, the “#” character designates the slot where the Contest Number will appear.



#### ADVICE:

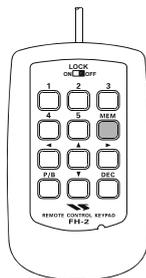
You may set the cursor position with the **(VFO-A)[SELECT]** knob, and then choose the letter/number with the **(VFO-B)[SELECT]** knob.



# CW CONVENIENCE FEATURES

## CONTEST MEMORY KEYS

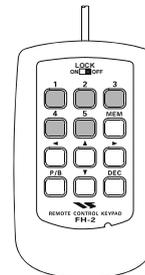
- When the message is complete, add the “}” character at the end to signify the termination of the message.
- Press and hold in the **FH-2 [MEM]** key for 2 seconds to exit, once all characters (including “}”) have been programmed.



TEXT	CW CODE						
!	SN	(	KN	/	DN	@	@
”	AF	)	KK	:	OS	[	—
#	—	*	—	;	KR	\	AL
\$	SX	+	AR	=	—	]	—
%	KA	,	MIM	<	BT	^	—
&	AS	—	DU	>	—	—	IQ
'	WG	.	AAA	?	IMI	}	—

### CHECKING THE CW MEMORY CONTENTS

- Be sure that Break-in is still turned “off” by the **[BK-IN]** button.
- Press the **[MONI]** button briefly, to enable the CW monitor.
- Press an **FH-2 [1] ~ [5]** key to check your work. You will hear the stored message with the CW monitor sidetone, but no RF energy will be transmitted.

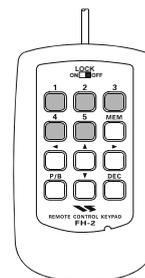


#### NOTE:

Adjust the monitor level using the **[MONI]** knob.

### ON-THE-AIR CW MESSAGE PLAYBACK

- Press the **[BK-IN]** button briefly to enable transmission. Either Full- or Semi-break-in will be engaged depending on the setting of Menu item “063 A1A BK-IN.”
- Press the **FH-2’s [1] ~ [5]** key to transmit the programmed message.



#### NOTE:

If you subsequently decide to use the “Message Memory” technique for message storage, on a particular memory register, the contents of the message stored using text input will not be transferred over when you select the “Message Memory” technique (the Menu Mode Setting is set to “MESSAGE”).

### Contest Number Programming

Use this process if you are starting a contest, or if you somehow get out of sync with the proper number in the middle of a contest.

- Press the **[MENU]** button briefly, to enter the Menu mode.
- Rotate the **(VFO-A)[SELECT]** knob to select Menu item “024 KEY CONTEST”.
- Rotate the **(VFO-B)[SELECT]** knob to set the Contest Number to the desired value.

#### ADVICE:

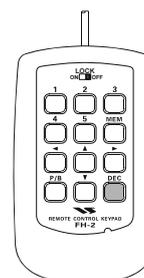
Press the **[CLEAR]** button briefly (located above the **[CLAR(VFO-B)]** knob), to reset the Contest Number to “1”.

- Press and hold in the **[MENU]** button for two seconds to store the new number and exit to normal operation.

### Decrementing the Contest Number

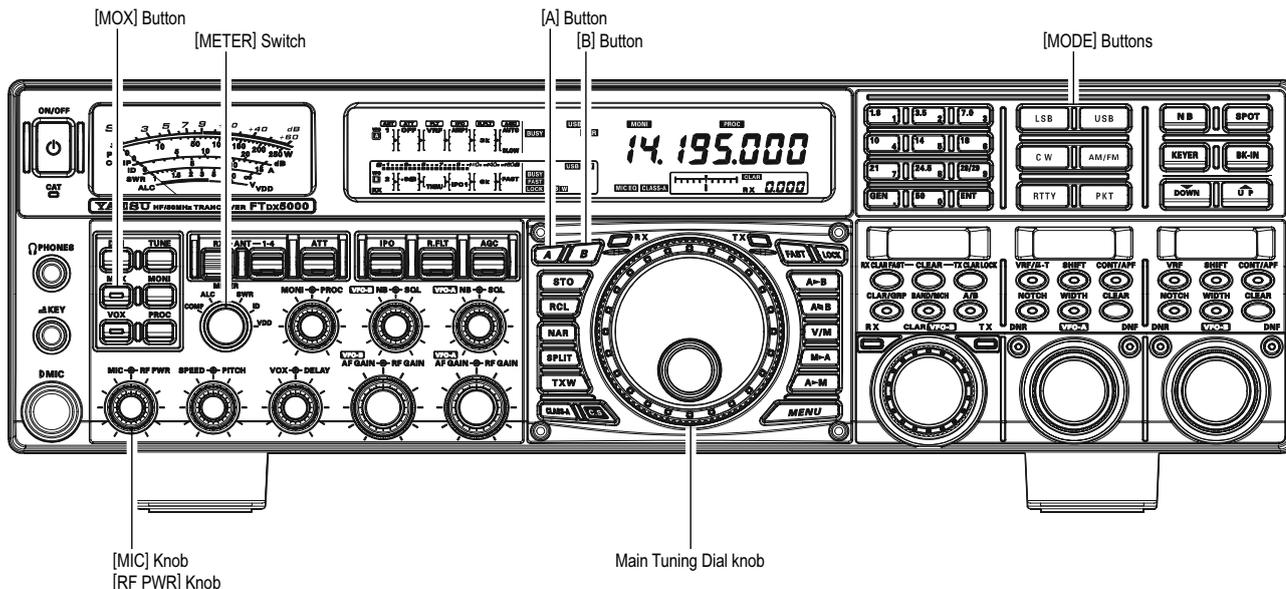
Use this process if the current contest number gets ahead of the actual number you want to send (in case of a duplicate QSO, for example).

Press the **FH-2 control’s [DEC]** key. The current Contest Number will be reduced by one. Press the **[DEC]** button briefly, as many times as necessary, to reach the desired number. If you go too far, use the “Contest Number Programming” technique desired at the left.



# FM MODE OPERATION

## BASIC OPERATION



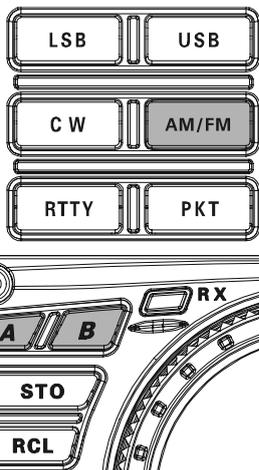
1. To select the FM operating mode, press the [AM/FM] button several times, until the “**FM**” icon appears in the display, .

**ADVICE:**

- The operating mode is

selected using the [MODE] button, and then pressing the [A] or [B] button (located to the upper left of the Main Tuning Dial knob), to choose VFO-A or VFO-B, to which the selection is applied. Usually, the [A] button glows red, signifying VFO-A is being adjusted. Similarly, pressing the [B] button will cause its indicator to glow orange, signifying VFO-B adjustment. Therefore, press the [A] or [B] button to select the desired VFO, then press the [AM/FM] button to select the FM mode.

2. Rotate the Main Tuning Dial knob (in the case of VFO-A operation) to tune the desired operating frequency. Pressing the microphone [UP] or [DWN] button will cause the frequency to change in 5 kHz steps.
3. Press the microphone PTT switch (or press the front panel [MOX] button) to transmit. Speak into the microphone in a normal voice level. Release the PTT or [MOX] switch to return to receive.



4. There are two methods of adjusting the microphone gain for FM operation. At the factory, a default level has been programmed that should be satisfactory for most situations. However, using Menu item “**079 F3E MICGAIN**”, you may set a different fixed value, or you may choose the “MCVR” option which then lets you use the front panel [MIC] knob to set the microphone gain in the FM mode.

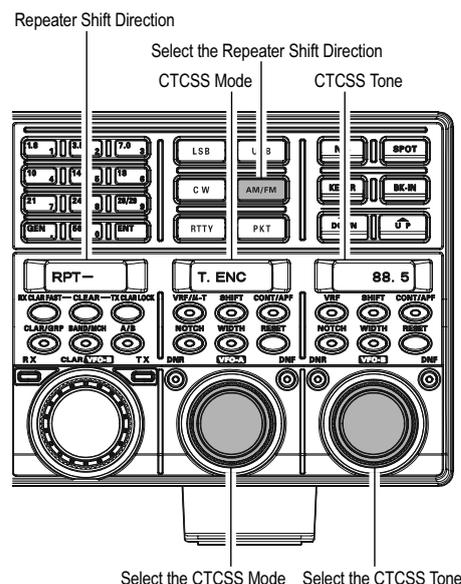
**ADVICE:**

- The Transmit Monitor is another helpful way of verifying proper adjustment of the FM MIC Gain. By pressing the [MONI] button, and then adjusting the [MONI] knob for a comfortable listening level while you are transmitting, you will be able to hear the difference in deviation as you make adjustments.
- FM is only used in the 28 MHz and 50 MHz Amateur bands covered in the FTDX5000. Please do not use FM on any other bands.

## REPEATER OPERATION

The **FTDx5000** may be utilized on 29 MHz and 50 MHz repeaters.

1. Rotate the Main Tuning Dial knob to the output frequency (downlink) from the repeater.
2. If CTCSS Tone operation is desired/needed, press and hold in the **[AM/FM]** button for two seconds to engage the CTCSS mode.
3. Within 5 seconds of pressing of the **[AM/FM]** button:
  - Rotate the **(VFO-A)[SELECT]** knob to select the desired CTCSS mode. If you just need to send the uplink encoding tone, select "T.ENC". For encode/decode operation, choose "T.SQL" instead. The available choices are "OFF" → "T.ENC" → "T.SQL" → "OFF".
  - Rotate the **(VFO-B)[SELECT]** knob to select the desired CTCSS Tone to be used. A total of 50 standard CTCSS tones are provided (see the CTCSS Tone Chart).
  - Press the **[AM/FM]** button briefly, to select the desired repeater shift direction. The selections are "RPT SIMP (not used on a repeater)" → "RPT +" → "RPT -" → "RPT SIMP (not used on a repeater)".
4. Press and hold in the **[AM/FM]** button for two seconds to exit from the repeater setup mode.
5. Close the microphone **PTT** switch (or press the **[MOX]** button) to begin transmission. You will observe that the frequency has shifted to correspond with the programming you set up in the previous steps. Speak into the microphone in a normal voice level, and then release the **PTT** switch or **[MOX]** button to return to the receive mode.



CTCSS TONE FREQUENCY (Hz)							
67.0	69.3	71.9	74.4	77.0	79.7	82.5	85.4
88.5	91.5	94.8	97.4	100.0	103.5	107.2	110.9
114.8	118.8	123.0	127.3	131.8	136.5	141.3	146.2
151.4	156.7	159.8	162.2	165.5	167.9	171.3	173.8
177.3	179.9	183.5	186.2	189.9	192.8	196.6	199.5
203.5	206.5	210.7	218.1	225.7	229.1	233.6	241.8
250.3	251.4	-	-	-	-	-	-

### ADVICE:

The conventional repeater shift used on 29 MHz is 100 kHz, while on the 50 MHz band the shift may vary between 500 kHz and 1.7 MHz (or more). To program the proper repeater shift, use Menu items "081 F3E 28 RPT" (28 MHz) and "082 F3E 50 RPT" (50 MHz), as appropriate.

# MEMORY OPERATION

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## CONVENIENT MEMORY FUNCTIONS

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The **FTdx5000** contains ninety-nine regular memories, labeled “01” through “99”; nine specially programmed limit memory pairs, labeled “P1L/P1U” through “P9L/P9U”; and five QMB (Quick Memory Bank) memories, labeled “C-1” through “C-5”. Each memory location not only stores the VFO-A frequency and mode, but also stores the various settings shown below. By default the 99 regular memories are contained in one group. However, they can be arranged in up to six separate groups, if desired.

### QUICK POINT:

The **FTdx5000**'s memory channels store the following data (in addition to the operating frequency):

- Frequency
- Mode
- Clarifier status and its Offset Frequency
- ANT status
- ATT status
- IPO status
- VRF status
- Roofing filter status and its Bandwidth
- Noise Blanker status
- CONTOUR status and its Peak Frequency
- DSP Noise Reduction (DNR) status and its Reduction algorithm selection.
- DSP Notch filter (NOTCH) status
- NAR bandwidth status
- DSP Auto Notch filter (DNF) status
- Repeater Shift Direction and CTCSS Tone Frequency

### IMPOTANT NOTE

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

## QMB (QUICK MEMORY BANK)

The Quick Memory Bank consists of five memories (labeled “C-1” through “C-5.”) independent from the regular and PMS memories. These can quickly store operating parameters for later recall.

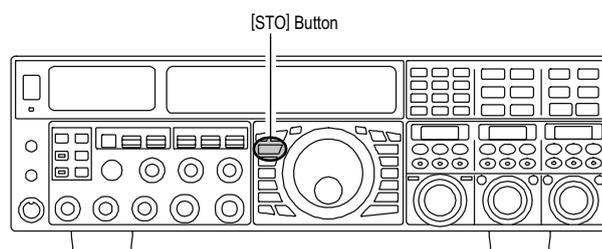
### QMB Channel Storage

1. Tune to the desired frequency on VFO-A.
2. Press the blue **[STO]** button briefly. The “beep” will confirm that the contents of VFO-A have been written to the currently available QMB memory.
3. If you repeatedly press the **[STO]** button, the QMB memories will be written in the following order:



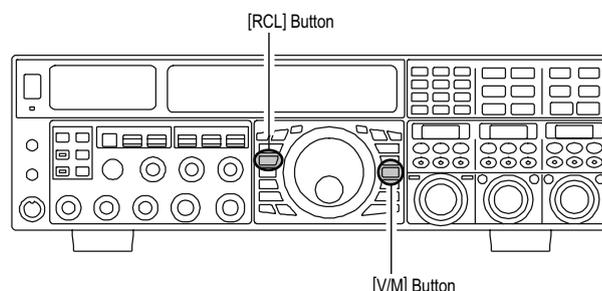
C-2 → C-3 → C-4 → C-5 → C-1 .....

Once all five QMB memories have data in them, previous data (starting with channel “C-1”) will be over-written, on a first-in, first-out basis.



### QMB Channel Recall

1. Press the blue **[RCL]** button briefly. The current QMB channel data will be shown on the VFO-A frequency display field, and the QMB memory channel number will appear in the small window at the lower right corner of the display.
2. Repeatedly pressing the **[RCL]** button will rotate through the QMB channels:  
C-2 → C-3 → C-4 → C-5 → C-1 .....
3. Press the **[V/M]** button briefly, to return to the VFO or Memory mode.



#### ADVICE:

Rotating the Main Tuning Dial knob, or changing the operating mode will place the transceiver in the “Memory Tune” mode. This is a temporary “pseudo-VFO” method of tuning off of a stored memory channel. If you do not over-write the contents of the current memory channel, the original contents will not be disturbed by the initiation of Memory Tune operation.

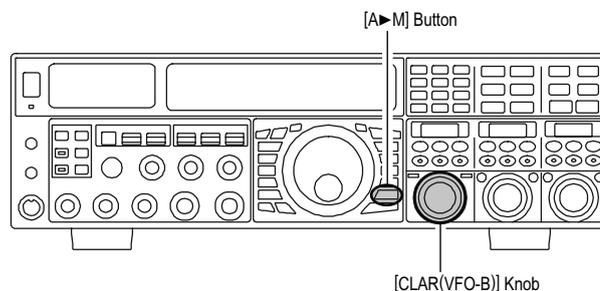
# MEMORY OPERATION

## REGULAR MEMORY OPERATION

The Regular Memory of the **FTdx5000** allows storage and recall of up to 99 memories, each storing frequency, mode, and a wide variety of status information detailed previously. Memories may be grouped into as many as six Memory Groups. Additionally, you get nine pairs of band-limit (PMS) memories, and five QMB (Quick Memory Bank) memories.

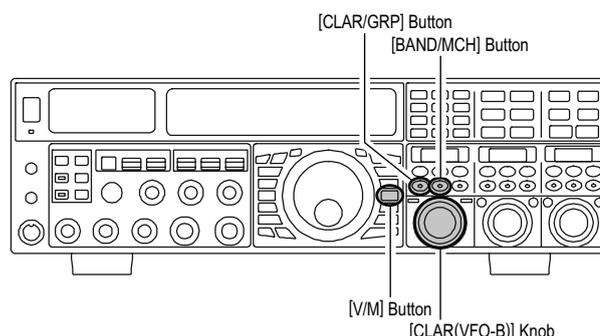
### Memory Storage

1. Set VFO-A up with frequency, mode, and status information, the way you want to have it stored.
2. Press the **[A►M]** button briefly (the current channel number will start blinking in the small window at the lower right corner of the display), and the contents of the current memory channel will be shown on the **SUB DISPLAY-I**.
3. Rotate the **[CLAR(VFO-B)]** knob to select the memory channel onto which you wish to store the data. If you have selected a channel in which data is already stored, that frequency will appear on the **SUB DISPLAY-I** window.
4. Press and hold in the **[A►M]** button for two seconds to store the frequency and other data into the selected memory channel. A double beep will confirm that you have held the **[A►M]** button in long enough.



### Memory Channel Recall

1. Press the **[V/M]** button briefly, if necessary, to enter the Memory mode. The memory channel data will be shown on the VFO-A frequency display field, and the "**MR**" icon and memory channel number will appear in the small window at the lower right corner of the display.
2. Press and hold the **[BAND/MCH]** button for two seconds. The **[BAND/MCH]** button glows yellow, indicating that you are ready to select a memory channel using the **[CLAR(VFO-B)]** knob.
3. After pressing the **[BAND/MCH]** button, you may rotate the **[CLAR(VFO-B)]** knob to select the desired memory channel.



