

Basic Operation

Transmit mode	Description of Modes
MANUAL	Automatically selects one of the 4 communication modes according to the received signal. Briefly pressing [PTT] switch between digital mode (DN) and analog FM mode.
FM FIX	Automatically selects one of the 4 communication modes according to the received signal. Always switches to FM mode for transmission.
DN FIX	Automatically selects one of the 4 communication modes according to the received signal. Always switches to DN mode for transmission.
VW FIX	Automatically selects one of the 4 communication modes according to the received signal. Always switches to VW mode for transmission.
AUTO	Automatically selects one of the 4 communication modes according to the received signal.

4. Press [PTT] switch to save the setting and return to normal operation.

● Changing the communication mode manually

1. Press the [AMS] key to deactivate the AMS function.
2. Pressing repeatedly switches the communication mode as follows. Pressing [mode] key repeatedly switches the communication mode as follows.
 [Digital (DN)] → [Digital Wide (VW)] → [Analog (FM)] → ...

Communication Mode	Icon	Explanation of modes
V/D Mode (Voice/Data simultaneous transmission mode)	DN	Calls are less prone to interruptions due to detection and correction of voice signals during digital voice signal transmission. This is the standard mode for C4FM Digital.
Voice FR Mode (Voice Full Rate Mode)	VW	High speed data communication using entire 12.5 kHz band. Enables high-quality voice communication.
Analog FM Mode	FM	Analog communication using FM mode. Effective when the signal is weak and audio is susceptible to interruption in digital mode.
AM Mode (receive only)	AM	The FT-70DR/DE is mainly provides the AM mode for reception of air band.



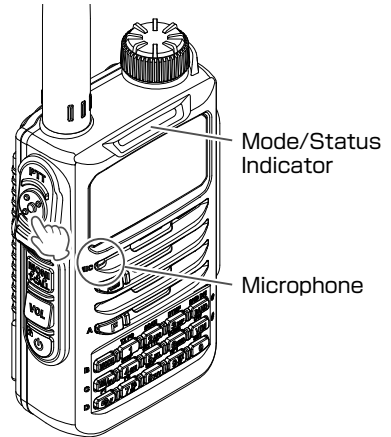
In V/D mode ("DN" on the LCD), position information is included in the radio wave during voice communication, however, position information is not included in the Voice FR mode ("VW" on the LCD).

Basic Operation

Transmission

1. Press and hold **[PTT]** switch on the microphone.
 The Mode/Status Indicator lights up as shown in the table below during transmission.

Communication mode	Left portion	Right portion
Analog FM	Red	Red
V/D mode / Voice FR mode		Blue



Keep your mouth about 5 cm away from the microphone when you speak.

2. Release **[PTT]** switch.
 The transceiver returns to receive mode.



- Use the transceiver at the minimum required transmit power level. Doing so prevents the transceiver from overheating and saves battery power, increasing the operating time.
- Do not continue transmitting for a prolonged period. The transceiver can overheat, resulting in malfunction or a burn injury.
- If transmission is continued for a long period, the transceiver overheats and the high temperature protection function is activated. As a result, the transmitting power level is automatically set to Low Power. If you continue transmitting while the high temperature protection function is active, the transceiver will be forcibly returned to the receive mode.
- If you touch the transceiver immediately after the high temperature protection function has become active, you may be burned. Wait for the temperature inside the transceiver to cool sufficiently before resuming transmission.
- Do not start transmitting without attaching the antenna. The transmitter circuit can be damaged.



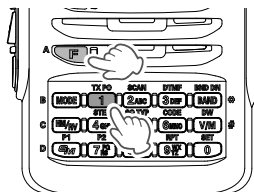
- You can transmit on the 144 MHz and 430 MHz ham radio bands.
- Even while receiving in AM mode, transmit will continue to be in NFM mode when pressing .
- If is pressed when a frequency other than the amateur ham radio band is selected, an alarm tone (beep) will be emitted and "ERROR" appears on the LCD, disabling transmission.
- The transceiver may be set to inhibit transmit while receiving a signal. Press and hold **[F]** key to enter the Set mode, then select **[4 BCLO]**, and then select **[ON]**.

