THE TRANSCEIVER

IC-7850

Instruction Manual

A-7199H-1EX-??
Printed in Japan

FOREWORD

Congratulations! You are the owner of the world's most advanced amateur HF/50 MHz transceiver— IC-7850. The IC-7850 is designed and built with Icom's superior technology and craftsmanship. With proper care, this product should provide you with years of trouble-free operation.

We would like to take a few moments of your time to thank you for making the IC-7850 your radio of choice, and hope you agree with Icom's philosophy of "technology first." Many hours of research and development went into the design of your IC-7850.

◇ *FEATURES*

- ❍ *Ultimate receiver performance: third-order intercept (IP3) of +40 dBm (HF bands only), both main and sub*
- ❍ *Independent identical receiver circuits for main and sub bands provide perfect no-compromise Dualwatch operation*
- ❍ *Built-in Baudot RTTY and PSK31 modulator/demodulator and direct PC keyboard connection capability for RTTY and PSK31 operation without a PC*
- ❍ *Upgraded real-time spectrum scope— center frequency and fix frequency modes, plus mini-scope displays*

IMPORTANT

READ THIS INSTRUCTION MANUAL CAREFULLY before attempting to operate the transceiver.

SAVE THIS INSTRUCTION MANUAL. This manual contains important safety and operating instructions for the IC-7850.

EXPLICIT DEFINITIONS

WORD	DEFINITION
⚠ **DANGER!**	Personal death, serious injury or an explosion may occur.
⚠ **WARNING!**	Personal injury, fire hazard or electric shock may occur.
CAUTION	Equipment damage may occur.
NOTE	Recommended for optimum use. No risk of personal injury, fire or electric shock.

TRADEMARKS

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PRECAUTIONS

⚠ **DANGER HIGH RF VOLTAGE! NEVER** attach an antenna or internal antenna connector during transmission. This may result in an electrical shock or burn.

⚠ **WARNING! NEVER** operate the transceiver with a headset or other audio accessories at high volume levels. Hearing experts advise against continuous high volume operation. If you experience a ringing in your ears, reduce the volume or discontinue use.

⚠ **WARNING! NEVER** operate or touch the transceiver with wet hands. This may result in an electric shock or damage to the transceiver.

⚠ **WARNING! NEVER** let metal, wire or other objects protrude into the transceiver or into connectors on the rear panel. This may result in an electric shock.

⚠ **WARNING!** Immediately turn the transceiver power OFF and remove the power cable if it emits an abnormal odor, sound or smoke. Contact your Icom dealer or distributor for advice.

CAUTION: NEVER put the transceiver in any unstable place (such as on a slanted surface or vibrated place). This may cause injury and/or damage to the transceiver.

CAUTION: NEVER change the internal settings of the transceiver. This may reduce transceiver performance and/or damage to the transceiver.

In particular, incorrect settings for transmitter circuits, such as output power, idling current, etc., might damage the expensive final devices.

The transceiver warranty does not cover any problems caused by unauthorized internal adjustment.

CAUTION: NEVER block any cooling vents on the top, rear or bottom of the transceiver.

CAUTION: NEVER expose the transceiver to rain, snow or any liquids.

CAUTION: NEVER install the transceiver in a place without adequate ventilation. Heat dissipation may be reduced, and the transceiver may be damaged.

CAUTION: The line-voltage receptacle must be near the transceiver and must be easily accessible. Avoid extension cords.

CAUTION: The transceiver weighs approximately 25 kg (55 lb). Always have two people available to carry, lift or turn over the transceiver.

DO NOT use harsh solvents such as benzine or alcohol when cleaning, as they can damage the transceiver's surfaces.

DO NOT push the PTT switch when you don't actually desire to transmit.

DO NOT use or place the transceiver in areas with temperatures below ±0°C (+32°F) or above +50°C (+122°F).

DO NOT place the transceiver in excessively dusty environments or in direct sunlight.

DO NOT place the transceiver against walls or putting anything on top of the transceiver. This may overheat the transceiver.

Always place unit in a secure place to avoid inadvertent use by children.

BE CAREFUL! If you use a linear amplifier, set the transceiver's RF output power to less than the linear amplifier's maximum input level, otherwise, the linear amplifier will be damaged.

BE CAREFUL! NEVER touch the transceiver top cover when transmitting continuously for long periods. The top cover may be hot.

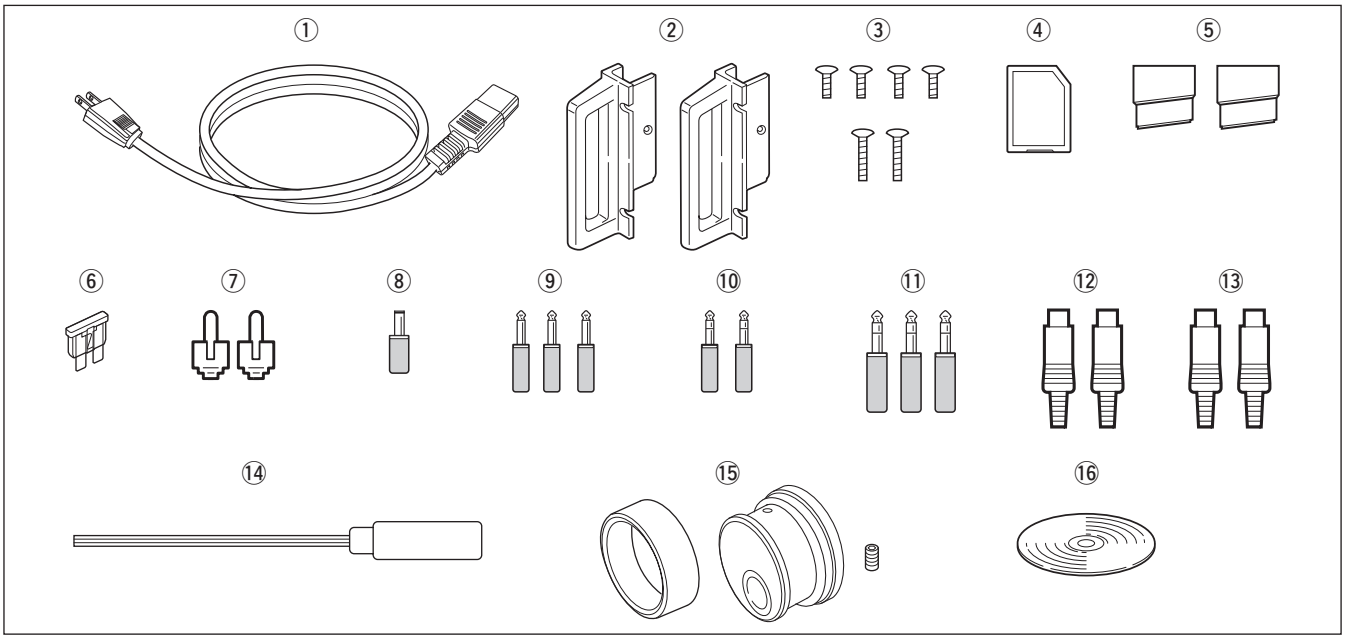
Use Icom microphones only (supplied or optional). Other manufacturers' microphones have different pin assignments, and connection to the IC-7850 may damage the transceiver or microphone.

The LCD display may have cosmetic imperfections that appear as small dark or light spots. This is not a malfunction or defect, but a normal characteristic of LCD displays.

During maritime mobile operation, keep the transceiver and microphone as far away as possible from the magnetic navigation compass to prevent erroneous indications.

Turn [I/O] switch (on the rear panel) OFF and/or disconnect the AC power cable from the AC outlet when you will not use the transceiver for long period of time.

SUPPLIED ACCESSORIES



① AC power cable*1 1
② Rack mounting handles ..... 1 pair
③ Screws for rack mounting handles ..... 1 set
④ SD card 1
⑤ Stands ..... 1 pair
⑥ Spare fuse (2 A) 1
⑦ RCA plugs 2
⑧ DC power plug 1
⑨ 2-conductor 1/8″ plugs 3
⑩ 3-conductor 1/8″ plugs 2
⑪ 3-conductor 1/4″ plugs 3
⑫ ACC plugs (7-pin) 2
⑬ ACC plugs (8-pin) 2
⑭ Hexagonal driver 1
⑮ Main dial*2 1
⑯ CD (Instruction Manual) 1

*1 May differ from that shown depending on the version
*2 See the "Information—About the Main Dial" leaflet that comes with the IC-7850, for dial attachment details.

FCC INFORMATION

FOR CLASS B UNINTENTIONAL RADIATORS

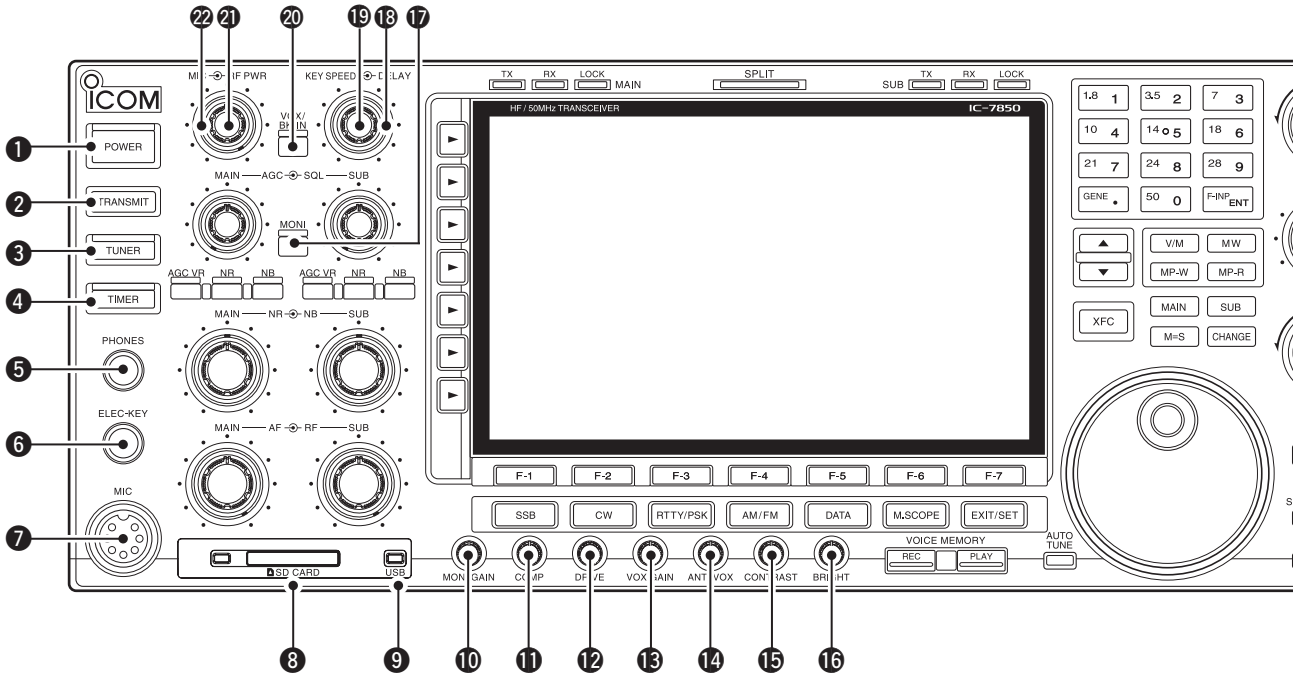
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

CAUTION: Changes or modifications to this device, not expressly approved by Icom Inc., could void your authority to operate this device under FCC regulations.

PANEL DESCRIPTION Section 1

■ Front panel



❶ POWER KEY [POWER] (p. ?3-2)

Turn the internal power supply ON in advance. The internal power supply switch is located on the rear panel. (p. 3-2)

➥ Push to turn the transceiver power ON.
- The [POWER] indicator above this key lights blue when powered ON.

➥ Hold down for 1 second to turn the transceiver power OFF.
- The [POWER] indicator lights orange when the transceiver is OFF when the internal power supply is switched ON.

❷ TRANSMIT KEY [TRANSMIT]

Selects transmitting or receiving.
- The [TX] indicator lights red while transmitting and the [RX] indicator lights green when the squelch is open.

❸ ANTENNA TUNER KEY [TUNER] (p. ?10-5)

➥ Turns the internal antenna tuner ON or OFF (bypass) when pushed momentarily.
- The [TUNER] indicator above this key lights white when the tuner is turned ON, goes off when tuner is turned OFF (bypassed).

➥ Tunes the antenna tuner manually when held down for 1 second.
- The [TUNER] indicator blinks red during manual tuning.
- When the tuner cannot tune the antenna, the tuning circuit is bypassed automatically after 20 seconds.

❹ TIMER KEY [TIMER] (p. ?11-4)

➥ Push to turn ON or OFF the sleep or daily timer function.
- The [TIMER] indicator above this key lights white when the timer is in use.

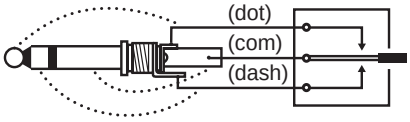
➥ Hold down for 1 second to enter the Timer set screen.

❺ HEADPHONE JACK [PHONES]

Accepts standard stereo headphones.
- Output power: 50 mW with an 8 Ω load.
- When headphones are connected, the internal speaker or connected external speaker does not function.

❻ ELECTRONIC KEYER JACK [ELEC-KEY] (p. ?2-4)

Accepts a paddle to activate the internal electronic keyer for CW operation.
- You can select internal electronic keyer, bug-key or straight key operation in the Keyer set screen. (p. ?4-12)
- A straight key jack is located on the rear panel. See [KEY] on p. ?1-13.
- Keyer polarity (dot and dash) can be reversed in the Keyer set screen. (p. ?4-12)
- 8-channel memory keyer is available for your convenience. (p. ?4-8)



❼ MICROPHONE CONNECTOR [MIC]
Accepts an optional microphone.
- See p. ?15-4 for appropriate microphones.
- See p. ?2-10 for microphone connector information.

❽ SD CARD SLOT [SD CARD] (p. ??-?)
Insert the supplied SD card for both reading/storing a wide variety of the transceiver's information and data.
- The indicator beside the slot lights or blinks when the transceiver reads or writes to the card.
- Push the card to remove the card card.

❾ USB INDICATOR [USB]
Lights while accessing the USB flash drive inserted to the [USB A] port.

❿ MONITOR GAIN CONTROL [MONI GAIN] (p. ?6-4)
Adjusts the transmit IF signal monitor level.

⓫ COMPRESSION LEVEL CONTROL [COMP] (p. ?6-5)
Adjusts the speech compression level in SSB.

⓬ DRIVE GAIN CONTROL [DRIVE] (p. ?3-13)
Adjusts the transmitter level at the driver stage. Activate in all modes (except SSB with [COMP] OFF).

⓭ VOX GAIN CONTROL [VOX GAIN] (p. ?6-2)
Adjusts the transmit/receive switching threshold level for VOX operation.

⓮ ANTI VOX CONTROL [ANTI VOX] (p. ?6-2)
Adjusts the VOX deactivate level to prevent unwanted VOX activation from the speaker audio.

⓯ DISPLAY CONTRAST CONTROL [CONTRAST]
Adjusts the display contrast.

⓰ DISPLAY BRIGHTNESS CONTROL [BRIGHT]
Adjusts the display brightness.

⓱ MONITOR KEY [MONI] (p. ?6-4)
Monitors your transmitted IF signal.
- The CW sidetone functions regardless of [MONI] key setting in CW mode.
- The [MONI] indicator above this key lights white while the function is activated.

⓲ BREAK-IN DELAY CONTROL [DELAY] (p. ?6-3)
Adjusts the transmit-to-receive switching delay time for CW semi-break-in operations.

⓳ ELECTRONIC CW KEYER SPEED CONTROL [KEY SPEED] (p. ?4-4)
Adjusts the internal electronic CW keyer's speed.
- 6 wpm (minimum) to 48 wpm (maximum) can be set.
- The keyer's speed is displayed.

⓴ VOX/BREAK-IN KEY [VOX/BK-IN]
➥ Push to turn the VOX function ON or OFF in the SSB, AM, or FM mode operation. (p. ?6-2)
➥ Push to turn the break-in function ON (Semi break-in, Full break-in) or OFF during CW mode operation. (p. ?6-3)
➥ Hold down for 1 second to enter VOX set screen. (p. ?6-2)

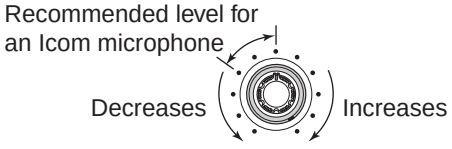
✔ What is the VOX function?
The VOX function (voice operated transmission) starts transmission without pushing the transmit key or PTT switch when you speak into the microphone; then, automatically returns to receive when you stop speaking.

✔ What is the break-in function?
The break-in function toggles between transmit and receive with CW keying. Full break-in (QSK) can monitor the receive signal during keying.

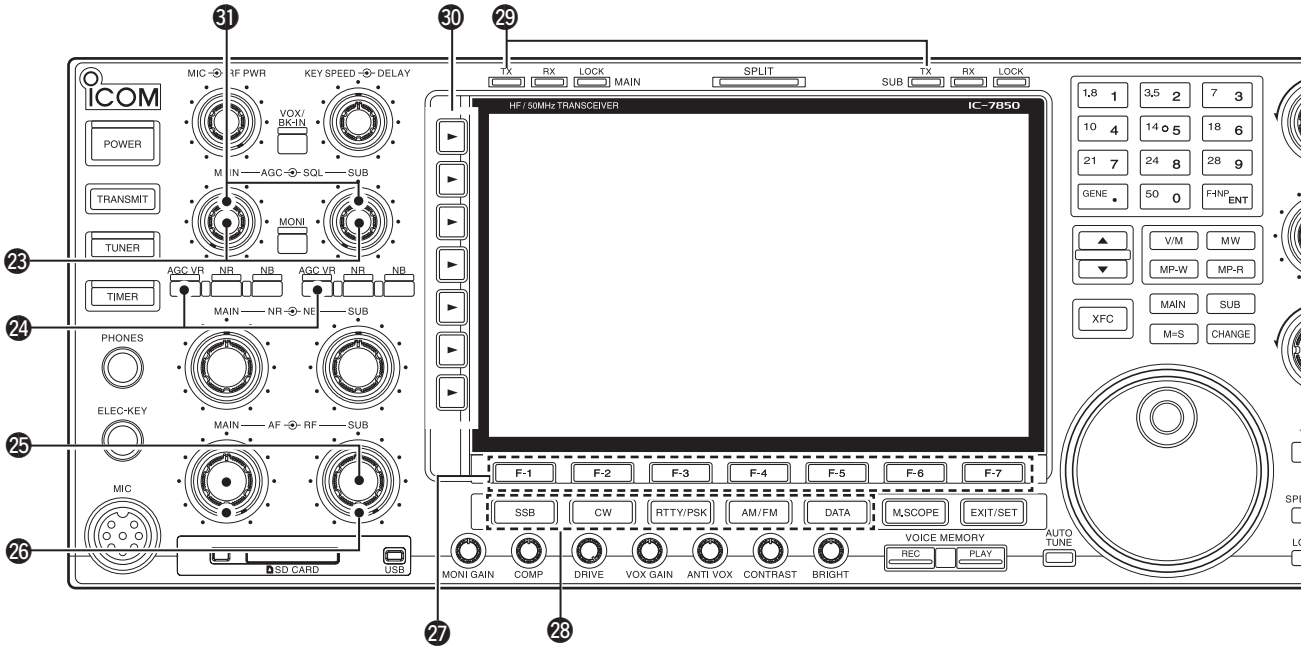
㉑ RF POWER CONTROL [RF PWR] (p. ?3-12)
Continuously varies the RF output power from minimum (5 W*) to maximum (200 W*).
*AM mode: 5 W to 50 W
- The output power is displayed.

㉒ MIC GAIN CONTROL [MIC]
Adjusts microphone gain.
- The transmit audio tone in the SSB, AM, or FM mode can be adjusted independently in the Level set screen. (p. ?12-4)

✔ How to set the microphone gain.
Set the [MIC] control so that the ALC meter swings within the ALC range during normal voice level transmission in the SSB or AM mode. (The ALC meter must be selected.)



■ Front panel (Continued)



㉓ AGC CONTROL [AGC] (p. ?5-12)
Adjusts the continuously-variable AGC circuit time constant.
- To use [AGC] control, push the appropriate band's [AGC VR] ([AGC VR] indicator lights white).

㉔ AGC VOLUME KEY [AGC VR] (p. ?5-12)
➥ Push to toggle [AGC] control usage ON or OFF.
- Use [AGC] control to set the AGC time constant when switched ON.
- The [AGC VR] indicator above this key lights white when the control is ON.

➥ Turns the AGC function OFF when held down for 1 second.

㉕ AF CONTROL [AF]
Varies the audio output level of the speaker or headphones.

㉖ RF GAIN CONTROL [RF] (p. ?3-9)
Adjusts the RF gain level.
While rotating the RF gain control, you may hear noise. This comes from the DSP unit and does not indicate a malfunction.

㉗ FUNCTION KEYS [F-1]–[F-7]
Push to select the function indicated in the display above these keys.
- Functions vary depending on the operating condition.

㉘ MODE KEYS
Selects the desired mode. (p. ?3-8)
- Announces selected mode via the speech synthesizer. (p. ?12-17)

SSB ➥ Selects USB or LSB modes alternately.

CW ➥ Selects CW or CW-R (CW reverse) modes alternately.

RTTY/PSK ➥ Toggles between RTTY and PSK mode.
➥ Toggles between RTTY or RTTY-R (RTTY reverse) mode when held down for 1 second in RTTY mode.
➥ Toggles between PSK or PSK-R (PSK reverse) mode when held down for 1 second in PSK mode.