### ADVICE:

To work within a particular Memory Group (described on page 105), press and hold the **[CLAR/GRP]** button for two seconds (the button will glow yellow), then rotate the **[CLAR(VFO-B)]** knob to select the desired Memory Group. Now press and hold the **[BAND/MCH]** button for two seconds (the **[BAND/MCH]** button will glow yellow). You may now choose the memory channel within the selected Memory Group.

## REGULAR MEMORY OPERATION

### Checking a Memory Channel's Status

Before programming a channel into memory, you can check the current contents of that channel without the danger of overwriting the channel accidentally.

1. Press the [**A▶M**] button briefly.  
The data stored in the currently-selected memory channel will be displayed in the **SUB DISPLAY-I** window. However, since you are only checking the contents of the memory channel, your radio will not have moved to the memory channel's frequency.
2. Rotate the [**CLAR(VFO-B)**] knob to select a different memory channel. To exit from the Memory Check mode, press the [**A▶M**] button briefly, once more.

#### ADVICE:

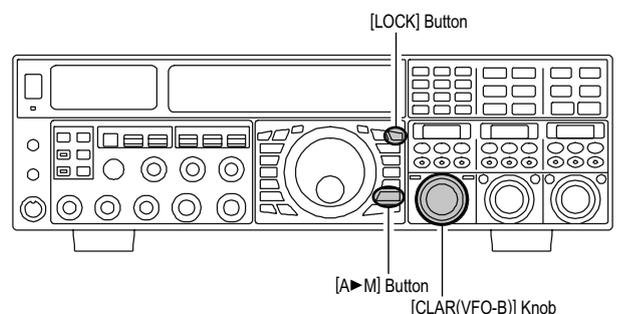
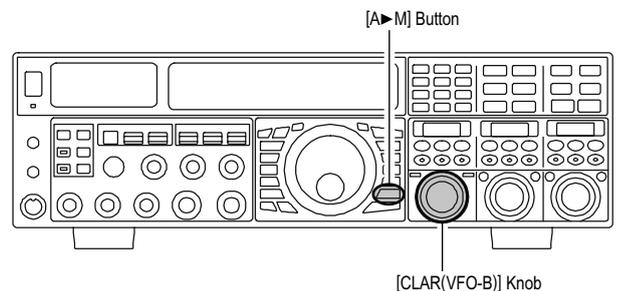
- While the Memory Check function is engaged, the memory channel number will blink in the multi-panel window.
- While operating in the VFO mode, using Memory Check, you may store the current contents of the VFO-A register into the selected memory by pressing and holding in the [**A▶M**] button for two seconds (listen for the double beep). Conversely, if you wish to write the contents of the current memory into the VFO-A register, press and hold in the [**M▶A**] button for two seconds.

### Erasing Memory Channel Data

1. Press the [**A▶M**] button briefly.  
The data stored in the currently-selected memory channel will be displayed in the **SUB DISPLAY-I** window.
2. Rotate the [**CLAR(VFO-B)**] knob to select the memory channel that you would like to erase.
3. Press the [**LOCK**] button briefly, to erase the contents of the selected memory channel.

#### ADVICE:

- After erasure, only the memory channel number will remain. The frequency data will disappear from the display.
- If you make a mistake and wish to restore the memory contents, just repeat steps (1) through (3) above.



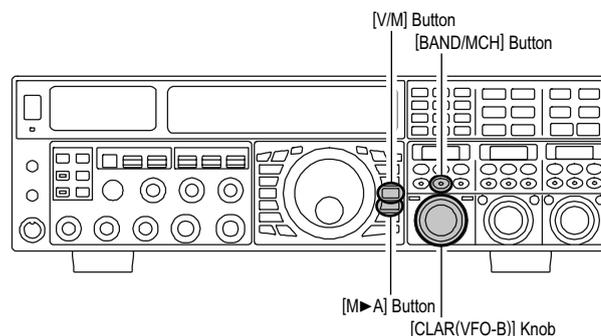
# MEMORY OPERATION

## REGULAR MEMORY OPERATION

### Moving Memory Data to the VFO-A

You may transfer the contents of the currently selected memory channel into the Main band (VFO-A) register, if you like.

1. Press the **[V/M]** button briefly, as necessary, to enter the Memory mode. The memory channel number will appear in the small window at the lower right corner of the display.
2. Press and hold the **[BAND/MCH]** button for two seconds. The **[BAND/MCH]** button will glow yellow, indicating that you are ready to select a memory channel using the **[CLAR(VFO-B)]** knob.
3. Rotate the **[CLAR(VFO-B)]** knob to select the memory channel you wish to transfer to VFO-A.
4. Press and hold in the **[M▶A]** button for two seconds, until you hear the double beep. The data in the selected memory channel will now be transferred to the VFO-A.



#### ADVICE:

The transfer of data to the VFO-A does not affect the original contents of the memory channel. This is a “copy” function that leaves the memory contents unchanged.

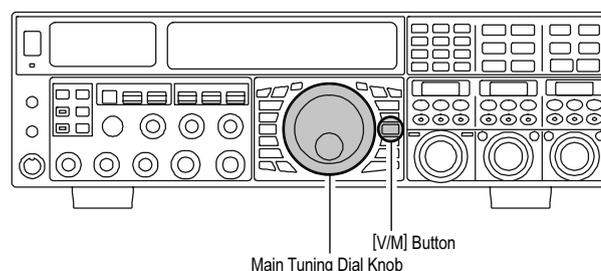
### Memory Tune Operation

You may freely tune the frequency off of any memory channel in a “Memory Tune” mode. This is similar to VFO operation. So long as you do not over-write the contents of the current memory, Memory Tune operation will not alter the contents of the memory channel.

1. Press the **[V/M]** button briefly, to recall any memory channel.
2. Rotate the Main Tuning Dial knob and you will see that the memory channel frequency is changing.

#### ADVICE:

- The “**MT**” icon will replace the “**MR**” icon in the small window at the lower right corner of the display, indicating you are in the “Memory Tune” mode.
  - During Memory Tune operation, you may change operating modes, and engage the Clarifier, if desired.
3. Press the **[V/M]** button briefly to return to the originally-memorized frequency of the current memory channel. One more brief press of the **[V/M]** button will return you to VFO operation.



#### NOTE:

Computer software programs utilizing the CAT system interface port may presume that the transceiver is operating in the VFO mode for certain features like “band mapping” and/or frequency logging. Because the “Memory Tune” mode so closely resembles the VFO mode, be sure that you have the **FTDX5000** operating in a control mode compatible with your software requirements. Use the VFO mode if you’re not sure.

## MEMORY GROUPS

Memory channels may be grouped into as many as six convenient batches, for easy identification and selection. For example, you might want to set aside memory groups for AM BC stations, shortwave broadcast stations, contest frequencies, repeater frequencies, and PMS limits, or any other groupings you like.

Each memory group is capable of holding up to 19 or 20 memory channels (the Group size is fixed). When a memory channel is grouped, the channel numbers change to correspond to the chart below:

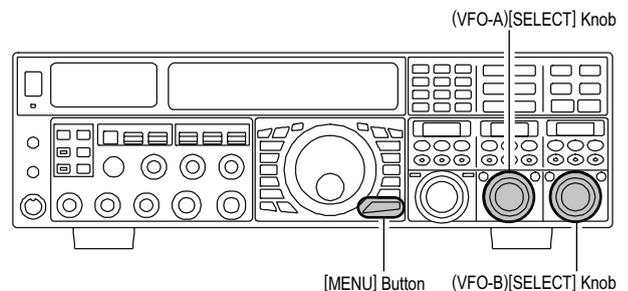
### Memory Group Assignment

1. Press the [MENU] button briefly, to enter the Menu mode.
2. Rotate the (VFO-A)[SELECT] knob to select Menu item "032 GENE MEM GRP".
3. Rotate the (VFO-B)[SELECT] knob to set this Menu item to "ENABLE" (the default setting is "DISABLE").
4. Press and hold in the [MENU] button for two seconds to save the new setting and exit. Operation will now be restricted to the six Memory Groups.

To cancel Memory Group operation, repeat steps (1) through (4) above, choosing "DISABLE" in step (3).

#### ADVICE

Note that for the PMS memory group, the PMS memories "P1L" through "P9U" will be so designated, to avoid confusion.



MEMORY CHANNEL NUMBER	
GROUP MEMORY "OFF"	GROUP MEMORY "ON"
01 ~ 19	1-01 ~ 1-19
20 ~ 39	2-01 ~ 2-20
40 ~ 59	3-01 ~ 3-20
60 ~ 79	4-01 ~ 4-20
80 ~ 99	5-01 ~ 5-20
P-1L/1U ~ P-9L/9U	P-1L/1U ~ P-9L/9U

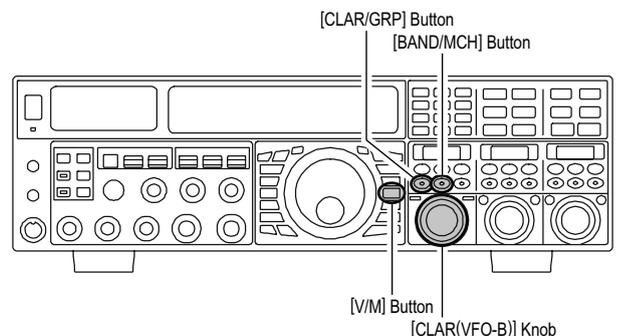
### Choosing the Desired Memory Group

You may recall memories just within a particular Memory Group, if desired.

1. Press the [V/M] button briefly, if necessary to enter the Memory mode.
2. Press and hold the [CLAR/GRP] button for two seconds. The [CLAR/GRP] button will glow yellow.
3. Rotate the [CLAR(VFO-B)] knob to select the desired Memory Group.
4. Press and hold the [BAND/MCH] button. The [BAND/MCH] button will glow yellow.
5. Rotate the [CLAR(VFO-B)] knob to select the desired Memory Channel within the Selected Memory Group.

#### ADVICE:

If no channels have been assigned to a particular Memory Group, you will not have access to that Group.



# OPERATION ON ALASKA EMERGENCY FREQUENCY: 5167.5 KHz (U.S. VERSION ONLY)

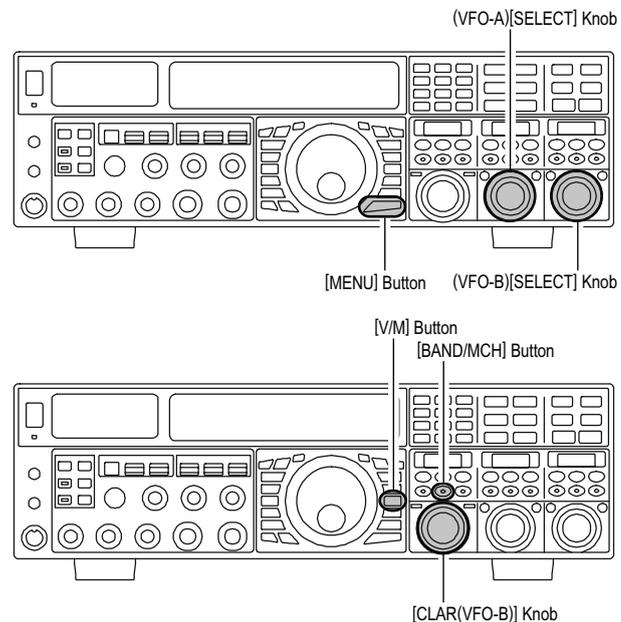
Section 97.401(d) of the regulations governing amateur radio in the United States permits emergency amateur communications on the spot frequency of 5167.5 kHz by stations in (or within 92.6 km of) the state of Alaska. This frequency is only to be used when the immediate safety of human life and/or property are threatened. It is never to be used for routine communications.

The **FTdx5000** includes the capability for transmission and reception on 5167.5 kHz under such emergency conditions via the Menu system. To activate this feature:

1. Press the **[MENU]** button to briefly, enter the Menu mode.
2. Rotate the **(VFO-A)[SELECT]** knob to select “**176 TGEN EMRGNCY**”.
3. Rotate the **(VFO-B)[SELECT]** knob to select “**ENABLE**”.
4. Press and hold in the **[MENU]** button for 2 seconds to save the new setting and exit to normal operation. Emergency communication on this spot frequency is now possible.
5. Press the **[V/M]** button, as necessary, to enter the Memory mode. Press and hold the **[BAND/MCH]** button (the imbedded LED glows yellow), then rotate the **[CLAR(VFO-B)]** knob to select the emergency channel (“**E-US**”), which is found between channels “**P-9U**” and “**01.**”

## NOTE:

- The receive-mode CLARIFIER functions normally while using this frequency, but variation of the transmit frequency is not possible. Activation of “**176 TGEN EMRGNCY**” does not enable any other out-of-amateur-band capability on the transceiver. The full specifications of the **FTdx5000** are not necessarily guaranteed on this frequency. However, power output and receiver sensitivity should be fully satisfactory for the purpose of emergency communication.
- If you wish to disable operation capability on the Alaska Emergency Frequency, repeat the above procedures, but set “**176 TGEN EMRGNCY**” to “**DISABLE**” in step 3.
- In an emergency, note that a half-wave dipole cut for this frequency should be approximately 45’3” on each leg (90’6” total length). Emergency operation on 5167.5 kHz is shared with the Alaska-Fixed Service. This transceiver is not authorized for operation under the FCC’s Part 87 rules for aeronautical communications.



# VFO AND MEMORY SCANNING

You may scan either the VFO or the memories of the **FTDx5000**. The radio will halt scanning on any station with a signal strong enough to open the receiver squelch.

## VFO SCANNING

1. Set the VFO to the frequency on which you would like to begin scanning.
2. Rotate the **(VFO-A)[SQL]** knob so that the background noise is just silenced.

### ADVICE:

If you would like to scan on VFO-B, rotate the **(VFO-B)[SQL]** knob so that the background noise is just silenced.

3. Press and hold in the microphone **[UP]** or **[DWN]** key for 1/2 second to start scanning in the specified direction on the VFO-A.

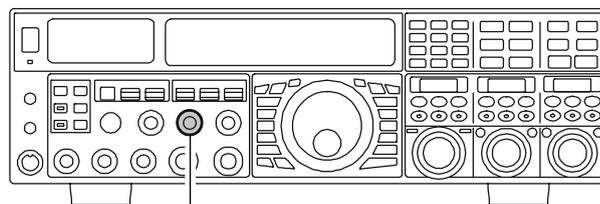
### ADVICE:

If you would like to begin scanning on the VFO-B, press the **[B]** button briefly, first (located to the upper left of the Main Tuning Dial knob), then press and hold in the microphone **[UP]** or **[DWN]** key for 1/2 second.

4. The scanner will now increment the frequency in the chosen direction until a signal is detected. When a signal is encountered which opens the squelch, receiver will respond differently, depending on the operating mode:

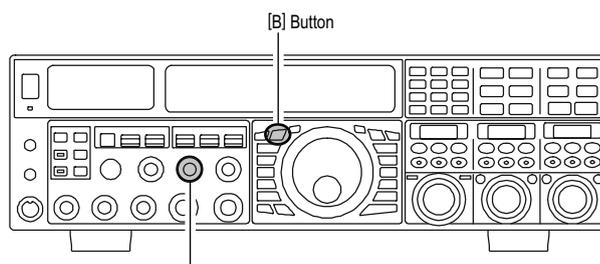
- In the SSB/CW modes**, the decimal points in the frequency display area will blink and the scanner will slow down (but does not stop).
- In the FM/AM modes**, the transceiver pauses on the signal and stays locked on its frequency for five seconds. Thereafter, scanning will resume whether or not the other station's transmission has ended. While the transceiver is in the "pause" condition, the decimal points in the frequency display area will blink. If the incoming signal disappears, scanning will resume.

5. To cancel scanning, press the microphone **[UP]** or **[DWN]** key briefly.



(VFO-B)[PICTH] Knob

### MAIN BAND (VFO-A) SCANNING



(VFO-B)[PICTH] Knob

### SUB BAND (VFO-B) SCANNING

### ADVICE:

You may select the manner in which the scanner resumes while it has paused on a signal in the FM/AM modes, using Menu item "045 GENE SCN RSM". The default "TIME" setting will cause the scanner to resume scanning after five seconds; you may change it, however, to resume only after the carrier has dropped out, if you like See page 125.

### QUICK POINT:

If you have no interest in scanning, and wish to prohibit the microphone's **[UP]**/**[DWN]** keys from initiating scanning, you may disable scanning control from the microphone using Menu item "044 GENE MIC SCN" (set it to "DISABLE").

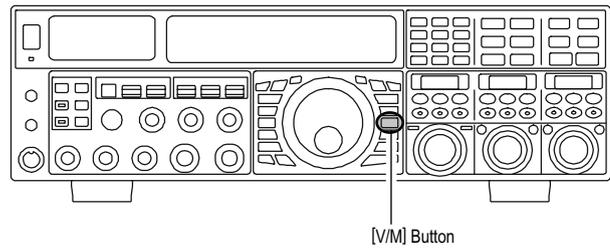
# VFO AND MEMORY SCANNING

## MEMORY SCAN

1. Set the transceiver up in the memory mode by pressing the [V/M] button briefly, if necessary.
2. Rotate the (VFO-A)[SQL] knob so that the background noise is just silenced.
3. Press and hold in the microphone's [UP] or [DWN] key for 1/2 second to start scanning in the specified direction.
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 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. While the transceiver is in the "pause" condition, the decimal points in the frequency display area will blink.
5. If the incoming signal disappears, scanning will resume.
6. To cancel the scanning, press the microphone's [UP] or [DWN] key briefly.

