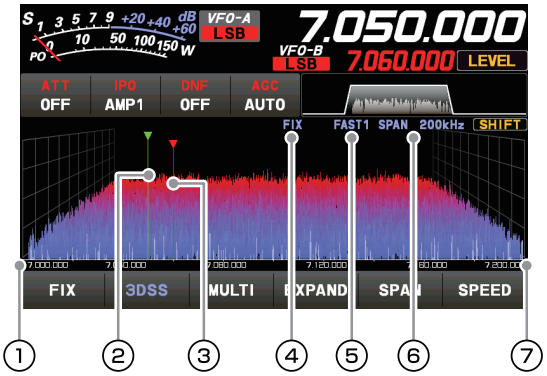
• FIX

To use Fixed Mode, enter the start frequency of the scope.



① Display area start frequency
② Marker* (Reception Frequency)
③ Marker* (Transmit Frequency)
④ Current display mode (FIX)
⑤ Sweep Speed
⑥ Scope Screen frequency span (display range).
⑦ The upper limit frequency of the display area.

*At factory shipment, marker display is ON.

FIX is displayed at the top of the scope screen.
Press and hold [FIX] while FIX is displayed, the frequency input screen will be displayed, and the start frequency can be entered:

Example:

To enter 7.000.000 MHz

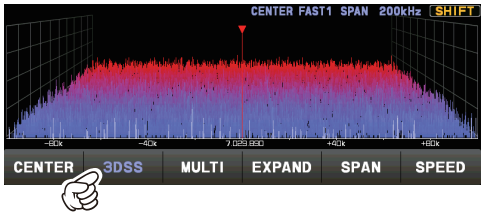
[0]→[7]→[ENT] or [7]→[.]→[ENT]

To enter 7.030.000 MHz

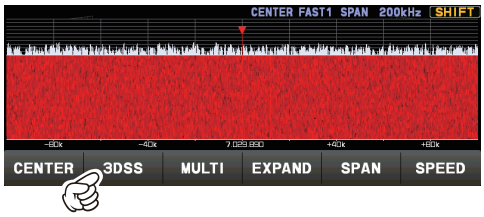
[7]→[.]→[0]→[3]→[ENT]

• 3DSS

Switch between the 3DSS display and the waterfall display.
The display will change each time it is touched:

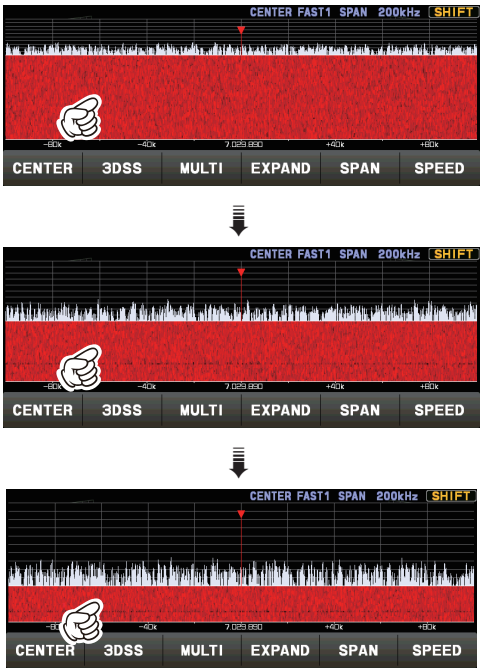


3DSS type



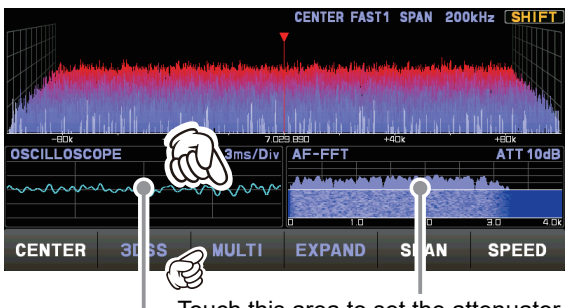
Waterfall type

Each time the Waterfall Display is touched, the size of the display changes as follows.



• MULTI

In addition to the scope display, the oscilloscope and AF-FFT are also presented.
Touch again to return to the original screen.

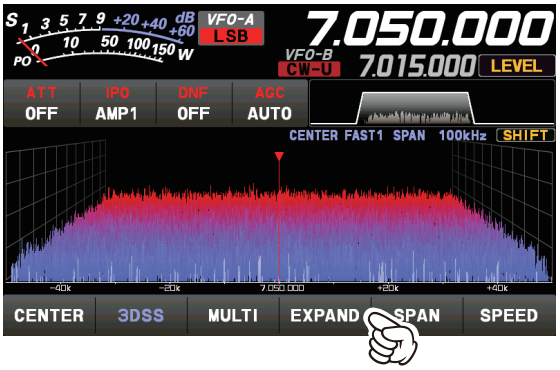


Touch this area to set the attenuator.

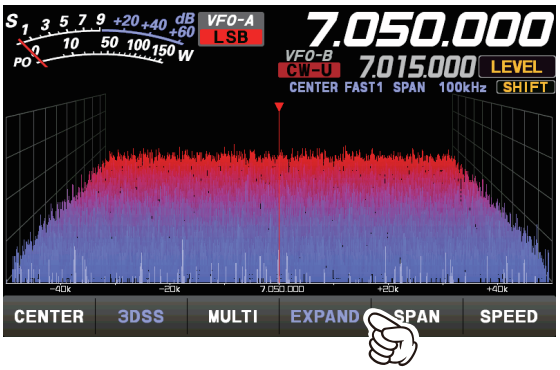
Touch this area to set the level and sweep speed.

• EXPAND

The display area of the scope screen may be expanded vertically.
Touch to expand the display. Touch again to return to the original.



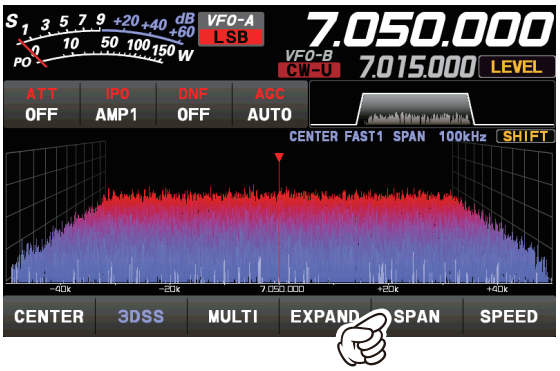
Normal Display

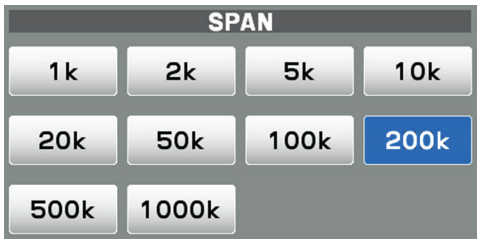


Larger View

• SPAN

Set the frequency span (display range) of the scope screen. After touching, select the desired span.

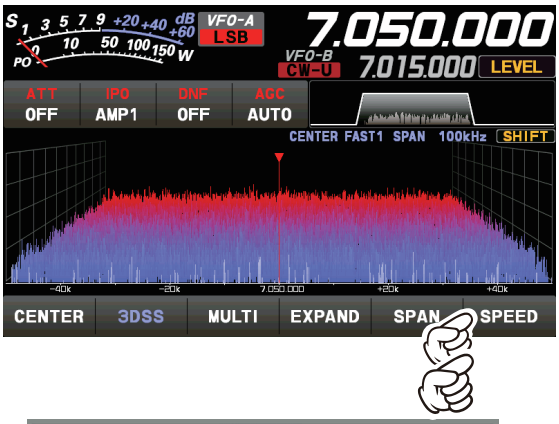


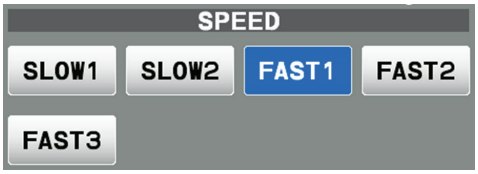


The display level changes when SPAN is changed, so reset the optimum display level with [LEVEL] each time.

• SPEED

Sets the Scope Display sweep speed. After touching, select the desired speed.





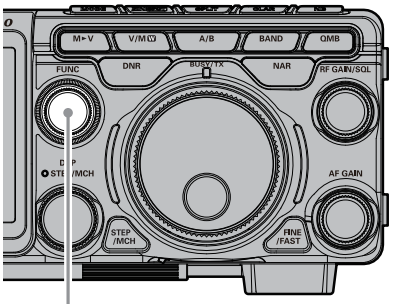
SLOW1 : sweep speed
SLOW2 : sweep speed
FAST1 : sweep speed
FAST2 : sweep speed
FAST3 : sweep speed

Slow
↑
Normal
↓
Fast

Set with the FUNC knob

Operate the [FUNC] knob to make the following settings related to the display.

LEVEL : Adjust the LEVEL of the scope for the best image on the screen.
PEAK : Adjust the color density with respect to the signal level on the scope screen in 5 steps (LV1 to LV5).
MARKER : ON/OFF Marker indicates the transmit and receive frequency position within the Scope Display image.
COLOR : Changes the scope screen display color from 11 types.
CONTRAST : Adjust the TFT display contrast (difference between light and dark) in 21 steps.
DIMMER : Adjust the TFT display brightness in 21 steps.



The last function used is retained in the [FUNC] knob so it can be easily set by operating the [FUNC] knob. Normally, it is suggested to utilize the [FUNC] knob as the [LEVEL] knob for the spectrum scope.

• LEVEL

Adjust the level to make it easier to distinguish between the desired signal and noise. The display level changes depending on antenna gain, condition, frequency band, SPAN and so on.
Always adjust the LEVEL for the best image on the screen.
Press the [FUNC] knob then touch [LEVEL], and then turn the [FUNC] knob to select the desired level.

- On the 3DSS screen, weak signals may be more easily observed by adjusting the LEVEL so that the noise level can be seen only a little, so always adjust the LEVEL and use it at the optimum position.
- Be sure to make adjustments when changing bands or changing SPAN.
- If the level is changed, the signal strength also appears to change, but it does not affect the actual signal input level.

• PEAK

The color density may be adjusted to the level of the signal. Touch PEAK and then select the desired color concentration.
Press the [FUNC] knob then touch [PEAK], and then turn the [FUNC] knob to select the desired level.

LV1 : Thin
LV2 : ↑
LV3 : Normal
LV4 : ↓
LV5 : Dark

• MARKER

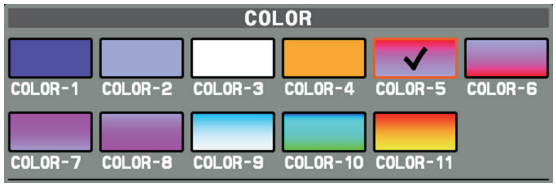
Displays markers that indicates the position of the current receive and the transmit frequencies in the spectrum.

Press the [FUNC] knob then touch [MARKER] to turn the MARKER ON or OFF. Normally leave it ON.

• COLOR

The display color of the scope screen can be changed.

Press the [FUNC] knob then touch [COLOR], then touch the desired color from the color selection screen.
The Display Color selection screen will disappear automatically after about 3 seconds.



• Adjust contrast

Adjust the contrast of the TFT display.

Press the [FUNC] knob then touch [CONTRAST], and then turn the [FUNC] knob to adjust the contrast.

• Adjusting the brightness (DIMMER)

Adjust the brightness of the TFT display.

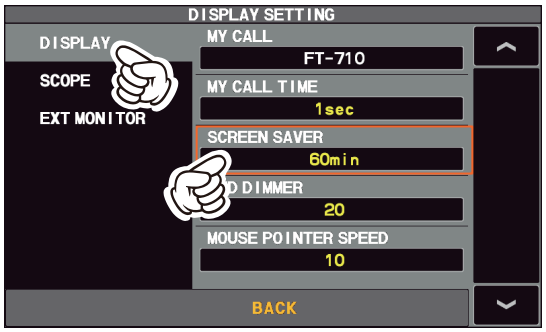
Press the [FUNC] knob then touch [DIMMER], and then turn the [FUNC] knob to adjust the brightness.

