YAESU
The radio

C4FM/FM 144/430MHz
DIGITAL/ANALOG TRANSCEIVER

FT-70DR
FT-70DE

Advance Manual

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Digital Personal ID (DP-ID) feature

About the Digital Personal ID (DP-ID) feature

When operating in digital C4FM communications, each transceiver is programmed with, and sends its own individual ID information (Radio ID) in each transmission. The DP-ID function and the individual identification information, makes possible group communications of stations that are within communications range.
Digital Personal ID (DP-ID) feature opens the speaker audio only when a signal set to the same DP-ID in the Digital Mode is received, even if each transceiver is set a different Digital Group ID (DG-ID) number.

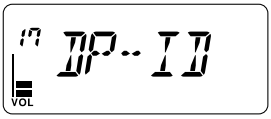
The digital C4FM repeater equipped with the DP-ID function allows preferentially contact in an emergency, regardless of the repeater setting or if the repeater is being used without the DG-ID setting.

- Digital C4FM mode transceivers compatible with the DG-ID function are required in order to utilize this function.
- If the firmware is not compatible with the DG-ID function, update to the latest firmware to use the DG-ID function. The latest firmware is available on the YAESU website. The latest firmware is available on the YAESU website. The latest firmware is available on the YAESU website.

Registering the DP-ID of the other station

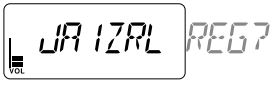
When setting the DG-ID code to “00”, the transceiver will receive signals from all digital C4FM stations. To utilize the DP-ID function, it is necessary to set the receive DG-ID code to a number other than “00”.

1. Press and hold the [**F**] key, to enter the Set Mode.
2. Rotate the **DIAL** knob to select [17 DP-ID].



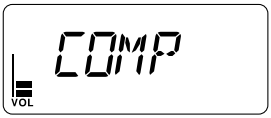
3. Press the [**F**] key.
   - The DP-ID list is displayed.
   - If a number of DP-IDs are registered, rotate the **DIAL** knob to display the desired DP-ID.

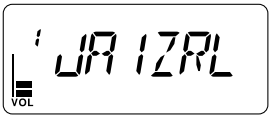
4. A transmission in the digital C4FM mode from the other transceiver will register the DP-ID.
   When a signal from the other station is received, the call-sign and “REG” are displayed on the LCD.



- When a signal from another registered transceiver is received, nothing is display on the LCD.
- When registering a transceiver already registered with a different call sign, the call sign registered in the DP-ID list is changed to the new registered call sign.

5. Press and hold the [**GM**] key.
   - When registering in the DP-ID list is finished, “COMP” is displayed for three seconds, then the display returns to the DP-ID list screen.
   - If not registering the DP-ID, press the [**GM**] key.
   - If registering several DP-IDs, repeat step 4 and 5.
   - A maximum of 24 stations may be registered.

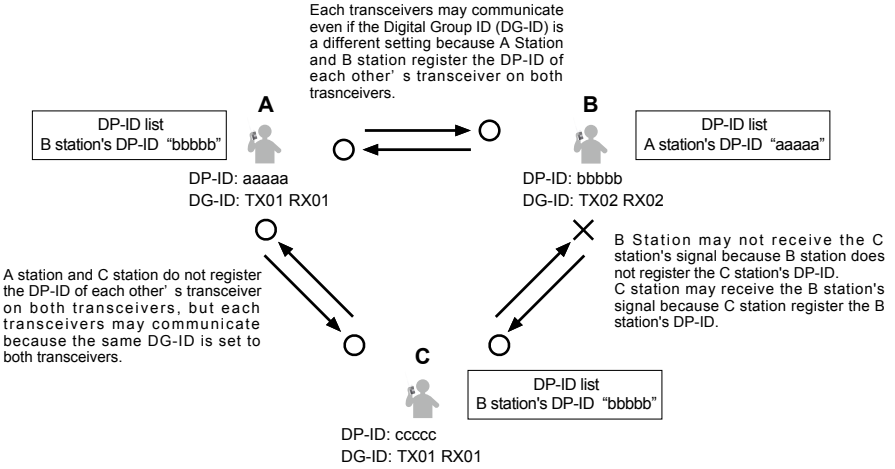




6. Press the **PTT** switch to save the setting and return to normal operation.
   - Similarly, register all of the communicating transceivers’ DP-IDs to the DP-ID lists of the other stations.
   - The DP-ID setting is complete.

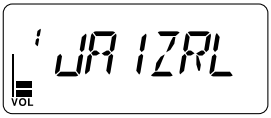
When using the DP-ID function in the Voice FR mode(Voice Full Rate Mode)communication mode, turn the battery saver function OFF in the Set Mode [48 RX SAVE] (see 📖39).

For communicating using the DP-ID function, register the DP-ID of each other’s transceiver on both transceivers. By registering the DP-ID, users may communicate even if the Digital group ID (DG-ID) is a different setting.

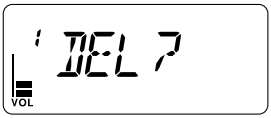


- Deleting the registered DP-ID

1. Press and hold the [**F**] key to enter the Set Mode.
2. Rotate the **DIAL** knob to select [17 DP-ID].
3. Press the [**F**] key.
   The DP-ID list is displayed.



4. Rotate the **DIAL** knob to select the call sign of the other transceiver, then press and hold the [**GM**] key.
   The call sign of the transmitted transceiver and “DEL?” is displayed.
5. Press and hold the [**GM**] key.
   - When finishing registering in the DP-ID list, the “COMP” is displayed for three seconds.
   - If not registering another DP-ID, press the [**GM**] key.
   - If registering several DP-IDs, repeat step 4 and 5.
6. Press the **PTT** switch to save the new setting and return to normal operation.



Selecting the Squelch Type in the Analog FM Mode

1. Press the [**F**] key, then press the [**5**] (**SQ TYP**) key.
2. Rotate the **DIAL** knob to adjust to a level at which the background noise is muted.

Tone squelch (CTCSS), DCS and the New PAGER (EPCS) functions do not operate in the C4FM digital mode. Press the [**MODE**] key to change to the Analog FM mode, or press and hold the [**AMS**] key to turn the AMS function ON (AMS icon appears).

Squelch type	Icon indication	Description
OFF	-	Deactivates the tone squelch function and DCS function OFF, then returns to the normal squelch operation in the Analog FM mode.
TONE	***T*** appears	Analog FM Transmissions contain the CTCSS tone. Receives as a normal squelch operation.
TSQL	***T SQ*** appears	Activates the CTCSS tone squelch function on Analog FM receive.
DCS	***DCS*** appears	Activates the Digital Code Squelch (DCS) function. The DCS code may be selected from 104 codes (from 023 to 754).
RV TN	***T SQ*** (Blinks)	Activates the reverse tone function. Used to monitor communications based on the squelch control system. When a signal contains the designated tone, the squelch is not opened, and when the tone signal disappears, the squelch opens and communication starts.
PR FRQ	***SQ*** (appears)	Activates the no-communication squelch function for radios. The no-communication signal tone frequencies may be specified within the range from 300 Hz to 3000 Hz in steps of 100 Hz.
PAGER	***PAG*** (appears)	Activates a new two-tone CTCSS pager function. When communicating with FT-70DR/DE transceivers among friends, specify personal codes (each code is composed of two tones) so that you can call only specific stations.
D CODE*	***DCS*** (Blinks)	Transmits the signal containing the DCS CODE. Receives as a normal squelch operation.
T DCS*	***T*** (Blinks) ***DCS*** (appears)	Sends a tone signal when transmitting, and receives the only signal matches the DCS code when receiving.
D TONE*	***T SQ*** (appears) ***DCS*** (Blinks)	Sends the DCS CODE when transmitting, and receives only signals that contain a matching tone signal when receiving.

*:Turning the Set Mode [54 SQL.EXP] SPL ON (📖40), “D CODE”, “T DCS” and “D TONE” setting values are activated.

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

- The squelch type may be set for each frequency band (BAND).
- The CTCSS and DCS squelch settings are also active during scanning. If scanning is performed with the CTCSS and DCS squelch function activated, scanning stops only when a signal containing the specified CTCSS tone or DCS code is received.
- Pressing the **MONI/T-CALL** switch allows signals that do not contain a tone or DCS code, and signals with different tones, DCS codes, digital mode signals to all be heard.
- Set Mode [13 DCS.INV] (📖30) allows to receive the DCS code of the inverted phase.

Tone squelch feature

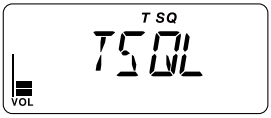
The tone squelch opens the speaker audio only when a signal containing the specified CTCSS tone is received. The receiver will be quiet while waiting for a call from a specific station.

The tone squelch function does not function in digital mode. Press the [**MODE**] to change the communication mode to Analog FM mode or press and hold the [**AMS**] key to turn the AMS function ON (the AMS icon appears).

Setting CTCSS Tone frequency

The tone frequency may be selected from 50 frequencies (from 67.0 Hz to 254.1 Hz).

1. Press the [**F**] key, then press the [**5**](SQ TYP) key.
2. Rotate the **DIAL** knob to select the “TSQL”.
3. Press the **PTT** switch to save the setting and return to normal operation.
4. Press the [**F**] key, then press the [**6**](CODE) key.
   The setting screen of the tone frequency is displayed.
5. Rotate the **DIAL** knob to select the tone frequency.
6. Press the [**F**] ket switch to save the setting and return to normal operation.



- The tone frequency setting is common with the squelch types as follows:
  TONE, TSQL, RV TN, T DCS, D TONE
- The default setting is “88.5 Hz”

Searching for the CTCSS Tone transmitted by the other Station

Search and display the tone squelch CTCSS tone transmitted by the other station.

1. Press the [**F**] key, then press the [**5**](SQ TYP) key.
2. Rotate the **DIAL** knob to select the “TSQL”.
3. Press the **PTT** switch to save the setting and return to normal operation.
4. Press the [**F**] key, then press the [**6**](CODE) key.
   The setting screen of the tone frequency is displayed.
5. Press the [**BAND**] key.
   The transceiver begins searching for a matching tone frequency.
   When a corresponding tone frequency is detected, a beep sound is emitted, and the detected tone frequency blinks.
   The searching stops for 5 seconds and the audio is heard.
6. Press the [**BAND**] key to stop searching.
7. Press the [**F**] key.
   The detected tone frequency is set.