### ADVICE:

- During Memory Group operation, only the channels within the current Memory Group will be scanned.
- If the scan has paused on a signal, pressing the microphone's [UP] or [DWN] key will cause scanning to resume instantly.
- If you press the microphone's PTT switch during scanning, the scanner will halt at once. Pressing the PTT switch during scanning will not cause transmission, however.
- You may select the manner in which the scanner resumes while it has paused on a signal, using Menu item "045 GENE SCN RSM". The default "TIME" setting will cause the scanner to resume scanning after five seconds; you may change it, however, to resume only after the carrier has dropped out, if you like See page 125.



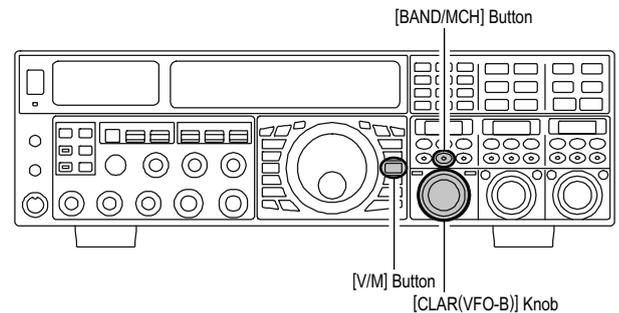
### QUICK POINT:

If you have no interest in scanning, and wish to prohibit the microphone's [UP]/[DWN] keys from initiating scanning, you may disable scanning control from the microphone using Menu item "044 GENE MIC SCN" (set it to "DISABLE").

# PMS (PROGRAMMABLE MEMORY SCANNING)

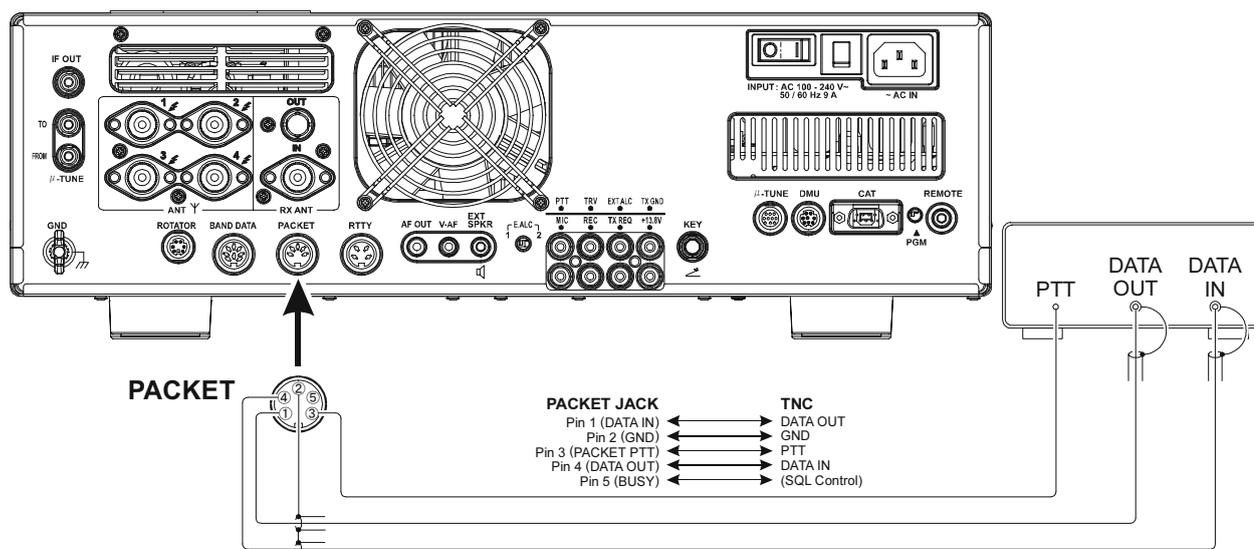
To limit scanning (and manual tuning) within a particular frequency range, you can use the Programmable Memory Scanning (PMS) feature, which utilizes nine special-purpose memory pairs (“P1L/P1U” through “P9L/P9U”). The PMS feature is especially useful in helping you to observe any operating sub-band limits which apply to your Amateur license class.

1. Store the Lower and Upper tuning/scanning limit frequencies into the memory pair “P1L” and “P1U,” respectively, or any other “L/U” pair of memories in the special PMS memory area. See page 102 for details regarding memory storage.
2. Press the [V/M] button briefly, to enter the Memory mode.
3. Press and hold the [BAND/MCH] button for two seconds. The [BAND/MCH] button will glow yellow, indicating that you may select a memory channel using the [CLAR(VFO-B)] knob.
4. Rotate the [CLAR(VFO-B)] knob to select memory channel “P1L” or “P1U.”
5. Rotate the (VFO-A)[SQL] knob so that the background noise is just silenced.
6. Turn the Main Tuning Dial knob slightly (to activate memory tuning). Tuning and scanning are now limited to the range within the P1L/P1U limits until you press the [V/M] button briefly, to return to memory channel or VFO-A operation.
7. Press and hold in the microphone’s [UP] or [DWN] key for 1/2 second to start scanning in the specified direction.
8. 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, it will do different things, depending on the operating mode:
  - In the SSB/CW modes**, the decimal points in the frequency display area will blink and the scanner will slow down (but does not stop).
  - In the FM/AM modes**, 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. While the transceiver is in the “pause” condition, the decimal points in the frequency display area will blink. If the incoming signal disappears, scanning will resume.
9. If you rotate the Main Tuning Dial knob in the opposite direction from the current scanning direction (in other words, you rotate the dial to the left when scanning toward a higher frequency), the direction of the scan will reverse.
10. If you press the microphone **PTT** switch during scanning, the scanner will halt at once. Pressing the **PTT** switch during scanning will not cause transmission, however.



# PACKET OPERATION

Packet operation is easily accomplished on the **FTdx5000** by connecting your TNC (Terminal Node Controller) to the transceiver, as in the illustration. “Packet” operation also applies to SSB-based AFSK data modes, such as PSK31, etc.



## PACKET SETUP (INCLUDING SUBCARRIER FREQUENCY)

Before operation can commence, some basic setup procedures must be performed, using the Menu, to configure your radio for the desired data mode.

MENU ITEM	AVAILABLE VALUES	MENU ITEM	AVAILABLE VALUES
069 DATA DATA IN	DATA or PC	083 PKT LCUT FRQ	OFF/100 ~ 1000 Hz
070 DATA DT GAIN	0 ~ 100	084 PKT LCUT SLP	18dB/oct or 6dB/oct
071 DATA DT OUT	VFO-A or VFO-B	085 PKT HCUT FRQ	OFF/700 ~ 4000 Hz
072 DATA OUT LVL	0 ~ 100	086 PKT HCUT SLP	18dB/oct or 6dB/oct
073 DATA VOX DLY	30 ~ 3000 ms	087 PKT PKT DISP	-3000 ~ +3000 Hz
074 DATA VOX GAIN	0 ~ 100	088 PKT PKT SFT	-3000 ~ +3000 Hz

## BASIC SETUP

1. Press the **[PKT]** button.

### ADVICE:

- ❑ For HF operation, SSB-based data operation is generally used. One brief press of the **[PKT]** button will engage packet operation in the “LSB” mode (by default). Both the “**PKT**” and “**LSB**” icons will appear in the display.
  - ❑ To operate FM-based 1200-baud packet on the 29/50 MHz bands, press the **[PKT]** button repeatedly to illuminate the “**PKT**” and “**FM**” icons, to engage the “PKT-FM” mode.
  - ❑ To engaged Packet operation in the “USB” mode, repeat pressing the **[PKT]** button until both the “**PKT**” and “**USB**” icons are appear.
2. When the “transmit” command is received from the TNC, the **FTdx5000** transmitter will automatically be engaged. Likewise, the command to return to receive will cause the radio to revert to the receive mode.

### ADVICE:

- ❑ If you need to adjust the output level from the “DATA OUT” pin of the **PACKET** jack (pin 4) on the radio, use Menu item “**072 DATA OUT LVL**”. For the input level from the TNC, as applied to the DATA IN pin of the **PACKET** jack (pin 1), use Menu item “**070 DATA DT GAIN**”.
- ❑ During Packet operation via the rear panel **PACKET** jack, the front panel **MIC** jack is cut off, so you won’t have a “live microphone” problem during data operation.

### NOTE:

If you anticipate making data transmissions of longer than a few minutes, we recommend that you use the **[RF PWR]** knob to reduce the transmitter power to 1/3 ~ 1/2 of its normal maximum.

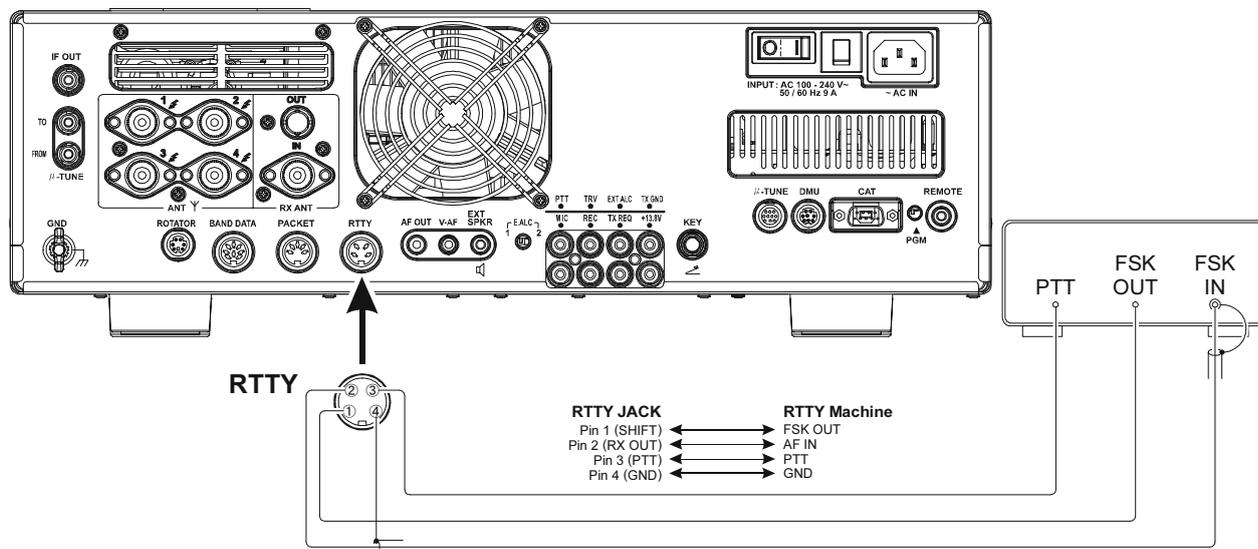
### QUICK POINT:

#### PACKET Jack Specifications

- ❑ DATA IN (Pin 1)
  - Input Level: 50 mVp-p
  - Input Impedance: 10 k-Ohms
- ❑ DATA OUT (Pin 4)
  - Output Level: 100 mVp-p max.
  - Output Impedance: 10 k-Ohms

# RTTY (RADIO TELETYPE) OPERATION

Most RTTY operation today is accomplished using a TNC or other computer-based system that utilizes AFSK tones. As such, the previous discussion on LSB-mode “Packet” operation will also apply for Baudot operation. RTTY operation using a Terminal Unit (TU), or the “FSK” output from a TNC is discussed below. Also, see the illustration for details regarding connection to your TU.



## SETTING UP FOR RTTY OPERATION

Before commencing RTTY operation, please direct your attention to the setup steps shown in the chart to the right.

MENU ITEM	AVAILABLE VALUES	MENU ITEM	AVAILABLE VALUES
089 RTTY LCUT FRQ	OFF/100 ~ 1000 Hz	094 RTTY T PLRTY	NOR or REV
090 RTTY LCUT SLP	18dB/oct or 6dB/oct	095 RTTY RTTY OUT	VFO-A or VFO-B
091 RTTY HCUT FRQ	OFF/700 ~ 4000 Hz	096 RTTY OUT LEVEL	0 ~ 100
092 RTTY HCUT SLP	18dB/oct or 6dB/oct	097 RTTY SHIFT	170/200/425/850 Hz
093 RTTY R PLRTY	NOR or REV	098 RTTY TONE	1275/2125 Hz

## BASIC SETUP

- Press the [RTTY] button briefly, to enter the RTTY mode.  
One press of the [RTTY] button will engage RTTY operation using “LSB” injection, which is generally used in the Amateur service. In this mode, both the “RTTY” and “LSB” icons will appear in the display.  
To switch to USB-side injection in RTTY, press the [RTTY] button once more. Both the “RTTY” and “USB” icons appear. Repeatedly pressing the [RTTY] button will toggle between LSB and USB injection on RTTY.
- When you begin typing on your TU or computer keyboard, the command to transmit should automatically be sent to the transceiver, causing it to enter the transmit mode.

### NOTE:

If you anticipate making data transmissions of longer than a few minutes, we recommend that you use the [RF PWR] knob to reduce the transmitter power to 1/2 ~ 1/3 of its normal maximum.

### ADVICE:

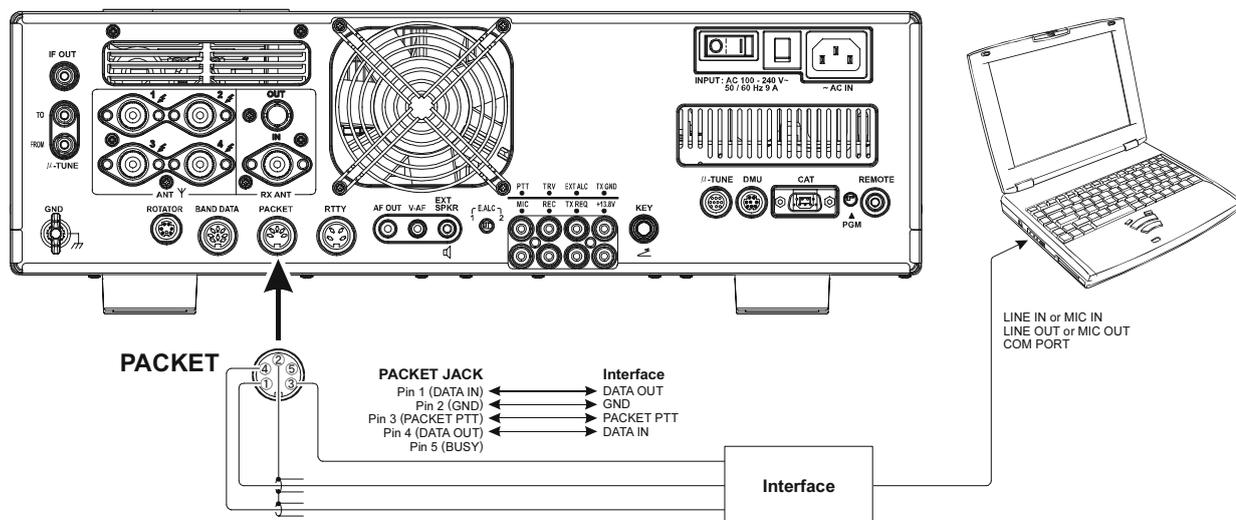
- The Mark/Space Shift utilized in most Amateur RTTY operation is 170 Hz. Other shifts may be configured using Menu item “097 RTTY SHIFT”.  
The FTdx5000 is set up for “high tone” operation (centered on 2125 Hz) by default, but you may configure it for low tone (1275 Hz) operation using Menu item “074 RTTY TONE”.
- You may find that you are unable to decode some RTTY stations, even if they are of sufficient signal strength. If this is observed, there may be a Mark/Space polarity problem between your station and the other station. If so, try setting Menu item “093 RTTY R PLRTY” to “REV” (“Reverse”) to see if that permits copy. A separate Menu item permits reversal of your transmitter Mark/Space polarity: “094 RTTY T PLRTY”.

### QUICK POINT:

In the FTdx5000, “RTTY” is defined as an “FSK” mode, whereby the closing and opening of a keying line (to ground) causes the Mark/Space tones to alternate. The RTTY mode is not an AFSK based mode in this transceiver and the AFSK output tones from a TNC will not cause Mark/Space shifting to occur. Use the “Packet” mode for AFSK-based Baudot and other data modes.

# MISCELLANEOUS AFSK-BASED DATA MODES

The **FTdx5000** may also be used for a host of other SSB-based Data modes. Please set up your system using the illustration as a guideline.



## QUICK POINT:

When you have configured Menu item “**174 TGEN VOX SEL**” to “**DATA**”, the transceiver will operate in a “**VOX**” mode, and it is not necessary to connect a **PTT** line. This makes very convenient to interface your transceiver to computer Sound Cards, etc.

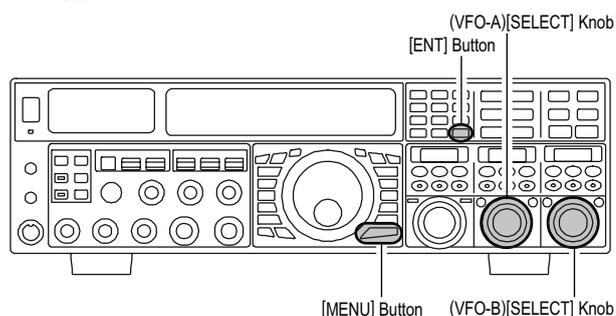


# ABOUT THE TRANSVERTER OUTPUT TERMINAL

You may connect an after-market transverter to the rear panel **TRV** jack. The output frequency is selectable from 14, 28, and 50 MHz, and the output level is approximately  $-10$  dBm (0.1 mW) at 50 Ohms.