Basic Operation

Changing the Transmission Power Level

The maximum transmit power level of this transceiver is 5 W. When communicating with another station in the immediate area, or to reduce the battery power consumption, the transmit power level may be lowered.

1. Press **[F]** key, then press the **[1](TX PO)** key.
2. Rotate the **[DIAL]** knob to select one of the following transmission power levels.



TX PO Level	Icon	PO meter
HIGH (5 W)	(disappear)	 5 9
MID (2 W)	LOW	 5
LOW (0.5 W)	LOW	

3. Press **[PTT]** switch to save the setting and return to normal operation.



- The transmitter power level may be set separately for the 144 MHz and 430 MHz band.
- Use the transceiver at the minimum required transmit power level to reduce battery power consumption.
- By default, "HIGH (High power)" is selected.

Locking Keys and Dial

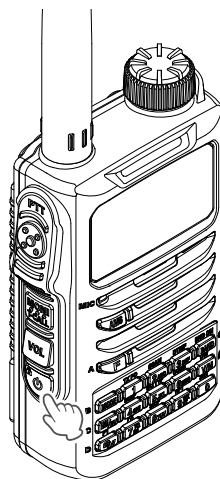
To prevent accidental frequency change during operation, the keys, switches and DIAL (except **[MONI]** key and **[VOL]** key) can be locked.

1. Press and hold **[LOCK](POWER)** key.
 "LOCK" is displayed for 1 second on the LCD.
 When the lock function is activated, "🔒" always appears on the LCD.



To lock/unlock the operations of the **DIAL** knob and **[PTT]** switch, press and hold the **[F]** key to enter Set mode, then select **[38 LOCK]**.

2. To unlock a key or dial, press and hold **[LOCK](POWER)** key again.
 "UNLOCK" is displayed on the LCD for 1 second.



Basic Operation

Communicating Via the Repeater

The FT-70DR/DE includes an ARS (Automatic Repeater Shift) function which enables repeater operation automatically when setting the receiver to the repeater frequency.

1. Set the receiver frequency to the repeater frequency.
“**-**” or “**+**” appears in the above of the frequency.
2. Begin transmitting by pressing and holding **[PTT]** switch. The transmitter will automatically be set to the programmed offset frequency.



- Pressing **[F]** key and then pressing **[HM/RV]** key enters the “reverse” state where the transmission frequency and the receive frequency are temporarily reversed. This allows checking to find if direct communication with the remote station is possible.
- In the “reverse” state, “**-**” or “**+**” blinks on the LCD.
- Pressing **[F]** key again and then **[HM/RV]** exits from the “reverse” state.
- Press and hold **[F]** key to enter Set mode, then configure the following repeater settings for more convenient use.
[54 RPT.ARS]: Deactivates the ARS function
[55 RPT.FRQ]: Allows changing the repeater shift offset
[56 RPT.SFT]: Allows setting the repeater shift direction

Tone Calling (1750 Hz burst tone)

If your transceiver is FT-70DE (European version), press and hold in the **[MONI/T-CALL]** key to generates a 1750 Hz burst tone to access the European repeater.

The transmitter will automatically be activated, and a 1750 Hz audio tone will be superimposed on the carrier. Once access to the repeater has been gained, you may release the **[MONI/T-CALL]** key, and use the **[PTT]** switch for activating the transmitter thereafter. If you need to access the repeaters which requires a 1750 Hz burst tone for access by the FT-70DR (USA/EXP versions), you can set the **[MONI/T-CALL]** key switch to serve as a “Tone Call” switch instead. To change the configuration of this switch, use Set Mode [40 M/T-CL].

Basic Operation

Restoring to Defaults (All Reset)

To restore all transceiver settings and memory content to the defaults.



When the All Reset function is performed, all data registered in the memory will be deleted. Be sure to note the settings on paper.

1. Turn the radio OFF.
2. Press and hold **[MODE]** key, **[HM/RV]** key and **[GM]** key and turn on the transceiver simultaneously.
3. When the beep sounds, release the key.
“ALL RESET? PUSH F KEY” appears on the LCD.
4. Touch **[F]** key.

A beep sounds and the call sign input message appears on the LCD.



- To cancel Reset function, press a key or switch other than [F] key.
- To return only the Set Mode option settings to default, Press and hold **[MODE]** key and **[V/M]** key and turn on the transceiver simultaneously.