Other display settings

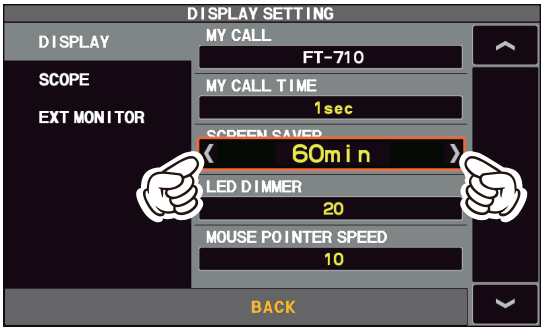
• Screen Saver

A Screen saver, to prevent burning of the TFT screen will operate after a set time, if no transceiver function is operated.

1. Press the [FUNC] knob.
2. Touch [DISPLAY SETTING] or rotate the [FUNC] knob to select [DISPLAY SETTING] and then press the [FUNC] knob.
3. Touch [DISPLAY] → [SCREEN SAVER] or rotate the [FUNC] knob to select an item and press the [FUNC] knob.



4. Rotate the [FUNC] knob, or touch "<" or ">" on either side of the value to select the time until the screen saver is employed (default setting is 60 min).



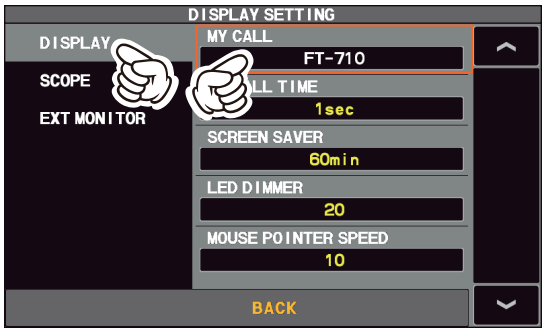
OFF	Screen saver is not employed.
15min	Screen saver activates after 15 minutes.
30min	Screen saver activates after 30 minutes.
60min	Screen saver activates after 60 minutes.

5. Press the [FUNC] knob to save the new setting.
6. Touch [BACK] several times to return to normal operation.

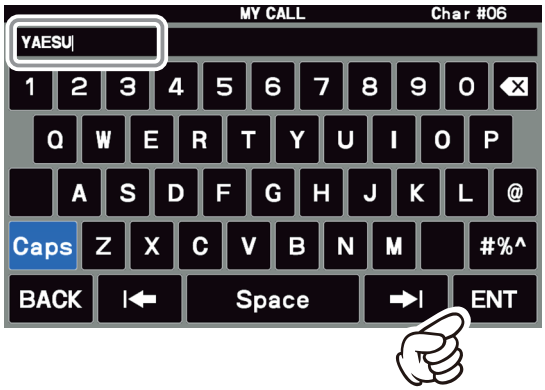
• Inputting the Call Sign

Registered call signs names, and characters can be displayed on the opening screen when the power is turned ON.

1. Press the [FUNC] knob.
2. Touch [DISPLAY SETTING] or rotate the [FUNC] knob to select [DISPLAY SETTING] and then press the [FUNC] knob.
3. Touch [DISPLAY] → [MY CALL] or rotate the [FUNC] knob to select the item and press the [FUNC] knob.



4. Touch a character key. The touched character will be displayed at the top of the screen. Enter each character of your call sign.
Up to 12 characters (letters, numbers, and symbols) can be entered.



Caps	The input switches between lower and upper-case letters each time this symbol is touched.
⌫	One character to the left of the cursor is erased when this symbol is touched.
BACK	The display returns to the previous screen when this symbol is touched.
|◀ / ▶|	The cursor in the input field moves left or right when these symbols are touched.
Space	Insert space
ENT	The entered characters are confirmed and the display returns to the previous screen when this symbol is touched.

5. Touch [ENT] to save the new setting and exit to normal operation.

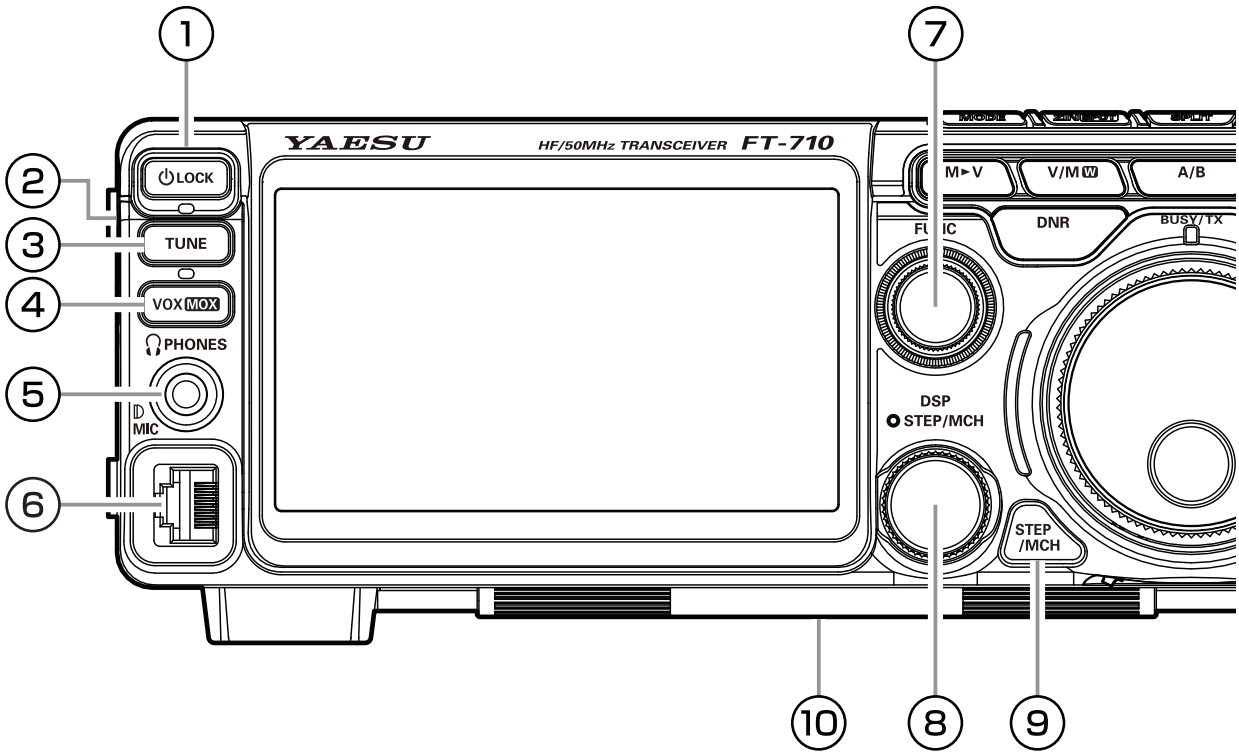
About TFT Displays

FT-710 utilizes a TFT liquid-crystal display.

Although TFT liquid-crystal displays are made using very precise technology, they are prone to develop dead pixels (dark dot) or pixels that are always on (bright dot). Please understand that such phenomena do not constitute product defects or malfunctions. Rather, this phenomenon occurs due to limitations in the manufacturing technology with respect to TFT liquid-crystal displays.

- Depending on the viewing angle, unevenness in color or brightness may occur. Please note that any unevenness observed is inherent to the construction of TFT liquid crystal displays and therefore does not constitute a product defect or malfunction.
- If your TFT liquid-crystal display becomes dirty, please use a dry soft cloth or tissue to wipe the display clean. If it is extremely dirty, moisten it with water or lukewarm water and wipe it off with a soft cloth that has been wrung out tightly. Use of glass cleaner, household cleaners, organic solvents, alcohol, abrasives, and/or like substance may damage the TFT liquid-crystal display.

Front Panel Controls & Switches



① ON/OFF Switch

Press and hold this switch for one second to turn the transceiver ON or OFF.

This key toggles the ON/OFF lock for the MAIN Dial knob. When “Lock” is ON, the MAIN Dial knob can still be turned, but the frequency will not change, and “LOCK” appears in the frequency display.

② SD memory card slot

A commercially available SD memory card may be used to save transceiver settings, to save the memory contents, to screen capture and to update the firmware.

- The SD card is not provided with the product.
- Not all SD cards sold commercially are guaranteed to work with this transceiver.

③ TUNE

This is the ON/OFF switch for the FT-710 Automatic Antenna Tuner.

Press the [TUNE] key briefly to activate the antenna tuner. Press the [TUNE] key briefly again to disable the antenna tuner.

Press the [TUNE] key for about 1 second to start “automatic tuning”.

Since the transceiver transmits automatically during automatic tuning, make sure to connect an antenna or dummy load before tuning up.

When the antenna or dummy load does not match the impedance, “HI-SWR” will appear on the touch panel.

④ VOX/MOX

VOX

This key enables automatic voice-actuated transmitter switching. While VOX is activated, the LED inside this key glows orange.

1. Press the [VOX] key.
   VOX feature is activated
2. Without pressing the PTT switch, speak into the microphone in a normal voice level. When you start speaking, the transmitter should be activated automatically.
   When you finish speaking, the transceiver should return to the receive mode (after a short delay).

To cancel VOX and return to PTT operation, press the [VOX] key once more.

• Adjusts the VOX GAIN

The VOX Gain may be adjusted to prevent unintended transmitter activation in a noisy environment. To adjust the VOX Gain:

1. Press the [FUNC] knob.
2. Touch [VOX GAIN] .
3. While speaking into the microphone, rotate the [FUNC] knob to the point where the transmitter is quickly activated by your voice, without background noise causing the transmitter to activate.

• Adjusts the VOX Delay Time

The “Hang-Time” of the VOX system (the transmit-receive delay after the cessation of speech) may also be adjusted.

To set a different delay time:

1. Press the [FUNC] knob.
2. Touch [VOX DELAY] .
3. Rotate the [FUNC] knob while saying a brief syllable like “Ah” and listening to the hang time for the desired delay.

• Adjusts the VOX anti-trip sensitivity

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).

1. Press the [FUNC] knob.
2. Touch [ANTI VOX] .
3. Rotate the [FUNC] knob to prevent receiver audio from activating the transmitter (via the microphone).

MOX

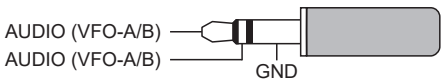
Pressing this key engages the PTT (Push to Talk) circuit to activate the transmitter.

⑤ PHONES Jack

Connect headphones to this standard ϕ3.5 stereo jack.

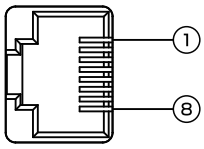
Inserting a headphone plug into this jack will deactivate the internal and external speakers.

> When wearing headphones, we recommend that you turn the AF Gain levels down to their lowest settings before turning power ON, to minimize the impact on your hearing caused by audio “pops” during switch-on.



⑥ MIC

This 8-pin jack accepts input from a microphone utilizing the traditional YAESU HF transceiver pinout.



① DOWN
② UP
③ +5V
④ MIC GND
⑤ MIC
⑥ PTT
⑦ GND
⑧ FAST

⑦ FUNC

Simply press the function [FUNC] knob to easily select the setting menu, and then change the setting value.
Quick response is possible even while operating. Assign a frequently used function or setting menu

⑧ DSP STEP/MCH

DSP

Pressing this key momentarily, exchanges the SHIFT, WIDTH, NOTCH and CONTOUR.

STEP

Press the [STEP/MCH] key to turn ON the LED of the [STEP/MCH] knob. Turning the [STEP/MCH] knob changes the frequency in 10kHz steps (factory default settings).

Press and hold the [STEP/MCH] key to turn ON the LED of the [STEP/MCH] knob. Turning the [STEP/MCH] knob changes the frequency in 1MHz steps.

MCH

Press and hold the [STEP/MCH] key, the LED of the [STEP/MCH] knob will blink, and turn the [STEP/MCH] knob ON in memory mode, and it will switch the memory channels.