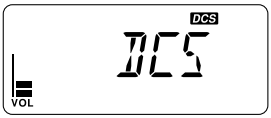
To set the transceiver operation when scanning stops, set the Set Mode [52 SCN.RSM](📖 40). This setting is common with the scan setting, tone search function and DCS search function.

Digital Code Squelch (DCS) feature

The Digital Code Squelch opens the speaker audio only when a signal containing the specified DCS code is received.
The DCS code may be selected from 104 types (from 023 to 754).

Setting the DCS CODE

1. Press the [**F**] key, then press the [**5**](SQ TYP) key.
2. Rotate the **DIAL** knob to select “DCS”.
3. Press the **PTT** switch to save the setting and return to normal operation.
4. Press the [**F**] key, then press the [**6**](CODE) key.
   The DCS code setting screen is displayed.
5. Rotate the **DIAL** knob to select the DCS code.
6. Press the [**F**] key switch to save the setting and return to normal operation.



- The DCS code set by the above operation is common setting for all transmissions with a DCS Code (DCS, D CODE, T DCS, D TONE).
- The default DCS code is “023”.

Searching for the DCS Code Used by the Other Station

Search for the DCS code used by the other station.

1. Press the [**F**] key, then press the [**5**](SQ TYP) key.
2. Rotate the **DIAL** knob to select the “DCS”.
3. Press the **PTT** switch to save the setting and return to normal operation.
4. Press the [**F**] key, then press the [**6**](CODE) key.
   The DCS code is displayed.
5. Press the [**BAND**] key.
   The transceiver starts to search for the DCS code.
   When a corresponding DCS code is detected, a beep sound is emitted. The detected DCS code blinks.
   The searching stops for 5 seconds and the audio is heard.
6. Press the [**BAND**] key to stop searching.
7. Press the [**F**] key.
   The searched DCS code is set and the transceiver exits from Set mode.

To set the transceiver operation when scanning stops, set the Set Mode [52 SCN.RSM](📖 40). This setting is common with the scan settings, the tone search function and DCS search function.

New Two CTCSS Tone Pager Function

When using the FT-70DR/DE transceivers with a group of friends, setting the two CTCSS tone personal codes allows calling just the specific stations. Even when the person who is called is not near the transceiver, the information on the LCD indicates that a call was received.

> The new two CTCSS tone pager feature does not operate in the digital mode. Press the [**MODE**] key to change to the Analog FM mode or press and hold the [**AMS**] key to turn the AMS function ON.

Using the Pager Function

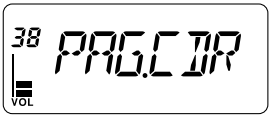
1. Press the [**F**] key, then press the [**5**](SQ TYP) key.
2. Rotate the **DIAL** knob to select the "PAGER".

3. Press the **PTT** switch to save the setting and return to normal operation.
   The new pager function is activated.

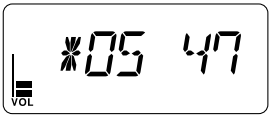
Setting the Code for Your Station

Set the "pager code" to be called by other stations.

1. Press and hold the [**F**] key, then rotate the **DIAL** knob to select the Set Mode [38 PAG.CDR].



2. Press the [**F**] key.
3. Rotate the **DIAL** knob to select the first element of the code from 01 to 50.



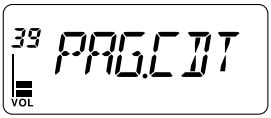
4. Press the [**BAND**] key to move the icon to the second element of the code.
5. Rotate the **DIAL** knob to select the second element of the code from the 01 to 50.
   The first and second element of the code may not be set to the same code.
6. Press the **PTT** switch to save the setting and return to normal operation.

- The reverse combination works as the same code, that is "05 47" is the same as "47 05".
- If the same code is specified for all individuals, all the individuals can be called at the same time.
- The default code is "05 47".
- When receiving the signals, the intermittent sound of the tone signal may be heard slightly.

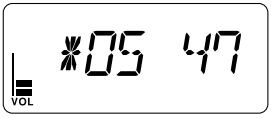
Calling a Specific Station

The “pager code” may be set to call to specific stations.

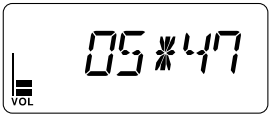
1. See “Activating the New Pager Function” to initiate the new pager function.
2. Press and hold the [**F**] key, rotate the **DIAL** knob to select the Set Mode [39 PAG.CDT].



3. Press the [**F**] key.
4. Rotate the **DIAL** knob to select the first element of the code from the 01 to 50.



5. Press the [**BAND**] key to move the icon to the second element of the code.
6. Rotate the **DIAL** knob to select the second element of the code from the 01 to 50.
   The first and second element may not be set to the same code.



7. Press the **PTT** switch to save the setting and return to normal operation.
8. Press the **PTT** switch to transmit a call to the specific station.

Receiving “pager code” calls from a Remote Station (Standby Operation)

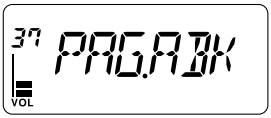
When the Pager function is activated, and a call is received with a corresponding Code, the “**PAG**” icon blinks and the audio is heard.

Furthermore, when the Bell function (📖12) is activated, the bell rings and the “🔔” icon blinks while calling from the other station.

Using the Pager Answer Back

If the Answer Back feature is ON, when called by another station with a corresponding pager code, the transceiver is automatically placed in the transmit mode (for about 2.5 seconds) to notify the other station that you are ready to communicate.

1. Press and hold the [**F**] key, rotate the **DIAL** knob to select the Set Mode [37 PAG.ABK].



2. Press the [**F**] key.
3. Rotate the **DIAL** knob to select the “ON”.
4. Press the **PTT** switch to save the setting and return to normal operation.

Notification of a Call from a Remote Station by the Bell Function

The Bell may be set to sound an Alert when a call from another station containing a corresponding tone, DCS or pager code is received. "♥" icon on the LCD blinks to provide a later notice of the call from the other station.

1. Press and hold the [**F**] key, rotate the **DIAL** knob to select the Set Mode [8 BELL].

2. Press the [**F**] key.
3. Rotate the **DIAL** knob to select the desired number of times (1-20 times or continuous) the Bell rings.
   ••• ⇔ OFF ⇔ 1T ⇔ 2T ⇔ •••
   ⇔ 20T ⇔ CONT (continuous) ⇔ •••
4. Press the **PTT** switch to save the setting and return to normal operation.

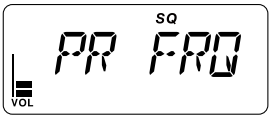
Bell icon

- The default setting is "OFF".
- If setting the "CONT" (continuous), the bell keeps sounding until operating something.

User Programmed Reverse CTCSS Decoder

The tone signal frequency can be set at 100 Hz intervals between 300 Hz and 3000 Hz to mute the audio when receiving a signal containing a CTCSS tone matching the programmed tone.

1. Press the [**F**] key, then press the [**5**](SQ TYP) key.
2. Rotate the **DIAL** knob to select the "PR FRQ".
3. Press the **PTT** switch to save the setting and return to normal operation.
4. Press the [**F**] key, then press the [**6**](CODE) key.
   The setting screen containing the CTCSS tone frequencies is displayed.
5. Rotate the **DIAL** knob to select the desired CTCSS tone frequency.
6. Press the **PTT** switch to save the setting and return to normal operation.

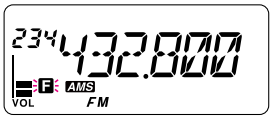


Convenient Functions

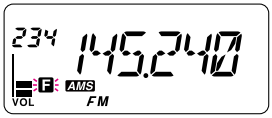
Split Memory

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

1. Register the receive frequency to a memory channel first. See “Registering to Memory Channels” (Operating Manual).
2. Set the transceiver to the desired transmit frequency.
3. Press and hold the [**V/M**] key.
4. Rotate the **DIAL** knob to select the channel number that the receive frequency was registered to on step1.
5. While pressing and holding the **PTT** switch, press the [**V/M**] key.
   - The beep sounds and the split memory is saved.
   - While recalling the split memory,” ⊟” and “⊞” is displayed on the LCD.



Registering the receive frequency



Registering the transmit frequency

Recalling the split memory

While operating the split memory, press the [**F**] key, then press the [**HM/RV**] key to reverse the transmit and receive frequencies temporarily When reversing the frequencies, “⊟” and “⊞” blink

Using Memory Tag

Memory name tags (up to 6 characters) may be assigned or changed on the memory channels and home channels.

1. Recall the memory channel or home channel to assign the name tag.
2. Press and hold the [**F**] key, rotate the **DIAL** knob to select the Set Mode [33 MEM.NAM].
3. Press the [**F**] key.
   The character input screen is displayed.
4. Use the numeric keypad or **DIAL** knob to input the characters.
   - Inputting characters
     Example quickly Pressing the [**2**] key, each time switches the following characters:
     A → B → C → 2 → A → •••
     Example Rotating the **DIAL** switches the following characters.
     ••• ⇔ A - Z ⇔ (symbol) ⇔ 0 - 9 ⇔ (symbol) ⇔ A - Z ⇔ •••
   - Moving the cursor, deleting the input character
     [**BAND**] key: Moves the cursor to the right
     [**MODE**] key: Moves the cursor to the left
     Pressing and holding the [**GM**] key: Erases all characters after the cursor
5. Press the **PTT** switch to save the setting and return to normal operation.
   The memory tag is registered to the memory channel, and the Set Mode exits.

The memory name tag registered to the channel is automatically displayed as the memory tag indication.

Changing between name tag display and frequency display

1. Recall the memory channel or the home channel to be changed.
2. Press the [**F**] key, then press the [**MODE**] key.
   The display changes between the memory tag display and the frequency display.
   • If a name tag has not been set for the memory/home channel, the beep sounds and the display will not change.

If the memory channel or home channel is set to display the memory tag, pressing the [**F**] key will temporarily display the frequency indication while "**F**" is lighted.

