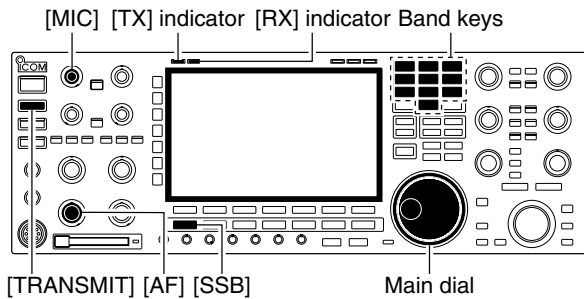


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■ Operating SSB



- ① Push a band key to select the desired band.
- ② Push [SSB] to select LSB or USB.
 - “USB” or “LSB” appears.
 - Below 10 MHz LSB is automatically selected; above 10 MHz USB is automatically selected.
- ③ Rotate the main dial to tune a desired signal.
 - The S-meter indicates received signal strength when signal is received.
- ④ Rotate [AF] to set audio to a comfortable listening level.
- ⑤ Push [TRANSMIT] or [PTT] (microphone) to transmit.
 - The TX indicator lights red.
- ⑥ Speak into the microphone at your normal voice level.
 - Adjust the microphone gain with [MIC] at this step, if necessary.
- ⑦ Push [TRANSMIT] or release [PTT] (microphone) to return to receive.

◇ Convenient functions for receive

- **Preamp** (p. 5-9)
 - ➔ Push [P.AMP] several times to set the preamp OFF, preamp 1 ON or preamp 2 ON.
 - “P.AMP1” or “P.AMP2” appears when the preamp 1 or preamp 2 is set to ON, respectively. (depending on operating frequency band)
- **Attenuator** (p. 5-9)
 - ➔ Push [ATT] several times to set the attenuator in 6 dB steps.
 - Pushing [P.AMP] for 1 sec. to set the attenuator in 3 dB steps.
 - “ATT” and attenuation level appear when the attenuator is set to ON.
- **Noise blanker** (p. 5-17)
 - ➔ Push [NB] switch to turn the noise blanker ON and OFF, and then rotate [NB] control to adjust the threshold level.
 - Noise blanker indicator (above [NB] switch) lights when the noise blanker is set to ON.
 - Push [NB] for 1 sec. to enter noise blanker set mode.
- **Twin PBT (passband tuning)** (p. 5-12)
 - ➔ Rotate [TWIN PBT] controls (inner/outer).
 - Push [PBT CLEAR] to clear the settings.
- **Audio tone control** (p. 12-4)
 - ➔ Push [F-7•SET] then [F-1•LEVEL] to enter level set mode. Select an item with [F-1•▲]/[F-2•▼] then rotate the main dial to adjust the audio tone.
- **Noise reduction** (p. 5-18)
 - ➔ Push [NR] switch to turn the noise reduction ON and OFF.
 - Rotate [NR] control to adjust the noise reduction level.
 - Noise reduction indicator (above [NR] switch) lights when the noise reduction is set to ON.
- **Auto notch filter** (p. 5-19)
 - ➔ Push [NOTCH] switch to turn the auto or manual notch function ON and OFF.
 - Rotate [NOTCH] control to set the attenuating frequency for manual notch operation.
 - Notch indicator (above [NOTCH] switch) lights when either the auto or manual notch is set to ON.
- **AGC (auto gain control)** (p. 5-11)
 - ➔ Push [AGC] switch several times to select AGC FAST, AGC MID or AGC SLOW.
 - ➔ Push [AGC VR] to turn the AGC time constant manual setting ON and OFF.
 - Rotate [AGC] control to adjust the time constant.
- **VSC (voice squelch control)** (p. 9-3)
 - ➔ Push [VSC] to turn the VSC function ON and OFF.
 - The VSC indicator appears when the voice squelch function is set to ON.

◇ Convenient functions for transmit

- **Speech compressor** (p. 6-5)

- Push [COMP] to turn the speech compressor ON and OFF.
 - Pushing [COMP] for 1 sec. to select the compression bandwidth from wide, middle and narrow.

- **VOX (voice operated transmit)** (p. 6-2)

- Push [VOX/BK-IN] to turn the VOX function ON and OFF.
 - "VOX" appears when the VOX function is set to ON.

- **Transmit quality monitor** (p. 6-4)

- Push [MONI] to turn the monitor function ON and OFF.
 - Rotate [MONI GAIN] to adjust the monitor gain.
 - Monitor indicator (above [MONI] switch) lights when the monitor function is set to ON.

- **Audio tone control** (p. 12-4)

- Push [F-7•SET] then [F-1•LEVEL] to enter level set mode. Select an item with [F-1•▲]/[F-2•▼] then rotate the main dial to adjust the audio tone.

◇ About 5 MHz band operation (USA version only)

Operation on the 5 MHz band is allowed on 5 discrete frequencies and must adhere to the following:

- USB mode
- Maximum of 50 watts ERP (Effective Radiated Power)
- 2.8 kHz bandwidth

It is the operator's responsibility to set all controls so that the transmission in this band meets the stringent conditions under which we may use these frequencies.

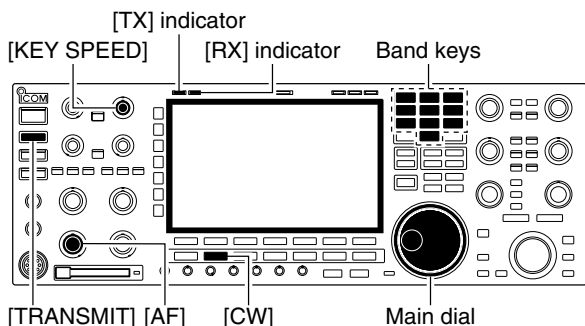
/// **NOTE:** We recommend that you store these frequencies, mode and filter settings into the memory channel for easy recall.

/// *The channel center frequencies that are specified by the FCC, show the center frequency of their passband. However, the IC-7800 displays carrier point frequency, so set 1.5 kHz below from FCC channel center frequency.

IC-7800 Tuning Frequency*	FCC Channel Center Frequency*
5.33050 MHz	5.33200 MHz
5.34650 MHz	5.34800 MHz
5.36650 MHz	5.36800 MHz
5.37150 MHz	5.37300 MHz
5.40350 MHz	5.40500 MHz

To assist you in operating the 5 MHz band correctly within the rules specified by the FCC, transmission is impossible on any 5 MHz band frequency other than the 5 frequencies indicated in the table above.

■ Operating CW



- ① Push a band key to select the desired band.
- ② Push [CW] to select CW.
 - After CW mode is selected, push [CW] to toggle between CW and CW-R modes.
 - “CW” or “CW-R” appears.
- ③ Rotate the main dial to simultaneously tune a desired signal and its side tone.
 - The S-meter indicates received signal strength when signal is received.
- ④ Rotate [AF] to set audio to a comfortable listening level.
- ⑤ Push [TRANSMIT] to transmit.
 - [TX] indicator lights red.
- ⑥ Use the electric keyer or paddle to key your CW signals.
 - The power meter indicates transmitted CW output power.
- ⑦ Adjust CW speed with [KEY SPEED].
 - Adjustable within 6–60 WPM.
- ⑧ Push [TRANSMIT] to return to receive.

◇ Convenient functions for receive

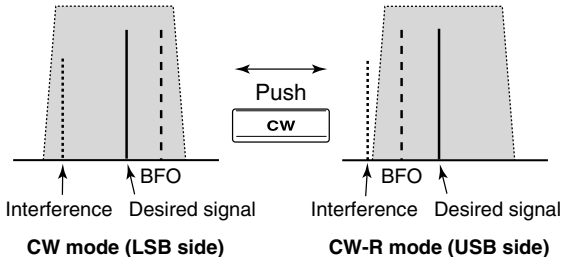
- **Preamp** (p. 5-9)
 - ➔ Push [P.AMP] several times to set the preamp OFF, preamp 1 ON or preamp 2 ON.
 - “P.AMP1” or “P.AMP2” appears when the preamp 1 or preamp 2 is set to ON, respectively. (depending on operating frequency band)
 - **Attenuator** (p. 5-9)
 - ➔ Push [ATT] several times to set the attenuator in 6 dB steps.
 - Pushing [P.AMP] for 1 sec. to set the attenuator in 3 dB steps.
 - “ATT” and attenuation level appear when the attenuator is set to ON.
 - **Noise blanker** (p. 5-14)
 - ➔ Push [NB] switch to turn the noise blanker ON and OFF, and then rotate [NB] control to adjust the threshold level.
 - Noise blanker indicator (above [NB] switch) lights when the noise blanker is set to ON.
 - Push [NB] for 1 sec. to enter noise blanker set mode.
 - **Noise reduction** (p. 5-18)
 - ➔ Push [NR] switch to turn the noise reduction ON and OFF.
 - Rotate [NR] control to adjust the noise reduction level.
 - Noise reduction indicator (above [NR] switch) lights when the noise reduction is set to ON.
 - **Twin PBT (passband tuning)** (p. 5-12)
 - ➔ Rotate [TWIN PBT] controls (inner/outer).
 - Push [PBT CLEAR] to clear the settings.
 - **Auto notch filter** (p. 5-19)
 - ➔ Push [NOTCH] switch to turn the manual notch function ON and OFF.
 - Rotate [NOTCH] control to set the attenuating frequency.
 - Notch indicator (above [NOTCH] switch) lights when either the manual notch is set to ON.
 - **AGC (auto gain control)** (p. 5-11)
 - ➔ Push [AGC] switch several times to select AGC FAST, AGC MID or AGC SLOW.
 - ➔ Push [AGC VR] to turn the AGC time constant manual setting ON and OFF.
 - Rotate [AGC] control to adjust the time constant.
 - **1/4 function** (p. 3-6)
 - ➔ Push [1/4] to turn the 1/4 function ON and OFF.
 - **Auto tuning function** (p. 1-9)
 - ➔ Push [AUTO TUNE] to turn the auto tuning function ON and OFF.
 - The transceiver automatically tuned into the desired signal within ± 500 kHz range.
- IMPORTANT!**
When receiving a weak signal, or receiving a signal with interference, the automatic tuning function may not be tuned, or tuned into an undesired signal.

◆ Convenient functions for transmit

- **Break-in function** (p. 6-3)

- Push [VOX/BK-IN] several times to select the break-in OFF, semi break-in and full break-in.
 - “BK IN” or “F-BK IN” appears when the semi break-in or full break-in function is set to ON, respectively.

◆ About CW reverse mode

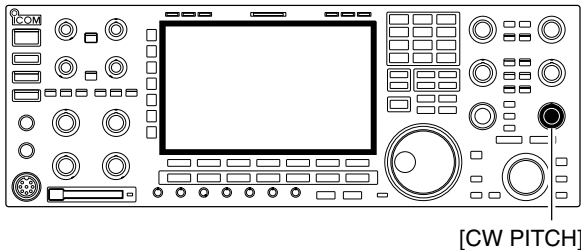


CW-R (CW Reverse) mode receives CW signals with a reverse side CW carrier point like that of LSB and USB modes.

Use when interfering signals are near a desired signal and you want to change the interference tone.

- During CW mode, push [CW] to select CW and CW-R mode.