⑨ STEP/MCH

STEP

Press the [STEP/MCH] key to turn ON the LED of the [STEP/MCH] knob. Turning the [STEP/MCH] knob changes the frequency in 10kHz steps (factory default settings).

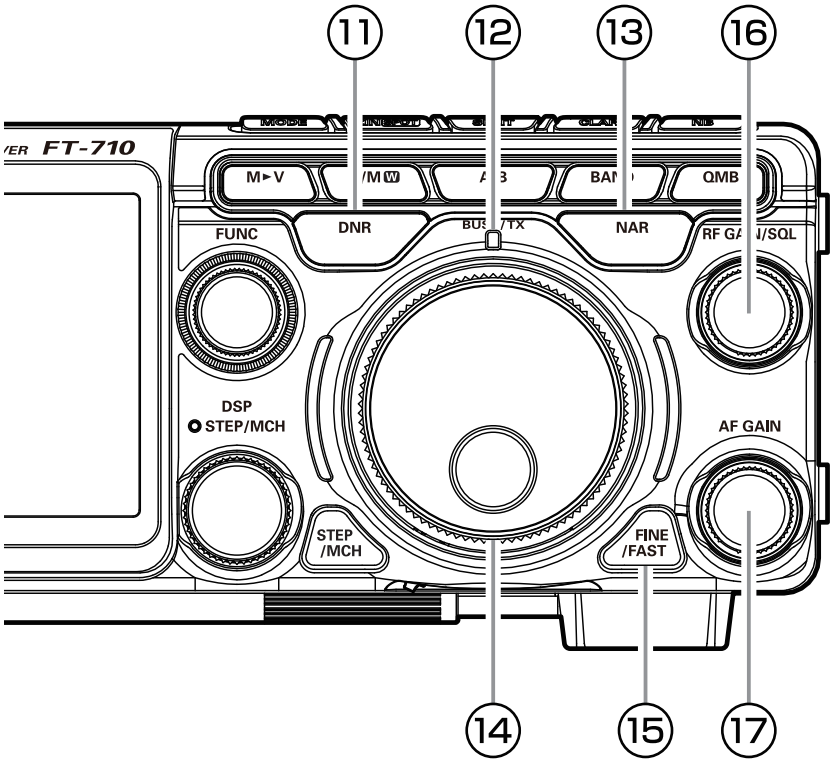
Press and hold the [STEP/MCH] key to turn ON the LED of the [STEP/MCH] knob. Turning the [STEP/MCH] knob changes the frequency in 1MHz steps.

MCH

Press and hold the [STEP/MCH] key, the LED of the [STEP/MCH] knob will blink, and turn the [STEP/MCH] knob ON in memory mode, and it will switch the memory channels.

⑩ WIRE STAND

The heavy wire stand on the bottom of the transceiver allows the transceiver to be tilted upward for better viewing. Simply fold the stand forward to raise the front of the transceiver, and fold it back against the bottom case to lower the front of the FT-710.



⑪ DNR (Digital Noise Reduction)

The Digital Noise Reduction (DNR) system is designed to reduce the level of ambient noise found on the HF and 50 MHz bands. The (DNR) system is especially effective during SSB operation. Any of 15 different noise-reduction algorithms can be selected; each of these algorithms was created to deal with a different noise profile. You will want to experiment with the DNR system to find the best setting corresponding to the noise currently being experienced.
The DNR function can be operated individually for VFO-A band and VFO-B.

Press the [DNR] key to enable the DNR operation. To disable DNR operation, press the [DNR] key once more.

• Adjusting the DNR Level

1. Press and hold the [DNR] key to display the DNR level.
2. Turn the [FUNC] knob to adjust the DNR Level.
3. After adjusting to a DNR level, the DNR level display disappears after about 2 seconds.

After adjusting the DNR level, the operation of the [FUNC] knob returns to the operation that was used before adjusting the DNR level.

⑫ BUSY/TX Indicater

Green: This indicator illuminates when the receiver is active.
Red: This indicator illuminates when the transmitter is active.

⑬ NAR (Narrow)

This key is used to set the DSP (digital) IF filters to Narrow bandwidth.

⑭ MAIN dial

The MAIN dial sets the operating frequency.
Rotate the MAIN dial knob to tune within the band, and begin normal operation.

- The amount of frequency change depends on the operation mode (default setting: see table below).

Operating Mode	1 Step	1 Dial Rotation
LSB / USB / CW-L CW-U / DATA-L DATA-U / RTTY-L RTTY-U / PSK	10 Hz (1 Hz)	5 kHz (500 Hz)
AM / AM-N / FM FM-N / DATA-FM D-FM-N	100 Hz (10 Hz)	50 kHz (5 kHz)

Numbers in parentheses indicate steps when the [FINE] key is ON.

*This setting may be changed to 5 Hz in the Setting Menu.

SSB/CW mode

"SSB/CW DIAL STEP"

RTTY/DATA mode

"RTTY/PSK DIAL STEP"

Adjusting the Main tuning DIAL torque

The torque (drag) of the Main DIAL knob may be adjusted for operating preferences. Slide the lever on the bottom side of the transceiver clockwise to reduce the drag, or counter-clockwise to increase the drag.

⑮ FINE/FAST

FINE Tuning (Tuning of 1Hz)

In the LSB, USB, CW-L, CW-U, DATA-L, DATA-U, RTTY-L, RTTY-U or PSK mode, the frequency can be adjusted in 1 Hz steps.

- The AM, AM-N, FM, FM-N, DATA-FM and D-FM-N modes may be adjusted in 10 Hz steps.

1. Press the [FINE/FAST] key.
   The “FINE” indicator lights in the display.
2. Rotate the MAIN dial knob.
3. Press the [FINE/FAST] key again to return to the original frequency step.

FAST Tuning (Tuning of 100Hz)

In the LSB, USB, CW-L, CW-U, DATA-L, DATA-U, RTTY-L, RTTY-U or PSK mode, the frequency can be adjusted in 100Hz steps.

- The AM, AM-N, FM, FM-N, DATA-FM and D-FM-N modes may be adjusted in 1kHz steps.

1. Press and hold the [FINE/FAST] key.
   The “FAST” indicator lights in the display.
2. Rotate the MAIN dial knob.
3. Press the [FINE/FAST] key again to return to the original frequency step.

⑯ RF GAIN/SQL

RF (default setting)

The RF Gain control provides manual adjustment of the gain levels for the receiver RF and IF stages, to account for noise and signal strength conditions at the moment.
[RF GAIN/SQL] knob is normally left in the fully clockwise position.

- Before operation, set the operation of the [RF/SQL] control to “RF” (see below). The default setting is “RF”.
- It does not operate in FM/FM-N/DATA-FM and D-FM-N mode.

SQL

The squelch system allows the back-ground noise to be muted when no signal is being received.
Normally, the squelch is not used during SSB or CW operation.

Before operation, set the operation of the [RF GAIN/SQL] control to “SQL”. The default setting is “RF”.

Rotate the [RF GAIN/SQL] knob to adjust the squelch until the noise disappears.

If the squelch knob is turned too far to the right, weak signals cannot be heard

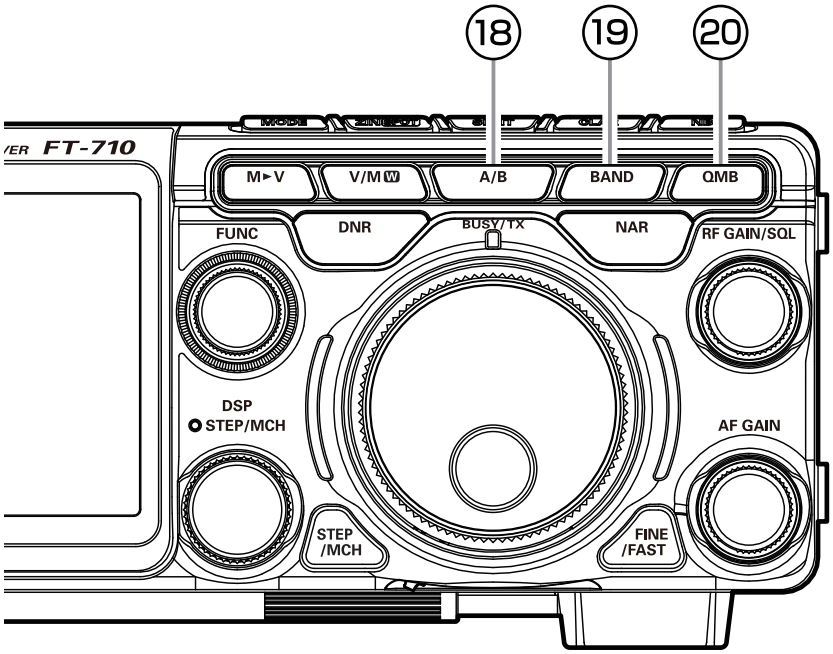
• Switching the operation of the [RF GAIN/SQL] knob

1. Press the [FUNC] knob.
2. Select [OPERATION SETTING]→[GENERAL] → [RF/SQL VR].
3. Select “RF” or “SQL”.
4. Press the [FUNC] knob to save the new setting.
5. Touch [BACK] several times to return to normal operation.

RF GAIN/SQL settings cannot be set separately for the VFO-A and the VFO-B.

⑰ AF GAIN

Sets the audio level of the VFO-A receiver.



⑱ A/B

Pressing this key momentarily, exchanges the VFO-A and VFO-B frequency data. If pressed and held, both VFO-A and VFO-B will be set to the operating band frequency.

⑲ BAND (Operating Band Selection)

① Touch the display to select

Press the [BAND] key, the operation band selection screen appears on the display, so touch the desired band. When you touch it, the band will be confirmed for about 1 second and then return to the operating screen.

② Rotate the [FUNC] knob to select

Press the [BAND] key, the operation band selection screen appears on the display. Rotate the [FUNC] knob to select the desired band.

⑳ QMB (Quick Memory Bank)

The current operation status can be stored in a dedicated memory channel (QMB: Quick Memory Bank) with one touch.

• QMB Channel Storage

The initial number is 5 QMB memories, but this can be increased to 10 channels.

1. Tune to the desired frequency on the VFO-A.
2. Press and hold the [QMB] key. The “beep” will confirm that the VFO-A contents have been written to the currently available QMB memory.

- Repeated pressing and holding of the [QMB] key will write the VFO contents to successive QMB memories.
- Once all five (or ten) QMB memories have data on them, previous data will be over-written on a first-in, first-out basis.

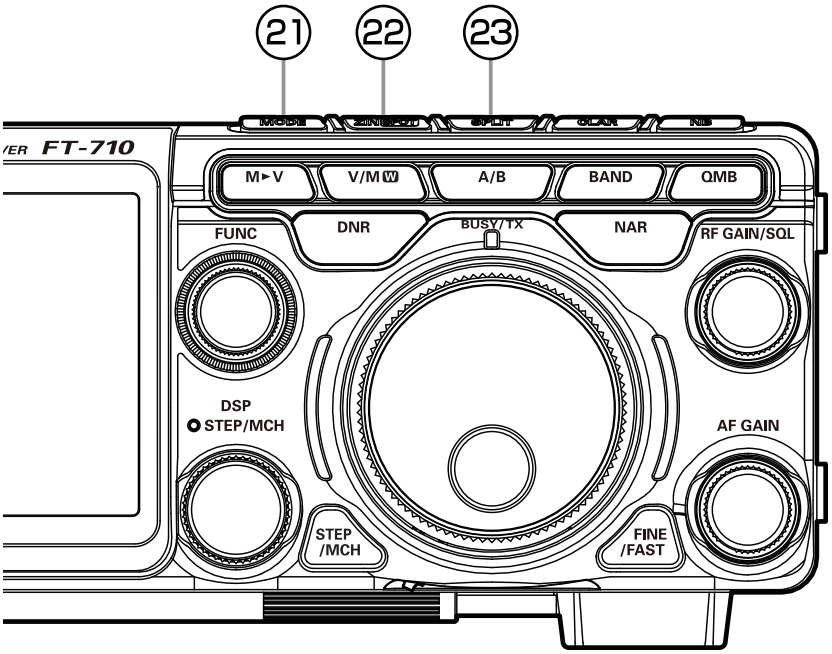
• QMB Channel Recall

1. Press the [QMB] key.
   The current QMB channel data will be shown on the frequency display area.
   The “VFO” or “Memory Channel number” will be replaced by “QMB”.
2. Repeatedly pressing the [QMB] key will step through the QMB channels:
3. Press the [V/M] key to return to the VFO mode.

