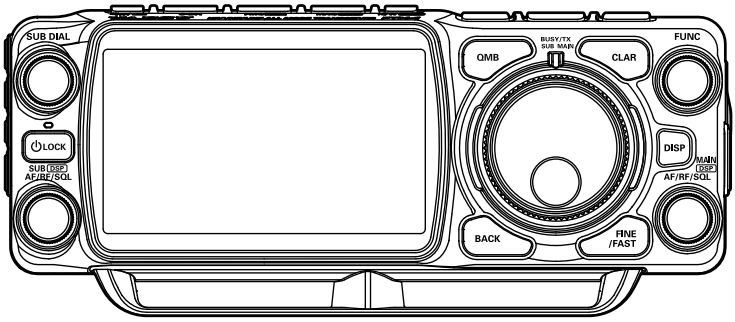
YAESU

Radio for Professionals

HF/50/144/430MHz ALL MODE TRANSCEIVER

FTX-1series

Operation Manual



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General Description

The FTX-1 can be used in a variety of ways, from field operation using batteries to mobile operation.

FTX-1 Field

The included high-capacity lithium-ion battery “SBR-52LI” can be mounted on the back, allowing for long-term field operation of approximately 9 hours on the HF band in SSB with transmission output of 6W (5W in QRP mode).
When connected to an external power source (DC 13.8V), operating with a transmission output of 10W is possible.
The battery and antenna tuner “FC-80” (optional) can be installed at the same time, so antenna tuning can be performed even in field operation.
When performing continuous transmission such as data communication using an external power source, the cooling fan “SCF-1” (optional) can be attached to efficiently cool the heat generated by the radio.

FTX-1 optima

High power output of 100W*[1] allows for full-scale fixed station operation.
The panel can be removed from the main unit and attached to a commercially available stand, etc., to operate at your preferred angle.
*1: 50W for 144MHz and 430MHz bands

Full coverage of HF to UHF bands in all modes

Full coverage of amateur radio bands from 1.8 to 430MHz in all modes (SSB/CW/AM/FM/C4FM digital). General coverage reception from 30kHz to 174MHz and 400 to 470MHz is possible.

Supports simultaneous reception of two bands* and simultaneous C4FM/C4FM digital playback

Supports simultaneous reception of two bands*. It can be used in a variety of ways, such as enjoying DX in SSB mode on HF while monitoring local club stations in C4FM digital on V/U.
* Simultaneous reception of HF/HF is not supported.

High-brightness TFT full-color display with touch-panel functionality

The FTX-1 is equipped with a 4.3-inch full-color TFT display. Operating functions, including the receiving band noise and signal interference reduction tools, are graphically displayed. Even while involved in rigorous operations, such as DXpeditions and contests, the operator may instantly grasp the status of each function.

Filter Function Display monitors the status of the passband

In the display, a filter function display presents the state of the pass-band. In addition to the operating state of the interference removal functions, the filter function information is displayed. Not only can you grasp the operating status of WIDTH, SHIFT, NOTCH and CONTOUR at a glance, you can also view the status of the RF spectrum in the passband.

3DSS method adopted

In addition to the conventional waterfall display, a 3DSS (3 Dimensions Spectrum Stream) image method has been adopted. The 3DSS image uses the horizontal axis (X axis) for frequency, the vertical axis (Y axis) for signal intensity, and the Z axis for time. Compared to the conventional waterfall method, the signal strength is displayed in three dimensions as well as in color, recognition of changes in the band conditions is instant, convenient and intuitive.

Two selectable RF Stages amplify the desired signals from low band to high band

RF amplifier AMP1, and AMP2 are low noise negative feedback RF amplifiers that may be selected or combined in series as is needed for various low-band, high-band, frequency and noise conditions. In addition, the IPO (Intercept Point Optimization) function maximizes the dynamic range and enhances the close multi-signal and inter-modulation characteristics of the receiver. The influence of strong broadcasting stations, especially in the low bands, can be minimized.

Monitor 5 channels in the VHF/UHF band and operate efficiently using PMG (Primary Memory Group)

The PMG function scans up to 5 channels registered to the PMG. The receive status of each channel is simultaneously displayed in real time with a bar graph.
* Frequencies between 108MHz and 470MHz can be registered.

Super-DX

The Super DX function increases the sensitivity of the RF amplifier when the received signal is weak, expanding the calling range.

MAG (Memory Channel Band Auto Grouping)

The memory channels are automatically categorized in each band, so that memory channels can be easily and quickly recalled.

High quality sound and loud volume from 2-way front speakers

Equipped with two speakers of different diameters, the sound is emitted from the opening at the bottom of the front panel, reproducing high quality sound at a volume sufficient for field operation.
The FTX-1 optima has a large 66mm, 2.5W high quality speaker on top of the rear case, ensuring sufficient volume for fixed station operation.

QRP mode allows you to set the maximum transmission output to 5W

Equipped with a QRP mode that allows you to set the maximum transmission output to “5W” on all bands. This is useful for QRP contests.

About TFT Displays

FTX-1 series 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.

Safety Precautions

Be sure to read these important precautions, and use this product safely.

Yaesu is not liable for any failures or problems caused by the use or misuse of this product by the purchaser or any third party. Also, Yaesu is not liable for damages caused through the use of this product by the purchaser or any third party, except in cases where ordered to pay damages under the laws.

Types and meanings of the marks

DANGER	This mark indicates an imminently hazardous situation, which, if not avoided, could result in death or serious injury.
WARNING	This mark indicates a potentially hazardous situation, which, if not avoided, could result in death or serious injury.
CAUTION	This mark indicates a potentially hazardous situation, which, if not avoided, may result in minor or moderate injury or only property damage.

Types and meanings of symbols

These symbols signify prohibited actions, which must not be done to use this product safely. For example: indicates that the product should not be disassembled.

These symbols signify required actions, which must be done to use this product safely. For example,: indicates that the power plug should be disconnected.

DANGER

Do not use the device in "regions or aircrafts and vehicles where its use is prohibited" such as in hospitals and airplanes.
This may exert an impact on electronic and medical devices.

Do not use this product while driving or riding a motorbike. This may result in accidents.
Make sure to stop the car in a safe location first before use if the device is going to be used by the driver.

Do not operate the device when flammable gas is generated.
Doing so may result in fire and explosion.

Never touch the antenna during transmission.
This may result in injury, electric shock and equipment failure.

Do not transmit in crowded places in consideration of people who are fitted with medical devices such as heart pacemakers.
Electromagnetic waves from the device may affect the medical device, resulting in accidents caused by malfunctions.

When an alarm goes off with the external antenna connected, cut off the power supply to this radio immediately and disconnect the external antenna from this radio.
If not, this may result in fire, electric shock and equipment failure.

Do not touch any liquid leaking from the liquid display with your bare hands.
There is a risk of chemical burns occurring when the liquid comes into contact with the skin or gets into the eyes. In this case, seek medical treatment immediately.

WARNING

Do not use voltages other than the specified power supply voltage.
Doing so may result in fire and electric shock.

Do not transmit continuously for long periods of time.
This may cause the temperature of the main body to rise and result in burns and failures due to overheating.

Do not dismantle or modify the device.
This may result in injury, electric shock and equipment failure.

Do not handle the power plug and connector etc. with wet hands. Also do not plug and unplug the power plug with wet hands.
This may result in injury, liquid leak, electric shock and equipment failure.

When smoke or strange odors are emitted from the radio, turn off the power and disconnect the power cord from the socket.
This may result in fire, liquid leak, overheating, damage, ignition and equipment failure. Please contact our company amateur customer support or the retail store where you purchased the device.

Keep the power plug pins and the surrounding areas clean at all times.
This may result in fire, liquid leak, overheating, breakage, ignition etc.

Disconnect the power cord and connection cables before incorporating items sold separately and replacing the fuse.
This may result in fire, electric shock and equipment failure.

Never cut off the fuse holder of the DC power cord.
This may cause short-circuiting and result in ignition and fire.

Do not allow metallic objects such as wires and water to get inside the product.
This may result in fire, electric shock and equipment failure.

Do not place the device in areas that may get wet easily (e.g. near a humidifier).
This may result in fire, electric shock and equipment failure.

When connecting a DC power cord, pay due care not to mix up the positive and negative polarities.
This may result in fire, electric shock and equipment failure.

Do not use DC power cords other than the one enclosed or specified.
This may result in fire, electric shock and equipment failure.

Do not bend, twist, pull, heat and modify the power cord and connection cables in an unreasonable manner.
This may cut or damage the cables and result in fire, electric shock and equipment failure.

Do not pull the cable when plugging and unplugging the power cord and connection cables.
Please hold the plug or connector when unplugging. If not, this may result in fire, electric shock and equipment failure.

Refrain from using headphones and earphones at a loud volume.
Continuous exposure to loud volumes may result in hearing impairment.

Do not use the device when the power cord and connection cables are damaged, and when the DC power connector cannot be plugged in tightly.
Please contact our company amateur customer support or the retail store where you purchased the device as this may result in fire, electric shock and equipment failure.

Follow the instructions given when installing items sold separately and replacing the fuse.
This may result in fire, electric shock and equipment failure.

Do not use the device when the alarm goes off.
For safety reasons, please pull the power plug of the DC power equipment connected to the product out of the AC socket.
Never touch the antenna as well. This may result in fire, electric shock and equipment failure due to thunder.

⚠ CAUTION

Do not place this device near a heating instrument or in a location exposed to direct sunlight.
This may result in deformation and discoloration.

Do not place this device in a location where there is a lot of dust and humidity.
Doing so may result in fire and equipment failure.

Stay as far away from the antenna as possible during transmission.
Long-term exposure to electromagnetic radiation may have a negative effect on the human body.

Do not wipe the case using thinner and benzene etc.
Please use a soft and dry piece of cloth to wipe away the stains on the case.

Keep out of the reach of small children.
If not, this may result in injuries to children.

Do not put heavy objects on top of the power cord and connection cables.
This may damage the power cord and connection cables, resulting in fire and electric shock.

Do not transmit near the television and radio.
This may result in electromagnetic interference.

Do not use optional products other than those specified by our company.
If not, this may result in equipment failure.

When using the device in a hybrid car or fuel-saving car, make sure to check with the car manufacturer before using.
The device may not be able to receive transmissions normally due to the influence of noises from the electrical devices (inverters etc.) fitted in the car.

For safety reasons, switch off the power and pull out the DC power cord connected to the DC power connector when the device is not going to be used for a long period of time.
If not, this may result in fire and overheating.

Do not throw or subject the device to strong impact forces.
This may result in equipment failure.

Do not the put this device near magnetic cards and video tapes.
The data in the cash card and video tape etc. may be erased.

Do not turn on the volume too high when using a headphone or earphone.
This may result in hearing impairment.

Do not place the device on an unsteady or sloping surface, or in a location where there is a lot of vibration.
The device may fall over or drop, resulting in fire, injury and equipment failure.

Do not stand on top of the product, and do not place heavy objects on top or insert objects inside it.
If not, this may result in equipment failure.

Do not use a microphone other than those specified when connecting a microphone to the device.
If not, this may result in equipment failure.

Do not touch the heat radiating parts.
When used for a long period of time, the temperature of the heat radiating parts will get higher, resulting in burns when touched.

Do not open the case of the product except when replacing the fuse and when installing items sold separately.
This may result in injury, electric shock and equipment failure.

Accessories & Options

Supplied Accessories

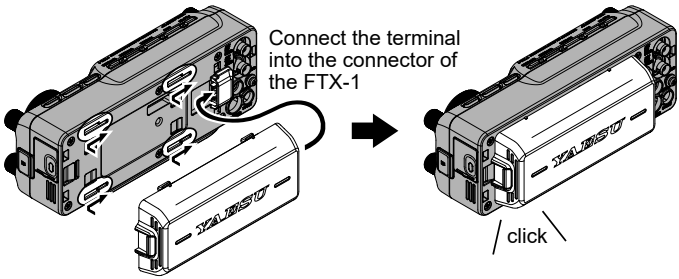
Hand Microphone SSM-75E
DC Power Cord
Spare Fuse (25A)
Rechargeable Li-Ion Battery Pack SBR-52LI (10.8V, 6400mAh)
Rubber Cap (for DC 13.8V terminal)
Rubber Cap (for EXT SPKR, TUNER/LINEAR terminal)
Plate
Operation Manual
World Map
Sticker

Available options

- Hand Microphone (equivalent to the supplied microphone) SSM-75E
- Reference Microphone M-1
- Dual Element Microphone M-100
- Desktop Microphone M-90D
- Microphone Stand Kit M-90MSkit
- Desktop Microphone M-70D
- Lightweight Stereo Headphone YH-77STA
- 100W (144/430MHz: 50W) RF Power Amplifier (supplied with FTX-1 optima) SPA-1
- Rechargeable Li-Ion Battery Pack (equivalent to the supplied Battery) SBR-52LI
- HF/50MHz 10W Automatic Antenna Tuner (supplied with spacer) FC-80
- HF/50MHz 10W Long wire/50Ω compatible Automatic Antenna Tuner FC-90
- Long wire compatible External Auto Antenna Tuner FC-40
- Active Tuning Antenna (Automatic Type) ATAS-120A
- Antenna Base Kit (for ATAS-120A) ATBK-100
- Active Tuning Antenna (Manual Type) ATAS-25
- Cooling Fan SCF-1
- GPS Antenna Unit FGPS-5
- Bluetooth Unit BU-6
- Bluetooth Headset SSM-BT20
- Protection Guard SPG-1
- Side Carry Handle (for SPA-1 only) MHG-1

Installation and Interconnections

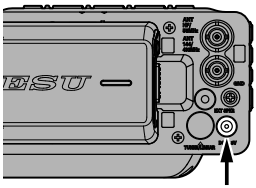
Installing the Battery Pack

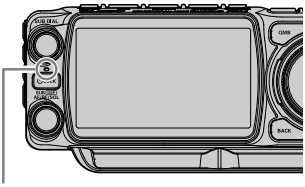


Charging the Battery Pack

The SBR-52LI can be charged in one of the following ways:

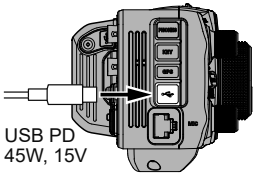
Charges when attached to the FTX-1



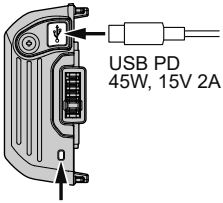


Red: Charging
Green: Charge Complete
Blinks Red and Green: Charge Error

The LED glows blue when the transceiver power is on, whether the transceiver is still charging or fully charged.



Charging the SBR-52LI by itself



Red: Charging
Red (blinks): Charge Error
None: Charge Complete

- Do not attach the SBR-52LI to the FTX-1 while charging via USB PD. Doing so may damage the battery.
- If the external power supply voltage is below 13.8V, the battery may not be fully charged.
- To charge via the USB Type-C terminal, a commercially available USB PD (Power Delivery) charger (output 45W or more, DC15V 2A output compatible) and a Type-C cable compatible with PD are required.
- It takes approximately 7 hours to fully charge the SBR-52LI battery pack when the transceiver is turned OFF. If the transceiver is turned ON, the charging time will be longer.
- Depending on the battery status, the charging time might be increased.
- 9-hour stand-alone operating time with 6W on HF bands (SSB), and 8-hour operating time with 6W on V/UHF bands (FM) are available (6-6-48 duty cycle).

Relationship between connected power source, charging, and transmission/reception

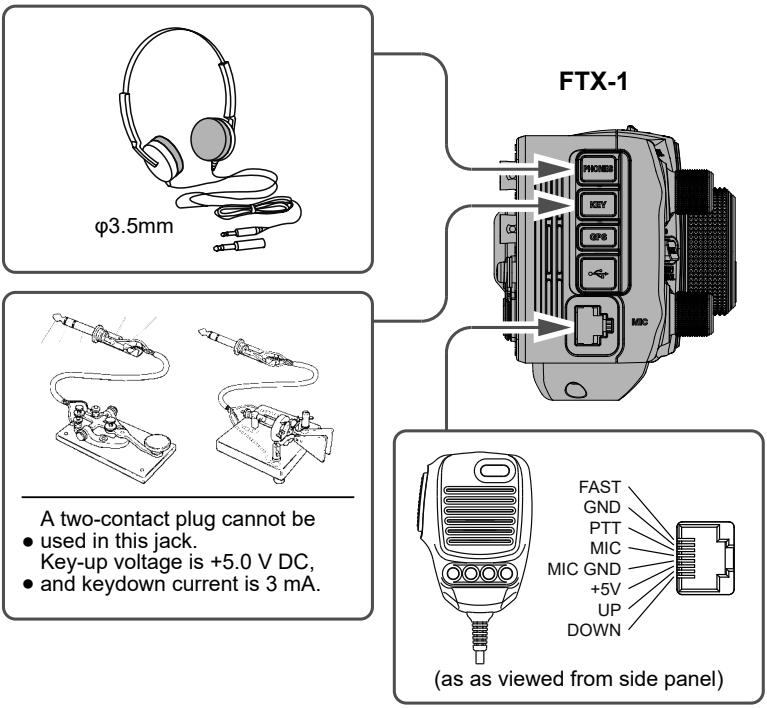
When connected to USB PD

	Receive	Transmit	Charge to SBR-52LI
When SBR-52LI is installed	Yes	Yes	Stops when sending
When SBR-52LI is not installed	Yes	No	---

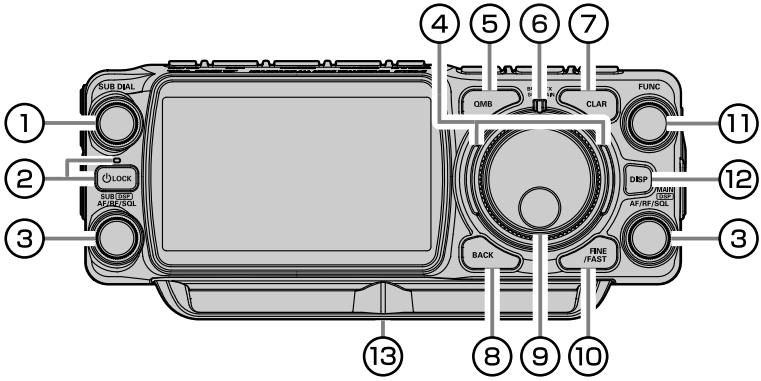
When connected to USB PD and external power DC 13.8V or external power DC 13.8V only

	Receive	Transmit	Charge to SBR-52LI
When SBR-52LI is installed	Yes	Yes	Stop when sending
When SBR-52LI is not installed	Yes	Yes	---

Microphone, Headphone, Key and Keyer Connections



Field Head Controls & Switches



① SUB DIAL

Tune the frequency of the SUB-side.
Each press key swaps the MAIN-side and SUB-side.

② ON/OFF (LOCK) Switch

Press and hold this switch for one second to turn the transceiver ON or OFF.
When the power is ON, press this switch briefly to engage, or release the DIAL or SUB DIAL lock.

- The LED glows blue when the transceiver power is ON, whether the transceiver is still charging or fully charged.
- When the transceiver is powered OFF, the LED glows red while charging, turns green when charging is complete, and blinks red and green in case of a charging error.

③ AF/RF/SQL - MAIN DSP / SUB DSP

AF (default setting)

Rotate the Knob to adjust the audio volume level.

MAIN-side: AF/RF/SQL - MAIN DSP knob
SUB-side: AF/RF/SQL - SUB DSP knob

Press

The operation changes depending on the operating mode (see table below).

AM / AM-N / FM / FM-N C4FM / D-FM / D-FM-N VW	Functions as the Squelch level adjustment knob.
LSB / USB / CW-L / CW-U DATA-L / DATA-U / RTTY-L RTTY-U / PSK	Functions as the RF gain adjustment knob.

RF

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.
[AF/RF/SQL] knob is normally in the fully clockwise position.

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.
Rotate the [AF/RF/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 [AF/RF/SQL] knob

1. Press and hold the [FUNC] knob.
2. Select [OPERATION SETTING]→[GENERAL] → [RF/SQL VR].
3. Select “RF”, “SQL” or “AUTO”.

RF	Functions as the RF gain adjustment knob.
SQL	Functions as the Squelch level adjustment knob.
AUTO	Functions as the squelch level adjustment knob in FM, FM-N, DATA-FM and D-FMN modes, and as the RF gain adjustment knob in other modes.

4. Press the [FUNC] knob, or wait for about 3 seconds to save the setting.
5. Touch [BACK] several times to return to normal operation.

④ VFO mode indicator

Shows the current operating status of the VFO at a glance. The indicator lights up in the following colors according to the operating status (factory default settings).

Blue: Operation on VFO mode
Green: Operation on Memory mode
Red: Clarifier Operation

The lighting colors can be changed by the following operations:

1. Press and hold the [FUNC] knob.
2. Select [DISPLAY SETTING] → [VFO IND COLOR].
3. Select the item whose color you want to change.
4. Rotate the [FUNC] knob, or touch "<" or ">" on either side of the value to select the Color.
   Select the color of the "✓" mark in the table below for each item.

	Blue	Green	Red	White	None
VFO	✓	✓	–	✓	✓
Memory	✓	✓	–	✓	✓
Clarifier	–	–	✓	–	✓

5. Press the [FUNC] knob, or wait for about 3 seconds to save the setting.
6. Press the [BACK] key several times to return to normal operation.

⑤ QMB

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 mode.
2. Press and hold the [QMB] key. The "beep" will confirm that the VFO 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 (MW)] 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 and hold the [FUNC] knob.
2. Select [OPERATION SETTING] → [BAND/SCAN] → [QMB CH].
3. Select "5ch" or "10ch".
4. Press the [FUNC] knob, or wait for about 3 seconds to save the setting.
5. Press the [BACK] key several times to return to normal operation.

⑥ BUSY/TX indicator

This indicator glows green* (Blue:C4FM) when the squelch opens, and glows red during transmit.

* Glows green only when the [AF/RF/SQL] knob is set to "SQL" or "AUTO".

⑦ CLAR

The clarifier is used to adjust the transceiver receive frequency to match the other station transmit frequency and improve the audio; or to shift the transmit frequency of this station when the transmit frequency of the contact station is shifted.