The Memory Channel Only Mode

The FT-70DR/DE may be set to operated only in the registered memory channels.

1. While pressing the [**V/M**] key, press and hold the **POWER** (LOCK) switch to turn the transceiver ON.
   • The memory channel only mode is ON, the previously selected memory channel is recalled.
   • Rotating the **DIAL** knob may be selected.
   • Inputting the 3 digits of the memory channel using the numeric keys may be re-called the memory channel directly.

- In the memory only mode, only the following functions will operate:
  - Changing the communication mode (press the [**MODE**] key)
  - Group monitor (GM) function (press the [**GM**] key)
  - The transmission mode setting of the AMS function (press the [**AMS**] key)
  - Turning the AMS function ON or OFF (press and hold the [**AMS**] key)
  - Setting of the DG-ID code (press and hold the [**MODE**] key)
  - Reverse function (press the [**F**] key, and then press the [**HM/RV**] key)
  - Audio level adjustment (press the **VOL** key)
  - SQL level adjustment (press the [**F**] key, and then press the **MONI/T-CALL** switch)
  - Key lock function (press the **POWER** (LOCK) switch
- Pressing the [**V/M**] key or the [**HM/VM**] key, will sound the beep, "M-ONLY" will be displayed, and the function will not operate.

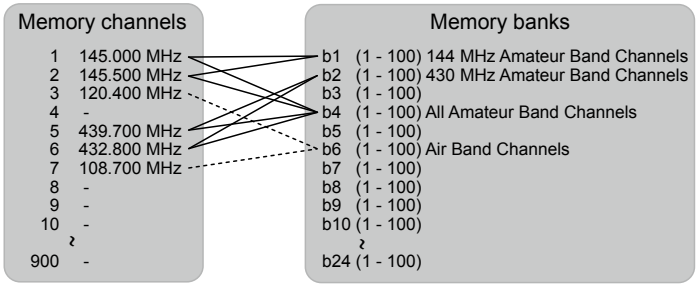
- Canceling Memory Only Mode

1. Turn the transceiver OFF; and then while pressing the [**V/M**] key, press and hold the **POWER** (LOCK) switch to turn the transceiver ON.

Using Memory Banks

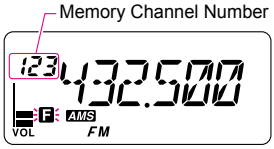
The transceiver allows using up to 24 memory banks to be recalled with the sorted the memory channels. One memory channel may also be registered in two or more memory banks according to the intended use.

Example of registering memory channels to the memory banks:



Registering to Memory Banks

1. Press the [**V/M**] key to enter the memory mode.
2. Rotate the **DIAL** knob to recall the memory channel to register in the memory bank,



3. Press and hold the [**V/M**] key.
   "**F**" blinks.
4. Rotate the **DIAL** to select the memory bank (b1 to b24) to register the memory channel.

   - The memory bank channels are displayed between the memory channel 1 (1CH), and PMS memory channel U50.

5. Press the [**V/M**] key.
   The memory channel is registered in the selected memory bank and the transceiver operation returns to the memory mode.

Open the Memory Bank display

1. Press the [**V/M**] key to switch to the memory mode.
2. Pressing the [**BAND**] key switches between the normal memory channel display and the memory bank display.
   BANK□□(1 - 24) : The memory bank display
   MEMORY : The memory channel display
   The display is automatically switched to the selected display after one second.

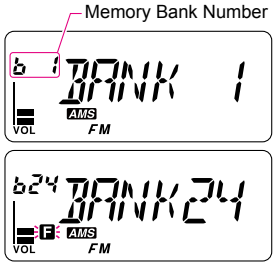
If no memory channel is registered, setting the following operation sounds the beep and "NO BNK" will be displayed.

Open Memory Bank Channels

1. After pressing the [**F**] key, press the [**BAND**] key.
2. Rotate the **DIAL** knob to select the memory bank (b1 to b24) to be recalled.

> If no memory channel is registered, the memory bank may not be selected.

3. Press the [**BAND**] key.
   The selected memory bank is activated.



Canceling a Memory Channel Registered in Memory a Bank

1. Recall the memory bank to cancel registering.
2. Rotate the **DIAL** knob to select the memory channel to cancel registering to the memory channel.
3. Press and hold the [**V/M**] key.
4. Press the [**AMS**] key.

Assigning a Name to a Memory Bank

1. Press and hold the [**F**] key to enter the Set Mode.
2. Rotate the **DIAL** knob to select the Set Mode [9 BNK.NAM].
3. Press the [**F**] key.
4. Rotate the **DIAL** knob to select the memory bank to assign the name.
5. Press the [**V/M**] key.
   The character input screen is displayed.

> The default memory bank names are set from “BANK 1” to “BANK 24. Each name may be changed.

6. Use the numeric keys or **DIAL** knob, to input the name characters.
   - Inputting characters:
     Example, quickly pressing the [**2**] key each time switches the following characters.
     A → B → C → 2 → A → •••
     Example, Rotating the **DIAL** switches the following characters.
     ••• ⇔ A-Z ⇔ (symbol) ⇔ 0-9 ⇔ (symbol)⇔ A-Z ⇔ •••
   - Moving the cursor & deleting input characters:
     [**BAND**] key: Moves the cursor to the right
     [**MODE**] key: Moves the cursor to the left
     Pressing and holding the [**GM**] key: Erases all characters after the cursor
7. Press the **PTT** switch to save the setting and return to normal operation.
   The memory bank name is set and the transceiver exits from Set mode.

Skipping Unwanted Scan Frequencies (Skip Search Memory)

During the VFO scan, an unwanted frequency may be skipped by registering it to the “skip search memory channels” in advance.

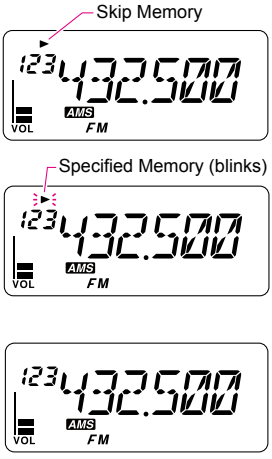
- Set the temporary scan stop to the skip search memory
  1. Press and hold the [**V/M**] key to temporarily stop the VFO scan.
  2. Rotate the **DIAL** knob to select a skip search memory channel from 901-999.
     - Only skip search memory channels 901-999 may be selected.
  3. Press the [**V/M**] key.
     The beep sounds and the search skip channel is saved to memory, then the scan resumes.
- Specifying Unwanted VFO Scan Frequencies
  1. In the VFO mode, set the frequency that you do not want to receive.
  2. Register the skip search memory (901-999) with the same steps as “Registering to Memory Channel” (see the operating manual).

The skip search memory may be deleted with the same steps as “Deleting the memory channel” (See the Operating Manual) The deleted frequency is scanned again.

Setting Skip Memory Channel and Specified Memory Channel

Two types of memory channels may be designated, “skip memory channels” and “specified memory channels” for efficient memory channel scanning. Set “Skip Memory Channels” may be skipped during the memory scanning; and only “Specified Memory Channels” will be scanned during specified memory channel scanning.

1. Recall the memory channel to specify.
2. Press the [**F**] key, then repeatedly to press the [9](SKIP) key to change as follows:
   Skip Memory Channel → Specified Memory Channel → Normal Memory Channel →
   → Skip Memory Channel → •••
   - Skip Memory Channel:
     The “▶” above the memory channel number lights up, then the channel is skipped when scanning the memory channels
   - Specified Memory Channel:
     The “▶” above the memory channel number blinks, only designated memory channels are scanned during memory scanning.
   - Normal Memory Channel:
     The “▶” above the memory channel number turns OFF.



Scanning Only the Specified Memory Channels

1. Recall the memory channel registered as a specified memory channel.
2. Press the [**F**] key, then press the [2](SCAN) key to start scanning.
   Only the memory channels registered as the specified memory channels are scanned.

Unless two or more specified memory channels are registered, the specified memory channel scanning does not function.

Programmable Memory Channel Scan (PMS)

Registering to the Programmable Memory Channels

50 sets of PMS memory channels (L1/U1 to L50/U50) are available.
Register the lower and upper frequencies of the frequency range in a pair of Programmable Memory Channels,

L□□: Lower limit memory channel
U□□: Upper limit memory channel

For more details on registering frequencies to the memory channel, see “Registering To Memory channel” (see the operating manual).

- Make sure to use the corresponding numbers for the lower and upper limit memory channels.
- Set the PMS memory channel for performing the Programmable Memory scanning (PMS) as follows.
  - The scan width of the upper and lower limit frequencies must be 100 kHz or more.
  - The lower and upper limit memory channels must be within the same frequency band.
  - The lower and upper limit memory channels must not register the lower and upper channels in reverse.
  - The PMS memory channel must not register a skip memory channel.

Performing Programmable Memory Channel Scan

The programmable memory channel scan allows scanning a specified frequency range within the same frequency band.

1. Recall the PMS memory channel to which the lower limit (L□□) or upper limit (U□□) of the frequency is registered.
2. Press the [**F**] key, then press the [2](SCAN) key.
   Programmable memory channel scanning starts.
   - During scanning, “P□□” appears on the upper left side of the LCD.
   - If the **DIAL** knob is rotated while scanning is in progress, the scanning will continue up or down in frequency according to the direction of the **DIAL** Knob rotation.

   If the scanner halts on an incoming signal, the back light will turn ON and the decimal point between the “MHz” and “kHz” digits of the frequency display will blink. Scanning will resume in about five seconds.
3. Press the **PTT** switch to cancel the scanning.

- If the scan has paused on a signal, rotating the **DIAL** knob will cause scanning to resume instantly.
- During scanning, the frequency may be changed only within the programmed frequency range.
- During scanning, press the [**V/M**] key to return to the normal memory mode.