• Changing the number of QMB channels

The QMB channels can be selected from “5 channels” or “10 channels”.

1. Press the [FUNC] knob.
2. Select [OPERATION SETTING] → [GENERAL] → [QMB CH].
3. Select “5ch” or “10ch”.
4. Press the [FUNC] knob to save the new setting.
5. Touch [BACK] several times to return to normal operation.



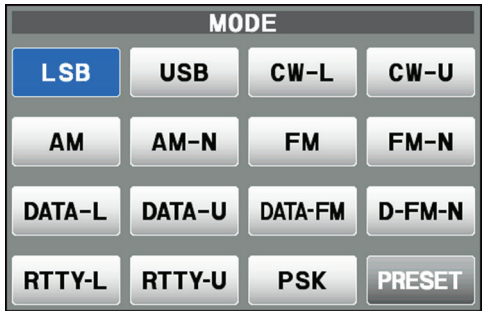
21 MODE (Operating Mode Selection)

① Touch the display to select

Press the [MODE] key or touch the operation mode area, the operation mode selection screen appears on the display, so touch the desired mode.

② Rotate the [FUNC] knob to select

Press the [MODE] key or touch the operation mode area, the operation mode selection screen appears on the display. Rotate the MPVD ring to select the desired mode.



- Touch [PRESET] to display the settings that apply to the FT8 operation.
- When changing modes from SSB to CW, the frequency will shift on the display, even though the actual tone that is heard does not change.
  This shift represents the BFO offset between the “zero beat” frequency and the audible CW pitch (tone). The pitch is programmed via Menu item “CW FREQ DISPLAY”.

22 ZIN/SPOT

ZIN

Press the [ZIN/SPOT] switch momentarily to adjust the receiving frequency and zero-in automatically while receiving a CW signal.

SPOT

While pressing and holding [ZIN/SPOT], the tone is output from the speaker. This tone corresponds to the pitch of your transmitted signal. If you adjust the receiver frequency until the pitch of the received CW signal matches that of the Spot tone, the transmitted signal will be precisely matched to that of the other station.

23 SPLIT

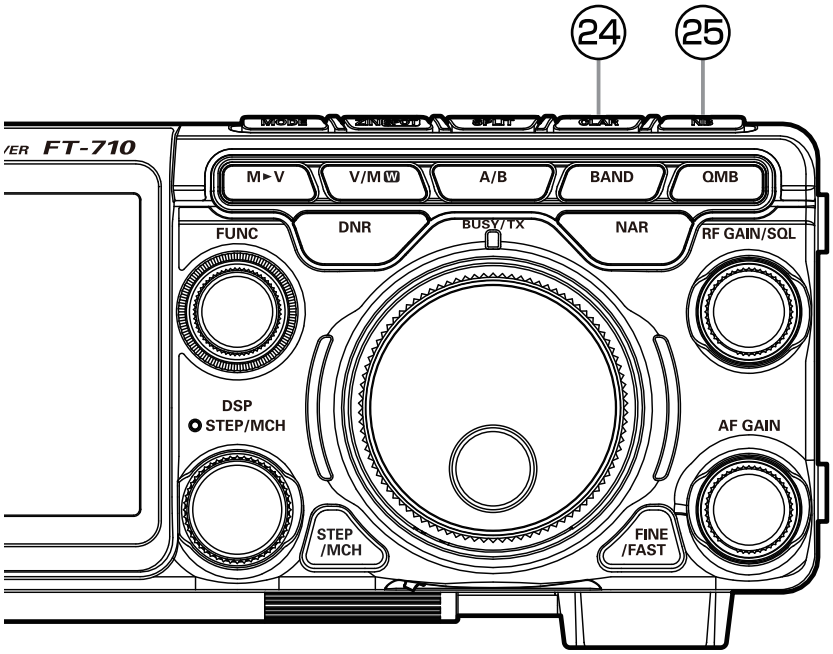
A powerful capability of the FT-710 is its flexibility in Split Frequency operation using the VFO-A and VFO-B frequency registers. This makes the FT-710 especially useful for high-level DX-peditions. The Split operation capability is very advanced and easy to use.

1. Set the VFO-A frequency to the desired receive frequency.
2. Press the [A/B] key.
3. Set the VFO-B frequency to the desired transmit frequency.
4. Press the [A/B] key, then press the [SPLIT] key.

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] key once more, Split operation will be cancelled.

- During Split operation, pressing the [A/B] key will reverse the contents of VFO-A and VFO-B. Press the [A/B] key once more to return to the original frequency settings.
- The receive and transmit frequencies can be set to different bands or operation modes.
- When transmitting and receiving with VFO-A, if you press the [SPLIT] key, VFO-B will become the transmit frequency and the VFO-B frequency display will be red.

Press and hold the [SPLIT] key to increase the VFO-B transmit frequency by 5kHz.

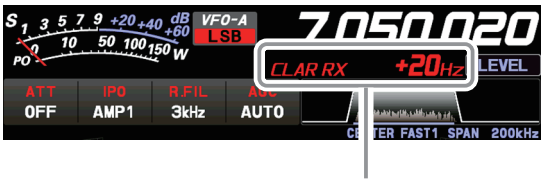


㉔CLAR (Clarifire)

• RX Clarifier

If the transmit frequency of the contact station deviates, this receiver clarifier frequency can be changed leaving this transmit frequency unchanged.

1. Press the [CLAR] key.
2. Rotate the MAIN dial knob to change only the receive frequency.



When the receive frequency is offset by +20 Hz.

- The “CLAR RX” will appear in the display, and the programmed offset will be applied to the receive frequency.
- Offsets of up to ±9900 Hz may be set using the Clarifier.

3. To cancel Clarifier operation, press the [CLAR] key three times.

- Since the offset amount is memorized, when the clarifier function is operated again, the same offset amount is set.
- To clear out the programmed clarifier offset altogether, and reset it to “zero”, press and hold the [CLAR] key.

• TX Clarifier

The transmit frequency can be changed without moving the receive frequency of the transceiver. Normally, the clarifier is used to move only the receive frequency and compensate for the deviation of the transmission frequency of the contact station, however alternatively, only the transmit frequency can be moved without changing the transmitter. When responding to an operator that is called by a large number of stations such as in a contest, etc., the response rate may increase if the transmit frequency is moved slightly.

1. Press the [CLAR] key twice.
2. Rotate the MAIN dial knob to change only the transmit frequency.

- The “CLAR TX” will appear in the display, and the programmed offset will be applied to the transmit frequency.
- Offsets of up to ±9900 Hz may be set using the Clarifier.

3. To cancel Clarifier operation, press the [CLAR] key twice.

To clear out the programmed clarifier offset altogether, and reset it to “zero”, press and hold the [CLAR] key.

㉕ NB

The FT-710 includes an effective IF Noise Blanker, which can significantly reduce noise caused by automotive ignition systems.
The NB function can be operated individually for VFO-A band and VFO-B.

Press the [NB] key to enable the Noise Blanker operation. To disable Noise Blanker operation, press the [NB] key once more.

• Adjusting the Noise Blanker Level

After adjusting the NB level, the operation of the [FUNC] knob returns to the operation that was used before adjusting the NB level.

> The NB function may be less effective on some other types of interference.

• Adjusting the Noise Attenuation

1. Press the [FUNC] knob.
2. Select [OPERATION SETTING]→[RX DSP] →[NB REJECTION].
3. Rotate the [FUNC] knob to set the noise attenuation (10dB / 30dB / 50dB).
4. Press the [FUNC] knob to save the new setting.
5. Touch [BACK] several times to return to normal operation.

• Reduces longer duration pulse noise

Reduces long duration noise as well as pulse noise.

1. Press the [FUNC] knob.
2. Select [OPERATION SETTING]→[RX DSP] → [NB WIDTH] .
3. Rotate the [FUNC] knob to select the value that will reduce the noise.
4. Press the [FUNC] knob to save the new setting.
5. Touch [BACK] several times to return to normal operation.

Voice Communications (SSB and AM)

When transmitting in SSB or AM mode

The FT-710 transmit audio circuit can be set to the optimum operating level by individually adjusting the input and output gains of the microphone amplifier.

> The AMC (Automatic Microphone Gain Control) regulates the microphone audio so that distortion does not occur, even if excessive audio is input.

1. Adjust Microphone gain

Touch the Meter Display and then touch “ALC” to select the ACL Meter.

1. Press the [FUNC] knob.
2. Touch [MIC GAIN].
3. Key TX and adjust the [FUNC] knob to set the input level of the Microphone Amplifier to the position where the ALC Meter needle does not exceed the ALC zone on the audio peaks.

2. Adjust the AMC gain

Touch the Meter Display and then touch “COMP” to select the COMP Meter.

1. Press the [FUNC] knob.
2. Touch [AMC LEVEL].
3. Activate the transmit and speak into the microphone while adjusting the AMC level with the [FUNC] knob.

- Adjust the AMC to a point where the COMP Meter deflection does not exceed “10dB” on the audio peaks.

Setup is completed.

> The AMC function only works in SSB, AM, DATA-L and DATA-U modes.
> It does not work in other modes.

Speech Processor

The FT-710 Speech Processor is designed to increase “talk power” by increasing the average power output of the transmitted SSB signal.

> The speech processor function only works in SSB mode. It does not work in other modes.

1. Adjust the MIC gain as described on the previous page.
2. Press the [FUNC] knob.
3. Touch [PROC LEVEL].
4. Touch the Meter area on the display to select the “COMP” meter.
   The transmit meter becomes the “COMP” meter.
5. Press the PTT switch on the microphone, and speak into the microphone in a normal voice level.
6. Adjust the [FUNC] knob to set the compression level within 10 dB.
   - The Transmit Monitor is a helpful aid to verify proper adjustment of the Compression level.

Rotate the [FUNC] knob to the left to turn the speech processor function “OFF”.

> The speech processor can distort the transmit waveform when used to increase the average TX power, so it is not used in normal communication.

RF Power output control

Turn the [FUNC] knob to adjust the RF power output.

1. Press the [FUNC] knob.
2. Touch [RF POWER].
3. Rotate the [FUNC] knob to adjust the RF power.

> When transmitting in the AM mode, set a maximum (carrier) power output of 25 Watts.

● Setting of maximum transmission output

The maximum transmit power can be set for each of the HF Bands, the 50MHz band and the AM mode. Set it according to operating conditions, when high transmit power is not needed.

1. Press the [FUNC] knob.
2. Select [OPERATION SETTING] → [TX GENERAL].
3. Rotate the [FUNC] knob to select the item you want to set.

   HF MAX POWER (HF band)
   (The setting range is 5 to 100 W)
   50M MAX POWER (50 MHz band)
   (The setting range is 5 to 100 W)
   70M MAX POWER (70 MHz band)
   (The setting range is 5 to 50 W)
   AM MAX POWER (AM mode)
   (The setting range is 5 to 25 W)
4. Press the [FUNC] knob to save the settings.
5. Touch [BACK] several times to return to normal operation.

MONI (Monitor)

Use the Monitor feature to listen to the quality of the transmitted signal.

1. Press the [FUNC] knob.
2. Touch [MONI LEVEL].
3. Rotate the [FUNC] knob to adjust the Monitor level.

Transmit audio monitor is not activate in the FM, FM-N, DATA-FM and D-FM-N modes.

- If you are using the speaker for monitoring, instead of headphones, excessive advancement of the Monitor level 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 Monitor level, if the speaker must be used.

4. To cancel the monitor function, turn the [FUNC] knob to set “MONI LEVEL” to “OFF”.

- Because the Monitor feature samples the transmitter 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.