AM/FM ➥ Selects AM or FM modes alternately.

DATA ➥ Selects SSB, AM or FM data mode (USB-D, LSB-D, AM-D, FM-D) when pushed in SSB, AM or FM mode, respectively.
➥ Toggles between D1, D2 or D3 when held down for 1 second.

㉙ TRANSMIT INDICATOR [TX]
Lights red while transmitting.
- SUB band's [TX] indicator lights only when in split operation.

㉚ MULTI-FUNCTION KEYS

Push to select the functions indicated in the display to the right of these keys.

• Functions vary depending on the operating condition.

➥ Selects the antenna connector from ANT1, ANT2, ANT3 or ANT4 when pushed. (p. ?10-2)

➥ Displays antenna selection memory when held down for 1 second.

• When the receive antenna is activated, the antenna which is connected to [ANT4] is used for receive only.

When a transverter is in use, this [ANT] does not function and "TRV" appears.

➥ Selects RF power (Po), SWR, ALC, COMP, V_D or I_D metering during transmit. (p. ?3-10)

➥ Turns the multi-function digital meter ON or OFF when held down for 1 second. (p. ?3-10)

➥ Selects one of two receive RF preamps or bypasses them. (p. ?5-10)

• "P.AMP1" activates 10 dB preamp.

• "P.AMP2" activates 16 dB high-gain preamp.

✔ What is the preamp?

The preamp amplifies received signals in the front end circuit to improve S/N ratio and sensitivity. Select "P.AMP1" or "P.AMP2" when receiving weak signals.

➥ Selects 6 dB, 12 dB or 18 dB attenuator when pushed. (p. ?5-10)

➥ Selects 3 dB, 6 dB, 9 dB, 12 dB, 18 dB, or 21 dB attenuator when held down for 1 second. (p. ?5-10)

✔ What is the attenuator?

The attenuator prevents a desired signal from distorting when very strong signals are near the desired frequency, or when very strong electric fields, such as from a broadcasting station, are near your location.

➥ Activates and selects fast, middle or slow AGC time constant when pushed. (p. ?5-12)

• In FM mode, only "FAST" is available.

➥ Enters the AGC set mode when held down for 1 second. (p. ?5-12)

AGC time constant can be set between 0.1 to 8.0 second (depends on mode), or turned OFF. When AGC is "OFF," the S-meter does not function.

✔ What is the AGC?

The AGC controls receiver gain to produce a constant audio output level, even when the received signal strength varies dramatically. Select "FAST" for tuning and then select "MID" or "SLOW" depending on the receiving condition.

➥ Turns the speech compressor ON or OFF in the SSB mode. (p. ?6-5)

➥ Selects the narrow, middle or wide compression when held down for 1 second.

✔ What is the speech compressor?

The speech compressor compresses the transmitter audio input to increase the average audio output level, to increase talk power. This function is effective for long-distance communication or when propagation conditions are poor.

➥ Turns the ¼-speed tuning function ON or OFF in the SSB data, CW, RTTY and PSK modes. (p. ?3-6)

• ¼ function sets dial rotation to ¼ of normal speed for fine tuning.

➥ Toggles between the tone encoder, tone squelch function and no-tone operation when pushed in the FM mode. (pp. ?4-32, 4-33)

➥ Enters the tone set mode when held down for 1 second in the FM mode. (pp. ?4-32, 4-33)

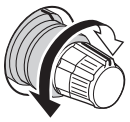
➥ Turns the voice squelch control function ON or OFF; useful for scanning. (p. ?9-3)

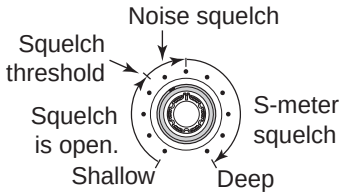
㉛ SQUELCH CONTROL [SQL] (p. ?3-9)

Adjusts the squelch threshold level. The squelch removes noise output from the speaker (closed condition) when no signal is received.

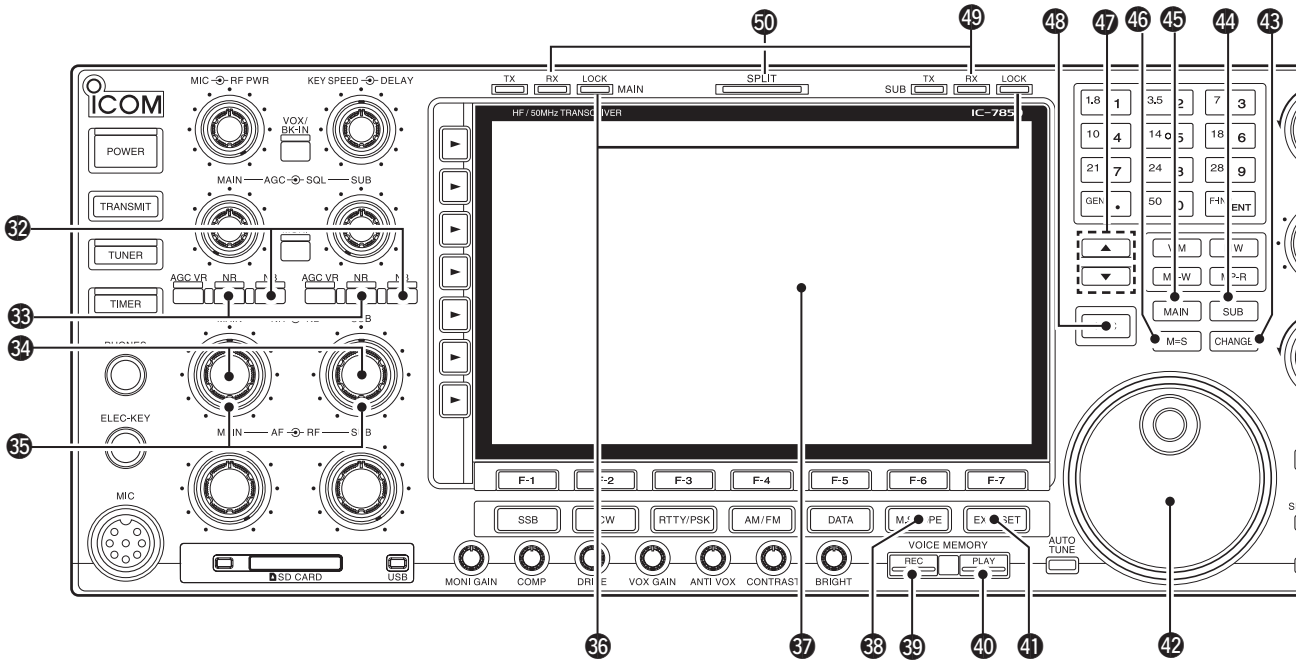
• The squelch is particularly effective for FM. It is also available for other modes.

• 11 to 12 o'clock position is recommended for any setting of the [SQL] control.





■ Front panel (Continued)



32 NOISE BLANKER KEY [NB] (p. ?5-18)
➥ Turns the noise blanker ON or OFF when pushed. The noise blanker reduces pulse-type noise such as that generated by automobile ignition systems. This function cannot be used for FM, or non-pulse-type noise.
• The [NB] indicator above this key lights white while the function is activated.
➥ Enters blank-width set mode when held down for 1 second.

33 NOISE REDUCTION KEY [NR] (p. ?5-19)
Push to switch the DSP noise reduction ON or OFF.
• The [NR] indicator above this key lights white when the function is activated.

34 NOISE REDUCTION LEVEL CONTROL [NR] (p. ?5-19)
Adjusts the DSP noise reduction level when the noise reduction is in use. Set for maximum readability.
• To use this control, push the appropriate band's [NR].

35 NOISE BLANKER CONTROL [NB] (p. ?5-18)
Adjust the noise blanker threshold level.
• To use this control, push appropriate band's [NB] key.

36 LOCK INDICATOR [LOCK] (p. ?5-19)
Lights when the dial lock function is activated.

37 FUNCTION DISPLAY (p. ?1-15)
Shows the operating frequency, function key menus, spectrum scope screen, memory channel screen, set mode settings, and so on.

38 MINI SPECTRUM SCOPE KEY [M.SCOPE] (p. ?5-4)
➥ Push to turn ON or OFF the mini spectrum scope screen.
• The mini spectrum scope screen can be displayed with another screen, such as memory or set mode screen, simultaneously.
➥ Hold down for 1 second to turn ON the spectrum scope screen.

39 VOICE MEMORY RECORD KEY [REC]
➥ Push to store the previous received signal for the preset time period. (p. ?7-7) INSTANT REPLAY
• The preset time period can be set in the Voice set screen. (p. ?7-13)
➥ Hold down for 1 second to record a QSO (Communication) audio onto a memory device. (p. ?7-2)
• Hold down this key for 1 second again to stop recording.
• The recorded memory device can be changed in the Voice set screen. (p. ?7-13)

㊵ VOICE MEMORY PLAY BACK KEY [PLAY] (p. ?7-8)
➥ Push to playback last 5 seconds of the instant replay memory.
• The playback time can be changed in the Voice set screen.
➥ Hold down for 1 second to playback all of the instant replay memory.
• The record time can be changed in the Voice set screen.

㊶ EXIT/SET KEY [EXIT/SET]
➥ Push to exit, or return to the previous screen indication during spectrum scope, memory, scan or set screen display.
➥ Hold down for 1 second to display the Set mode screen.

㊷ MAIN DIAL
Changes the displayed frequency (Main band), selects set mode option, and so on.

㊸ MAIN/SUB CHANGE KEY [CHANGE]
Toggles the frequency and selected memory channel between main and sub readouts when pushed.
• Toggles between transmit frequency and receive frequency when the split frequency function is ON. (p. ?6-6)

㊹ SUB BAND ACCESS KEY [SUB]
Selects the sub readout.
• The sub readout frequency is clearly displayed. The main readout functions only during split operation or dualwatch.

㊺ MAIN BAND ACCESS KEY [MAIN]
Selects the main readout.
• The main readout frequency is clearly displayed. The sub readout functions only during split operation or dualwatch.

㊻ MAIN/SUB EQUALIZING KEY [M=S]
Hold down for 1 second to equalize the sub readout frequency to the main readout frequency.

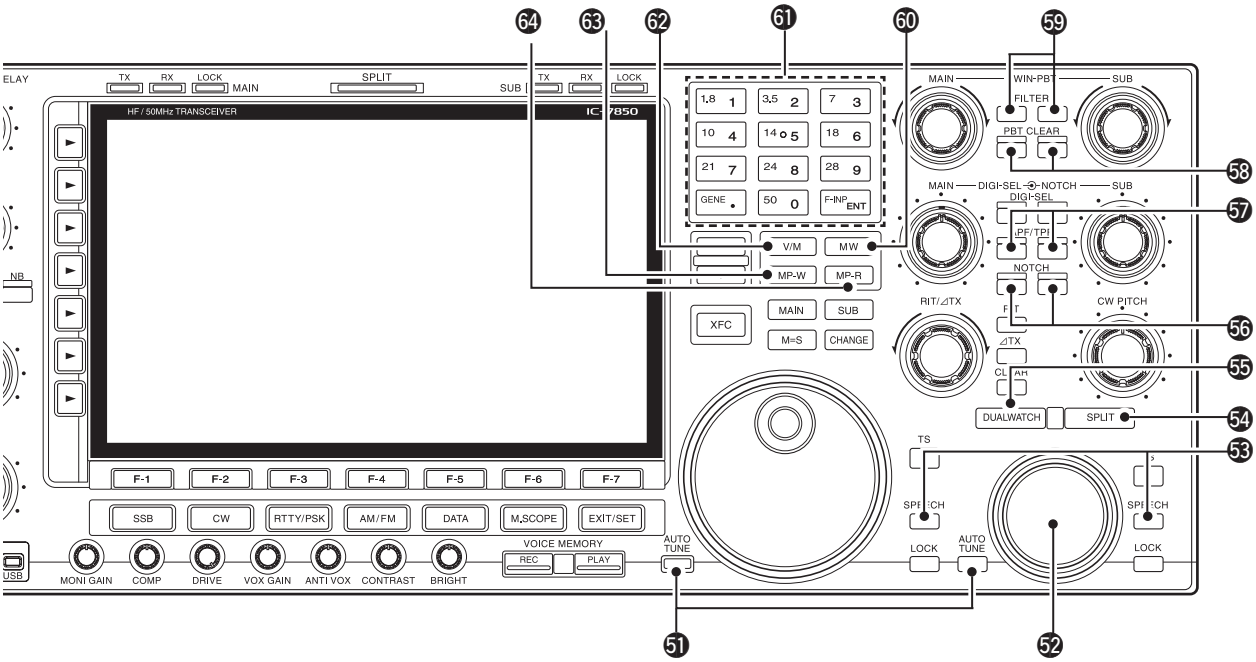
㊼ MEMORY CHANNEL UP/DOWN KEYS [▲]/[▼] (p. ?8-2)
Push to select the desired memory channel.
• Memory channels can be selected both in VFO and memory modes.

㊽ TRANSMIT FREQUENCY CHECK KEY [XFC] (p. ?6-6)
Monitors the transmit frequency (including ⊿TX frequency offset) when held down during split frequency operation.
• While holding down this key, the transmit frequency can be changed with the main dial, keypad, memo pad or [▲]/[▼] keys.
• When the split lock function is turned ON, pushing [XFC] cancels the dial lock function. (p. ?6-7)

㊾ RECEIVE INDICATOR [RX]
Lights green while receiving a signal and when the squelch is open.

㊿ SPLIT OPERATION INDICATOR [SPLIT]
Lights during split frequency operation.

■ Front panel (Continued)



51 AUTOMATIC TUNING KEY [AUTO TUNE]
Turns the automatic tuning function ON or OFF in CW and AM modes.

> ***IMPORTANT!***
> When receiving a weak signal, or receiving a signal with interference, the automatic tuning function may tune the receiver to an undesired signal.

52 SUB DIAL
Changes the displayed frequency in sub band.

53 SPEECH KEY [SPEECH] (p. ?13-3)
➥ Push to announce the S-meter indication and the selected readout frequency.
• You can change the speech language, speech speed, and speech contents in the Others set screen. (p. ?12-15)
➥ Hold down for 1 second to additionally announce the selected operating mode.

54 SPLIT KEY [SPLIT] (p. ?6-6)
➥ Push to turn ON or OFF the split function.
➥ Hold down for 1 second to turn the split function ON and equalizes the sub readout frequency to the main readout in non-FM modes, and then sets the sub readout for frequency input mode. (Quick split function)
• In the FM mode, the sub readout frequency is shifted the preset frequency offset from the main readout frequency. (pp. ?12-15, 12-16)
• The quick split function can be turned OFF in the Others set screen. (p. ?12-15)
➥ After entering a frequency offset, push to turn the split function ON, and the sub readout frequency is shifted the amount of frequency from the main readout frequency.

55 DUALWATCH KEY [DUALWATCH] (p. ?5-17)
➥ Turns the dualwatch function ON or OFF when pushed.
➥ Turns the dualwatch function ON, and equalizes the main/sub readout frequency to the sub/main readout when held down for 1 second. (Quick dualwatch function)
• The quick dualwatch function can be turned OFF in the Others set screen. (p. ?12-15)

56 NOTCH KEY [NOTCH] (p. ?5-20)
➥ Selects the notch function between auto, manual or OFF in SSB and AM modes.
➥ Turns the manual notch function ON or OFF when pushed in CW, RTTY and PSK31 mode.
➥ Turns the auto notch function ON or OFF when pushed in FM mode.
• "MN" appears when manual notch is in use.
• "AN" appears when auto notch is in use.
➥ Selects the manual notch characteristics from wide, middle or narrow when held down for 1 second.

✔ What is the notch function?
The notch function eliminates unwanted CW or AM carrier tones while preserving the desired voice signal. The DSP circuit automatically adjusts the filtering frequency to effectively eliminate unwanted tones.

57 AUDIO PEAK FILTER/TWIN PEAK FILTER KEY [APF/TPF]

During CW mode operation (p. ?4-6)

➥ Push to turn the audio peak filter ON or OFF.
- "APF" appears when audio peak filter is in use.

➥ Hold down for 1 second to select the APF passband width from WIDE, MID and NAR or from 320, 160 and 80 Hz depending on APF type setting.

During RTTY mode operation (p. ?4-14)

➥ Push to turn the twin peak filter ON or OFF.
- "TPF" appears when twin peak filter is in use.

58 PBT CLEAR KEY [PBT CLEAR] (p. ?5-13)

Clears the PBT settings when held down for 1 second.
- The [PBT CLEAR] indicator above this key lights when PBT is in use.

59 FILTER KEY [FILTER] (p. ?5-14)

➥ Selects one of 3 IF filter settings.

➥ Enters the filter set screen when held down for 1 second.

60 MEMORY WRITE KEY [MW] (p. ?8-4)

Stores the selected readout frequency and operating mode into the displayed memory channel when held down for 1 second.
- This function is available both in VFO and memory modes.

61 KEYPAD

➥ Pushing a key selects the operating band.
- [GENE•.] selects the general coverage band.

➥ Pushing the same key 2 or 3 times calls up other stacked frequencies in the band. (p. ?3-4)
- Icom's triple band stacking register memorizes 3 frequencies in each band.

➥ After pushing [F-INP•ENT], enters a frequency or memory channel. Pushing [F-INP•ENT] or [▲/[▼] is necessary to end. (pp. ?3-5, 8-2)
- e.g. to enter 14.195 MHz, push [F-INP] [1.8•1] [10•4] [GENE •] [1.8•1] [28•9] [14•5] [F-INP•ENT].

62 VFO/MEMORY KEY [V/M]

➥ Toggles the selected readout operating mode between the VFO and memory when pushed. (pp. ?3-3, 8-2)

➥ Transfers the memory contents to VFO when held down for 1 second. (p. ?5-5)

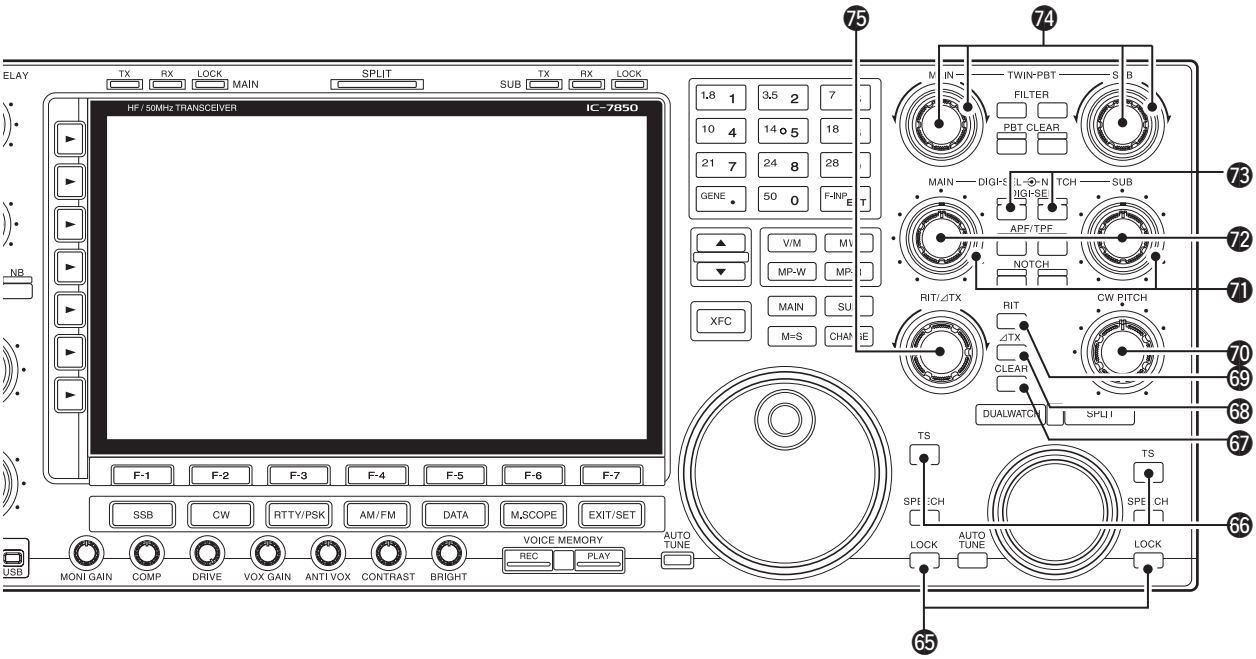
63 MEMO PAD-WRITE KEY [MP-W] (p. ?8-7)

Programs the selected readout frequency and operating mode into a memo pad.
- The 5 most recent entries remain in memo pads.
- The memo pad quantity can be expanded from 5 to 10 in the Others set screen. (p. ?12-18)

64 MEMO PAD-READ KEY [MP-R] (p. ?8-7)

Each push calls up a frequency and operating mode in a memo pad. The 5 (or 10) most recently programmed frequencies and operating modes can be recalled, starting from the most recent.
- The memo pad quantity can be expanded from 5 to 10 in Others set screen. (p. ?12-18)

■ Front panel (Continued)



65 LOCK KEY [LOCK] (p. ?5-19)
Push to switch the dial lock function ON or OFF.

66 QUICK TUNING KEY [TS]
➥ Turns the quick tuning step ON or OFF. (p. ?3-6)
- While the quick tuning indicator, "▼," is displayed above the frequency indication, the frequency can be changed in programmed kHz steps.
- 0.1, 1, 5, 9, 10, 12.5, 20 and 25 kHz steps are available for each operating mode independently.

➥ When the quick tuning step is OFF, held down for 1 second to turn the 1 Hz tuning step ON or OFF. (p. ?3-7)
➥ When the quick tuning step is ON, hold down for 1 second to enter the Quick tuning step set screen. (p. ?3-6)

67 CLEAR KEY [CLEAR] (pp. ?5-11, 6-4)
Clears the RIT/⊿TX shift frequency when held down for 1 second or when pushed momentarily, depending on the quick RIT/⊿TX clear function setting (p. ?12-18).