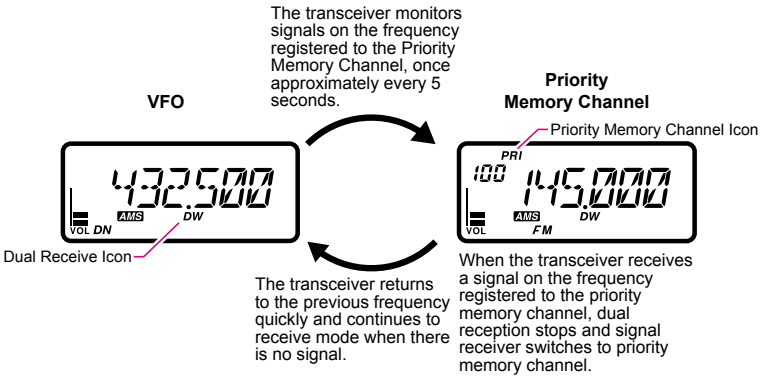
Dual Receive (DW) Function

The transceiver is equipped with the following 3 types of Dual Receive Functions:

- VFO Dual Receive
- Memory Channel Dual Receive
- Home Channel Dual Receive

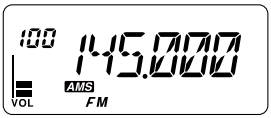
The transceiver checks for signals on the frequency registered to the selected memory channel (Priority Memory Channel) once approximately every 5 seconds. When receiving a signal on the frequency registered to a priority memory channel, the Dual Receive function automatically pauses, and allows reception of the signals.

Example: Checking the priority memory channel “100” (145.000 MHz), while receiving “432.500 MHz”.



Registering the priority channel

1. Register the preferred receive frequency and communication mode to the priority memory channel (see the operating manual).
2. Press the [**V/M**] key to recall the memory channel.
3. Press and hold the [**V/M**] key, and then rotate the **DIAL** knob to select the memory channel registered in step 1.



4. Press the [**BAND**] key.
   The confirmation screen “PRICH” appears.

5. Press the [**BAND**] key.
   The priority memory channel setting is saved and operation returns to the prior recalled memory channel.
   When recalling the priority memory channel, the “PRI” icon appears on the upper right side of the memory channel number.

The priority memory channel is not set to the Memory channel by default. If using the dual receive priority memory channel, the priority memory channel must be set.

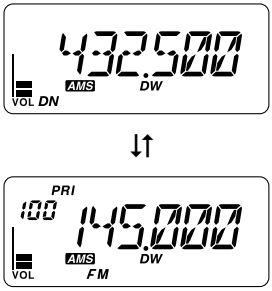
The time interval at which the priority memory channel is monitored for activity may be changed In the Set Mode [22 DW RSM] (📖32).

Activating the Dual Receive (DW) feature

1. Set the frequency and communication mode to monitor continually.
   The monitor frequency may be set on the VFO mode, the memory channel mode or the HOME channel mode.

VFO Dual Receive	VFO ⇆ Priority Memory Channel
Memory Channel Dual Receive	Memory Channel ⇆ Priority Memory Channel
HOME Channel Dual Receive	HOME Channel ⇆ Priority Memory Channel

2. Press the [**F**] key, then press the [**V/M**](DW) key.
   "DW" icon appears and the Dual Receive function activates.
   When a signal is received on the priority channel, the beep sounds, the "PRI" icon appears and the Dual Receive function stops temporarily. The decimal point of the frequency display blinks during the temporary halt.
3. Press the [**V/M**](DW) key to cancel the Dual Receive function.



The combination of the frequency bands and modes for the Priority Memory Channel and the receiver monitor frequency can be easily changed. Dual Receive may be operated with the AMS function ON.

Setting the Dual Receive (DW) Resume Conditions

1. Press and hold the [**F**] key, and then rotate the **DIAL** knob to select the Set Mode [22 DW RSM].
2. Press the [**F**] key.
3. Rotate the **DIAL** knob to select the resume condition when halting the Dual Receive function.
   - 2.0 S to 10.0 S
     The signal is received for the specified period of time, and then the Dual Receive resumes.
     The Dual Receive resume time may be set from 2 to 10 seconds at 0.5 second intervals.
   - BUSY
     The signal is received until the signal fades out. Two seconds after the signal fades out, the Dual Receive resumes.
   - HOLD
     The Dual Receive stops and tuning remains on the current receive frequency. (The Dual Receive does not resume.)
4. Press the **PTT** switch to save the new setting and return to normal operation.

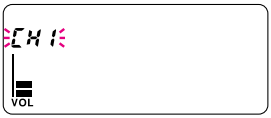
- The default setting is “HOLD”.
- In the Set Mode [21 DW INT] (see 32), the interval time at which the priority channel is monitored may be set from 0.1 SEC to 10.0 SEC. (The default setting is “5.0 SEC”.)
- When Set Mode [23 DW RVT] (see 32) is set to ON, press the **PTT** switch to transmit, without waiting for activity to appear on the priority channel. After transmitting, the transceiver receives the priority channel and Dual Receive resumes after 5 seconds.

DTMF Operation

DTMF (Dual Tone Multi Frequencies) are the tone signals sent to make telephone calls, or control repeaters and network links. Up to 10 registers of 16-digit DTMF tone codes can be stored as telephone numbers to make calls through the public telephone network using a phone patch or connect through the WIRES-X analog node station.

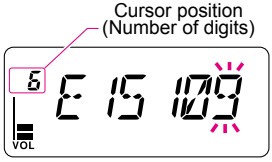
Setting the DTMF Memory

1. Press and hold the [**F**] key, then rotate the **DIAL** knob to select the Set Mode [19 DT SET].
2. Press the [**F**] key.
   The DTMF memory channel number blinks.



3. Rotate the **DIAL** knob to select the DTMF memory channel number to register.
4. Press the [**V/M**] key.
   The DTMF memory channel input screen is displayed.

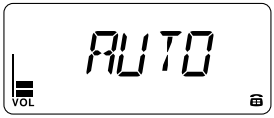
5. Use the numeric keypad or **DIAL** knob to input the DTMF code maximum of 16 digits.
   - Using the numeric key:
     The DTMF codes from 0 to 9 may be input.
     Rotate the **DIAL** knob to input A to D, ∗ or #.
   - Using the **DIAL** knob:
     Rotate the **DIAL** knob to set the DTMF code.
     ••• ⇔ 0 to 9 ⇔ A to F ⇔ – ⇔ •••
     “∗” is displayed “E”, “#” is displayed “F”
   - Moving the cursor, deleting input characters:
     [**BAND**] key: Moves the cursor to the right
     [**MODE**] key: Moves the cursor to the left
     Pressing and holding the [**GM**] key:
     Erases all characters after the cursor



6. Press the **PTT** switch to save the setting and return to normal operation.
   - Press the [**F**] key to save the DTMF memory and return to Set Mode screen.

Transmitting the Registered DTMF Code

1. Press the [**F**] key, then press the [**3**](DTMF) key.
1. The DTMF function setting screen is displayed.
2. Rotate the **DIAL** knob to select the “AUTO”.
   The DTMF icon blinks on the display.
   AUTO: The registered DTMF code is automatically transmitted.
   MANUAL: The DTMF code may be transmitted manually by pressing each numeric key.



3. Press the **PTT** switch to save the setting and return to normal operation.
   The setting is completed.

4. While pressing and holding the **PTT** switch, press a numeric [**0**] to [**9**] key.
   The DTMF code registered in the DTMF memory channel is automatically transmitted.
   • Even after releasing the **PTT** switch, the transmission continues until the DTMF code is completed. The transceiver is automatically returned to receive mode.

Manually Transmitting the DTMF Code

1. Set [**3**](DTMF) to “MANUAL” referring to the above “Transmitting the Registered DTMF Code”.

2. While pressing and holding the **PTT** switch to transmit, press each corresponding key to send the DTMF code:

[**0**] to [**9**] key:	0 to 9
[**F**] key:	A
[**MODE**] key:	B
[**HM/RV**] key:	C
[**AMS**] key:	D
[**BAND**] key:	✳
[**V/M**] key:	#

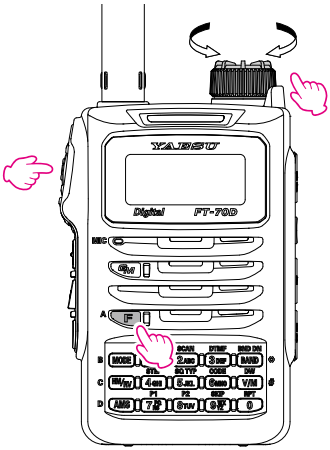
   The transmission may continue for two seconds after releasing the **PTT** switch.

Customizing Menu Settings and User Preferences (Set Mode)

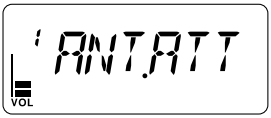
From the Setup menu, the various functions of the transceiver may be customized according to the user's personal preferences. Setting or inputting in each Set Mode item allows more easy to use.

Setting the Set Mode

1. Press and hold the [**F**] key.
   The previously selected Set Mode item is displayed.



2. Rotate the **DIAL** knob to select the desired Set Mode item.



3. Press the [**F**] key, then rotate the **DIAL** knob to change the setting.

4. Press the **PTT** switch to save the new setting and return to normal operation.
   - On some setting screens, pressing the **PTT** switch does not exit from Set mode. In this case, press and hold the [**F**] key to return to the frequency display screen.

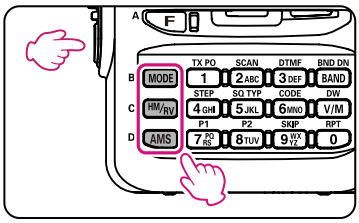
- In step 4 above, press the [**F**] key to save the new setting and return to Set Mode item in step 2. This is convenient for setting another Set Mode item.
- On some setting screens, the key operation is different than described in the above steps (For example, inputting the characters, etc.). Refer to the "Tables of Set Mode Operations".

Reset All

Use this procedure to restore all settings to their original factory defaults. All Memories will be cleared by this procedure.

CAUTION!

Resetting will clear all memories and all settings to the factory default. Be sure to make a note of the Memory Channel and Set Mode settings, etc. before resetting.