Parametric Microphone Equalizer

The FT-710 includes a unique Three-Band Parametric Microphone Equalizer that provides precise, independent control over the low, mid and treble ranges in the voice waveform. One group of settings may be utilized when the AMC or speech processor is Off, and an alternate group of settings when the AMC or Speech Processor is On (SSB mode only). The speech processor feature is described in the next chapter.

Parametric microphone equalizer function is activated only in SSB, AM and FM modes.

• Setup the Parametric Microphone Equalizer

1. Set the RF output power to minimum value.

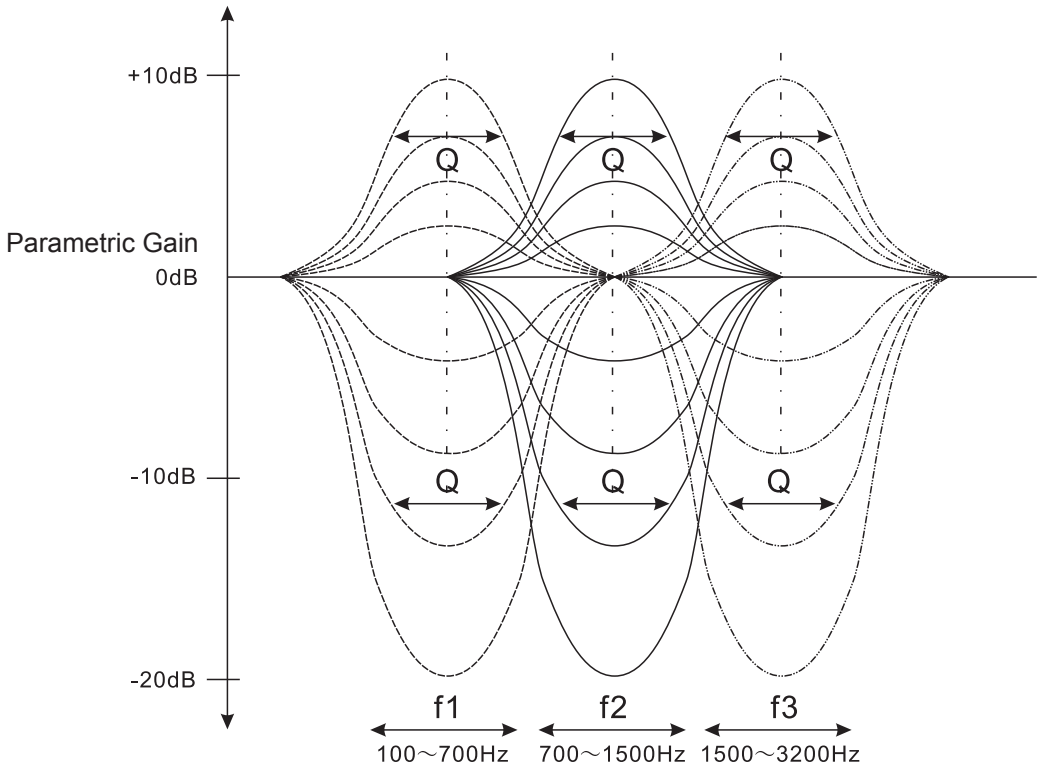
   We recommend connecting a dummy load to one of the Antenna jacks, and monitoring the signal on a separate receiver, to prevent interference to other users.

2. Press the [FUNC] knob.
3. Touch [MIC EQ].
   Parametric Microphone Equalizer function is activated.
   - To adjust the Parametric Microphone Equalizer with the AMC or speech processor engaged, activated the AMC or speech processor.
4. Press the [FUNC] knob.
5. Touch [MONI LEVEL].
6. Rotate the [FUNC] knob to adjust the Monitor level.
7. Press the [FUNC] knob.
8. Select [OPERATION SETTING]→[TX AUDIO].
9. Rotate the [FUNC] knob to find Menu items [PRMTRC EQ1 FREQ] through [PRMTRC EQ3 BWTH]; these parameters apply to the adjustment of the Parametric Microphone Equalizer when the AMC or speech processor is disabled.
   Menu items [P PRMTRC EQ1 FREQ] through [P PRMTRC EQ3 BWTH] apply to the adjustment of the Parametric Microphone Equalizer when the AMC or speech processor is engaged.
10. Rotate the [FUNC] knob, or touch “<” or “>” on either side of the value to adjust a particular Menu item.
11. Press and hold the PTT switch, and speak into the microphone while listening to the effect of the adjustments being made. Because the overall sound will change with each adjustment, make several passes through each adjustment area, to be sure that the optimum settings are achieved.
    - The best way to hear the effects of the adjustments is to wear headphones (connected to the monitor receiver) while listening to the transmitted signal.
12. When all adjustments are satisfactory, press the [FUNC] knob to save the new settings.
13. Touch [BACK] several times to return to normal operation.

• Activate the Parametric Microphone Equalizer

1. Adjust the MIC gain, as described on page 32.
2. Press the [FUNC] knob.
3. Touch [MIC EQ].
   Parametric Microphone Equalizer function is activated.
4. Press the PTT switch on the microphone, and speak into the microphone in a normal voice level.

To cancel the Parametric Microphone Equalizer function, repeat steps 2 and 3 above, and choose “OFF” in step 3.



3-Stage Parametric Equalizer Adjustments (Speech Processor: “OFF”)

Center Frequency	PRMTRC EQ1 FREQ	(Low) “100” (Hz) - “700” (Hz) / OFF	OFF
	PRMTRC EQ2 FREQ	(Mid) “700” (Hz) - “1500” (Hz) / OFF	
	PRMTRC EQ3 FREQ	(High) “1500” (Hz) - “3200” (Hz) / OFF	
Parametric Gain	PRMTRC EQ1 LEVEL	(Low) “-20” (dB) - “+10” (dB)	+5
	PRMTRC EQ2 LEVEL	(Mid) “-20” (dB) - “+10” (dB)	
	PRMTRC EQ3 LEVEL	(High) “-20” (dB) - “+10” (dB)	
Q (Bandwidth)	PRMTRC EQ1 BWTH	(Low) “0” - “10”	10
	PRMTRC EQ2 BWTH	(Mid) “0” - “10”	
	PRMTRC EQ3 BWTH	(High) “0” - “10”	

3-Stage Parametric Equalizer Adjustments (AMC or Speech Processor: “ON”)

Center Frequency	P PRMTRC EQ1 FREQ	(Low) “100” (Hz) - “700” (Hz) / OFF	OFF
	P PRMTRC EQ2 FREQ	(Mid) “700” (Hz) - “1500” (Hz) / OFF	
	P PRMTRC EQ3 FREQ	(High) “1500” (Hz) - “3200” (Hz) / OFF	
Parametric Gain	P PRMTRC EQ1 LEVEL	(Low) “-20” (dB) - “+10” (dB)	0
	P PRMTRC EQ2 LEVEL	(Mid) “-20” (dB) - “+10” (dB)	
	P PRMTRC EQ3 LEVEL	(High) “-20” (dB) - “+10” (dB)	
Q (Bandwidth)	P PRMTRC EQ1 BWTH	(Low) “0” - “10”	2
	P PRMTRC EQ2 BWTH	(Mid) “0” - “10”	1
	P PRMTRC EQ3 BWTH	(High) “0” - “10”	

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.

Using the Automatic Antenna Tuner

The Automatic Antenna Tuner (ATU) is built into each FT-710. The ATU is designed to ensure that a 50-Ohm antenna impedance load is presented to the final amplifier stage of the transmitter.

- Because the FT-710 ATU is located inside transceiver, it can only adjust the impedance presented to the transceiver end of the coaxial cable feedline. It does not “tune” the SWR at the antenna feed point itself. When designing and building an antenna system, we recommend that every effort be made to also ensure a low SWR at the antenna feed point.
- The ATU in the FT-710 is designed to match impedances within the range of 16.5 Ohms to 150 Ohms, corresponding to an SWR of 3:1 or less on the HF amateur bands (6 m amateur band: 25 Ohms to 100 Ohms, corresponding to an SWR of 2:1 or less). Accordingly, simple non-resonant whip antennas, along with random-length wires and the “G5RV” antenna (on most bands) may not be within the impedance matching range of the ATU.
- The built-in antenna tuner cannot be used with an antenna connector connected to an external antenna tuner.

• ATU Operation

1. Press the [TUNE] key momentarily to place the ATU in the transmit line (no adjustment or tuning will occur yet).
   While the ATU function is activated, the “TUNE” will be displayed.
   - The momentary press of the [TUNE] key will turn the tuner ON, and the microprocessor will automatically select the tuning point closest to the current operating frequency.
2. Press and hold the [TUNE] key to begin automatic tuning.
   - The transmitter will be engaged, and “TUNE” will be displayed while tuning is in progress.
   - Always listen on the operating frequency before beginning the tuning process, to be sure tuning will not interfere with others who may already be using the frequency.
   - When the optimum tuning point has been achieved, the transceiver will return to receive.
3. To disengage the ATU from the transmit line, press the [TUNE] key momentarily.

The ATU microprocessor memories store the record of the capacitors and inductors selected to tune each 10 kHz window in which tuning has occurred. This eliminates the need to retune every time operation returns to a frequency on which the tuning process has already been completed.

CW Mode Operation

The impressive CW operating capabilities of the FT-710 permit operating with an Electronic Keyer Paddle, a “Straight Key”, or a computer based keying device.

1. Before starting, connect the key cable to the rear panel KEY jack.
2. Set the operating mode to CW-U.
   The normal “CW” mode utilizes USB-side carrier injection.
3. Rotate the Main Tuning Dial knob to select the desired operating frequency.
4. Press the [FUNC] knob.
5. Touch [BK-IN] to turn ON the BK-IN function.
6. Touch [MONI LEVEL] and then turn the [FUNC] knob to adjust the volume of the monitor.
7. When using the keyer paddle, press the [FUNC] knob and then touch [KEYER] to turn ON the Electronic Keyer.
8. When the key or the keyer paddle is pressed, the transmitter will automatically be engaged.
   - Press [FUNC], then touch [CW SPEED], and rotate the [FUNC] knob to set the desired sending speed.
   - As shipped from the factory, the FT-710 CW TX/RX is configured for “Semibreak-in” operation. However, using Menu item “CW BK-IN TYPE”, this setup may be changed to full break-in (QSK) operation, wherein the switching is quick enough to hear incoming signals in the spaces between the dots and dashes of the transmission. This may prove very useful during contest and traffic handling operations.

• Adjusting the Sidetone Audio level

The CW sidetone audio level may be adjusted by press the [FUNC] knob, then touch [MONI LEVEL], and then rotating the [FUNC] knob.

• CW Delay Time Setting

During semi-break-in (not QSK) operation, the hang time of TX, after the transmitting ends may be adjusted to a comfortable value corresponding with the sending speed.

1. Press the [FUNC] knob, then touch [BK-DELAY].
2. Start sending and rotate the [FUNC] knob to adjust the hang time for comfortable operation.
3. Approximately 1 second after selection, the settings are saved and the normal operation screen returns.

CW Spotting (Zero-Beating)

“Spotting” (zeroing in on another CW station) is a handy technique to ensure the transceiver and the other station are operating precisely on the same frequency.

The Tuning Offset Indicator in the display may also be moved to adjust the receiver frequency to center on the incoming station with the CW pitch corresponding to that of the transmit signal.

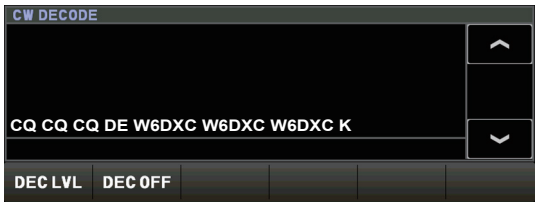
Turn OFF the Tuning Offset Indicator using Menu item “CW INDICATOR”.

CW Decode

Alphanumeric Morse code can be decoded and displayed as text on the TFT Panel.

Interfering signals, noise, propagation phasing, and code inaccuracy, may prevent accurate message copy.

1. Set the operating mode to CW.
2. Press the [FUNC] knob, and then touch [CW SPEED] and turn the [FUNC] knob to closely match the speed of the received CW signal.
   If the speed is significantly different, it may not be deciphered correctly.
3. Press the [FUNC] knob.
4. Touch [DECODE] .
   The CW DECODE screen is displayed, and the decoded message text will appear on the screen.