68 ⊿TX KEY [⊿TX] (p. ?6-4)
➥ Turns the ⊿TX function ON or OFF when pushed.
- Use [RIT/⊿TX] control to vary the ⊿TX frequency.

➥ Adds the ⊿TX shift frequency to the operating frequency when held down for 1 second.

✔ What is the ⊿TX function?

⊿TX shifts the transmit frequency without shifting the receive frequency. This is useful for simple split frequency operation in CW, etc.

69 RIT KEY [RIT] (p. ?5-11)
➥ Turns the RIT function ON or OFF when pushed.
- Use [RIT/⊿TX] control to vary the RIT frequency.

➥ Adds the RIT shift frequency to the operating frequency when held down for 1 second.

✔ What is the RIT function?

Receiver incremental tuning (RIT) shifts the receive frequency without shifting the transmit frequency.

This is useful for fine tuning stations calling you on off-frequency or when you prefer to listen to slightly different-sounding voice characteristics, etc.

70 CW PITCH CONTROL [CW PITCH] (p. ?4-5)
Shifts the received CW audio pitch and the CW side tone pitch without changing the operating frequency.

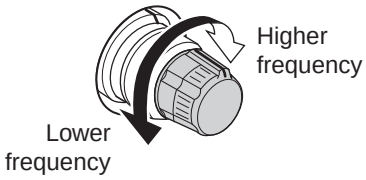
71 MANUAL NOTCH FILTER CONTROL [NOTCH] (p. ?5-20)
Varies the "valley" frequency of the manual notch filter to reject an interfering signal while the manual notch function is ON.
- Notch filter center frequency:
  SSB : –1060 Hz to 4040 Hz
  CW : CW pitch freq. + 2540 Hz to CW pitch freq. –2540 Hz
  AM : –5100 Hz to 5100 Hz

⓬ DIGITAL RF SELECTOR CONTROL [DIGI-SEL]

(for SUB band; p. ?5-20)

Adjusts the digital RF selector center frequency.

- The control can be reassigned as the audio peak filter adjustment (p. ?12-19)



⓭ DIGITAL RF SELECTOR KEY [DIGI-SEL]

(p. ?5-20)

Turns the digital RF preselector ON or OFF.

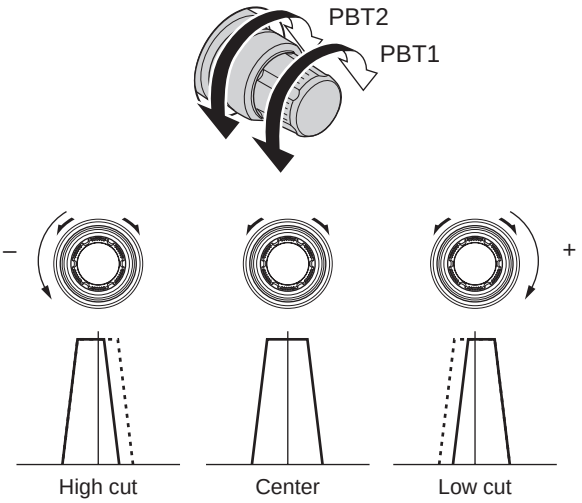
- The [DIGI-SEL] indicator lights white when the preselector is in use.

⓮ PASSBAND TUNING CONTROLS [TWIN PBT]

(p. ?5-13)

Adjusts the receiver's IF filter "passband width" via the DSP.

- Passband width and shift frequency are displayed in the multi-function display.
- Hold down [PBT CLEAR] for 1 second to clear the PBT settings.
- The adjustment range is half of the passband width, and the value is adjustable in 25 Hz steps for the SSB/CW/RTTY/PSK modes, and 100 Hz steps for the AM mode.



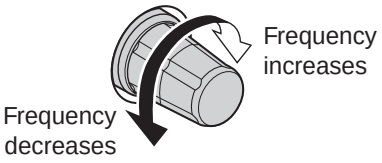
✔ What is the PBT control?

The PBT function electronically modifies the IF passband width to reject interference. This transceiver uses the DSP circuit for the PBT function.

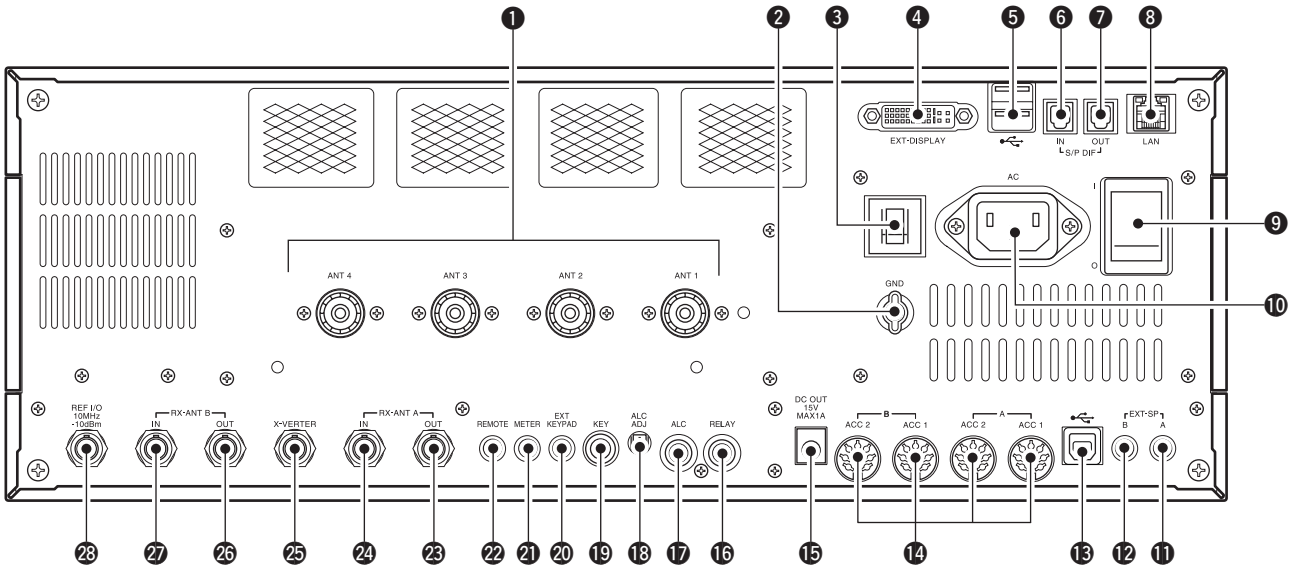
⓯ RIT/ΔTX CONTROL [RIT/ΔTX] (pp. ?5-11, 6-4)

Shifts the receive and/or transmit frequency without changing the transmit and/or receive frequency.

- Rotate the control clockwise to increase the frequency, or rotate the control counterclockwise to decrease the frequency. The RIT or ΔTX functions must be ON.
- The shift frequency range is ±9.999 kHz in 1 Hz steps (or ±9.99 kHz in 10 Hz steps).



■ Rear panel



❶ **ANTENNA CONNECTOR [ANT 1–4]** (p. ?2-4)
Accept a 50 Ω antenna with a PL-259 plug connector.

❷ **GROUND TERMINAL [GND]** (p. ?2-3)
Connect this terminal to a ground to prevent electrical shocks, TVI, BCI and other problems.

❸ **CIRCUIT BREAKER**
Cuts off the AC input when over-current occurs.

❹ **EXTERNAL DISPLAY TERMINAL [EXT-DISPLAY]** (p. ?2-6)
Connects to an external display monitor.
• At least 800×600 pixel display is necessary.

❺ **USB (Universal Serial Bus) PORT [USB A]**
➥ Insert USB flash drive* for both reading and storing a wide variety of the transceiver's information and data.
• The indicator above the connectors lights or blinks when the transceiver reads or writes to the memory data.
• An unmount operation should be performed before removing the USB flash drive* (p.12-29).
➥ Connects a PC keyboard for RTTY and PSK31 operations.
• USB keyboards* are supported.
*: A USB flash drive or USB keyboard is not supplied by Icom.

About the [USB A] connector:
• Supported only USB flash drive, keyboard, mouse or hub.
• **KEEP** the transceiver power OFF when connecting or disconnecting a USB keyboard, mouse or hub.
• **DO NOT** connect the following devices:
- Two or more the same kind of USB devices. (Example: Two USB hubs or two USB mouses)
- Multimedia adapter
- USB HDD
- Larger than 32 GB USB flash drives
- Bluetooth® keyboard or mouse.

❻ **S/P DIF INPUT TERMINAL [S/P DIF– IN]** (p. ?2-6)
❼ **S/P DIF OUTPUT TERMINAL [S/P DIF– OUT]** (p. ?2-6)
Connects external equipment that supports S/P DIF input/output.

❽ **ETHERNET CONNECTOR [LAN]** (p. ?16-6)
Connects to a PC network through a LAN (Local Area Network).

❾ **MAIN POWER KEY [I/O]** (p. ?3-2)
Turns the internal power supply ON or OFF.

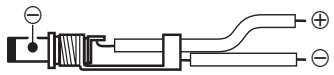
❿ **AC POWER SOCKET [AC]** (p. ?2-4)
Connects the supplied AC power cable to an AC line-voltage receptacle.

⓫ **EXTERNAL SPEAKER JACK MAIN [EXT-SP A]** (p. ?2-5)
⓬ **EXTERNAL SPEAKER JACK SUB [EXT-SP B]** (p. ?2-5)
Connects an external speaker (4–8 Ω), if desired.

⓭ USB PORT [USB B]
USB B type port onnects a PC.
• A USB A/USB B cable is required.

⓮ ACCESSORY SOCKET [A ACC1]
ACCESSORY SOCKET [A ACC2]
ACCESSORY SOCKET [B ACC1]
ACCESSORY SOCKET [B ACC2]
Enable connection of external equipment such as a linear amplifier, an automatic antenna selector/ tuner, a TNC for data communications, etc.
• See page 1-14 for socket information.

⓯ DC OUTPUT JACK [DC OUT] (p. ?2-6)
Outputs a regulated 14 V DC (approximately) for external equipment. Connected in parallel with 13.8 V outputs of [ACC 1] and [ACC 2]. (max. 1 A in total)



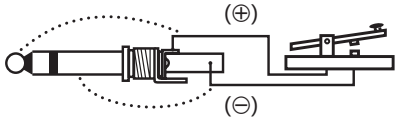
⓰ T/R CONTROL JACK* [RELAY] (p. ?2-7)
Goes to ground when transmitting to control an external unit, such as a non-Icom linear amplifier.

NOTE: T/R control voltage and current must be lower than 16 V DC/0.5 A (or 250 V AC, 200 mA with MOS-FET switching).

⓱ ALC INPUT JACK [ALC] (p. ?2-7)
Connects to the ALC output jack of a non-Icom linear amplifier.

⓲ ALC LEVEL ADJUSTMENT POT* [ALC ADJ]
Adjusts the ALC levels.
No adjustment is required when the ALC output level of the connected non-Icom linear amplifier is 0 to –4 V DC.

⓳ STRAIGHT KEY JACK [KEY] (p. ?2-4)
Accepts a straight key or external electronic keyer with ¼ inch standard plug.
• [ELEC-KEY] on the front panel can be used for a straight key or external electronic keyer. Deactivate the internal electronic keyer in the Keyer set screen. (p. ?4-12)



⓴ EXTERNAL KEYPAD JACK [EXT KEYPAD] (p. ?2-6)
Connects an external keypad for direct voice memory (p. ?7-11), memory keyer (p. ?4-8), RTTY memory (p. ?4-16) or PSK memory (p. ?4-24) transmission.
Transceiver mute control line (both transmit and receive) is also supported.

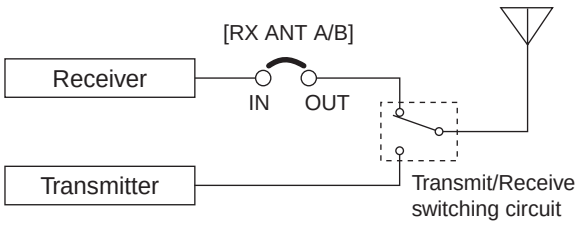
㉑ METER JACK [METER] (p. ?2-6)
Outputs the receiving signal strength level signal, transmit output power, VSWR, ALC, speech compression, VD or ID level for external meter indication.

㉒ CI-V REMOTE CONTROL JACK [REMOTE] (p. ?2-5)
➥ Connects a PC via the optional CT-17 CI-V LEVEL CONVERTER for external control of the transceiver.
➥ Used for transceive operation with another Icom CI-V transceiver or receiver.

㉓ RECEIVE ANTENNA B OUT [RX ANT B– OUT]
㉔ RECEIVE ANTENNA B IN [RX ANT B– IN]
Located between the transmit/receive switching circuit and receiver's RF stage in SUB band (MAIN band during split operation).

Connects an external unit, such as preamplifier or RF filter, using BNC connectors, if desired.

When no external unit is connected, [RX ANT B– OUT] and [RX ANT B– IN] must be shorted with the supplied coaxial cable. (p. ?2-2)



㉕ TRANSVERTER CONNECTOR [X-VERTER] (p. ?2-5)
External transverter input/output connector.
Activated by voltage applied to [ACC 2] pin 6, or when the transverter function is in use. (pp. ?1-14, 4-6)

㉖ RECEIVE ANTENNA A OUT [RX ANT A– OUT]
㉗ RECEIVE ANTENNA A IN [RX ANT A– IN]
Located between the transmit/receive switching circuit and receiver's RF stage in MAIN band (SUB band during split operation).

Connects an external unit, such as preamplifier or RF filter, using BNC connectors, if desired.

When no external unit is connected, [RX ANT A– OUT] and [RX ANT A– IN] must be shorted with the supplied coaxial cable. (p. ?2-2)

㉘ REFERENCE SIGNAL INPUT/OUTPUT TERMINAL [REF I/O]
Inputs/outputs a 10 MHz reference signal.

■ Accessory connector information

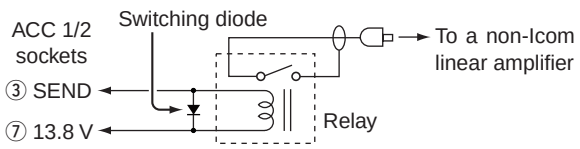
ACC 1	PIN No.	NAME	DESCRIPTION	SPECIFICATIONS
	1	RTTY	Controls RTTY keying	"High level" : More than 2.4 V "High level" : Less than 0.6 V Output current : Less than 2 mA
	2	GND	Connects to ground. Connected in parallel with ACC 2 pin 2.	———
	3	SEND*	Input/output pin. Connected in parallel with ACC 2 pin 3.	An external equipment controls the transceiver. When this pin goes low, the transceiver transmits. Input voltage (High) : 2.0 V to 20.0 V Input voltage (Low) : –0.5 V to 0.8 V Current flow : Maximum 20 mA
				The transceiver outputs a low signal to control external equipment. Output voltage (Low) : Less than 0.1 V Current flow : Maximum 200 mA
	4	MOD	Modulator input. Connects to a modulator.	Input impedance : 10 kΩ Output level : Approximately 100 mV rms
	5	AF	AF detector output. Fixed level, regardless of [AF] position in default settings. (see notes below)	Output impedance : 4.7 kΩ Output level : 100–300 mV rms
	6	SQLS	Squelch output. Grounded when squelch opens.	SQL open : Less than 0.3 V/5 mA SQL closed : More than 6.0 V/100 µA
	7	13.8 V	13.8 V output when power is ON. Connected in parallel with ACC 2 pin 7.	Output current : Max. 1 A
	8	ALC	ALC voltage input. Connected in parallel with ACC 2 pin 5.	Control voltage : –4 V to 0 V Input impedance : More than 10 kΩ

NOTE: If the CW side tone level limit or beep level limit is in use, the CW side tone or beep tone decreases from the fixed level when the [AF] control is rotated above a specified level. (pp. 12-5, 12-6)

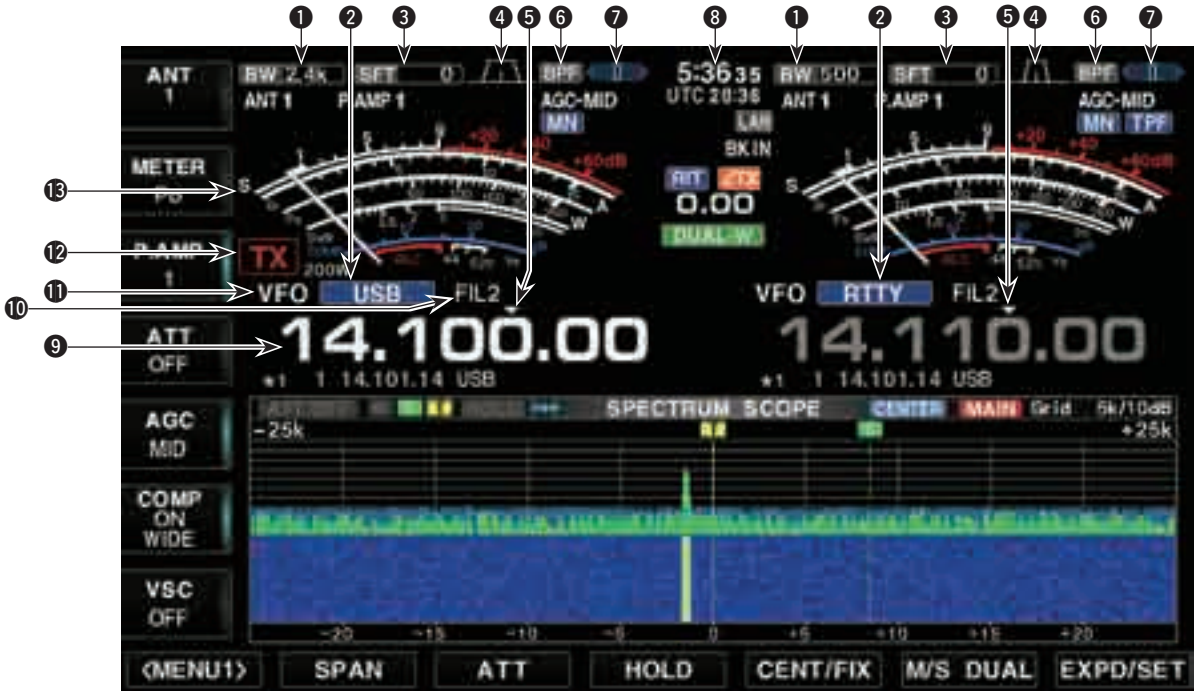
ACC 2	PIN No.	NAME	DESCRIPTION	SPECIFICATIONS
	1	8 V	Regulated 8 V output.	Output voltage : 8 V ±0.3 V Output current : Less than 10 mA
	2	GND	Same as ACC 1 pin 2.	
	3	SEND*	Same as ACC 1 pin 3.	
	4	BAND	Band voltage output. (Varies with amateur band)	Output voltage : 0 V to 8.0 V
	5	ALC	Same as ACC 1 pin 8.	
	6	TRV	Activates [X-VERTER] input/output when "HIGH" voltage is applied	Input impedance : More than 10 kΩ Input voltage : 2 V to 13.8 V
	7	13.8 V	Same as ACC 1 pin 7.	

*When the SEND terminal controls the inductive load (such as a relay), a counter-electromotive force can cause the transceiver's malfunction or damage. To prevent this, we recommend adding a switching diode, such as an "1SS133," on the load side of the circuit to the counter-electromotive force absorption.
When the diode is added, a switching delay of the relay may occur. Be sure to check its switching action before operation.

[Example]



■ LCD display



❶ **BAND WIDTH INDICATOR** (p. 5-13)
Shows the passband width of the IF filter.

❷ **MODE INDICATOR**
Shows the selected mode.

❸ **SHIFT FREQUENCY INDICATOR** (p. 5-13)
Shows the shift frequency of the IF filter.

❹ **PASSBAND WIDTH INDICATOR** (p. 5-13)
Graphically displays the passband width for twin PBT operation and center frequency for IF shift operation.

❺ **QUICK TUNING INDICATOR** (p. 3-6)
Appears when the quick tuning step function is in use.

❻ **BANDPASS FILTER INDICATOR**
Appears when the narrow filter (500 Hz or less) is selected in the CW, RTTY, or PSK mode.

❼ **RTTY TUNING INDICATOR**
Shows the tuning level in RTTY mode.

❽ **CLOCK READOUT**
Shows the current time.

❾ **FREQUENCY READOUTS**
Shows the operating frequency.
• Gray characters are used for non-active readout.