1. Turn the transceiver OFF.
2. Press and hold the [**MODE**] key, [**HM/RV**] key and the [**AMS**] key simultaneously, while turning the transceiver ON.
   The beep sounds and the confirmation screen is displayed.
3. Press the [**F**] key to sound beep and reset all factory defaults.
   - After resetting all defaults, the call sign input message appears on the LCD. Set the call sign. (See the operating manual)

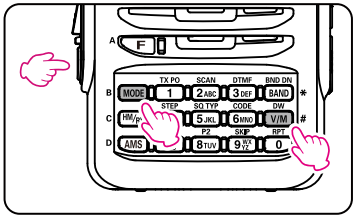
To cancel the resetting, press any key except the [**F**] key.

Set Mode Reset

The Set mode only reset will restore all the Set Mode Items to the default settings. The user memory channels will not be reset.

CAUTION!

Resetting will clear all Set Mode MENU items to the factory default. Be sure to make a note of any user customized Set Mode settings, etc. before resetting.



1. Turn the transceiver OFF.
2. Press and hold the [**MODE**] key and the [**V/M**] key and turn the transceiver ON simultaneously.
   The beep sounds and the confirmation screen is displayed.
3. Press the [**F**] key to sound a beep and reset the Set Mode settings.

To cancel the resetting, press any key except the [**F**] key.

The Set Mode Reset may not reset the following Set Mode items.
To restore all of the following Set Mode items to default, perform All Reset:

1 ANT.ATT	8 BELL	9 BNK.NAM	11 CLK.SFT	13 DCS.INV
17 DP-ID	19 DT SET	33 MEM.NAM	35 NM/FRQ	36 OPN.MSG
37 PAG.ABK	38 PAG.CDR	39 PAG.CDT	41 PSWDWT	44 RF SQL
46 RPT.FRQ	47 RX MOD	49 SCM.WTH	50 SCV.WTH	54 SQL.EXP
62* (61) W/N.DEV	64* (63) MYCALL			

*: USA Version

Tables of Set Mode Operations

No.	Set Mode Item	Description	Selectable options (Options in bold are the default settings)	🕮
1	ANT.ATT	Switch the attenuator between ON/OFF.	**OFF** / ON	28
2	APO	Set the length of time until the transceiver turns off automatically.	**OFF** / 0.5 Hours to 12 Hours	28
3	BCLO	Turns the busy channel lockout function ON/OFF.	**OFF** / ON	28
4	BEEP	Sets the beep sound function.	OFF / **KEY+SC** / KEY	28
5	BEP.LVL	Beep volume setting	LEVEL1 - **LEVEL4** - LEVEL7	28
6	BEP.EDG	Sets the beep sound ON or OFF when a band edge is encountered.	**OFF** / ON	29
7	BEP.STB	Sets the beep sound ON or OFF when the other station completes transmission in the Digital Mode.	OFF / **ON**	29
8	BELL	Set the bell function settings.	**OFF** / 1 T - 20 T / CONT (Continuous ringing)	12
9	BNK.NAM	Assign a name to each memory bank.	(up to 6 characters)	16
10	BSY.LED	Turn the MODE/STATUS Indicator ON or OFF while receiving signals.	LED.OFF / **LED.ON**	30
11	CLK.SFT	Set the clock shift function.	**A** / B	30
12	DC VLT	Display the voltage.	(Voltage)	30
13	DCS.INV	Select a combination of DCS inversion codes in terms of communication direction.	**RXN.TXN** / RXR.TXN / RXB.TXN / RXN.TXR / RXR.TXR / RXB.TXR	30
14	DIMMER	Set the brightness level of the LCD backlight and numeric keypad light.	LEVEL1 - **LEVEL6**	31
15	DIG.POP	Set the POP UP display time.	OFF / 2 SEC – **10 SEC** - 60 SEC / CONT	31
16	DIG VW	Turn the VW mode selection ON or OFF.	**OFF** / ON	31
17	DP-ID	DP-ID list (Display/Register/Clear)	(Registered DP-ID)	4
18	DT DLY	Set the DTMF code transmission delay time.	50MS / 250MS / **450MS** / 750MS / 1000MS	31
19	DT SET	Select and edit the DTMF auto dialer memory channel.	CH0 / **CH1** - CH9	21
20	DT SPD	Set the DTMF code transmission speed.	**50 MS** / 100 MS	32
21	DW INT	Set the priority memory channel monitoring interval during Dual Receive.	0.1 S – **5.0 S** – 10.0 S	32
22	DW RSM	Configure the scan stop mode settings for Dual Receive.	2.0 S – 10.0 S / BUSY / **HOLD**	20
23	DW RVT	Turn the “Priority Channel Revert” feature ON or OFF during Dual Receive.	**OFF** / ON	32
24	GM RNG	Select the beep option while receiving digital GM information.	OFF / **IN RNG** /ALWAYS	33
25	GM INT	Set the transmission interval of digital GM information.	OFF / **NORMAL** / LONG	33

No.	Set Mode Item	Description	Selectable options (Options in bold are the default settings)	🕮
26	HM/RV	Select the function of the [**HM/RV**] key	**HOME** / REV	33
27	HM-VFO	Turn transfer VFO to the Home channel ON or OFF.	OFF / **ON**	34
28	LAMP	Set the duration time of the backlight and keys to be lit.	OFF / 2 SEC – **5 SEC** – 10 SEC / CONT	34
29	LED.LGT	Turn ON the LED light.	(LED lights up)	34
30	LOCK	Configure the lock mode setting.	KEY / DIAL / **K+D** / PTT / K+P / D+P / ALL	34
31	MCGAIN	Adjust the microphone gain level.	LEVEL1 – **LEVEL5** – LEVEL9	35
32	M/T-CL	Select the function of the **MONI/T-CALL** switch.	**MONI** / T-CALL* (*: European / Asian Version)	35
33	MEM.NAM	Input the memory channel tag.	(Up to 6 letters)	13
34	MW MOD	Set the automatic channel number increment when registering to a memory channel.	**NEXT** / LOWER	35
35	NM/FRQ	Switching the memory tag indication and frequency indication	**FREQ** / ALPHA	14
36	OPN.MSG	Select the memory channel tag display or frequency display.	DC / **MSG** / OFF	36
37	PAG.ABK	Turn the pager answer back Function ON/OFF.	**OFF** / ON	11
38	PAG.CDR	Specify a personal code (receive).	01 – **05** – 50, 01 – **47** – 50	10
39	PAG.CDT	Specify a personal code (transmit).	01 – **05** – 50, 01 – **47** – 50	11
40	PASSWD	Turn the password function ON/OFF.	**OFF** / ON	37
41	PSWDWT	Input the password.	(four digits)	37
42	PTT.DLY	Set the **PTT** delay time.	**OFF** / 20 MS / 50 MS / 100 MS / 200 MS	37
43	RAD ID	Display the transceiver specific number (5 digits alphanumeric ID). (Uneditable)	(Radio ID display)	37
44	RF SQL	Adjusts the RF Squelch threshold level.	**OFF** / S1 – S9	38
45	RPT.ARS	Turn the ARS function ON/OFF.	OFF / **ON**	38
46	RPT.FRQ	Set the repeater shift width.	0.00M – 150.00M	38
47	RX MOD	Select the receive mode.	**AUTO** / FM / AM	38
48	RXSAVE	Set the battery save time.	OFF / **0.2 S** – 60.0 S	39
49	SCM.WTH	Set the memory scan frequency range.	**ALL** / BAND	39
50	SCV.WTH	Set the VFO scan frequency range.	**ALL** / BAND	39
51	SCN.LMP	Set the scan lamp ON or OFF when scanning stops.	**ON** / OFF	40
52	SCN.RSM	Configure the scan stop mode settings.	2.0 S – **5.0 S** – 10.0 S / BUSY / HOLD	Operating Manual
53	SCN.STR	Set the scanning restart time.	0.1 S – **2.0 S** – 10.0 S	40

No.	Set Mode Item	Description	Selectable options (Options in bold are the default settings)	🕮
54	SQL.EXP	Set a squelch type separately for receive and transmit.	**SPL.OFF** / SPL.ON	40
55	TEMP	Indicates the current temperature inside the transceiver.	(temperature display)	41
56	TOT	Set the timeout timer.	**OFF** / 0.5M – 10.0 M	41
57	TS MUT	Turn the muting function ON/OFF during tone search.	OFF / **ON**	41
58	TS SPD	Select a tone search speed.	**FAST** / SLOW	41
59	VER.INF	Display the CPU and DSP firmware version of the transceiver.	(C x.xx) / (D x.xx) Rotate **DIAL** knob to select	41
60	VFO.MOD	Set the frequency setting range in the VFO mode by **DIAL** knob.	**ALL** / BAND	42
61	WX ALT	Turn the weather alert scan ON/OFF. (This menu item is only available in the USA version.)	**OFF** / ON	42
62* (61)	W/N.DEV	Set the Transmit Modulation Level in the FM mode.	**WIDE** / NARROW	42
63* (62)	W-DGID	Set the WIRES-X DGID.	AUTO / DGID01 - DGID99	42
64* (63)	MYCALL	Set the call sign.	(up to 10 characters)	Operating Manual

*: USA Version

1 ANT.ATT

Enables/Disables the Receiver Front-end Attenuator.

Set the attenuator (ATT) function. If setting ON, the receiver sensitivity may be reduced to about 10 dB.

OFF	Disable the attenuator (ATT) function OFF.
ON	Enable the attenuator (ATT) function ON.

2 APO

The Setting of the APO (Auto Power Off)

Set the length of time until the transceiver turns off automatically.

OFF	Automatic Power OFF (APO)
0.5 H – 12 H (Hours)	"⏻" icon appears on the LCD; the transceiver is turned OFF automatically when no operation is performed for a specified period of time. Beep sounds about 60 seconds before turn OFF.

3 BCLO

Enables/Disables the Busy Channel Lock-Out feature.

Preventing transmissions when the receive channel is busy.

OFF	Permits starting a transmission while receiving a signal.
ON	Disables transmissions while receiving a signal.

4 BEEP

Setting of the beep sound when operating keys or stopping scanning.

Set whether or not a beep sound is emitted to confirm when keys are operated, when scanning reaches the end of a frequency band.

OFF	The beep does not sound.
KEY+SC	Emits the beep sound when a key is operated or scanning stops.
KEY	Emits the beep sound when a key is pressed.