The display will indicate "CLAR RX" → "CLAR TX" → "CLAR RXTX" in red, each time the [CLAR] key is pressed, and the clarifier will activate.

To adjust the offset frequency of the clarifier, turn the "MAIN DIAL" for the MAIN-side and the "SUBDIAL" for the SUB-side.

To turn the clarifier OFF, repeatedly press the [CLAR] key until the Clarifier status is not displayed.

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

For details, see "CLAR (Clarifier)" on page 40.

⑧ BACK

Press

Press the this key to return to the previous screen.

Press and hold

Press and hold while setting the DSP interference removal function (SHIFT, WIDTH, NOTCH, CONTOUR, APF), and the setting will return to the default value.

⑨ MAIN DIAL

Tune the frequency of the MAIN-side.

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

Operating Mode	1 Step
LSB / USB CW-L / CW-U	20Hz / [1Hz] / (200Hz)
DATA-L / DATA-U RTTY-L / RTTY-U PSK	10Hz / [1Hz] / (100Hz)
AM / AM-N FM / FM-N / C4FM DATA-FM / D-FM-N	100Hz / [10Hz] / (1kHz)

[ ]: FINE tuning
( ): FAST tuning

⑩ 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/SUB DIAL knob.
3. Press the [FINE/FAST] key again to return to the original frequency step.

FAST Tuning (Tuning of 10 times)

The frequency can be adjusted in 10 times steps.

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

⑪ FUNC

Easily change the menu settings.
The last function used is remembered, so once you select a function, you can easily change the settings by simply turning the knob.
For details, see “FUNC knob operation display” on page 22.

⑫ DISP

Press

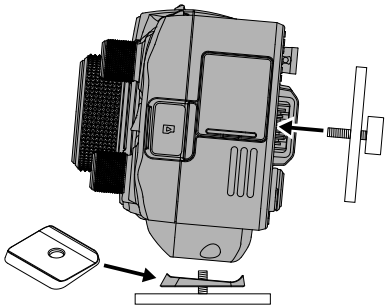
Switches the Operation screen each time the key is pressed.

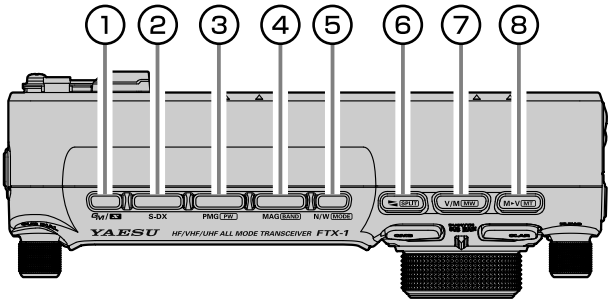
Press and hold

Turns off the display.
The screen will reappear, if you touch the screen or perform any other operation on the FTX-1.

⑬ Screw hole for bracket

The screw hole size is 1/4 inch.
Mounting holes on the back and bottom.
When attaching a stand to the bottom, you can tilt it by about 5 degrees using the supplied plate.





① GM/

Turn the GM (group monitor) function ON/OFF. (For details on the function, refer to the GM Function Instruction Manual which may be downloaded from the Yaesu website.)

② S-DX

Press

Enable the Super DX function to increase sensitivity.

Press and hold

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

③ PMG PW

Press

Displays PMG (Primary Memory Group).

Press and hold

Register the displayed frequency in PMG.

For details, see “PMG (Primary Memory Group)” on page 31.

④ MAG BAND

In VFO mode

Each key press switches the operating frequency band.

Press and hold 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.

In Memory mode

Each time the key is pressed, only memory channels of the same frequency band are automatically recalled as a group.

For details, see “MAG (Memory Channel Band Auto Grouping)” on page 57.

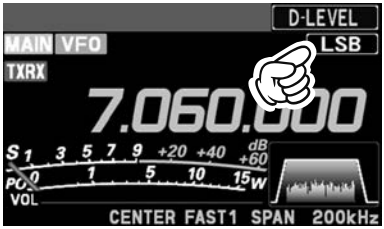
⑤ N/W MODE

Press

To set the DSP (digital) IF filters to Narrow bandwidth.

Press and hold

Switch the operating mode.
The operation mode selection screen appears on the display, so touch the desired mode.



Touch [PRESET] to display the settings that apply to the FT8 operation.

⑥ SPLIT

A powerful capability of the FTX-1 is its flexibility in Split Frequency operation using the MAIN-side and SUB-side frequency registers. This makes the FTX-1 especially useful for high-level DX-peditions.

For details, see “SPLIT” on page 37.

⑦ V/M MW

Press

This key toggles frequency control between VFO and the memory system.

Press and hold

The memory channel list will be displayed.
From the channel list, touch and select the desired memory channel.

For details, see “Memory Operation” on page 55.

⑧ M►V MT

Press

Data saved in a memory channel can be transferred to the VFO.

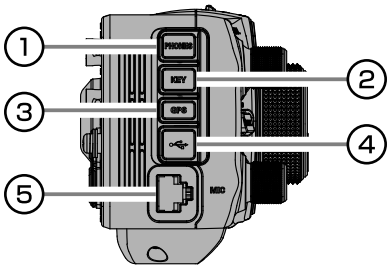
For details, see “Moving Memory Data to the VFO register” on page 55.

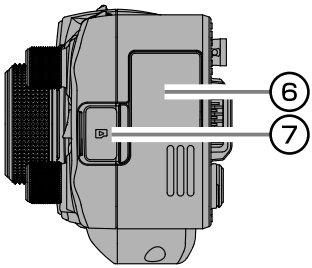
Press and hold

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 overwrite 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-nnn”.

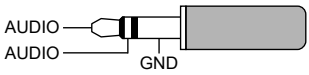
Press the [V/M MW] key to return to the originally memorized frequency of the current memory channel.





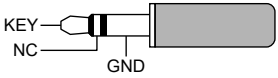
① PHONE Jack

Connect headphones to this standard ϕ3.5 stereo jack.
Inserting a headphone plug into this jack will deactivate the internal and external speakers.

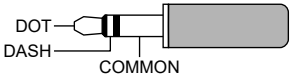


② KEY

This 3.5-mm, 3-contact jack accepts a CW key orkeyer paddle. A two-contact plug cannot be used in this jack. Key-up voltage is +5.0V DC, and keydown current is 3mA.



When connecting a single straight key



When connecting an electronic keyer paddle

③ GPS

This is the terminal for connecting the optional GPS antenna unit “FGPS-5”.

④ USB (Type-C)

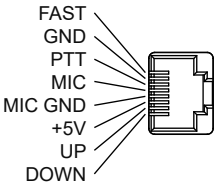
You can charge the lithium-ion battery SBR-52LI attached to this unit using a commercially available USB PD (Power Delivery) charger (output 45W or more, DC15V 2A output compatible) and a PD-compatible Type-C cable.

> For information on charging and transmission/reception when a USB PD charger is connected, see “Relationship between connected power source, charging, and transmission/reception” (page 7).

Connecting to a computer from this jack with a commercially available USB cable allows remote control by CAT commands from a computer. The jack can also be used for input and output of audio signals and transmitter control. A USB driver is required for remote control from a computer. Download the driver from the Yaesu website (http://www.yaesu.com).

⑤ MIC jack

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



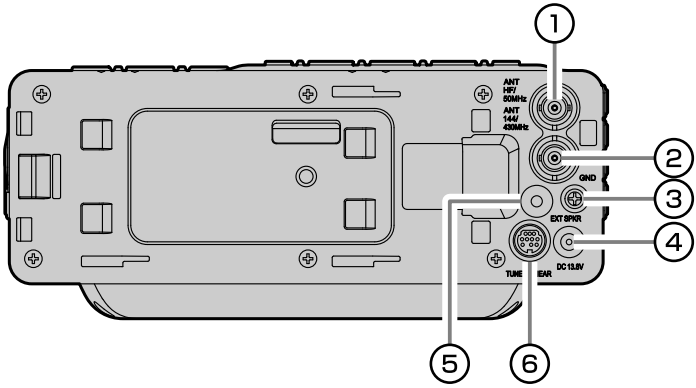
⑥ Bluetooth

This is the terminal for connecting the optional Bluetooth unit “BU-6”.

⑦ microSD card slot

Insert a commercially available micro SD card to backup the various radio settings, memory channels, recordings of received audio, etc.

Rear Panel of the Field Head (FTX-1 Field)



① ANT (HF/50MHz)

This is the BNC-type coaxial connnector for the HF band to 50MHz antennas (50 ohms).

② ANT (144/430MHz)

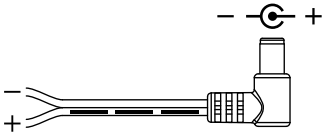
This is the BNC-type coaxial connnector for the 144MHz band and 430MHz band antennas (50 ohms).

③ GND

Use this terminal to connect the transceiver to a good earth ground, for safety and optimal performance.

④ DC 13.8V

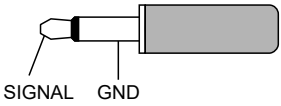
This is the DC power supply connection for the transceiver.
Use the supplied DC cable to connect directly to a DC power supply.
The white-and-black wire is positive polarity, and the black wire is negative.



Supplied DC cable

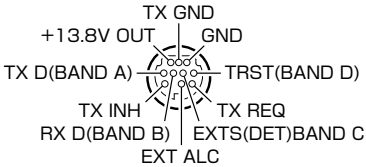
⑤ EXT SPKR

This 3.5-mm, 2-contact, jack provides audio output for a external loudspeaker.



⑥ TUNER/LINEAR

This 10-pin output jack is used to connect to the External Automatic Antenna Tuner or a Linear Amplifier.

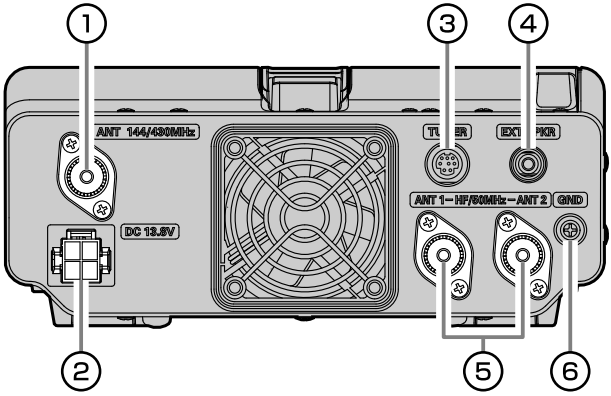


Refer to the table below for the TUNER/LINEAR terminal levels when using a linear amplifier.

BAND	BAND DATA			
	A	B	C	D
400k	H	L	H	H
1	L	H	H	H
1.8	H	L	L	L
3.5	L	H	L	L
5 / 7	H	H	L	L
10	L	L	H	H
14	H	L	H	L
18	L	H	H	L

BAND	BAND DATA			
	A	B	C	D
21	H	H	H	L
24.5	L	L	L	H
28	H	L	L	H
50	L	H	L	H
70	H	H	H	H
144	H	H	L	H
430	L	L	H	H

Rear Panel of the Main Body (FTX-1 optima)

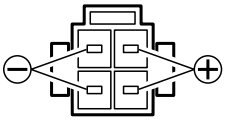


① ANT (144/430MHz)

This is the M-type coaxial connector for the 144 MHz band and 430 MHz band antennas (50 ohms).

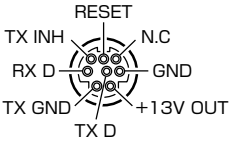
② DC 13.8V

This is the DC power supply connection for the transceiver.
Use the supplied DC cable to connect directly to a DC power supply, which must be capable of supplying at least 25 A @13.8 VDC.



③ TUNER

Connect the optional external antenna tuner "FC-40".



④ EXT SPKR

This 3.5-mm, 2-contact, jack provides audio output for a external loudspeaker. The impedance at the jack is 4-8 Ohms.

⑤ ANT 1/2 (HF/50MHz)

This is the M-type coaxial connector to connect HF band and 50 MHz band antennas (50 ohms).

⑥ GND

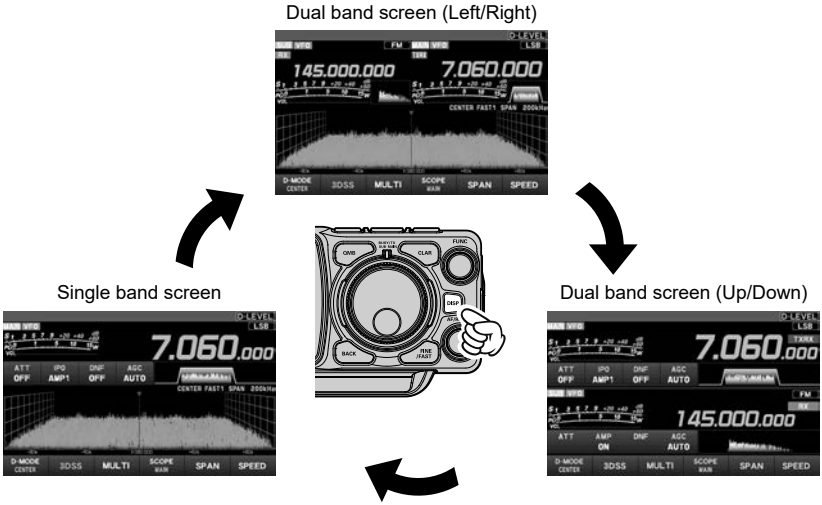
Use this terminal to connect the transceiver to a good earth ground, for safety and optimal performance.

Grounding

To prevent damage from lightning, atmospheric electrical discharges, electric shock etc., provide a good earth ground.
Use a short, thick, braided cable to connect the station equipment to the buried ground rod (or alternative earth ground system).

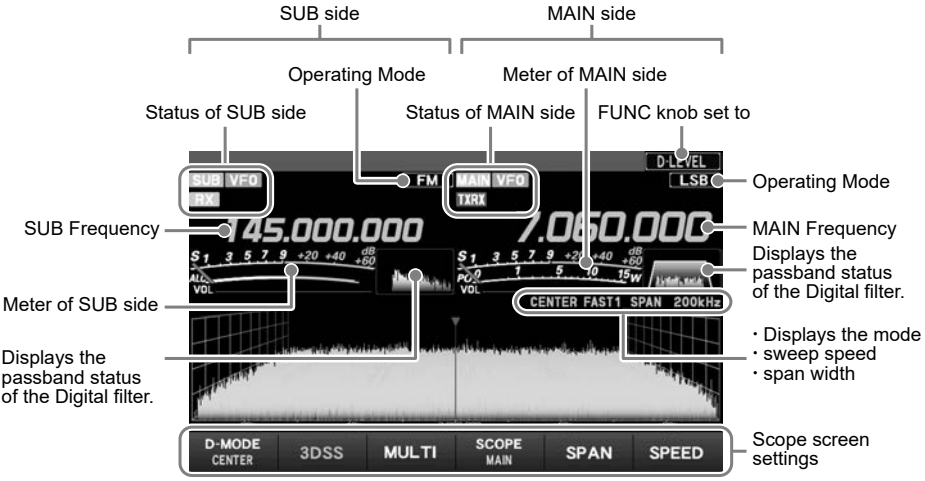
Display Indications

Each time you press the [DISP] key, the screen display will change as follows. You can also press and hold the [DISP] key to temporarily turn off the screen display. The screen will reappear when you perform any FTX-1 operation, such as touching the screen.



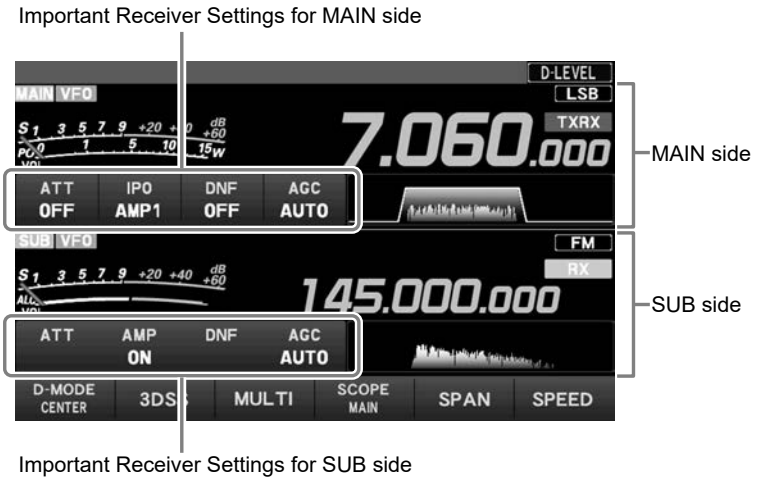
Dual band screen (Left/Right)

This is a dual band screen that displays the MAIN and SUB frequencies on the left and right. The scope screen allows you to intuitively visualize changes in the band condition.



Dual band screen (Up/Down)

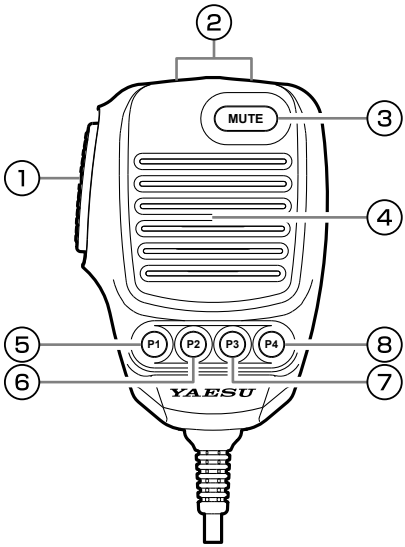
This is the screen for dual band operation, where MAIN and SUB frequencies are displayed above and below.



Single band screen

This is the screen for single band operation where only the MAIN or SUB frequency is displayed. Each time you press the SUB DIAL knob, it switches between MAIN and SUB.

SSM-75E Microphone Switches



① PTT Switch

Switches Transmit/Receive.
Press to transmit and release to receive.

② DWN/UP

The [UP]/[DWN] keys may also be used to manually scan the frequency upward or downward.

③ MUTE

While pressing the MUTE key, the receiver audio from the speaker will be muted.

④ Microphone

Speak into the microphone in a normal tone of voice with the microphone 5 cm away from the mouth.

⑤ P1

This key toggles the ON/OFF lock for the MAIN Dial knob and SUB Dial. When “Lock” is ON, the MAIN or SUB Dial knob can still be turned, but the frequency will not change, and “LOCK” appears in the display.
It is the same function as the [Power] key on the front panel of the transceiver.

⑥ P2

The current operation status can be stored in a dedicated memory channel (QMB: Quick Memory Bank) with one touch.
It is the same function as the [QMB] key on the front panel of the transceiver.

⑦ P3

Pressing this key momentarily, change to a higher Operation Band.

It is the same function as the [MAG BAND] key on the front panel of the transceiver.

⑧ P4

This key toggles frequency control between VFO and the memory system.

It is the same function as the [V/M MW] key on the front panel of the transceiver.

Display Details

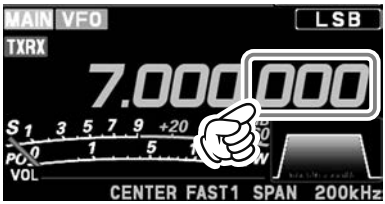
Frequency Display

Displays the transmit and receive frequencies.

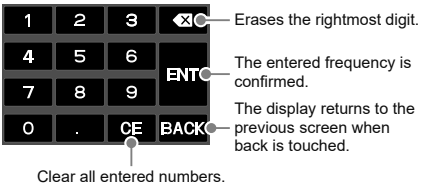
> Simultaneous reception of HF/HF is not supported.

• Keyboard Frequency Entry

1. Touch the “Hz” area of the frequency display.



2. Enter the frequency using the numeric keys.



- If there is no operation within 10 seconds, the input will be canceled.

3. Touch [ENT] to confirm.
   - A short-cut for frequencies ending in zero -touch [ENT] after the last non-zero digit.

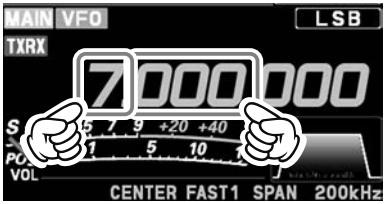
   Example:

   To enter 7.00.000MHz
   [0] → [0] → [7] → [ENT]
   or [7] → [.]→ [ENT]

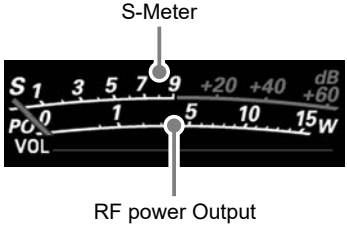
   To enter 7.03.000MHz
   [7] → [.]→ [0] → [3] → [ENT]

• Tuning in 1 MHz or 1 kHz Steps

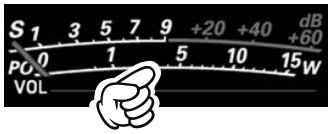
To temporarily set the dial knob to 1MHz or 1kHz steps, touch the “MHz” or “kHz” area of the frequency display.



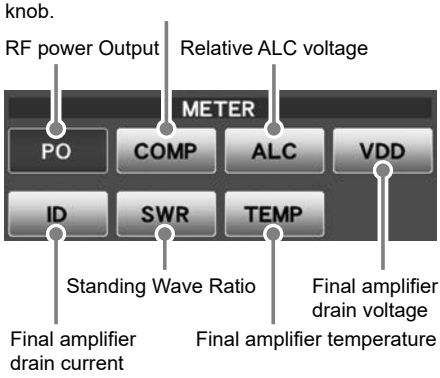
Meter Display



When the meter display screen is touched, the transmit meter selection screen is shown (the default setting is “PO”).