## SETUP

1. Press the **[MENU]** button briefly to enter the Menu mode.
2. Rotate the **(VFO-A)[SELECT]** knob to select Menu item “**150 TUNE MY BAND**”.
3. Rotate the **(VFO-B)[SELECT]** knob to select the desired input frequency band of the transverter in menu item (T14M OFF, T28M OFF, or T50M OFF ).
4. Press the **[ENT]** button (one of the **[BAND]** buttons) to change the parameter to “ON” (the “OFF” notation will change to “ON”).
5. Rotate the **(VFO-A)[SELECT]** knob to select Menu item “**172 TGEN ETX-GND**”.
6. Rotate the **(VFO-B)[SELECT]** knob to set this Menu item to “ENABLE” to enable the internal relay connected to the rear panel **TX GND** jack.
7. Press and hold the **[MENU]** button for at least two seconds to save the new setting, and exit to normal operation.



### Setting the Transverter Frequency Offset

You may set up the frequency display so that it shows the frequencies of the transverter operating band (instead of the 28 MHz band frequencies used as the “IF” on your **FTDx5000**).

*Example:* Setting up the **FTDx5000** display for use with a 144 MHz Transverter

1. Connect the 144 MHz transverter to the **FTDx5000**.
2. Press the **[MENU]** button briefly, to enter the Menu mode.
3. Rotate the **(VFO-A)[SELECT]** knob to select the Menu item which designates the input frequency band from the transverter (**040 GENE TRV 14M**, **041 GENE TRV 28M**, or **042 GENE TRV 50M**).
4. Rotate the **(VFO-B)[SELECT]** knob to select “44MHz” on the display.
5. Press and hold the **[MENU]** button in for at least two seconds to save the new setting and exit.

The “100 MHz” digit of the frequency is not displayed, so when you are operating on 2 meters and see “45 MHz” on the frequency readout, this indicates “145 MHz” instead.

### ADVICE:

With the setup described above, tuning the actual operating range of the **FTDx5000** will correspond to transverter operating frequency of 144-145 MHz, with “44-45” being displayed on the front panel of the transceiver.

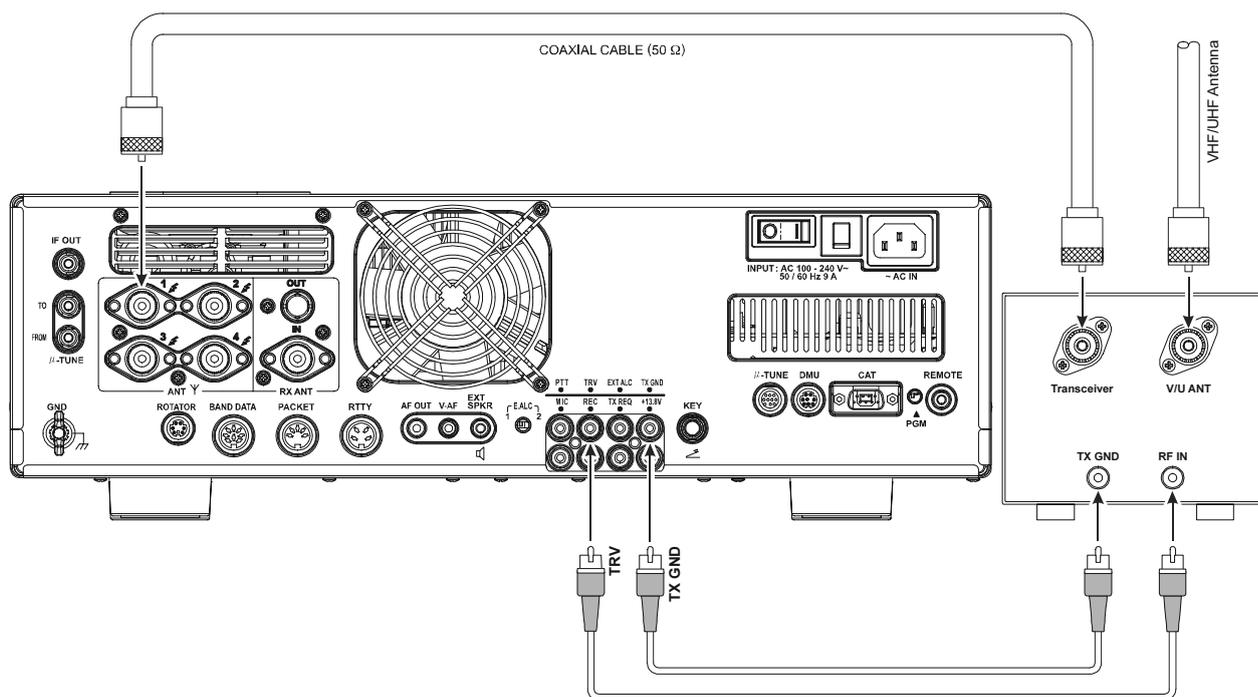
# ABOUT THE TRANSVERTER OUTPUT TERMINAL

## OPERATION

1. Set up the **FTdx5000** for transverter use, as described previously.
2. Choose the “Transverter” band with the “MY Bands” procedures as described on page 46. You may find the “Transverter” band between the “1.8 MHz” and “50 MHz” Bands.
3. Rotate the Main Tuning Dial knob to set the desired operating frequency. Operation is basically unchanged from normal transceiver operation.

### ADVICE:

When the “Transverter” mode is turned on, TX power output will not be allowed to pass to the “ANT 1” through “ANT 4” main antenna jacks. So one of these may be connected to your transverters “RX” jack. Just be certain to disconnect the transverter when returning to HF operation, as the selected antenna jack will now be capable of passing RF power.



# MENU MODE

The Menu system of the **FTdx5000** provides extensive customization capability, so you can set up your transceiver just the way you want to operate it. The Menu items are grouped by general utilization category, and are numbered from “001 AGC FST DLY” to “176 TGEN EMRGNCY.”

## USING THE MENU

1. Press the **[MENU]** button momentarily, to engage the Menu mode.

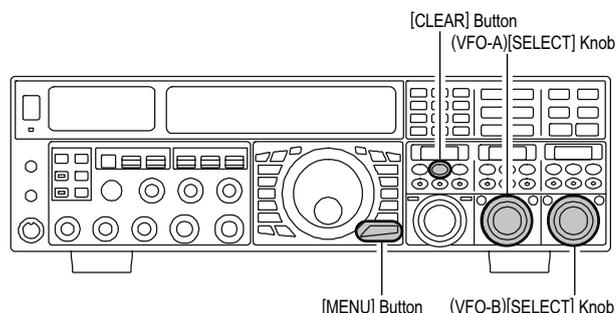
The **SUB DISPLAY-I** window will show the Menu Number and Menu Group name, while the **SUB DISPLAY-II** window will show the Menu item; the **SUB DISPLAY-III** window shows the current setting of the currently-selected Menu item.

2. Rotate the **(VFO-A)[SELECT]** knob to select the Menu item you wish to work on.
3. Rotate the **(VFO-B)[SELECT]** knob to change the current setting of the selected Menu item.

### ADVICE:

Press the **[CLEAR]** button momentarily to reset the selected Menu item to the factory default value.

4. When you have finished making your adjustments, press and hold in the **[MENU]** button for two seconds to save the new setting and exit to normal operation. If you only *momentarily* press the **[MENU]** button, the new settings will *not* be retained.



## Menu Mode Reset

You may reset all the Menu settings to their original factory defaults, if desired.

1. Turn the front panel **[POWER]** switch off.
2. Press and hold in the **[MENU]** button, and while holding it in, press the **[POWER]** switch to turn the transceiver back on. Now release the **[MENU]** button.

# MENU MODE

GROUP	No.	MENU FUNCTION	AVAILABLE VALUES	DEFAULT SETTING
AGC	001	AGC FST DLY	20 msec ~ 4000 msec (20 msec/step)	300 msec
AGC	002	AGC FST HLD	0 msec ~ 2000 msec (20 msec/step)	20 msec
AGC	003	AGC MID DLY	20 msec ~ 4000 msec (20 msec/step)	700 msec
AGC	004	AGC MID HLD	0 msec ~ 2000 msec (20 msec/step)	20 msec
AGC	005	AGC SLW DLY	20 msec ~ 4000 msec (20 msec/step)	3000 msec
AGC	006	AGC SLW HLD	0 msec ~ 2000 msec (20 msec/step)	20 msec
DISPLAY	007	DISP COLOR	BLUE1 / BLUE2 / WHITE / UMBER1 / UMBER2	BLUE1*1
DISPLAY	008	DISP DIM MTR	0 ~ 15	8
DISPLAY	009	DISP DIM VFD	0 ~ 15	8
DISPLAY	010	DISP DIM OLE	0 ~ 15	8
DISPLAY	011	DISP DIM ELCD	0 ~ 15	8
DISPLAY	012	DISP BAR SEL	CLAR / CW TUNE	CW TUNE
DISPLAY	013	DISP S PK HLD	OFF / 0.5s / 1.0s / 2.0s	OFF
DISPLAY	014	DISP RTR STU	0° / 90° / 180° / 270°	0°
DISPLAY	015	DISP RTR ADJ	-30° ~ 0° (2°/step)	0°
DISPLAY	016	DISP QMB MKR	DISABLE / ENABLE	ENABLE*1
DISPLAY	017	DISP LVL IND	PTCH / SPED / CDLY / VDLY / RPWR / MICG / PROC	ON
DISPLAY	018	DISP INDI	VFD / OEL	VFD
DISPLAY	019	DISP SELECT	PTN1 / PTN2 / PTN3	PTN2
DVS	020	DVS RX LVL	0 ~ 100	50
DVS	021	DVS TX LVL	0 ~ 100	50
KEYER	022	KEY BEACON	OFF / 1s ~ 255s	OFF
KEYER	023	KEY NUM STL	1290 / AUNO / AUNT / A2NO / A2NT / 12NO / 12NT	1290
KEYER	024	KEY CONTEST	0 ~ 9999	1
KEYER	025	KEY CW MEM1	TEXT / MESSAGE	MESSAGE
KEYER	026	KEY CW MEM2	TEXT / MESSAGE	MESSAGE
KEYER	027	KEY CW MEM3	TEXT / MESSAGE	MESSAGE
KEYER	028	KEY CW MEM4	TEXT / MESSAGE	MESSAGE
KEYER	029	KEY CW MEM5	TEXT / MESSAGE	MESSAGE
GENERAL	030	GENE ANT SEL	BAND / STACK	BAND
GENERAL	031	GENE BEEP LVL	0 ~ 100	40
GENERAL	032	GENE CAT BPS	4800 bps / 9600 bps / 19200 bps / 38400 bps	4800 bps
GENERAL	033	GENE CAT TOT	10 msec / 100 msec / 1000 msec / 3000 msec	10 msec
GENERAL	034	GENE CAT RTS	DISABLE / ENABLE	ENABLE
GENERAL	035	GENE CAT IND	DISABLE / ENABLE	ENABLE
GENERAL	036	GENE MEM GRP	DISABLE / ENABLE	DISABLE
GENERAL	037	GENE Q SPLIT	-20 kHz ~ 0 kHz ~ 20 kHz (1 kHz/step)	+5 kHz
GENERAL	038	GENE TRACK	OFF / BAND / FREQ	OFF
GENERAL	039	GENE TX TOT	OFF / 1 ~ 30 min	OFF
GENERAL	040	GENE TRV 14M	30 MHz ~ 46 MHz	44 MHz
GENERAL	041	GENE TRV 28M	30 MHz ~ 46 MHz	44 MHz
GENERAL	042	GENE TRV 50M	30 MHz ~ 46 MHz	44 MHz
GENERAL	043	GENE $\mu$ T DIAL	STEP-1 / STEP-2 / OFF	STEP-1
GENERAL	044	GENE MIC SCN	DISABLE / ENABLE	ENABLE
GENERAL	045	GENE SCN RSM	TIME / PAUSE	TIME
GENERAL	046	GENE FRQ ADJ	-25 ~ 0 ~ +25	0
MODE-AM	047	A3E LCUT FRQ	OFF / 100 Hz ~ 1000 Hz (50 Hz/step)	OFF
MODE-AM	048	A3E LCUT SLP	6dB/oct or 18dB/oct	6dB/oct
MODE-AM	049	A3E HCUT FRQ	700 Hz ~ 4000 Hz / OFF (50 Hz/step)	OFF
MODE-AM	050	A3E HCUT SLP	6dB/oct or 18dB/oct	6dB/oct
MODE-AM	051	A3E MIC GAIN	MCVR / 0 ~ 100	30
MODE-AM	052	A3E MIC SEL	FRONT / DATA / PC	FRONT

\*: Requires optional **DMU-2000** Data Management Unit.

# MENU MODE

GROUP	No. MENU FUNCTION	AVAILABLE VALUES	DEFAULT SETTING
MODE-CW	053 A1A LCUT FRQ	OFF / 100 Hz ~ 1000 Hz (50 Hz/step)	300 Hz
MODE-CW	054 A1A LCUT SLP	6dB/oct or 18dB/oct	18dB/oct
MODE-CW	055 A1A HCUT FRQ	700 Hz ~ 4000 Hz / OFF (50 Hz/step)	1000 Hz
MODE-CW	056 A1A HCUT SLP	6dB/oct or 18dB/oct	6dB/oct
MODE-CW	057 A1A F-TYPE	OFF / BUG / ELEKEY / ACS	ELEKEY
MODE-CW	058 A1A F-REV	NOR / REV	NOR
MODE-CW	059 A1A R-TYPE	OFF / BUG / ELEKEY / ACS	ELEKEY
MODE-CW	060 A1A R-REV	NOR / REV	NOR
MODE-CW	061 A1A CW AUTO	OFF / 50M / ON	OFF
MODE-CW	062 A1A BFO	USB / LSB / AUTO	USB
MODE-CW	063 A1A BK-IN	SEMI / FULL	SEMI
MODE-CW	064 A1A SHAPE	1 msec / 2 msec / 4 msec / 6 msec	4 msec
MODE-CW	065 A1A WEIGHT	(1:) 2.5 ~ 4.5	3.0
MODE-CW	066 A1A FRQ DISP	FREQ / PITCH	PITCH
MODE-CW	067 A1A PC KYNG	DISABLE / ENABLE	DISABLE
MODE-CW	068 A1A QSKTIME	15 msec / 20 msec / 25 msec / 30 msec	15 msec
MODE-DAT	069 DATA DATA IN	DATA / PC	DATA
MODE-DAT	070 DADA DT GAIN	0 ~ 100	50
MODE-DAT	071 DATA DT OUT	VFO-A / VFO-B	VFO-A
MODE-DAT	072 DATA OUT LVL	0 ~ 100	50
MODE-DAT	073 DATA VOX DLY	30 ms ~ 3000 ms (10 ms/step)	300ms
MODE-DAT	074 DATA VOX GAIN	0 ~ 100	50
MODE-FM	075 F3E LCUT FRQ	OFF / 100 Hz ~ 1000 Hz (50 Hz/step)	OFF
MODE-FM	076 F3E LCUT SLP	6dB/oct or 18dB/oct	6dB/oct
MODE-FM	077 F3E HCUT FRQ	700 Hz ~ 4000 Hz / OFF (50 Hz/step)	OFF
MODE-FM	078 F3E HCUT SLP	6dB/oct or 18dB/oct	6dB/oct
MODE-FM	079 F3E MIC GAIN	MCVR / 0 ~ 100	50
MODE-FM	080 F3E MIC SEL	FRONT / DATA / PC	FRONT
MODE-FM	081 F3E 28 RPT	0 kHz ~ 1000 kHz (10 kHz/step)	100 kHz
MODE-FM	082 F3E 50 RPT	0 kHz ~ 4000 kHz (10 kHz/step)	1000 kHz
MODE-PKT	083 PKT LCUT FRQ	OFF / 100 Hz ~ 1000 Hz (50 Hz/step)	300 Hz
MODE-PKT	084 PKT LCUT SLP	6dB/oct or 18dB/oct	18dB/oct
MODE-PKT	085 PKT HCUT FRQ	700 Hz ~ 4000 Hz / OFF (50 Hz/step)	3000 Hz
MODE-PKT	086 PKT HCUT SLP	6dB/oct or 18dB/oct	18dB/oct
MODE-PKT	087 PKT PKT DISP	-3000 Hz ~ 3000 Hz (10 Hz/step)	0 Hz
MODE-PKT	088 PKT PKT SFT	-3000 Hz ~ 3000 Hz (10 Hz/step)	1000 Hz
MODE-RTY	089 RTTY LCUT FRQ	OFF / 100 Hz ~ 1000 Hz (50 Hz/step)	300 Hz
MODE-RTY	090 RTTY LCUT SLP	6dB/oct or 18dB/oct	18dB/oct
MODE-RTY	091 RTTY HCUT FRQ	700 Hz ~ 4000 Hz / OFF (50 Hz/step)	3000 Hz
MODE-RTY	092 RTTY HCUT SLP	6dB/oct or 18dB/oct	18dB/oct
MODE-RTY	093 RTTY R PLRTY	NOR / REV	NOR
MODE-RTY	094 RTTY T PLRTY	NOR / REV	NOR
MODE-RTY	095 RTTY RTTY OUT	VFO-A / VFO-B	VFO-A
MODE-RTY	096 RTTY OUT LVL	0 ~ 100	50
MODE-RTY	097 RTTY SHIFT	170 Hz / 200 Hz / 425 Hz / 850 Hz	170 Hz
MODE-RTY	098 RTTY TONE	1275 Hz / 2125 Hz	2125 Hz
MODE-SSB	099 A3J LCUT FRQ	OFF / 100 Hz ~ 1000 Hz (50 Hz/step)	100 Hz
MODE-SSB	100 A3J LCUT SLP	6dB/oct or 18dB/oct	6dB/oct
MODE-SSB	101 A3J HCUT FRQ	700 Hz ~ 4000 Hz / OFF (50 Hz/step)	3000 Hz
MODE-SSB	102 A3J HCUT SLP	6dB/oct or 18dB/oct	6dB/oct
MODE-SSB	103 A3J MIC SEL	FRONT / DATA / PC	FRONT
MODE-SSB	104 A3J TX BPF	50-3000 / 100-2900 / 200-2800 / 300-2700 / 400-2600 / 3000WB	300-2700
MODE-SSB	105 A3J LSB CAR	-200 Hz ~ 200 Hz (10 Hz/step)	0 Hz
MODE-SSB	106 A3J USB CAR	-200 Hz ~ 200 Hz (10 Hz/step)	0 Hz