5 BEP.LVL

Beep volume setting

Changing the Beep Volume

LEVEL1 – **LEVEL4** – LEVEL7	Rotate the **DIAL** knob to adjust the beep volume.

Rotating the **DIAL** knob each time sounds beep for checking the volume.

6 BEP.EDG

The Confirmation sound is emitted when a Band Edge or Memory Channel 1 is encountered.

Set whether or not a beep sound is emitted to confirm when a Band Edge or Memory Channel 1 is encountered.

OFF	No confirmation sound is emitted when a Band Edge or Memory Channel 1 is encountered.
ON	Emits the confirmation sound when a Band Edge or Memory Channel 1 is encountered.

7 BEP.STB

The setting of the Standby Beep in the digital C4FM mode.

Set whether or not to emit the standby beep sound when the other station completes transmission in the digital C4FM mode.

OFF	Does not emit the standby beep sound.
ON	Emits the standby beep sound.

8 BELL

Setting of the number of times the bell rings

Set the Bell sound to alert you of a call from another station containing a corresponding tone, DCS or pager code.

OFF	The beeper does not sound.
1 T – 20 T	The number of times the bell rings may be set from among 1 to 20 times.
CONT	The bell continues to sound until performing key

For more details, see “Notification of a Call from a Remote Station by the Bell Function” (📖12).

9 BNK.NAM

Assigning a name to memory bank.

A name can be assigned to a memory bank using up to 16 characters.

For more details, see “Assigning Name to Memory Bank” (📖16).

10 BSY.LED

Turn the MODE/STATUS Indicator ON or OFF while receiving signals.

Set whether or not the MODE/STATUS Indicator lights when receiving signals.

LED.ON	The MODE/STATUS Indicator lights during receiving signals.
LED.OFF	The MODE/STATUS Indicator does not light during receiving signals.

If setting “LED.OFF”, the transmission condition and the In/Out display of the GM function is displayed.

11 CLK.SFT

Setting of the CPU clock shift function.

Set the CPU Clock Shift function may be activated to eliminate an internally generated spurious high frequency signal. Select “A” for normal use.

A	Automatically switches the Clock Shift function between ON & OFF.
B	Activates the Clock Shift function constantly.

12 DC VLT

The battery voltage display

Displays battery DC voltage.

Press the **PTT** switch to check the battery voltage in the transmission state.

In this setting, press and hold the [**F**] key, to return to normal operation.

13 DCS.INV

Setting a combination of DCS inversion codes in terms of communication direction.

The DCS code phase combination for transmit/receive may be set to the homeomorphic or the inverted phase.

Values	Receive DCS Code	Transmit DCS Code
RXN.TXN	Homeomorphic	Homeomorphic
RXR.TXN	Inverted Phase	Homeomorphic
RXB.TXN	Both Phase (Homeomorphic/ Inverted Phase)	Homeomorphic
RXN.TXR	Homeomorphic	Inverted Phase
RXR.TXR	Inverted Phase	Inverted Phase
RXB.TXR	Both Phase (Homeomorphic/ Inverted Phase)	Inverted Phase

Setting the receive DCS code to “Both Phase”, the DCS codes of the Homeomorphic and the Inverted phases are regarded as the same code.

For details on the DCS code, see “Digital Code Squelch (DCS) feature” (📖9).

14 DIMMER

Setting of the brightness level of the LCD backlight and numeric keypad light.

Adjusting the LCD backlight and Key Button Light Brightness Level

LEVEL1 – **LEVEL6**	LEVEL1 (minimum) – LEVEL6 (maximum)

To turn the LCD, backlight OFF, set the Set Mode [28 LAMP] (📖34) "OFF".

15 DIG.POP

Setting of the Pop-up time of the other station information

Set the time duration to display the other station information such as the call sign, on the LCD.

OFF	The other station information is not displayed.
2 SEC – **10 SEC** – 60 SEC	The other station information is continually displayed for the set time.
CONT	The other station information is continually displayed.

16 DIG VW

Enables/Disables the digital voice FR (VW) mode selection

When pressing the [**MODE**] key, set whether the digital voice FR (VW) mode may be selected or not.

OFF	The digital voice FR (VW) mode may not be selected.
ON	The digital voice FR (VW) mode may be selected.

17 DP-ID

DP-ID list (Display/Register/Clear)

The digital personal ID (DP-ID) may be displayed, registered and cleared.

For more details "About the Digital Personal ID (DP-ID) feature" (see 📖4)

18 DT DLY

Setting of the DTMF code transmission delay time

Set the transmission delay time of the registered DTMF code when set "AUTO"

50MS / 250MS / **450MS** / 750MS / 1000MS (msec)	While pressing and holding the **PTT** switch, press the numeric key, set the registered DTMF code delay time.

19 DT SET

Select and edit the DTMF auto dialer memory channel.

Up to 10 registers of 16-digit DTMF tone codes may be stored.

For more details, see "Setting the DTMF Memory" (📖21).

20 DT SPD

Set the DTMF code transmission speed.

Set the DTMF code transmission speed when setting “AUTO”.

50MS / 100MS(msec)	The DTMF code transmission speed setting

21 DW INT

The receive monitoring interval setting of the Priority Memory Channel during Dual Receive (DW)

Set the interval of time for periodically checking the Priority Channels during Dual Receive (DW)

0.1 S – **5.0 S** – 10.0 S (SEC)	When the Dual Receive function is active, the interval time at which the priority channel is monitored can be set.

22 DW RSM

Set the searching stop operation during the Dual Receive temporary stop

Chose the resume operation for Dual Receive when a signal is received on the Priority Memory Channel.

2.0 S – 10.0 S	The signal is received for the specified period of time, then the Dual Receive resumes even though the received signal continues.
BUSY	The Priority Memory Channel signal is received until the signal fades out. Two seconds after the signal fades out, scanning resumes.
HOLD	Dual receive stops and reception on the Priority Memory Channel continues. (The Dual Receive does not resume.)

23 DW RVT

Set the Priority Memory Channel transmit operation.

Determines the operation of the PTT switch when pressed during the Dual Receive

OFF	When a signal is received on Priority Memory Channel, duel receive pauses, press the **PTT** switch to deactivate the Dual Receive operation and transmit on the Priority Memory Channel. (The Dual Receive does not resume.)
ON	Press the **PTT** switch to transmit on the Priority Memory Channel. Release the **PTT** switch to receive the Priority Memory Channel for about five seconds, then Dual Receive operation continues.

24 GM RNG

Set the Beep option to alert when GM stations are within communication range.

Chose the beep alert operation setting when the other stations are in/out of the communication range during Group Monitor (GM) operation.

OFF	No alert beeps will be heard.
IN RNG	The beep sounds when the other stations are within the communication range or not. If the other station continues to be out of communication range, the beep does not sound.
ALWAYS	When checked the other station is within the communication range, the beep sounds every time. And when the other station is out of the communication range, the beep sounds.

25 GM INT

Set the polling interval during the Group Monitor (GM) operation.

Selects the Polling Interval during the Group Monitor (GM) operation.

OFF	The polling not programmed automatically.
NORMAL	The GM feature may be programmed to poll every 15 seconds*.
LONG	The GM feature may be programmed to poll every one minute*.

*: The programmed polling interval depends on the number of the other stations received signals.

26 HM/RV

Set the Primary function of the [HM/RV] key.

Selects the Primary function of the [**HM/RV**] key.

HOME	Pressing the [**HM/RV**] key instantly recalls a favorite “Home” channel.
REV	Pressing the [**HM/RV**] key reverses the transmit and receive frequencies during repeater operation.

Press the [**F**] key, then press the [**HM/RV**] key to toggle the setting.

27 HM-VFO

Transferring the Home Frequency to VFO operation

While set to the HOME channel, this setting determines whether or not to transfer the frequency and setting information of the home channel to the VFO, when the **DIAL** knob is turned.

OFF	Turning the **Dial** knob while set on the home channel does not switch to the VFO control.
ON	Turning the **DIAL** knob while set on the home channel transfers frequency control to the VFO.

28 LAMP

Set the backlight operation

Set the duration time of the backlight and key lights.

OFF	The LCD and keys do not light up.
2 SEC – **5 SEC** – 10 SEC (SEC)	When the **DIAL** knob is rotated or a key is pressed, the LCD and key lights remain illuminated for the set time.
CONT	The LED Lights continuously

29 LED.LGT

Turn ON the LED light.

In this setting, pressing the [**F**] key each time toggles the transmit MODE/STATUS Indicator light between ON & OFF. Press and hold the [**F**] key to return to normal operation.

30 LOCK

Setting the LOCK Function

Choose the **POWER** (LOCK) switch setting, to lock the Panel keys, the DIAL knob and the **PTT** Switch according to the below table:

Values	Front Panel keys	**DIAL** Knob	**PTT** (Push To Talk) Switch (Transmit Operation)
KEY	○	×	×
DIAL	×	○	×
K+D	○	○	×
PTT	×	×	○
K+P	○	×	○
D+P	×	○	○
ALL	○	○	○

The **MONI/T-CALL** switch, the **VOL** switch and the **POWER** (LOCK) switch may not be locked.

31 MCGAIN

Adjust the microphone gain level.

Adjust the input level of the built-in microphone or an optional external microphone.

LEVEL1 – **LEVEL5** – LEVEL9	LEVEL1 (Mic gain low) – LEVEL9 (Mic gain high)

While pressing the **PTT** switch, the microphone gain level may be adjusted.

In this setting, press and hold the **[F]**to return to normal operation.

32 M/T-CL

Setting the MONI/T-CALL switch operation

Sets the **MONI/T-CALL** switch function.

MONI	Pressing this switch opens the squelch.
T-CALL	Pressing this switch activates the T-CALL (1750 Hz) for Repeater access.

33 MEM.NAM

Edit memory tag name

Memory name tags may be assigned to the memory channel and the home channel.

For more details, see “Using Memory Tag” (📖13).

34 MW MOD

Choses the available memory channel

Selects the next available channel when registering to a memory channel.

NEXT	Stores the data into the next lowest channel from the last-stored memory channel.
LOWER	Stores the data into the lowest-available “free” channel.

35 NM/FRQ

Set the memory channel display to show the frequency or the name tag.

When recalling the memory channel or the home channel, chose the frequency display or the memory name tag display.