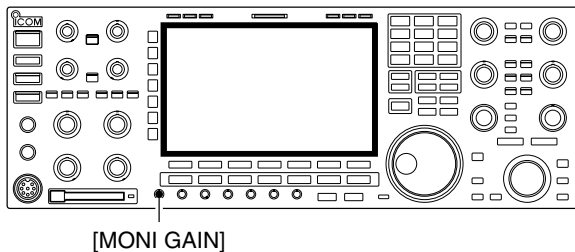
◆ About CW pitch control



The received CW audio pitch and monitored CW audio can be adjusted to suit your preference (300 to 900 Hz in 25 Hz steps) without changing the operating frequency.

- Rotate [CW PITCH] to suit your preference.
 - Adjustable within 300 to 900 Hz in 25 Hz steps.

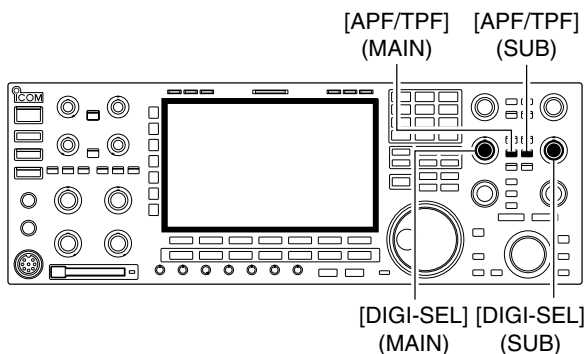
◆ CW side tone function



When the transceiver is in the receive condition (and the break-in function is OFF— p. 6-3) you can listen to the tone of your CW signal without actually transmitting.

This allows you to match your transmit signal exactly to another station's. This also convenient for CW practice. CW side tone level can be adjusted with [MONI GAIN].

◇ APF (Audio Peak Filter) operation



The APF changes the receive frequency response by boosting up a particular frequency to pick up a desired CW signal.

The peak frequency can be adjusted with [DIGI-SEL] control when “APF” is selected for “DIGI-SEL VR Operation” in miscellaneous (others) set mode (p. 12-17).

- ① During CW mode, push [APF/TPF] to turn the audio peak filter ON and OFF.
 - “APF” appears in the display and [APF/TPF] indicator above this switch lights green.
- ② Push [APF/TPF] for 1 sec. several times to select the desired audio filter width.
 - 320, 160 and 80 Hz filters are available.
- ③ If “APF” is selected for “DIGI-SEL VR Operation,” rotate [DIGI-SEL] control to suit your preference.

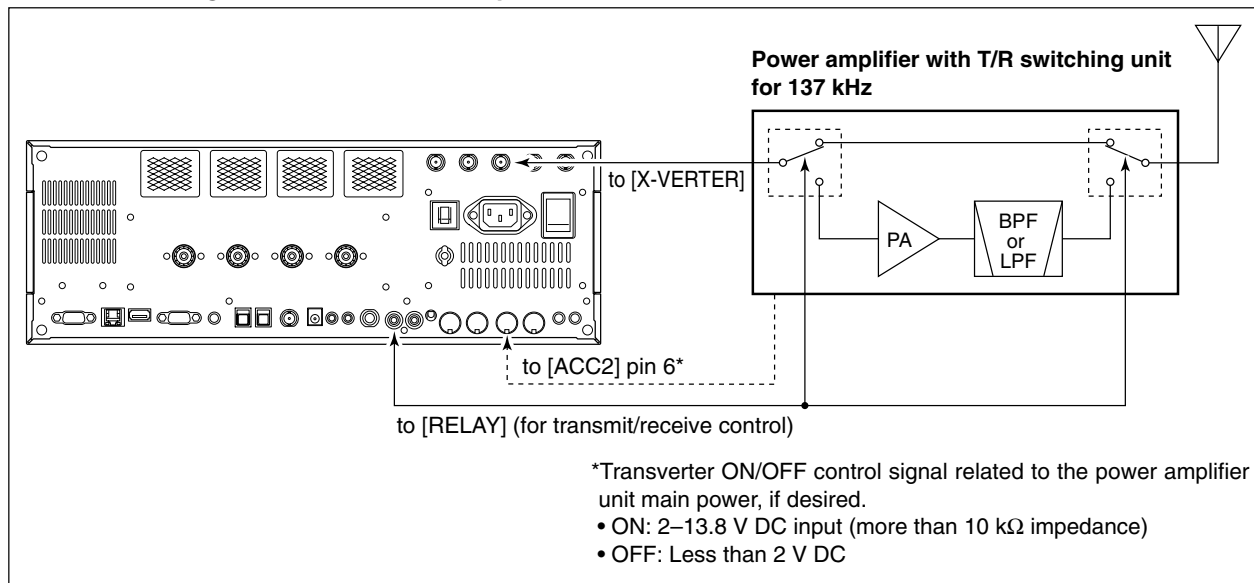
◇ About 137 kHz band operation (Europe, UK, Italy, Spain, France versions only)

137 kHz band, within 135.7 kHz to 137.8 kHz range, operation in CW mode is optionally available with the IC-7800.

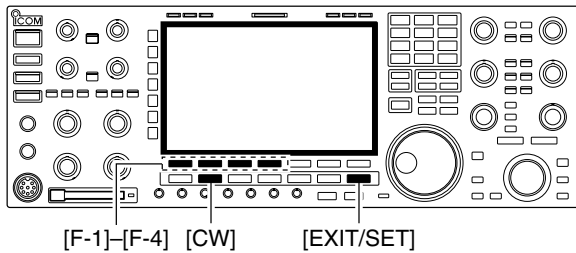
The RF signal from [X-VERTER] is used for the 137 kHz band operation, and an external amplifier unit is necessary.

See the connection diagram below for reference.

• Connection diagram for 137 kHz band operation



Electronic keyer functions



The IC-7800 has a number of convenient functions for the electronic keyer that can be accessed from the memory keyer menu.

- ① During CW mode, push [EXIT/SET] several times to normal screen, if necessary.
- ② Push [F-3•KEYER] to select memory keyer screen.
- ③ Push [EXIT/SET] to select memory keyer menu screen.
- ④ Push one of the multi-function keys ([F-1] to [F-4]) to select the desired menu. See the diagram below.
 - Push [EXIT/SET] to return to the previous indication.



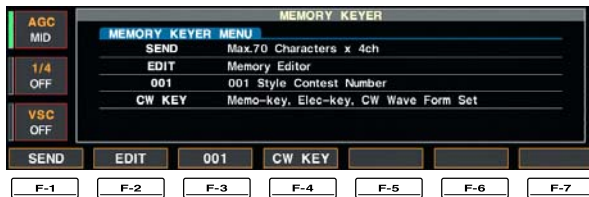
• Memory keyer screen (p. 4-8)



• Memory keyer edit screen (p. 4-9)



• Memory keyer menu screen



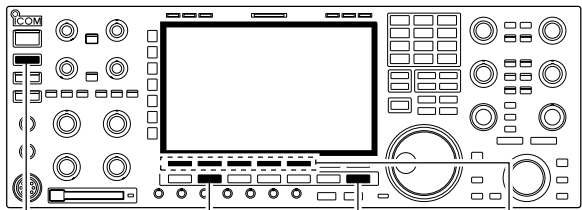
• Contest number set mode (p. 4-10)



• Keyer set mode screen (p. 4-11)



◇ Memory keyer screen



[TRANSMIT] [CW] [EXIT/SET] [F-1•M1]—[F-5•-1]

• Memory keyer screen



Pre-set characters can be sent using the keyer send menu. Contents of the memory keyer are set using the edit menu.

• Transmitting

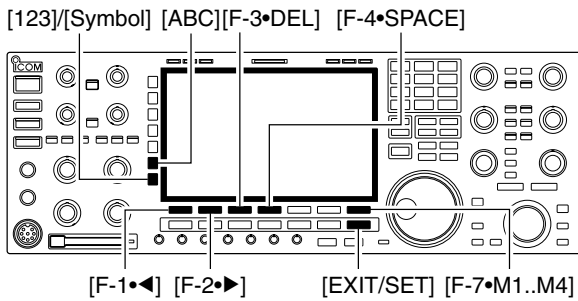
- ① During CW mode operation, push [F-3•KEYER] to select memory keyer screen.
- ② Push [TRANSMIT] to set the transceiver to transmit, or set the break-in function ON (p. 6-3).
- ③ Push one of the function keys ([F-1•M1] to [F-4•M4]) to send the contents of the memory keyer.
 - Pushing a function key for 1 sec. repeatedly sends the contents; push any function key to cancel the transmission.
 - The contest number counter, above [F-5•-1], is incremented each time the contents are sent.
 - Push [F-5•-1] to reduce the contest number count by 1 when resending contents to unanswered calls.

/// **For your information**

When an external keypad is connected to [EXT KEYPAD] connector on the rear panel, the programmed contents, M1—M4, can be transmitted without selecting the memory keyer screen. See p. 2-6 for details.

- ④ Push [EXIT/SET] twice to return to normal screen.

◇ Editing a memory keyer



• Memory keyer edit screen



• Example—entered “QSL TU DE JA3YUA TEST” into memory keyer channel 3



• Pre-programmed contents

CH	Contents
M1	CQ TEST CQ TEST DE ICOM ICOM TEST
M2	UR 5NN* BK
M3	CFM TU
M4	QRZ?

The contents of the memory keyer memories can be set using the memory keyer edit menu. The memory keyer can memorize and re-transmit 4 CW key codes for often-used CW sentences, contest numbers, etc. Total capacity of the memory keyer is 70 characters per memory channel.

• Programming contents

- ① During CW mode operation, push [F-3•KEYER] to select memory keyer screen.
- ② Push [EXIT•SET] to select memory keyer menu, then push [F-2•EDIT] to select keyer edit screen.
 - Memory keyer contents of the Channel 1 (M1) is selected.
- ③ Push [F-7•M1..M4] several times to select the desired memory keyer channel to be edited.
 - Push [F5] to manually increment the contest number.
- ④ Push [ABC] or [123] or [Symbol] to select the character group, then rotate the main dial to select the character, or push the keypad for number input.
 - [Symbol] appears when [123] is pushed when “123” character group is selected.
 - Selectable characters (with the main dial);

Key selection	Editable characters
ABC	A to Z (capital letters)
123	0 to 9 (numbers)
Symbol	/ ? ^ . , *

NOTE:

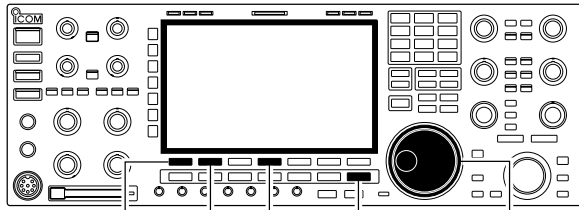
“^” is used to transmit a following word with no space such as AR. Put “^” before a text string such as ^AR, and the string “AR” is sent with no space.
 “*” is used to insert the CW contest number. The contest number automatically increments by 1. This function is only available for one memory keyer channel at a time. Memory keyer channel M2 used “*” by default.

✓ For your convenience

When a PC keyboard is connected to [KEYBOARD] connector on the rear panel, the memory keyer contents can also be edited from the keyboard.

- ⑤ Push [F-1•◀] or [F-2•▶] to move the cursor backwards or forwards, respectively.
 - Pushing [F-3•DEL] deletes a character and [F-4•SPACE] inserts a space.
- ⑥ Repeat steps ④ and ⑤ to input the desired characters.
- ⑦ Push [EXIT/SET] twice to return normal screen.