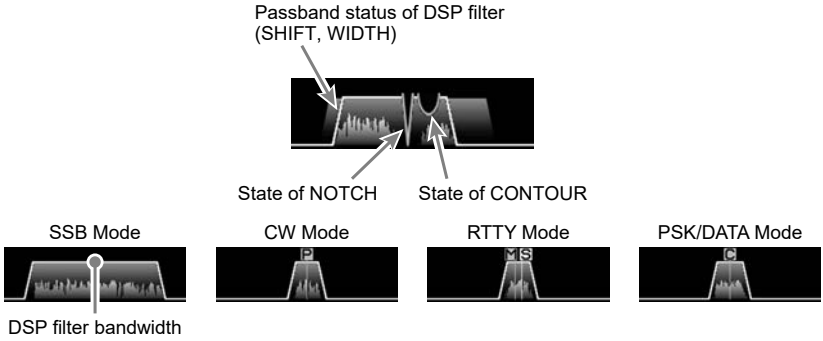


AMC gain control display
(Displays compression level during speech processor operation)
Make adjustments by press and hold the [FUNC] knob → touch [AMC LEVEL] → rotate the [FUNC] knob.



Filter Function Display

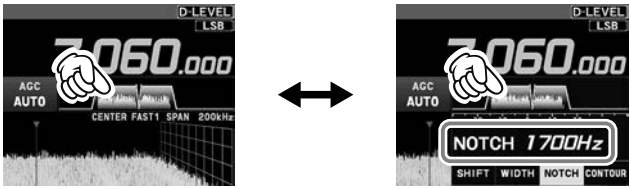
Displays the passband status of the Digital filter. The operation of WIDTH, SHIFT, NOTCH, CONTOUR etc. can be observed.



Touch the filter display to reveal and check the setting value of the last used function from SHIFT, WIDTH, NOTCH, CONTOUR, and APF.

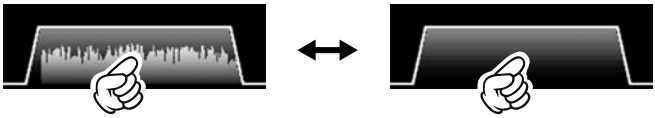
Example: When the last function used is the NOTCH function

Touch the filter display to display the NOTCH function setting value.

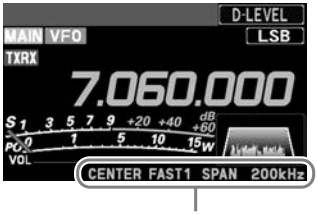


• Turn the spectrum display OFF

To display only the Digital filter bandwidth information, press and hold the spectrum area of the filter function display to clear the spectrum view. To display it, press and hold again.



Information displayed on the scope screen



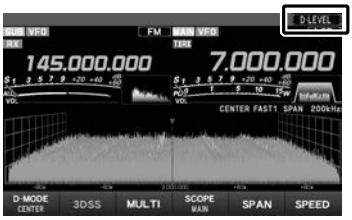
Scope screen information

CENTER	The receive frequency is always shown at the center of the screen and spectrum display. The band spectrum is shown within the range set by "SPAN". The CENTER mode is convenient for monitoring the signal activity around the operating frequency.	
CURSOR	Monitors the spectrum within the range set with "SPAN". When the frequency (marker) exceeds the upper limit or the lower limit of the range, the screen is automatically scrolled and the status beyond the setting range can be observed.	
FIX	Enter the start frequency of the scope.	
SLOW1	sweep speed	Slow
SLOW2	sweep speed	↑
FAST1	sweep speed	Normal
FAST2	sweep speed	↓
FAST3	sweep speed	Fast
STOP	Temporarily hold the operation of 3DSS display and waterfall display.	
SPAN *nnn*kHz	Scope Screen frequency span (display range).	

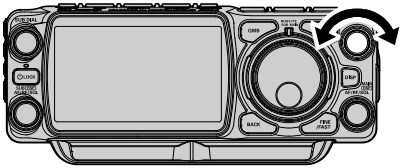
Operation of the display [FUNC] knob

Displays the multiple functions that may be operated when the [FUNC] knob is pressed.
Normally, it is recommended to adjust the level of the spectrum scope with the [D-LEVEL] knob.
The last used function is recalled when the [FUNC] knob is pressed. Therefor you can easily call up and then set a function by turning the [FUNC] knob.
To change the function of the [FUNC] knob, touch the desired item that appears on the function screen when the [FUNC] knob is press and hold, or turn the [FUNC] knob to select an item and then press the [FUNC] knob.

The last function used is stored as the FUNC knob and displayed in the upper right corner of the screen.



Can be easily called up and set by turning the [FUNC] knob.



Wait for about 3 seconds or press the FUNC knob, or the [BACK] key to confirm the settings and return to the operating screen.

PAGE 1/3 SSB

D-LEVEL	Adjust the LEVEL of the scope for the best image on the screen.
D-PEAK	Adjust the color density with respect to the signal level on the scope screen in 5 steps (LV1to LV5).
D-MARKER	ON/OFF Marker indicates the transmit and receive frequency position within the Scope Display image.
D-COLOR	Changes the scope screen display or the Frequency color.
D-CONTRAST	Adjust the TFT display contrast (difference between light and dark) in 21 steps.
DIMMER	Adjust the TFT display brightness in 21 steps.
MOX	Engages the PTT (Push to Talk) circuit to activate the transmitter.
ATT	Turns the ATT (Attenuator) ON/OFF.
IPO (AMP)	Activates the IPO.
DNF	Turns the DNF (Digital Notch Filter) ON/OFF.
AGC	Adjust the AGC receiver-recovery time.
MIC EQ	Three-Band Parametric Microphone Equalizer is turned ON/OFF.
PROC LEVEL	Adjusts the Speech Processor Gain.
ANT TUNE	Starts automatic antenna tuning.
TUNER	Turns the built-in antenna tuner ON/OFF. (FTX-1 optima only)
NB	Activates the NB (Noise blanker) function.
DNR	Activates the DNR (Digital Noise Reduction) function.
ANT	Selects the ANT 1 or ANT 2 connector on the rear panel. (FTX-1 optima only)
TXW	During split operation, touch [TXW] to listen on the transmitter frequency.
RF POWER	Transmit power setting.
MIC GAIN	Adjusts the microphone gain.
AMC LEVEL	Adjusts the AMC (Automatic Microphone Gain Control) Gain.
VOX	Turn the VOX function ON/OFF.
VOX GAIN	VOX gain setting.
VOX DELAY	VOX delay setting.

PAGE 2/3 CW

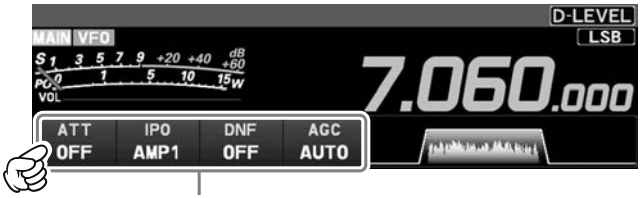
MONI LEVEL	Monitor level adjustment.
KEYER	Built-in electronic keyer is turned ON/OFF.
BK-IN	CW Break-in function is turned ON/OFF.
CW SPEED	Adjusts the desired sending speed.
CW PITCH	Adjusts the CW tone when receiving the CW signal and the side tone monitor.
BK-DELAY	Adjust the hang time after the CW transmitting ends.
ZIN	Press to activate the auto-zero-in function.
CW SPOT	Press and hold to activate the sidetone.
MESSAGE	CW text memory or Voice memory function.
PLAY	Check the CW Memory Content or Check the Voice Recording Content.
RECORD	Voice recording function.

PAGE 3/3 FM/C4FM

DTMF	Set the DTMF auto dialer channel and code.
T-CALL	Transmits the T-CALL(1750 Hz).
RPT SHIFT	Sets the repeater shift direction.
REV	Reverses the transmit and receive frequencies in repeater mode or split memory.
DG-ID TX	Setting the transmit DG-ID number.
DG-ID RX	Setting the receive DG-ID number.
APRS S.LIST	Displays the APRS function station list.
APRS M.LIST	Displays the message list of the APRS function.
APRS BEACON	Set APRS Automatic beacon transmitting ON/OFF.
APRS BCN-TX	Transmitting an APRS beacon manually.
CH STEP	Change frequency in set step intervals.
SQL TYPE	Select a squelch type.
TONE FREQ	Set the CTCSS Tone Frequency.
DCS	Set the DCS code.
HOME	Recalls the HOME channel.
RADIO SETTING	SSB, AM, FM, Data, RTTY & Digital operating mode Menu.
CW SETTING	CW operation Setting Menu.
OPERATION SETTING	Comprehensive settings such as: Transmit & Receive, Interference Reduction, Scan, etc.
DISPLAY SETTING	Display Setting Menu.
EXTENSION SETTING	Date, SD Card Settings, Firmware Version Display & Reset Operation.
APRS SETTING	APRS operation Setting Menu.

Important Receiver Settings

The status of various operations that are important during receive, are shown at the bottom of the display. To change a setting, touch the appropriate location on the display.



Important setting items when receiving

• ATT (Attenuator)

Displays the current ATT (Amount of receive input signal attenuation).
When the desired signal is extremely strong or the noise level is high on a low frequency band, activate the attenuator to reduce the incoming signal or noise from the antenna.
After touching [ATT], touch the ON or OFF.

- The ATT feature is only available in the HF - 50MHz band.
- The ATT is set independently for each operation band.

• IPO

The IPO (Intercept Point Optimization) function can establish the gain of the RF amplifier section to accommodate the connected antenna and the received signal conditions. IPO can be selected from three operating conditions.

AMP1: One stage RF amplifier is connected. This is a well-balanced operation of receiver sensitivity and characteristics (Approximately 10 dB gain).
AMP2: Two RF amplifiers are connected in series to give top priority to sensitivity (Approximately 20 dB gain).
IPO: The received signal is input to the IF mixer without passing through the RF amplifier. This can greatly improve receiving, especially in the harsh low band signal environment.

After touching [IPO], touch the desired operating condition.

- The IPO feature is only available in the HF - 50MHz band.
- IPO is set independently for each operation band.

• AMP

Increases the sensitivity of the RF amplifier when the received signal is weak.

After touching [AMP], touch the ON or OFF.

The AMP feature is only available in the AIR band, 144MHz and 430MHz band.

• DNF (Digital NOTCH Filter)

The Digital NOTCH Filter (DNF) is an effective beat-canceling filter that can null out a number of interfering beat notes inside the receiver passband.

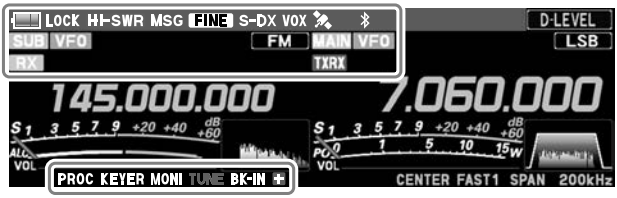
Because this is an Auto-Notch feature, there is no djustment knob associated with this filter.

• AGC (Automatic Gain Control)

Displays the currently selected AGC setting.
The AGC system is designed to help compensate for fading and other propagation effects. The AGC characteristics can be individually set for each operating mode. The basic objective of AGC is to maintain a constant audio output level once a certain minimum threshold of signal strength is achieved.
After touching [AGC], touch the desired time constant.

- AGC can be set for each operation band.
- The “AUTO” selection mode selects the optimum receiver-recovery time for the reception mode.

Information displayed on the scope screen



/ / :
The battery condition is displayed in 3 steps.

: Charging

LOCK : Appears when the lock function is enabled.

HI-SWR : A warning display to indicate an antenna system error.

MSG : Voice memory playing

REC : Blinks → Voice memory recording standby
Appears → Voice memory recording

FINE : FINE Tuning

FAST : FAST Tuning

S-DX : Appears when the Super DX function is enabled.

VOX : Appears when the VOX function is enabled.

: Appears → Satellites are acquired.
Blinks → Satellites cannot be acquired.

: Appears when the Bluetooth function is activated.
Appears → Bluetooth device is connected.
Blinks → Bluetooth device not connected.

MAIN : MAIN-side icon

SUB : SUB-side icon

VFO : VFO mode

M-ALL : Recalls all memory channels regardless of frequency band.

M-HF : Recalls only memory channels in the HF band.

50MHz : Recalls only memory channels in the 50MHz band.

M-AIR : Recalls only memory channels in the AIR band.

M-VHF : Recalls only memory channels in the VHF band.

M-UHF : Recalls only memory channels in the UHF band.

M-GRP : Channels, regardless of the band, can be registered in advance and called up as frequently used memory channels in the M-GRP.

PROC : Appears when the Speech Processor function is activated.

KEYER : Appears when the Built-in electronic keyer is activated.

MONI : Appears when the MONITOR function is activated.

TUNE : Appears when the internal Automatic Antenna Tuner is activated.
Blinks during tuning.

BK-IN : Appears when the CW Break-in function is activated.

/ : Lights in plus (+) or negative (-) shift (repeater operation).

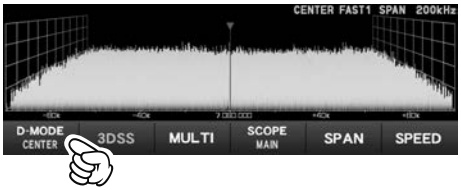
ANT1 / **ANT2** (optima only):
The currently selected antenna terminal is displayed.

Scope Display Setting

In addition to the conventional two-dimensional waterfall spectrum display, Yaesu has added the 3-Dimension Spectrum Stream (3DSS) color display. The constantly changing band conditions and signals are depicted in real time and color. The frequency span is shown on the horizontal X axis, the vertical Y axis depicts the signals and their strengths, and the time is represented on the receding Z axis. The FTX-1 operator can intuitively grasp the band and signal conditions at any instant.

• CENTER/CURSOR/FIX

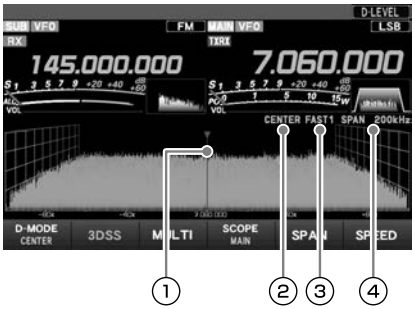
Switches the Spectrum Scope operation each time the key is touched.



- When the display area is touched, the receive frequency is moved to that point.
- In CENTER mode, the frequency touched becomes the center.
- In CURSOR and FIX mode, the marker and the receive frequency move to the touched position.

• CENTER

The receive frequency is always shown at the center of the screen and spectrum display. The band spectrum is shown within the range set by “SPAN”. The CENTER mode is convenient for monitoring the signal activity around the operating frequency.

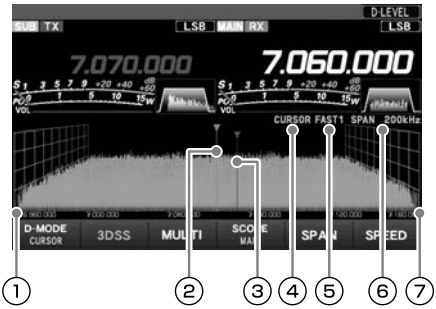


① Marker*
② Current display mode (CENTER)
③ Sweep Speed
④ Scope Screen frequency span (display range).

*At factory shipment, marker display is ON.

• CURSOR

Monitors the spectrum within the range set with “SPAN”. When the frequency (marker) exceeds the upper limit or the lower limit of the range, the screen is automatically scrolled and the status beyond the setting range can be observed.

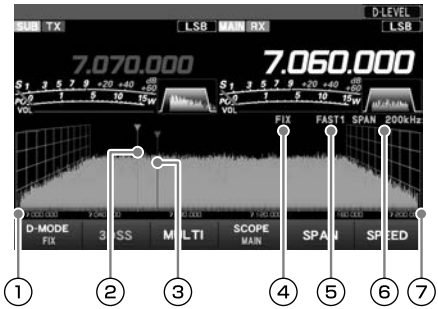


① The lower limit frequency of the display area.
② Marker* (Receive Frequency)
③ Marker* (Transmit Frequency)
④ Current display mode (CURSOR)
⑤ Sweep Speed
⑥ Scope Screen frequency span (display range).
⑦ The upper limit frequency of the display area.

*At factory shipment, marker display is ON.

• FIX

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

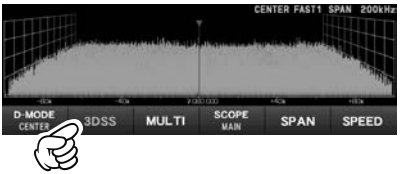


① Display area start frequency
② Marker* (Reception Frequency)
③ Marker* (Transmit Frequency)
④ Current display mode (FIX)
⑤ Sweep Speed
⑥ Scope Screen frequency span (display range).
⑦ The upper limit frequency of the display area.

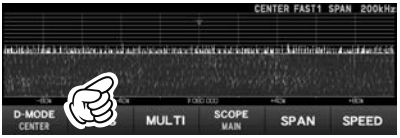
*At factory shipment, marker display is ON.

• 3DSS

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



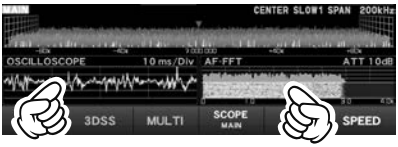
3DSS type



Waterfall type

• MULTI

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

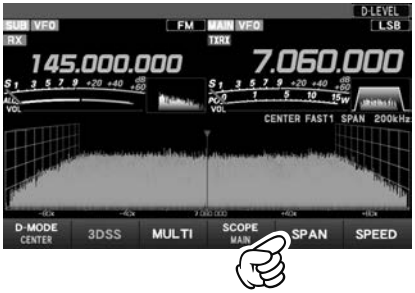


Touch this area to set the level and sweep speed.

Touch this area to set the attenuator.

• SPAN

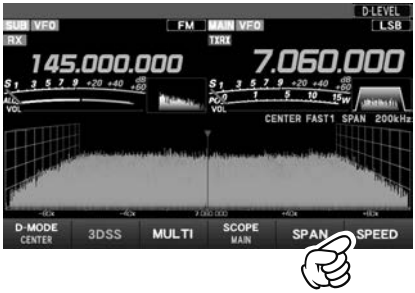
Set the frequency span (display range) of the scope screen. After touching, select the desired span.

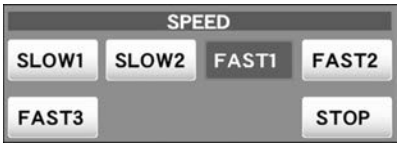


> The display level changes when SPAN is changed, so reset the optimum display level with [D-LEVEL] each time.

• SPEED

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



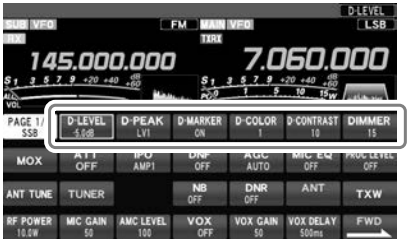


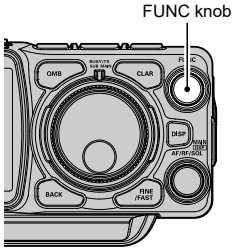
SLOW1 : sweep speed Slow
SLOW2 : sweep speed ↑
FAST1 : sweep speed Normal
FAST2 : sweep speed ↓
FAST3 : sweep speed Fast
STOP : Touch [STOP] to temporarily hold the 3DSS display and waterfall display operations. Touch [STOP] again or another speed, to release the hold.

• Set with the FUNC knob

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

D-LEVEL : Adjust the LEVEL of the scope for the best image on the screen.
D-PEAK : Adjust the color density with respect to the signal level on the scope screen in 5 steps (LV1 to LV5).
D-MARKER : ON/OFF Marker indicates the transmit and receive frequency position within the Scope Display image.
D-COLOR : Changes the scope screen display color from 12 types.
Changes the font color of the frequency from 3 types.
D-CONTRAST : Adjust the TFT display contrast (difference between light and dark) in 21 steps.
DIMMER : Adjust the TFT display brightness in 21 steps.

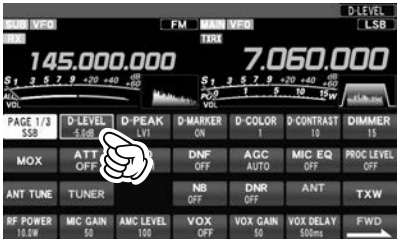




The last function used is retained in the [FUNC] knob so it can be easily set by operating the [FUNC] knob. Normally, it is suggested to utilize the [FUNC] knob as the [D-LEVEL] knob for the spectrum scope.

• 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 and hold the [FUNC] knob then touch [D-LEVEL], and then turn the [FUNC] knob to select the desired level.

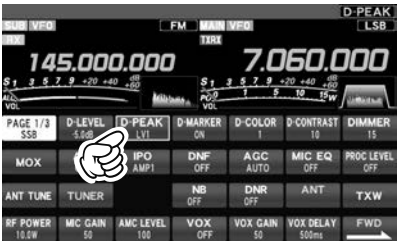


- On the 3DSS screen, weak signals may be more easily observed by adjusting the LEVEL so that the noise level can be seen only a little, so always adjust the LEVEL and use it at the optimum position.
- Be sure to make adjustments when changing bands or changing SPAN.
- If the level is changed, the signal 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 and hold the [FUNC] knob then touch [PEAK], and then turn the [FUNC] knob to select the desired level.

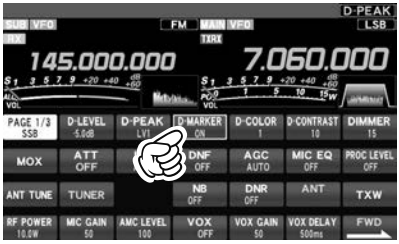


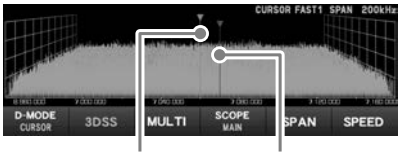
LV1 Slow
LV2 ↑
LV3 Normal
LV4 ↓
LV5 Fast

• MARKER

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

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





Receive Frequency Transmit Frequency

• COLOR

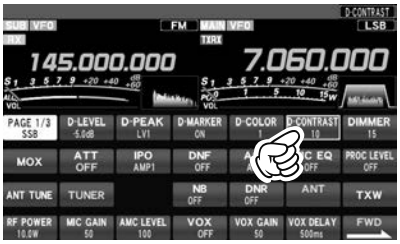
The display color of the scope screen or font color of the frequency can be changed.