FREQ	Displays the frequency.
ALPHA	Displays the name tag.

For more details, see “Changing between name tag display and frequency display” (📖14).

36 OPN.MSG

Create an opening message

Set the message displayed for three seconds.

OFF	Does not display.
MSG	The message input by the following operation displays.
DC	Displays battery DC voltage.

Message input method

1. Press the [**F**] key in this setting item, press the [**V/M**] key while selecting the setting values.
2. Using the **DIAL** knob or the numeric keys, input the message using up to 6 characters.
   - Inputting characters
     Example: Pressing the [**2**] key each time switches the following characters.
     A → B → C → 2 → A → •••
     Example: Rotating the **DIAL** switches the following characters.
     ••• ⇔ A-Z ⇔ (symbol) ⇔ 0-9 ⇔ (symbol) ⇔ A-Z ⇔ •••
   - Moving the cursor, and deleting input characters
     [**BAND**] key: Moves the cursor to the right
     [**MODE**] key: Moves the cursor to the left
     Pressing and holding the [**GM**] key:
     Erases all characters after the cursor
3. Press the [**V/M**] key to save the setting and return to normal operation.

37 PAG.ABK

Enables/disables the Answer Back function of the Enhanced CTCSS Paging & Code Squelch.

When called by another station corresponding to the pager code, the transceiver is-automatically placed in the transmit mode (for about 2.5 seconds) to notified the other station that you are ready to communicate.

OFF	Does not transmit automatically.
ON	Transmits automatically.

For more details, see “Using the Pager Answer back” (📖11).

38 PAG.CDR

Specify the receive personal Enhanced CTCSS Paging code.

Set the pager code for receive to be called by other stations.

01 – **05** – 50, 01 – **47** – 50	Set the receive “pager code” to be called by other stations.

For more details, see “Setting the Code for Your Station” (📖10).

39 PAG.CDT

Specify the transmit personal Enhanced CTCSS Paging code.

Set the pager code (transmit) to call to other stations.

01 – **05** – 50, 01 – **47** – 50	Set the pager code to transmit calls to other stations.

For more details, see “Calling a Specific Station” (📖11).

40 PASSWD

Turn the password function ON or OFF.

A 4-digit password may be set to prevent unauthorized operation of the transceiver without permission.

OFF	Disables the PASSWORD function.
ON	Enables the PASSWORD function.

- Set Mode [40 PASSWD] cannot be set to “ON”, until the 4-digit password has been set in the Set Mode [41 PSWDWT].
- If the password is forgotten, the password cannot be deactivated without the all reset. If performing the all reset, all the transceiver settings are initialized. Do not forget the passwords.

41 PSWDWT

Input the password.

Input the 4-digits password.

1. Rotate the **DIAL** knob to input the 4-digits password.

Cursor
[**BAND**] key: Moves the cursor to the right
[**MODE**] key: Moves the cursor to the left

2. Press the **PTT** switch to save the setting and return to normal operation.

42 PTT.DLY

Set the PTT delay time.

Set a timed delay before actual transmission begins after pressing the **PTT** switch.

OFF	Disables the **PTT** delay time function.
20MS/50MS/100MS /200MS (msec)	The delay time setting before actual transmission begins after pressing the **PTT** switch.

43 RAD ID

Displays of the individual 5-character ID of this transceiver.

Radio ID (its own ID) is displayed.

44 RF SQL

Adjusts the RF Squelch threshold level.

This feature allows setting the squelch to open only for signals exceeding the previously selected S-meter level.

OFF	Normal squelch operation. RF Squelch is OFF.
S1 – S9	Only signals exceeding the set S-meter level will open the squelch.

- When setting the RF squelch, the S meter number corresponding to the set signal strength blinks.
- When receiving signals with less than the set signal strength (S meter value), the left side of the MODE/STATUS Indicator blinks blue, but no audio is heard.

RF squelch is available on the FM mode or the AM mode.

45 RPT.ARS

Set the ARS (Automatic Repeater Shift).

Enable or disable the automatic Repeater Shift operation ARS (Repeater operation is initiated by tuning to the repeater frequency).

OFF	Disables the ARS function.
ON	Set the repeater shift offset frequency.

46 RPT.FRQ

Set the Repeater Shift offset frequency

Set the repeater shift offset frequency.

0.00M – 150.00M	Repeater shift offset frequency (0.00MHz - 150.00MHz).

47 RX MOD

Set the band receiving mode.

Each band receive mode may be set.

AUTO	The receive mode (FM mode or AM mode) is automatically selected according to the frequency band in use.
FM	The selected frequency band is set to FM mode.
AM	The selected frequency band is set to AM mode.

48 RXSAVE

Set receiver battery save operation.

Sets the Receive battery save OFF time interval (sleep ratio) to reduce power consumption.

OFF	Disables the Battery save function.
0.2 S – 60.0 S	Enables the battery save function. Receiving is automatically OFF during the set time, no signal is heard. 0.2 S: 0.2 sec receive/0.2 sec receive OFF (1:1). 60.0 S: 0.2 sec receive/60 sec receive OFF (1:300).

- With the longer value of the battery saving, a short transmission or the beginning of a message may not be heard. Adjust the setting according to the operating considerations.
- Set the battery save function "OFF" when using the DP-ID function in the Voice FR (VW) mode.

49 SCM.WTH

Set the memory scan frequency range.

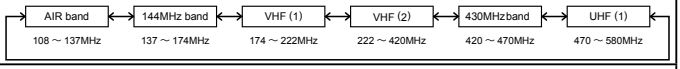
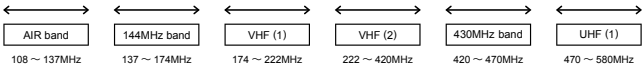
Set the frequency band range while scanning in the memory mode.

ALL	All the memory channels are scanned without regard to the band of the registered frequency of the memory channels.
BAND	Only memory channels with frequencies registered to the same band as the channel on witch scan is started are scanned. 

50 SCV.WTH

Set the VFO scan frequency range.

Sets VFO scanning action, when the scanning reaches the end of a frequency band.

ALL	When scanning reaches the band edge, scanning continues into the next frequency band. 
BAND	When scanning reaches the band edge, scanning repeats within the same frequency band. 

51 SCN.LMP

Set back light ON or OFF when scanning stops.

Sets the back-light operation when a received signal pauses the scan.

OFF	The back light does not illuminate when scan stops.
ON	When stops scanning temporarily, the back light turns ON.

52 SCN.RSM

Set scan resume condition

When receiving the signal and pausing the scanning, select the receive operation.

2.0 S – **5.0 S** – 10.0 S (SEC)	The signal is received for a specified period of time, and then scanning resumes.
BUSY	Scanning stops on a received frequency until the signal fades out. Two seconds after the signal fades out, scanning resumes.
HOLD	Scanning stops on the current receive frequency (Scanning does not resume). Scanning may be resumed manually.

For more details, see “Setting the Receive Operation When Scanning Stops” (Operating Manual).

53 SCN.STR

Set the scanning restart time.

Set the time interval to resuming scanning after a received signal halts scanning.

0.1 S – **2.0 S** – 10.0 S (SEC)	Sets the time for scan to resume after the received signal ends during scanning.

For more details, see “Setting the Receive Operation When Scanning Stops” (Operating Manual).

54 SQL.EXP

Set the squelch code separately for Receive and transmit.

Applies the squelch codes separately for TX and RX or simultaneously for both TX and RX.

SPL.OFF	Sets squelch codes (“D CODE” / “T DCS” / “D TONE”), separately for TX and RX.
SPL.ON	Sets squelch codes (“D CODE” / “T DCS” / “D TONE”) simultaneously for TX and RX.

For more details, see “Selecting the Squelch Type in the Analog FM Mode” (📖7).

55 TEMP

Indicates the current temperature inside the transceiver.

Displays the internal temperature sensor "°F" or "°C".

Press the [**V/M**] key to toggle the measurement units between "°F" or "°C".

In this setting, press and hold the [**F**] key to return to normal operation.

56 TOT

Set the timeout timer.

Set the transceiver to automatically return to receive mode after transmitting continuously for a certain period of time. The TOT function limits inadvertent transmission of unnecessary signals, and unwanted battery power consumption (time-out timer function).

OFF	The TOT time is deactivated
0.5M – 10.0M (Minutes)	Set the transceiver to automatically return to receive mode after transmitting continuously for the set period of time.

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

57 TS MUT

Turn the muting function ON/OFF during tone search.

Set whether or not the audio outputs during tone search.

OFF	Does not mute the audio during the tone search operation.
ON	Mutes the audio during the tone search operation.

58 TS SPD

Setting of the tone search speed.

Set the tone search speed.

FAST	Speed up the tone search operation.
SLOW	Slow down the tone search operation.

59 VER.INF

Displays the CPU and DSP firmware version of the transceiver.

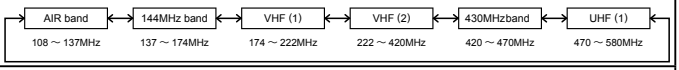
Displays the firmware version of the transceiver.

C x.xx	The software versions of "CPU" is shown.
D x.xx	The software versions of "DSP" is shown.

60 VFO.MOD

Set the Frequency Selection Range for Operation in VFO Mode

When rotating the **DIAL** knob to set the frequency tuning range.

ALL	Tuning continues to the next band when reaching the end of a band. 
BAND	Tuning continues to the other end of the current band when reaching the end of the band. When changing the band, press the [**BAND**] key. 

61* WX ALT (USA Version only)

Set the weather Alert Feature.

Set the weather Alert Feature, used for notifying storms and hurricanes, ON or OFF.

This menu item only appears in the USA Version.

OFF	Disables the Weather Alert Feature.
ON	Enables the Weather Alert Feature.

62* (61) W/N.DEV

Set the Transmit Modulation Level.

Set the transmit modulation level. Select “WIDE” for normal operation.

WIDE	Normal transmission modulation level
NARROW	The level is half of the normal transmit modulation level.

63* (62) W-DGID

Set the WIRES-X DG-ID number.

Set the WIRES-X DG-ID to the same ID number as the node station.