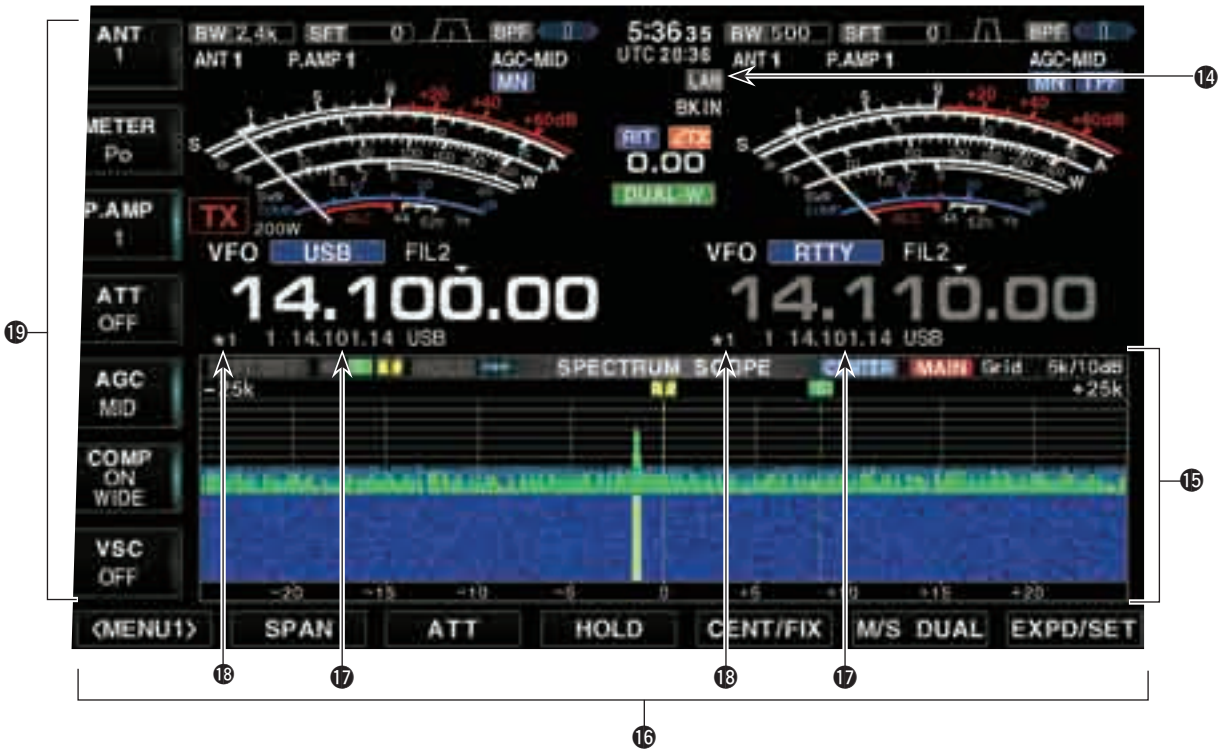
❿ **IF FILTER INDICATOR**
Shows the selected IF filter number.

⓫ **VFO/MEMORY CHANNEL INDICATOR** (p. 3-3)
Indicates the VFO mode or selected memory channel number.

⓬ **TX INDICATOR**
➥ "TX" appears while transmitting.
➥ Indicates the frequency readout for transmit.
• Appears on the sub readout when the split function is turned ON.
• A TX indicator with doted rectangle, "TX" is displayed, instead of the regular "TX" TX indicator, when a frequency outside of an amateur band frequency range is selected. This function can be turned OFF in set mode, if desired. (pp. 3-13, 12-12)

⓭ **S/RF METER** (p. 3-10)
Shows the signal strength while receiving. Shows the relative output power, SWR, ALC or compression levels while transmitting.

■ LCD display (Continued)



⓮ LAN INDICATOR
Appears when the Remote station access the transceiver through the LAN. (An optional RS-BA1 is required.)

⓯ MULTI-FUNCTION SCREEN
Shows the screens for the multi-function digital meter, spectrum scope, audio scope, voice recorder, memory channel, scan, memory keyer, RTTY decoder, PSK decoder, IF filter selection or set modes, and so on.

⓰ DISPLAY FUNCTION KEY GUIDE
Indicates the function of the Display Function keys ([F-1] – [F-7]).

⓱ MEMORY CHANNEL READOUTS
➥ Shows the selected memory channel contents in VFO mode.
➥ Shows the VFO contents in memory mode.

⓲ SELECT MEMORY CHANNEL INDICATOR (p. ?9-7)
Indicates the displayed memory channel is set as a select memory channel.
The desired memory channels can be assigned to 3 select groups, for fast, convenient scanning.

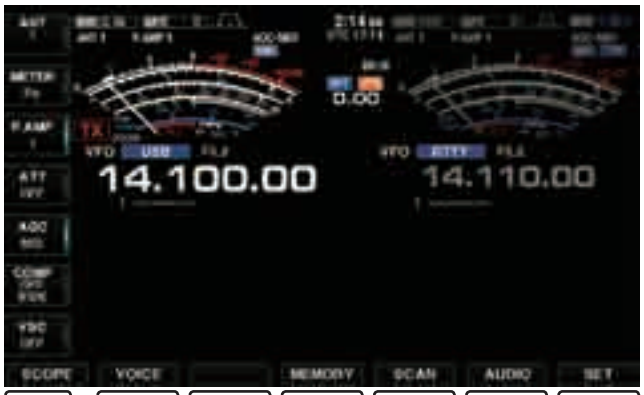
⓳ MULTI-FUNCTION KEY GUIDE
Indicates the function of the multi-function keys.

■ Screen menu arrangement

The following screens can be selected from the start up screen. Choose the desired screen using the following chart.

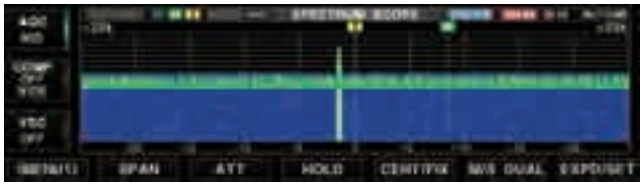
Pushing [EXIT/SET] several times returns to the start up screen. See page 12-3 for set mode arrangement.

• Start up screen



F-1 F-2 F-3 F-4 F-5 F-6 F-7

• Spectrum scope screen (☞P?6-2)



• Voice recorder screen (☞P?9-3)

F-2

• Memory keyer screen (CW mode: ☞P?5-8)

F-3

• RTTY decoder screen (☞P?5-15)

F-3

• PSK decoder screen (☞P?5-24)

F-3

• Memory channel screen (☞P?11-3)

F-4

• Scan screen (VFO mode: ☞P?12-4)

F-5

• Scan screen (Memory mode: ☞P?12-5)

F-5

• Audio scope screen (☞P?6-15)

F-5

• Set mode menu screen (☞P?15-3)

F-7

BASIC OPERATIONS Section 4

■ When first applying power (CPU resetting)

Before first applying power, make sure all connections required for your system are complete by referring to Section 3. Then, reset the transceiver using the following procedure.

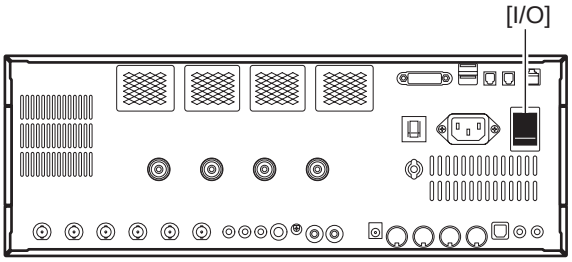
Resetting **CLEARS** all programmed contents in memory channels and returns programmed values in set mode to default values.

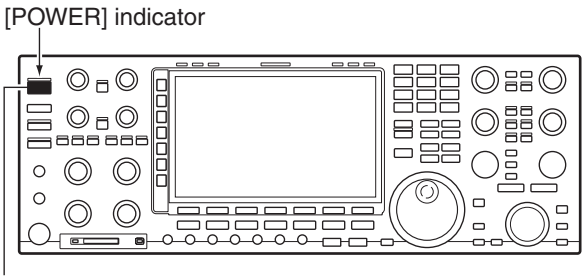
① Turn ON the main power with [I/O] on the rear panel.
- The transceiver power is still OFF and the [POWER] indicator lights orange.

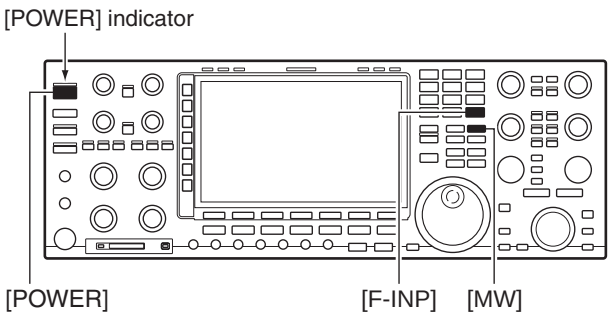
② While holding down [F-INP] and [MW], push [POWER] to turn power ON.
- The CPU is reset.
- The CPU start-up takes approximately 5 seconds.
- The transceiver displays its initial VFO frequencies when resetting is complete.

③ Change the set mode settings after resetting, if desired.

In cooler temperatures, the LCD may appear dark and unstable after turning power ON. This is normal and does not indicate any equipment malfunction.

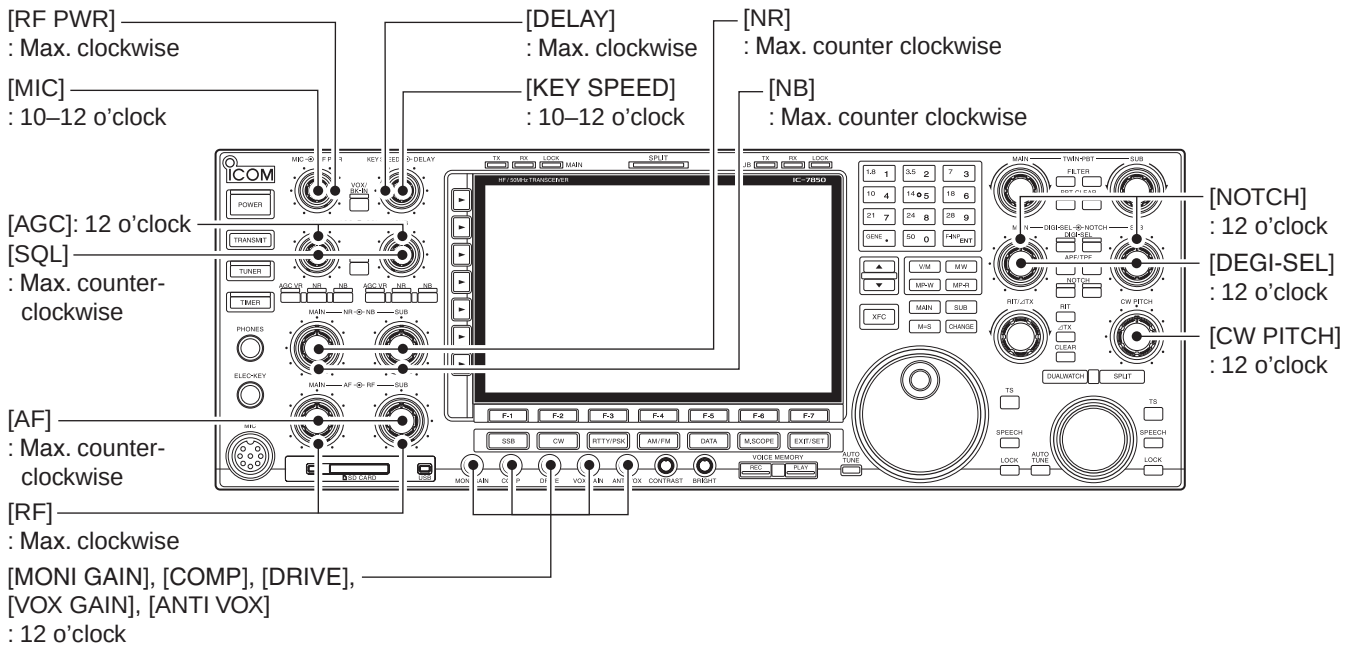






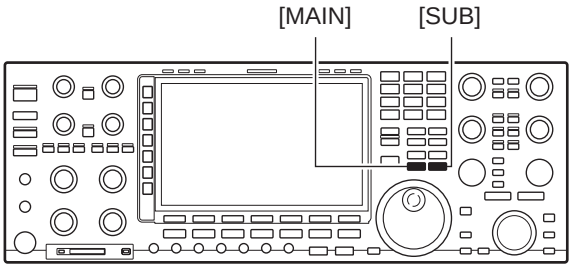
■ Initial settings

After resetting the transceiver, set controls as shown in the figure below.



■ Main/Sub band selection

The IC-7850 has 2 identical receivers, main and sub. The main band is displayed on the left hand side, and the sub band is displayed on the right hand side of the LCD. Some functions can only be applied to the selected band and transmission occurs on the main band (except during split frequency operation).

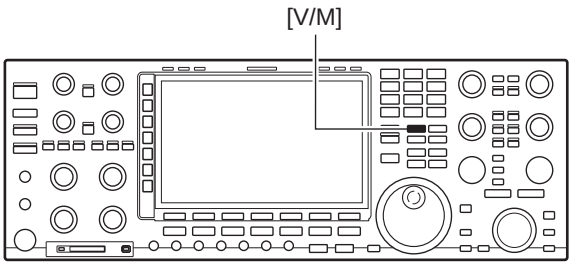


➥ Push [MAIN] to select the main band.
- The key backlight for [MAIN] lights.
- Main band's frequency readout highlighted.

➥ Push [SUB] to select the sub band.
- The key backlight for [SUB] lights.
- Sub band's frequency readout highlighted.

■ Selecting VFO/memory mode

VFO is an abbreviation of Variable Frequency Oscillator, and is commonly referred to as a main tuning function.
[MAIN DIAL] is often called the "VFO knob."



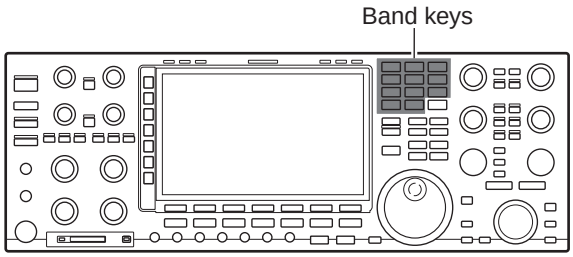
➥ Push [V/M] to switch between VFO and memory modes.
- "VFO" appears when in VFO mode, or the selected memory channel number appears when in memory mode.
- Holding down [V/M] for 1 second transfers the contents of the selected memory channel to VFO. (p. 8-5?)

■ Selecting an operating band

The triple band stacking register provides three memories for each band key to store frequencies and operating modes.

This function is convenient when you operate three operating modes on one frequency band.
For example, one register can be used for a CW frequency, another for an SSB frequency and the other one for an RTTY frequency.

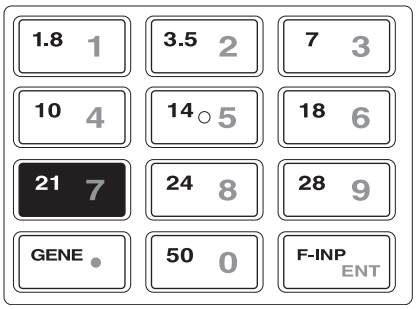
If a band key is pushed once, the last used frequency and operating mode are called up. When the key is pushed again, another stored frequency and operating mode are called up.



See the table below for a list of the available frequency bands and their default frequency and mode settings.

BAND	REGISTER 1	REGISTER 2	REGISTER 3
1.8 MHz	1.900000 MHz CW	1.910000 MHz CW	1.915000 MHz CW
3.5 MHz	3.550000 MHz LSB	3.560000 MHz LSB	3.580000 MHz LSB
7 MHz	7.050000 MHz LSB	7.060000 MHz LSB	7.020000 MHz CW
10 MHz	10.120000 MHz CW	10.130000 MHz CW	10.140000 MHz CW
14 MHz	14.100000 MHz USB	14.200000 MHz USB	14.050000 MHz CW
18 MHz	18.100000 MHz USB	18.130000 MHz USB	18.150000 MHz USB
21 MHz	21.200000 MHz USB	21.300000 MHz USB	21.050000 MHz CW
24 MHz	24.950000 MHz USB	24.980000 MHz USB	24.900000 MHz CW
28 MHz	28.500000 MHz USB	29.500000 MHz USB	28.100000 MHz CW
50 MHz	50.100000 MHz USB	50.200000 MHz USB	51.000000 MHz FM
General	15.000000 MHz USB	15.100000 MHz USB	15.200000 MHz USB

◇ Using the band stacking registers



① Push band key's [21], then select a frequency and an operating mode.
- The previously selected frequency and an operating mode are memorized in the first band stacking register of that band.

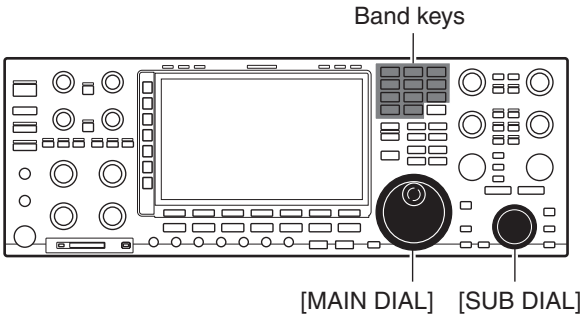
② Push band key's [21] again, then select another frequency and operating mode.
- The frequency and operating mode that is selected in step ① are memorized in the 21 MHz's first band stacking register.

③ Push band key's [21] again, then select another frequency and operating mode.
- The frequency and operating mode that is selected in step ② are memorized in the 21 MHz's second band stacking register.

④ Push band key's [21] again, then select another frequency and operating mode.
- The frequency and operating mode that is selected in step ③ are memorized in the 21 MHz's third band stacking register.
- When band key's [21] is pushed again, the first band stacking register set in step ②, is overwritten.

■ Frequency setting

The transceiver has several tuning methods for convenient frequency tuning.



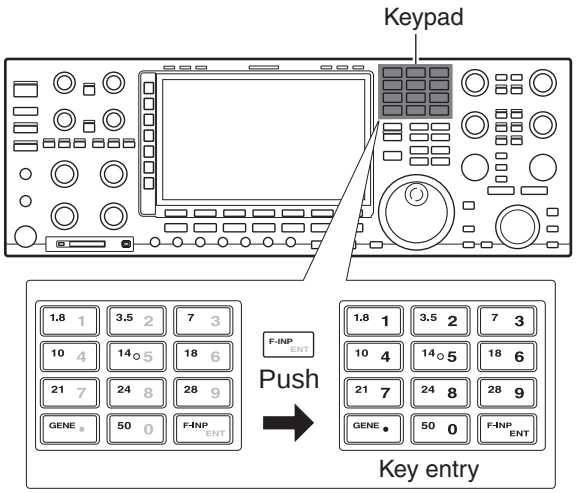
◇ Tuning with [MAIN DIAL]

① Push the desired band key on the keypad 1–3 times.
- Three different frequencies can be selected on each band with the band key.
- Push [MAIN] or [SUB] to select the band.

② Rotate [MAIN DIAL] to set the desired frequency in the main band, rotate the sub dial to set the desired frequency in the sub band.

If the dial lock function is activated, the lock indicator lights, and [MAIN DIAL] does not function. In this case, push [LOCK] to deactivate the lock function. (see p. 4-11 for details)

✔ CONVENIENT!
The sub dial is always available for tuning the sub band. The sub dial allows quick tuning in the sub band without switching from main to sub.



◇ Direct frequency entry with the keypad

The transceiver has a keypad for direct frequency entry as described below.

① Push [MAIN] or [SUB] to select the band.
② Push [F-INP].
- "F-INP" indicator appears and keypad backlight lights.

③ Input the desired frequency
- Push [•] to input ". (decimal point)" between the MHz units and kHz units.

④ Push [ENT] to set the input frequency.
- To cancel the input, push any other key (except [▲]/[▼]) instead of [ENT].

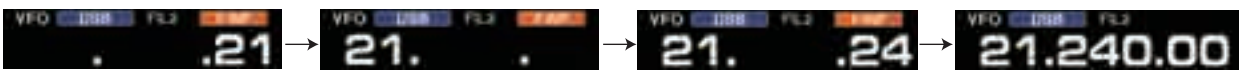
[EXAMPLE]

7.00000 MHz

Push [F-INP ENT] [21 7] → [F-INP ENT]

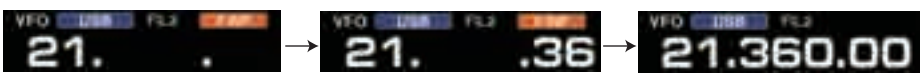
21.24000 MHz

Push [F-INP ENT] [3.5 2] [1.8 1] [GENE •] [3.5 2] [10 4] [F-INP ENT]



21.24000 MHz ⇨ 21.36000 MHz

Push [F-INP ENT] [GENE •] [7 3] [18 6] [F-INP ENT]

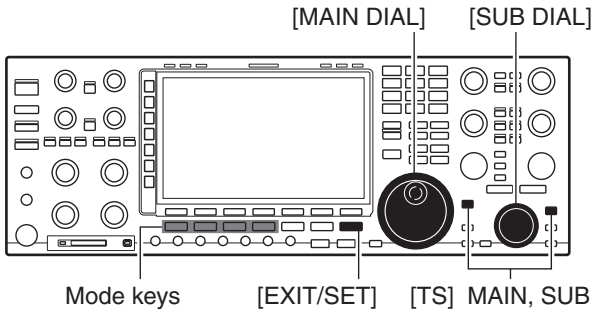


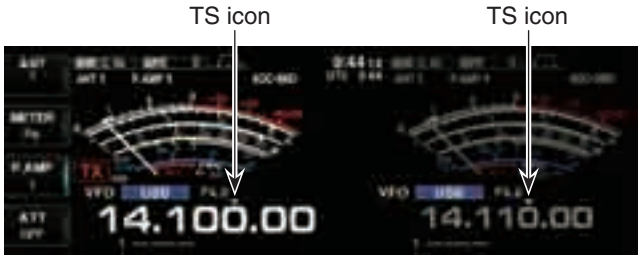
■ Frequency setting (Continued)

◇ Quick tuning step

The operating frequency can be changed in kHz steps (0.1, 1, 5, 9, 10, 12.5, 20 or 25 kHz selectable) for quick tuning.

① Push [TS] to turn ON the quick tuning function.
  • "▼" is displayed when the function is ON.
② Rotate [MAIN DIAL] ain dial to change the frequency in programmed kHz steps.
③ Push [TS] again to turn OFF the indicator.
④ Rotate [MAIN DIAL] for normal tuning if desired.