# MENU MODE

GROUP	No.	MENU FUNCTION	AVAILABLE VALUES	DEFAULT SETTING
RX AUDIO	107	ROUT AGC SLP	NORMAL / SLOPE	NORMAL
RX AUDIO	108	ROUT HEADPHN	SEPARATE / COMBINE1 / COMBINE2	SEPARATE
RX GNRL	109	RGEN IF OUT	DISABLE / ENABLE	DISABLE
RX GNRL	110	RGEN MNB LVL	0 ~ 100	50
RX GNRL	111	RGEN MNB WDTN	0 ~ 100	50
RX DSP	112	RDSP CNTR LV	-40 dB ~ 20 dB	-15 dB
RX DSP	113	RDSP CNTR WI	1 ~ 11	10
RX DSP	114	RDSP NOTCH WI	NARROW / WIDE	WIDE
RX DSP	115	RDSP HCW SHP	SOFT / SHARP	SHARP
RX DSP	116	RDSP HCW SLP	STEEP / MEDIUM / GENTLE	MEDIUM
RX DSP	117	RDSP HPKT SHP	SOFT / SHARP	SHARP
RX DSP	118	RDSP HPKT SLP	STEEP / MEDIUM / GENTLE	MEDIUM
RX DSP	119	RDSP HRTY SHP	SOFT / SHARP	SHARP
RX DSP	120	RDSP HRTY SLP	STEEP / MEDIUM / GENTLE	MEDIUM
RX DSP	121	RDSP HSSB SHP	SOFT / SHARP	SHARP
RX DSP	122	RDSP HSSB SLP	STEEP / MEDIUM / GENTLE	MEDIUM
RX DSP	123	RDSP VCW SHP	SOFT / SHARP	SHARP
RX DSP	124	RDSP VCW SLP	STEEP / MEDIUM / GENTLE	MEDIUM
RX DSP	125	RDSP VPKT SHP	SOFT / SHARP	SHARP
RX DSP	126	RDSP VPKT SLP	STEEP / MEDIUM / GENTLE	MEDIUM
RX DSP	127	RDSP VRTY SHP	SOFT / SHARP	SHARP
RX DSP	128	RDSP VRTY SLP	STEEP / MEDIUM / GENTLE	MEDIUM
RX DSP	129	RDSP VSSB SHP	SOFT / SHARP	SHARP
RX DSP	130	RDSP VSSB SLP	STEEP / MEDIUM / GENTLE	MEDIUM
SCOPE	131	SCP 1.8 FIX	1800 kHz ~ 1999 kHz (1 kHz/step)	1800 kHz <sup>※1</sup>
SCOPE	132	SCP 3.5 FIX	3500 kHz ~ 3999 kHz (1 kHz/step)	35000 kHz <sup>※1</sup>
SCOPE	133	SCP 5.0 FIX	5250 kHz ~ 5499 kHz (1 kHz/step)	5250 kHz <sup>※1</sup>
SCOPE	134	SCP 7.0 FIX	7000 kHz ~ 7299 kHz (1 kHz/step)	7000 kHz <sup>※1</sup>
SCOPE	135	SCP 10.1 FIX	10100 kHz ~ 10149 kHz (1 kHz/step)	10100 kHz <sup>※1</sup>
SCOPE	136	SCP 14.0 FIX	14000 kHz ~ 14349 kHz (1 kHz/step)	14000 kHz <sup>※1</sup>
SCOPE	137	SCP 18.0 FIX	18000 kHz ~ 18199 kHz (1 kHz/step)	18068 kHz <sup>※1</sup>
SCOPE	138	SCP 21.0 FIX	21000 kHz ~ 21449 kHz (1 kHz/step)	21000 kHz <sup>※1</sup>
SCOPE	139	SCP 24.8 FIX	24800 kHz ~ 24989 kHz (1 kHz/step)	24890 kHz <sup>※1</sup>
SCOPE	140	SCP 28.0 FIX	28000 kHz ~ 29699 kHz (1 kHz/step)	28000 kHz <sup>※1</sup>
SCOPE	141	SCP 50.0 FIX	50000 kHz ~ 53999 kHz (1 kHz/step)	50000 kHz <sup>※1</sup>
TUNING	142	TUN DIAL STP	1 Hz / 5 Hz / 10 Hz	10 Hz
TUNING	143	TUN CW FINE	DISABLE / ENABLE	DISABLE
TUNING	144	TUN MHz SEL	1 MHz / 100 kHz	100 kHz
TUNING	145	TUN AM STEP	2.5 kHz / 5 kHz / 9 kHz / 10 kHz / 12.5 kHz	5 kHz
TUNING	146	TUN FM STEP	5 kHz / 6.25 kHz / 10 kHz / 12.5 kHz / 20 kHz / 25 kHz	5 kHz
TUNING	147	TUN AM D.LCK	DISABLE / ENABLE	DISABLE
TUNING	148	TUN FM D.LCK	DISABLE / ENABLE	DISABLE
TUNING	149	TUN FM DIAL	10 Hz / 100 Hz	100 Hz
TUNING	150	TUN MY BAND	1.8M ~ 50M / GEN / T14M / T28M / T50M	TRV

※1: Requires optional **DMU-2000** Data Management Unit.

※2: This Menu item does not work. Please do not change this setting.

# MENU MODE

GROUP	No. MENU FUNCTION	AVAILABLE VALUES	DEFAULT SETTING
TX AUDIO	151 TAUD EQ1 FRQ	OFF / 100 Hz ~ 700 Hz (100 Hz/step)	OFF
TX AUDIO	152 TAUD EQ1 LVL	-20 ~ 10	5
TX AUDIO	153 TAUD EQ1 BW	1 ~ 10	10
TX AUDIO	154 TAUD EQ2 FRQ	OFF / 700 Hz ~ 1500 Hz (100 Hz/step)	OFF
TX AUDIO	155 TAUD EQ2 LVL	-20 ~ 10	5
TX AUDIO	156 TAUD EQ2 BW	1 ~ 10	10
TX AUDIO	157 TAUD EQ3 FRQ	OFF / 1500 Hz ~ 3200 Hz (100 Hz/step)	OFF
TX AUDIO	158 TAUD EQ3 LVL	-20 ~ 10	5
TX AUDIO	159 TAUD EQ3 BW	1 ~ 10	10
TX AUDIO	160 TAUD PE1 FRQ	OFF / 100 Hz ~ 700 Hz (100 Hz/step)	200 Hz
TX AUDIO	161 TAUD PE1 LVL	-20 ~ 10	0
TX AUDIO	162 TAUD PE1 BW	1 ~ 10	2
TX AUDIO	163 TAUD PE2 FRQ	OFF / 700 Hz ~ 1500 Hz (100 Hz/step)	800 Hz
TX AUDIO	164 TAUD PE2 LVL	-20 ~ 10	0
TX AUDIO	165 TAUD PE2 BW	1 ~ 10	1
TX AUDIO	166 TAUD PE3 FRQ	OFF / 1500 Hz ~ 3200 Hz (100 Hz/step)	2100 Hz
TX AUDIO	167 TAUD PE3 LVL	-20 ~ 10	0
TX AUDIO	168 TAUD PE3 BW	1 ~ 10	1
TX GNRL	169 TGEN BIAS	1 ~ 100	100
TX GNRL	170 TGEN MAX PWR	20 W / 50 W / 100 W / 200 W	200 W
TX GNRL	171 TGEN PWR CTRL	ALL MODE / CARRIER	ALL MODE
TX GNRL	172 TGEN ETX-GND	DISABLE / ENABLE	DISABLE
TX GNRL	173 TGEN TUN PWR	20 W / 50 W / 100 W / 200 W	100 W
TX GNRL	174 TGEN VOX SEL	MIC / DATA	MIC
TX GNRL	175 TGEN ANTI VOX	0 ~ 100	50
TX GNRL	176 TGEN EMRGNCY	DISABLE / ENABLE	DISABLE

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## AGC GROUP

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### 001 AGC FST DLY

**Function:** Sets the delay time for the AGC FAST mode.

**Available Values:** 20 msec ~ 4000 msec (20 msec/step)

**Default Setting:** 300 msec

### 002 AGC FST HLD

**Function:** Sets the hang time of the AGC peak voltage for the AGC FAST mode.

**Available Values:** 0 msec ~ 2000 msec (20 msec/step)

**Default Setting:** 20 msec

### 003 AGC MID DLY

**Function:** Sets the delay time for the AGC MID mode.

**Available Values:** 20 msec ~ 4000 msec (20 msec/step)

**Default Setting:** 700 msec

### 004 AGC MID HLD

**Function:** Sets the hang time of the AGC peak voltage for the AGC MID mode.

**Available Values:** 0 msec ~ 2000 msec (20 msec/step)

**Default Setting:** 20 msec

### 005 AG SLW DLY

**Function:** Sets the delay time for the AGC SLOW mode.

**Available Values:** 20 msec ~ 4000 msec (20 msec/step)

**Default Setting:** 3000 msec

### 006 AGC SLW HLD

**Function:** Sets the hang time of the AGC peak voltage for the AGC SLOW mode.

**Available Values:** 0 msec ~ 2000 msec (20 msec/step)

**Default Setting:** 20 msec

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## DISPLAY GROUP

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### 007 DISP COLOR

**Function:** Selects the Display color when the optional Data Management Unit (**DMU-2000**) is connected.

**Available Values:** BLUE1 / BLUE2 / WHITE / UMBER1 / UMBER2

**Default Setting:** BLUE1

**ADVICE:**

If the optional **DMU-2000** Data Management Unit is not connected, this adjustment has no effect.

### 008 DISP DIM MTR

**Function:** Setting of the meter brightness level when "DIM" is selected.

**Available Values:** 0 ~ 15

**Default Setting:** 8

### 009 DISP DIM VFD

**Function:** Setting of the frequency display brightness level when "DIM" is selected.

**Available Values:** 0 ~ 15

**Default Setting:** 8

### 010 DISP DIM OEL

**Function:** Setting of three Sub Displays brightness level when "DIM" is selected.

**Available Values:** 0 ~ 15

**Default Setting:** 8

### 011 DISP DIM ELCD

**Function:** Setting of the Spectrum Scope display brightness level of the optional **SM-5000** Station Monitor when "DIM" is selected.

**Available Values:** 0 ~ 15

**Default Setting:** 8

**ADVICE:**

If the optional **SM-5000** Station Monitor is not connected, this adjustment has no effect.

### 012 DISP BAR SEL

**Function:** Selects one of three parameters to be viewed on the Tuning Offset Indicator.

**Available Values:** CLAR / CW TUNE

**Default Setting:** CW TUNE

CLAR: Displays relative clarifier offset.

CW-TUNE: Displays relative CW tuning offset between the incoming signal and transmitted frequency.

### 013 DISP PK HLD

**Function:** Selects the peak hold time of the VFO-B receiver's S-meter.

**Available Values:** OFF / 0.5s / 1.0s / 2.0s

**Default Setting:** OFF

## DISPLAY GROUP

### 014 DISP RTR STU

**Function:** Selects the starting point of your rotator controller's indicator needle.

**Available Values:** 0° / 90° / 180° / 270°

**Default Setting:** 0°

### 015 DISP RTR ADJ

**Function:** Adjusts the indicator needle precisely to the starting point set in menu item "014 DISP RTR STU".

**Available Values:** -30° ~ 0° (2°/step)

**Default Setting:** 0°

### 016 DISP QMB MKR

**Function:** Enables/Disables the QMB Marker (White arrow "▽") to display on the Spectrum Band Scope when the optional **DMU-2000** Data Management Unit is connected.

**Available Values:** DISABLE / ENABLE

**Default Setting:** ENABLE

#### ADVICE:

If the optional **DMU-2000** Data Management Unit is not connected, this adjustment has no effect.

### 017 DISP LVL IND

**Function:** Enables/Disables the Main Display to show the frequency or value while each enabled knob is turned.

**Available Values:** PTCH (PITCH) / SPED (SPEED) / CDLY (CW DELAY) / VDLY (VOX DEALAY) / RPWR (RF POWER) / MICG (MIC GAIN) / PROC (PROCESSOR GAIN)

To disable the "function," rotate the (VFO-B)[SELECT] knob to recall the "function" to be disabled, then press the [ENT] key (one of the [BAND] buttons) to change this setting to "OFF". Repeat the same procedures to enable a function (setting it to "ON").

### 018 DISP INDI

**Function:** Select the indicator location of the current value when adjusting the following knobs\*.

**Available Values:** VFD / OEL

**Default Setting:** VFD

VFD: The current value will show for 3-seconds in the lower right corner of the Main Display whenever the following knob\* is turned.

OEL: The current value will show for 3-seconds in the **SUB DISPLAY-III** window whenever the following knob\* is turned.

\*: MIC, RF PWR, SPEED, PITCH, DELAY, and PITCH knob

### 019 DISP SELECT

**Function:** Selects the display pattern of the **SUB DISPLAY-II** and **SUB DISPLAY-III** windows.

**Available Values:** PTN1 / PTN2 / PTN3

**Default Setting:** PTN2

PTN1: Generally, the current value is not indicated in the window, only the graphic is depicted. When the [SELECT] knob is rotated, the current value will appear under the graphical display. Three seconds after the turning of the [SELECT] knob is stopped, the current value indication disappears.

PTN2: Generally, the current value is indicated with the small characters and graphical display. When the [SELECT] knob is rotated, the current value indication becomes large characters. Three seconds after the turning of the [SELECT] knob is stopped, the current value indication returns to small characters.

PTN3: The current value always indicated with the large characters and graphical display.

#### SUB DISPLAY EXAMPLES (CONTOUR OPERATION)

	GENERAL	WHILE ADJUSTING
PTN1		
PTN2		
PTN3		

## DVS GROUP

### 020 DVS RX LVL

**Function:** Sets the audio output level from the voice memory.

**Available Values:** 0 ~ 100

**Default:** 50

### 021 DVS TX LVL

**Function:** Sets the microphone input level to the voice memory

**Available Values:** 0 ~ 100

**Default:** 50

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## KEYER GROUP

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### 022 KEY BEACON

**Function:** Sets the interval time between repeats of the beacon message.

**Available Values:** OFF / 1s ~ 255 sec

**Default Setting:** OFF

### 023 KEY NUM STL

**Function:** Selects the Contest Number “Cut” format for an imbedded contest number.

**Available Values:** 1290 / AUNO / AUNT / A2NO / A2NT / 12NO / 12NT

**Default Setting:** 1290

1290: Does not abbreviate the Contest Number

AUNO: Abbreviates to “A” for “One,” “U” for “Two,” “N” for “Nine,” and “O” for “Zero.”

AUNT: Abbreviates to “A” for “One,” “U” for “Two,” “N” for “Nine,” and “T” for “Zero.”

A2NO: Abbreviates to “A” for “One,” “N” for “Nine,” and “O” for “Zero.”

A2NT: Abbreviates to “A” for “One,” “N” for “Nine,” and “T” for “Zero.”

12NO: Abbreviates to “N” for “Nine,” and “O” for “Zero.”

12NT: Abbreviates to “N” for “Nine,” and “T” for “Zero.”

### 024 KEY CONTEST

**Function:** Enters the initial contest number that will increment/decrement after sending during contest QSOs.

**Available Values:** 0 ~ 9999

**Default Setting:** 1

**ADVICE:**

Press the [CLEAR] button to reset the contest number to “1.”

### 025 KEY CW MEM1

**Function:** Permits entry of the CW message for message register 1.

**Available Values:** TEXT / MESSAGE

**Default Setting:** MESSAGE

TEXT: You may enter the CW message from the **FH-2**'s keypad.

MESSAGE: You may enter the CW message from the CW keyer.

### 026 KEY CW MEM2

**Function:** Permits entry of the CW message for message register 2.

**Available Values:** TEXT / MESSAGE

**Default Setting:** MESSAGE

TEXT: You may enter the CW message from the **FH-2**'s keypad.

MESSAGE: You may enter the CW message from the CW keyer.

### 027 KEY CW MEM3

**Function:** Permits entry of the CW message for message register 3.

**Available Values:** TEXT / MESSAGE

**Default Setting:** MESSAGE

TEXT: You may enter the CW message from the **FH-2**'s keypad.

MESSAGE: You may enter the CW message from the CW keyer.

### 028 KEY CW MEM4

**Function:** Permits entry of the CW message for message register 4.

**Available Values:** TEXT / MESSAGE

**Default Setting:** MESSAGE

TEXT: You may enter the CW message from the **FH-2**'s keypad.

MESSAGE: You may enter the CW message from the CW keyer.

### 029 KEY CW MEM5

**Function:** Permits entry of the CW message for message register 5.

**Available Values:** TEXT / MESSAGE

**Default Setting:** MESSAGE

TEXT: You may enter the CW message from the **FH-2**'s keypad.