Press and hold the [FUNC] knob then touch [COLOR], then touch the desired color from the color selection screen.

• Adjust contrast

Adjust the contrast of the TFT display.

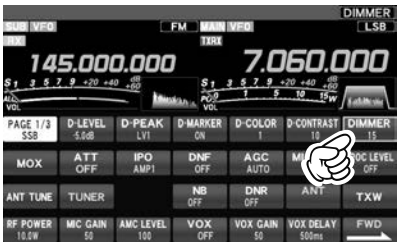
Press and hold the [FUNC] knob then touch [D-CONTRAST], and then turn the [FUNC] knob to adjust the contrast.



• Adjusting the brightness (DIMMER)

Adjust the brightness of the TFT display.

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

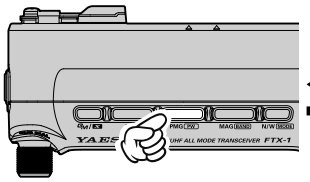


PMG (Primary Memory Group) for VHF/UHF

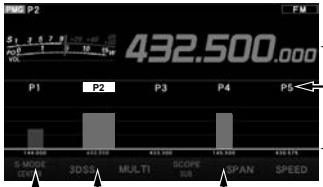
The PMG function scans up to 5 channels registered to the PMG. The receive status of each channel is simultaneously displayed in real time with a bar graph. In addition, two channels with signals are simultaneously received, allowing convenient standby.
Operation differs between “Manual mode” and “Auto mode”.
In manual mode, transmit and receive are performed on the selected channel. If a signal is received on another channel, it can be received at the same time.
In auto mode, when a signal is received on a scanned channel, the radio automatically switches to the channel with the signal for transmit and receive.
If a signal is received on another channel, it can be received at the same time.
To register the currently displayed VFO or memory channel to the PMG, simply press and hold the key on the frequency.

The PMG feature is only available in the AIR band, 144MHz and 430MHz band.

PMG Screen



Press the [**PMG** PW]



Current Frequency
Channel bar
Line under the bar graph
White : Manual Mode
Orange : Auto Mode

When there is a signal,
a bar graph is displayed

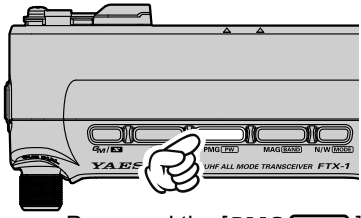
: Receiving signal
: Previously received signals Bar graph

- If there are no registered Channels in PMG, the PMG screen will not be displayed even if the [PMG PW] key is pressed.
- To adjust the squelch during PMG operation, press the MAIN-side AF/RF/SQL knob and turn it. The adjustment is reflected in all channels registered in PMG.
- To adjust the volume during PMG operation, rotate the MAIN-side AF/RF/SQL knob.
- Press and hold the [PMG PW] key to cancel the registration of the currently selected PMG channel.

Register the frequency to PMG

- Press and hold the [PMG PW] key to register the current frequency in PMG.
- Up to 5 channels can be registered in PMG.

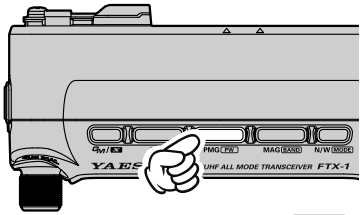
Up to 5 channels can be registered in PMG. When registering more than five Frequencies, older frequencies will be deleted in order from PMG.



Press and the [**PMG** PW]

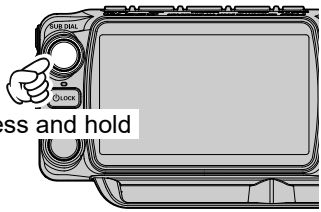
Unregister the Channel (Frequency) registered in PMG

1. Select the channel (frequency) to be unregistered by rotating the MAIN DIAL knob.
2. Press and hold the [PMG (PW)] key to cancel the registration.



Press and the [**PMG (PW)**]

Press and hold the [**SUB DIAL**] knob to switch between "**PMG Auto Mode**" and "**PMG Manual Mode**".



Press and hold

Manual Mode

- While continuously receiving and transmitting on the PMG channel selected, if a signal is received on another channel, it can be received at the same time.
- Transmission is on the selected channel.
- Displays historical received signal strengths in gray (Disappears the signal is lost).
- When a signal is received on another channel, the signal strength is displayed as a bar graph and it is simultaneously heard, but the transmit channel does not change. Turn the DIAL knob or touch the screen to change the transmit channel.

Select the desired channel (e.g. P2).

Receive a signal on P2 | Receive a signal on P4

Receive a signal on P2.
Scan P1, P3 to P5.

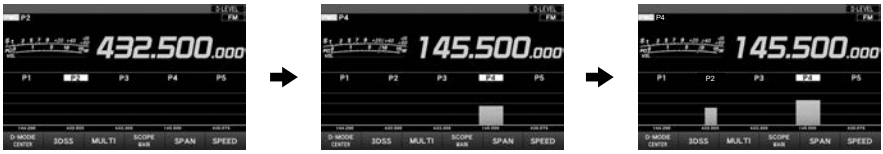
While listening to received audio on P2, P1 & P3 to P5 are scanned.

- P2 and P4 received audio can be heard at the same time.
- Transmission will be on P2.
- To transmit on P4, rotate the DIAL to select P4 or touch the P4 bar graph.
- When the P4 signal disappears, While listening to received audio on P2, P1 & P3 to P5 are scanned.

Auto Mode

- When a signal is received on the channels being scanned, the radio will automatically switch to that channel. If a signal is received on another channel, it can be received at the same time.
- When a signal disappears, scanning resumes.
- Transmission is automatically performed on the channel that received the signal.
- Displays historical received signal strengths in gray (Disappears the signal is lost).

Receive a signal on P4 Receive a signal on P2



Receive a signal on P2.
Scan P1, P3 to P5.

- The channel will automatically change to P4.
- While listening to received audio on P4.
- P1 to P3 & P5 are scanned.
- Transmit will also be set to P4.

- P2 and P4 received audio can be heard at the same time.
- Transmission will be on P4.
- To transmit on P2, rotate the DIAL to select P2 or touch the P2 bar graph.

DSP interference removal functions

Press and hold the [MAIN DSP] or [SUB DSP] knob, then rotate the [MAIN DSP] or [SUB DSP] knob to exchanges the SHIFT, WIDTH, NOTCH, CONTOUR and APF.

The "MAIN" side is set with the [MAIN DSP] knob, and the "SUB" side is set with the [SUB DSP] knob.

1. SHIFT

IF SHIFT permits moving the Digital filter passband higher or lower, without changing the pitch of the incoming signal, and thus reduce or eliminate interference. Because the tuned carrier frequency is not varied, there is no need to re-tune the operating frequency to eliminate the interference.
The total passband tuning range for the IF SHIFT system is ±1.2kHz.

2. WIDTH

The IF WIDTH tuning system allows you to vary the width of the DSP IF passband, to reduce or eliminate interference.
Moreover, the bandwidth may actually be expanded from its default setting, should you wish to enhance incoming signal fidelity when interference on the band is low.

3. NOTCH

The IF NOTCH filter is a highly effective system that allows removing an interfering beat note or other carrier signal from within the receiver passband.

4. CONTOUR

The CONTOUR filter system provides a gentle perturbation of the IF filter passband. The CONTOUR is set to either suppress, or boost specific frequency components, and thus enhances the sound and readability of a received signal

5. APF

During CW operation, when interference or noise is present, the center frequency is automatically set to the PITCH frequency, making it easier to hear the desired signal

• Setting method

The following explanation describes how to set up the "MAIN" side.
To set up the "SUB" side, perform the same operation using the [SUB DSP] knob.

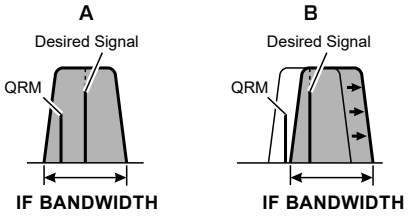
1. Press and hold the [MAIN DSP] knob or touch the spectrum area.

2. Rotate the [MAIN DSP] knob to select the function, then press the [MAIN DSP] knob. (The function may also be selected by touching the function name.)
3. Rotate the [MAIN DSP] knob to set the desired value.
4. Press the [MAIN DSP] knob to confirm the setting.

1. SHIFT

1. Press and hold the [MAIN (DSP)] knob.
2. Rotate the [MAIN (DSP)] knob to select "SHIFT", then press the [MAIN (DSP)] knob. (The function may also be selected by touching "SHIFT".)
3. Rotate the [MAIN (DSP)] knob to the left or right to reduce interfering signals.
4. Press the [MAIN (DSP)] knob to save the setting.
   Press and hold the [BACK] key to quickly move the filter passband to center.

Refer to Figure "A" and notice the depiction of the IF DSP filter as a thick line in the center of the passband. In Figure "B", you can see the effect of rotating the [MAIN (DSP)] knob.
The interference level is reduced by moving the filter passband so that the interference is outside of the passband.



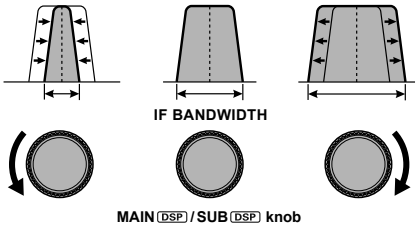
2. WIDTH

1. Press and hold the [MAIN (DSP)] knob.
   Rotate the [MAIN (DSP)] knob to select "WIDTH", then press the [MAIN (DSP)] knob. (The function may also be selected by touching "WIDTH".)
2. Rotate the [MAIN (DSP)] knob counter-clockwise to narrow the bandwidth and reduce interference.
3. Press the [MAIN (DSP)] knob to save the setting.
   Press and hold the [BACK] key to reset the digital filter bandwidth to its initial value.

The default bandwidths, and total bandwidth adjustment range, will vary according to the operating mode (see table below).

Operating Mode	IF BANDWIDTH
LSB / USB	300Hz - 4000Hz (default: 3000Hz)
CW-L / CW-U RTTY-L / RTTY-U	50Hz - 4000Hz (default: 500Hz)
DATA-L / DATA-U PSK	50Hz - 4000Hz (default: 3200Hz)
AM	9000Hz (Fixed)
AM-N	6000Hz (Fixed)

The figure below is a conceptual diagram of WIDTH.

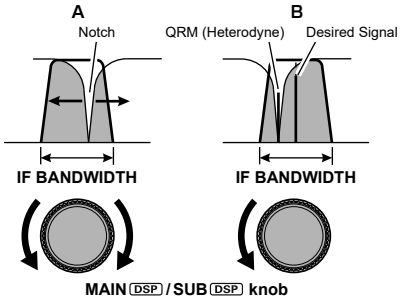


3. NOTCH

1. Press and hold the [MAIN DSP] knob
2. Rotate the [MAIN DSP] knob to select "NOTCH", then press the [MAIN DSP] knob.
   (The function may also be selected by touching "NOTCH".)
3. Rotate the [MAIN DSP] knob to adjust the "null" position of the Notch filter.
4. Press the [MAIN DSP] knob to save the setting.
   Press and hold the [BACK] key to return the center frequency to its initial value.

The bandwidth of the NOTCH filter (either narrow or wide) may be adjusted using Menu item [OPERATION SETTING] → [RX DSP] → [IF NOTCH WIDTH].
The factory default setting is "WIDE".

The performance of the IF Notch filter is shown in Figure "A", where the effect of rotation of the [MAIN DSP] knob is depicted. In Figure "B" you can see the notching effect of the IF Notch filter as you rotate the [MAIN DSP] knob to eliminate the incoming interference.

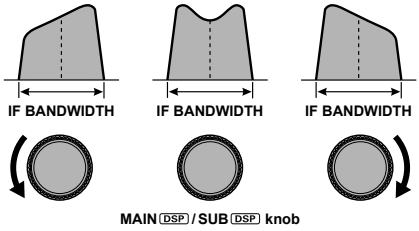


4. CONTOUR

"CONTOUR" function does not work in CW-L and CW-U modes.

1. Press and hold the [MAIN DSP] knob
2. Rotate the [MAIN DSP] knob to select "CONTOUR", then press the [MAIN DSP] knob.
   (The function may also be selected by touching "CONTOUR".)
3. Rotate the [MAIN DSP] knob to achieve the most natural-sounding audio reproduction of the incoming signal.
4. Press the [MAIN DSP] knob to save the setting.
   Press and hold the [BACK] key to return the center frequency to its initial value.

The figure below is a conceptual diagram of CONTOUR.



• Adjusting the GAIN of the CONTOUR Circuit

1. Press and hold the [FUNC] knob.
2. Select [OPERATION SETTING] → [RX DSP] → [CONTOUR LEVEL].
3. Rotate the [FUNC] knob, or touch "<" or ">" on either side of the value to set the CONTOUR circuit gain.
4. Press the [FUNC] knob, or wait for about 3 seconds to save the setting.
5. Press the [BACK] key several times to return to normal operation.

• Sets the Bandwidth (“Q”) of the CONTOUR Circuit

1. Press and hold the [FUNC] knob.
2. Select [OPERATION SETTING] → [RX DSP] → [CONTOUR WIDTH].
3. Rotate the [FUNC] knob, or touch “<” or “>” on either side of the value to set bandwidth (“Q”) of the CONTOUR circuit.
4. Press the [FUNC] knob, or wait for about 3 seconds to save the setting.
5. Press the [BACK] key several times to return to normal operation.

5. APF

“APF” function only works in CW-L and CW-U modes.

1. Press and hold the [MAIN DSP] knob
2. Rotate the [MAIN DSP] knob to select “APF”, then press the [MAIN DSP] knob. (The function may also be selected by touching “APF”.)
3. Rotate the [MAIN DSP] knob to the left or right to reduce any interference.
4. Press the [MAIN DSP] knob to save the setting.
5. Press and hold the [BACK] key to restore the APF peak center frequency setting to “0Hz”, and disable the APF function.

The APF bandwidth can be selected from NARROW / MEDIUM / WIDE via the Menu item [OPERATION SETTING] → [RX DSP] → [APF WIDTH].

Split

A powerful capability of the FTX-1 is its flexibility in Split Frequency operation using the MAIN-side and SUB-side frequency registers. This makes the FTX-1 especially useful for high-level DX-peditions.

The Split operation capability is very advanced and easy to use.

1. To set the MAIN-side VFO frequency to the desired receive frequency.
2. Press and hold the [SPLIT] key, and then set the SUB-side VFO frequency to the desired transmit frequency.

During Split operation, the MAIN-side VFO register will be used for reception, while the SUB-side VFO register will be used for transmission.

Press and hold the [SPLIT] key again to cancel Split operation.

- During split operation, touch [TXW] after press and hold the [FUNC] knob, to receive the transmit frequency press the [FUNC] knob.

Voice Communications (SSB and AM)

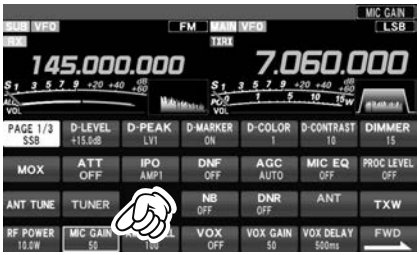
When transmitting in SSB or AM mode The FTX-1 transmit audio circuit can be set to the optimum operating level by individually adjusting the input and output gains of the microphone amplifier.

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

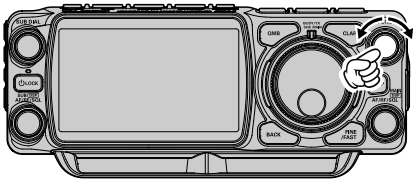
1. Adjust Microphone gain

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

1. Press and hold the [FUNC] knob.
2. Touch [MIC GAIN].



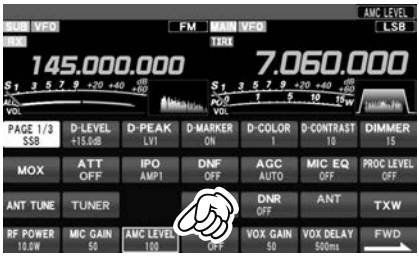
3. Key TX and adjust the [FUNC] knob to set the input level of the Microphone Amplifier to the position where the ALC Meter needle does not exceed the ALC zone on the audio peaks.



2. Adjust the AMC gain

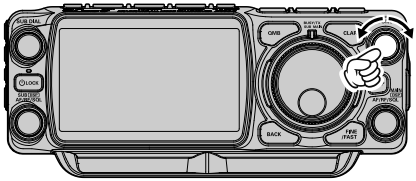
Touch the Meter Display and then touch “COMP” to select the COMP Meter.

1. Press and hold 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.



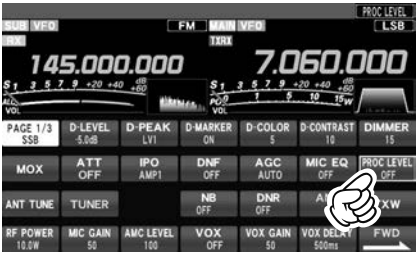
The AMC function only works in LSB, USB, AM, AM-N, DATA-L, DATA-U and PSK modes.
It does not work in other modes.

Speech Processor

The FTX-1 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 LSB/USB mode. It does not work in other modes.

1. Adjust the MIC gain as described on the previous page.
2. Press and hold the [FUNC] knob.
3. Touch [PROC LEVEL].



4. Touch the Meter area on the display to select the “COMP” meter.
5. The transmit meter becomes the “COMP” meter.
6. Press the PTT switch on the microphone, and speak into the microphone in a normal voice level.
7. 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.
   - The “PROC” indicator lights in the display.

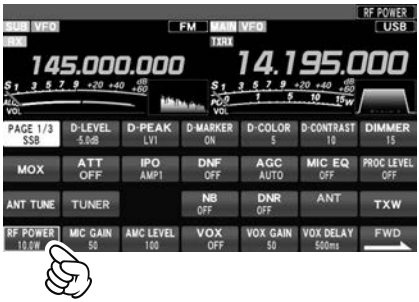
Rotate the [FUNC] knob to the left to turn the speech processor function “OFF”.

> 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 and hold the [FUNC] knob.
2. Touch [RF POWER].



3. Rotate the [FUNC] knob to adjust the RF power.

MONITOR

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

1. Press and hold 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, D-FM-N, AM and AM-N modes.

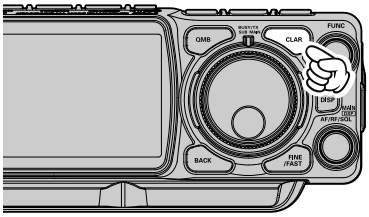
- If you are using the speaker for monitoring, instead of headphones, excessive advancement of the Monitor level can cause feedback to occur. Additionally, this feedback can cause the VOX system to hang up in a loop, making it impossible to return to receive. Therefore, we recommend the use of headphones, 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”.

CLAR (Clarifier)

The clarifier is used to adjust the transceiver receive frequency to match the other station transmit frequency and improve the audio; or to shift the transmit frequency of this station when the transmit frequency of the contact station is shifted.

The display will indicate “CLAR RX” → “CLAR TX” → “CLAR RXTX” in red, each time the [CLAR] key is pressed, and the clarifier will activate.



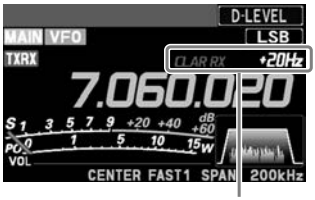
To adjust the offset frequency of the clarifier, turn the “MAIN DIAL” for the MAIN-side, or the “SUB DIAL” for the SUB-side.

To turn the clarifier OFF, repeatedly press the [CLAR] key until the Clarifier status is not displayed.
To clear out the programmed clarifier offset altogether, and reset it to “zero,” press and hold the [CLAR] key.

• 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 +20Hz.

Offsets of up to ±9995Hz may be set using the Clarifier.

• Adjust transmit frequency to the offset frequency

After changing the receiver frequency with RX Clarifier, the transmitter frequency can be set to the same frequency as the receiver.

1. After offsetting the receiver frequency, press the [CLAR] key twice.
   The transmit frequency becomes the same as the receive frequency. “CLAR RX” of the display changes to “CLAR RXTX”.
2. Press the [CLAR] key twice, only the receive frequency returns to the offset state.
   “CLAR RXTX” of the display changes to “CLAR RX”.

• 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.

Offsets of up to ±9995Hz 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.

• To offset the frequency with the TX Clarifier Adjust receive frequency

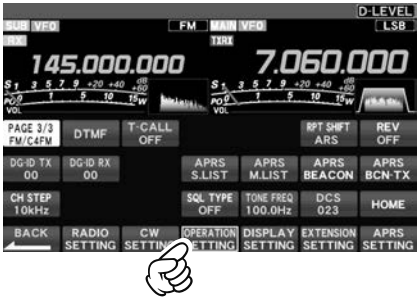
When the transmit frequency is offset with the TX Clarifier, it can be reset to the same frequency as the TX frequency offset from the receive frequency.

1. After offsetting the transmit frequency, press the [CLAR] key.
   The receive frequency becomes the same as the transmit frequency. “CLAR TX” of the display changes to “CLAR RXTX”.
2. Press the [CLAR] key three times, only the transmit frequency returns to the offset state. “CLAR RXTX” of the display changes to “CLAR TX”.

QRP Mode

Equipped with a QRP mode that allows you to set the maximum transmission output to “5W” on all bands. This is useful for QRP contests.

1. Press and hold the [FUNC] knob.
2. Select [OPERATION SETTING] → [TX GNRL].



3. Rotate the [FUNC] knob to select [QRP MODE].
4. Rotate the [FUNC] knob, or touch “<” or “>” on either side of the value to select “ON” or “OFF”.
5. Press the [FUNC] knob, or wait for about 3 seconds to save the setting.

DNR (Digital Noise Reduction)

The Digital Noise Reduction (DNR) system is designed to reduce the level of ambient noise . The (DNR) system is especially effective during SSB operation. Any of 10 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 MAIN-side and SUB-side.