◆ Contest number set mode



[F-1•▲] [F-2•▼] [F-4•DEF] [EXIT/SET] Main dial

This menu is used to set the contest (serial) number and count up trigger, etc.

• Setting contents

- ① During CW mode operation, push [F-3•KEYER] to select memory keyer screen.
- ② Push [EXIT•SET] to select memory keyer menu, then push [F-3•001] to select contest number set mode.
- ③ Push [F-1•▲] or [F-2•▼] to select the desired set item.
- ④ Set the desired condition using the main dial.
 - Push [F-4•DEF] for 1 sec. to select the default condition or value.
- ⑤ Push [EXIT/SET] twice to normal screen.

• Contest number set mode screen



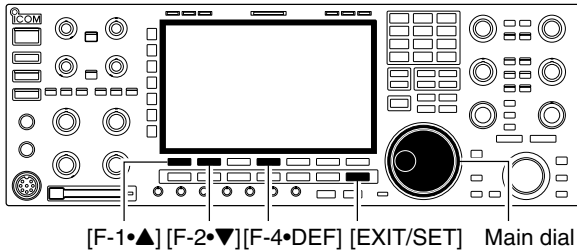
Number Style	Normal
This item sets the numbering system used for contest (serial) numbers— normal or morse cut numbers.	<ul style="list-style-type: none"> • Normal : Does not use morse cut number (default) • 190→ANO : Sets 1 as A, 9 as N and 0 as O. • 190→ANT : Sets 1 as A, 9 as N and 0 as T. • 90→ NO : Sets 9 as N and 0 as O. • 90→ NT : Sets 9 as N and 0 as T.

Count Up Trigger	M2
This selects which of the four memory slots will have the contest serial number exchange. The count up trigger allows the serial number automatically incremented after each complete serial number exchange is sent.	<ul style="list-style-type: none"> • M1, M2, M3 and M4 can be set. (default: M2)

Present Number	001
This item shows the current number for the count up trigger channel set above.	<ul style="list-style-type: none"> • Rotate the main dial to change the number, or push [F-3•001CLR] for 1 sec. to reset the current number to 001.

◆ Keyer set mode

This set mode is used to set the CW side tone, memory keyer repeat time, dash weight, paddle specifications, keyer type, etc.



• Setting contents

- ① During CW mode operation, push [F-3•KEYER] to select memory keyer screen.
- ② Push [EXIT•SET] to select memory keyer menu, then push [F-4•CW KEY] to select keyer set mode.
- ③ Push [F-1•▲] or [F-2•▼] to select the desired set item.
- ④ Set the desired condition using the main dial.
 - Push [F-4•DEF] for 1 sec. to select the default condition or value.
- ⑤ Push [EXIT/SET] twice to normal screen.

• Keyer set mode screen



Keyer Repeat Time	2s
When sending CW using the repeat timer, this item sets the time between transmission.	<ul style="list-style-type: none"> • 1 to 60 sec. in 1 sec. steps can be selected. (default: 2 sec.)

Dot/Dash Ratio	1:1:3.0
This item sets the dot/dash ratio.	<ul style="list-style-type: none"> • 1:1:2.8 to 1:1:4.5 (in 0.1 steps) can be selected. (default: 1:1:3.0)
<p>Keying weight example: Morse code "K"</p> <p style="font-size: small;">*SPACE and DOT length can be adjusted with [KEY SPEED] only.</p>	

Rise Time	4ms
This item sets the envelop time period which the output power becomes the set transmit power.	<ul style="list-style-type: none"> • 2, 4, 6 or 8 msec. can be selected. (default: 4 msec.)
<p>• About rise time</p>	

to be continued...

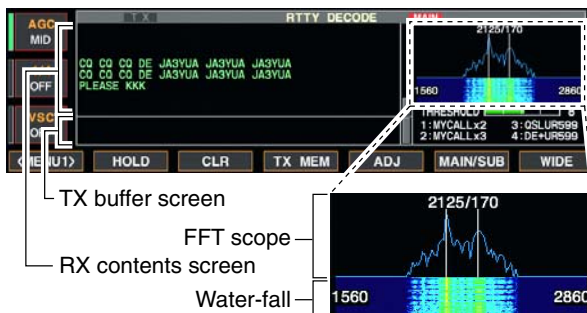
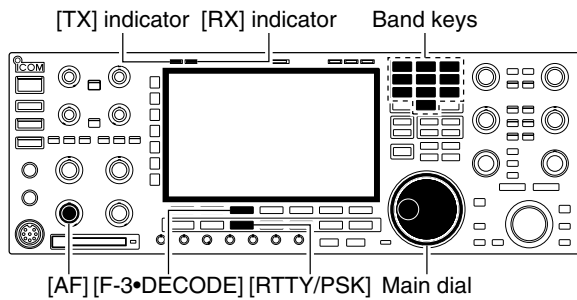
◇ Keyer set mode (continued)

Paddle Polarity	Normal
This item sets the paddle polarity.	• Normal and reverse polarity can be selected.

Keyer Type	ELEC-KEY
This item selects the keyer type for [ELEC-KEY] connector on the front panel.	• ELEC-KEY, BUG-KEY and Straight key can be selected. (default: ELEC-KEY)

MIC Up/Down Keyer	OFF
This item allows you to set the microphone [UP]/[DN] keys to be used as a paddle.	<ul style="list-style-type: none">• ON : [UP]/[DN] switches can be used for CW.• OFF : [UP]/[DN] switches cannot be used for CW. <p>NOTE: When “ON” is selected, the frequency and memory channel cannot be changed using the [UP]/[DN] switches.</p>

■ Operating RTTY (FSK)



The Baudot RTTY encoder/decoder is built-in to the IC-7800. When connecting a PC keyboard (p. 2-6), RTTY operation can be performed without an external RTTY terminal, TNC, etc.

When using your RTTY terminal or TNC, consult the manual that comes with the RTTY terminal or TNC.

- ① Push a band key to select the desired band.
- ② Push [RTTY/PSK] to select RTTY.
 - After RTTY mode is selected, push [RTTY/PSK] for 1 sec. to toggle between RTTY and RTTY-R modes.
 - “RTTY” or “RTTY-R” appears.
- ③ Push [F-3•DECODE] to display the decoder screen.
 - The IC-7800 has a Baudot decoder.
- ④ To tune into the desired signal, make symmetrical wave form and ensure the waves peak points align with the mark (2125 Hz) and shift (170 Hz) frequency lines in the FFT scope with the main dial.
 - The S-meter indicates received signal strength when signal is received.
- ⑤ Rotate [AF] to set the audio to a comfortable listening level.
- ⑥ Press [F12] of the connected keyboard to transmit.
 - [TX] indicator lights red.
- ⑦ Type from the connected keyboard to enter the contents that you want to transmit.
 - The typewritten contents are indicated in the TX buffer screen and transmitted immediately.
 - The text color will be changed when transmitted.
 - Press one of [F1]–[F8] to transmit the TX memory contents.
- ⑧ Press [F12] of the keyboard to return to receive.

✓ For your convenience

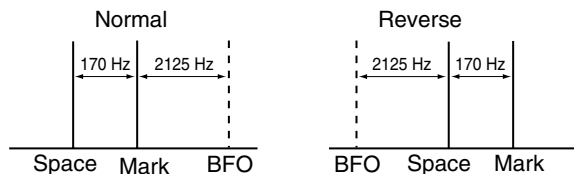
The transmission contents can be typewritten before being transmitted.

- ① Perform the steps ① to ④ above.
- ② Type from the connected keyboard to enter the contents that you want to transmit.
 - The typewritten contents are indicated in the TX buffer screen.
- ③ Press [F12] of the connected keyboard to transmit the typewritten contents.
 - The color of displayed text, in the TX buffer screen, will be changed when transmitted.
 - To cancel the transmission, press [F12] twice.
- ④ Press [F12] of the keyboard to return to receive.

◆ Convenient functions for receive

- **Preamp** (p. 5-9)
 - Push [P.AMP] several times to set the preamp OFF, preamp 1 ON or preamp 2 ON.
 - “P.AMP1” or “P.AMP2” appears when the preamp 1 or preamp 2 is set to ON, respectively. (depending on operating frequency band)
- **Attenuator** (p. 5-9)
 - Push [ATT] several times to set the attenuator in 6 dB steps.
 - Pushing [P.AMP] for 1 sec. to set the attenuator in 3 dB steps.
 - “ATT” and attenuation level appear when the attenuator is set to ON.
- **Noise blanker** (p. 5-17)
 - Push [NB] switch to turn the noise blanker ON and OFF, and then rotate [NB] control to adjust the threshold level.
 - Noise blanker indicator (above [NB] switch) lights when the noise blanker is set to ON.
 - Push [NB] for 1 sec. to enter noise blanker set mode.
- **Twin PBT (passband tuning)** (p. 5-12)
 - Rotate [TWIN PBT] controls (inner/outer).
 - Push [PBT CLEAR] to clear the settings.
- **Noise reduction** (p. 5-18)
 - Push [NR] switch to turn the noise reduction ON and OFF.
 - Rotate [NR] control to adjust the noise reduction level.
 - Noise reduction indicator (above [NR] switch) lights when the noise reduction is set to ON.
- **Auto notch filter** (p. 5-19)
 - Push [NOTCH] switch to turn the manual notch function ON and OFF.
 - Rotate [NOTCH] control to set the attenuating frequency.
 - Notch indicator (above [NOTCH] switch) lights when either the manual notch is set to ON.
- **AGC (auto gain control)** (p. 5-11)
 - Push [AGC] switch several times to select AGC FAST, AGC MID or AGC SLOW.
 - Push [AGC VR] to turn the AGC time constant manual setting ON and OFF.
 - Rotate [AGC] control to adjust the time constant.
- **1/4 function** (p. 3-6)
 - Push [1/4] to turn the 1/4 function ON and OFF.

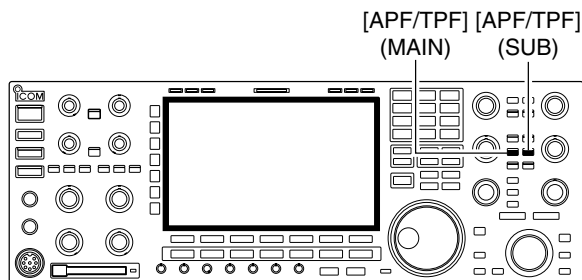
◆ About RTTY reverse mode



Received characters are occasionally garbled when the receive signal is reversed between MARK and Space. This reversal can be caused by incorrect TNC connections, setting, commands, etc. To receive reversed RTTY signals correctly, select RTTY-R mode.

- During RTTY mode, push [RTTY/PSK] for 1 sec. to select RTTY and RTTY-R mode.

◆ Twin peak filter

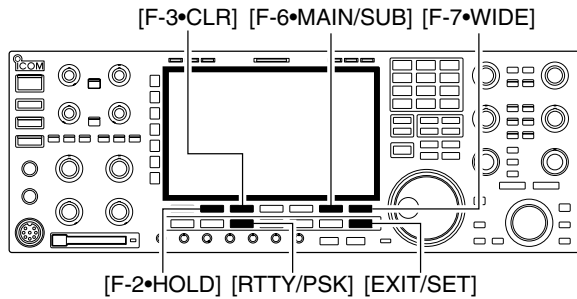


The twin peak filter changes receive frequency response by boosting 2 particular frequencies (2125 and 2295 Hz) for better copying of desired RTTY signals.