AUTO	Only open nodes, set to the DG-ID number “00” may be connected.
DGID01 - DGID99	Only nodes matching the set DG-ID number may be connected.

64* (63) MYCALL

Setting of the call sign.

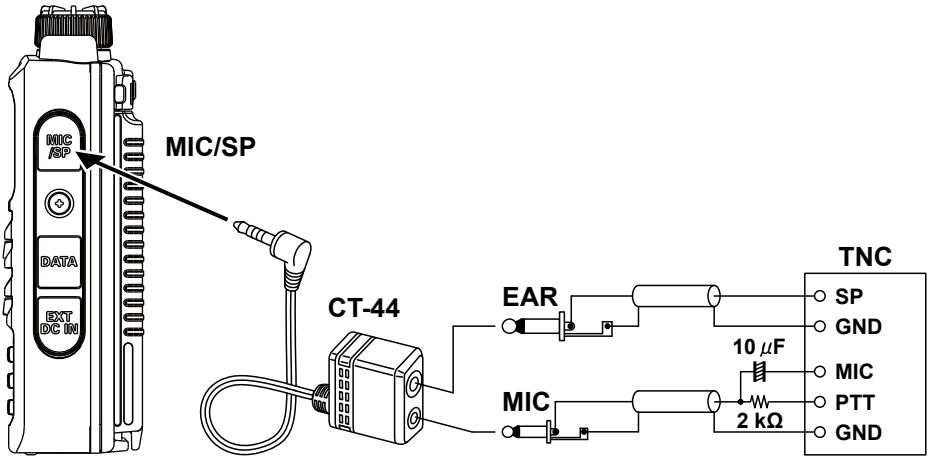
Input your own call sign set in the transceiver.

For more details, see “Inputting the call sign” (Operating Manual).

*: USA Version

Using the Transceiver for Packet Communication

You can perform packet communication with your transceiver by connecting a TNC (Terminal Node Controller) using an optional Microphone Adapter (CT-44).



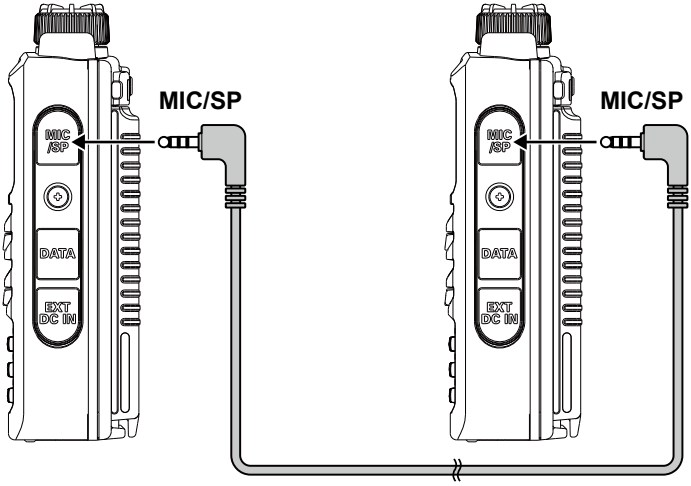
After connecting the TNC to the transceiver, set the output signal level to the TNC by adjusting the sound volume level of your transceiver.
Also, adjust the signal level input to your transceiver using the output level adjustment volume on the TNC (Input level cannot be adjusted on your transceiver).

When sending a vast volume of data, the transmission takes a longer time and the transceiver may be overheated.
If the transmission is continued for a long time, the overheat prevention circuit will operate and the transmission power decreases. If the transmission is continued further, the transmission will be automatically stopped to prevent the transceiver from overheating and consequently malfunctioning.
If the overheat prevention circuit has operated and then the transceiver returns to the receive mode, turn the transceiver off, or leave it in the receive mode until the temperature falls.

- Set the receive battery Save Function to “OFF” during packet communication by selecting [48 RX SAVE] (39) in the Set mode.
- Reception can be interfered with by noise generated from your PC.
  If the transceiver enters an abnormal receive state, disconnect the transceiver from the PC, and reconnect it to the PC using a photo coupler device or noise filter.
- For details on how to connect TNC to the PC, refer to the TNC instruction manual.

Clone Operation

Data and various settings saved in your transceiver may be copied to any other FT-70DR/DE transceiver.



CT-27 (option)

1. Turn off the power of both FT-70DR/DE transceivers,
2. Remove the rubber cap from the MIC/SP jack of the each transceivers, then connect the optional clone cable (CT-27).
3. While pressing and holding the [**F**] key, turn the each transceivers ON.
   The “CLONE” is displayed on the LCD, then the transceiver enters the clone mode.
4. Press the [**MODE**] key on the receiving side transceiver.
   The “--WAIT--” is displayed on the receiving transceiver
5. Press the [**BAND**] key on the transmitting transceiver.
   - The “--TX--” is displayed on the transmitting transceiver and then data copy starts.
   - The display on the receiving transceiver changes from “--WAIT--” to “--RX--”.
   - When data transmission begins, the transmission data amount bar graph appears on the LCD.
6. When copying is completed, the receiving side transceiver returns to the normal mode. On the transmission side transceiver, the indication on the LCD returns from “--TX--” to “CLONE”.
7. Turn off the power of both transceivers, then disconnect the clone cable.

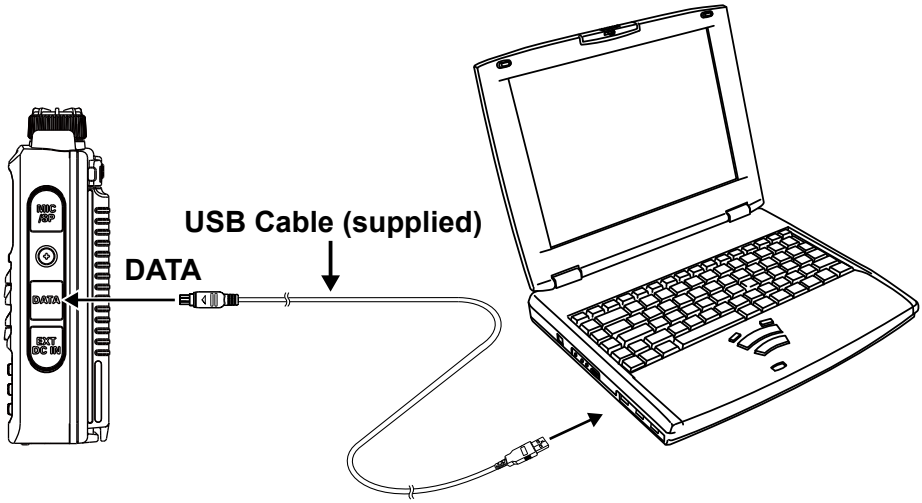
When the “ERROR” appears on the LCD during data transfer, copying cannot be completed. Check the clone cable connection, and redo the operation from the beginning.

Connecting to a PC

To update the transceiver firmware, connect your PC to the DATA terminal of the transceiver with the supplied mini USB cable, as described below:

Updating the firmware

The firmware of the FT-70DR/DE may be updated.
When a new firmware update for the FT-70DR/DE is available, download the data from the YAESU website to update the FT-70DR/DE to the latest version.



If you suspect malfunction

Check the following items before requesting a repair.

- The transceiver does not turn on.
  - Is the battery depleted?
  - Charge the battery pack after purchase, and when the transceiver has not been used for a long time.
  - The battery pack properly attached?
    Refer to “Installing the Battery Pack” on the Operating Manual and securely install the battery pack.
  - Is the external power supply properly connected?
    When using an external power supply, connect the external power supply adapter with a cigarette lighter plug (SDD-13) or an external power cable (E-DC-6) to DC input jack.
  - Is the voltage of the battery pack or the external power supply correct?
    Be sure that there is a charge left in the battery pack (do not completely discharge). Check that the output voltage of the SDD-13 or the E-DC-6 is approximately 12V.
- There is no sound.
  - Is the level of squelch (or S meter squelch) set too high?
    Press the **MONI/T-CALL** switch and verify that you can hear white noise.
    Adjust the level of squelch (or S meter squelch) when receiving a weak signal.
  - Is the volume low?
    While pressing the **VOL** key, rotate the **DIAL** knob clockwise to increase the volume.
  - Is the tone squelch or DCS on?
    When the tone squelch or DCS is on, the sound is not output until the transceiver receives a signal containing the same tone frequency or DCS code set.
  - Is the C4FM digital mode on?
    When the AMS function is on, the sound is not output until the transceiver receives a signal containing the Analog FM mode.
    Also, when the DG-ID function is on and set the DG-ID number to except for “00”, the sound is not output until the transceiver receives a signal correspond to the two-digit DG-ID.
- There is no transmission of radio waves.
  - Are you pressing the **PTT** switch properly?
  - Is the **PTT** lock on?
  - Is the Busy TX Block (BCLO function) on?
    When the Busy TX Block (BCLO function) is on, transmission cannot be done when receiving a signal even if the **PTT** is pressed. Wait until signal being received stops and then press the **PTT** switch.
  - Is the transmission frequency on a ham radio band?
    Transmission cannot be performed on the AM Radio Broadcast Band/ Short Wave Radio Band/ FM Radio Broadcast Band/ Air Band/ Information Radio Band.
  - Is the voltage of the battery pack or external power source correct?
    Check the remaining charge on the battery pack.
    In addition, using an inadequate power supply where voltage drops during transmission will prevent the FT-70DR/DE from operating at full capability.
- The keys or **DIAL** does not respond.
  - Is the Key Lock or DIAL Lock on?
- The battery pack cannot be charged or battery power depletes immediately after charging.
  - Is the battery pack being charged with a charger specified by Yaesu?
    Charge the battery pack using the accessory battery charger (SAD-18B) or the rapid charge cradle (SBH-28). When using an external power supply, use the external power supply adapter with a cigarette lighter plug (SDD-13) or an external power cable (E-DC-6).
  - Is the battery pack in use exhausted?
    If “CHGERR” appears on the LCD during the charging and the battery pack is not charged after a lapse of 10 or more hours, stop charging the battery pack immediately. The battery pack is presumed to be at the end of its service life, or defective. In this case, replace the battery pack with a new one.
  - Charge the battery pack within the temperature range from +5 °C to +35 °C (+41 °F to +95 °F).

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