1. Press and hold the [FUNC] knob.
2. Touch [DNR].

3. Rotate the [FUNC] knob to adjust the DNR level.
   The “DNR” indicator lights in the display.
4. Rotate the [FUNC] knob to the left to turn the DNR function “OFF”.

Voice Memory

The Voice Memory capability of the FTX-1 may be used to store and replay often repeated messages. The Voice Memory includes five memories.

When performing Voice memory, a commercially available microSD card is necessary.

• Recording Your Own Voice in Memory

1. Insert a commercially available microSD memory card into the SD card slot on the left side of the transceiver.
2. Select the LSB, USB, AM, AM-N, FM or FM-N mode.
3. Press and hold the [FUNC] knob.
4. Touch [MESSAGE].
   The “MESSAGE MEMORY” screen will be displayed.
5. Touch [MEM] on the display.
   A blinking “REC” will appear in the display.
6. Touch [1] through [5] on the display to select that memory storage register.
7. Press the microphone PTT switch momentarily.
   The “REC” icon will glow steadily and recording will begin.
   - “REC” lights up on the display while recording is in progress.
   - Remember that the time limit for recording any message is 90 seconds.
8. Release the PTT switch to complete the message storage process.

• Checking the Recording

1. Press and hold the [FUNC] knob.
2. Touch [BK-IN] to turn OFF the BK-IN function.
3. Touch [MESSAGE].
   The “MESSAGE MEMORY” screen will be displayed.
4. Touch [1] through [5] on the display (whichever register was just recorded in). The “MSG” icon will appear in the display and the audio recorded in the Voice Memory will be heard.
   - To adjust the playback volume level, turn the [FUNC] knob or touch [RX LEVEL] when not playing, and then turn the [FUNC] knob to adjust.

• Transmitting the Recorded Message

1. Select the LSB, USB, AM, AM-N, FM or FM-N mode.
2. Press and hold the [FUNC] knob.
3. Touch [BK-IN] to turn ON the BK-IN function.
4. Touch [MESSAGE] .
5. Touch [1] through [5] on the display (whichever memory was recorded in). A “MSG” icon will appear in the display and the message will be transmitted.
   - To adjust the output level during transmit, touch [TX LEVEL] and turn the [FUNC] knob.

Record the received audio

You can record and play the received audio on the microSD memory card.
Record and play of the received audio may be operated from the Display Panel.

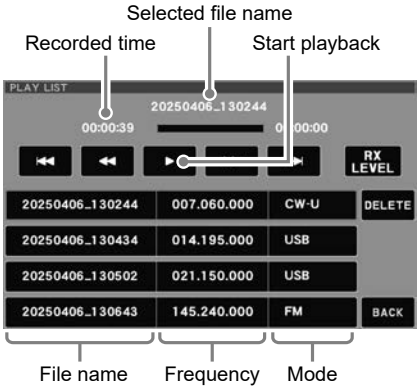
- Only audio from the MAIN side will be recorded. The SUB side audio cannot be recorded.
- When performing record and play of the received audio, a commercially available microSD card is necessary.
- The maximum recording time for one file is about 16 hours. (Maximum file size limit approx. 3.5GB) Recording stops automatically when the maximum file size limit is exceeded.
- Audio files other than those recorded by this unit cannot be played.

• Recording the received audio

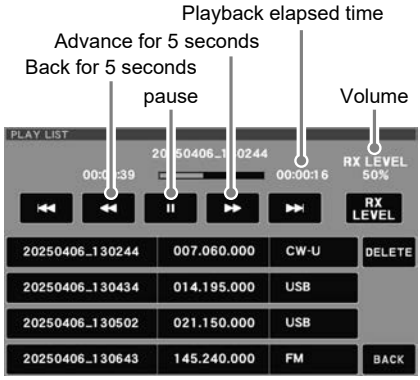
1. Insert a commercially available microSD memory card into the SD card slot on the left side of the transceiver.
2. Press and hold the [FUNC] knob.
3. Touch [RECORD].
   A “S.REC” icon will blink and recording will begin.
   The recording time depends on the capacity of the SD memory card used.
4. Touch [STOP] to end recording.
   “S.REC” on the display turns OFF.

• Play the recorded content

1. Press and hold the [FUNC] knob.
2. Touch [PLAY].
   The “PLAY LIST” screen will be displayed.
3. Rotate the [FUNC] knob to select the file name you want to play.
   You can also select it by touching [I◄◄] or [►►I].
4. Touch [►] to start playback.



5. Rotate the [FUNC] knob during playback to adjust the volume.
   You can also adjust the volume by touching [RX LEVEL] and turning the [FUNC] knob when not playing.



6. Touch [BACK] to return to normal operation.

• Erase the recorded content

1. Press and hold the [FUNC] knob.
2. Touch [PLAY].
   The “PLAY LIST” screen will be displayed.
3. Rotate the [FUNC] knob to select the file name you want to delete.
4. Touch [DELETE].
5. Touch [OK] to delete it.

Using the Automatic Antenna Tuner (FTX-1 optima only)

The Automatic Antenna Tuner (ATU) is built into each FTX-1 optima. 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 FTX-1 optima 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 FTX-1 optima is designed to match impedances within the range of 16.7 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 and hold the [FUNC] knob.
2. Touch [TUNER] 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.
3. Touch [ANT TUNE] key to begin automatic tuning.

   The transmitter will be engaged, and "TUNE" will be blinks 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.
   - It is normal to hear the sound of the relays while tuning is in progress.
4. To disengage the ATU from the transmit line, touch [TUNE].

About ATU Memories

SWR (After tuning) Less than 2:1
The tuner settings are stored in the ATU memory.

SWR (After tuning) Greater than 2:1
Tuning data will not be retained in memory. If operation is returned to the same frequency, the tuning process must be repeated.

SWR (After tuning) Greater than 3:1
The "HI-SWR" icon will light up, and the tuner settings, if achieved, will not be memorized.
Investigate the high SWR condition and resolve the problem before attempting further operation using this antenna.

For additional details on the following Functions, refer to the Advanced Manual which may be downloaded from the Yaesu website.

Tone squelch feature

The tone squelch opens the speaker audio only when a signal containing the specified CTCSS tone is received. By matching the CTCSS tone frequency with the partner stations, quiet standby monitoring is possible.

DCS (Digital Code squelch) feature

The DCS (Digital Coded Squelch) function allows audio to be heard only when signals containing the same DCS code are received.

DG-ID (Digital Group ID) feature

Digital Group ID (DG-ID) function allows using the two-digit ID numbers to communicate only with specific group members.

DP-ID (Digital Personal ID) feature

DP-ID (Digital Personal ID) feature opens the speaker audio only when a C4FM signal set to the same DP-ID in the Digital Mode is received.

Parametric Microphone Equalizer

The FTX-1 includes a unique Three-Band Parametric Microphone Equalizer that provides precise, in- dependent control over the low, mid and treble ranges in the voice waveform. One group of settings may be utilized when the Speech Processor is Off, and an alternate group of settings when the Speech Processor is On (SSB mode only).

Adjustable Receiver Audio Filter

The FTX-1 incorporates an adjustable receiver audio filter, that affords precision control of the lower and upper audio ranges independently.

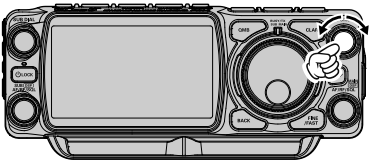
Change the sound quality of the received audio

You can change each of the high, mid, and low frequencies of the received audio to your liking. It can be set for each mode.

CW Mode Operation

The impressive CW operating capabilities of the FTX-1 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 left side panel KEY jack.
2. Set the operating mode to CW-U.
   The normal “CW” mode utilizes USB-side carrier injection.
3. Press and hold the [FUNC] knob.



4. Touch [BK-IN] to turn ON the BK-IN function.
5. Touch [MONI LEVEL] and then turn the [FUNC] knob to adjust the volume of the monitor.
6. When using the keyer paddle, press and hold the [FUNC] knob and then touch [KEYER] to turn ON the Electronic Keyer.
7. When the key or the keyer paddle is pressed, the transmitter will automatically be engaged.

As shipped from the factory, the FTX-1 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 and hold the [FUNC] knob, then touch [MONI LEVEL], and then rotating the [FUNC] knob.

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”.

1. Press and hold the [FUNC] knob.
2. Select [CW SETTING] → [MODE CW].
3. Rotate the [FUNC] knob to select [CW INDICATOR].
4. Rotate the [FUNC] knob, or touch “<” or “>” on either side of the value to select “ON” or “OFF”.
5. Press the [FUNC] knob, or wait for about 3 seconds to save the setting.

• ZIN

1. Press and hold the [FUNC] knob.
2. Touch [ZIN] to cause the receiving frequency to zero-in automatically while receiving the CW signal.

• SPOT

1. Press and hold the [FUNC] knob.
2. Touch [CW SPOT].
3. While you are pressing and holding the [FUNC] knob, the tone is output from the speaker.
   - The Spot tone audio level may be adjusted by press and hold the [FUNC] knob, then touching [MONI LEVEL], and 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 and hold the [FUNC] knob.
2. Touch [BK-DELAY].
3. Rotate the [FUNC] knob to adjust the hang time for comfortable operation.
4. Press and hold the [FUNC] knob to save the setting.

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 3:0 (a dash is three times longer than a dot).

1. Press and hold 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, or wait for about 3 seconds to save the setting.
5. Press the [BACK] key 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.

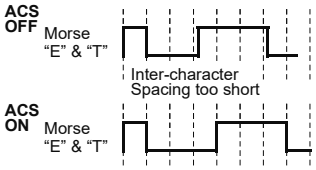
> In the Keyer modes described on the chart at the right, BUG and OFF modes are not changed.

1. Press and hold 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, or wait for about 3 seconds to save the setting.
6. Press the [BACK] key several times to return to normal operation.

• Selecting the Keyer Operating Mode

The configuration of the Electronic Keyer may be customized for the FTX-1. This permits utilization of Automatic Character Spacing (ACS), if desired.

1. Press and hold 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, or wait for about 3 seconds to save the setting.
6. Press the [BACK] key 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 FTX-1 may be controlled either from the Transceiver Front Panel.

• 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 and hold 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, or wait for about 3 seconds to save the setting.
6. Press the [BACK] key several times to return to normal operation.

• Message Memory Programming (Using your Paddle)

1. Set the operating mode to CW.
2. Press and hold the [FUNC] knob.
3. Touch [BK-IN] to turn it “OFF”.
4. Touch [KEYER] to turn it “ON”.
   The built-in Electronic Keyer is activated.
5. Touch [MESSAGE] .
   The “MESSAGE MEMORY” screen will be displayed.
6. Touch [MEM] on the display.
   A blinking “REC” will appear in the display.
7. Touch [1] through [5] on the display to select that memory storage register.
   ● The “REC” will glow steadily.
8. Send the desired CW message using the keyer paddle.
9. Touch [MEM] on the display 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 and hold 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.
4. Press and hold the [FUNC] knob.
5. Touch [MESSAGE].
   The “MESSAGE MEMORY” screen will be displayed.
6. Touch [1] - [5] on the display, 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 and hold the [FUNC] knob.
2. Touch [BK-IN] to turn it “ON”.
3. Touch [MESSAGE].
   The “MESSAGE MEMORY” screen will be displayed.
4. Touch [1] - [5] on the display 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.
   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 and hold 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, or wait for about 3 seconds to save the setting.
6. Press the [BACK] key several times to return to normal operation.

• Text Message Programming

1. Set the operating mode to CW.
2. Press and hold the [FUNC] knob.
3. Touch [MESSAGE].
   The "MESSAGE MEMORY" screen will be displayed.
4. Touch [MEM] on the display.
5. Touch [1] through [5] on the display 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 FTX-1 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 text entry is completed, touch [ENT].
8. When all the characters have been programmed, touch [BACK] to exit.

• Checking the CW Memory Contents

1. Set the operating mode to CW.
2. Press and hold the [FUNC] knob.
3. Touch [BK-IN] to turn it "OFF".
4. Touch [MONI LEVEL] and then turn the [FUNC] knob to adjust the volume of the monitor.
5. Press and hold the [FUNC] knob.
6. Touch [MESSAGE].
   The "MESSAGE MEMORY" screen will be displayed.
7. Touch [1] - [5] on the display, 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. Press and hold the [FUNC] knob.
3. Touch [BK-IN] to turn it "ON".
4. Touch [MESSAGE].
   The "MESSAGE MEMORY" screen will be displayed.
5. Touch [1] - [5] on the display, 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.

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 and hold 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, or wait for about 3 seconds to save the setting.
5. Press the [BACK] key 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,).

Touch [DECnnnn] on “MESSAGE MEMORY” screen. The current Contest Number will be reduced by one. If you go too far, use the “Contest Number Programming” technique described above.

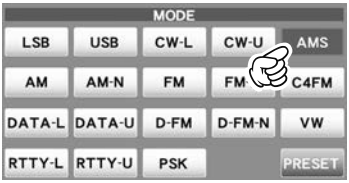
Selecting the Communication Mode

• Using AMS (Automatic Mode Select) function for VHF/UHF

The FTX-1 transceiver is equipped with the AMS (Automatic Mode Select) function which automatically selects the communication mode corresponding to the received signal.

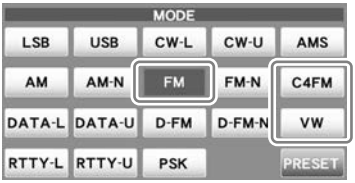
To utilize the AMS function.

1. Press and hold the [N/W (MODE)] key.
   The operation mode selection screen appears on the display.
2. Touch [AMS].
   When a signal is received, the communication mode is automatically switched and the communication mode display changes.



• Fixing the Communication Mode

1. Press and hold the [N/W (MODE)] key.
   The operation mode selection screen appears on the display.
2. Touch [FM], [C4FM] or [VW].



Communication Mode	Icon	Description of Modes
V/D mode (Voice & Data are transmitted simultaneously)	C4FM	This is the standard digital mode. Calls are less prone to interruptions caused by detection and correction of the received digital voice signal.
Voice FR mode (Voice Full Rate Mode)	VW	High speed data communication using entire 12.5 kHz band. Enables high-quality voice communication.
FM mode	FM	Analog communication using FM mode.

Repeater Operation

1. Set the operating mode to FM.
2. Set to the desired repeater output frequency (downlink from the repeater).
3. Press and hold 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" → "+" → "ARS"
   - To program the proper repeater shift, use Menu items "RPT SHIFT(28MHz)", "RPT SHIFT(50MHz)", "RPT SHIFT(144MHz)" and "RPT SHIFT(430MHz)" as appropriate.
6. Rotate the [FUNC] knob to select [SQL TYPE].
7. Rotate the [FUNC] knob, or touch "<" or ">" on either side of the value to select "ENC".
8. Rotate the [FUNC] knob to select [TONE FREQ].
9. 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).
10. Press the [FUNC] knob, or wait for about 3 seconds to save the setting.
11. Press the [BACK] key several times to return to normal operation.

Press and hold the microphone PTT switch to begin transmitting.

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	-	-	-	-	-	-

• Tone Calling (1750 Hz)

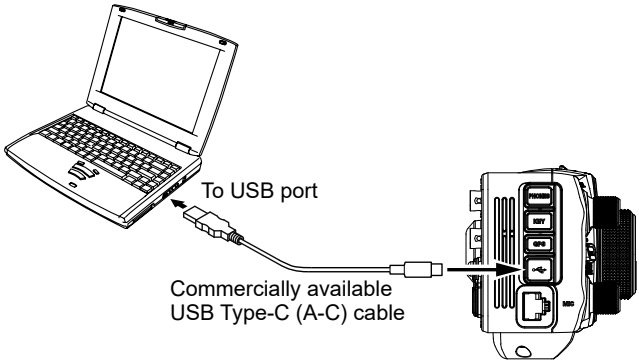
1. Press and hold the [FUNC] knob.
2. Touch [T-CALL] to generates a 1750 Hz burst tone to access the European repeater.
3. Once access to the repeater has been gained, you may touch [T-CALL] again, and use the PTT switch for activating the transmitter thereafter.

DATA (FT8 / RTTY / PSK) Operation

The transceiver and a PC may be connected with a commercially available USB cable (Type-C) to operate data communications using commercially available software and freeware.
Before connecting a RTTY communications TU (Terminal unit) or DATA Communications Device to the transceiver, also refer to the instruction manual of the connected device.

Connecting to a Personal Computer

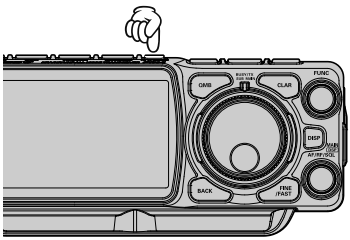
To connect to a PC using a USB cable, a Virtual COM port driver must be installed on the PC. Visit the Yaesu website http://www.yaesu.com/ to download the Virtual COM port driver and Installation Manual.

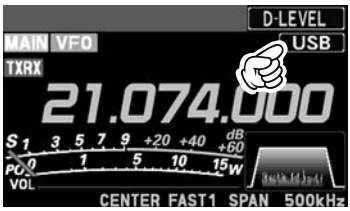


FT8 Operation

The multiple settings required for FT8 operation may be set with one touch of [PRESET]. In addition, the FT8 settings can be returned to the prior settings with one touch.

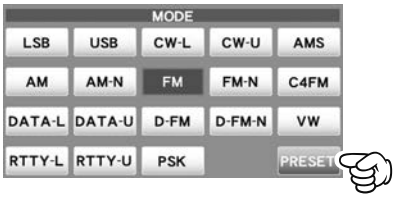
1. Touch the operation mode area, or press and hold the [N/W(MODE)] key.





2. The operation MODE selection screen appears on the display, then touch [PRESET], or rotate the [FUNC] knob to select [PRESET] then press the [FUNC] knob.

Touch [PRESET] or select [PRESET] via the [FUNC] knob, the settings will be confirmed and then the operating screen will return.



3. Touch [PRESET] again, the [PRESET] settings are canceled and the original settings are restored.

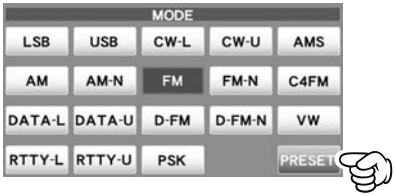
The color of the [PRESET] shows the current state.
Blue: Enable the [PRESET] settings
Gray: Disable the [PRESET] settings

• Change the [PRESET] setting

Five channels of the 15 listed in the table below are registered in [PRESET]. These settings may be changed as needed.

Function	Available Settings (Default: Bold)
CAT-1 RATE	4800bps / 9600bps / 19200bps / **38400bps** / 115200bps
CAT-1 TIME OUT TIMER	**10msec** / 100msec / 1000msec / 3000msec
CAT-1 CAT-3 STOP BIT	**1bit** / 2bit
AGC FAST DELAY	20msec - **160msec** - 4000msec (20msec/step)
AGC MID DELAY	20msec - **500msec** - 4000msec (20msec/step)
AGC SLOW DELAY	20msec - **1500msec** - 4000msec (20msec/step)
LCUT FREQ	OFF / **100Hz** - 1000Hz (50Hz/step)
LCUT SLOPE	6dB/oct / **18dB/oct**
HCUT FREQ	OFF / 700Hz - **3200Hz** - 4000Hz (50Hz/step)
HCUT SLOPE	6dB/oct / **18dB/oct**
USB OUT LEVEL	0 - **50** - 100
TX BPF SEL	**50-3050Hz** / 100-2900Hz / 200-2800Hz / 300-2700Hz / 400-2600Hz
MOD SOURCE	MIC / USB / Bluetooth / **AUTO**
USB MOD GAIN	0 - **50** - 100
RPTT SELECT	OFF / **RTS** / DTR

1. Touch and hold [PRESET], the operation mode selection screen appears on the display.
2. Touch the PRESET 1 to 5 settings to be changed.
3. Touch the desired item, or rotate the [FUNC] knob to select the desired item, then press the [FUNC] knob.
4. Rotate the [FUNC] knob, or touch “<” or “>” on either side of the value setting that is to be changed.
5. Press the [FUNC] knob, or wait for about 3 seconds to save the setting.
6. Press the [BACK] key twice to return to the operation MODE selection screen. After about 5 seconds, the operation screen will return.



RTTY Operation

1. Before operating with RTTY, set the Menu items in the chart to the below.

Setting Menu	Available Values (Bold is the default)	
RADIO SETTING → MODE RTTY → RPTT SELECT	**OFF**	Not available
	RTS/DTR	Controls the RTTY transmit signal from the USB virtual COM/ RTS or DTR ports.
RADIO SETTING → MODE RTTY → MARK FREQUENCY	1275Hz **2125Hz**	Normally use at 2125 Hz.
RADIO SETTING → MODE RTTY → SHIFT FREQUENCY	**170Hz** 200Hz 425Hz 850Hz	Normally use at 170 Hz.
RADIO SETTING → MODE RTTY → POLARITY TX	**NOR**	The shift direction of the RTTY transmit space frequency will be lower than the mark frequency.
	REV	The shift direction of the RTTY transmit mark frequency will be lower than the space frequency.

2. Set the operating mode to RTTY-L.

Generally, amateur band stations operate RTTY in LSB.

Align the peak of the received signal with the mark frequency and shift frequency marker of the TFT screen.

PSK Operation

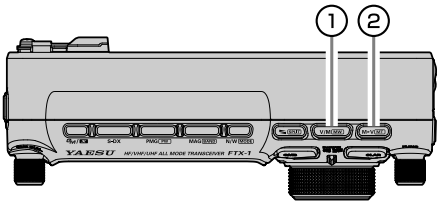
1. For PSK operation, set the Menu items as indicated in the below chart.

Setting Menu	Available Values (Bold is the default)	
RADIO SETTING → MODE DATA → MOD SOURCE	MIC	Audio is input from the MIC jack.
	USB	Audio/Data is input from the USB jack.
	Bluetooth	Audio/Data is input from the Bluetooth.
	AUTO	Modulation is automatically selected according to the transmission method. PTT: The MIC jack on the front panel. MOX: The MIC jack on the front panel. CAT: The USB jack on the front panel. RTS: The USB jack on the front panel. DTR: The USB jack on the front panel. VOX: Terminal set with “VOX SELECT”.
RADIO SETTING → MODE DATA → RPTT SELECT	**OFF**	Not available
	RTS/DTR	Controls the DATA transmit signal from the USB virtual COM/RTS or DTR ports.