◇ Selecting "kHz" step

① Push [TS] to turn the quick tuning function ON or OFF.
  • "▼" appears when the quick tuning function ON.
② Hold down [TS] for 1 second to enter tuning step setting display.
  • Selected tuning steps for all modes appear.
③ Select the desired operating mode.
④ Rotate [MAIN DIAL] to select the desired tuning step.
⑤ Repeat steps ③ and ④ to select quick tuning steps for other modes, if desired.
⑥ Push [EXIT/SET] to exit the setting display.

NOTE: When entering quick tuning step set mode, the quick tuning function must be activated first. The main and sub bands have independent tuning step settings.

• "TS" screen

◇ 1/4 tuning step function

When operating in SSB data, CW, RTTY or PSK, the 1/4 tuning function is selectable. Dial speed is reduced to 1/4 of normal speed when the 1/4 tuning function is ON for finer tuning control.

➥ Push the Multi-function keys' [1/4] to toggle the 1/4 tuning function ON or OFF.
  • "¼" appears when the 1/4 tuning function is ON.

1/4 tuning step OFF

1/4 tuning step ON

■ Frequency setting (Continued)

◇ Selecting 1 Hz step

The minimum tuning step of 1 Hz can be used for fine tuning.

❍ In the Quick tuning function OFF.
- "▼" is not displayed.

① Hold down [TS] for 1 second.
- Turn the 1 Hz tuning step ON or OFF.

NOTE: 1 Hz tuning step activates for both main and sub bands simultaneously. Therefore, either [TS] can be used for the 1 Hz tuning step selection.

◇ Auto tuning step function

When rotating main or sub dial rapidly, the tuning speed accelerated automatically as selected.

① Select the "MAIN DIAL Auto TS" item in the Others set screen.

SET [F-7] ↘ **OTHERS** [F-5] ↘ ***MAIN DIAL Auto TS***

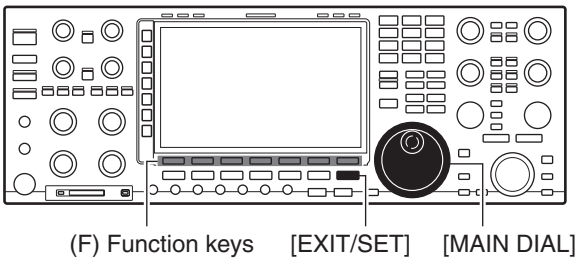
- "MAIN DIAL Auto TS" for main dial, "SUB DIAL Auto TS" for sub dial selection.

② Rotate [MAIN DIAL] to select the option.

◆Auto tuning step options

HIGH: Approximately 5 times faster when the tuning step is set to 1 kHz or smaller steps; approximately 2 times faster when the tuning step is set to 5 kHz or larger steps.
LOW: Approximately 2 times faster.
OFF: Auto tuning step is turned OFF.

③ Push [EXIT/SET] several times.
- Exits the set mode.

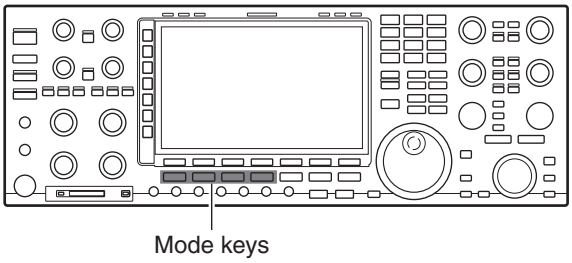


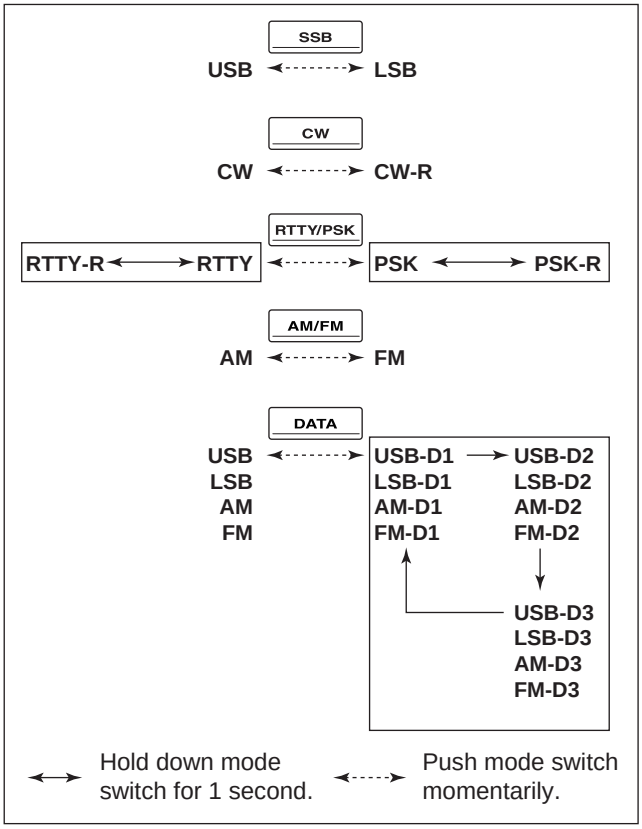
■ Operating mode selection

SSB (USB/LSB), SSB data (USB data/LSB data), CW, CW reverse (CW-R), RTTY, RTTY reverse (RTTY-R), PSK, PSK reverse (PSK-R), AM, AM data, FM and FM data modes are selectable in the IC-7850. Select the desired operation mode as follows.

To select a mode of operation, push the desired Mode key. Push the key again to toggle between USB and LSB, CW and CW-R, RTTY/RTTY-R and PSK/PSK-R, AM and FM, if desired. Hold down the key for 1 second to toggle between RTTY and RTTY-R, PSK and PSK-R, if desired.
See the diagram to the right for the order of selection.

Microphone signals are muted when data mode is selected.





• Selecting SSB mode

➥ Push [SSB] to select USB or LSB.
- USB is selected first when above 10 MHz; or LSB is selected first when below 10 MHz operation.
  (USB is selected when 5 MHz band is selected for the USA version.)
- After USB or LSB is selected, push [SSB] to toggle between USB and LSB.

• Selecting CW mode

➥ Push [CW] to select CW.
- After CW is selected, push [CW] to toggle between CW and CW reverse mode.

• Selecting RTTY/PSK mode

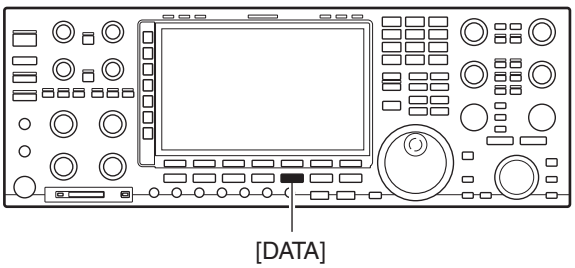
➥ Push [RTTY/PSK] to select RTTY or PSK.
- After RTTY or PSK is selected, push [RTTY/PSK] to toggle between RTTY and PSK.
- After RTTY or PSK is selected, hold down [RTTY/PSK] for 1 second to toggle between RTTY and RTTY reverse, or, PSK and PSK reverse mode, respectively.

• Selecting AM/FM mode

➥ Push [AM/FM] to select AM or FM.
- After AM or FM is selected, push [AM/FM] to toggle between AM and FM.

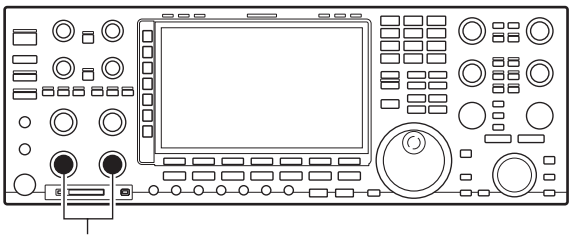
• Selecting DATA mode

➥ After USB, LSB, AM or FM is selected, push [DATA] to select USB data, LSB data, AM data or FM data mode, respectively.
- After data mode is selected, push [DATA] to toggle between regular voice and data mode.
- After data mode is selected, hold down [DATA] for 1 second to select data 1, 2 and 3 in sequence.



■ Volume setting

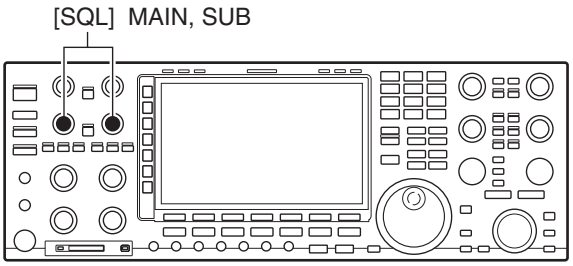
➥ Rotate [AF] control adjust the audio output level.
• Set a suitable audio level.



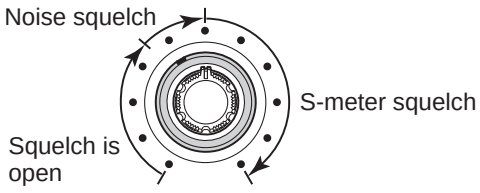
■ Squelch level adjustment

The squelch removes noise output from the speaker (closed position) when no signal is received.

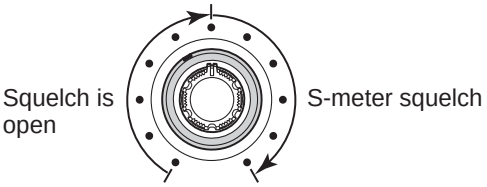
➥ When no signal is received, rotate [SQL] control fully counterclockwise first, then rotate [SQL] clockwise to the point that the noise just disappears.



• In the FM mode

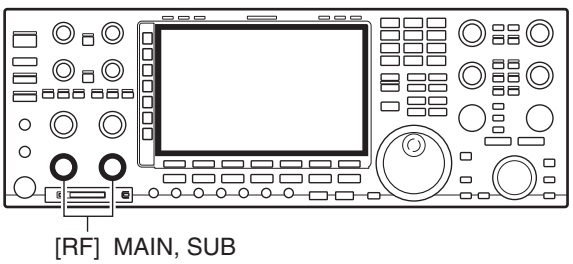


• Other than the FM mode (SSB/CW/RTTY/PSK/AM)



■ RF gain adjustment

➥ Rotate [RF] control clockwise to increase, counter-clockwise to decrease the receiver sensitivity.

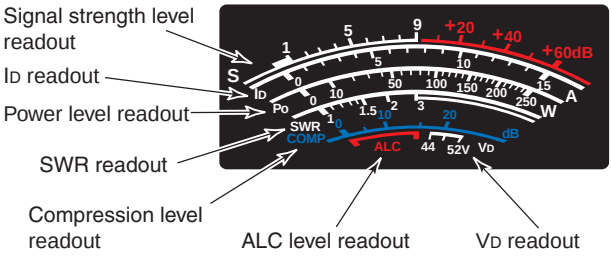


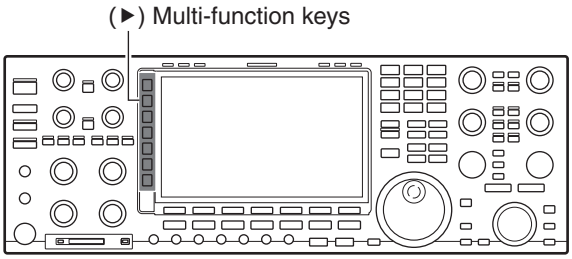
■ Meter selection

The S/RF meter indication, during transmit, can be selected from the following items as you desire.

➥ Push the Multi-function keys' [METER] several times to select the desired meter item.
- The selectable meters are:
  PO → SWR → ALC → COMP → VD → ID in order.

METER Po	Indicates the RF output power in watts.
METER SWR	Indicates the VSWR on the transmission line.
METER ALC	Indicates the ALC level. The ALC circuit begins to activate when the RF output power reaches a preset level.
METER COMP	Indicates the compression level when the speech compressor is in use.
METER Vd	Indicates the drain current of the final amplifier MOS-FETs.
METER Id	Indicates the drain terminal voltage of the final amplifier MOS-FETs.





◇ Multi-function digital meter

The IC-7850 can display the multi-function digital meter in the LCD display. This meter displays all transmit parameters simultaneously.

➥ Hold down the Multi-function keys' [METER] for 1 second.
- The Multi-function digital meter is displayed.
- Hold down the Multi-functions keys' [METER] for 1 second to turn OFF the multi-function digital meter.

➥ Push [P-HOLD](F) to turn ON the peak level hold function.
- "P-HOLD" is displayed on the window title when the function is ON.

■ Meter indication selection (Continued)

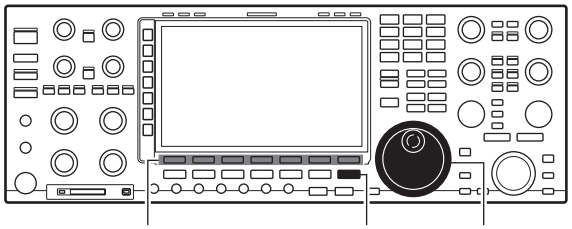
◇ Meter type selection

A total of 3 meter types are selectable.
The meter types are Standard, Edgewise and Bar meters. Follow the instructions for the meter type selection.

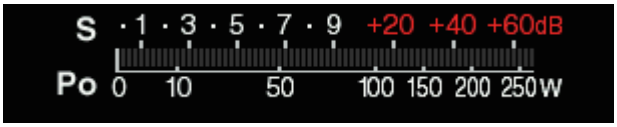
① Select the “Meter Type (Normal Screen)” item in the Display set screen.

SET [F-7] ↘ **DISPLAY** [F-3] ↘ ***Meter Type (Normal screen)***

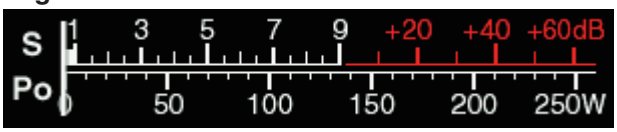
② Rotate [MAIN DIAL] to select the option.
③ Push [EXIT/SET] several times.
• Exits the set mode.



• **Bar meter**



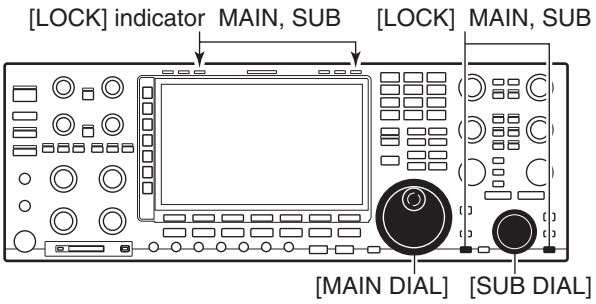
• **Edgewise meter**



■ Dial lock function

The dial lock function prevents frequency changes by accidental movement of the tuning dial. The lock function electronically locks the dial.

➥ Push [LOCK].
• Each push toggles the dial lock function ON or OFF.
• The [LOCK] indicator lights when the function is ON.
• [MAIN DIAL] or [SUB DIAL] is locked when the function is ON.



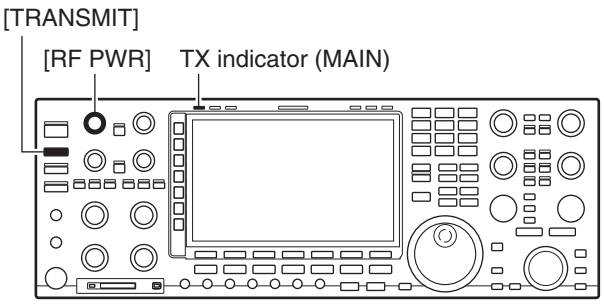
Before transmitting, monitor your selected operating frequency to make sure transmitting won't cause interference to other stations on the same frequency. It's good amateur practice to listen first, and then, even if nothing is heard, ask "is the frequency in use" once or twice, before you being operating on that frequency.

■ Basic transmit operation

◇ Transmitting

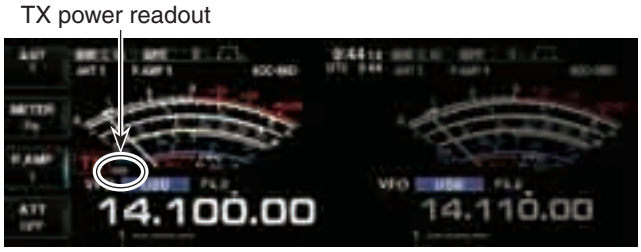
① Push [TRANSMIT] or [PTT] (microphone) to transmit.
- The main band's [TX] indicator lights red.
- When split operation is activated, the sub band's [TX] indicator lights.

② Push [TRANSMIT] again or release [PTT] (microphone) to return to receive.



✔ Adjusting the transmit output power

➥ Rotate [RF PWR].
- Adjustable range : 5 W to 200 W
  (AM mode: 5 W to 50 W)



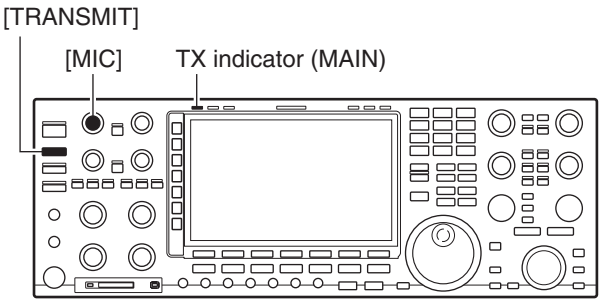
"<5W" is displayed when the power is set less than 5 W.

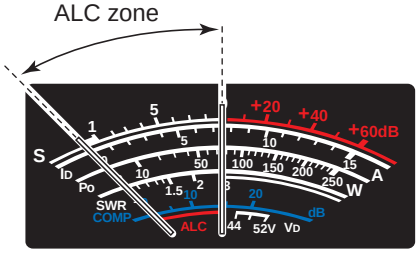
◇ Microphone gain adjustment

Before transmitting, monitor your selected operating frequency to make sure transmitting won't cause interference to other stations on the same frequency.

① Push [METER] to select the ALC meter.
② Push [PTT] (microphone) to transmit.
- Talk into the microphone at your normal voice level.

③ While talking into the microphone, rotate [MIC] so that the ALC meter reading doesn't go outside the ALC zone. (see to the right)
④ Release [PTT] (microphone) to return to receive.



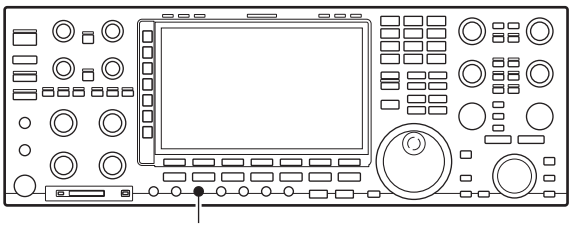


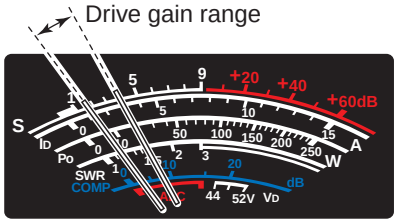
■ Basic transmit operation (Continued)

◇ Drive gain adjustment

The drive gain is active for all modes except SSB without speech compressor. The [DRIVE] control adjusts the amplifying gain at the driver stage.

① Push [METER] to select the ALC meter.
② Push [PTT] (microphone; SSB with [COMP] ON, AM or FM), key down (CW) or push [TRANSMIT] (RTTY or PSK) to transmit.
③ While talking into the microphone, keying down or transmitting, rotate [DRIVE] so that the ALC meter reading swinging within 30 to 50% of the ALC scale. (see to the right)
• Talk into the microphone at your normal voice level.
④ Release [PTT], stop keying or push [TRANSMIT] again to return to receive.

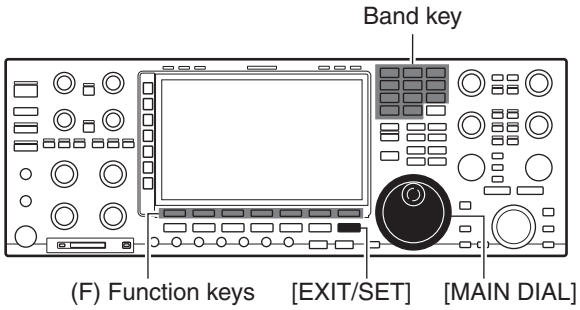


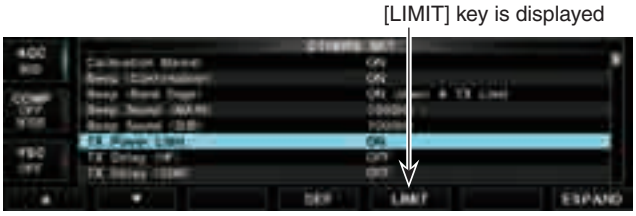


◇ Transmit power limit

The transceiver can be set maximum output power to each operating band.
You can separately set the maximum output power for operating in the DATA mode

①Select the “TX Power Limit” item in the Others set screen.
SET [F-7] ↘ **OTHERS** [F-5] ↘ ***TX Power Limit***
②Rotate [MAIN DIAL] to select “ON.”
• When ON is selected, the TX Power Limit is active.
③Push [LIMIT](F).
• The TX POWER LIMIT screen is displayed.
④Push the band key.
• Select the desired band to be set the TX Power Limit.
• In the Phone mode (SSB, AM, or FM mode), push [DATA] to select the Data mode.
⑤Rotate [MAIN DIAL] to set the maximum power.
⑥Push [EXIT/SET] several times.
• Exits the set mode.





When ON is selected

TX POWER LIMIT screen

■ Band edge warning beep

This function allows you to hear a beep tone when you tune in or out of an amateur band's frequency range. A regular beep sounds when you tune into a range, and an lower tone error beep will sound when you tune out of a range.
Also, the TX indicator shows if the selected frequency is in or out of an amateur band, when an option other than "OFF" is set.

• A TX indicator with doted oval, "TX" is displayed, instead of the regular "TX" TX indicator, when a frequency outside of an amateur band frequency range is selected.