- During RTTY mode, push [APF/TPF] to turn the twin peak filter ON and OFF.
 - “TPF” appears in the LCD and the [APF/TPF] indicator above this switch lights green while the filter is in use.

NOTE: When the twin peak filter is in use, the received audio output may be increased. This is a normal transceiver performance to providing a better decoding, not a malfunction.

◆ Functions for the RTTY decoder indication



• Wide screen indication



◆ Setting the decoder threshold level



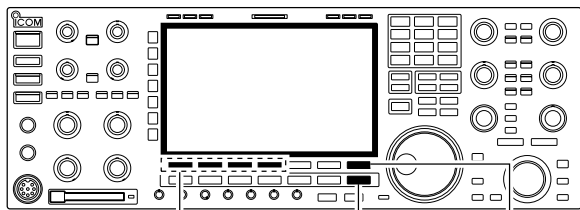
- ① Push a band key to select the desired band.
- ② Push [RTTY/PSK] to select RTTY.
 - After RTTY mode is selected, push [RTTY/PSK] for 1 sec. to toggle between RTTY and RTTY-R modes.
 - “RTTY” or “RTTY-R” appears.
- ③ Push [F-3•DECODE] to display the decoder screen.
 - When tuned into an RTTY signal, decoded characters are displayed in the RX contents screen.
- ④ Push [F-2•HOLD] to freeze the current screen.
 - “HOLD” appears while the function is in use.
 - Push [F-2•HOLD] again to release the function.
- ⑤ Push [F-3•CLR] for 1 sec. to clear the displayed characters.
 - “HOLD” indicator disappears at the same time when the hold function is in use.
- ⑥ Push [F-7•WIDE] to toggle the RTTY decode screen size from normal and wide.
 - S/Rf meter type during wide screen indication can be selected in display set mode. (pgs. 3-11, 12-11)
- ⑦ Push [F-6•MAIN/SUB] to toggle the MAIN and SUB band for decode operation.
 - Dualwatch function (p. 5-16) should be ON when SUB band is selected for decode operation.
- ⑧ Push [EXIT/SET] to close the RTTY decode screen.

Adjust the RTTY decoder threshold level if some characters are displayed when no signal is received.

- ① Call up the RTTY decoder screen as described above.
- ② Push [F-5•ADJ] to select the threshold level setting condition.
- ③ Rotate the main dial to adjust the RTTY decoder threshold level.
 - Push [F-6•DEF] for 1 sec. to select the default setting.
- ④ Push [F-5•ADJ] to exit from the threshold level setting condition.

▨ The UnShift On Space (USOS) function and new line code can be set in the RTTY set mode. (p. 4-18)

◇ RTTY memory transmission



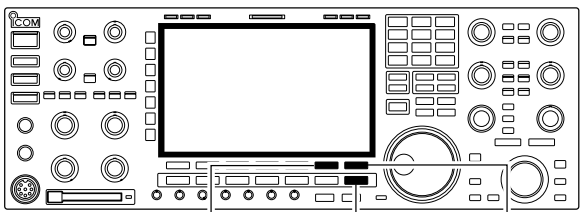
[F-1•RT1]–[F-4•RT4] [EXIT/SET] [F-7•1–4/5–8]
[F-1•RT5]–[F-4•RT8]

		RTTY MEMORY			
AGC MID	RT1	MYCALLx2	„DE ICOM ICOM K,“	AUTO TX/RX	
1/4 OFF	RT2	MYCALLx3	„DE ICOM ICOM ICOM K,“	AUTO TX/RX	
VSC OFF	RT3	QSLUR599	„QSL UR 599–599 BK,“	AUTO TX/RX	
	RT4	DE+UR599	„QSL DE ICOM ICOM UR 599–599 BK,“	AUTO TX/RX	
	RT1	RT2	RT3	RT4	EDIT 1–4/5–8

Pre-set characters can be sent using the RTTY memory. Contents of the memory are set using the edit menu.

- ① During RTTY mode operation, push [F-3•DECODE] to select RTTY decode screen.
- ② Push [F-4•TX MEM] to select RTTY memory screen.
- ③ Push [F-7•1–4/5–8] to select memory bank then push one of the function keys ([F-1•RT1] to [F-4•RT4] or [F-1•RT5] to [F-4•RT8]).
 - When no keyboard is connected, the selected memory contents will be transmitted immediately.
 - When a keyboard is connected, the memory contents will be transmitted immediately when function key is pushed, or transmitted after [F12] on the connected keyboard is pressed, depending on auto transmission/reception setting (see below).
 - The transmission date, time, reception date and/or time may be displayed in RX contents screen, depending on setting.

◇ Automatic transmission/reception setting



[F-6•AUTO TX] [EXIT/SET] [F-7•RT1..RT8]

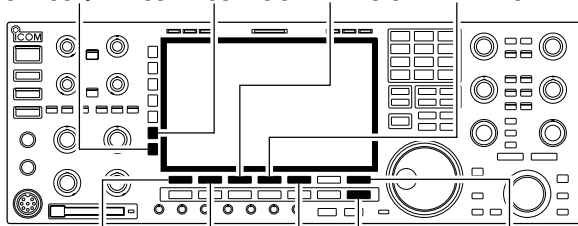
		RTTY MEMORY EDIT			
ABC	RT1	MYCALLx2	„DE ICOM ICOM K,“	AUTO TX/RX	
ABC	RT2	MYCALLx3	„DE ICOM ICOM ICOM K,“	AUTO TX/RX	
	RT3	QSLUR599	„QSL UR 599–599 BK,“	AUTO TX/RX	
123	RT4	DE+UR599	„QSL DE ICOM ICOM UR 599–599 BK,“	AUTO TX/RX	
		DEL	SPACE	AUTO TX RT1..RT8	

- ① During RTTY mode operation, push [F-3•DECODE] to select RTTY decode screen.
- ② Push [F-4•TX MEM] to select RTTY memory screen, then push [F-6•EDIT] to select RTTY memory edit screen.
 - RTTY memory contents of the Channel 1 (RT1) is selected.
- ③ Push [F-7•RT1..RT8] several times to select the desired RTTY memory.
- ④ Push [F-6•AUTO TX] several times to select the desired condition as follow.
 - AUTO TX/RX : Automatically transmits the selected memory and returns to receive after the transmission.
 - AUTO TX : Automatically transmits the selected memory. To return to receive, press [F12] on the keyboard.
 - AUTO RX : Press [F12] on the keyboard to transmit the selected memory. Automatically returns to receive after the transmission.
 - No indication : Press [F12] on the keyboard to transmit the selected memory and press [F12] again to return to receive.
- ⑤ Push [EXIT/SET] to exit RTTY memory edit condition.

NOTE: The transceiver always functions as the “AUTO TX/RX” setting when no keyboard is connected.

◆ Editing RTTY memory

[123]/[Symbol] [ABC]/[abc] [F-3•DEL] [F-4•SPACE]



[F-1•◀] [F-2•▶] [F-5•◀▶] [EXIT/SET] [F-7•RT1..RT8]

• RTTY memory edit screen



• Pre-programmed contents

CH	Name	Contents
RT1	MYCALLx2	┆DE ICOM ICOM K┆
RT2	MYCALLx3	┆DE ICOM ICOM ICOM K┆
RT3	QSLUR599	┆QSL UR 599-599 BK┆
RT4	DE+UR599	┆QSL DE ICOM ICOM UR 599-599 BK┆
RT5	73 GL SK	┆73 GL SK┆
RT6	CQ CQ CQ	┆CQ CQ CQ DE ICOM ICOM ICOM K┆
RT7	RIG&ANT	┆MY TRANSCEIVER IS IC-7800 & ANTENNA IS A 3-ELEMENT TRIBAND YAGI.┆
RT8	EQUIP.	┆MY RTTY EQUIPMENT IS INTERNAL FSK UNIT & DEMODULATOR OF THE IC-7800.┆

The contents of the RTTY memories can be set using the memory edit menu. The memory can memorize and re-transmit 8 RTTY contents for often-used RTTY sentences. Total capacity of the memory is 70 characters per memory channel.

• Programming contents

- ① During RTTY mode operation, push [F-3•DECODE] to select RTTY decode screen.
- ② Push [F-4•TX MEM] to select RTTY memory screen, then push [F-6•EDIT] to select RTTY memory edit screen.
 - RTTY memory contents of the Channel 1 (RT1) is selected.
- ③ Push [F-7•RT1..RT8] to several times to select the desired RTTY memory channel to be edited.
- ④ Push [F-5•◀ ▶] to select the edit item between memory contents and memory name.
 - [abc] appears when [ABC] is pushed when “ABC” character group is selected, and [Symbol] appears when [123] is pushed when “123” character group is selected.
- ⑤ Push [ABC], [abc], [123] or [Symbol] to select the character group, then rotate the main dial to select the character, or push the keypad for number input.
 - Selectable characters (with the main dial);

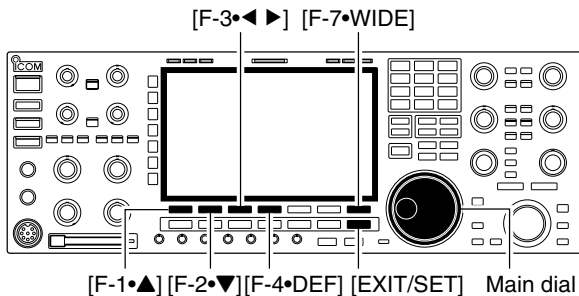
Key selection	Editable characters
	A to Z (capital letters)
	a to z (small letters) (selectable for memory name only)
	0 to 9 (numbers)
	! # \$ % & ¥ ? “ ’ ^ + - * / . , ; = < > () [] { } _ ~ @ (For the memory contents setting, ! \$ & ? “ ’ - / . , ; () ┆ are selectable.)

✓ For your convenience

When a PC keyboard is connected to [KEYBOARD] connector on the rear panel, the RTTY memory contents can also be edited from the keyboard.

- ⑥ Push [F-1•◀] or [F-2•▶] to move the cursor backwards or forwards, respectively.
 - Pushing [F-3•DEL] deletes a character and [F-4•SPACE] inserts a space.
- ⑦ Repeat steps ⑤ and ⑥ to input the desired characters.
- ⑧ Push [EXIT/SET] to set the contents and exit RTTY memory edit screen.

◆ RTTY decode set mode



• RTTY decode set mode screen



This set mode is used to set the decode USOS function, time stamp setting, etc.

• Setting contents

- ① During RTTY mode operation, push [F-3•DECODE] to select RTTY decode screen.
- ② Push [F-1•<MENU2>] to select RTTY decode menu 2, then push [F-6•SET] to select RTTY decode set mode.
 - Push [F-7•WIDE] to toggle the screen size from normal and wide.
- ③ Push [F-1•▲] or [F-2•▼] to select the desired set item.
- ④ Set the desired condition using the main dial.
 - Push [F-4•DEF] for 1 sec. to select a default condition or value.
 - Push [F-3•◀▶] to select the set contents for some items.
- ⑤ Push [EXIT/SET] to exit from set mode.

RTTY Decode USOS	ON
Turn the letter code decoding after receiving a “space” (USOS; UnShift On Space function) capability ON and OFF.	<ul style="list-style-type: none"> • ON : Decode as letter code. • OFF : Decode as character code.