2. Set the operating mode to PSK.

Set the operation mode of the data communication software application on the PC to “DATA-U”.

Align the peak of the received signal with the mark frequency and shift frequency marker of the TFT screen.



① V/M (MW)

This key toggles frequency control between VFO and the memory system.

Memory Storage

1. Set the frequency, mode, and status, as desired.
2. Press and hold the [V/M (MW)] 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 (MW)] 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 microSD card.

Recall a Memory Channel other than the last used VFO frequency

Rotate the MAIN DIAL/SUB DIAL knob to select a memory

1. Press the [V/M (MW)] key.
2. Rotate the MAIN DIAL/SUB DIAL knob, to select the desired memory channel.

Touch the display to select a memory

1. Press and hold the [V/M (MW)] 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. Press the [FUNC] knob.
4. To exit from memory mode and return to the VFO mode, press the [V/M (MW)] key.

② M►V (MT)

• Moving Memory Data to the VFO register

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

1. Press and hold the [V/M (MW)] key while operating in either VFO mode, or memory channel mode.
   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 the [**M►V** (MT)] key, the data in the selected memory channel will now be transferred to the VFO.

• Transfer last used memory to VFO

When in VFO mode, the last used VFO memory may be copied to VFO.

Press the [**M►V** (MT)] key, copy to the VFO.

The memory last used by MAIN-side is copied to MAIN-side VFO, and the memory last used by SUB-side is copied to SUB-side VFO.

• Memory Tune Operation

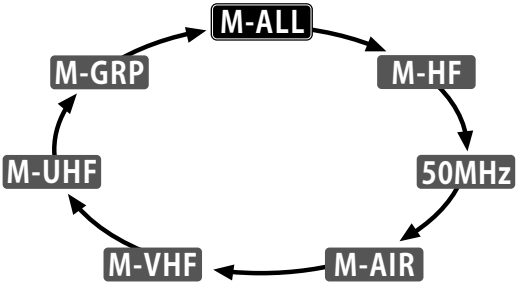
You may freely tune off from any memory channel in a “Memory Tune” mode, this is similar to VFO operation. So long as you do not overwrite the contents of the current memory, Memory Tune operation will not alter the contents of the memory channel.

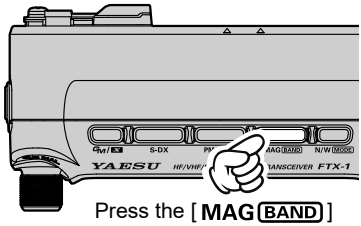
1. When in memory mode, press and hold the [**M►V** (MT)] key.
   - The “MT” notation will appear instead of the “M-nnn”.
2. Rotate the MAIN DIAL/SUB DIAL knob; you will now observe that the memory channel frequency is changing.
3. Press the [**M►V** (MT)] key to return to the originally memorized frequency of the current memory channel.

Recall only memories in the same frequency band (Band) using the MAG (Memory Auto Grouping) function

With the MAG (Memory Auto Grouping) function, only memory channels in the same frequency band (Band) can be called.

In the memory mode, each time the key is pressed, only memory channels of the specified frequency band are automatically recalled as a group, as shown below:





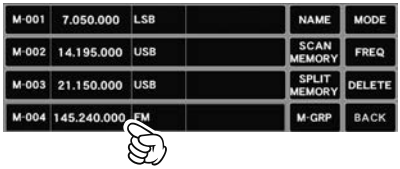
Press the [**MAG** (BAND)]

Group	Selectable Memory Channels
M-ALL	Recalls all memory channels regardless of frequency band.
M-HF	Recalls only memory channels in the HF band.
50MHz	Recalls only memory channels in the 50MHz band.
M-AIR	Recalls only memory channels in the AIR band.
M-VHF	Recalls only memory channels in the VHF band.
M-UHF	Recalls only memory channels in the UHF band.
M-GRP	Channels, regardless of the band, can be registered in advance and called up as frequently used memory channels in the M-GRP.

Refer to the next page for instructions to register with M-GRP.

• Registering frequently used memory channels in M-GRP (Memory Group)

1. Press the [V/M (MW)] key.
   The memory channel list will be displayed.
2. Rotate the [FUNC] knob to select the memory channel to be registered in the M-GRP, then press the [FUNC] knob.



3. Touch [M-GRP].

The memory channel numbers registered in the M-GRP are changed in white to Blue.

• Unregistering memory from M-GRP (Memory Group)

1. Press the [V/M (MW)] key.
   The memory channel list will be displayed.
2. Rotate the [FUNC] knob to select the memory channel to be unregistered.
3. Touch [M-GRP].

Edit memory

• Erasing Memory Channel Data

The contents written to the memory channel may be erased.

1. Press the [V/M MW] 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 return to the previous screen.

> Memory channels “M-001” and “5-01” through “5-15” 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 the [V/M MW] 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.

• 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 the [V/M MW] 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 [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.

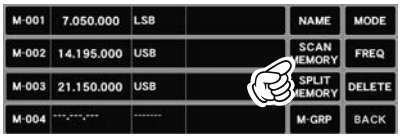
5. Touch [ENT].
   To add a label to another memory, repeat steps 2 to 5 above.
6. Touch [BACK] to save the new settings and return to normal operation.

• Scan Skip Setting

Each memory channel can be set to be skipped during memory scan.

1. Press the [V/M (MW)] 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 on the screen.



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

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

> 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 “5-15”, 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, CW-U or DATA-U (U.S. version only) mode is automatically selected on these channels.
These channels appear after the “last” PMS channel (“P-50U”).

U.S. Version

Channel Number	Frequency
5-01	5.332.000 MHz (USB)
5-02	5.348.000 MHz (USB)
5-03	5.358.500 MHz (USB)
5-04	5.373.000 MHz (USB)
5-05	5.405.000 MHz (USB)
5-06	5.332.000 MHz (CW-U)
5-07	5.348.000 MHz (CW-U)
5-08	5.358.500 MHz (CW-U)
5-09	5.373.000 MHz (CW-U)
5-10	5.405.000 MHz (CW-U)
5-11	5.332.000 MHz (DATA-U)
5-12	5.348.000 MHz (DATA-U)
5-13	5.358.500 MHz (DATA-U)
5-14	5.373.000 MHz (DATA-U)
5-15	5.405.000 MHz (DATA-U)

U.K. Version

Channel Number	Frequency (U.K. Version)
5-01	5.260.000 MHz (USB)
5-02	5.280.000 MHz (USB)
5-03	5.290.500 MHz (USB)
5-04	5.368.000 MHz (USB)
5-05	5.373.000 MHz (USB)
5-06	5.400.000 MHz (USB)
5-07	5.405.000 MHz (USB)

For additional details on the following Functions, refer to the Advanced Manual which may be downloaded from the Yaesu website.

PMS (Programmable Memory scan)

This function scans only the range of frequencies between the lower and upper limits registered in a pair of PMS (Programmable Memory channel). 50 sets of PMS memory channels (P-01L/P-U01U to P-50L/P-50U) are available.

Split Memory

Two different frequencies, one for receive and another for transmit, can be registered to a memory channel.

HOME Channel

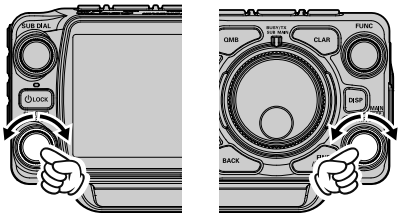
A special one-touch “HOME” channel is available for HF, 50MHz, AIR, 144MHz and 430MHz bands, to allow quick recall of a favorite operating frequency /on each band.

VFO and Memory Scanning

Either the VFO or the memory channels of the FTX-1 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 [AF/RF/SQL] knob so that the background noise is just silenced (page 9).



3. Pressing and holding the UP or DWN key on the microphone will start the scanning.
   - The operation when a signal is received during scanning varies depending on the mode type.

Other than LSB, USB CW-L, CW-U	Scanning will pause.
LSB, USB CW-L, CW-U	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 (MAIN-side)/SUB DIAL (SUB-side) 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.
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.

- During MAG operation, only the channels within the current 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] → [BAND/SCAN] → [SCAN RESUME].
  The default “BUSY” setting will cause the scan will continue to pause while receiving the signal.

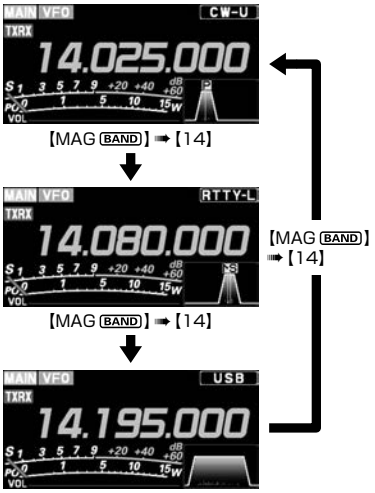
Band Stack Operation

The FTX-1 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 14MHz band, might be arranged like this:

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

   With this configuration, successive momentary press and hold the [MAG 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 and hold 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, or wait for about 3 seconds to save the setting.
5. Press the [BACK] key several times to return to normal operation.

Operation on Alaska Emergency Frequency: 5167.5kHz

Section 97.401(d) of the regulations governing amateur radio in the United States permit 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, and is never to be used for routine communications.

The FTX-1 is capable of transmitting and receiving on 5167.5 kHz under such emergency conditions. Use the Setting Menu to activate the Alaska Emergency Frequency feature:

1. Press and hold the [FUNC] knob.
2. Select [OPERATION SETTING] → [TX GNRL] → [EMERGENCY FREQ TX].
3. Rotate the [FUNC] knob, or touch “<” or “>” on either side of the value to select “ON”.
4. Press the [FUNC] knob, or wait for about 3 seconds to save the setting.
5. Press the [BACK] key several times to return to normal operation.
   Emergency communication on this spot frequency is now possible.
6. Press the [V/M MW] key, as necessary, to enter the Memory mode.
7. Rotate the MAIN dial (MAIN-side)/SUB DIAL (SUB-side) knob to select the emergency channel (“EMG”), which is found after the channel “5-15”.

Using the microSD Card

The following operations can be completed with the use of an microSD 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

• microSD Cards that can be used

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

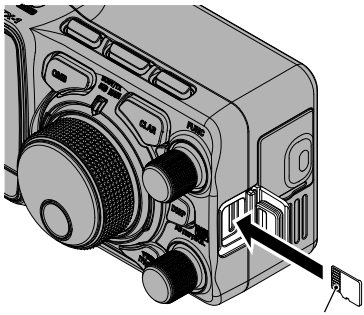
- The microSD or microSDHC cards are not provided with the product.
- Not all microSD and microSDHC cards sold commercially are guaranteed to work with this product.

- Do not touch the contacts of the microSD card with your hands.
- microSD cards formatted on other devices may not properly save information when used with this transceiver. Format microSD cards again with this transceiver when using memory cards formatted with another device.
- Do not remove the microSD card or turn the transceiver OFF, while saving data to the microSD card is in progress.
- When a single microSD card is used for a long period of time, writing and deletion of data may become disabled. Use a new microSD 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 microSD card.

• Installing the microSD card

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

To prevent the microSD card from popping out, insert and remove the microSD card firmly.



• Removing the microSD card

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

• Formatting a microSD card

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

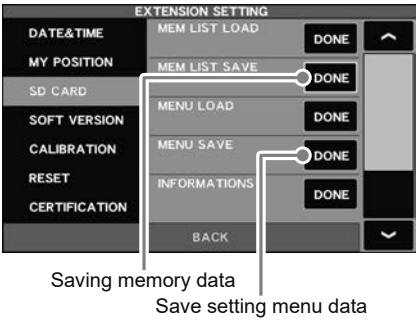
Formatting a microSD card erases all data saved on it. Before formatting the microSD card, be sure to check the data previously saved on it.

1. Press and hold 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. Press the [BACK] key 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 microSD Card:

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



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

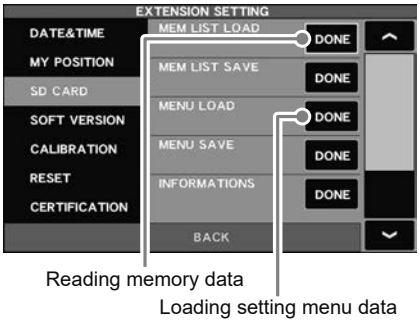
5. Enter the file name (maximum 15 characters) on the file name input screen.
   If the file name is not to be changed, proceed to step 6 as it is.

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. Press the [BACK] key several times to return to normal operation.

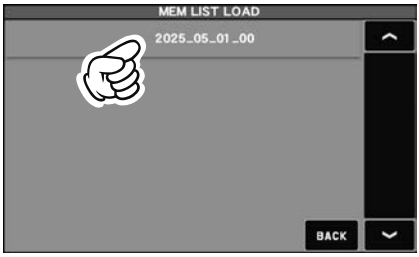
• Reading Memory and Set Menu data

The Memory and Setting Menu data saved on the microSD 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
7. reading is completed.
8. Touch the TFT screen to finish loading the data.
9. Once the power is turned OFF, the power is turned ON automatically afterwards.

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

For additional details on the following Functions, refer to the Advanced Manual which may be downloaded from the Yaesu website.

Screen capture

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

Display the microSD Card Information

The memory free space of the microSD card may be checked.

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

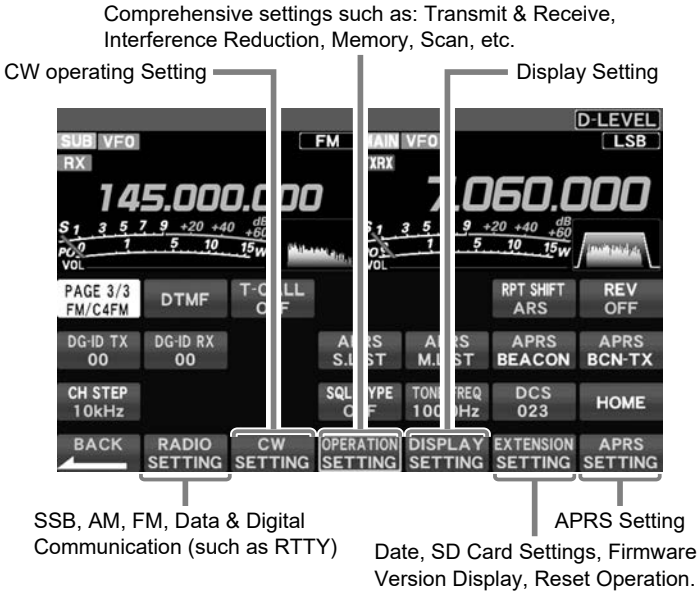
1. Press and hold the [FUNC] knob → Select [EXTENSION SETTING] → [DATE&TIME].
2. Select the item “DAY”, “MONTH” or “YEAR”.
3. Rotate the [FUNC] knob, or touch “<” or “>” on either side of the value to select the “day", “month” and “year", then press the [FUNC] knob.
4. Press the [FUNC] knob, or wait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

Adjusting the Clock

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

Setting Menu

The Menu system of the FTX-1 provides extensive customization capability. The transceiver functions can be tailored for the most demanding operators. The Setting Menus are grouped into five specific utilization categories.



Using the Menu

1. Press and hold the [FUNC] knob.
2. Touch the category item that is to be set (see above).
3. Touch the desired item, or rotate the [FUNC] knob to select the desired item, then press the [FUNC] knob.
4. Rotate the [FUNC] knob to select the desired item, then touch the item, or rotate the [FUNC] knob to select the desired item, then press the [FUNC] knob.
5. Rotate the [FUNC] knob, or touch "<" or ">" on either side of the value setting that is to be changed.
6. Press the [FUNC] knob, or wait for about 3 seconds to save the setting.
7. Press the [BACK] key several times to return to normal operation.

Reset the Setting Menu

Use this procedure to restore the Menu settings to their factory defaults, without affecting the Programmed Frequency Memories.

1. Press and hold the [FUNC] knob.
2. Select [EXTENSION SETTING] → [RESET].
3. Touch "DONE" of the "MENU CLEAR" item.
   The reset confirmation screen will be displayed.
4. Touch "OK" or press the [FUNC] knob to reset.
   (Touch "CANCEL" to cancel the reset)
5. Once the power is turned OFF, it will turn ON automatically afterwards.
   Setting Menu reset is complete.

Tables of Menu list Operations

Note: For details, refer to the Advanced Manual (download from the Yaesu website).

Menu Function		Available Settings (Default: Bold)
RADIO SETTING		
MODE SSB	AF TREBLE GAIN	-20 - **0** - 10
	AF MIDDLE TONE GAIN	-20 - **0** - 10
	AF BASS GAIN	-20 - **0** - 10
	AGC FAST DELAY	20 - **300** - 4000 (20msec/step)
	AGC MID DELAY	20 - **1000** - 4000 (20msec/step)
	AGC SLOW DELAY	20 - **3000** - 4000 (20msec/step)
	LCUT FREQ	OFF / **100** - 1000 (50Hz/step)
	LCUT SLOPE	**6dB/oct** / 18dB/oct
	HCUT FREQ	700 - **3000** - 4000 (50Hz/step) / OFF
	HCUT SLOPE	**6dB/oct** / 18dB/oct
	USB OUT LEVEL	0 - **50** - 100
	TX BPF SEL	50-3050 / **100-2900** / 200-2800 / 300-2700 / 400-2600
	MOD SOURCE	MIC / USB / Bluetooth / **AUTO**
	USB MOD GAIN	0 - **50** - 100
	RPTT SELECT	**OFF** / RTS / DTR
	NAR WIDTH	300/400/600/850/1100/1200/**1500**/1650/1800/1950/ 2100/2250/2400/2450/2500/2600/2700/2800/2900/ 3000/3200/3500/4000 (Hz)
	CW AUTO MODE	**OFF** / 50M / ON
MODE AM	AF TREBLE GAIN	-20 - **0** - 10
	AF MIDDLE TONE GAIN	-20 - **0** - 10
	AF BASS GAIN	-20 - **0** - 10
	AGC FAST DELAY	20 - **1000** - 4000 (20msec/step)
	AGC MID DELAY	20 - **2000** - 4000 (20msec/step)
	AGC SLOW DELAY	20 - **4000** (20msec/step)
	LCUT FREQ	**OFF** / 100 - 1000 (50Hz/step)
	LCUT SLOPE	**6dB/oct** / 18dB/oct
	HCUT FREQ	700 - 4000 (50Hz/step) / **OFF**
	HCUT SLOPE	**6dB/oct** / 18dB/oct
	USB OUT LEVEL	0 - **50** - 100
	TX BPF SEL	**50-3050** / 100-2900 / 200-2800 / 300-2700 / 400-2600
	MOD SOURCE	MIC / USB / Bluetooth / **AUTO**
	USB MOD GAIN	0 - **50** - 100
	RPTT SELECT	**OFF** / RTS / DTR
MODE FM	AF TREBLE GAIN	-20 - **0** - 10
	AF MIDDLE TONE GAIN	-20 - **0** - 10
	AF BASS GAIN	-20 - **0** - 10
	AGC FAST DELAY	**20** - 4000 (msec) (20msec/step)
	AGC MID DELAY	20 - **240** - 4000 (msec) (20msec/step)
	AGC SLOW DELAY	20 - **500** - 4000 (msec) (20msec/step)
	LCUT FREQ	OFF / 100 - **300** - 1000 (Hz) (50Hz/step)
	LCUT SLOPE	6dB/oct / **18dB/oct**
	HCUT FREQ	700 - **3000** - 4000 (Hz) (50Hz/step) /OFF
	HCUT SLOPE	6dB/oct / **18dB/oct**

Menu Function		Available Settings (Default: Bold)
	USB OUT LEVEL	0 - **50** - 100
	MOD SOURCE	MIC / USB / Bluetooth / **AUTO**
	USB MOD GAIN	0 - **50** - 100
	RPTT SELECT	**OFF** / RTS / DTR
	RPT SHIFT	– / SIMP / + / **ARS**
	RPT SFT FREQ(28MHz)	0 - **100** - 1000 (kHz) (10kHz/step)
	RPT SFT FREQ(50MHz)	0 - **500** - 4000 (kHz) (10kHz/step)
	RPT SFT FREQ(144MHz)	**0.00** - 100 (MHz) (50kHz/step)
	RPT SFT FREQ(430MHz)	0.00 - **5.00** - 100 (MHz) (50kHz/step)
	SQL TYPE	**OFF** / ENC / TSQ / DCS / PR FREQ / REV TONE
	TONE FREQ	67.0 - **100.0** - 254.1 (Hz)
	DCS CODE	**023** - 754
	DCS RX REVERS	**NORMAL** / REVERS / BOTH
	DCS TX REVERS	**NORMAL** / REVERS
	PR FREQ	300 - **1600** - 3000 (Hz) (100Hz/step)
	DTMF DELAY	50 / 250 / **450** / 750 / 1000 (ms)
	DTMF SPEED	**50** / 100 (ms)
	DTMF MEMORY1 - 9	–
MODE DATA	AF TREBLE GAIN	-20 - **0** - 10
	AF MIDDLE TONE GAIN	-20 - **0** - 10
	AF BASS GAIN	-20 - **0** - 10
	AGC FAST DELAY	20 - **160** - 4000 (20msec/step)
	AGC MID DELAY	20 - **500** - 4000 (20msec/step)
	AGC SLOW DELAY	20 - **1500** - 4000 (20msec/step)
	LCUT FREQ	OFF / **100** - 1000 (50Hz/step)
	LCUT SLOPE	6dB/oct / **18dB/oct**
	HCUT FREQ	700 - **3200** - 4000 (50Hz/step) /OFF
	HCUT SLOPE	6dB/oct / **18dB/oct**
	USB OUT LEVEL	0 - **50** - 100
	TX BPF SEL	**50-3050** / 100-2900 / 200-2800 / 300-2700 / 400-2600
	MOD SOURCE	MIC / USB / Bluetooth / **AUTO**
	USB MOD GAIN	0 - **50** - 100
	RPTT SELECT	**OFF** / RTS / DTR
	NAR WIDTH	50/100/150/200/250/**300**/350/400/450/500/600/800/ 1200/1400/1700/2000/2400/3000/3200/3500/4000 (Hz)
	PSK TONE	**1000** / 1500 / 2000 (Hz)
	DATA SHIFT (SSB)	0 - **1500** - 3000 (10Hz/step)
MODE RTTY	AF TREBLE GAIN	-20 - **0** - 10
	AF MIDDLE TONE GAIN	-20 - **0** - 10
	AF BASS GAIN	-20 - **0** - 10
	AGC FAST DELAY	20 - **160** - 4000 (20msec/step)
	AGC MID DELAY	20 - **500** - 4000 (20msec/step)
	AGC SLOW DELAY	20 - **1500** - 4000 (20msec/step)
	LCUT FREQ	OFF / 100Hz - **300Hz** - 1000Hz (50Hz/step)
	LCUT SLOPE	6dB/oct / **18dB/oct**
	HCUT FREQ	700Hz - **3000Hz** - 4000Hz (50Hz/step) / OFF
	HCUT SLOPE	6dB/oct / **18dB/oct**
	USB OUT LEVEL	0 - **50** - 100