   - If extraneous characters are displayed, due to noise and clutter when a CW signal is not being received, touch [DEC LVL] and then rotate the [FUNC] knob to adjust the threshold level.
5. To cancel the CW decode function, touch [DEC OFF].

Setting of the Electronic Keyer

• Adjusting the Keyer Speed

Keyer speed can be adjusted by rotating the [FUNC] knob.

Press [FUNC], then touch [CW SPEED], and rotate the [FUNC] knob to set the desired sending speed (4 wpm - 60 wpm).

• Setting the Keyer Weight (Dot/Dash) Ratio

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

1. Press the [FUNC] knob.
2. Select [CW SETTING]→[KEYER]→[CW WEIGHT].
3. Rotate the [FUNC] knob, or touch “<” or “>” on either side of the value to set the weight to the desired value. The available adjustment range is a Dot/Dash ratio of 2.5 - 4.5 (default value: 3.0).
4. Press the [FUNC] knob to save the new setting.
5. Touch [BACK] several times to return to normal operation.

• Reversing the Keyer Polarity

The Keyer polarity can be reversed easily in the Menu mode without changing the keyer connections (the default setting is “NOR”). Example: for left-handed operators in a contest.

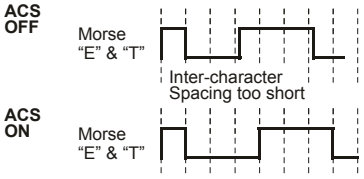
> In the Keyer modes described on the chart at the right, BUG and OFF modes are not changed.

1. Press the [FUNC] knob.
2. Select [CW SETTING] → [KEYER].
3. Select [KEYER DOT/DASH].
4. Rotate the [FUNC] knob, or touch “<” or “>” on either side of the value to set the “REV”.
5. Press the [FUNC] knob to save the new setting.
6. Touch [BACK] several times to return to normal operation.

• Selecting the Keyer Operating Mode

The configuration of the Electronic Keyer may be customized for the FT-710. This permits utilization of Automatic Character Spacing (ACS), if desired. This allows the use of an electronic keyer via the front jack and a computer-driven keying line via the rear panel.

1. Press the [FUNC] knob.
2. Select [CW SETTING]→[KEYER].
3. Select [KEYER TYPE].
4. Rotate the [FUNC] knob, or touch “<” or “>” on either side of the value to set the keyer to the desired operating mode, see the table below.
5. Press the [FUNC] knob to save the new setting.
6. Touch [BACK] several times to return to normal operation.

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-A	A code element (“Dot” or “Dash” side) is transmitted upon releasing both sides of the paddle.
ELEKEY-B	Releasing both sides of the paddle transmits the currently generated “Dash” side followed by “Dot” side (or reverse order).
ELEKEY-Y	Pressing both sides of the paddle transmits the currently generated “Dash” side followed by “Dot” side (or reverse order). While transmitting the “Dash” side, the first transmitted “Dot” side will not be stored.
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). 

Contest Memory Keyer

The CW message capability of the FT-710 may be controlled either from the Transceiver Front Panel, or with the optional FH-2 Remote Control Keypad, which plugs into the rear panel REM jack.

• Message Memory

Five CW memory channels capable of retaining 50 characters each are available (using the PARIS standard for characters 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 [FUNC] knob.
2. Select [CW SETTING] →[KEYER] .
3. Select the CW Memory Register (“CW MEMORY 1” to “CW MEMORY 5”) into which the message is to be stored; for now, the message entry technique is being set to “Keyer Entry” for the selected CW Memory register.
4. Set the selected CW Memory Register to “MESSAGE”. To use the Keyer Paddle for message entry on all the memories, set all five Menu items to “MESSAGE”.
5. Press the [FUNC] knob to save the new setting.
6. Touch [BACK] several times to return to normal operation.

• Message Memory Programming (Using your Paddle)

1. Set the operating mode to CW.
2. Touch [BK-IN] to turn it “OFF”.
3. Touch [KEYER] to turn it “ON”.
   The built-in Electronic Keyer is activated.
   When using the optional FH-2 Controller, go to step 6.
4. Press the [FUNC] knob.
5. Touch [MESSAGE] .
   The “MESSAGE MEMORY” screen will be displayed.
6. Touch [MEM] on the display or press the [MEM] key on the FH-2.
   A blinking “REC” will appear in the display.

> If a Key [1] through [5] is not pressed within five seconds (see next step), the memory storage process will be cancelled.

7. Touch [1] through [5] on the display or press any of the FH-2 keys numbered [1] through [5] to select that memory storage register.
   - The “REC” will glow steadily.
   - If keying is not begun within ten seconds, the memory storage process will be cancelled.
8. Send the desired CW message using the keyer paddle.
9. Touch [MEM] on the display or press the [MEM] key on the FH-2 once more to end message recording.

> Care must be exercised in sending to ensure the spaces between letters and words are accurately applied.
>
> If the timing is off, the spacing may not be correct in the stored message. For ease in setting up the keyer memories, we recommend setting Menu item “KEYER TYPE” to “ACS” (Automatic Character Spacing) while programming the keyer memories.

• Checking the CW Memory Contents

1. Press the [FUNC] knob.
2. Touch [BK-IN] to turn it “OFF”.
3. Touch [MONI LEVEL] and then turn the [FUNC] knob to adjust the volume of the monitor.
   When using FH-2, go to step 6.
4. Press the [FUNC] knob.
5. Touch [MESSAGE].
   The “MESSAGE MEMORY” screen will be displayed.
6. Touch [1] - [5] on the display or press the FH-2 [1] - [5] key, whichever memory was just recorded. The message will be played and heard in the sidetone monitor, but no RF energy will be transmitted.
   ● The “MSG” will appear in the display.

• On-The-Air CW Message Playback

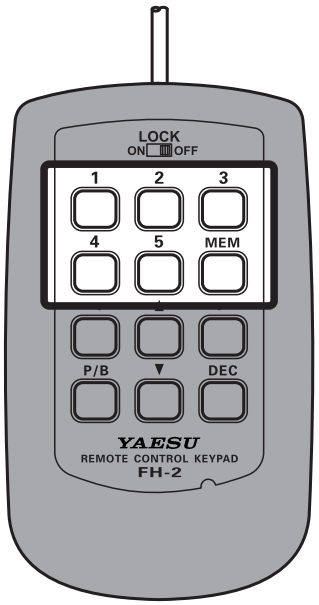
1. Press the [FUNC] knob.
2. Touch [BK-IN] to turn it “ON”.
   When using FH-2, go to step 5.
3. Press the [FUNC] knob.
4. Touch [MESSAGE].
   The “MESSAGE MEMORY” screen will be displayed.
5. Touch [1] - [5] on the display or press the FH-2 [1] - [5] key, to transmit the recorded CW Memory Register message. The programmed message will be transmitted on the air.
   ● During a transmission, the same key may be pressed again to immediately end the transmission.

Transmitting in the Beacon Mode

In “Beacon” mode, any programmed message, (either via Paddle, or via “Text” input method) may be repeatedly transmitted. The time delay between message repeats may be set from 1 to 60 seconds, in one second steps, via Menu item “REPEAT INTERVAL”.

To transmit the message:

1. Touch and hold [1] - [5] on the display or press and hold the FH-2 [1] - [5] key. Repetitive transmission of the Beacon message will begin.
2. Press the same key again to cancel the Beacon Mode.



• TEXT Memory

The five channels of CW message memory (up to 50 characters each) may also be programmed using a text-entry technique.

This technique is somewhat slower than sending the message directly from the keyer paddle, but accuracy of character spacing is ensured. Be sure to enter the character "}" at the end of the text message.

Example 1: CQ CQ CQ DE W6DXC K} (20 characters)

The sequential Contest Number ("Count up") feature is another impressive feature of the CW Memory Keyer.

Example 2: 599 10 200 # K} (15 characters)

• Text Memory Storage

1. Press the [FUNC] knob.
2. Select [CW SETTING] →[KEYER] .
3. Select the CW Memory Register ("CW MEMORY 1" to "CW MEMORY 5") into which a message is to be stored. For now, the message entry technique is being set to (Text entry) for the selected CW Memory Register.
4. If Text Message entry is to be used for all five memories, set all five CW Memory Register Menu items to "TEXT".
5. Press the [FUNC] knob to save the new setting.
6. Touch [BACK] several times to return to normal operation.

Contest Number Programming

Use this process when starting a new contest, or if somehow the numbering gets out of sync during the contest.

1. Press the [FUNC] knob.
2. Select [CW SETTING] → [KEYER] → [CONTEST NUMBER].
3. Rotate the [FUNC] knob to set the Contest Number to the desired value.
4. Press the [FUNC] knob to save the new setting.
5. Touch [BACK] several times to return to normal operation.

• Text Message Programming

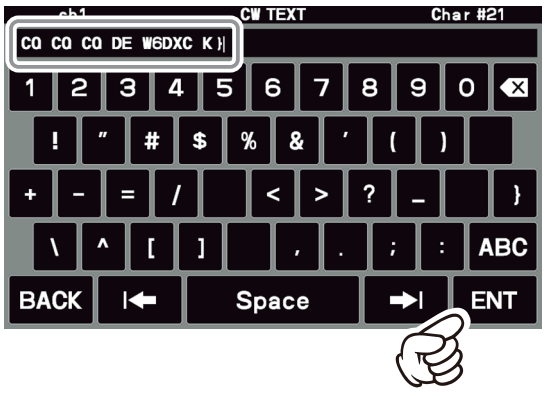
1. Set the operating mode to CW.
   When using the optional FH-2, go to step 4.
2. Press the [FUNC] knob.
3. Touch [MESSAGE].
   The "MESSAGE MEMORY" screen will be displayed.
4. Touch [MEM] on the display or press the [MEM] key on the FH-2.
5. Touch [1] through [5] on the display or press any of the FH-2 keys numbered [1] through [5] to select that memory storage register.
   The text input screen will appear.

> The following texts are programmed to MEMORY 4 and MEMORY 5 in factory default.
> MEMORY 4: DE FT-710 K}
> MEMORY 5: R 5NN K}

6. Touch the character keys on the display to enter the letters, numbers, or symbols of the desired label. Use the "#" character to designate the position where the Contest Number will appear.
7. When the message is complete, add the "}" character at the end to signify the termination of the message.
   Example: CQ CQ CQ DE W6DXC K}

> Use the FH-2 [◀] and [▶] keys to set the cursor position and use the FH-2 [▲] and [▼] keys to choose the letter/number to be programmed into each slot of the memory.

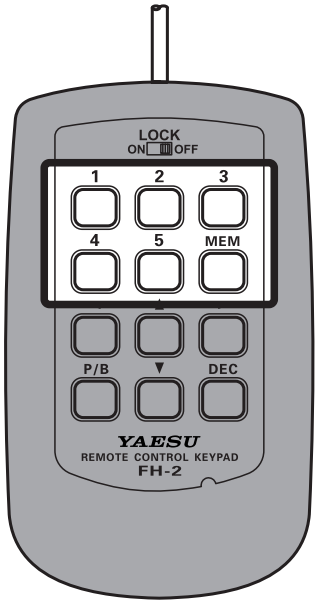
8. When the text entry is completed, touch [ENT].



9. When all the characters (including "}") have been programmed, touch [BACK] to exit.

• Checking the CW Memory Contents

1. Set the operating mode to CW.
2. Touch [BK-IN] to turn it “OFF”.
3. Touch [MONI LEVEL] and then turn the [FUNC] knob to adjust the volume of the monitor.
   When using the optional FH-2, go to step 6.
4. Press the [FUNC] knob.
5. Touch [MESSAGE].
   The “MESSAGE MEMORY” screen will be displayed.
6. Touch [1] - [5] on the display or press the FH-2 [1] - [5] key, whichever memory that was recorded in. The message will be played, and heard in the sidetone monitor, but no RF energy will be transmitted.
   ● “MSG” will appear in the display.