Specifications

● General

Frequency range:	TX 144 - 146 MHz or 144 - 148 MHz 430 - 440 MHz or 430 - 450 MHz RX 108 - 137 MHz (Air Band) 137 - 174 MHz (144 MHz HAM) 174 - 222 MHz (GEN1) 222 - 420 MHz (GEN2) 420 - 470 MHz (430 MHz HAM) 470 - 579.995 MHz (GEN3)
Channel steps:	5 / 6.25 / 8.33 / 10 / 12.5 / 15 / 20 / 25 / 50 / 100 kHz (8.33 kHz : only for Air band)
Emission Type:	F2D, F3E, F7W
Frequency stability:	±2.5 ppm -4°F to +140°F (-20°C to +60°C)
Antenna impedance:	50 Ω
Supply Voltage:	Nominal 7.4 V DC, negative ground Operating 6 - 14 V DC Negative Ground (EXT DC JACK while Charging) 11 - 16 V DC Negative Ground (EXT DC JACK with SDD-13)
Current consumption:	120 mA (Receive) 80 mA (Standby, Save Off) 50 mA (Standby, Saver On "Save Ratio 1:5") +20 mA (Digital or AMS) 400 μA (Auto Power Off) 1.6 A (5 W TX, 144 MHz 7.4 V DC) 1.8 A (5 W TX, 430 MHz 7.4 V DC)
Operating temperature:	-4°F to +140°F (-20°C to +60°C)
Case size:	2.4" (W) × 3.6" (H) × 1.6" (D) (60 × 98 × 32 mm)
Weight (approx.):	9.5 oz (270 g) with SBR-24LI, Antenna

● Transmitter

Output Power:	5 W (High) / 2.5 W (Mid) / 0.5 W (LOW) (@ 7.4 V DC or EXT DC)
Modulation Type:	F2D, F3E: Variable Reactance Modulation F7W: 4FSK (C4FM)
Spurious Emission:	USA/EXP version At least 60 dB below (@TX Power High, Mid) At least 40 dB below (@TX Power Low)

● Receiver

Circuit Type:	Double-conversion super heterodyne
Intermediate Frequency:	1st: 47.25 MHz 2nd: 450 kHz
Sensitivity:	1.5 μV for 10 dB SN (108 - 137 MHz, AM) 0.2 μV for 12 dB SINAD (137 - 140 MHz, NFM) 0.16 μV for 12 dB SINAD (140 - 150 MHz, NFM) 0.2 μV for 12 dB SINAD (150 - 174 MHz, NFM) 1 μV for 12 dB SINAD (174 - 222 MHz, NFM) 0.5 μV for 12 dB SINAD (300 - 350 MHz, NFM) 0.2 μV for 12 dB SINAD (350 - 400 MHz, NFM)

Specifications

0.18 μ V for 12 dB SINAD (400 - 470 MHz, NFM)
 1.5 μ V for 12 dB SINAD (470 - 579.995 MHz, NFM)
 0.19 μ V TYP for BER 1% (Digital Mode)
 Selectivity (-6dB/-60dB): 12 kHz / 35 kHz (NFM/AM)

AF Output: 700 mW (16 Ω for 10 % THD 7.2 V) internal speaker
 300 mW (8 Ω for 10 % THD 7.2 V) external speaker

Rated values are at normal temperature and pressure.

Specifications are subject to change without notice, and are guaranteed within the 144/430 MHz amateur bands only. Frequency ranges will vary according to transceiver version; check with your dealer.

Disposal of your Electronic and Electric Equipment

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

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

In EU countries, please contact your local equipment supplier representative or service center for information about the waste collection system in your country.



Attention in case of use

This transceiver works on frequencies which are not generally permitted.

As for the actual usage, the user has to possess an amateur radio licence.

Usage is allowed only in the frequency bands which are allocated for amateur radios.

List of national codes					
AT	BE	BG	CY	CZ	DE
DK	ES	EE	FI	FR	GB
GR	HR	HU	IE	IT	LT
LU	LV	MT	NL	PL	PT
RO	SK	SI	SE	CH	IS
LI	NO	-	-	-	-

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

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

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

DECLARATION BY MANUFACTURER

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

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

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

YAESU

The radio

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