Menu Function		Available Settings (Default: Bold)
	RPTT SELECT	**OFF** / RTS / DTR
	NAR WIDTH	50/100/150/200/250/**300**/350/400/450/500/600/800/ 1200/1400/1700/2000/2400/3000/3200/3500/4000 (Hz)
	MARK FREQUENCY	1275 / **2125** (Hz)
	SHIFT FREQUENCY	**170** / 200 / 425 / 850 (Hz)
	POLARITY TX	**NOR** / REV
DIGITAL	DIGITAL POPUP	OFF / 2 - **10** - 60 / CONTINUE
	LOCATION SERVICE	OFF / **ON**
	STANDBY BEEP	OFF / **ON**
	DP-ID LIST	–
	RADIO ID	– (cannot be edited)

CW SETTING		
MODE CW	AF TREBLE GAIN	-20 - **0** - 10
	AF MIDDLE TONE GAIN	-20 - **0** - 10
	AF BASS GAIN	-20 - **0** - 10
	AGC FAST DELAY	20 - **160** - 4000 (msec) (20msec/step)
	AGC MID DELAY	20 - **500** - 4000 (msec) (20msec/step)
	AGC SLOW DELAY	20 - **1500** - 4000 (msec) (20msec/step)
	LCUT FREQ	OFF / 100 - **250** - 1000 (Hz) (50Hz/step)
	LCUT SLOPE	6dB/oct / **18dB/oct**
	HCUT FREQ	700 - **1200** - 4000 (Hz) (50Hz/step) /OFF
	HCUT SLOPE	6dB/oct / **18dB/oct**
	USB OUT LEVEL	0 - **50** - 100
	RPTT SELECT	**OFF** / RTS / DTR
	NAR WIDTH	50/100/150/200/**250**/300/350/400/450/500/600/800/ 1200/1400/1700/2000/2400/3000/3200/3500/4000 (Hz)
	PC KEYING	**OFF** / RTS / DTR
	CW BK-IN TYPE	**SEMI** / FULL
	CW FREQ DISPLAY	DIRECT FREQ / **PITCH OFFSET**
	QSK DELAY TIME	**15** / 20 / 25 / 30 (msec)
	CW INDICATOR	OFF / **ON**
KEYER	KEYER TYPE	OFF / BUG / ELEKEY-A / **ELEKEY-B** / ELEKEY-Y / ACS
	KEYER DOT/DASH	**NOR** / REV
	CW WEIGHT	2.5 - **3.0** - 4.5
	NUMBER STYLE	**1290** / AUNO / AUNT / A2NO / A2NT / 12NO / 12NT
	CONTEST NUMBER	**1** - 9999
	CW MEMORY 1 - 5	**TEXT** / MESSAGE
	REPEAT INTERVAL	1 - **5** - 60 (sec)

OPERATION SETTING		
GENERAL	BEEP LEVEL	0 - **30** - 100
	RF/SQL VR	RF / SQL / **AUTO**
	TUN/LIN PORT SELECT	**OPTION** / BAND DATA / CAT-3 / GPO
	TUNER SELECT	**OPTION** / ATAS
	CAT-1 RATE	4800 / 9600 / 19200 / **38400** / 115200 (bps)
	CAT-1 TIME OUT TIMER	**10** / 100 / 1000 / 3000 (msec)
	CAT-1 CAT-3 STOP BIT	**1bit** / 2bit

Menu Function		Available Settings (Default: Bold)
	CAT-2 RATE	**4800** / 9600 / 19200 / 38400 / 115200 (bps)
	CAT-2 TIME OUT TIMER	**10** / 100 / 1000 / 3000 (msec)
	CAT-3 RATE	4800 / 9600 / 19200 / **38400** / 115200 (bps)
	CAT-3 TIME OUT TIMER	**10** / 100 / 1000 / 3000 (msec)
	TX TIME OUT TIMER	**OFF** / 1 - 30 (min)
	REF FREQ FINE ADJ	-25 - **0** - 25
	CHARGE CONTROL	OFF / **ON**
	SUB BAND MUTE	**OFF** / ON
	SPEAKER SELECT	Auto / INT / **BOTH**
	DITHER	OFF / **ON**
BAND/SCAN	QMB CH	**5ch** / 10ch
	BAND STACK	OFF / **ON**
	BAND EDGE	**OFF** / ON
	SCAN RESUME	**BUSY** / HOLD / 1sec / 3sec / 5sec
RX DSP	IF NOTCH WIDTH	NARROW / **WIDE**
	NB REJECTION	LOW / **MID** / HIGH
	NB WIDTH	NARROW / **MEDIUM** / WIDE
	APF WIDTH	NARROW / **MEDIUM** / WIDE
	CONTOUR LEVEL	-40 - **15** - 0 - 20
	CONTOUR WIDTH	1 - **10** - 11
TX AUDIO	AMC RELEASE TIME	FAST / **MID** / SLOW
	PRMTRC EQ1 FREQ	**OFF** / 100 - 700 (100Hz/step)
	PRMTRC EQ1 LEVEL	-20 - 0 - **5** - 10
	PRMTRC EQ1 BWTH	0 - **10**
	PRMTRC EQ2 FREQ	**OFF** / 700 - 1500 (100Hz/step)
	PRMTRC EQ2 LEVEL	-20 - 0 - **5** - 10
	PRMTRC EQ2 BWTH	0 - **10**
	PRMTRC EQ3 FREQ	**OFF** / 1500 - 3200 (100Hz/step)
	PRMTRC EQ3 LEVEL	-20 - 0 - **5** - 10
	PRMTRC EQ3 BWTH	0 - **10**
	P PRMTRC EQ1 FREQ	**OFF** / 100 - 700 (100Hz/step)
	P PRMTRC EQ1 LEVEL	-20 - **0** - 10
	P PRMTRC EQ1 BWTH	0 - **2** - 10
	P PRMTRC EQ2 FREQ	**OFF** / 700 - 1500 (100Hz/step)
	P PRMTRC EQ2 LEVEL	-20 - **0** - 10
	P PRMTRC EQ2 BWTH	0 - **1** - 10
	P PRMTRC EQ3 FREQ	**OFF** / 1500 - 3200 (100Hz/step)
	P PRMTRC EQ3 LEVEL	-20 - **0** - 10
	P PRMTRC EQ3 BWTH	0 - **1** - 10
TX GNRL	MAX POWER(BAT)	0.5 - **6.0** (W)
	QRP MODE	**OFF** / ON
	HF MAX POWER	0.5 - **10.0** (W)
	50M MAX POWER	0.5 - **10.0** (W)
	70M MAX POWER	0.5 - **6.0** (W)
	144M MAX POWER	0.5 - **10.0** (W)
	430M MAX POWER	0.5 - **10.0** (W)
	AM HF/50 MAX POWER	0.5 - **2.5** (W)

Menu Function		Available Settings (Default: Bold)
	AM V/U MAX POWER	0.5 - **2.5** (W)
	VOX SELECT	**MIC** / USB / BLUETOOTH
	EMERGENCY FREQ TX	**OFF** / ON
	TX INHIBIT	**OFF** / ON
	METER DETECTOR	**AVERAGE** / PEAK
KEY/DIAL	SSB/CW DIAL STEP	5 / 10 / **20** (Hz)
	RTTY/PSK DIAL STEP	5 / **10** / 20 (Hz)
	FM DIAL STEP	5 / 10 / 20 / **Auto** (Hz)
	CH STEP	1 / 2.5 / 5 / **10** (kHz)
	AM CH STEP	2.5 / **5** / 9 / 10 / 12.5 / 25 (kHz)
	FM CH STEP	**5** / 6.25 / 10 / 12.5 / 20 / 25 (kHz)
	MAIN STEPS PER REV.	50 / 100 / **200**
	MIC P1 - MIC P4	LOCK / QMB / A/B / V/M / TUNER / VOX/MOX /MODE / ZIN_SPOT / SPLIT / FINE / NAR / NB /DNR / FREQ UP / FREQ DOWN / BAND UP /BAND DOWN / ATT / IPO / DNF / AGC MIC P1: **LOCK** MIC P2: **QMB** MIC P3: **BAND UP** MIC P4: **V/M** MIC UP: **FREQ UP** MIC DOWN: **FREQ DOWN**
	MIC UP	
	MIC DOWN	
	MIC SCAN	OFF / **ON**
OPTION	TUNER TYPE SEL ANT1	**INT** / INT(FAST) / EXT / ATAS
	TUNER TYPE SEL ANT2	**INT** / INT(FAST) / EXT / ATAS
	ANT2 OPERATION	**TRX** / TX-ANT1,RX-ANT2 / TRX-ANT1,RX-ANT2
	HF ANT SELECT	**ANT1** / ANT2
	HF MAX POWER	5 - **100** (W)
	50M MAX POWER	5 - **100** (W)
	70M MAX POWER	5 - **50** (W)
	144M MAX POWER	5 - **50** (W)
	430M MAX POWER	5 - **50** (W)
	AM MAX POWER	5 - **25** (W)
	AM V/U MAX POWER	5 - **13** (W)
	GPS	**OFF** / ON
	GPS PINNING	OFF / **ON**
	GPS BAUDRATE	4800 / 9600 / 19200 / 38400 / 115200
	BLUETOOTH	**OFF** / ON
	BLUETOOTH DEVICE LIST	DISCONNECT / **CONNECT**
	BLUETOOTH AUDIO	**FIX** / AUTO

DISPLAY SETTING		
DISPLAY	MY CALL	Max 10 characters (**FTX-1**)
	MY CALL TIME	OFF / **1** / 2 / 3 / 4 / 5 (sec)
	POP-UP TIME	FAST / **MID** / SLOW
	SCREEN SAVER	OFF / 1 / 2 / 5 / 15 / 30 / **60** (min)
	SCREEN SAVER(BAT)	OFF / 1 / 2 / **5** / 15 / 30 / 60 (min)
	SAVER TYPE	Logo / DIMMER / **DISP OFF**
	AUTO POWER OFF	**OFF** / 0.5 - 12 (hour) (0.5hour/step)
	LED DIMMER	OFF / 1 - **20**

Menu Function		Available Settings (Default: Bold)
UNIT	POSITION UNIT	**MM.MM** / MM.ss
	DISTANCE UNIT	km / **mile**
	SPEED UNIT	km/h / knot / **mph**
	ALTITUDE UNIT	m / **ft**
	TEMP UNIT	c / **f**
	RAIN UNIT	mm / **INCH**
	WIND UNIT	m/s / **mph**
SCOPE	RBW	**HIGH** / MID / LOW
	SCOPE CTR	FILTER / **CARRIER**
	2D DISP SENSITIVITY	NORMAL / **HI**
	3DSS DISP SENSITIVITY	NORMAL / **HI**
	AVERAGE	**OFF** / 2 / 4 / 8
VFO IND COLOR	VMI COLOR VFO	**BLUE** / GREEN / WHITE / NONE
	VMI COLOR MEMORY	BLUE / GREEN / **WHITE** / NONE
	VMI COLOR CLAR	**RED** / NONE

EXTENSION SETTING		
DATE&TIME	TIME ZONE	-12.0 - **0.0** - 14.0
	DAY	–
	MONTH	–
	YEAR	–
	HOUR	–
	MINUTE	–
	GPS TIME SET	**AUTO** / MANUAL
MY POSITION	MY POSITION	**GPS** / MANUAL
	MY POSITION LATITUDE	**N 00° 00.00'(00")**
	MY POSITION LONGTUDE	**E 000° 00.00'(00")**
SD CARD	MEM LIST LOAD	–
	MEM LIST SAVE	–
	MENU LOAD	–
	MENU SAVE	–
	INFORMATIONS	–
	FIRMWARE UPDATE	–
	FORMAT	–
SOFT VERSION	–	–
CALIBRATION	CALIBRATION	–
RESET	MEMORY CLEAR	–
	MENU CLEAR	–
	ALL RESET	–

APRS SETTING
Refer to the separate Operation Manual APRS Edition for details on the functions.

Optional Accessories

FC-40 External Automatic Antenna Tuner (for Wire Antenna)

The FC-40 makes use of the control circuitry built into the transceiver, which allows the operator to control and monitor automatic operation of the FC-40, which mounts near the antenna feedpoint. The FC-40 uses specially selected, thermally stable components, and is housed in a waterproof case to withstand severe environmental conditions with high reliability.

A carefully-chosen combination of solid-state switching components and high-speed relays allows the FC-40 to match a wide variety of antennas to within a 2:1 SWR on any amateur band frequency (160 through 6 meters), typically in less than eight seconds. Transmitter power required for matching may be as little as 4 - 60 Watts, and matching settings are automatically stored in memory for instant recall when the same frequency range is selected later.

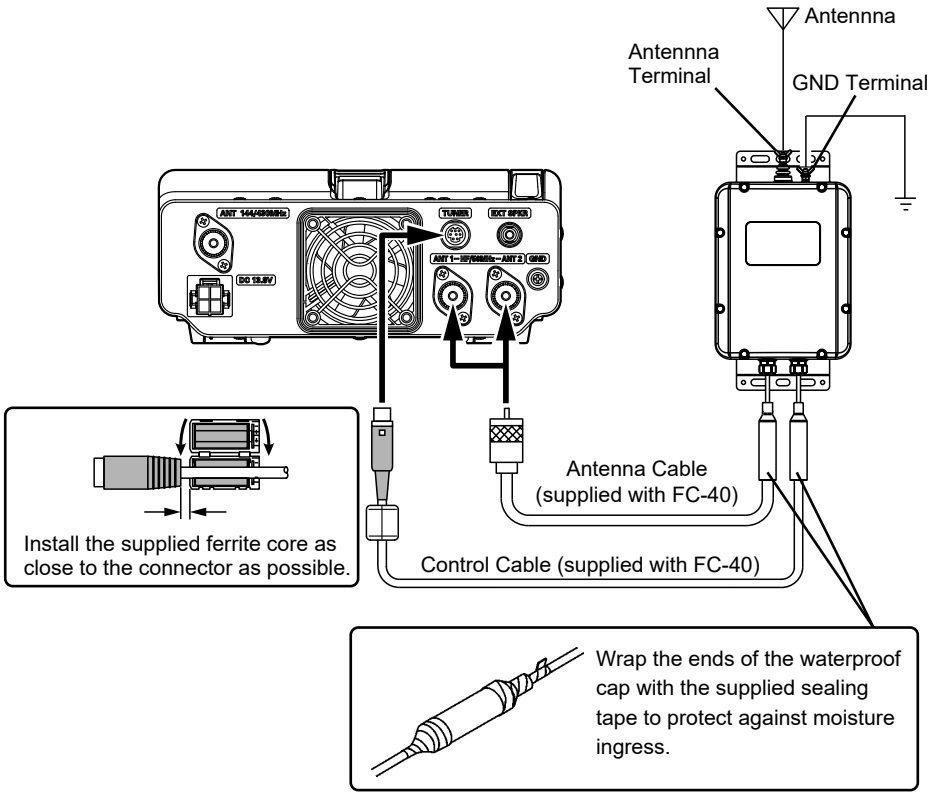
Please see the FC-40 Operating Manual for detailed information.

The FC-40 cannot be connected to the FTX-1 Field configuration.

• Interconnections to FTX-1 optima

After mounting the FC-40, connect the cables from the FC-40 to the ANT and TUNER jacks on the rear panel of the FTX-1 optima Transceiver.

Turn OFF the external power supply switch and the FTX-1 power supply switch first before connecting the cables.



• Setup the transceiver

The optional FC-40 Automatic Antenna Tuner provides automatic tuning of a coaxial line to present nominal 50-ohm impedance to the FTX-1 optima's ANT jack.
Before tuning can begin, the FTX-1 optima must be configured to recognize that the FC-40 is being used.
Configuration is done using the Setting Menu Mode:

1. Press and hold the [FUNC] knob.
2. Select [OPERATION SETTING] → [GENERAL] → [TUNER SELECT].
3. Rotate the [FUNC] knob, or touch "<" or ">" on either side of the value to select "OPTION".
4. Press the [FUNC] knob, or wait for about 3 seconds to save the setting.
5. Select [OPERATION SETTING] → [OPTION] → [TUNER TYPE SEL ANT1] or [TUNER TYPE SEL ANT2].
6. Rotate the [FUNC] knob, or touch "<" or ">" on either side of the value to select "EXT".
7. Press the [FUNC] knob, or wait for about 3 seconds to save the setting.
8. Press the [BACK] key several times to return to normal operation.

• Tuning Operation

Depending on the installation and location of some antennas, it may not be possible to tune to a low SWR.

1. Press and hold the [FUNC] knob.
2. Touch [TUNER].
   A "TUNE" icon will appear in the display; and the tuner function is activated.
3. Touch [ANT TUNE] key to begin automatic tuning.

   The transmitter will be engaged, and "TUNE" will be blinks while tuning is in progress.
   - When the optimum tuning point has been reached, the transceiver will return to receive, and the "TUNER" icon will again glow steadily (instead of blinking).
4. To disengage the ATU from the transmit line, touch [TUNE].

FC-80 Automatic Antenna Tuner

The FC-80 Automatic Antenna Tuner responds to control commands from the FTX-1 Field Transceiver, providing microprocessor-based impedance matching on the 160 through 6 meter Amateur bands.

The FC-80 cannot be connected to the FTX-1 optima configuration.

• Setup the transceiver

Before tuning can begin, the FTX-1 Field must be configured to recognize that the FC-80 is being used.
Configuration is done using the Setting Menu Mode:

1. Press and hold the [FUNC] knob.
2. Select [OPERATION SETTING] → [GENERAL] → [TUNER SELECT].
3. Rotate the [FUNC] knob, or touch "<" or ">" on either side of the value to select "OPTION".
4. Press the [FUNC] knob, or wait for about 3 seconds to save the setting.
5. Press the [BACK] key several times to return to normal operation.

• Tuning Operation

Depending on the installation and location of some antennas, it may not be possible to tune to a low SWR.

1. Press and hold the [FUNC] knob.
2. Touch [TUNER].
   A "TUNE" icon will appear in the display; and the tuner function is activated.
3. Touch [ANT TUNE] key to begin automatic tuning.

   The transmitter will be engaged, and "TUNE" will be blinks while tuning is in progress.
   - When the optimum tuning point has been reached, the transceiver will return to receive, and the "TUNER" icon will again glow steadily (instead of blinking).
4. To disengage the ATU from the transmit line, touch [TUNE].

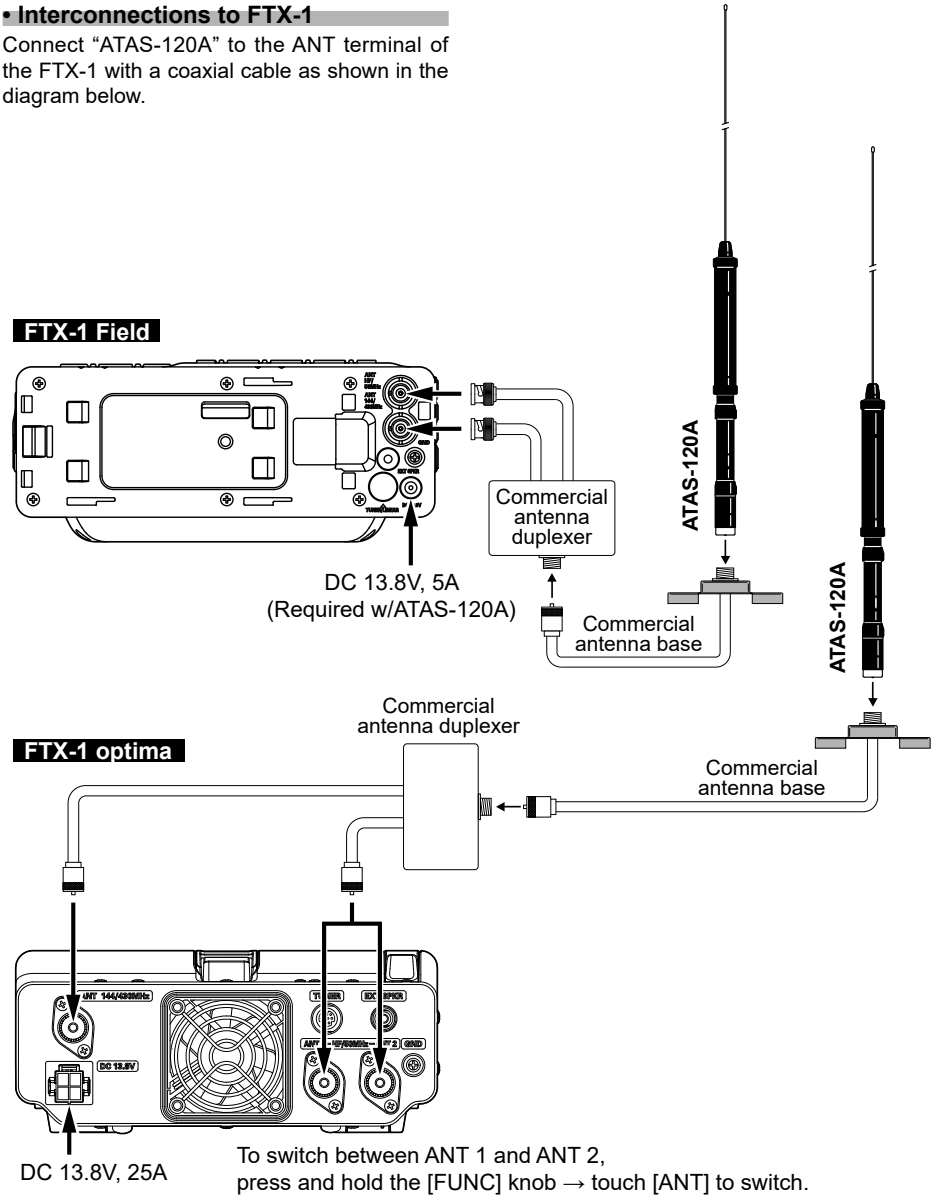
Active-Tuning Antenna System (ATAS-120A)

ATAS-120A is a multi-band auto-tuning antenna that can be used in the amateur bands from the HF band to the UHF band (7/14/21/28(29) /50/144/430). Using the active tuning mechanism, tuning can be carried out automatically by the control signal from FTX-1. Please refer to the ATAS-120A Operating Manual for the assembly and installation of ATAS-120A.