• On-The-Air CW Message Playback

1. Set the operating mode to CW.
2. Touch [BK-IN] to turn it “ON”.
   When using FH-2, go to step 5.
3. Press the [FUNC] knob.
4. Touch [MESSAGE].
   The “MESSAGE MEMORY” screen will be displayed.
5. Touch [1] - [5] on the display or press the FH-2 [1] - [5] key, depending on the CW Memory Register message to be transmitted. The programmed message will be transmitted on the air.
   ● During transmit, press the same key again, to immediately cancel the transmission.

Transmitting in the Beacon Mode

In “Beacon” mode, any programmed message, (either via Paddle, or via “Text” input method) may be repeatedly transmitted. The time delay between message repeats may be set from 1 to 60 seconds, in one second steps, via Menu item “REPEAT INTERVAL”.

To transmit the message:

1. Touch and hold [1] - [5] on the display or press and hold the FH-2 [1] - [5] key. Repetitive transmission of the Beacon message will begin.
2. Press the same key again to cancel the Beacon Mode.

Contest Number

If “#” is entered in the CW message, the contest number will automatically increment (count up) each time the message is sent. See below to set the contest number.

Contest Number Programming

1. Press the [FUNC] knob.
2. Select [CW SETTING] → [KEYER] → [CONTEST NUMBER].
3. Rotate the [FUNC] knob, or touch “<” or “>” on either side of the value to set the Contest Number to the desired value.
4. Press the [FUNC] knob to save the new setting.
5. Touch [BACK] several times to return to normal operation.

Decrementing the Contest Number

Use this process if the current contest number gets ahead of the actual number. For example: in case of a duplicate QSO,).

Press the FH-2 [DEC] key momentarily. The current Contest Number will be reduced by one. Press of the FH-2 [DEC] key as many times as necessary to reach the desired number. If you go too far, use the “Contest Number Programming” technique described above.

Repeater Operation

The FT-710 may be operated on 29 MHz and 50 MHz repeaters.

1. Set the operating mode to FM.
2. Set to the desired repeater output frequency (downlink from the repeater).
3. Press the [FUNC] knob.
4. Select [RADIO SETTING] → [MODE FM] → [RPT SHIFT].
5. Rotate the [FUNC] knob, or touch "<" or ">" on either side of the value to select the desired repeater shift direction. The selections are:

   "SIMP" → "+" → "–" → "SIMP"

   - To program the proper repeater shift, use Menu items "RPT SHIFT(28MHz)" and "RPT SHIFT(50MHz)", as appropriate.
6. Rotate the [FUNC] knob to select [TONE FREQ].
7. Rotate the [FUNC] knob, or touch "<" or ">" on either side of the value to select the desired CTCSS Tone to be used. A total of 50 standard CTCSS tones are provided (see the CTCSS Tone Chart).
8. Rotate the [FUNC] knob to select [ENC/DEC].
9. Rotate the [FUNC] knob, or touch "<" or ">" on either side of the value to select "ENC".
10. Touch [BACK] several times to return to normal operation.

Press and hold the microphone PTT switch to begin transmitting.

Tone Squelch Operation

The "Tone Squelch" may be activated to keep the receiver silent until an incoming signal modulated with a matching CTCSS tone is received. The receiver squelch will then open in response to reception of the required tone.

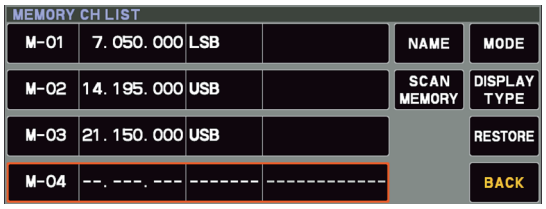
1. Set the operating mode to FM.
2. Set the transceiver to the desired frequency.
3. Press the [FUNC] knob.
4. Select [RADIO SETTING] → [MODE FM] → [ENC/DEC].
5. Rotate the [FUNC] knob, or touch "<" or ">" on either side of the value to select "TSQ".
6. Rotate the [FUNC] knob to select [TONE FREQ] .
7. Rotate the [FUNC] knob, or touch "<" or ">" on either side of the value to select the desired CTCSS Tone to be used. A total of 50 standard CTCSS tones are provided (see the CTCSS Tone Chart).
8. Touch [BACK] several times to return to normal operation.

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	254.1	-	-	-	-	-	-	-	-	-	-

Memory Operation

• Memory Storage

1. Set the frequency, mode, and status, as desired.
2. Press and hold the [V/M (W)] key.
   The memory channel list will be displayed.
3. From the channel list, touch and select the desired memory channel
   Alternately, the memory channel may be selected by rotating the [FUNC] knob.



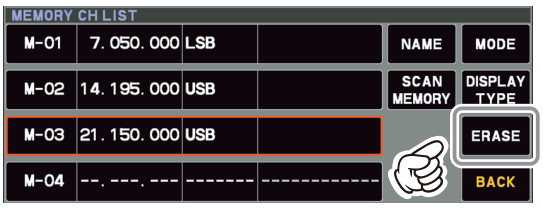
4. Press and hold the [V/M (W)] key to store the frequency and other data into the selected memory channel.
   ● This method may also be used to overwrite the contents previously stored to a memory channel.
5. Touch [BACK], the memory is stored and the screen returns to normal.

> The information saved in the memory may be lost due to incorrect operation, static electricity or electrical noise. Data may also be lost due to component failures and repairs. Make sure to write down the information registered in the memories on a piece of paper or by using a SD card.

• Erasing Memory Channel Data

The contents written to the memory channel may be erased.

1. Press and hold the [V/M (W)] key.
   The memory channel list will be displayed.
2. From the channel list, touch and select the memory channel to be erased.
   Alternately, the memory channel may be selected by rotating the [FUNC] knob.
3. Touch [ERASE] to clear the contents of the selected memory channel.



4. Touch [BACK] to erase the contents of the selected memory channel.

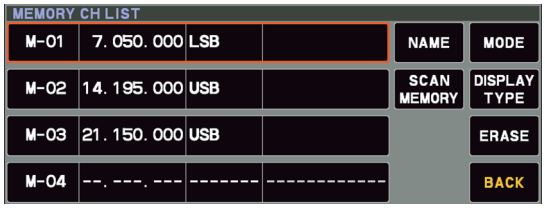
> If you make a mistake and wish to restore a memories contents, touch [RESTORE].

> Memory channels “M-01” (and “5-01” through “5-10”: U.S. version, “5-01” through “5-07”: U.K. version) cannot be erased.

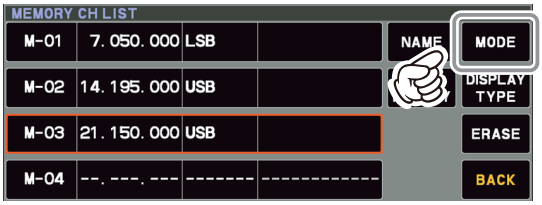
• Check Memory Channel Status

Before programming a memory channel, the current contents of that channel may be verified without the danger of over-writing the channel.

1. Press and hold the [V/M (W)] key.
   The memory channel list will be displayed.



2. From the channel list, touch and select the memory channel and check, or change the operation mode.
   Alternately, the memory channel may be selected by rotating the [FUNC] knob.
   ● Press the [FUNC] knob to enter memory mode on the selected channel.
3. To change the operation mode, touch [MODE], rotate the [FUNC] knob to select the mode then press the [FUNC] knob.



4. Touch [BACK] to return to the previous screen.

• Memory Tune Operation

You may freely tune off from 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.

● The “***MT***” notation will appear instead of the “M-nn”.

Press the [V/M (W)] key to return to the originally memorized frequency of the current memory channel.

• Moving Memory Data to the VFO register

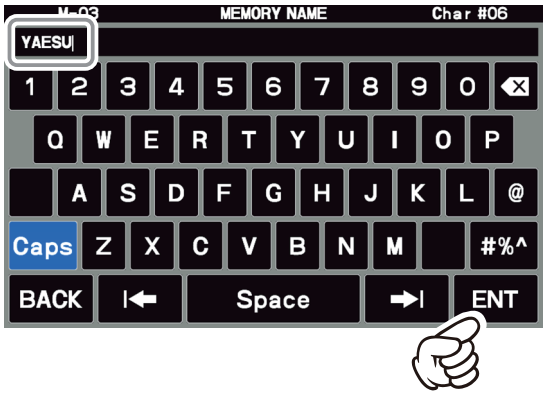
The contents of the currently selected Memory Channel may be transferred into the VFO register:

1. Press the [V/M (W)] key While operating in either VFO mode, or memory channel mode, to transfer memory channel data to the VFO.
   The memory channel list will be displayed.
2. From the channel list, touch the memory channel to select it and transfer it to the VFO.
   Alternately, the memory channel may be selected by rotating the [FUNC] knob.
3. Press and hold the [V/M (W)] key.
   The data in the selected memory channel will now be transferred to VFO.

• Labeling Memories

Alphanumeric labels (“Tags”) may be appended to memory channels, to aid in recollection of the channel’s use (such as a club name, a location etc.).

1. Press and hold the [V/M (W)] key.
   The memory channel list is displayed.
2. From the channel list, touch and select the desired memory channel.
   Alternately, the memory channel may be selected by rotating the [FUNC] knob.
3. Touch [NAME] area on the screen.
   The character input screen will be displayed.
4. Touch a character key on the display to enter the letters, numbers, or symbols of the desired label.
   Up to 12 characters may be used in the creation of a label.

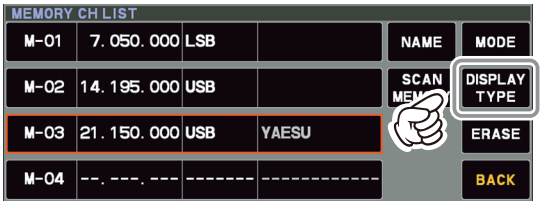


5. Touch [ENT] .
   To add a label to another memory, repeat steps 2 to 5 above.
6. Touch [BACK] to save the new settings and return to normal operation.

• Displaying the Memory Tag

The “Frequency display” or “Alpha tag display” format may be selected.

1. Press and hold the [V/M (W)] key.
   The memory channel list will be displayed.
2. From the channel list, touch and select the desired memory channel.
   Alternately, the memory channel may be selected by rotating the [FUNC] knob.
3. Touch [DISPLAY TYPE] area.



4. Rotate the [FUNC] knob to select the desired display type.

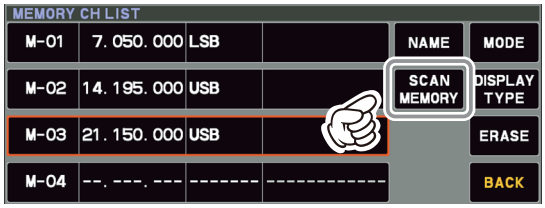
FREQ	Frequency
NAME	Memory Tag

5. Touch [BACK] to save the new setting and return to normal operation.

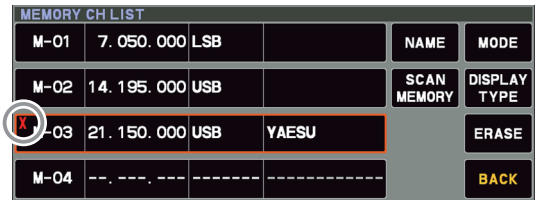
• Scan Skip Setting

The “Frequency display” or “Name display” format may be selected.

1. Press and hold the [V/M (W)] key.
   The memory channel list will be displayed.
2. From the channel list, touch and select the Memory Channel to be skipped during scanning.
   Alternately, the memory channel may be selected by rotating the [FUNC] knob.
3. Touch [SCAN MEMORY] area.



4. Rotate the [FUNC] knob to select “SKIP”, then press the [FUNC] knob.
   - “X” lights up for channels for which “SKIP” is set.



5. Touch [BACK] to save the new setting and return to normal operation.

> To re-institute a channel into the scanning loop, select “SCAN” in step 4 above.

• 60-Meter (5 MHz) Band (U.S. and U.K. Version only)

Memory channels (U.S. version: “5-01” through “5-10”, U.K. version: “5-01” through “5-07”) are pre-programmed, at the factory, with the permitted frequencies in the 5 MHz band, and the USB or CW-L mode is automatically selected on these channels.