①Select the "Beep (Band Edge)" item in the Others set screen.

SET [F-7] ↘ **OTHERS** [F-5] ↘ ***Beep (Band Edge)***

②Rotate [MAIN DIAL] to select the option.

◆Band Edge Beep options

OFF: Band edge beep is OFF.

ON (Default): When you tune into or out of the default amateur band's frequency range, a beep sounds. (default)

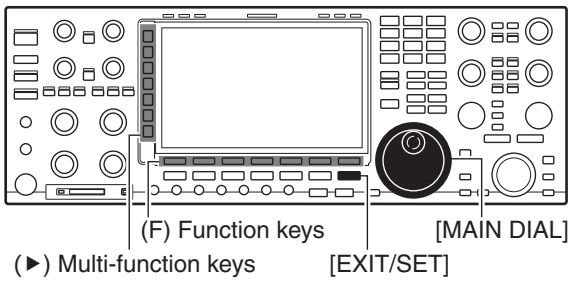
ON (User): When you tune outside of, or back into a user programmed amateur band's frequency range, a beep sounds.

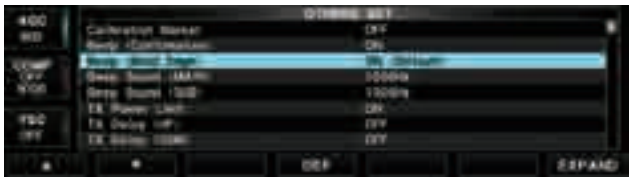
ON (User) & TX Limit: When you tune outside of, or back into a user programmed amateur band's frequency range, a beep sounds. Transmission is also inhibited outside the programmed range.

③Push [EXIT/SET] several times.

• Exits the set mode.

When the transverter function is in use, the band edge warning beep sounds with the default setting.





ON（Default）is selected

The beep output level can be set in level set mode. (p. 12-5)

■ Band edge warning beep (Continued)

◇ Programming the user band edge

①Select the “Beep (Band Edge)” item in the Others set screen.

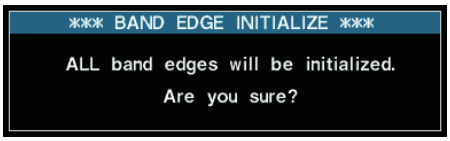
SET [F-7] ↘ **OTHERS** [F-5] ↘ ***Beep (Band Edge)***

②Rotate [MAIN DIAL] to select either the “ON (User)” or “ON (User) & TX Limit” option.
- The [BAND] key is displayed in the Function keys.

③Push [BAND](F) to open the band edge screen.

④Push [▲](F) or [▼](F) to select the band edge that is changed or deleted.
- Hold down to continuously move the lines.
- Push [◄ ►](F) to toggle between the entry cells of upper and lower band edge frequencies.
- Push [INS](►) to insert a new blank line.
- Hold down [DEL](►) for 1 second to delete the selected line.
- Hold down [DEF](F) for 1 second to initialize all band edge frequencies.

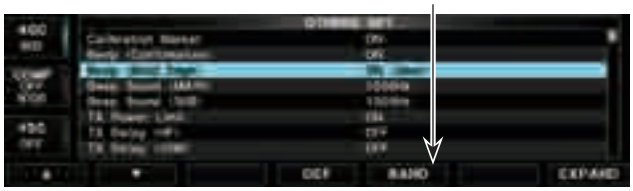
The band edge initialize screen appears as shown below, then push [OK](F) to initialize all frequencies.



⑤Enter the Band edge frequencies with the keypad.
- ❶ Push [F-INP] to enter the frequency input mode.
- ❷ Enter the desired frequency.
- ❸ Push [ENT] to save the frequency.
- Push [•] to input decimal point (“.”) between the MHz and kHz digits.
- Program each channel from left to right and each frequency must be higher than the preceding frequency.
- The frequency that is duplicated, or out of an amateur band, cannot be programmed.

⑥Push [EXIT/SET] several times.
- Exits the set mode.

[BAND] key is displayed



ON（User）is selected

• Band edge screen

◇ About the 5 MHz frequency band operation (USA version only)

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

- The USB, USB Data, CW, and PSK modes.
- Maximum of 100 watts ERP (Effective Radiated Power)
- 2.8 kHz bandwidth (maximum)

It is your responsibility to set all controls so that transmission in this frequency band meets the stringent conditions under which amateur operations may use these frequencies.

NOTE: We recommend that you store these frequencies, modes and filter settings into memory channels, for easy recall.

To assist you in operating within the rules specified by the FCC, transmission is illegal on any frequencies other than the five shown in the tables below.

• For the USB and USB Data modes

The FCC specifies center frequencies on the 5 MHz frequency band. However, the transceiver displays carrier frequency. Therefore, tune the transceiver to 1.5 kHz below the specified FCC channel center frequency.

Transceiver Displayed Frequency	FCC Channel Center Frequency
5.33050 MHz	5.33200 MHz
5.34650 MHz	5.34800 MHz
5.35700 MHz	5.35850 MHz
5.37150 MHz	5.37300 MHz
5.40350 MHz	5.40500 MHz

• For the CW and PSK modes

The transceiver displays the center frequency. Therefore, tune the transceiver to the specified FCC channel frequency when you operate in these modes.

Transceiver Displayed Frequency	FCC Channel Center Frequency
5.33200 MHz	5.33200 MHz
5.34800 MHz	5.34800 MHz
5.35850 MHz	5.35850 MHz
5.37300 MHz	5.37300 MHz
5.40500 MHz	5.40500 MHz

FUNCTIONS FOR RECEIVE Section 7

■ Preamplifier

The preamp amplifies received signals in the receiver front end, to improve the S/N ratio and sensitivity. Set this to preamp 1 or preamp 2 when receiving weak signals.

➥ Push [P.AMP] several times to set the preamp OFF, preamp 1 ON or preamp 2 ON.

For all HF bands

High-gain preamp for 24 MHz band and above (Available for all HF and 50 MHz bands)

✔ About the "P.AMP2"

The "P.AMP 2" is a high gain receive amplifier. When the "P.AMP 2" is used during times of strong electric fields, distortion sometimes results. In such cases, use the transceiver with the "P.AMP 1" or "P.AMP OFF" setting.

The "P.AMP 2" is most effective when:

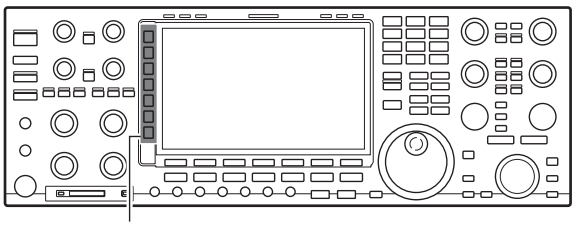
- Used on bands above 24 MHz and when electric fields are weak.
- Receive sensitivity is insufficient during low gain, or while using a narrow band antenna (such as small loop, a Beverage antenna or a short Yagi antenna).

■ Attenuator

The attenuator prevents a desired signal from distortion when very strong signals are near the desired frequency or when very strong electric fields, such as from broadcasting stations, are near your location.

➥ Push [ATT] several times to set the attenuator 6 dB, 12 dB, 18 dB or attenuator OFF.

➥ Hold down [ATT] for 1 second several times to set the attenuator 3 dB, 6 dB, 9 dB, 12 dB, 15 dB, 18 dB, 21 dB or attenuator OFF.



(▶) Multi-function keys

NOTE:
The preamp (P.AMP1 or P.AMP2) cannot be used while the digital selector is activated.
Also the preamp is automatically disabled when the digital selector is turned ON.

• When selecting Preamp 1

• When selecting Attenuator (6 dB)

■ RIT function

The RIT (Receive Increment Tuning) function compensates for off-frequencies of the communicating station.
The function shifts the receive frequency up to ±9.99 kHz in 10 Hz steps without moving the transmit frequency.

① Push [RIT] to turn the RIT function ON or OFF.
- "RIT" and the shifting frequency appear when the function is ON.

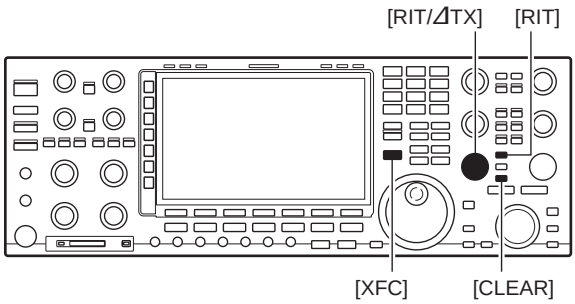
② Rotate the [RIT/⊿TX] control.
- Hold down [CLEAR] for 1 second to reset the RIT frequency.
- Push [CLEAR] momentarily to reset the RIT frequency when the quick RIT/⊿TX clear function is ON. (p. 12-18)
- Hold down [RIT] for 1 second to add the shift frequency to the operating frequency.

◇ RIT monitor function

When the RIT function is ON, holding down [XFC] allows you to monitor the operating frequency directly (RIT is temporarily cancelled).

✔ For your convenience— Calculate function
The shift frequency of the RIT function can be added/subtracted to the displayed frequency.

➥ While displaying the RIT shift frequency, hold down [RIT] for 1 second.



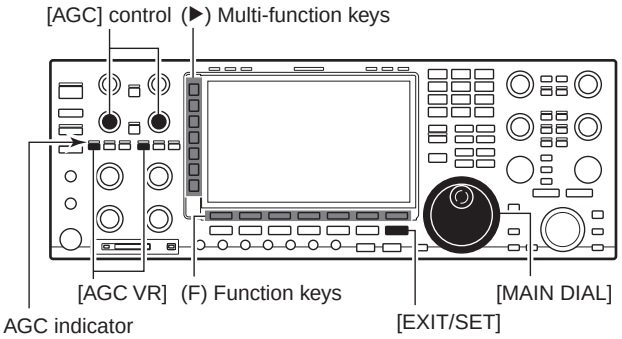
• When selecting RIT function

■ AGC function

The AGC (auto gain control) controls receiver gain to produce a constant audio output level even when the received signal strength varies greatly.

The transceiver has three preset AGC characteristics (time constant: fast, mid, slow) for non-FM mode.

The FM mode AGC time constant is fixed as 'FAST' (0.1 seconds) and AGC time constant cannot be selected.



◇ Selecting the preset value

① Select non-FM mode.
② Push [AGC] several times to select AGC fast, AGC medium (MID) or AGC slow.
- Hold down [AGC VR] for 1 second to turn the AGC function OFF.

• When selecting "AGC-MID"

• When selecting "AGC VR"

◇ Adjusting the AGC time constant

① Select non-FM mode.
② Push [AGC VR], then rotate [AGC] control to adjust the AGC time constant.
- [AGC VR] indicator above the switch lights green.

◇ Setting the AGC time constant preset value

① Select the desired mode (not FM mode).
② Hold down [AGC] for 1 second to enter AGC set mode.
③ Push [AGC] several times to select FAST time constant.
④ Rotate [MAIN DIAL] to set the desired time constant for 'AGC FAST.'
- AGC time constant can be set between 0.1 to 8.0 seconds (depends on mode) or turned OFF.
- Hold down [DEF](F) for 1 second to select a default value.

⑤ Push [AGC] to select medium time constant.
⑥ Rotate [MAIN DIAL] to set the desired time constant for 'AGC MID.'
- AGC time constant can be set between 0.1 to 8.0 seconds (depends on mode) or turned OFF.
- Hold down [DEF](F) for 1 second to select a default value.

⑦ Push [AGC] to select slow time constant.
⑧ Rotate [MAIN DIAL] to set the desired time constant for 'AGC SLOW.'
- AGC time constant can be set between 0.1 to 8.0 seconds (depends on mode) or turned OFF.
- Hold down [DEF](F) for 1 second to select a default value.

⑨ Select another mode (not FM). Repeat steps ③ to ⑧ if desired.
⑩ Push [EXIT/SET] to exit the AGC set mode screen.

• AGC screen

• Selectable AGC time constant (unit: sec.)

Mode	Default	Selectable AGC time constant
SSB	0.3 (FAST)	0.1, 0.2, 0.3, 0.5, 0.8, 1.2, 1.6, 2.0, 2.5, 3.0, 4.0, 5.0, 6.0
	2.0 (MID)	
	6.0 (SLOW)	
CW	0.1 (FAST)	0.1, 0.2, 0.3, 0.5, 0.8, 1.2, 1.6, 2.0, 2.5, 3.0, 4.0, 5.0, 6.0
	0.5 (MID)	
	1.2 (SLOW)	
RTTY PSK	0.1 (FAST)	0.1, 0.2, 0.3, 0.5, 0.8, 1.2, 1.6, 2.0, 2.5, 3.0, 4.0, 5.0, 6.0
	0.5 (MID)	
	1.2 (SLOW)	
AM	3.0 (FAST)	0.3, 0.5, 0.8, 1.2, 1.6, 2.0, 2.5, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0
	5.0 (MID)	
	7.0 (SLOW)	
FM	0.1 (FAST)	Fixed

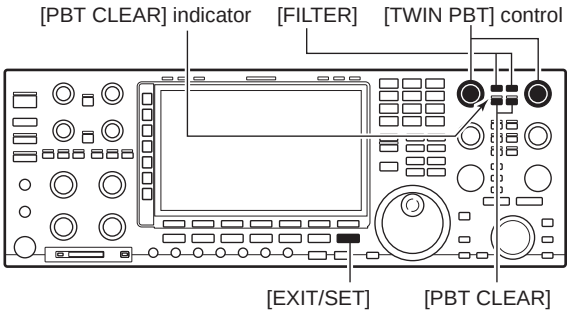
■ Twin PBT operation

In general PBT (Passband Tuning) electronically narrows the IF passband width by shifting the IF frequency to slightly outside of the IF filter passband to reject interference. The IC-7850 uses DSP for the PBT function. Moving both [TWIN PBT] controls to the same position shifts the IF.

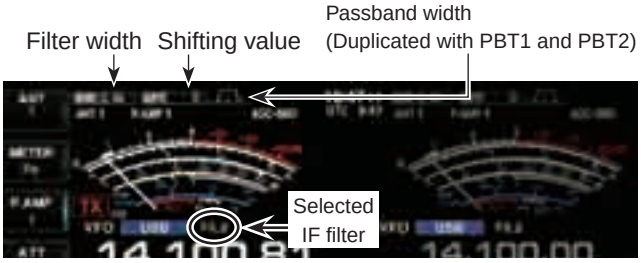
➥ The LCD shows the passband width and shift frequency graphically.
➥ Hold down [FILTER] for 1 second to enter the filter set screen. Current passband width and shift frequency is displayed in the filter set screen.
➥ To set the [TWIN PBT] controls to the center positions, hold down [PBT CLR] for 1 second.

The variable range depends on the passband width and mode. The edge of the variable range is half of the passband width, and PBT is adjustable in 25 Hz steps in the SSB/CW/RTTY/PSK modes, and 100 Hz in the AM mode.

- [TWIN PBT] should normally be set to the center positions (PBT setting is cleared) when there is no interference.
- When PBT is used, the audio tone may be changed.
- Not available for FM mode.
- While rotating [TWIN PBT], noise may occur. This comes from the DSP unit and does not indicate an equipment malfunction.

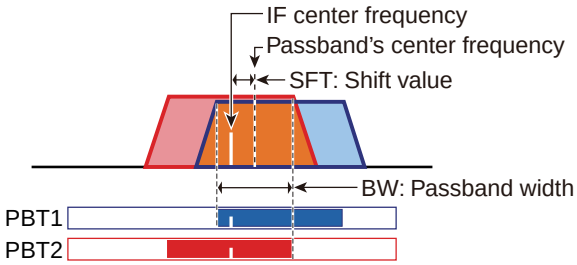


• When operating [TWIN PBT]

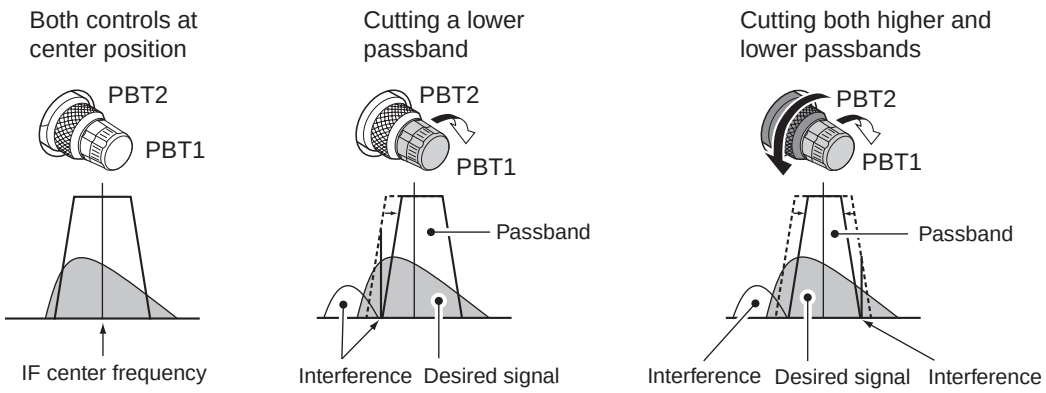


• "FILTER" display when operating [TWIN PBT]

• About Passband width and Shift value on the screen



• PBT operation example



■ IF filter selection

The transceiver has 3 passband width IF filters for each mode.

For SSB, CW and PSK modes, the passband width can be set within 50 to 3600 Hz in 50 or 100 Hz steps. A total of 41 passband widths are available.

For RTTY mode, the passband width can be set within 50 to 2700 Hz in 50 or 100 Hz steps. A total of 32 passband widths are available.

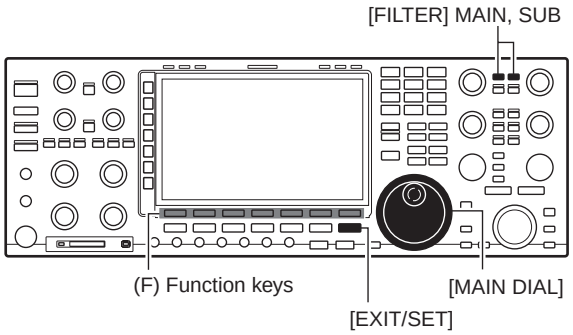
For AM mode, the passband width can be set within 200 Hz to 10 kHz in 200 Hz steps. A total of 50 passband widths are available.

For FM mode, the passband width is fixed and 3 passband widths are available.

◇ IF filter selection

① Select the desired mode.
② Push [FILTER] several times to select the IF filter 1, 2 or 3.
• The selected passband width and filter number is displayed in the LCD.

Mode	IF filter	Adjustable range (steps)
SSB	FIL1 (3.0 kHz)	50 to 500 Hz (50 Hz) 600 Hz to 3.6 kHz (100 Hz)
	FIL2 (2.4 kHz)	
	FIL3 (1.8 kHz)	
SSB-D CW PSK	FIL1 (1.2 kHz)	50 to 500 Hz (50 Hz) 600 Hz to 3.6 kHz (100 Hz)
	FIL2 (500 Hz)	
	FIL3 (250 Hz)	
RTTY	FIL1 (2.4 kHz)	50 to 500 Hz (50 Hz) 600 Hz to 2.7 kHz (100 Hz)
	FIL2 (500 Hz)	
	FIL3 (250 Hz)	
AM AM-D	FIL1 (9.0 kHz)	200 Hz to 10 kHz (200 Hz)
	FIL2 (6.0 kHz)	
	FIL3 (3.0 kHz)	
FM FM-D	FIL1 (15 kHz)	Fixed
	FIL2 (10 kHz)	
	FIL3 (7.0 kHz)	



The filter selection is automatically memorized in each mode.
The PBT shift frequencies are automatically memorized in each filter.

• When selecting “FIL1” (Wide)

• When selecting “FIL2” (Mid)

• When selecting “FIL3” (Narrow)

◇ Filter passband width setting (except FM mode)

① Hold down [FILTER] for 1 second to enter the Filter set screen.
② Select any mode except FM.
  • Passband widths for FM modes are fixed, and cannot be changed.
③ Push [FILTER] several times to select the desired IF filter.
④ Push [BW](F), then rotate [MAIN DIAL] to adjust the desired passband width. Then push [BW](F) again.
  • While holding down [BW](F), rotating [MAIN DIAL] also adjusts the passband width. After adjustment, release [BW](F) to set.
⑤ If desired, repeat steps ② to ④.
  • Hold down [DEF](F) for 1 second to select the default value.
⑥ Push [EXIT/SET] to exit filter set screen.

The PBT shift frequencies are cleared when the passband width is changed.

This filter set screen graphically displays the PBT shift frequencies and CW pitch operations.

• During the passband width setting

• When selecting the passband width (500 Hz or less)

■ IF filter selection (Continued)

◇ Roofing filter selection

The IC-7850 has 3, 6 and 15 kHz roofing filters at the 1st IF frequency. The roofing filter provides interference reduction from nearby strong signals.

① Hold down [FILTER] for 1 second to enter filter set screen.
② Select any mode except FM.
③ Push [ROOFING](F) to select the desired filter width from 15 kHz (default), 6 kHz and 3 kHz.
  • Hold down [DEF](F) for 1 second to select a default value.
④ Push [EXIT•SET] to exit filter set screen.

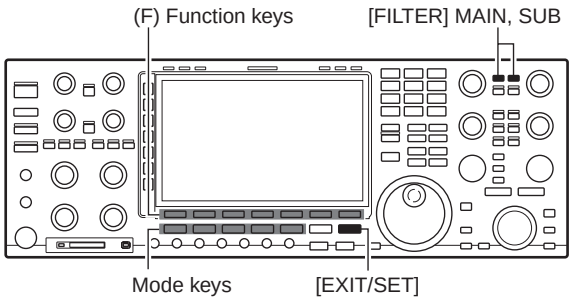
• Roofing filter set screen

◇ DSP filter shape

The type of DSP filter shape for each SSB, SSB data and CW can be selected independently from soft and sharp.