RTTY Decode New Line Code	CR,LF,CR+LF
Selects the new line code of the internal RTTY decoder. CR: Carriage Return, LF: Line Feed	<ul style="list-style-type: none"> • CR,LF,CR;LF : Makes new line with any codes. • CR+LF : Makes new line with CR+LF code only.

RTTY Diddle	BLANK
Selects the diddle condition.	<ul style="list-style-type: none"> • BLANK : Transmits blank code during no code transmission. • LTRS : Transmits letter code during no code transmission. • OFF : Turns the diddle function OFF.

RTTY TX USOS	ON
Selects the FIGS insertion even changing from LTRS to FIGS does not necessary when sending a numeral or symbol character after a space.	<ul style="list-style-type: none"> • ON : Inserts FIGS. • OFF : Not insert FIGS.




RTTY Auto CR+LF by TX	ON
Selects the automatic new line code (CR+LF) transmission capability.	<ul style="list-style-type: none"> • ON : Transmits CR+LF code once. • OFF : Transmits no CR+LF code.




◇ RTTY decode set mode (continued)




RTTY Time Stamp	ON
Turn the time stamp (date, transmission or reception time) indication ON and OFF.	<ul style="list-style-type: none"> • ON : Indicates the time stamp. • OFF : No time stamp indication.




RTTY Time Stamp (Time)	Local
Selects the clock indication for time stamp usage. NOTE: The time won't be displayed when "OFF" is selected in "RTTY Time Stamp" as above.	<ul style="list-style-type: none"> • Local : Selects the time that set in "Time (Now)." • UTC* : Selects the time that set in "CLOCK2." <small>*The name of choice may differ according to "CLOCK2 Name" setting (p, 11-2). "UTC" is the default name setting of CLOCK2.</small>

RTTY Time Stamp (Frequency)	OFF
Selects the operating frequency indication for time stamp usage. NOTE: The frequency won't be displayed when "OFF" is selected in "RTTY Time Stamp" as above.	<ul style="list-style-type: none"> • ON : Indicates the operating frequency. • OFF : No operating frequency indication.

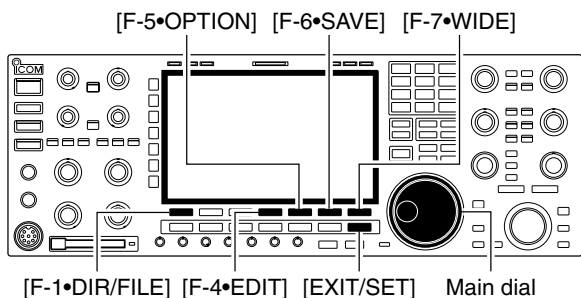
RTTY Font Color (Receive)	 128  255 
Set the text color for received characters.	<ul style="list-style-type: none"> • The color is set in RGB format. • Push [F-3•◀▶] to select R (Red), G (Green) and B (Blue), and rotate the ratio from 0 to 255 range. • The set color is indicated in the box beside the RGB scale.

RTTY Font Color (Transmit)	 255  106 
Set the text color for transmitted characters.	<ul style="list-style-type: none"> • The color is set in RGB format. • Push [F-3•◀▶] to select R (Red), G (Green) and B (Blue), and rotate the ratio from 0 to 255 range. • The set color is indicated in the box beside the RGB scale.

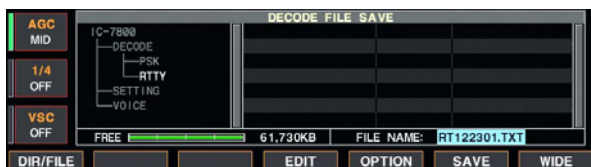
RTTY Font Color (Time Stamp)	 0  155 
Set the text color for time stamp indication.	<ul style="list-style-type: none"> • The color is set in RGB format. • Push [F-3•◀▶] to select R (Red), G (Green) and B (Blue), and rotate the ratio from 0 to 255 range. • The set color is indicated in the box beside the RGB scale.

RTTY Font Color (TX Buffer)	 255  255 
Set the text color in the TX buffer screen.	<ul style="list-style-type: none"> • The color is set in RGB format. • Push [F-3•◀▶] to select R (Red), G (Green) and B (Blue), and rotate the ratio from 0 to 255 range. • The set color is indicated in the box beside the RGB scale.

◆ Data saving



• Decode file save screen



• Decode file save screen— file name edit



• Save option screen



The contents of the RTTY memory and received signal can be saved into the CF memory card.

- ① During RTTY decode screen indication, push [F-1•<MENU1>] to select RTTY decode menu 2.
- ② Push [F-5•SAVE] to select decode file save screen.
- ③ Change the following conditions if desired.

• File name:

- ① Push [F-4•EDIT] to select file name edit condition.
 - Push [F-1•DIR/FILE] several times to select the file name, if necessary.
- ② Push [ABC], [123] or [Symbol] to select the character group, then rotate the main dial to select the character.
 - [ABC] : A to Z (capital letters); [123]: 0 to 9 (numerals); [Symbol]: ! # \$ % & ' ` ^ + = () [] { } _ ~ @ can be selected.
 - Push [F-1•◀] to move the cursor left, push [F-2•▶] to move the cursor right, [F-3•DEL] delete a character and push [F-4•SPACE] to insert a space.
- ③ Push [EXIT/SET] to set the file name.

• File format

- ① Push [F-5•OPTION] to enter save option screen.
- ② Rotate the main dial to select the saving format from Text and HTML.
 - "Text" is the default setting.
 - Push [F-4•DEF] for 1 sec. to select the default setting.
- ③ Push [EXIT/SET] to return to the previous indication.

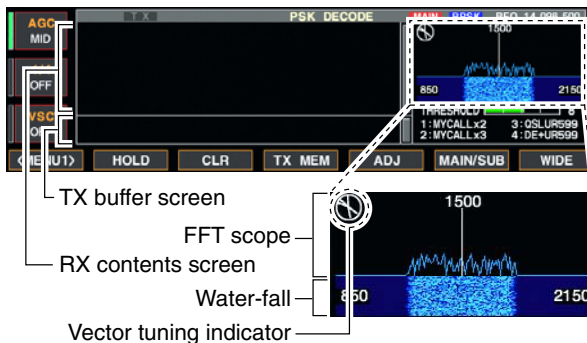
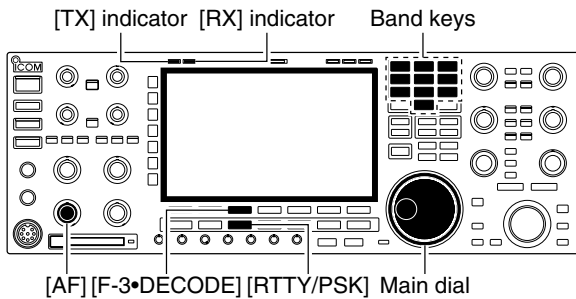
• Saving location

- ① Push [F-1•DIR/FILE] to select tree view screen.
- ② Select the desired directory or folder in the CF memory card.
 - Push [F-4•◀ ▶] to select the upper directory.
 - Push [F-2•▲] or [F-3•▼] to select folder in the same directory.
 - Push [F-4•◀ ▶] for 1 sec. to select a folder in the directory.
 - Push [F-5•REN/DEL] to rename the folder.
 - Push [F-5•REN/DEL] for 1 sec. to delete the folder.
 - Push [F-6•MAKE] for 1 sec. to making a new folder. (Edit the name with the same manner as the "• File name" above.)
- ③ Push [F-1•DIR/FILE] twice to select the file name.
- ④ Push [F-6•SAVE].
 - After the saving is completed, return to RTTY decode menu 2 automatically.

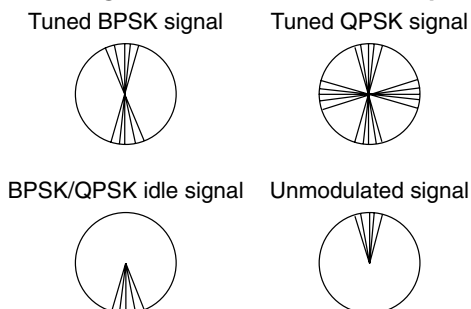
✓ For your convenient!

Both of data formats, Text and HTML, are compatible data format in a PC. The saved data can be copied to your PC for record, etc.

Operating PSK



• Vector tuning indicator indication example



The PSK31 encoder/decoder is built-in to the IC-7800. When connecting a PC keyboard (p. 2-6), PSK31 operation can be performed without a PSK operation software installed PC.

When using your PSK operation software, consult the manual that comes with the software.

- ① Push a band key to select the desired band.
- ② Push [RTTY/PSK] to select PSK.
 - After PSK mode is selected, push [RTTY/PSK] for 1 sec. to toggle between PSK and PSK-R modes.
 - “PSK” or “PSK-R” appears.
- ③ Push [F-3•DECODE] to displays the decoder screen.
 - The IC-7800 has a PSK31 decoder.
- ④ Tune to the desired signal with the main dial.
 - The signal is tuned when the radiated lines in the vector tuning indicator narrow as in the example below.
 - The radiated lines in the vector tuning indicator are displayed in sporadically.
 - When a PSK signal is received, the water-fall indicator is activated.
 - The water-fall indicator shows the signal condition within the passband width and a vertical line appears when a PSK signal is received.
- ⑤ Rotate [AF] to set the audio to a comfortable listening level.
- ⑥ Press [F12] of the connected keyboard to transmit.
 - [TX] indicator lights red.
- ⑦ Type from the connected keyboard to enter the contents that you want to transmit.
 - The typewritten contents are indicated in the TX buffer screen and transmitted immediately.
 - The text color will be changed when transmitted.
 - Press one of [F1]–[F8] to transmit the TX memory contents.
- ⑧ Press [F12] of the keyboard to return to receive.
- ⑨ Push [TRANSMIT] to return to receive.

✓ For your convenience

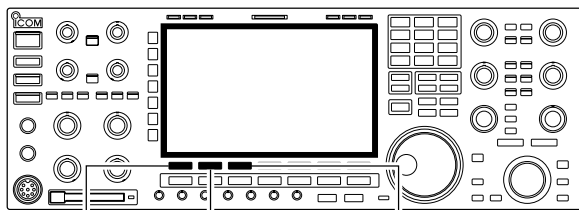
The transmission contents can be typewritten before being transmit.

- ① Perform the steps ① to ④ above.
- ② Type from the connected keyboard to enter the contents that you want to transmit.
 - The typewritten contents are indicated in the TX buffer screen.
- ③ Press [F12] of the connected keyboard to transmit the typewritten contents.
 - The color of displayed text, in the TX buffer screen, will be changed when transmitted.
 - To cancel the transmission, press [F12] twice.
- ④ Press [F12] of the keyboard to return to receive.