MESSAGE: You may enter the CW message from the CW keyer.

## GENERAL GROUP

### 030 GENE ANT SEL

**Function:** Sets the method of antenna selection.

**Available Values:** BAND / STACK

**Default Setting:** BAND

**BAND:** The antenna is selected in accordance with the operating band.

**STACK:** The antenna is selected in accordance with the band stack (different antennas may be utilized on the same band, if so selected in the band stack).

### 031 GENE BEEP LVL

**Function:** Sets the beep level.

**Available Values:** 0 ~ 100

**Default Setting:** 40

### 032 GENE CAT BPS

**Function:** Sets the transceiver's computer-interface circuitry for the CAT baud rate to be used.

**Available Values:** 4800bps / 9600bps / 19200bps / 38400bps

**Default Setting:** 4800bps

### 033 GENE CAT TOT

**Function:** Sets the Time-Out Timer countdown time for a CAT command input.

**Available Values:** 10ms / 100ms / 1000ms / 3000ms

**Default Setting:** 10ms

The Time-Out Timer shuts off the CAT data input after the continuous transmission of the programmed time.

### 034 GENE CAT RTS

**Function:** Enables/Disables the RTS port of the CAT jack.

**Available Values:** DISABLE / ENABLE

**Default Setting:** ENABEL

### 035 GENE CAT IND

**Function:** Enables/Disables the flashing of the CAT LED in conjunction with the CAT commands.

**Available Values:** DISABLE / ENABLE

**Default Setting:** ENABEL

### 036 GENE MEM GRP

**Function:** Enables/Disables Memory Group Operation.

**Available Values:** DISABLE / ENABLE

**Default Setting:** DISABEL

### 037 GENE Q SPLIT

**Function:** Selects the tuning offset for the Quick Split feature.

**Available Values:** -20 kHz ~ 0 kHz ~ 20 kHz (1 kHz Step)

**Default Setting:** 5 kHz

### 038 GENE TRACK

**Function:** Sets the VFO Tracking feature.

**Available Values:** OFF / BAND / FREQ

**Default Setting:** OFF

**OFF:** Disables the VFO Tracking feature.

**BAND:** When you change bands on the VFO-A side, the VFO-B will automatically change to be the same as that of VFO-A.

**FREQ:** This function is the similar to "BAND", additionally, the VFO-B frequency changes together with the VFO-A frequency when turning the Main Dial Tuning knob.

### 039 GENE TX TOT

**Function:** Sets the Time-Out Timer countdown time.

**Available Values:** OFF / 1min ~ 30min

**Default Setting:** OFF

The Time-Out Timer shuts off the transmitter after continuous transmission of the programmed time.

### 040 GENE TRV 14M

**Function:** Sets the 10's and 1's of the MHz digits display for operation with a transverter when the exciter band is 14 MHz.

**Available Values:** 30 MHz ~ 46 MHz

**Default Setting:** 44 MHz

The default setting would be used with a 144 MHz transverter. If you connect a 430 MHz transverter to the radio, set this menu to "30" (the "100 MHz" digits are hidden on this radio).

### 041 GENE TRV 28M

**Function:** Sets the 10's and 1's of the MHz digits display for operation with a transverter when the exciter band is 28 MHz.

**Available Values:** 30 MHz ~ 46 MHz

**Default Setting:** 44 MHz

The default setting would be used with a 144 MHz transverter. If you connect a 430 MHz transverter to the radio, set this menu to "30" (the "100 MHz" digits are hidden on this radio).

### 042 GENE TRV 50M

**Function:** Sets the 10's and 1's of the MHz digits display for operation with a transverter when the exciter band is 50 MHz.

**Available Values:** 30 MHz ~ 46 MHz

**Default Setting:** 44 MHz

The default setting would be used with a 144 MHz transverter. If you connect a 430 MHz transverter to the radio, set this menu to "30" (the "100 MHz" digits are hidden on this radio).

## GENERAL GROUP

### 043 GENE $\mu$ T DIAL

**Function:** Selects the  $\mu$ -TUNE mode.

**Available Values:** STEP-1 / STEP-2 / OFF

**Default Setting:** STEP-1

STEP-1: Activates the  $\mu$ -TUNE system using “COARSE” steps of the [SELECT] knob (2 steps/click) on the 7 MHz and lower amateur bands. On the 10/14 MHz bands, “FINE” steps of [SELECT] knob (1 step/click) will be used.

STEP-2: Activates the  $\mu$ -TUNE system using “FINE” steps of the [SELECT] knob (1 step/click) on the 14 MHz and lower amateur bands on the Main band (VFO-A).

OFF: Disables the  $\mu$ -TUNE system. Activates the VRF feature on the 14 MHz and lower amateur bands on the main band (VFO-A).

#### **ADVICE:**

If the optional RF  $\mu$ Tuning Kit is not connected, this adjustment has no effect.

### 044 GENE MIC SCN

**Function:** Enables/disables scanning access via the microphone's [UP]/[DWN] keys.

**Available Values:** DISABLE / ENABLE

**Default Setting:** ENABLE

### 045 GENE SCN RSM

**Function:** Selects the Scan Resume mode.

**Available Values:** TIME / PAUSE

**Default Setting:** TIME

TIME: The scanner will hold for five seconds, then resume whether or not the other station is still transmitting.

PAUSE: The scanner will hold until the signal disappears, then will resume after one second.

### 046 GENE FRQ ADJ

**Function:** Adjusts the reference oscillator.

**Available Values:** -25 ~ 0 ~ 25

**Default Setting:** 0

Connect a 50-Ohm dummy load and frequency counter to the antenna jack; adjust the (VFO-B)[SELECT] knob so that the frequency counter reading is same as the VFO frequency while pressing the PTT switch.

#### **ADVICE:**

Do not perform this Menu item unless you have a high-performance frequency counter. Perform this Menu item after aging the transceiver and frequency counter sufficiently (at least 30 minutes).

## MODE-AM GROUP

### 047 A3E LCUT FRQ

**Function:** Selects the cutoff frequency of the lower side of the RX audio filter in the AM mode.

**Available Values:** OFF / 100 Hz ~ 1000Hz (50 Hz/step)

**Default Setting:** OFF

### 048 A3E LCUT SLP

**Function:** Selects the filter slope of the lower side of the RX audio filter in the AM mode.

**Available Values:** 6dB/oct or 18dB/oct

**Default Setting:** 6dB/oct

### 049 A3E HCUT FRQ

**Function:** Selects the cutoff frequency of the upper side of the RX audio filter in the AM mode.

**Available Values:** OFF / 700Hz ~ 4000Hz (50 Hz/step)

**Default Setting:** OFF

### 050 A3E HCUT SLP

**Function:** Selects the filter slope of the upper side of the RX audio filter in the AM mode.

**Available Values:** 6dB/oct or 18dB/oct

**Default Setting:** 6dB/oct

### 051 A3E MIC GAIN

**Function:** Sets the microphone gain for the AM mode.

**Available Values:** MCVR / 0 ~ 100

**Default Setting:** 30

When this menu is set to “MCVR”, you may adjust the microphone gain using the front panel's [MIC] knob.

### 052 A3E MIC SEL

**Function:** Selects the microphone to be used in the AM mode.

**Available Values:** FRONT / DATA / PC

**Default Setting:** FRONT

FRONT: Selects the microphone connected to the front panel's MIC jack while using the AM mode.

DATA: Selects the microphone connected to pin 1 of the PACKET Jack while using the AM mode.

PC: This parameter is for future expansion of this transceiver's capabilities, but at this time is not supported.

## MODE-CW GROUP

### 053 A1A LCUT FRQ

**Function:** Selects the cutoff frequency of the lower side of the RX audio filter in the CW mode.

**Available Values:** OFF / 100 Hz ~ 1000Hz (50 Hz/step)

**Default Setting:** 300Hz

### 054 A1A LCUT SLP

**Function:** Selects the filter slope of the lower side of the RX audio filter in the CW mode.

**Available Values:** 6dB/oct or 18dB/oct

**Default Setting:** 18dB/oct

### 055 A1A HCUT FRQ

**Function:** Selects the cutoff frequency of the upper side of the RX audio filter in the CW mode.

**Available Values:** OFF / 700Hz ~ 4000Hz (50 Hz/step)

**Default Setting:** 1000Hz

### 056 A1A HCUT SLP

**Function:** Selects the filter slope of the upper side of the RX audio filter in the CW mode.

**Available Values:** 6dB/oct or 18dB/oct

**Default Setting:** 6dB/oct

### 057 A1A F-TYPE

**Function:** Selects the desired keyer operation mode for the device connected to the front panel **KEY** jack.

**Available Values:** OFF / BUG / ELEKEY / ACS

**Default Setting:** ELEKEY

OFF: Disables the front panel keyer (use this mode with a straight key, an external keyer, or a computer-driven keying interface).

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

ELEKEY: Iambic keyer with ACS (Automatic Character Spacing) disabled.

ACS: Iambic keyer with ACS (Automatic Character Spacing) enabled.

### 058 A1A F-REV

**Function:** Selects the keyer paddle’s wiring configuration for the **KEY** jack on the front panel.

**Available Values:** NOR / REV

**Default Setting:** nor

NOR: Tip = Dot, Ring = Dash, Shaft = Ground

REV: Tip = Dash, Ring = Dot, Shaft = Ground

### 059 A1A R-TYPE

**Function:** Selects the desired keyer operation mode for the device connected to the rear panel **KEY** jack.

**Available Values:** OFF / BUG / ELEKEY / ACS

**Default Setting:** ELEKEY

OFF: Disables the rear panel keyer (use this mode with a straight key, an external keyer, or a computer-driven keying interface).

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

ELEKEY: Iambic keyer with ACS (Automatic Character Spacing) disabled.

ACS: Iambic keyer with ACS (Automatic Character Spacing) enabled.

### 060 A1A R-REV

**Function:** Selects the keyer paddle wiring configuration for the **KEY** jack on the rear panel.

**Available Values:** NOR / REV

**Default Setting:** nor

NOR: Tip = Dot, Ring = Dash, Shaft = Ground

REV: Tip = Dash, Ring = Dot, Shaft = Ground

### 061 A1A CW AUTO

**Function:** Enables/disables CW keying while operating on SSB.

**Available Values:** OFF / 50M / ON

**Default Setting:** OFF

OFF: Disables CW keying while operating on SSB.

50M: Enables CW keying only while operating SSB on 50 MHz (but not HF).

ON: Enables CW keying while operating on SSB (all TX bands).

### **NOTE:**

This feature allows you to move someone from SSB to CW without having to change modes on the front panel.

### 062 A1A BFO

**Function:** Sets the CW carrier oscillator injection side for the CW mode.

**Available Values:** USB / LSB / AUTO

**Default Setting:** USB

USB: Injects the CW carrier oscillator on the USB side.

LSB: Injects the CW carrier oscillator on the LSB side.

AUTO: Injects the CW carrier oscillator on the LSB side while operating on the 7 MHz band and below, and the USB side while operating on the 10 MHz band and up.

## MODE-CW GROUP

### **063 A1A BK-IN**

**Function:** Sets the CW “break-in” mode.

**Available Values:** SEMI / FULL

**Default Setting:** SEMI

SEMI: The transceiver will operate in the semi break-in mode. The delay (receiver recovery) time is set by the front panel [DELAY] knob.

FULL: The transceiver will operate in the full break-in (QSK) mode.

### **064 A1A SHAPE**

**Function:** Selects the CW carrier wave-form shape (rise/fall times).

**Available Values:** 1ms / 2ms / 4ms / 6ms

**Default Setting:** 4 ms

### **065 A1A WEIGHT**

**Function:** Sets the Dot:Dash ratio for the built-in electronic keyer.

**Available Values:** (1:) 2.5 ~ 4.5

**Default Setting:** 3.0

### **066 A1A FRQ DISP**

**Function:** Selects the frequency Display Format for the CW mode.

**Available Values:** FREQ / PITCH

**Default Setting:** PITCH

FREQ: Displays the receiver carrier frequency, without any offset added. When changing modes between SSB and CW, the frequency display remains constant.

PITCH: This frequency display reflects the added BFO offset.

### **067 A1A PC KYNG**

**Function:** Enables/disables CW keying from the “PACKET PTT” terminal (pin 3) on the rear panel’s PACKET jack while operating in the CW mode.

**Available Values:** DISABLE / ENABLE

**Default Setting:** DISABLE

### **068 A1A QSK TIME**

**Function:** Selects the time delay between when the PTT is keyed and the carrier is transmitted during QSK operation when using the internal keyer.

**Available Values:** 15ms / 20ms / 25ms / 30 ms

**Default Setting:** 15ms

## MODE-DAT GROUP

### **069 DATA DATA IN**

**Function:** Selects the data input path to be used in the PKT mode.

**Available Values:** DATA / PC

**Default Setting:** DATA

DATA: Uses the data input line connected to pin 1 of the PACKET jack while using the PKT mode.

PC: This parameter is for future expansion of this transceiver’s capabilities, but at this time is not supported.

### **070 DATA DT GAIN**

**Function:** Sets the data input level from the TNC to the AFSK modulator.

**Available Values:** 0 ~ 100

**Default Setting:** 50

### **071 DATA DT OUT**

**Function:** Selects the receiver to be connected to the data output port (pin 4) of the PACKET jack.

**Available Values:** VFO-A / VFO-B

**Default Setting:** VFO-A

### **072 DATA OUT LVL**

**Function:** Sets the AFSK data output level at the output port (pin 4) of the PACKET jack.

**Available Values:** 0 ~ 100

**Default Setting:** 50

### **073 DATA VOX DLY**

**Function:** Adjusts the “VOX” delay (receiver recovery) time in the PKT mode.

**Available Values:** 30ms ~ 3000ms (10 ms/step)

**Default Setting:** 300ms

### **074 DATA VOX GAIN**

**Function:** Adjusts the “VOX” gain in the PKT mode.

**Available Values:** 0 ~ 100

**Default Setting:** 50

# MENU MODE

## MODE-FM GROUP

### 075 F3E LCUT FRQ

**Function:** Selects the cutoff frequency of the lower side of the RX audio filter in the FM mode.

**Available Values:** OFF / 100Hz ~ 1000Hz (50 Hz/step)

**Default Setting:** OFF

### 076 F3E LCUT SLP

**Function:** Selects the filter slope of the lower side of the RX audio filter in the FM mode.

**Available Values:** 6dB/oct or 18dB/oct

**Default Setting:** 6dB/oct

### 077 F3E HCUT FRQ

**Function:** Selects the cutoff frequency of the upper side of the RX audio filter in the FM mode.

**Available Values:** OFF / 700Hz ~ 4000Hz (50 Hz/step)

**Default Setting:** OFF

### 078 F3E HCUT SLP

**Function:** Selects the filter slope of the upper side of the RX audio filter in the FM mode.

**Available Values:** 6dB/oct or 18dB/oct

**Default Setting:** 6dB/oct

### 079 F3E MIC GAIN

**Function:** Sets the microphone gain for the FM mode.

**Available Values:** MCVR / 0 ~ 100

**Default Setting:** 50

When this menu is set to “MCVR”, you may adjust the microphone gain using the front panel [MIC] knob.

### 080 F3E MIC SEL

**Function:** Selects the microphone to be used on the FM mode.

**Available Values:** FRONT / DATA / PC

**Default Setting:** FRONT

FRONT: Selects the microphone connected to the front panel **MIC** jack while using the FM mode.

DATA: Selects the microphone connected to pin 1 of the **PACKET** Jack while using the FM mode.

PC: This parameter is for future expansion of this transceiver’s capabilities, but at this time is not supported.

