HF/50 MHz TRANSCEIVER

IC-7700

Instruction Manual

A-6612H-1EX
Printed in Japan

FOREWORD

Thank you for making the IC-7700 your radio of choice. We hope you agree with Icom's philosophy of "technology first." Many hours of research and development went into the design of your IC-7700.

◇ *FEATURES*

- ❍ *Ultimate receiver performance: third-order intercept (IP3) of +40 dBm (HF bands only)*
- ❍ *Built-in Baudot RTTY and PSK31 modulator/demodulator and direct PC keyboard connection capability for RTTY and PSK31 operations without a PC*
- ❍ *High resolution spectrum scope— center frequency and fixed 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-7700.

EXPLICIT DEFINITIONS

WORD	DEFINITION
⚠ WARNING	Personal injury, fire hazard or electric shock may occur.
CAUTION	Equipment damage may occur.
NOTE	If disregarded, inconvenience only. No risk of personal injury, fire or electric shock.

TRADEMARKS

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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.

An LCD filter has been added to European versions for Electromagnetic interference (EMI) and Radio Frequency interference (RFI) compliance purpose. In some instances, the LCD may be a little difficult to see, but this is normal and does not indicate an LCD malfunction.

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PRECAUTIONS

⚠ **WARNING 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!** 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 injuly and/or damage to the transceiver.

⚠ **CAUTION! NEVER** put the transceiver's rear panel side down after lifting up the transceiver by holding rack mounting handle. This may scratch the surface of the place or damage the connectors on the transceiver's rear panel.

⚠ **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** touch the transceiver top cover when transmitting continuously for long periods. The top cover may be hot.

⚠ **CAUTION! 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.

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

⚠ **CAUTION!** The transceiver weighs approx. 22.5 kg (50 lb). Always have two people available to carry, lift or turn over the transceiver.

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

DO NOT use chemical agents such as benzine or alcohol when cleaning the IC-7700, as they can damage the transceiver's surfaces.

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

AVOID using or storing the transceiver in areas with temperatures below ±0°C (+32°F) or above +50°C (+122°F).

AVOID placing the transceiver in excessively dusty environments or in direct sunlight.

AVOID placing 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.

Use Icom microphones only (supplied or optional). Other manufacturers' microphones have different pin assignments, and connection to the IC-7700 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.

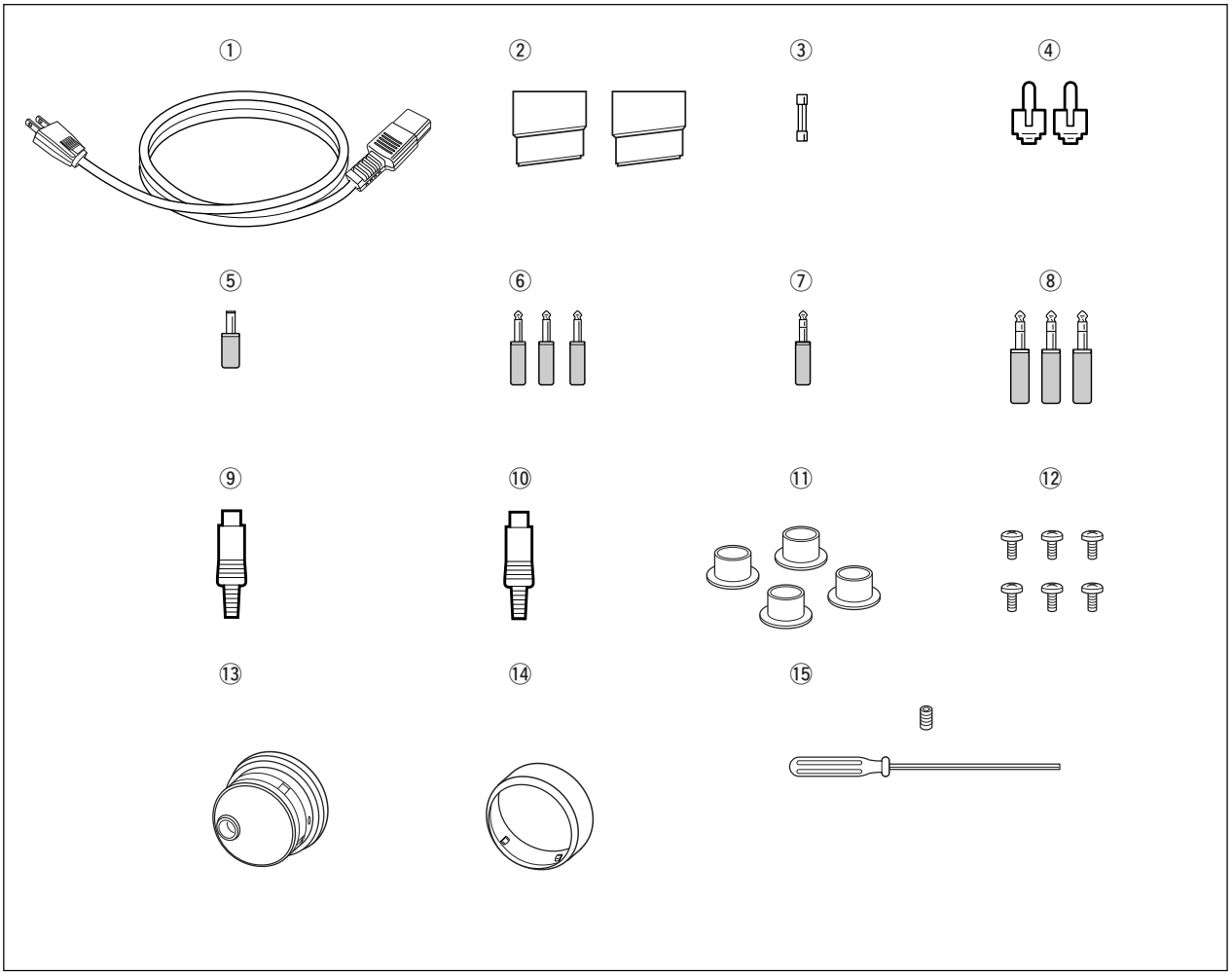
During maritime mobile operation, keep the transceiver and microphone as far away as possible from the magnetic navigation compass to prevent erroneous indications.