① Hold down [FILTER] for 1 second to enter filter set screen.
② Select SSB, SSB data or CW mode.
③ Push [SHAPE](F) to select the desired filter shape from soft and sharp.
④ Push [EXIT•SET] to exit filter set screen.

The filter shape can be set for each band (HF and 50 MHz bands), mode, as well as the passband width setting (CW only) independently as your default setting in filter shape set mode.



• When selecting “SHARP”

■ IF filter selection (Continued)

◇ Filter shape set mode

The type of DSP filter shape for each SSB, SSB data and CW can be selected independently from soft and sharp.

① Hold down [FILTER] for 1 second to enter filter set screen.
② Hold down [SHAPE](F) for 1 second to enter filter shape set mode.
③ Push [▲](F) or [▼](F) to select the desired item.
④ Rotate [MAIN DIAL] to select the filter shape from soft and sharp.
⑤ Push [EXIT/SET] to exit filter shape set mode.

• "FILTER SHAPE SET" screen

HF SSB (600Hz –) (Default: SHARP)

Select the filter shape for SSB mode in HF bands.

The set filter shape is automatically used only when the IF filter is set to 600 Hz or wider.

HF SSB-D (600Hz –) (Default: SHARP)

Select the filter shape for SSB data mode in HF bands.

The set filter shape is automatically used only when the IF filter is set to 600 Hz or wider.

HF CW (– 500Hz) (Default: SHARP)

Select the filter shape for CW mode in HF bands.

The set filter shape is automatically used only when the IF filter is set to 500 Hz or narrower.

HF CW (600Hz –) (Default: SHARP)

Select the filter shape for CW mode in HF bands.

The set filter shape is automatically used only when the IF filter is set to 600 Hz or wider.

50M SSB (600Hz –) (Default: SOFT)

Select the filter shape for SSB mode in 50 MHz band.

The set filter shape is automatically used only when the IF filter is set to 600 Hz or wider.

50M SSB-D (600Hz –) (Default: SHARP)

Select the filter shape for SSB data mode in 50 MHz band.

The set filter shape is automatically used only when the IF filter is set to 600 Hz or wider.

50M CW (– 500Hz) (Default: SHARP)

Select the filter shape for CW mode in 50 MHz band.

The set filter shape is automatically used only when the IF filter is set to 500 Hz or narrower.

50M CW (600Hz –) (Default: SHARP)

Select the filter shape for CW mode in 50 MHz band.

The set filter shape is automatically used only when the IF filter is set to 600 Hz or wider.

■ Dualwatch operation

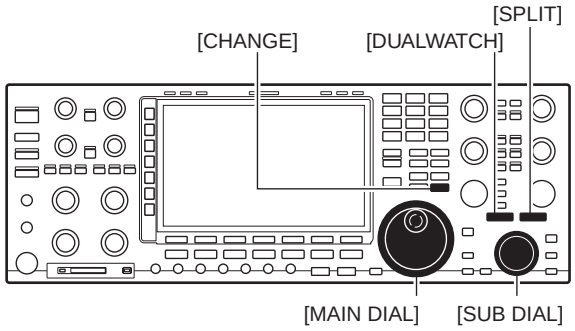
Dualwatch monitors two frequencies simultaneously. The IC-7850 has 2 independent receiver circuits so that you can use dualwatch with no compromises, even on different bands and modes.

① Set the desired frequency and mode into the main band.
② Push [DUALWATCH].
- "DUAL (M)" appears.
- Holding down [DUALWATCH] for 1 second, the sub band is equalized at the same time. This quick dualwatch function can be turned OFF in set mode. (p. 12-15)

③ Rotate the sub dial to set the desired frequency.
④ Push [SUB] to enables the sub band access when changing the frequency band, operating mode, etc. in sub band.
- Push [MAIN] for the main band access.

⑤ Rotate [AF] for sub band to adjust the sub band audio level.
⑥ To transmit on the sub band readout, push [CHANGE] or [SPLIT].

NOTE:
- A beat note may be heard depending on the frequency combination.
- Receiver sensitivity will be decreased when the same frequency band and the same antenna are selected during dualwatch.
- The RIT function can be used for the main readout only.
- The ⊿TX function can be used for the transmit readout (main readout when the split function OFF; sub readout when the split function ON).



• During dualwatch operation

• Split frequency operation during dualwatch

"TX" appears on the sub band

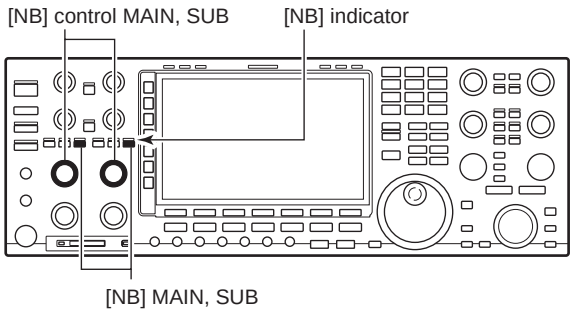
• F

■ Noise blanker

The noise blanker eliminates pulse-type noise such as the noise from car ignitions. The noise blanker is not available for FM mode.

① Push [NB] to turn the noise blanker function ON or OFF.
• [NB] indicator above their switch lights green.
② Rotate [NB] control to adjust the noise blanker threshold level.

When using the noise blanker, received signals may be distorted if they are excessively strong or the noise type is other than impulse. Turn the noise blanker OFF, or rotate [NB] control to a shallow position in this case.

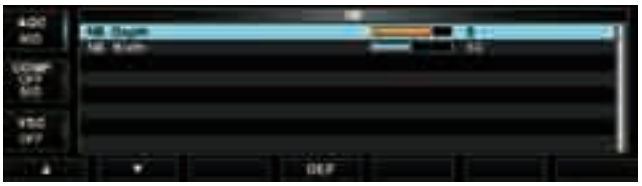


◇ NB set mode

To deal with various type of noises, attenuation level and noise width can be set in NB set mode.

① Hold down [NB] for 1 second to enter NB set mode.
② Push [▲](F) or [▼](F) to select the desired item.
③ Rotate [MAIN DIAL] to set the desired level or value.
• Hold down [DEF](F) for 1 second to select a default value.
④ Push [EXIT/SET] to exit NB set mode.

• “NB” screen



NB Depth (Default: 8)

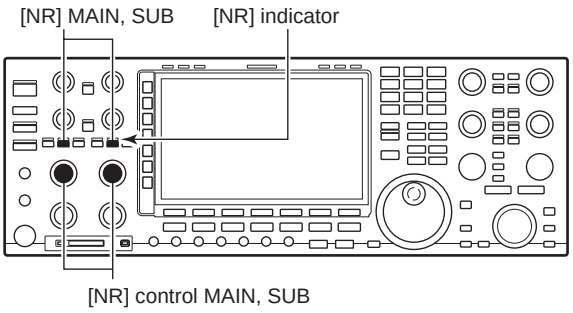
Set the noise attenuation level from 1 to 10.

NB Width (Default: 50)

Set the noise pulse width from 1 to 100.

■ Noise reduction

The noise reduction function reduces random noise components and enhances desired signals which are buried in noise. The DSP does the random noise reduction function.



① Push the [NR] to turn the noise reduction ON.
- [NR] indicator above their switch lights green.

② Rotate the [NR] control to adjust the noise reduction level.

③ Push the [NR] switch to turn the noise reduction OFF.
- [NR] indicator lights off.

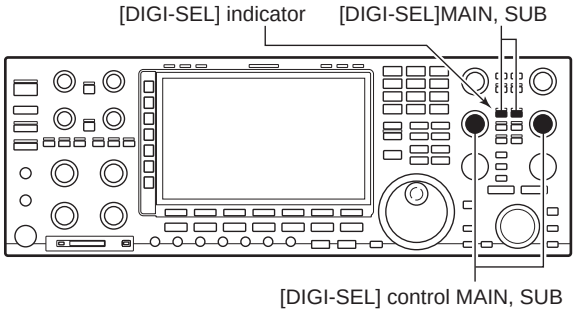
Deep rotation of the [NR] control results in audio signal masking or distortion. Set the [NR] control for maximum readability.

■ Digital selector

The digital selector manually adjusts the center frequency of the automatic pre-selector. The digital selector functions within 1.5 MHz to 29.999999 MHz range.

The automatic pre-selector adds selectivity ahead of the 1st mixer. This reduces intermodulation distortion from the nearby strong signals.

The automatic pre-selector tracks the frequency tuning, changing it's resonant frequency in discrete steps.



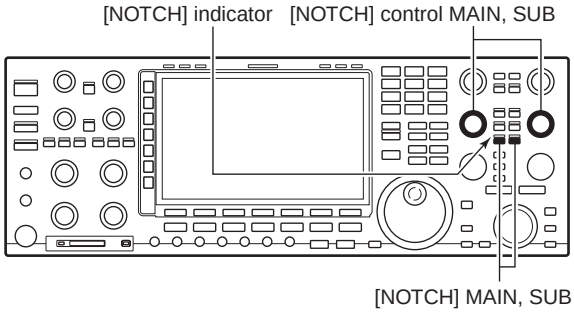
① Push [DIGI-SEL] to turn the digital selector ON or OFF.
- [DIGI-SEL] indicator above their switch lights green.

② Rotate [DIGI-SEL] control to adjust the center frequency.

NOTE:
- When rotating [MAIN DIAL] (or sub dial during dualwatch or split function) while the digital selector is activated, mechanical noise may be heard due to the switching noise from internal relays.
- The preamp (P.AMP1 or P.AMP2) cannot be used while the digital selector is activated.

■ Notch function

his transceiver has auto and manual notch functions.
The auto notch function uses DSP to automatically attenuates beat tones, tuning signals, etc., even if they are moving. The manual notch can be set to attenuate a frequency via the [NOTCH] control.
The auto notch can be used in SSB, AM and FM modes.
The manual notch can be used in SSB, CW, RTTY, PSK and AM modes.



➥ Push [NOTCH] to toggle the notch function between auto, manual and OFF in SSB and AM modes.
➥ Push [NOTCH] to turn the manual notch function ON or OFF in CW mode.
➥ Push [NOTCH] to turn the auto notch function ON or OFF in FM mode.
- [NOTCH] indicator above their switch lights green.
- Hold down [NOTCH] for 1 second to select the notch filter width for manual notch from wide, middle and narrow.
- Set to attenuate a frequency for manual notch via the [NOTCH] control.
- "AN" appears when auto notch is in use.
- "MN" appears when manual notch is in use.

While tuning the manual notch, noise may be heard. This comes from the DSP unit and does not indicate an equipment malfunction.

• Auto notch indication

• Manual notch indication

• When selecting the notch filter width for manual notch

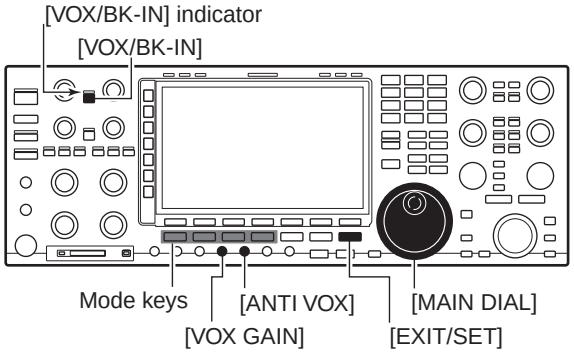
FUNCTIONS FOR TRANSMIT Section 8

■ VOX function

The VOX (Voice-Operated Transmission) function switches between transmit and receive with your voice. This function provides “hands-free” operation.

◇ Using the VOX function

① Select a phone mode (SSB, AM, FM).
② Push [VOX/BK-IN] to turn the VOX function ON or OFF.
- “VOX” appears while the VOX is in use.
- [VOX/BK-IN] indicator above this switch lights green.



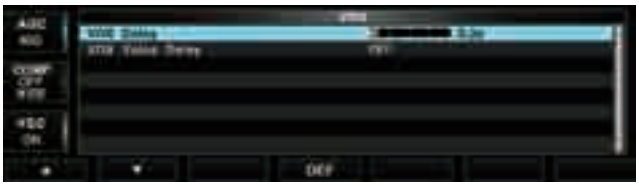
◇ Adjusting the VOX function

① Select a phone mode (SSB, AM, FM).
② Push [VOX/BK-IN] to turn VOX function ON.
③ While speaking into the microphone with your normal voice level, rotate [VOX GAIN] to the point where the transceiver is continuously transmitting.
④ During receive, rotate [ANTI VOX] to the point where the transceiver does not switch to transmit due to received audio from the speaker.
⑤ Adjust the VOX delay and the VOX voice delay in VOX set mode, if necessary.

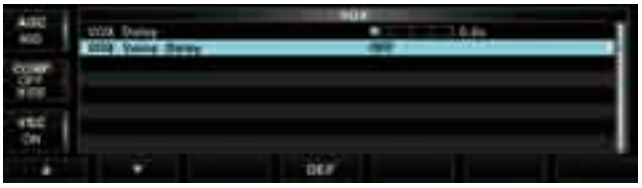
◇ VOX set mode

① Hold down [VOX/BK-IN] for 1 second to enter VOX set mode.
② Select the desired item using [▲](F) or [▼](F).
③ Rotate the main dial to the desired set value or condition.
  • Hold down [DEF](F) for 1 second to select a default value.
④ Push [EXIT/SET] to exit VOX set mode.

• VOX Delay



• VOX Voice Delay



VOX Delay (Default: 0.2s)

Set the VOX delay for a convenient interval before returning to receive within 0 to 2.0 seconds range.

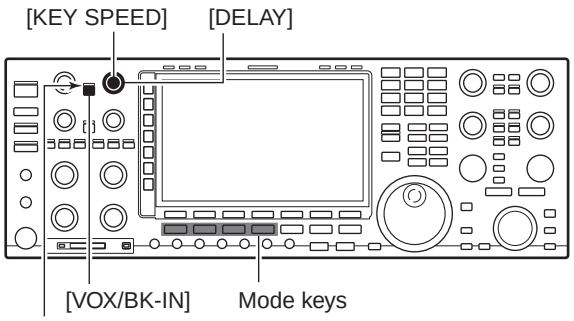
VOX Voice Delay (Default: OFF)

Set the VOX voice delay to prevent mis-transmission of your voice when switching to transmit.
Short, Mid., Long and OFF settings are available.

When using the VOX voice delay, turn the TX monitor function OFF, the transmitted audio will be echoed.

■ Break-in function

The break-in function is used in CW mode to automatically toggle the transceiver between transmit and receive when keying. The IC-7850 is capable for full break-in or semi break-in.



◇ Semi break-in operation

During semi break-in operation, the transceiver selects transmit when keying, then automatically returns to receive after a pre-set time after you stop keying.

① Push [CW] to select CW or CW-R mode.
② Push [VOX/BK-IN] several times to turn the semi break-in function ON.
  • "BK IN" appears.
③ Rotate [DELAY] to set the break-in delay time (the delay from transmit to receive).

When using a paddle, rotate [KEY SPEED] to adjust the keying speed.

• Semi break-in ON

◇ Full break-in operation

During full break-in operation, the transceiver automatically selects transmit while keying and returns to receive immediately after keying is finished.

① Push [CW] to select CW or CW-R mode.
② Push [VOX/BK-IN] several times to turn the full break-in function ON.
  • "F-BK IN" appears.

When using a paddle, rotate [KEY SPEED] to adjust the keying speed.

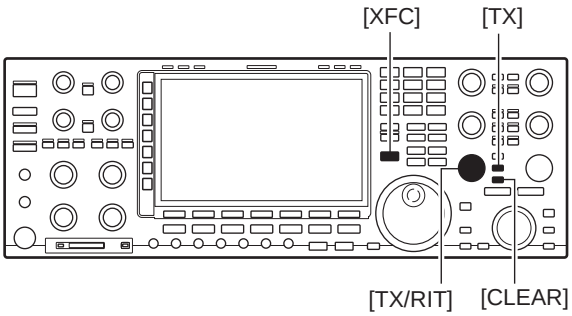
• Full break-in ON

■ ⊿TX function

The ⊿TX function shifts the transmit frequency up to ±9.999 kHz in 1 Hz steps (10 Hz steps when cancelling the 1 Hz step readout) without moving the receive frequency.

• See ⓭ on p. 1-11 for function description.

① Push [⊿TX].
  • "⊿TX" appears.
② Rotate [RIT/⊿TX].
③ To reset the ⊿TX frequency, hold down [CLEAR] for 1 second.
  • Push [CLEAR] momentarily to reset the RIT frequency when the quick RIT/⊿TX clear function is ON. (p. 12-18)
④ To cancel the ⊿TX function, push [⊿TX] again.
  • "⊿TX" disappears.



● ⊿TX function ON

◇ ⊿TX monitor function

When the ⊿TX function is ON, holding down [XFC] allows you to monitor the operating frequency directly.

✔ For your convenience — Calculate function

The shift frequency of the ⊿TX function can be added/subtracted to the displayed frequency.

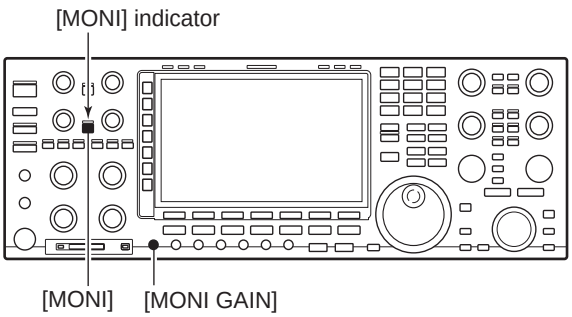
➥ While displaying the ⊿TX shift frequency, hold down [⊿TX] for 1 second.

■ Monitor function

The monitor function allows you to monitor your transmit IF signals in any mode. Use this to check voice characteristics while adjusting SSB transmit parameter. (p. 12-4) The CW sidetone functions regardless of the [MONI] switch setting.

① Push [MONI] to switch the monitor function ON or OFF.
  • [MONI] indicator above this switch lights green.
② Rotate [MONI GAIN] for the clearest audio output while holding [PTT] and speaking into the microphone.

NOTE: When using the VOX voice delay, turn the monitor function OFF; or transmitted audio will be echoed.

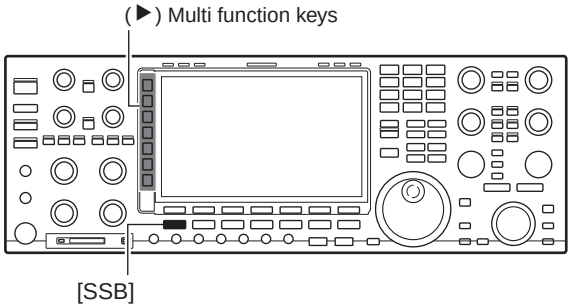


■ Transmit filter width setting (SSB only)

The transmit filter width for SSB mode can be selected from wide, middle and narrow.

➥ Operating in the SSB mode, hold down the Multi-function keys' [COMP](►) for 1 second several times to select the desired transmit filter width from wide, middle and narrow.
- The filter functions regardless of the speech compressor use.
- The following filters are specified as the default. Each of the filter width can be re-set in level set mode. (p. 12-5)

WIDE : 100 Hz to 2.9 kHz
MID : 300 Hz to 2.7 kHz
NAR : 500 Hz to 2.5 kHz



• LEVEL SET screen

■ Speech compressor (SSB only)

The speech compressor increases average RF output power, improving signal strength and readability in SSB mode only.

① Select USB or LSB mode and adjust [MIC] to a suitable level.
- Push [METER](►) several times to select the ALC meter for microphone gain adjustment.

② Push [COMP](►) to turn the speech compressor ON.

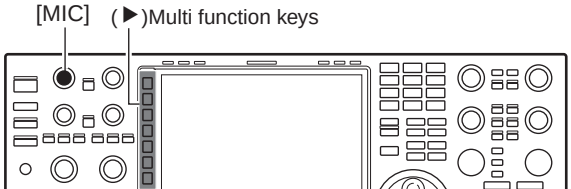
③ Push [METER](►) several times to select the COMP meter.

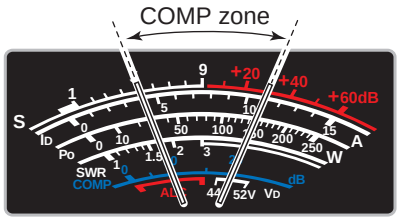
④ While speaking into the microphone, rotate [COMP](►) control, so that the COMP meter reads within the COMP zone (10 to 20 dB range) with your normal voice level.

When the COMP meter peaks exceed the COMP zone, your transmitted voice may be distorted.

⑤ Push [METER](►) several times to select the ALC meter.

⑥ While speaking into the microphone, rotate [DRIVE], so that the ALC meter reads within the 30 to 50% range of the ALC zone with your normal voice level.





✔ For your convenience

Hold down [METER](►) for 1 second to display the multi-function meter that can check the ALC and COMP level at a glance.

■ Split frequency operation

Split frequency operation allows you to transmit and receive in the same mode on two different frequencies. The split frequency operation is performed using 2 frequencies on the main and sub readouts.

The following is an example of setting 21.290 MHz for receiving and 21.310 MHz for transmitting.

① Set 21.290 MHz (USB) in VFO mode.
② Push [SPLIT] momentarily, then hold down [M=S] for 1 second.
- The quick split function is much more convenient for selecting the transmit frequency. See the next section for details.
- The equalized transmit frequency and "SPLIT" appear on the LCD.
- [SPLIT] indicator lights.
- "TX" appears to show the transmit frequency readout.