◆ Convenient functions for receive

- **Preamp** (p. 5-9)
 - Push [P.AMP] several times to set the preamp OFF, preamp 1 ON or preamp 2 ON.
 - “P.AMP1” or “P.AMP2” appears when the preamp 1 or preamp 2 is set to ON, respectively. (depending on operating frequency band)
- **Attenuator** (p. 5-9)
 - Push [ATT] several times to set the attenuator in 6 dB steps.
 - Pushing [P.AMP] for 1 sec. to set the attenuator in 3 dB steps.
 - “ATT” and attenuation level appear when the attenuator is set to ON.
- **Noise blanker** (p. 5-17)
 - Push [NB] switch to turn the noise blanker ON and OFF, and then rotate [NB] control to adjust the threshold level.
 - Noise blanker indicator (above [NB] switch) lights when the noise blanker is set to ON.
 - Push [NB] for 1 sec. to enter noise blanker set mode.
- **Twin PBT (passband tuning)** (p. 5-12)
 - Rotate [TWIN PBT] controls (inner/outer).
 - Push [PBT CLEAR] to clear the settings.
- **Noise reduction** (p. 5-18)
 - Push [NR] switch to turn the noise reduction ON and OFF.
 - Rotate [NR] control to adjust the noise reduction level.
 - Noise reduction indicator (above [NR] switch) lights when the noise reduction is set to ON.
- **AGC (auto gain control)** (p. 5-11)
 - Push [AGC] switch several times to select AGC FAST, AGC MID or AGC SLOW.
 - Push [AGC VR] to turn the AGC time constant manual setting ON and OFF.
 - Rotate [AGC] control to adjust the time constant.
- **Fine tuning** (p. 3-7)
 - During no kHz tuning step function OFF (no “▼” indication), push [TS] for 1 sec.
 - May not be decoded correctly with the 10 Hz step tuning.
- **1/4 function** (p. 3-6)
 - Push [1/4] to turn the 1/4 function ON and OFF.

◆ About BPSK and QPSK mode



[F-1]•<MENU> [F-2]•B/QPSK [F-3]•DECODE]

• PSK decode screen— BPSK mode



• PSK decode screen— QPSK mode

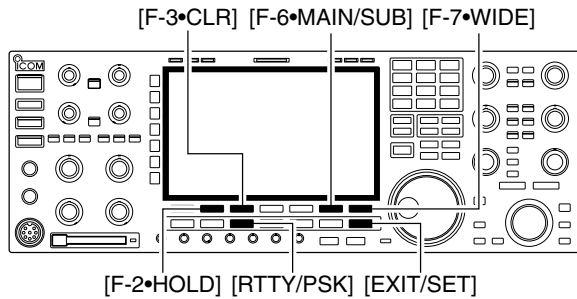


BPSK and QPSK modes are available for the PSK31.

- BPSK (Binary Phase Shift Keying) mode is the most often used mode.
- QPSK (Quadrature Phase Shift Keying) mode has error correction capability to provides a better decoding than BPSK mode operation even in a worth condition. However, much accurate tuning is required with the QPSK mode, due to the QPSK mode has only few phase margin.

- ① During PSK mode selection, push [F-3]•DECODE] to display the PSK decode screen.
- ② Push [F-1]•<MENU1>] to select PSK decode menu 2.
- ③ Push [F-2]•B/QPSK] to toggle between BPSK and QPSK mode alternately.

◆ Functions for the PSK decoder indication



• Wide screen indication



◆ Setting the decoder threshold level

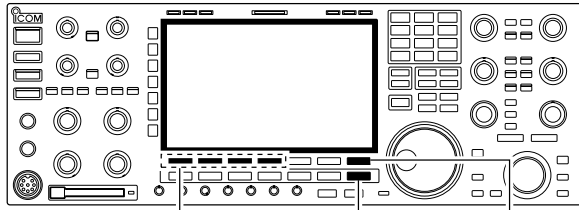


- ① Push a band key to select the desired band.
- ② Push [RTTY/PSK] to select PSK.
 - After PSK mode is selected, push [RTTY/PSK] for 1 sec. to toggle between PSK and PSK-R modes.
 - “PSK” or “PSK-R” appears.
- ③ Push [F-3•DECODE] to display the decoder screen.
 - When tuned into a PSK signal, decoded characters are displayed in the RX contents screen.
- ④ Push [F-2•HOLD] to freeze the current screen.
 - “HOLD” appears while the function is in use.
 - Push [F-2•HOLD] again to release the function.
- ⑤ Push [F-3•CLR] for 1 sec. to clear the displayed characters.
 - “HOLD” indicator disappears at the same time when the hold function is in use.
- ⑥ Push [F-7•WIDE] to toggle the PSK decode screen size from normal and wide.
 - S/R/F meter type during wide screen indication can be selected in display set mode. (pgs. 3-11, 12-11)
- ⑦ Push [F-6•MAIN/SUB] to toggle the MAIN and SUB band for decode operation.
 - Dualwatch function (p. 5-16) should be ON when SUB band is selected for decode operation.
- ⑧ Push [EXIT/SET] to close the PSK decode screen.

Adjust the PSK decoder threshold level if some characters are displayed when no signal is received.

- ① Call up the PSK decoder screen as described above.
- ② Push [F-5•ADJ] to select the threshold level setting condition.
- ③ Rotate the main dial to adjust the PSK decoder threshold level.
 - Push [F-6•DEF] for 1 sec. to select the default setting.
- ④ Push [F-5•ADJ] to exit from the threshold level setting condition.

◇ PSK memory transmission



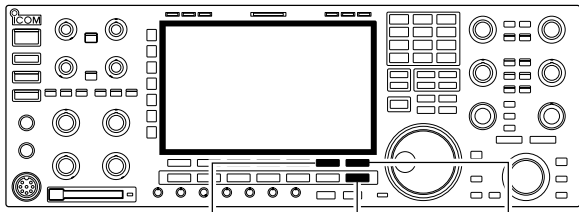
[F-1•PT1]–[F-4•PT4] [EXIT/SET] [F-7•1–4/5–8]
[F-1•PT5]–[F-4•PT8]

PSK MEMORY				
ABC MID	PT1	MYCALLx2	„DE lcom lcom K,„	AUTO TX/RX
1/4 OFF	PT2	MYCALLx3	„DE lcom lcom lcom K,„	AUTO TX/RX
VSC OFF	PT3	QSLUR599	„QSL UR 599 599 BK,„	AUTO TX/RX
	PT4	DE+UR599	„QSL DE lcom lcom UR 599 599 BK,„	AUTO TX/RX
	PT1	PT2	PT3	PT4
				EDIT 1–4/5–8

Pre-set characters can be sent using the PSK memory. Contents of the memory are set using the edit menu.

- ① During PSK mode operation, push [F-3•DECODE] to select PSK decode screen.
- ② Push [F-4•TX MEM] to select PSK memory screen.
- ③ Push [F-7•1–4/5–8] to select memory bank then push one of the function keys ([F-1•PT1] to [F-4•PT4] or [F-1•PT5] to [F-4•PT8]).
 - When no keyboard is connected, the selected memory contents will be transmitted immediately.
 - When a keyboard is connected, the memory contents will be transmitted immediately when function key is pushed, or transmitted after [F12] on the connected keyboard is pressed, depending on auto transmission/reception setting (see below).
 - The transmission date, time, reception date and/or time may be displayed in RX contents screen, depending on setting.

◇ Automatic transmission/reception setting



[F-6•AUTO TX] [EXIT/SET] [F-7•PT1..PT8]

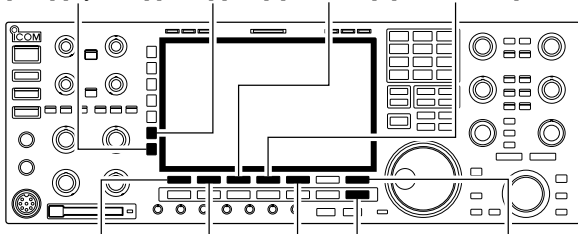
PSK MEMORY EDIT				
ABC	PT1	MYCALLx2	„DE lcom lcom K,„	AUTO TX/RX
ABC	PT2	MYCALLx3	„DE lcom lcom lcom K,„	AUTO TX/RX
	PT3	QSLUR599	„QSL UR 599 599 BK,„	AUTO TX/RX
123	PT4	DE+UR599	„QSL DE lcom lcom UR 599 599 BK,„	AUTO TX/RX
		DEL	SPACE	AUTO TX PT1..PT8

- ① During PSK mode operation, push [F-3•DECODE] to select PSK decode screen.
- ② Push [F-4•TX MEM] to select PSK memory screen, then push [F-6•EDIT] to select PSK memory edit screen.
 - PSK memory contents of the Channel 1 (PT1) is selected.
- ③ Push [F-7•PT1..PT8] several times to select the desired RTTY memory.
- ④ Push [F-6•AUTO TX] several times to select the desired condition as follow.
 - AUTO TX/RX : Automatically transmits the selected memory and returns to receive after the transmission.
 - AUTO TX : Automatically transmits the selected memory. To return to receive, press [F12] on the keyboard.
 - AUTO RX : Press [F12] on the keyboard to transmit the selected memory. Automatically returns to receive after the transmission.
 - No indication : Press [F12] on the keyboard to transmit the selected memory and press [F12] again to return to receive.
- ⑤ Push [EXIT/SET] to return to exit from PSK memory edit condition.

NOTE: The transceiver always functions as the “AUTO TX/RX” setting when no keyboard is connected.

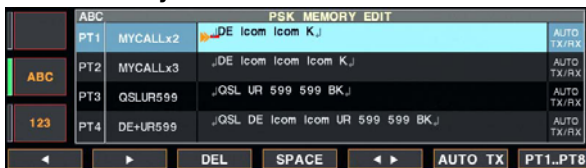
◇ Editing PSK memory

[123]/[Symbol] [ABC]/[abc] [F-3•DEL] [F-4•SPACE]



[F-1•◀] [F-2•▶] [F-5•◀▶] [EXIT/SET] [F-7•PT1..PT8]

• PSK memory edit screen



• Pre-programmed contents

CH	Name	Contents
PT1	MYCALLx2	└DE Icom Icom K┘
PT2	MYCALLx3	└DE Icom Icom Icom K┘
PT3	QSLUR599	└QSL UR 599 599 BK┘
PT4	DE+UR599	└QSL DE Icom Icom UR 599 599 BK┘
PT5	73 GL SK	└73 GL SK┘
PT6	CQ CQ CQ	└CQ CQ CQ DE Icom Icom Icom K┘
PT7	RIG&ANT	└My transceiver is IC-7800 & Antenna is a 3-element triband yagi.┘
PT8	EQUIP.	└My PSK equipment is internal modulator & demodulator of the IC-7800.┘

The contents of the PSK memories can be set using the memory edit menu. The memory can memorize and re-transmit 8 PSK contents for often-used PSK sentences. Total capacity of the memory is 70 characters per memory channel.

• Programming contents

- ① During PSK mode operation, push [F-3•DECODE] to select PSK decode screen.
- ② Push [F-4•TX MEM] to select PSK memory screen, then push [F-6•EDIT] to select PSK memory edit screen.
 - PSK memory contents of the Channel 1 (PT1) is selected.
- ③ Push [F-7•PT1..PT8] several times to select the desired PSK memory channel to be edited.
- ④ Push [F-5•◀ ▶] to select the edit item between memory contents and memory name.
 - [abc] appears when [ABC] is pushed when “ABC” character group is selected, and [Symbol] appears when [123] is pushed when “123” character group is selected.
- ⑤ Push [ABC], [abc], [123] or [Symbol] to select the character group, then rotate the main dial to select the character, or push the keypad for number input.
 - Selectable characters (with the main dial);

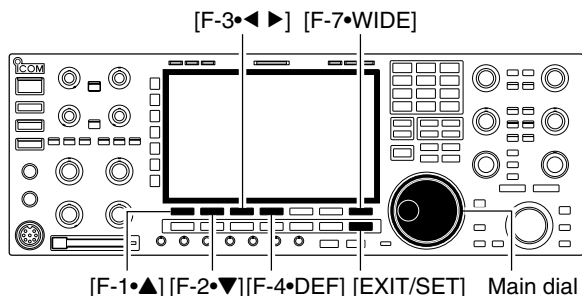
Key selection	Editable characters
	A to Z (capital letters)
	a to z (small letters)
	0 to 9 (numbers)
	! # \$ % & ¥ ? “ ’ ` ^ + - * / . , ; = < > () [] { } _ ~ @ ┘ (“┘” is for the memory contents setting only.)