### 081 F3E 28 RPT

**Function:** Sets the magnitude of the repeater shift on the 28 MHz band.

**Available Values:** 0kHz ~ 1000kHz (10 kHz/step)

**Default Setting:** 100kHz

### 082 F3E 50 RPT

**Function:** Sets the magnitude of the repeater shift on the 50 MHz band.

**Available Values:** 0kHz ~ 4000kHz (10 kHz/step)

**Default Setting:** 1000kHz

## MODE-PKT GROUP

### 083 PKT LCUT FRQ

**Function:** Selects the cutoff frequency of the lower side of the RX audio filter in the Packet mode.

**Available Values:** OFF / 100Hz ~ 1000Hz (50 Hz/step)

**Default Setting:** 300Hz

### 084 PKT LCUT SLP

**Function:** Selects the filter slope of the lower side of the RX audio filter in the Packet mode.

**Available Values:** 6dB/oct or 18dB/oct

**Default Setting:** 18dB/oct

### 085 PKT HCUT FRQ

**Function:** Selects the cutoff frequency of the upper side of the RX audio filter in the Packet mode.

**Available Values:** OFF / 700Hz ~ 4000Hz (50 Hz/step)

**Default Setting:** 3000Hz

### 086 PKT HCUT SLP

**Function:** Selects the filter slope of the upper side of the RX audio filter in the Packet mode.

**Available Values:** 6dB/oct or 18dB/oct

**Default Setting:** 18dB/oct

### 087 PKT PKTDISP

**Function:** Sets the packet frequency display offset.

**Available:** -3000Hz ~ 3000Hz (10 Hz/step)

**Default:** 0Hz

### 088 DATA PKT SFT

**Function:** Sets the carrier point during the SSB packet operation.

**Available:** -3000Hz ~ 3000Hz (10 Hz/step)

**Default:** 1000Hz (typical center frequency for PSK31, etc.)

## MODE-RTTY GROUP

### 089 RTTY LCUT FRQ

**Function:** Selects the cutoff frequency of the lower side of the RX audio filter in the RTTY mode.

**Available Values:** OFF / 100Hz ~ 1000Hz (50 Hz/step)

**Default Setting:** 300Hz

### 090 RTTY LCUT SLP

**Function:** Selects the filter slope of the lower side of the RX audio filter in the RTTY mode.

**Available Values:** 6dB/oct or 18dB/oct

**Default Setting:** 18dB/oct

### 091 RTTY HCUT FRQ

**Function:** Selects the cutoff frequency of the upper side of the RX audio filter in the RTTY mode.

**Available Values:** OFF / 700Hz ~ 4000Hz (50 Hz/step)

**Default Setting:** 3000Hz

### 092 RTTY HCUT SLP

**Function:** Selects the filter slope of the upper side of the RX audio filter in the RTTY mode.

**Available Values:** 6dB/oct or 18dB/oct

**Default Setting:** 18dB/oct

### 093 RTTY R PLRTY

**Function:** Selects normal or reverse Mark/Space polarity for RTTY receive operation.

**Available Values:** NOR / REV

**Default Setting:** NOR

### 094 RTTY T PLRTY

**Function:** Selects normal or reverse Mark/Space polarity for RTTY transmit operation.

**Available Values:** NOR / REV

**Default Setting:** NOR

### 095 RTTY RTTY OUT

**Function:** Selects the receiver to be connected to the data output port (pin 2) of the **RTTY** jack.

**Available Values:** VFO-A / VFO-B

**Default Setting:** VFO-A

### 096 RTTY OUT LVL

**Function:** Sets the FSK RTTY data output level at the output port (pin 2) of the **RTTY** jack.

**Available Values:** 0 ~ 100

**Default Setting:** 50

### 097 RTTY SHIFT

**Function:** Selects the frequency shift for FSK RTTY operation.

**Available Values:** 170Hz / 200Hz / 425Hz / 850Hz

**Default Setting:** 170Hz

### 098 RTTY TONE

**Function:** Selects the Mark tone for RTTY operation.

**Available Values:** 1275Hz / 2125Hz

**Default Setting:** 2125Hz

## MODE-SSB GROUP

### 099 A3J LCUT FRQ

**Function:** Selects the cutoff frequency of the lower side of the RX audio filter in the SSB mode.

**Available Values:** OFF / 100Hz ~ 1000Hz (50 Hz/step)

**Default Setting:** 100Hz

### 100 A3J LCUT SLP

**Function:** Selects the filter slope of the lower side of the RX audio filter in the SSB mode.

**Available Values:** 6dB/oct or 18dB/oct

**Default Setting:** 6dB/oct

### 101 A3J HCUT FRQ

**Function:** Selects the cutoff frequency of the upper side of the RX audio filter in the SSB mode.

**Available Values:** OFF / 700Hz ~ 4000Hz (50 Hz/step)

**Default Setting:** 3000Hz

### 102 A3J HCUT SLP

**Function:** Selects the filter slope of the upper side of the RX audio filter in the SSB mode.

**Available Values:** 6dB/oct or 18dB/oct

**Default Setting:** 6dB/oct

### 103 A3J MIC SEL

**Function:** Selects the microphone to be used on the SSB modes (LSB and USB).

**Available Values:** FRONT / DATA / PC

**Default Setting:** Frnt

FRONT: Selects the microphone connected to the front panel **MIC** jack while using the SSB modes.

DATA: Selects the microphone connected to pin 1 of the **PACKET** Jack while using the SSB modes.

PC: This parameter is for future expansion of this transceiver's capabilities, but at this time is not supported.

### 104 A3J TX BPF

**Function:** Selects the audio passband of the DSP modulator on the SSB mode.

**Available Values:** 50-3000 / 100-2900 / 200-2800 / 300-2700 / 400-2600 / 3000WB

**Default Setting:** 300-2700 (Hz)

#### **NOTE:**

The apparent power output, when using the widest bandwidths, may seem lower. This is normal, and it occurs because the available transmitter power is distributed over a wider bandwidth. The greatest compression of power output, conversely, occurs when using the "400-2600" setting (400-2600 Hz), and this setting is highly recommended for contest or DX pile-up work.

# MENU MODE

## MODE-SSB GROUP

### 105 A3J LSB CAR

**Function:** Adjusts the receiver carrier point for the LSB mode.

**Available Values:** -200 Hz ~ 200 Hz (10 Hz/steps)

**Default Setting:** 0 Hz

### 106 A3J USB CAR

**Function:** Adjusts the receiver carrier point for the USB mode.

**Available Values:** -200 Hz ~ 200 Hz (10 Hz/step)

**Default Setting:** 0 Hz

## RX AUDIO GROUP

### 107 ROUT AGC SLP

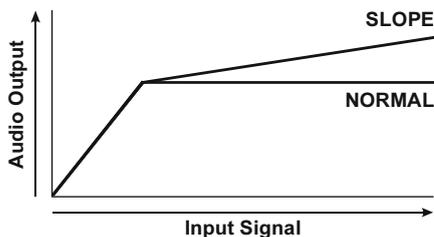
**Function:** Selects the gain curve of the AGC amplifier.

**Available Values:** NORMAL / SLOPE

**Default Setting:** nor

**NORMAL:** The AGC output level will follow a linear response to the antenna input level, while AGC is activated.

**SLOPE:** The AGC output level will increase at 1/10 the rate of the antenna input level, while AGC is activated.



### 108 ROUT HEADPHN

**Function:** Selects one of three audio mixing modes when using headphones during Dual Receive operation.

**Available Values:** SEPARATE / COMBINE1 / COMBINE2

**Default Setting:** SEPARATE

**SEPARATE:** Audio from the VFO-A receiver is heard only in the left ear, and VFO-B receiver audio solely in the right ear.

**COMBINE1:** Audio from both VFO-A and VFO-B receivers can be heard in both ears, but VFO-B audio is attenuated in the left ear and VFO-A audio is attenuated in the right ear.

**COMBINE2:** Audio from both VFO-A and VFO-B receivers is combined and heard equally in both ears.

## RX GNRL GROUP

### 109 RGEN IF OUT

**Function:** Enables/Disables the 9 MHz RX IF signal from the rear panel **IF OUT** jack.

**Available Values:** DISABLE / ENABLE

**Default Setting:** DISABLE

### 110 RGEN MNB LVL

**Function:** Adjusts the noise blanking level of the VFO-A IF noise Blanker.

**Available Values:** 0 ~ 100

**Default Setting:** 50

### 111 RGEN MNB WDTN

**Function:** Adjusts the bandwidth for the longer-duration pulse noise of the VFO-A IF noise Blanker.

**Available Values:** 0 ~ 100

**Default Setting:** 50

## RX DSP GROUP

### 112 RDSP CNTR LV

**Function:** Adjusts the gain of the Contour filter.

**Available Values:** -40 ~ 20 dB

**Default Setting:** -15 dB

### 113 RDSP CNTR WI

**Function:** Adjusts the Q-factor of the Contour filter.

**Available Values:** 1 ~ 11

**Default Setting:** 10

### 114 RDSP NOTCH WI

**Function:** Selects the bandwidth of the DSP NOTCH filter

**Available Values:** NARROW / WIDE

**Default Setting:** WIDE

### 115 RDSP HCW SHP

**Function:** Selects the passband characteristics of the DSP filter for the CW mode on the HF band.

**Available Values:** SOFT / SHARP

**Default Setting:** SHARP

SOFT: Primary importance is attached to the phase of the filter factor.

SHARP: Primary importance is attached to the amplitude of the filter factor.

### 116 RDSP HCW SLP

**Function:** Selects the shape factor of the DSP filter for the CW mode on the HF band.

**Available Values:** STEEP / MEDIUM / GENTLE

**Default Setting:** MEDIUM

### 117 RDSP HPKT SHP

**Function:** Selects the passband characteristics of the DSP filter for the PKT mode on the HF band.

**Available Values:** SOFT / SHARP

**Default Setting:** SHARP

SOFT: Primary importance is attached to the phase of the filter factor.

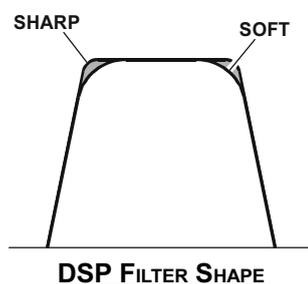
SHARP: Primary importance is attached to the amplitude of the filter factor.

### 118 RDSP HPKT SLP

**Function:** Selects the shape factor of the DSP filter for the PKT mode on the HF band.

**Available Values:** STEEP / MEDIUM / GENTLE

**Default Setting:** MEDIUM



### 119 RDSP HRTY SHP

**Function:** Selects the passband characteristics of the DSP filter for the RTTY mode on the HF band.

**Available Values:** SOFT / SHARP

**Default Setting:** SHARP

SOFT: Primary importance is attached to the phase of the filter factor.

SHARP: Primary importance is attached to the amplitude of the filter factor.

### 120 RDSP HRTY SLP

**Function:** Selects the shape factor of the DSP filter for the RTTY mode on the HF band.

**Available Values:** STEEP / MEDIUM / GENTLE

**Default Setting:** MEDIUM

### 121 RDSP HSSB SHP

**Function:** Selects the passband characteristics of the DSP filter for the SSB mode on the HF band.

**Available Values:** SOFT / SHARP

**Default Setting:** SHARP

SOFT: Primary importance is attached to the phase of the filter factor.

SHARP: Primary importance is attached to the amplitude of the filter factor.

### 122 RDSP HSSB SLP

**Function:** Selects the shape factor of the DSP filter for the SSB mode on the HF band.

**Available Values:** STEEP / MEDIUM / GENTLE

**Default Setting:** MEDIUM

### 123 RDSP VCW SHP

**Function:** Selects the passband characteristics of the DSP filter for the CW mode on the 50 MHz band.

**Available Values:** SOFT / SHARP

**Default Setting:** SHARP

SOFT: Primary importance is attached to the phase of the filter factor.

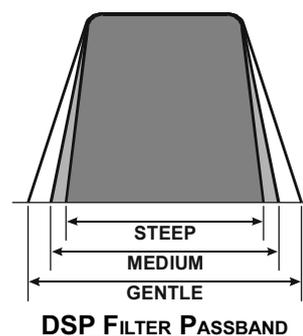
SHARP: Primary importance is attached to the amplitude of the filter factor.

### 124 RDSP VCW SLP

**Function:** Selects the shape factor of the DSP filter for the CW mode on the 50 MHz band.

**Available Values:** STEEP / MEDIUM / GENTLE

**Default Setting:** MEDIUM



## RX DSP GROUP

### 125 RDSP VPKT SHP

**Function:** Selects the passband characteristics of the DSP filter for the PKT mode on the 50 MHz band.

**Available Values:** SOFT / SHARP

**Default Setting:** SHARP

SOFT: Primary importance is attached to the phase of the filter factor.

SHARP: Primary importance is attached to the amplitude of the filter factor.

### 126 RDSP VPKT SLP

**Function:** Selects the shape factor of the DSP filter for the PKT mode on the 50 MHz band.

**Available Values:** STEEP / MEDIUM / GENTLE

**Default Setting:** MEDIUM

### 127 RDSP VRTY SHP

**Function:** Selects the passband characteristics of the DSP filter for the RTTY mode on the 50 MHz band.

**Available Values:** SOFT / SHARP

**Default Setting:** SHARP

SOFT: Primary importance is attached to the phase of the filter factor.

SHARP: Primary importance is attached to the amplitude of the filter factor.

### 128 RDSP VRTY SLP

**Function:** Selects the shape factor of the DSP filter for the RTTY mode on the 50 MHz band.

**Available Values:** STEEP / MEDIUM / GENTLE

**Default Setting:** MEDIUM

### 129 RDSP VSSB SHP

**Function:** Selects the passband characteristics of the DSP filter for the SSB mode on the 50 MHz band.

**Available Values:** SOFT / SHARP

**Default Setting:** SHARP

SOFT: Primary importance is attached to the phase of the filter factor.

SHARP: Primary importance is attached to the amplitude of the filter factor.

### 130 RDSP VSSB SLP

**Function:** Selects the shape factor of the DSP filter for the SSB mode on the 50 MHz band.

**Available Values:** STEEP / MEDIUM / GENTLE

**Default Setting:** MEDIUM

## SCOPE GROUP

### **ADVICE:**

This group's adjustment has no effect, if the optional **DMU-2000** Data Management Unit is not connected.

### 131 SCP 1.8 FIX

**Function:** Selects the scan start frequency of the FIX mode Spectrum Scope while monitoring on the 160 m amateur band.

**Available Values:** 1800kHz ~ 1999kHz (1 kHz/step)

**Default Setting:** 1800kHz

### 132 SCP 3.5 FIX

**Function:** Selects the scan start frequency of the FIX mode Spectrum Scope while monitoring on the 80 m amateur band.

**Available Values:** 3500kHz ~ 3999kHz (1 kHz/step)

**Default Setting:** 3500kHz

### 133 SCP 5.0 FIX

**Function:** Selects the scan start frequency of the FIX mode Spectrum Scope while monitoring on the 60 m amateur band.

**Available Values:** 5250kHz ~ 5499kHz (1 kHz/step)

**Default Setting:** 5250kHz

### 134 SCP 7.0 FIX

**Function:** Selects the scan start frequency of the FIX mode Spectrum Scope while monitoring on the 40 m amateur band.

**Available Values:** 7000kHz ~ 7299kHz (1 kHz/step)

**Default Setting:** 7000kHz

### 135 SCP 10.1 FIX

**Function:** Selects the scan start frequency of the FIX mode Spectrum Scope while monitoring on the 30 m amateur band.

**Available Values:** 10100kHz ~ 10149 kHz (1 kHz steps)

**Default Setting:** 10100kHz

## SCOPE GROUP

### **136 SCP 14.0 FIX**

**Function:** Selects the scan start frequency of the FIX mode Spectrum Scope while monitoring on the 20 m amateur band.

**Available Values:** 14000kHz ~ 14349kHz (1 kHz/step)

**Default Setting:** 14000kHz

### **137 SCP 18.0 FIX**

**Function:** Selects the scan start frequency of the FIX mode Spectrum Scope while monitoring on the 17 m amateur band.

**Available Values:** 18000kHz ~ 18199kHz (1 kHz/step)

**Default Setting:** 18068kHz

### **138 SCP 21.0 FIX**

**Function:** Selects the scan start frequency of the FIX mode Spectrum Scope while monitoring on the 15 m amateur band.

**Available Values:** 21000kHz ~ 21449kHz (1 kHz/step)

**Default Setting:** 21000kHz

### **139 SCP 24.8 FIX**

**Function:** Selects the scan start frequency of the FIX mode Spectrum Scope while monitoring on the 12 m amateur band.

**Available Values:** 24800kHz ~ 24989kHz (1 kHz/step)

**Default Setting:** 24890kHz

### **140 SCP 28.0 FIX**

**Function:** Selects the scan start frequency of the FIX mode Spectrum Scope while monitoring on the 10 m amateur band.

**Available Values:** 28000kHz ~ 29699kHz (1 kHz/step)

**Default Setting:** 28000kHz

### **141 SCP 50.0 FIX**

**Function:** Selects the scan start frequency of the FIX mode Spectrum Scope while monitoring on the 6 m amateur band.

**Available Values:** 50000kHz ~ 53999kHz (1 kHz/step)

**Default Setting:** 50000kHz

## TUNING GROUP

### **142 TUN DIAL STP**

**Function:** Setting of the Tuning Dial knob's tuning speed except the FM and FM-PKT modes.

**Available Values:** 1Hz / 5Hz / 10Hz

**Default Setting:** 10Hz

### **143 TUN CW FINE**

**Function:** Enabling/disabling of the "Fine" tuning speed in the CW, RTTY, and PKT-SSB modes.

**Available Values:** DISABLE / ENABLE

**Default Setting:** DISABLE

ENABLE: Tuning in 1 Hz steps on the CW, RTTY, and PKT-SSB modes.

DISABLE: Tuning according to the steps determined via menu item "142 TUN DIAL STP".

### **144 TUN MHz SEL**

**Function:** Selects the tuning steps of the [▼(DOWN)] / [▲(UP)] key.

**Available Values:** 1MHz / 100kHz

**Default Setting:** 100kHz

### **145 TUN AM STEP**

**Function:** Selects the tuning steps for the microphone's [UP]/[DWN] keys in the AM mode.

**Available Values:** 2.5kHz / 5kHz / 9kHz / 10kHz / 12.5 kHz

**Default Setting:** 5kHz

### **146 TUN FM STEP**

**Function:** Selects the tuning steps for the microphone's [UP]/[DWN] keys in the FM and FM-PKT modes.

**Available Values:** 5kHz / 6.25kHz / 10kHz / 12.5kHz / 20kHz / 25kHz

**Default Setting:** 5kHz

### **147 TUN AM D.LCK**

**Function:** Select whether the Main Tuning Dial knob and [CLAR(VFO-B)] knob shall be "Enabled" or "Disabled" on the AM mode.

**Available Values:** DISABLE / ENABLE

**Default Setting:** DISABLE

### **148 TUN FM D.LCK**

**Function:** Select whether the Main Tuning Dial knob and [CLAR(VFO-B)] knob shall be "Enabled" or "Disabled" on the FM mode.