③ Set the transmit frequency to 21.310 MHz in one of following ways.
➥ Rotate the main dial while holding down [XFC].
➥ Rotate the sub dial.
- The transmit frequency can be monitored while holding down [XFC] or using dualwatch.

④ Now you can receive on 21.290 MHz and transmit on 21.310 MHz.

To change the transmit and receive frequencies, push [CHANGE] to exchange the main and sub readouts.

✔ CONVENIENT

• Direct shift frequency input

The shift frequency can be entered directly.
① Push [F-INP].
② Enter the desired shift frequency with the digit keys.
- 1 kHz to 9.999 MHz can be set.
- When you require a minus shift direction, push [•] in advance.

③ Push [SPLIT].
- The shift frequency is input in the sub readout and the split function is turned ON.

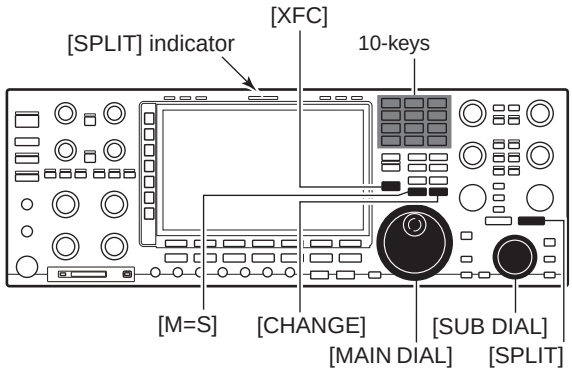
[Example]
To transmit on 1 kHz higher frequency:
- Push [F-INP], [1] then [SPLIT].

To transmit on 3 kHz lower frequency:
- Push [F-INP], [•], [3] then [SPLIT].

• Split lock function

Accidentally releasing [XFC] while rotating the main dial changes the receive frequency. To prevent this, use both the split lock and dial lock functions to change the transmit frequency only. The split lock function cancels the dial lock function while holding down [XFC] during split frequency operation.

The dial lock's effectiveness during split frequency operation can be selected in the set mode for both receive and transmit frequencies; or only the receive frequency. (p. 12-16)



• When the split function ON

• When [XFC] is pushed

• The split frequency operation is ready

■ Quick split function

When you find a DX station, an important consideration is how to set the split frequency.

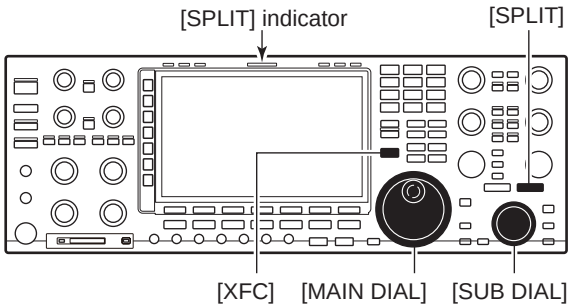
When you hold down the [SPLIT] switch for 1 second, split frequency operation is turned ON, the sub readout is equalized to the main readout frequency and enters standby for transmit frequency input.

This shortens the time needed to start split frequency operation.

The quick split function is ON by default. For your convenience, it can be turned OFF in set mode. (p. 12-15) In this case, the [SPLIT] switch does not equalize the main and sub readout frequencies.

① Suppose you are operating at 21.290 MHz (USB) in VFO mode.
② Hold down [SPLIT] for 1 second.
- Split frequency operation is turned ON.
- The sub readout is equalized to the main readout frequency.
- "F-INP" indicator appears and the sub readout enters standby for transmit frequency input.

③ Enter the desired offset frequency from the keypad then push [SPLIT], or set the transmit frequency with the main dial while pushing [XFC], or with the sub dial.
- "F-INP" indicator disappears when [XFC] is pushed or the main/sub dial is rotated.
- Offset frequency setting with the keypad— example
  To transmit on 1 kHz higher frequency:
  - Push [F-INP], [1] then [SPLIT].
  To transmit on 3 kHz lower frequency:
  - Push [F-INP], [•], [3] then [SPLIT].



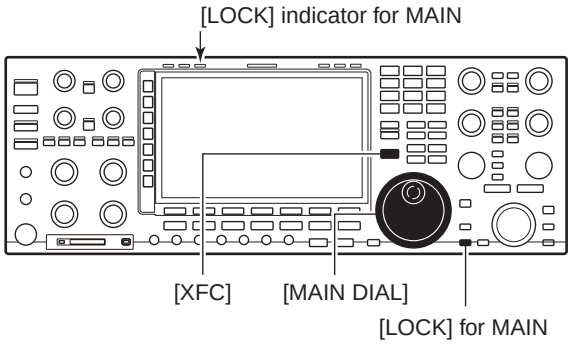
• When the quick split function ON

• When [XFC] is pushed

◇ Split lock function

The split lock function is convenient for changing only the transmit frequency. When the split lock function is not used, accidentally releasing [XFC] while rotating the main dial, changes the receive frequency. The split lock function is ON by default, but can be turned OFF in set mode. (p. 12-16)

① While split frequency operation is ON, push [LOCK] for both main and sub band to activate the split lock function.
② While pushing [XFC], rotate the main dial to change the transmit frequency.
- If you accidentally release [XFC] while rotating the main dial, the receive frequency does NOT change.



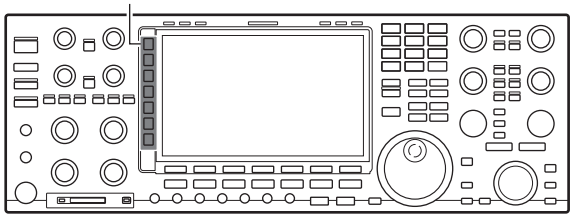
ANTENNA TUNER OPERATION Section 13

■ Antenna connection and selection

The IC-7850 has four antenna connectors for the HF/50 MHz bands, [ANT1], [ANT2], [ANT3], and [ANT4].

For each operating band the IC-7850 covers, there is a band memory which can memorize a selected antenna. When you change the operating frequency beyond a band, the previously used antenna is automatically selected (see below) for the new band. This function allows automatic switching of four separate antennas for HF and 50 MHz bands operation.

(▶) Multi-function keys

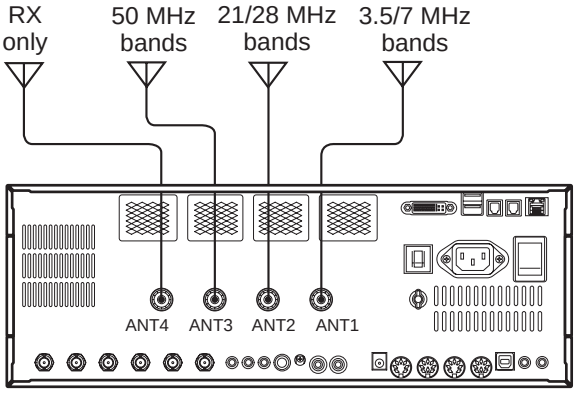


• Antenna selection mode: "Auto"

After an antenna has been selected for use (by pushing [ANT]), the antenna is automatically selected whenever that band is used.

[EXAMPLE]: a 3.5/7 MHz antenna is connected to [ANT1], a 21/28 MHz antenna is connected to [ANT2], a 50 MHz antenna is connected to [ANT3]. When the antenna selector function is set to "Auto," an antenna is automatically selected when changing bands.
[ANT4] can be used for receive only.

• Antenna connection example



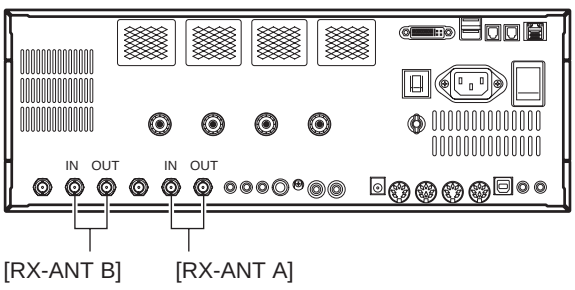
• Antenna selection mode: "Manual"

When "Manual" is selected, you can use the all antenna connectors, [ANT1] [ANT2], [ANT3] and [ANT4], however, band memory does not function. In this case you must select an antenna manually.

■ Rreceive Antena-I/O selection

The IC-7850 has two receive antenna connectors, [RX-ANT A] and [RX-ANT B] on the rear panel.

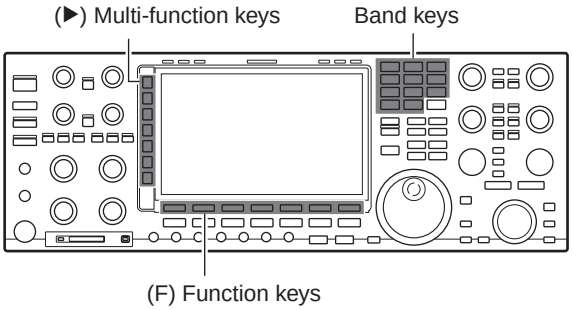
In the default setting, receive antenna connectors, [RX ANT-IN] and [RX ANT-OUT], deactivated and are connected internally by the switching relay. If you want to connect an external preamp or low-pass filter between the [RX ANT-IN] and [RX ANT-OUT], you must activate them as described page 13-6.



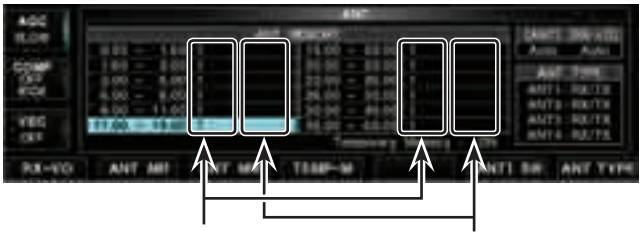
■ Antenna memory settings

This function stores the antenna connector number for each frequency band.

① Push [EXIT/SET] several times to close multi-function screen, if necessary.
② Hold down [ANT] for 1 second to select antenna set screen.
③ Select the desired frequency band with a band key.
④ Push [ANT] several times to select the desired antenna number that you want to set for the selected frequency band.
  • "★" appears.
⑤ Hold down [ANT MW](F) for 1 second to store the antenna selection into the antenna memory.
  • "★" disappears.
⑥ Repeat the steps ③ to ⑤ to store the antenna selection for another frequency bands, if desired.
⑦ Push [EXIT/SET] to exit antenna set screen.



• "ANT" screen



◇ Antenna type selection

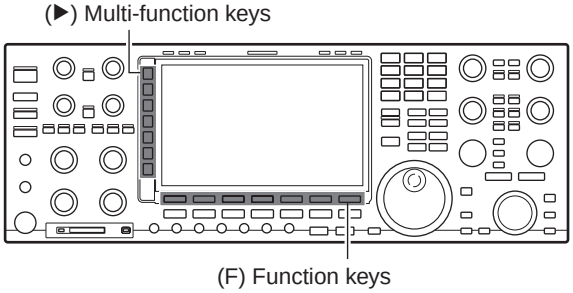
When no antenna is connected to [ANT2], [ANT3], and/or [ANT4], these antenna connectors can be deactivated— deleting the antenna number from selection. This prevent the transceiver from accidentally transmitting into an empty antenna connector.
In addition, a receive-only antenna can be specified for [ANT4].

① Select the antenna set screen as described above.
② Push [ANT TYPE](F) to select antenna type set screen.
③ Push [▲](F) or [▼](F) to select the desired antenna.
④ Rotate the main dial to select the desired antenna condition from TX/RX, RX (ANT4 only) and OFF.
  • TX/RX : Select when an antenna is connected.
  • OFF : Select when no antenna is connected.
  • RX : Select when a receive only antenna is connected. (available for the [ANT4] only)
⑤ Push [EXIT/SET] to exit antenna type set screen.

• Antenna type selection on the "ANT" screen

All antennas, connected to [ANT1]~[ANT4], are set as for 'TX/RX.'

• "ANT TYPE" screen



✔ For your information

The "OFF" antennas cannot be selected with [ANT] switch operation, or with the antenna memory setting. When "RX" is selected for [ANT4], "1/R," "2/R" and "3/R" selections will be added for the selection for both [ANT] switch operation and the antenna memory setting. In these selections, using the antenna connected to [ANT1], [ANT2] and/or [ANT3] for transmission and using the antenna connected to [ANT4] for reception.

■ Antenna memory settings (Continued)

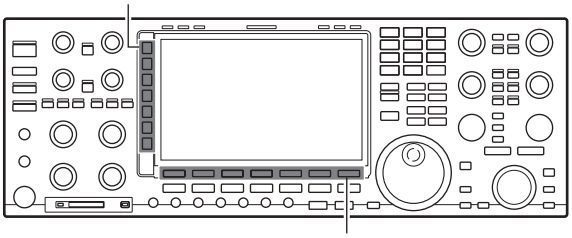
◇ Temporary memory

The antenna temporary memory memorizes the manually selected antenna. The selected antenna will be re-called even if frequency band has been changed.

① Select the antenna set screen.
② Push [TEMP-M](F) to turn the temporary memory ON or OFF.
③ Select the desired frequency band with a band key.
④ Push [ANT] to select the desired antenna.
  • "★" appears when a different antenna from the original is selected.
⑤ Push [ANT MR](F) to re-call the original antenna.
  • "★" disappears.
⑥ Push [EXIT/SET] to exit antenna set screen.

CAUTION: Before transmitting with the manually selected antenna, make sure the selected antenna suits the operating frequency. Otherwise the transceiver may be damaged.

(▶) Multi-function keys



(F) Function keys

• When the temporary memory is ON.

Appears when a different antenna from the original is selected.

The temporary memory is ON.

◇ Antenna selection mode

The automatic antenna selection (antenna memory) and the [ANT] switch function can be deactivated if desired.

① Select the antenna set screen.
② Push [[ANT] SW](F) to select the antenna selection from Auto, OFF and Manual.
  • Auto : Use the antenna memory. Antenna selection with [ANT] switch is also available.
  • OFF : Only the antenna connected to [ANT1] can be used. [ANT] switch is deactivated.
  • Manual: Deactivate the antenna memory function. Antenna can be selected with [ANT] switch operation only.
③ Push [EXIT/SET] to exit antenna set screen.

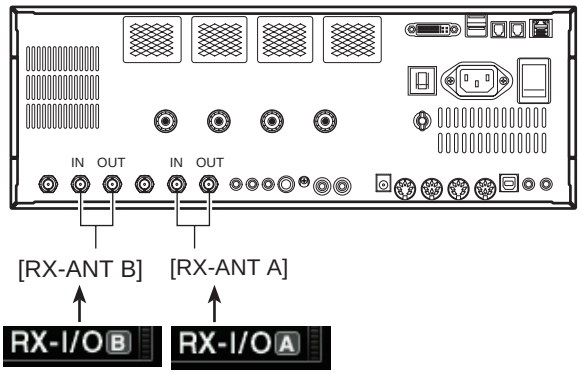
• Antenna selection mode

Push [[ANT] SW](F) to select the antenna selection mode.

• Options of the Antenna selection mode

◇ Receive antenna I/O setting

In the default setting, receive antenna connectors, [RX ANT-IN] and [RX ANT-OUT], on the rear panel are deactivated and are connected internally by the switching relay. If you want to connect an external preamp or low-pass filter between the [RX ANT-IN] and [RX ANT-OUT], you must activate them as described below.



① Select the antenna set screen.
② Select the desired frequency band with a band key.
③ Push [RX-I/O](F) to activate the receive antenna connectors.
  • "RX-I/O" indicators appear when [RX-I/O A] and/or [RX-I/O B] is active.
④ Repeat steps ② and ③, if desired.
⑤ Push [EXIT/SET]
  • The Antenna Set screen closed.

• When the RX-I/O is selected

OFF RX-I/O A RX-I/O B

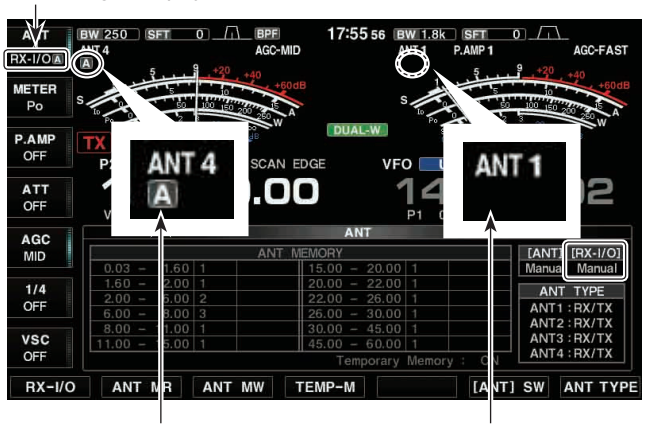
NOTE:
- When common antenna is set to the MAIN and SUB bands, different RX-I/O settings cannot be set.
- When different antennas are set to the MAIN and SUB bands, common RX-I/O setting cannot be set.
- When the SUB band is selected in the Dualwatch function OFF, you cannot change the RX-I/O setting.
  However, if you additionally turn ON the SPLIT function and holding down [XFC], you can change the RX-I/O setting.

• When the RX-I/O A is selected in the 10 MHz band

Pushing [RX-I/O](F) changes setting

• When the RX-I/O is selected (1)

The setting is Displayed



Set to RX-I/O A Set to [RX-I/O] through

• When the RX-I/O is selected (2)

When common antenna is selected on the MAIN and SUB bands, different RX-I/O settings cannot be set.
Thus, the transceiver automatically sets the RX-I/O setting of inoperating band to correct setting same as the opeating side.

■ Antenna tuner operation

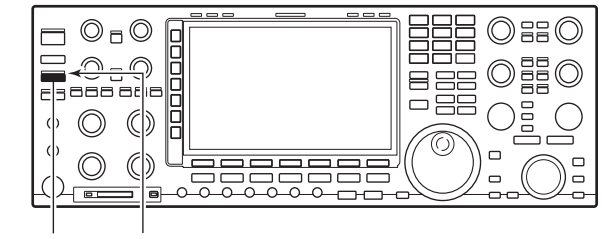
The internal automatic antenna tuner matches the transceiver to the connected antenna automatically. After the tuner matches an antenna, the variable capacitor angles are memorized as a preset point for each frequency range (100 kHz steps). Therefore, when you change the frequency range, the variable capacitors are automatically preset to the memorized point.

CAUTION: NEVER transmit with the tuner ON when no antenna is connected. This will damage the transceiver. Be careful of the antenna selection.

◇ Tuner operation

➥ Push [TUNER] to turn the internal antenna tuner ON. The antenna is tuned automatically when the antenna SWR is higher than 1.5:1.
- When the tuner is ON, [TUNER] switch indicator lights green.
- While tuning, [TUNER] switch indicator blinks green.

NOTE:
- **NEVER** transmit without an antenna properly connected to antenna port in use.
- When 2 or more antennas are connected, select the antenna to be used with [ANT].
- If the SWR is higher than about 1.5:1 when tuning above 100 kHz on an antenna's preset point, hold down [TUNER] for 1 second to start manual tuning.
- The internal tuner may not be able to tune in AM mode. In such cases, hold down [TUNER] for 1 second to manually tune.



• MANUAL TUNING

During SSB operation at low voice levels, the internal tuner may not be tuned correctly. In such cases, manual tuning is helpful.

➥ Hold down [TUNER] for 1 second, to start manual tuning.
- A side tone is emitted and [TUNER] switch indicator blinks red while tuning.
- If the tuner cannot reduce the SWR to less than 1.5:1 after 20 seconds of tuning, the [TUNER] switch indicator goes out.

• AUTOMATIC TUNER START (HF bands only)

If you want to deactivate the tuner under conditions of VSWR 1.5:1 or less, use the auto tuner start function and turn the tuner OFF. This function activates the tuner automatically when the SWR exceeds 1.5:1.

This function is turned ON in set mode. (p. 12-16).

■ Antenna tuner operation (Continued)

• PTT TUNER START

The tuner is always tuned when the PTT is pushed after the frequency is changed (more than 1% from last-tuned frequency). This function removes the “hold down [TUNER]” operation and activates for the first transmission on a new frequency.

This function is turned ON in set mode. (p. 12-16).

• Antenna tuner of the IC-PW1

When using an external antenna tuner such as the IC-PW1’s tuner, tune with the external antenna tuner, and turn OFF the IC-7850’s tuner. After tuning is completed, turn the internal tuner ON. Otherwise, both tuners tune simultaneously and correct tuning may not be obtained.

See the instruction manual included with each antenna tuner for their respective operations.

◇ If the tuner cannot tune the antenna

Check the following and try again:
- the [ANT] connector selection.
- the antenna connection and feedline.
- the untuned antenna SWR. (Less than 3:1 for HF bands; Less than 2.5:1 for 50 MHz band)
- the transmit power. (8 W for HF bands; 15 W for 50 MHz band)
- the power source voltage/capacity.

If the tuner cannot reduce the SWR to less than 1.5:1 after checking the above, perform the following:
- repeat manual tuning several times.
- tune with a 50 Ω dummy load and re-tune the antenna.
- turn power OFF and ON.
- adjust the antenna feedline length.
  (This is effective for higher frequencies in some cases.)
- Some antennas, especially for low bands, have a narrow bandwidth. These antennas may not be tuned at the edge of their bandwidth, therefore, tune such an antenna as follows:

[Example]: Suppose you have an antenna which has an SWR of 1.5:1 at 3.55 MHz and an SWR of 3:1 at 3.8 MHz.

① Set 3.55 MHz and hold down [TUNER] for 1 second to start manual tuning.

② Set 3.80 MHz and hold down [TUNER] for 1 second to start manual tuning.

Count on us!

IC-7851
#03 (Europe)

IC-7850
#23 (Europe-01)

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■RO ■TR ■HR

IC-7851
#04 (France)

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IC-7851
#05 (United Kingdom)

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IC-7851
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Icom Inc.
1-1-32 Kamiminami, Hirano-ku, Osaka 547-0003, Japan