✓ For your convenience

When a PC keyboard is connected to [KEYBOARD] connector on the rear panel, the PSK memory contents can also be edited from the keyboard.

- ⑥ Push [F-1•◀] or [F-2•▶] to move the cursor backwards or forwards, respectively.
 - Pushing [F-3•DEL] deletes a character and [F-4•SPACE] inserts a space.
- ⑦ Repeat steps ⑤ and ⑥ to input the desired characters.
- ⑧ Push [EXIT/SET] to set the contents and exit PSK memory edit screen.

◆ PSK decode set mode



This set mode is used to set the decode USOS function, time stamp setting, etc.

• Setting contents

- ① During PSK mode operation, push [F-3•DECODE] to select PSK decode screen.
- ② Push [F-1•<MENU2>] to select PSK decode menu 2, then push [F-6•SET] to select PSK decode set mode.
 - Push [F-7•WIDE] to toggle the screen size from normal and wide.
- ③ Push [F-1•▲] or [F-2•▼] to select the desired set item.
- ④ Set the desired condition using the main dial.
 - Push [F-4•DEF] for 1 sec. to select a default condition or value.
 - Push [F-3•◀▶] to select the set contents for some items.
- ⑤ Push [EXIT/SET] to exit from set mode.




PSK Time Stamp	ON
Turn the time stamp (date, transmission or reception time) indication ON and OFF.	<ul style="list-style-type: none"> • ON : Indicates the time stamp. • OFF : No time stamp indication.




PSK Time Stamp (Time)	Local
Selects the clock indication for time stamp usage. NOTE: The time won't be displayed when "OFF" is selected in "PSK Time Stamp" as above.	<ul style="list-style-type: none"> • Local : Selects the time that set in "Time (Now)." • UTC* : Selects the time that set in "CLOCK2." <p>*The name of choice may differ according to "CLOCK2 Name" setting (p, 11-2). "UTC" is the default name setting of CLOCK2.</p>




PSK Time Stamp (Frequency)	OFF
Selects the operating frequency indication for time stamp usage. NOTE: The frequency won't be displayed when "OFF" is selected in "PSK Time Stamp" as above.	<ul style="list-style-type: none"> • ON : Indicates the operating frequency. • OFF : No operating frequency indication.

PSK Font Color (Receive)	
Set the text color for received characters.	<ul style="list-style-type: none"> • The color is set in RGB format. • Push [F-3•◀▶] to select R (Red), G (Green) and B (Blue), and rotate the ratio from 0 to 255 range. • The set color is indicated in the box beside the RGB scale.

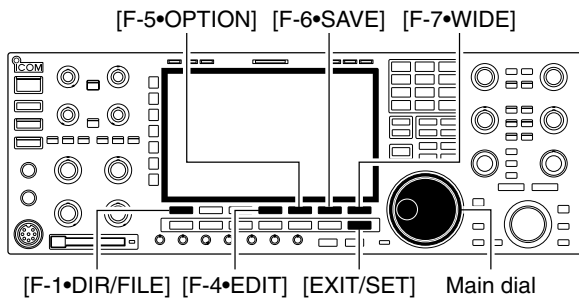
◇ PSK decode set mode (continued)

PSK Font Color (Transmit)		 255	 106	 106
Set the text color for transmitted characters.	<ul style="list-style-type: none"> The color is set in RGB format. Push [F-3•◀▶] to select R (Red), G (Green) and B (Blue), and rotate the ratio from 0 to 255 range. The set color is indicated in the box beside the RGB scale. 			

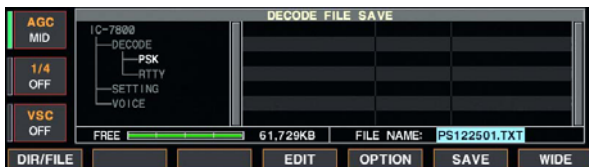
PSK Font Color (Time Stamp)		 0	 155	 189
Set the text color for time stamp indication.	<ul style="list-style-type: none"> The color is set in RGB format. Push [F-3•◀▶] to select R (Red), G (Green) and B (Blue), and rotate the ratio from 0 to 255 range. The set color is indicated in the box beside the RGB scale. 			

PSK Font Color (TX Buffer)		 255	 255	 255
Set the text color in the TX buffer screen.	<ul style="list-style-type: none"> The color is set in RGB format. Push [F-3•◀▶] to select R (Red), G (Green) and B (Blue), and rotate the ratio from 0 to 255 range. The set color is indicated in the box beside the RGB scale. 			

◆ Data saving



• Decode file save screen



• Decode file save screen— file name edit



• Save option screen



The contents of the PSK memory and received signal can be saved into the CF memory card.

- ① During PSK decode screen indication, push [F-1•<MENU1>] to select PSK decode menu 2.
- ② Push [F-5•SAVE] to select decode file save screen.
- ③ Change the following conditions if desired.

• File name:

- ① Push [F-4•EDIT] to select file name edit condition.
 - Push [F-1•DIR/FILE] several times to select the file name, if necessary.
- ② Push [ABC], [123] or [Symbol] to select the character group, then rotate the main dial to select the character.
 - [ABC] : A to Z (capital letters); [123]: 0 to 9 (numerals); [Symbol]: ! # \$ % & ' ` ^ + = () [] { } _ ~ @ can be selected.
 - Push [F-1•◀] to move the cursor left, push [F-2•▶] to move the cursor right, [F-3•DEL] delete a character and push [F-4•SPACE] to insert a space.
- ③ Push [EXIT/SET] to set the file name.

• File format

- ① Push [F-5•OPTION] to enter save option screen.
- ② Rotate the main dial to select the saving format from Text and HTML.
 - “Text” is the default setting.
 - Push [F-4•DEF] for 1 sec. to select the default setting.
- ③ Push [EXIT/SET] to return to the previous indication.

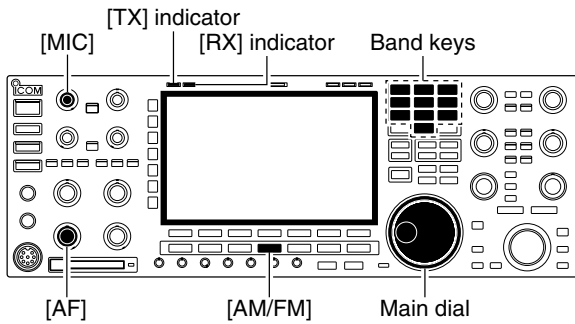
• Saving location

- ① Push [F-1•DIR/FILE] to select tree view screen.
- ② Select the desired directory or folder in the CF memory card.
 - Push [F-4•◀ ▶] to select the upper directory.
 - Push [F-2•▲] or [F-3•▼] to select folder in the same directory.
 - Push [F-4•◀ ▶] for 1 sec. to select a folder in the directory.
 - Push [F-5•REN/DEL] to rename the folder.
 - Push [F-5•REN/DEL] for 1 sec. to delete the folder.
 - Push [F-6•MAKE] for 1 sec. to make a new folder. (Edit the name with the same manner as the “File name” above.)
- ③ Push [F-1•DIR/FILE] twice to select the file name.
- ④ Push [F-6•SAVE].
 - After the saving is completed, return to PSK decode menu 2 automatically.

✓ For your convenient!

Both of data formats, Text and HTML, are compatible data format in a PC. The saved data can be copied to your PC for record, etc.

■ Operating AM



- ① Push a band key to select the desired band.
- ② Push [AM/FM] to select AM.
 - “AM” indicator appears.
 - After AM mode is selected, push [AM/FM] to toggle between AM and FM modes.
- ③ Rotate the main dial to tune the desired frequency.
 - The S-meter indicates received signal strength when signal is received.
- ④ Rotate [AF] to set audio to a comfortable listening level.
- ⑤ Push [TRANSMIT] or [PTT] (microphone) to transmit.
 - The TX indicator lights red.
- ⑥ Speak into the microphone at your normal voice level.
 - Adjust the microphone gain with [MIC] at this step, if necessary.
- ⑦ Push [TRANSMIT] or release [PTT] (microphone) to return to receive.

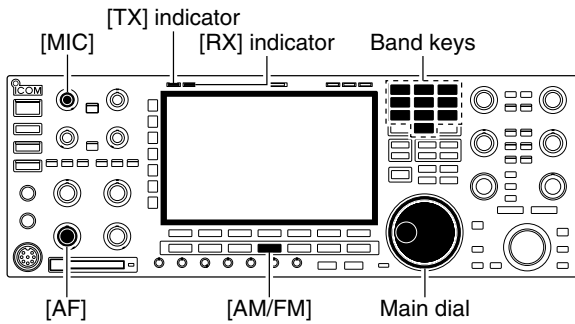
◇ Convenient functions for receive

- **Preamp** (p. 5-9)
 - Push [P.A.M.P] several times to set the preamp OFF, preamp 1 ON or preamp 2 ON.
 - “P.A.M.P1” or “P.A.M.P2” appears when the preamp 1 or preamp 2 is set to ON, respectively. (depending on operating frequency band)
 - **Attenuator** (p. 5-9)
 - Push [ATT] several times to set the attenuator in 6 dB steps.
 - Pushing [P.A.M.P] for 1 sec. to set the attenuator in 3 dB steps.
 - “ATT” and attenuation level appear when the attenuator is set to ON.
 - **Noise blanker** (p. 5-17)
 - Push [NB] switch to turn the noise blanker ON and OFF, and then rotate [NB] control to adjust the threshold level.
 - Noise blanker indicator (above [NB] switch) lights when the noise blanker is set to ON.
 - Push [NB] for 1 sec. to enter noise blanker set mode.
 - **Noise reduction** (p. 5-18)
 - Push [NR] switch to turn the noise reduction ON and OFF.
 - Rotate [NR] control to adjust the noise reduction level.
 - Noise reduction indicator (above [NR] switch) lights when the noise reduction is set to ON.
 - **Twin PBT (passband tuning)** (p. 5-12)
 - Rotate [TWIN PBT] controls (inner/outer).
 - Push [PBT CLEAR] to clear the settings.
 - **Notch filter** (p. 5-19)
 - Push [NOTCH] switch to turn the manual notch function ON and OFF.
 - Rotate [NOTCH] control to set the attenuating frequency.
 - Notch indicator (above [NOTCH] switch) lights when either the manual notch is set to ON.
 - **AGC (auto gain control)** (p. 5-11)
 - Push [AGC] switch several times to select AGC FAST, AGC MID or AGC SLOW.
 - Push [AGC VR] to turn the AGC time constant manual setting ON and OFF.
 - Rotate [AGC] control to adjust the time constant.
 - **Auto tuning function** (p. 1-9)
 - Push [AUTO TUNE] to turn the auto tuning function ON and OFF.
 - The transceiver automatically tuned into the desired signal within ± 500 kHz range.
- IMPORTANT!**
When receiving a weak signal, or receiving a signal with interference, the automatic tuning function may not be tuned, or tuned into an undesired signal.