**Available Values:** DISABLE / ENABLE

**Default Setting:** DISABLE

### **149 TUN FM DIAL**

**Function:** Setting of the Tuning Dial knob's tuning speed in the FM mode.

**Available Values:** 10Hz / 100Hz

**Default Setting:** 100Hz

## TUNING GROUP

### 150 TUN MY BAND

**Function:** Programs a band to be skipped while selecting bands using the [CLAR(VFO-B)] knob.

**Available Values:** 1.8M ~ 50M / GEN / T14M / T28M / T50M

**Default Setting:** 1.8M ~ 50M / GEN: ON, T14M / T28M / T50M: OFF

To program the band to be skipped, rotate the (VFO-B)[SELECT] knob to recall the band to be skipped while selecting bands via the [CLAR(VFO-B)] knob, then press the [ENT] key (one of the [BAND] buttons) to change this setting to “OFF”. Repeat the same procedures to cancel the setting (change the “OFF” notation to “ON”).

## TX AUDIO GROUP

### 151 TAUD EQ1 FRQ

**Function:** Selects the center frequency of the lower range for the parametric microphone equalizer.

**Available Values:** OFF / 100Hz ~ 700Hz (100 Hz/step)

**Default Setting:** OFF

OFF: The equalizer gain and Q-factor are set to factory defaults (flat).

100Hz ~ 700Hz: Center frequencies of 100 Hz ~ 700 Hz. You may adjust the equalizer gain and Q-factor at this selected audio frequency via menu items “152 TAUD EQ1 LVL” and “153 TAUD EQ1 BW”.

### 152 TAUD EQ1 LVL

**Function:** Adjusts the equalizer gain of the low range of the parametric microphone equalizer.

**Available Values:** -20 ~ 10

**Default Setting:** 5

### 153 TAUD EQ1 BW

**Function:** Adjusts the Q-factor of the low range of the parametric microphone equalizer.

**Available Values:** 1 ~ 10

**Default Setting:** 10

### 154 TAUD EQ2 FRQ

**Function:** Selects the center frequency of the middle range for the parametric microphone equalizer.

**Available Values:** OFF / 700Hz ~ 1500Hz (100 Hz/step)

**Default Setting:** OFF

OFF: The equalizer gain and Q-factor are set to factory defaults (flat).

700Hz ~ 1500Hz: Center frequencies of 700 Hz ~ 1500 Hz. You may adjust the equalizer gain and Q-factor at this selected audio frequency via menu items “155 TAUD EQ2 LVL” and “156 TAUD EQ2 BW”.

### 155 TAUD EQ2 LVL

**Function:** Adjusts the equalizer gain of the middle range of the parametric microphone equalizer.

**Available Values:** -20 ~ 10

**Default Setting:** 5

### 156 TAUD EQ2 BW

**Function:** Adjusts the Q-factor of the middle range of the parametric microphone equalizer.

**Available Values:** 1 ~ 10

**Default Setting:** 10

## TX AUDIO GROUP

### **157 TAUD EQ3 FRQ**

**Function:** Selects the center frequency of the high range for the parametric microphone equalizer.

**Available Values:** OFF / 1500Hz ~ 3200Hz (100 Hz/step)

**Default Setting:** OFF

OFF: The equalizer gain and Q-factor are set to factory defaults (flat).

1500Hz ~ 3200Hz: Center frequencies of 1500 Hz ~ 3200 Hz. You may adjust the equalizer gain and Q-factor in this selected audio frequency via menu items “158 TAUD EQ3 LVL” and “159 TAUD EQ3 BW”.

### **158 TAUD EQ3 LVL**

**Function:** Adjusts the equalizer gain of the high range of the parametric microphone equalizer.

**Available Values:** -20 ~ 10

**Default Setting:** 5

### **159 TAUD EQ3 BW**

**Function:** Adjusts the Q-factor of the high range of the parametric microphone equalizer.

**Available Values:** 1 ~ 10

**Default Setting:** 10

### **160 TAUD PE1 FRQ**

**Function:** Selects the center frequency of the lower range for the parametric microphone equalizer when the speech processor is activated.

**Available Values:** OFF / 100Hz ~ 700Hz (100 Hz/step)

**Default Setting:** 200Hz

OFF: The equalizer gain and Q-factor are set to factory defaults (flat).

100Hz ~ 700Hz: Center frequencies of 100 Hz ~ 700 Hz. You may adjust the equalizer gain and Q-factor at this selected audio frequency via menu items “161 TAUD PE1 LVL” and “162 TAUD PE1 BW”.

### **161 TAUD PE1 LVL**

**Function:** Adjusts the equalizer gain of the low range of the parametric microphone equalizer when the speech processor is activated.

**Available Values:** -20 ~ 10

**Default Setting:** 0

### **162 TAUD PE1 BW**

**Function:** Adjusts the Q-factor of the low range of the parametric microphone equalizer when the speech processor is activated.

**Available Values:** 1 ~ 10

**Default Setting:** 2

### **163 TAUD PE2 FRQ**

**Function:** Selects the center frequency of the middle range for the parametric microphone equalizer when the speech processor is activated.

**Available Values:** OFF / 700Hz ~ 1500Hz (100 Hz/step)

**Default Setting:** 800Hz

OFF: The equalizer gain and Q-factor are set to factory defaults (flat).

700Hz ~ 1500Hz: Center frequencies of 700 Hz ~ 1500 Hz. You may adjust the equalizer gain and Q-factor at this selected audio frequency via menu items “164 TAUD PE2 LVL” and “165 TAUD PE2 BW”.

### **164 TAUD PE2 LVL**

**Function:** Adjusts the equalizer gain of the middle range of the parametric microphone equalizer when the speech processor is activated.

**Available Values:** -20 ~ 10

**Default Setting:** 0

### **165 TAUD PE2 BW**

**Function:** Adjusts the Q-factor of the middle range of the parametric microphone equalizer when the speech processor is activated.

**Available Values:** 1 ~ 10

**Default Setting:** 1

### **166 TAUD PE3 FRQ**

**Function:** Selects the center frequency of the high range for the parametric microphone equalizer when the speech processor is activated.

**Available Values:** OFF / 1500Hz ~ 3200Hz (100 Hz/step)

**Default Setting:** 2100Hz

OFF: The equalizer gain and Q-factor are set to factory defaults (flat).

1500Hz ~ 3200Hz: Center frequencies of 1500 Hz ~ 3200 Hz. You may adjust the equalizer gain and Q-factor in this selected audio frequency via menu items “167 TAUD PE3 LVL” and “168 TAUD PE3 BW”.

### **167 TAUD PE3 LVL**

**Function:** Adjusts the equalizer gain of the high range of the parametric microphone equalizer when the speech processor is activated.

**Available Values:** -20 ~ 10

**Default Setting:** 0

### **168 TAUD PE3 BW**

**Function:** Adjusts the Q-factor of the high range of the parametric microphone equalizer when the speech processor is activated.

**Available Values:** 1 ~ 10

**Default Setting:** 1

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## TX GNRL GROUP

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### **169 TGEN BIAS**

**Function:** Adjusts the Bias level of the Final Amplifier while in “Class-A” operation.

**Available Values:** 1 ~ 100

**Default Setting:** 100

### **170 TGEN MAX PWR**

**Function:** Selects a maximum output power limit.

**Available Values:** 20W / 50W / 100W / 200W

**Default Setting:** 200W

### **171 TGEN PWR CTRL**

**Function:** Configures the [RF PWR] knob.

**Available Values:** ALL MODE / CARRIER

**Default Setting:** ALL MODE

ALL MODE: The [RF PWR] knob is enabled on all modes.

CARRIER: The [RF PWR] knob is enabled in all modes except SSB. In this configuration, the SSB output power will be set to maximum, regardless of the [RF PWR] knob’s position.

### **172 TGEN ETX-GND**

**Function:** Enables/Disables the TX GND jack on the rear panel.

**Available Values:** DISABLE / ENABLE

**Default Setting:** DISABLE

### **173 TGEN TUN PWR**

**Function:** Selects a maximum output power limit for driving the input circuit of an external linear RF amplifier while tuning (while using the Remote Control function of the linear RF amplifier).

**Available Values:** 20W / 50W / 100W / 200W

**Default Setting:** 100W

### **174 TGEN VOX SEL**

**Function:** Selects the audio input source for triggering TX during VOX operation.

**Available Values:** MIC / DATA

**Default Setting:** MIC

MIC: The VOX function will be activated by microphone audio input.

DATA: The VOX function will be activated by data audio input.

### **175 TGEN ANTI VOX**

**Function:** Adjusts the Anti-VOX Trip Gain, which is the level of negative AF feedback of receiver audio to the microphone, to prevent receiver audio from activating the transmitter (via the microphone) during VOX operation.

**Available Values:** 1 ~ 100

**Default Setting:** 100

### **176 TGEN EMRGNCY**

**Function:** Enables Tx/Rx operation on the Alaska Emergency Channel, 5167.5 kHz.

**Available Values:** DISABLE / ENABLE

**Default Setting:** DISABLE

When this Menu Item is set to “ENABLE”, the spot frequency of 5167.5 kHz will be enabled. The Alaska Emergency Channel will be found between the Memory channels “P-1” and “01 (or 1-01)”.

**IMPORTANT:**

The use of this frequency is restricted to stations operating in or near Alaska, and only for emergency purposes (never for routine operations). See §97.401(c) of the FCC’s regulations for details.

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**NOTE**

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# SPECIFICATIONS

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## GENERAL

<b>Rx Frequency Range:</b>	30 kHz - 60 MHz (operating) 1.8 - 29.7 MHz, 50 - 54 MHz (specified performance, Amateur bands only)
<b>Tx Frequency Ranges:</b>	1.8 - 29.7 MHz, 50 - 54 MHz (Amateur bands only) 5.16750MHz, 5.33200MHz, 5.34800MHz, 5.36800MHz, 5.37300MHz, 5.40500MHz (USA version only)
<b>Frequency Stability:</b>	±0.05 ppm (MP version, after 1 minute @+14 °F ~ +140 °F [-10 °C ~ +60 °C]) ±0.5 ppm (after 1 minute @+14 °F ~ +140 °F [-10 °C ~ +60 °C])
<b>Operating Temperature Range:</b>	+14 °F ~ +140 °F (-10 °C ~ +60 °C)
<b>Emission Modes:</b>	A1A (CW), A3E (AM), J3E (LSB, USB), F3E (FM), F1B (RTTY), F1D (PACKET), F2D (PACKET)
<b>Frequency Steps:</b>	1/5/10 Hz (SSB,CW, & AM), 100 Hz (FM)
<b>Antenna Impedance:</b>	50 Ohms, unbalanced 16.7 - 150 Ohms, unbalanced (Tuner ON, 1.8 - 29.7 MHz Amateur bands) 25 - 100 Ohms, unbalanced (Tuner ON, 50 MHz Amateur band)
<b>Power Consumption:</b> (@117 VAC)	Rx (no signal) 70 VA Rx (signal present) 80 VA Tx (200 W) 720 VA
<b>Supply Voltage:</b>	AC 90 V - AC 264 V
<b>Dimensions (WxHxD):</b>	18.2" x 5.3" x 15.3" (462 x 135 x 389 mm) w/o knob and connector
<b>Weight (approx.):</b>	46.3 lbs (21 kg)

## TRANSMITTER

<b>Power Output:</b>	10 - 200 watts (CW, LSB, USB, FM, RTTY, PKT) 5 - 50 watts (AM carrier) 10 - 75 watts (Class A: LSB, USB)
<b>Modulation Types:</b>	J3E (SSB): Balanced, A3E (AM): Low-Level (Early Stage) F3E (FM): Variable Reactance
<b>Maximum FM Deviation:</b>	±5.0 kHz/±2.5 kHz
<b>Harmonic Radiation:</b>	Better than -60 dB (1.8 - 50 MHz Amateur bands)
<b>SSB Carrier Suppression:</b>	At least 60 dB below peak output
<b>Undesired Sideband Suppression:</b>	At least 60 dB below peak output
<b>Audio Response (SSB):</b>	Not more than -6 dB from 300 to 2700 Hz
<b>3rd-order IMD:</b>	-31 dB @14 MHz, 100 watts PEP -40 dB @14 MHz, Class A: 75 watts PEP
<b>Bandwidth:</b>	500 Hz (CW) 3.0 kHz (LSB, USB) 6.0 kHz (AM) 16 kHz (FM)
<b>Microphone Impedance:</b>	600 Ohms (200 to 10 k Ohms)

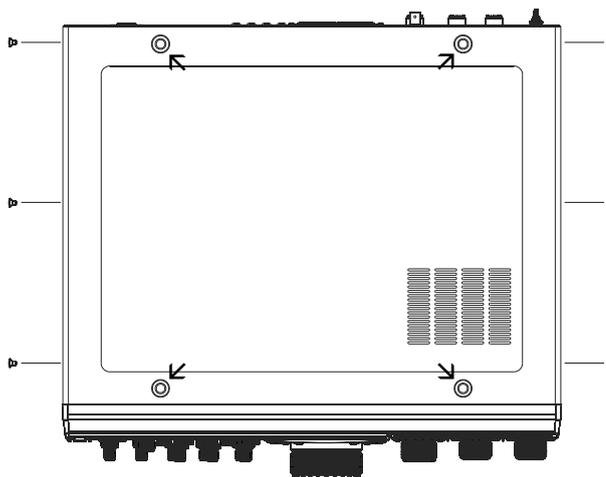
## RECEIVER

<b>Circuit Type:</b>	VFO-A; Double-conversion superheterodyne VFO-B; Triple-conversion superheterodyne
<b>Intermediate Frequencies:</b>	VFO-A; 9 MHz /30 kHz (24 kHz for AM/FM) VFO-B; 40.455 MHz/455 kHz /30 kHz (24 kHz for AM/FM)
<b>Sensitivity:</b>	SSB (2.4 kHz, 10 dB S+N/N) 2 $\mu$ V (0.5 - 1.8 MHz, IPO1) 0.2 $\mu$ V (1.8 - 30 MHz, AMP2) 0.125 $\mu$ V (50 - 54 MHz, AMP2) AM (6 kHz, 10 dB S+N/N, 30 % modulation @400 Hz) 6 $\mu$ V (0.5 - 1.8 MHz, IPO1) 2 $\mu$ V (1.8 - 30 MHz, AMP2) 1 $\mu$ V (50 - 54 MHz, AMP2) FM (BW: 15 kHz, 12 dB SINAD) 0.5 $\mu$ V (28 - 30 MHz, AMP2) 0.35 $\mu$ V (50 - 54 MHz, AMP2) There is no specification in frequency ranges not listed.
<b>Squelch Sensitivity (AMP2):</b>	SSB/CW/AM 2 $\mu$ V (0.1 - 30 MHz) 2 $\mu$ V (50 - 54 MHz) FM 1 $\mu$ V (28 - 30 MHz) 1 $\mu$ V (50 - 54 MHz) There is no specification in frequency ranges not listed.
<b>Selectivity (-6/-60 dB):</b>	Mode            -6 dB                            -60 dB CW                0.5 kHz or better        750 Hz or less LSB, USB            2.4 kHz or better        3.6 kHz or less AM                6 kHz or better            15 kHz or less FM                12 kHz or better           30 kHz or less
<b>Image Rejection:</b>	70 dB or better (1.8 - 29.7 MHz Amateur bands, VRF: ON) 60 dB or better (50 MHz Amateur band)
<b>Maximum Audio Output:</b>	2.5 W into 4 Ohms with 10% THD
<b>Audio Output Impedance:</b>	4 to 8 Ohms (4 Ohms: nominal)
<b>Conducted Radiation:</b>	Less than 4000 $\mu$ W

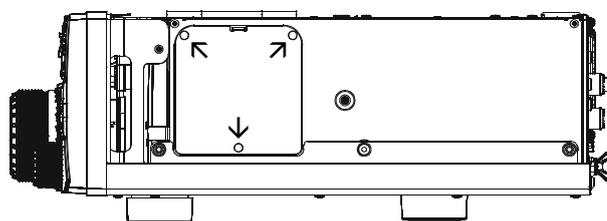
*Specifications are subject to change, in the interest of technical improvement, without notice or obligation, and are guaranteed only within the amateur bands.*

# INSTALLATION OF THE OPTIONAL ROOFING FILTER (XF-126CN)

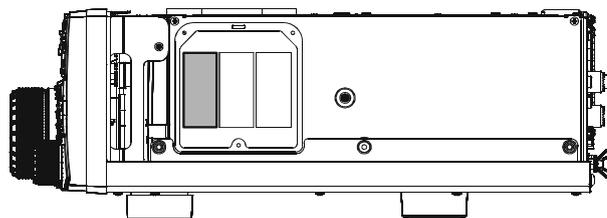
1. Turn the front panel **[POWER]** switch “off,” then turn the rear panel’s **[POWER]** switch “off.”
2. Disconnect all the cables from the transceiver.
3. Referring to Figure 1, remove the three screws from each side of the transceiver and four screws from the top of the transceiver, then remove the top cover.
4. Refer to Figure 2, there is the metal plate on the right side of the transceiver. A mounting position of the optional filter is inside of this. Remove the three screws affixing the metal plate, then remove the metal plate.
5. Refer to Figure 3, position the filter so that its connectors are aligned with the mounting pins on the board, and push it into place.
6. Replace the metal plate and its three screws.
7. Replace the top cover and its ten screws.
8. Filter installation is now complete.
9. Connect the all cables to the transceiver.



**FIGURE 1**



**FIGURE 2**



**FIGURE 3**



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# *NOTE*

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This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

1. Changes or modifications to this device not expressly approved by VERTEX STANDARD could void the user's authorization to operate this device.
2. This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions; (1) this device may not cause harmful interference, and (2) this device must accept any interference including interference that may cause undesired operation.
3. The scanning receiver in this equipment is incapable of tuning, or readily being altered, by the User to operate within the frequency bands allocated to the Domestic public Cellular Telecommunications Service in Part 22.

#### DECLARATION BY MANUFACTURER

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

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



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