The ATAS-120A cannot be used when operating on the Li-Ion Battery Pack SBR-52LI power alone for the FTX-1 Field. An external 13.8V power supply must be used.

• Interconnections to FTX-1

Connect “ATAS-120A” to the ANT terminal of the FTX-1 with a coaxial cable as shown in the diagram below.



To switch between ANT 1 and ANT 2,
press and hold the [FUNC] knob → touch [ANT] to switch.

• Setup the transceiver

Before tuning can begin, the FTX-1 must be configured to recognize that the ATAS-120A is being used.
Configuration is done using the Setting Menu Mode:

Setting for operation with the Field head only

1. Press and hold the [FUNC] knob.
2. Select [OPERATION SETTING] → [GENERAL] → [TUNER SELECT].
3. Rotate the [FUNC] knob, or touch "<" or ">" on either side of the value to select "ATAS".
4. Press the [FUNC] knob, or wait for about 3 seconds to save the setting.
5. Press the [BACK] key several times to return to normal operation.
   The "ATAS" icon will appear in the display.

When attaching the Field Head to the SPA-1 and using the SPA-1's built-in tuner, change the above setting to "OPTION."

Setting for operation with the FTX-1 optima

1. Press and hold the [FUNC] knob.
2. Select [OPERATION SETTING] → [OPTION] → [TUNER TYPE SEL ANT1] or [TUNER TYPE SEL ANT2].
3. Rotate the [FUNC] knob, or touch "<" or ">" on either side of the value to select "ATAS".
4. Press the [FUNC] knob, or wait for about 3 seconds to save the setting.
5. Press the [BACK] key several times to return to normal operation.
   The "ATAS" icon will appear in the display.

• Tuning Operation

Depending on the installation and location of some antennas, it may not be possible to tune to a low SWR.

The tuning of the ATAS-120A is carried out automatically.

When using the **ATAS-120A** for the first time or when tuning for the first time after resetting the FTX-1, tuning is not performed for about 1 minute until the FTX-1 recognizes the **ATAS-120A** even if the touch [**ANT TUNE**].
Tuning is performed after recognizing the **ATAS-120A**.

Press the [TUNE] key to begin automatic tuning.

- The transmitter will be engaged, and the "ATAS" icon will blink while tuning is in progress.
- When the optimum tuning point has been reached, the transceiver will return to receive, and the "ATAS" icon will again glow steadily (instead of blinking).

• Manual Tuning

The tuning of the ATAS-120A may be carried out manually.

Press the PTT switch on the microphone to transmit and then press the UP/DWN button on the microphone to adjust the antenna until the meter indicates the minimum SWR.

The meter on the screen will automatically change to the SWR meter.

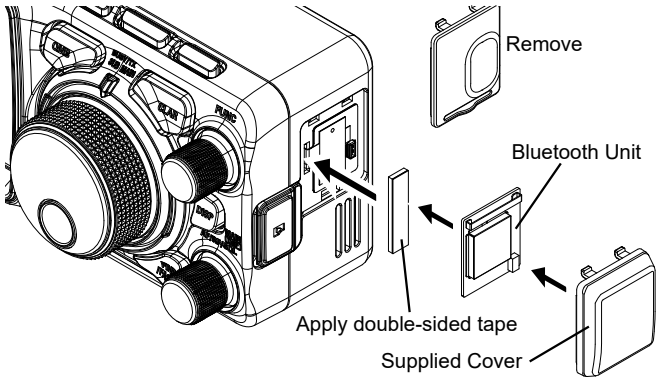
Bluetooth Unit BU-6

The FTX-1 can be equipped with the Bluetooth function by installing the optional Bluetooth unit "BU-6". Hands-free operation is possible using the optional Bluetooth headset (SSM-BT20) or a commercially available Bluetooth headset.

The BU-6 consists of a BU-5 and cover exclusively for the FTX-1.

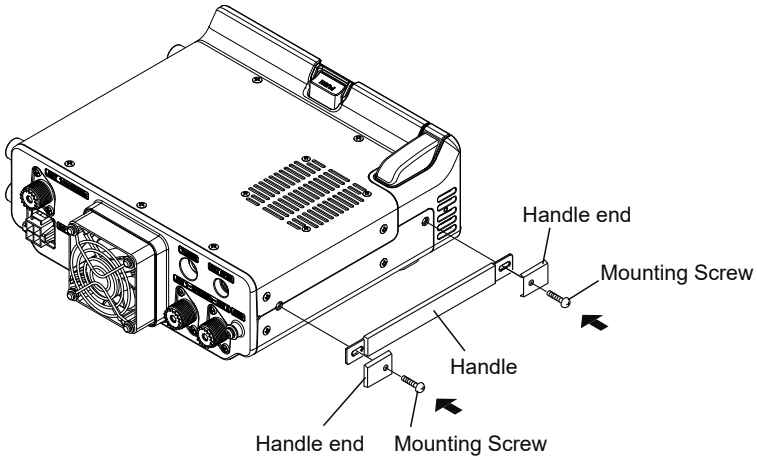
For additional details on the Bluetooth Functions, refer to the Advanced Manual which may be downloaded from the Yaesu website.

1. Turn the transceiver OFF.
2. Remove the Bluetooth unit cover from the transceiver.
3. Apply double-sided tape to Bluetooth unit.
   Double-sided tape is included with the BU-6.
4. Align the Bluetooth unit connector with the connector on the board and install.
5. Carefully attach the supplied cover.



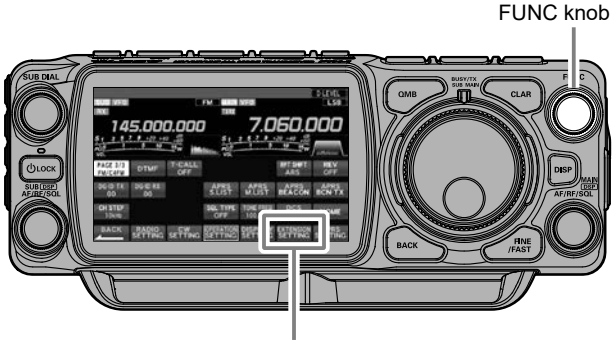
Side Carry Handle MHG-1

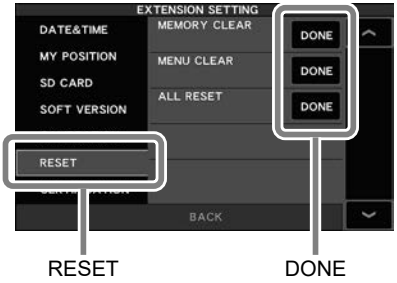
Do not use an improper screw for mounting the MHG-1! An improper screw may cause a "short circuit" to the internal circuitry, causing serious damage!



Resetting the Microprocessor

Memory channels, setting menus, and various settings can be initialized and returned to their factory defaults.





1. Display the reset item selection screen.
   Press and hold the [FUNC] knob → touch [EXTENSION SETTING] → touch [RESET]
2. Touch “DONE” of the item you want to reset (see below).
   Or Select an item with the [FUNC] knob and press the [FUNC] knob.
   A confirmation screen for reset execution is displayed.

   MEMORY CLEAR (Memory Reset)
   Only the contents of the memory channel are initialized (factory default).
   All stored information will be erased, but channel M-001 will return to the initial setting of 7.000.000MHz, LSB.

   MENU CLEAR (Setting Menu Reset)
   Only the contents of the setting menu are returned to their default values (factory default).

   ALL RESET (All Reset)
   Initializes all settings of this unit, including various settings, memories, and setting menus, and restores the factory settings.

3. Touch [OK] or select [OK] with the [FUNC] knob and press the [FUNC] knob to execute the reset.
   To cancel the reset, touch [CANCEL] or select [CANCEL] with the [FUNC] knob and press the [FUNC] knob.
4. The power is turned OFF once and then turned ON automatically.
   The reset is complete.

Specifications

General

Tx Frequency Range:	1.8MHz - 450MHz (Specified performance, Amateur bands only) 70MHz - 70.5MHz (Specified performance, UK Amateur bands only)
Rx Frequency Range:	30kHz - 174MHz, 400MHz - 470MHz (operating) 1.8MHz band - 430MHz band (specified performance, Amateur bands only)
Emission Modes:	A1A (CW), A3E (AM), J3E (LSB, USB), F3E (FM), F7W (C4FM), F1D, F2D
Frequency Steps:	1*/5/10/20Hz (CW, SSB, AM), 5/10/20Hz (FM) *FINE tuning “ON”
Antenna Impedance:	50Ω, unbalanced
Operating Temperature Range:	+14°F to +122°F (-10°C to +50°C)
Frequency Stability:	±0.5ppm (after 1 minute @ +14°F to +122°F [-10°C to +50°C])
Supply Voltage:	DC10.8V (SBR-52LI) DC13.8V ± 15% (EXT DC Jack)
Power Consumption (approx.)	Rx (no signal) 0.6A Rx (signal present) 0.9A Tx (Field, 6W) 2.5A Tx (Field, 10W) 3A Tx (optima, HF/50MHz 100W) 21A Tx (optima, 144MHz 50W) 9A Tx (optima, 430MHz 50W) 12A
Dimensions (WxHxD):	FTX-1 Field: 8.4” x 3.5” x 2.2” (213 x 89 x 55mm) FTX-1 optima: 8.4” x 3.5” x 9.4” (213 x 89 x 240mm)
Weight (approx.):	FTX-1 Field: 2.75 lbs (1.25kg) FTX-1 optima: 8.6 lbs (3.9kg)

Transmitter

Power Output:	FTX-1 Field:	0.5 - 6W (0.5 - 2.5W AM Carrier) @ SBR-52LI 0.5 - 10W (70MHz band: 0.5 - 6W) (0.5 - 2.5W AM Carrier) @ EXT DC 13.8V
	FTX-1 optima:	HF/50MHz band: 5 - 100W (5 - 25W AM Carrier) 144/430MHz band: 5 - 50W (5 - 13W AM Carrier)
Modulation Types:	J3E (SSB): Balanced A3E (AM): Low-Level (Early Stage) F1D, F2D, F3E (FM): Variable Reactance F7W (C4FM): 4-level FSK	
Maximum FM Deviation:	±5.0kHz / ±2.5kHz (Narrow)	
Harmonic Radiation:	Better than -50dB (1.8MHz - 29.7MHz Amateur bands) Better than -60dB (50MHz Amateur band, FTX-1 Field 10W) Better than -63dB (50MHz Amateur band, FTX-1 optima 100W) Better than -51dB (70MHz Amateur band, FTX-1 Field 6W) Better than -60dB (70/144/430MHz Amateur band, FTX-1 optima 50W)	
SSB Carrier Suppression:	At least 60dB below peak output	
Undesired Sideband Suppression:	At least 60dB below peak output	
Bandwidth:	3kHz (LSB, USB), 500Hz (CW), 6kHz (AM), 16kHz (FM/C4FM)	
Audio Response (SSB):	Not more than -6dB from 300 to 2700Hz	
Microphone Impedance:	600Ω (200 to 10kΩ)	

Receiver

Circuit Type:	Direct Sampling Superheterodyne (below 48MHz)
	Single Conversion IF Sampling (48MHz and above)
Intermediate Frequencies:	MAIN: 44.5 - 49.5MHz, SUB: 41.3 - 44.3MHz (48MHz and above)
Sensitivity (typ):	SSB/CW (BW: 2.4kHz, 10dB S+N/N)
	1.8MHz - 30MHz 0.16µV (IPO: AMP2)
	50MHz - 54MHz 0.125µV (IPO: AMP2)
	70MHz - 70.5MHz 0.16µV (IPO: AMP2)
	144MHz - 148MHz 0.125µV (AMP: ON)
	430MHz - 450MHz 0.125µV (AMP: ON)
	AM (BW: 6kHz, 10dB S+N/N, 30% modulation @400Hz)
	0.5MHz - 1.8MHz 7.9µV
	1.8MHz - 30MHz 2µV (IPO: AMP2)
	50MHz - 54MHz 1µV (IPO: AMP2)
	70MHz - 70.5MHz 2µV (IPO: AMP2)
	144MHz - 148MHz 1µV (AMP: ON)
	430MHz - 450MHz 1µV (AMP: ON)
	FM (BW: 12kHz, 12dB SINAD, 3.5kHz DEV @1kHz)
	28MHz - 30MHz 0.25µV (IPO: AMP2)
	50MHz - 54MHz 0.2µV (IPO: AMP2)
	70MHz - 70.5MHz 0.25µV (IPO: AMP2)
	144MHz - 148MHz 0.125µV (AMP: ON)
	430MHz - 450MHz 0.125µV (AMP: ON)

Selectivity (WIDTH: Center):	Mode	–6dB	–60dB
	CW (BW=0.5kHz)	0.5kHz or better	0.75kHz or less
	SSB (BW=2.4kHz)	2.4kHz or better	3.6kHz or less
	AM (BW=6kHz)	6kHz or better	15kHz or less
	FM (BW=12kHz)	12kHz or better	25kHz or less

Image Rejection:	70dB or better (1.8MHz - 28MHz Amateur bands)
	60dB or better (50MHz, 70MHz, 144MHz, 430MHz Amateur bands)
Maximum Audio Output:	FTX-1 Field: 1.5W (4Ω with 10% THD)
	FTX-1 optima: 4W (1.5 + 2.5 W) (4Ω with 10% THD)
Audio Output Impedance:	4 to 16Ω (4Ω: nominal)
Conducted Radiation:	Less than 4nW

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

YAESU LIMITED WARRANTY

Limited Warranty is valid only in the country/region where this product was originally purchased.
On-line Warranty Registration:
Thank you for buying YAESU products! We are confident your new radio will serve your needs for many years! Please register your product at **www.yaesu.com** - Owner's Corner

Warranty Terms:

Subject to the Limitations of the Warranty and the Warranty Procedures described below, YAESU MUSEN hereby warrants this product to be free of defects in materials and workmanship in normal use during the "Warranty Period." (the "Limited Warranty").

Limitations of Warranty:

A. YAESU MUSEN is not liable for any express warranties except the Limited Warranty described above.
B. The Limited Warranty is extended only to the original end-use purchaser or the person receiving this product as a gift, and shall not be extended to any other person or transferee.
C. Unless a different warranty period is stated with this YAESU product, the Warranty Period is three years from the date of retail purchase by the original end-use purchaser.
D. The Limited Warranty is valid only in the country/region where this product was originally purchased.
E. During the Warranty Period, YAESU MUSEN will, at its sole option, repair or replace (using new or refurbished replacement parts) any defective parts within a reasonable period of time and free of charge.
F. The Limited Warranty does not cover shipping cost (including transportation and insurance) from you to us, or any import fees, duties or taxes.
G. The Limited Warranty does not cover any impairment caused by tampering, misuse, failure to follow instructions supplied with the product, unauthorized modifications, or damage to this product for any reasons, such as: accident; excess moisture; lightning; power surges; connection to improper voltage supply; damage caused by inadequate packing or shipping procedures; loss of, damage to or corruption of stored data; product modification to enable operation in another country/purpose other than the country/purpose for which it was designed, manufactured, approved and/or authorized; or the repair of products damaged by these modifications.
H. The Limited Warranty applies only to the product as it existed at the time of the original purchase, by the original retail purchaser, and shall not preclude YAESU MUSEN from later making any changes in design, adding to, or otherwise improving subsequent versions of this product, or impose upon YAESU MUSEN any obligation to modify or alter this product to conform to such changes, or improvements.
I. YAESU MUSEN assumes no responsibility for any consequential damages caused by, or arising out of, any such defect in materials or workmanship.
J. TO THE FULLEST EXTENT PERMITTED BY LAW, YAESU MUSEN SHALL NOT BE RESPONSIBLE FOR ANY IMPLIED WARRANTY WITH RESPECT TO THIS PRODUCT.
K. If the original retail purchaser timely complies with the Warranty Procedures described below, and YAESU MUSEN elects to send the purchaser a replacement product rather than repair the "original product", then the Limited Warranty shall apply to the replacement product only for the remainder of the original product Warranty Period.
L. Warranty statutes vary from state to state, or country to country, so some of the above limitations may not apply to your location.

Warranty Procedures:

1. To find the Authorized YAESU Service Center in your country/region, visit www.yaesu.com. Contact the YAESU Service Center for specific return and shipping instructions, or contact an authorized YAESU dealer/distributor from whom the product was originally purchased.
2. Include proof of original purchase from an authorized YAESU dealer/distributor, and ship the product, freight prepaid, to the address provided by the YAESU Service Center in your country/ region.
3. Upon receipt of this product, returned in accordance with the procedures described above, by the YAESU Authorized Service Center, all reasonable efforts will be expended by YAESU MUSEN to cause this product to conform to its original specifications. YAESU MUSEN will return the repaired product (or a replacement product) free of charge to the original purchaser. The decision to repair or replace this product is the sole discretion of YAESU MUSEN.

Other conditions:
YAESU MUSEN'S MAXIMUM LIABILITY SHALL NOT EXCEED THE ACTUAL PURCHASE PRICE PAID FOR THE PRODUCT. IN NO EVENT SHALL YAESU MUSEN BE LIABLE FOR LOSS OF, DAMAGE TO OR CORRUPTION OF STORED DATA, OR FOR SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR INDIRECT DAMAGES, HOW EVER CAUSED; INCLUDING WITHOUT LIMITATION TO THE REPLACEMENT OF EQUIPMENT AND PROPERTY, AND ANY COSTS OF RECOVERING, PROGRAMMING OR REPRODUCING ANY PROGRAM OR DATA STORED IN OR USED WITH THE YAESU PRODUCT.
Some Countries in Europe and some States of the USA do not allow the exclusion or limitation of incidental or consequential damages, or a limitation on how long an implied warranty lasts, so the above limitation or exclusions may not apply. This warranty provides specific rights, there may be other rights available which may vary between countries in Europe or from state to state within the USA.
This Limited Warranty is void if the label bearing the serial number has been removed or defaced.

YAESU

Declaration of Conformity

Type of Equipment:	HF/50MHz/144MHz/430MHz TRANSCEIVER
Brand Name:	YAESU
Model Number:	FTX-1
Manufacturer:	YAESU MUSEN CO., LTD.
Address of Manufacturer:	Omori Bell port D building 3F, 6-26-3 Minamioi, Shinagawa-ku, Tokyo 140-0013 JAPAN

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 received, including interference that may cause undesired operation.
The technical documentation as required by the Conformity Assessment procedures is kept at the following address:
Company: Yaesu U.S.A.
Address: 6125 Phyllis Drive, Cypress, CA 90630, U.S.A.
Telephone: (714) 827-7600

FCC Statements

Federal Communications Commission (FCC) Statement

15.105(b)

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.

15.19

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 received, including interference that may cause undesired.

15.21

You are cautioned that changes or modifications not expressly approved by the part responsible for compliance could void the user's authority to operate the equipment.

FCC RF Radiation Exposure Statement:

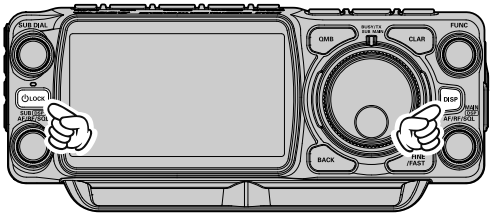
1. This Transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
2. For portable operation, this device has been tested and meets FCC RF exposure guidelines. When used with an accessory that contains metal may not ensure compliance with FCC RF exposure guidelines.

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

CAN ICES-3 (B) / NMB-3 (B)

Display the Certifications of FCC

1. Turn the transceiver OFF.
2. While holding the [DISP] key in, press and hold in the Power switch to turn the transceiver ON.



The Certifications of FCC is displayed.

3. Touch [**BACK**] to return to normal operation.

EU Declaration of Conformity

We, Yaesu Musen Co. Ltd of Tokyo, Japan, hereby declare that this radio equipment FTX-1 is in full compliance with EU Radio Equipment Directive 2014/53/EU. The full text of the Declaration of Conformity for this product is available to view at http://www.yaesu.com/jp/red

ATTENTION – Condition of use

This transceiver operates on frequencies that are regulated. Use of the Transmitter in the EU countries shown in the accompanying table is not permitted without authorization. Users should consult their local spectrum management authority for licensing conditions applicable to this equipment.

AT	BE	BG	CY	CZ	DE
DK	ES	EE	FI	FR	EL
HR	HU	IE	IT	LT	LU
LV	MT	NL	PL	PT	RO
SK	SI	SE	CH	IS	LI
NO	–	–	–	–	–

Disposal of Electronic and Electrical Equipment

Products with the symbol (crossed-out wheeled bin) cannot be disposed as household waste.

Electronic and Electrical Equipment should be recycled at a facility capable of handling these items and their waste by-products.

Please contact a local equipment supplier representative or service center for information about the waste collection system in your country.

YAESU

Radio for Professionals

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