◇ Convenient functions for transmit

- | | |
|---|---|
| <ul style="list-style-type: none">• VOX (voice operated transmit) (p. 6-2)<ul style="list-style-type: none">➤ Push [VOX/BK-IN] to turn the VOX function ON and OFF.<ul style="list-style-type: none">• “VOX” appears when the VOX function is set to ON.• Transmit quality monitor (p. 6-4)<ul style="list-style-type: none">➤ Push [MONI] to turn the monitor function ON and OFF.<ul style="list-style-type: none">• Rotate [MONI GAIN] to adjust the monitor gain.• Monitor indicator (above [MONI] switch) lights when the monitor function is set to ON. | <ul style="list-style-type: none">• Audio tone control (p. 12-4)<ul style="list-style-type: none">➤ Push [F-7•SET] then [F-1•LEVEL] to enter level set mode. Select an item with [F-1•▲]/[F-2•▼] then rotate the main dial to adjust the audio tone. |
|---|---|

■ Operating FM



- ① Push a band key to select the desired band.
- ② Push [AM/FM] to select FM.
 - “FM” indicator appears.
 - After FM mode is selected, push [AM/FM] to toggle between FM and AM modes.
- ③ Rotate the main dial to tune the desired frequency.
 - The S-meter indicates received signal strength when signal is received.
 - 10 kHz tuning step is preset for the FM mode.
- ④ Rotate [AF] to set audio to a comfortable listening level.
- ⑤ Push [TRANSMIT] or [PTT] (microphone) to transmit.
 - The TX indicator lights red.
- ⑥ Speak into the microphone at your normal voice level.
 - Adjust the microphone gain with [MIC] at this step, if necessary.
- ⑦ Push [TRANSMIT] or release [PTT] (microphone) to return to receive.

◇ Convenient functions for receive

• Preamp (p. 5-9)

- ➔ Push [P.AMP] several times to set the preamp OFF, preamp 1 ON or preamp 2 ON.
 - “P.AMP1” or “P.AMP2” appears when the preamp 1 or preamp 2 is set to ON, respectively. (depending on operating frequency band)

• Auto notch filter (p. 5-19)

- ➔ Push [NOTCH] switch to turn the auto notch function ON and OFF.
 - Notch indicator (above [NOTCH] switch) lights when either the manual notch is set to ON.

• Attenuator (p. 5-9)

- ➔ Push [ATT] several times to set the attenuator in 6 dB steps.
 - Pushing [P.AMP] for 1 sec. to set the attenuator in 3 dB steps.
 - “ATT” and attenuation level appear when the attenuator is set to ON.

◇ Convenient functions for transmit

• VOX (voice operated transmit) (p. 6-2)

- ➔ Push [VOX/BK-IN] to turn the VOX function ON and OFF.
 - “VOX” appears when the VOX function is set to ON.

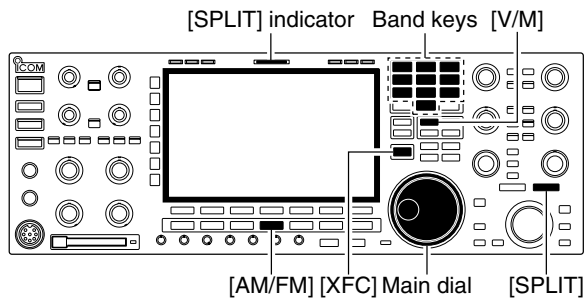
• Transmit quality monitor (p. 6-4)

- ➔ Push [MONI] to turn the monitor function ON and OFF.
 - Rotate [MONI GAIN] to adjust the monitor gain.
 - Monitor indicator (above [MONI] switch) lights when the monitor function is set to ON.

• Audio tone control (p. 12-4)

- ➔ Push [F-7•SET] then [F-1•LEVEL] to enter level set mode. Select an item with [F-1•▲]/[F-2•▼] then rotate the main dial to adjust the audio tone.

■ Repeater operation

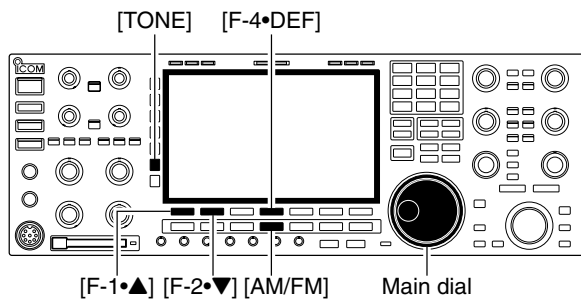


A repeater amplifies received signals and retransmits them at a different frequency. When using a repeater, the transmit frequency is shifted from the receive frequency by an offset frequency. A repeater can be accessed using split frequency operation with the shift frequency set to the repeater's offset frequency.

For accessing a repeater which requires a repeater tone, set the repeater tone frequency in tone frequency set mode as described below.

- ① Set the offset frequencies (HF, 50 MHz) and turn ON the quick split function in miscellaneous (others) set mode in advance. (p. 12-14)
- ② Push [V/M] to select VFO mode.
- ③ Push the desired band key.
- ④ Push [AM/FM] several times to select FM mode.
- ⑤ Set the receive frequency (repeater output frequency).
- ⑥ Push [SPLIT] for 1 sec. to start repeater operation.
 - Repeater tone is turned ON automatically.
 - [SPLIT] indicator lights and "SPLIT" appears on the LCD.
 - Shifted transmit frequency and "TX" appear in the sub band.
 - The transmit frequency can be monitored while pushing [XFC] or using dualwatch.
- ⑦ Push and hold [PTT] to transmit; release [PTT] to receive.
- ⑧ To return to simplex, push [SPLIT] momentarily.

◇ Repeater tone frequency setting



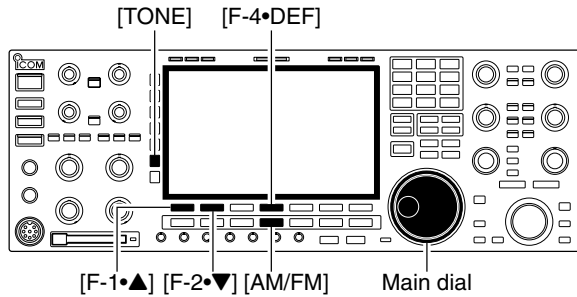
Some repeaters require subaudible tones to be accessed. Subaudible tones are superimposed over your normal signal and must be set in advance. The transceiver has 50 tones from 67.0 Hz to 254.1 Hz.

- ① Select FM mode.
- ② Push [TONE] for 1 sec. to tone frequency set mode.
- ③ Push [F-1•▲] or [F-2•▼] to select REPEATER TONE item.
- ④ Rotate the main dial to select the desired repeater tone frequency.
 - Push [F-4•DEF] for 1 sec. to select the default setting.
- ⑤ Push [EXIT/SET] to return to the previous indication.

• Available tone frequencies (unit: Hz)

67.0	85.4	107.2	136.5	165.5	186.2	210.7	254.1
69.3	88.5	110.9	141.3	167.9	189.9	218.1	
71.9	91.5	114.8	146.2	171.3	192.8	225.7	
74.4	94.8	118.8	151.4	173.8	196.6	229.1	
77.0	97.4	123.0	156.7	177.3	199.5	233.6	
79.7	100.0	127.3	159.8	179.9	203.5	241.8	
82.5	103.5	131.8	162.2	183.5	206.5	250.3	

■ Tone squelch operation



The tone squelch opens only when receiving a signal containing a matching subaudible tone. You can silently wait for calls from group members using the same tone.

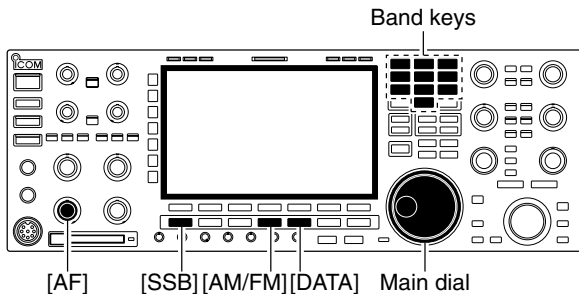
- ① Set the desired frequency band and select FM mode.
- ② Push [TONE] to turn the tone squelch function ON.
 - “TSQL” appears
- ③ Push [TONE] for 1 sec. to tone frequency set mode.
- ④ Push [F-1•▲] or [F-2•▼] to select T-SQL TONE item.
- ⑤ Rotate the main dial to select the desired tone squelch frequency.
 - Push [F-4•DEF] for 1 sec. to select the default setting.
- ⑥ Push [EXIT/SET] to return to the previous indication.
- ⑦ When the received signal includes a matching tone, squelch opens and the signal can be heard.
 - When the received signal's tone does not match, tone squelch does not open, however, the S-indicator shows signal strength.
 - To open the squelch manually, push [XFC].
- ⑧ Operate the transceiver in the normal way.
- ⑨ To cancel the tone squelch, push [TONE] to clear “TSQL.”

• Available tone frequencies

(unit: Hz)

67.0	85.4	107.2	136.5	165.5	186.2	210.7	254.1
69.3	88.5	110.9	141.3	167.9	189.9	218.1	
71.9	91.5	114.8	146.2	171.3	192.8	225.7	
74.4	94.8	118.8	151.4	173.8	196.6	229.1	
77.0	97.4	123.0	156.7	177.3	199.5	233.6	
79.7	100.0	127.3	159.8	179.9	203.5	241.8	
82.5	103.5	131.8	162.2	183.5	206.5	250.3	

■ Data mode (AFSK) operation



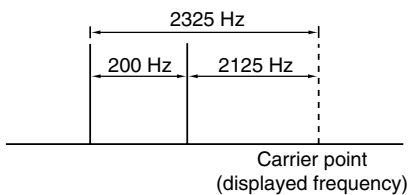
When operating AMTOR or PACKET with your TNC and/or PC software, consult the manual that comes with the TNC and/or the software.

- ① Connect a PC and TNC to the transceiver. (p. 2-8)
- ② Push a band key to select the desired band.
- ③ Push [SSB] or [AM/FM] to select the desired operating mode.
- ④ Push [DATA] to turn data mode ON.
 - One of “-D1,” “-D2” or “-D3” is additionally appears.
 - During data mode selection, pushing [DATA] for 1 sec. to select data mode 1 (D1), 2 (D2) and 3 (D3) in sequence.
- ⑤ Rotate the main dial to tune into the desired signal and decoded correctly.
 - Also use the tuning indicator of the TNC or software.
 - During SSB data mode, 1/4 tuning function can be used for critical tuning.
- ⑥ Operate the PC (software) or TNC to transmit.
 - When operating in SSB data mode, adjust the TNC output level so that the ALC meter reading doesn't go outside the ALC zone.

NOTE: When SSB data mode is selected, the audio input from the [ACC1] (pin 6) is used for transmission instead of [MIC]'s.

The fixed condition is used for SSB data transmission as follow.

- [COMP] : OFF
- Tx bandwidth : MID
- Tx Tone (Bass) : 0
- Tx Tone (Trebles): 0



✓ For your information

Carrier point frequency is displayed when SSB data mode is selected.

See the diagram left for the tone-pair example.