These channels appear after the “last” PMS channel (“M-P9U”).

Channel Number	Frequency	
	U.S. Version	U.K. Version
5-01	5.330.500 MHz (USB)	5.260.000 MHz (USB)
5-02	5.346.500 MHz (USB)	5.280.000 MHz (USB)
5-03	5.357.000 MHz (USB)	5.290.000 MHz (USB)
5-04	5.371.500 MHz (USB)	5.368.000 MHz (USB)
5-05	5.403.500 MHz (USB)	5.373.000 MHz (USB)
5-06	5.332.000 MHz (CW-L)	5.400.000 MHz (USB)
5-07	5.348.000 MHz (CW-L)	5.405.000 MHz (USB)
5-08	5.358.500 MHz (CW-L)	-
5-09	5.373.000 MHz (CW-L)	-
5-10	5.405.000 MHz (CW-L)	-

VFO and Memory Scanning

Either the VFO or the memory channels of the FT-710 may be scanned, and the receiver will halt scanning on any frequency with a signal strong enough to open the receiver squelch.
In the SSB/CW and SSB-based Data modes, the decimal points in the frequency display area will blink and the scanner will slow down (but does not stop).

VFO/Memory Scan

1. Set the frequency or Memory channel at which scanning is to begin.
2. Rotate the [RF GAIN/SQL] knob so that the background noise is just silenced.
3. Pressing and holding the UP or DWN key on the microphone will start the scanning.
   - If the scanner halts on an incoming signal, the decimal point between the “MHz” and “kHz” digits of the frequency display will blink.
   - The operation when a signal is received during scanning varies depending on the mode type.

Other than SSB, CW	Scanning will pause.
SSB, CW	Scanning speed will be slower, but scanning will not be paused.

   - If the scan has paused on a signal, pressing the microphone UP or DWN button will cause scanning to resume instantly.
   - If the Main Tuning Dial knob is rotated while scanning is in progress, the VFO scanning or memory channel scanning will continue up or down in accordance with the direction of the Dial Knob rotation. (In other words, if the dial is rotated to the left when scanning toward a higher frequency or memory channel number, the direction of the scan will reverse.)

To cancel scanning, press the PTT switch, or press any key on the front panel of the transceiver.

If the microphone PTT button is pressed during scanning, the scanner will halt at once. However, pressing the PTT button while scanning will not cause transmission.

- If you have no interest in scanning, and wish to prohibit the microphone UP/DWN buttons from initiating scanning, you may disable scanning control from the microphone using Menu item [OPERATION SETTING] → [GENERAL] → [MIC SCAN].
- During Memory Group operation, only the channels within the current Memory Group will be scanned.
- The manner in which the scanner resumes after it has paused on a signal may be selected by using Menu item [OPERATION SETTING] → [GENERAL] → [MIC SCAN RESUME].

  The default “TIME” (5 sec) setting will cause the scanner to resume scanning after five seconds; however the scan setting may be changed to resume only after the received signal has dropped out.

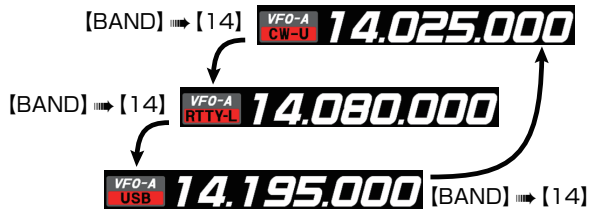
Band Stack Operation

The FT-710 employs a triple band-stack VFO selection technique that permits storing up to three favorite frequencies and modes onto each band VFO register.

A typical setup, for the 14 MHz band, might be arranged like this:

1. Program 14.0250 MHz, CW-U Mode, then press the [BAND] key then touch [14].
2. Program 14.0800 MHz, RTTY-L Mode, then press the [BAND] key then touch [14].
3. Program 14.1950 MHz, USB Mode, then press the [BAND] key then touch [14].

With this configuration, successive momentary presses of the [BAND] key and then touching [14] will step sequentially through the three Band Stack VFOs.



TOT (Time Out Timer)

The “Time-Out Timer” (TOT) shuts the transmitter OFF after continuously transmitting for the programmed time.

1. Press the [FUNC] knob.
2. Select [OPERATION SETTING] → [GENERAL] → [TX TIME OUT TIMER].
3. Rotate the [FUNC] knob, or touch “<” or “>” on either side of the value to select the TOT countdown time (1 -30 min or OFF).
4. Press the [FUNC] knob to save the new setting.
5. Touch [BACK] several times to return to normal operation.

The beep sounds at about 10 seconds before returning to receive mode automatically.

Screen capture

The display on the TFT screen may be saved on the SD card.

When performing screen capture, a commercially available SD card is necessary.

1. Insert the SD card into the SD card slot.
2. Display the screen that is to be saved.
3. Hold down the [MODE] key until “SCREEN SHOT” appears on the screen.
   Screen data is saved to the SD card.

Data saved on the SD card can be displayed on a personal computer or similar viewer.

Using the SD Card

The following operations can be completed with the use of an SD card in the transceiver:

- Record/Play of received audio
- Voice memory (voice recording for transmission)
- Saving the Memory Channel information
- Saving the Set-up Mode settings
- Transceiver firmware update
- Save a screen capture of the TFT display

• SD Cards that can be used

YAESU has tested with the 2GB SD card, and 4GB, 8GB, 16GB and 32GB SDHC cards, most can be used in this radio.
Please format (initialize) the SD card used for the first time on this unit with this transceiver.

- The SD or SDHC cards are not provided with the product.
- Not all SD and SDHC cards sold commercially are guaranteed to work with this product.

- Do not touch the contacts of the SD card with your hands.
- SD cards formatted on other devices may not properly save information when used with this transceiver. Format SD cards again with this transceiver when using memory cards formatted with another device.
- Do not remove the SD card or turn the transceiver OFF, while saving data to the SD card is in progress.
- When a single SD card is used for a long period of time, writing and deletion of data may become disabled. Use a new SD card when data can no longer be written or erased.
- Note that Yaesu shall not be liable for any damages suffered as a result of data loss or corruption in use of the SD card.

• Installing the SD card

1. Turn OFF the transceiver.
   Insert the SD card into the SD card slot, with the contact face on the bottom, until a click sound is heard.

• Removing the SD card

1. Turn OFF the transceiver.
2. Push in on the SD card.
   A click sound will be heard and the SD card will be pushed outward.

• Formatting a SD card

When using a new SD card, format it according to the following procedure.

Formatting a microSD card erases all data saved on it. Before formatting the microSD card, be sure to check the data previously saved on it.

1. Press the [FUNC] knob.
2. Select [EXTENSION SETTING] → [SD CARD] .
3. Touch “DONE” on the “FORMAT” item.
   The format confirmation screen will be displayed.
4. Touch “OK”, the SD card will be initialized.
   Touch “CANCEL” to cancel the initialization.
5. “FORMAT COMPLETED” will be displayed when initialization is completed.
6. Touch the screen to end formatting.
7. Touch [BACK] several times to return to normal operation.

Adjusting the Date and Clock

If the time stamp of the saved file is not correct, adjust the date and time by the following operation.

Adjusting the Date

1. Press the [FUNC] knob.
2. Select [EXTENSION SETTING] → [DATE&TIME].
3. Select the item “DAY”, “MONTH” or “YEAR”.
4. Rotate the [FUNC] knob, or touch “<” or “>” on either side of the value to select the “day", “month” and “year", then press the [FUNC] knob.
5. Press the [FUNC] knob to save the new setting.
6. Touch [BACK] several times to return to normal operation.

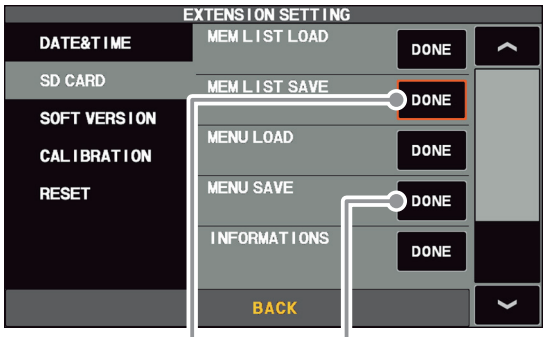
Adjusting the Clock

1. Press the [FUNC] knob.
2. Select [EXTENSION SETTING] → [DATE&TIME].
3. Select the item “HOUR” or “MINUTE”.
4. Rotate the [FUNC] knob, or touch “<” or “>” on either side of the value to select the “hour” and “minute”, then press the [FUNC] knob.
5. Press the [FUNC] knob to save the new setting.
6. Touch [BACK] several times to return to normal operation.

• Saving Memory data and Setting Menu data

The Memory Channel data, and the Setting Menu data can be saved to the SD Card:

1. Press the [FUNC] knob.
2. Select [EXTENSION SETTING]→[SD CARD].
3. Touch “DONE” for the data item to be saved.



Saving memory data

Save setting menu data

4. To save the file with a new name, touch “NEW”.

> To overwrite previously saved data, touch the file name, and touch “OK” when the overwrite confirmation screen appears.
> Touch “CANCEL” to cancel overwrite save.

When saving with a new file name

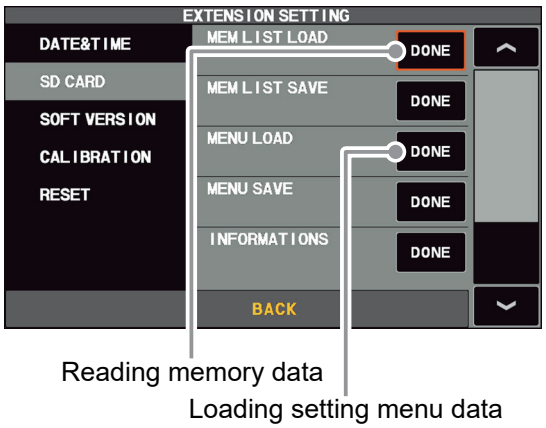
5. Enter the file name (maximum 15 characters) on the file name input screen.
   If the file name is not to be changed, proceed to step 6 as it is.

6. Touch “ENT” to start saving data, or touch “BACK” to cancel the name input.
7. “FILE SAVED” is displayed when data saving is completed.
8. Touch the screen to end saving data.
9. Touch [BACK] several times to return to normal operation.

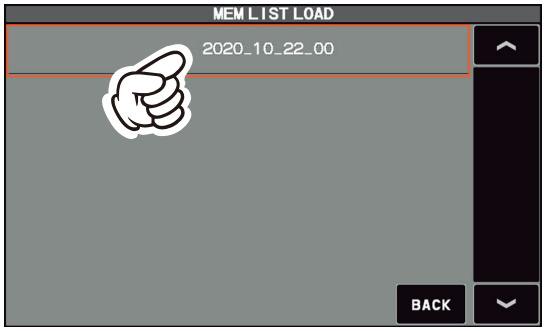
• Reading Memory and Set Menu data

The Memory and Setting Menu data saved on the SD card may be read to the Transceiver.

1. Press the [FUNC] knob.
2. Select [EXTENSION SETTING] → [SD CARD].
3. Touch “DONE” of the data item to be read.



4. Touch the file name to be loaded.
   Touch “BACK” to cancel reading data.



5. When the overwrite confirmation screen appears, touch “OK”.
6. “FILE LOADED” is displayed when the data reading is completed.
7. Touch the TFT screen to finish loading the data.
8. Once the power is turned OFF, the power is turned ON automatically afterwards.

> With some OEM SD cards, the screen may not be displayed, even when the power is turned ON. If the screen does not appear, remove the SD card and the screen will appear.

With this, the Reading of data is completed.

• Display the SD Card Information

The memory free space of the SD card may be checked:

1. Press the [FUNC] knob.
2. Select [EXTENSION SETTING] → [SD CARD].
3. Touch “DONE” of the “INFORMATIONS” item. The capacity and free space of the SD card are displayed.

4. Touch “BACK” to return to the Setting Menu screen.
5. Touch [BACK] several times to return to normal operation.