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.

For U.S.A. only

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

SUPPLIED ACCESSORIES



① AC power cable* 1
② Feet ..... 1 pair
③ Spare fuse (FGB 2 A) 1
④ RCA plugs 2
⑤ DC plug 1
⑥ 2-conductor 1/8″ plugs 3
⑦ 3-conductor 1/8″ plugs 2
⑧ 3-conductor 1/4″ plugs 3
⑨ ACC plugs (7-pin) 1
⑩ ACC plugs (8-pin) 1
⑪ Antenna connector caps 4
⑫ Side screws (without rack mounting handle)† ... 6
⑬ Main dial‡ 1
⑭ Rubber cover for Main dial‡ 1
⑮ Main dial screw and hexagonal wrench‡ ..... 1 set

*May differ from that shown according to version.
† These screw are used when removing rack mounting handles. See p.2-3 for rack mounting handle detachment details.
‡ See p.2-2 for main dial attachment details.

TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

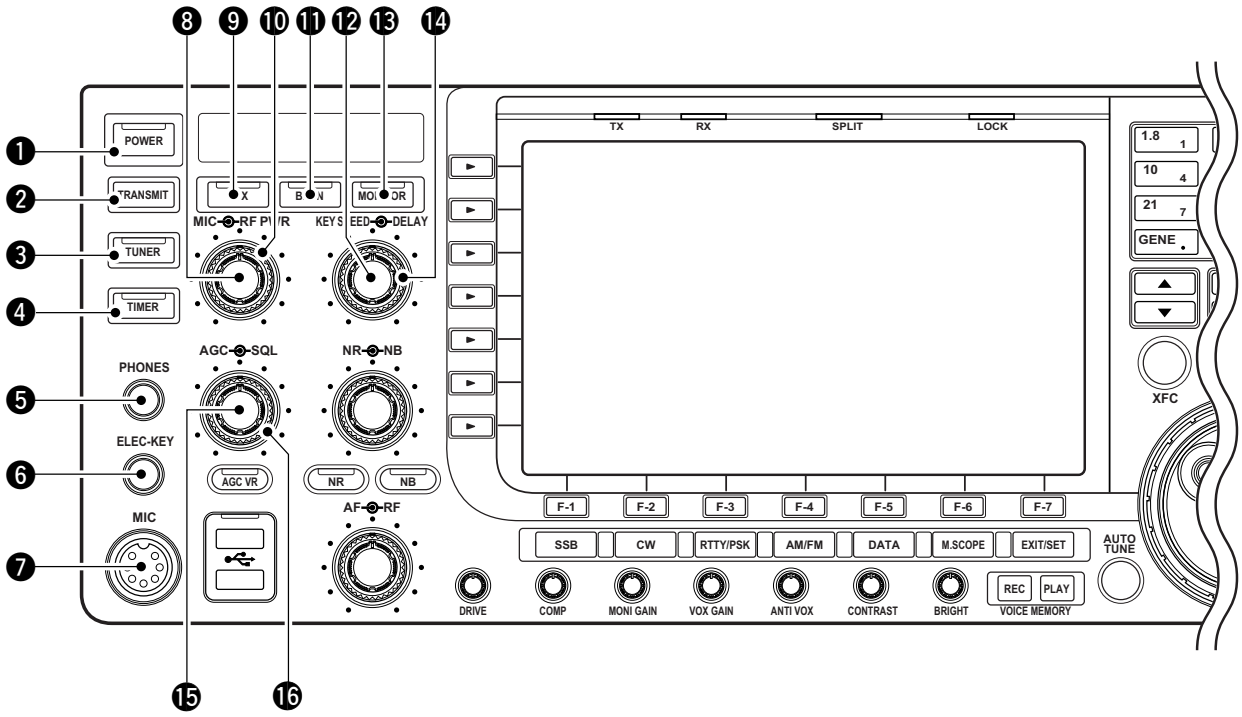
TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

PANEL DESCRIPTION Section 1

■ Front panel



❶ POWER SWITCH [POWER] (p. 3-2)

Turn the internal power supply ON in first. 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 switch lights green when powered ON.

➥ Push and hold for 1 sec. 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 SWITCH [TRANSMIT]

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

❸ ANTENNA TUNER SWITCH [TUNER] (p. 10-6)

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

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

❹ TIMER SWITCH [TIMER] (p. 11-4)

➥ Turns the sleep or daily timer function ON and OFF.
- The [TIMER] indicator above this switch lights green when the timer is in use.

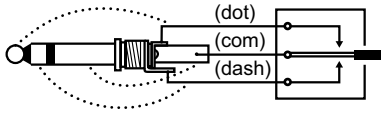
➥ Enters timer set mode when pushed and held for 1 sec.

❺ HEADPHONE JACK [PHONES]

Accepts standard stereo headphones.
- Output power: 5 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. 2-5)

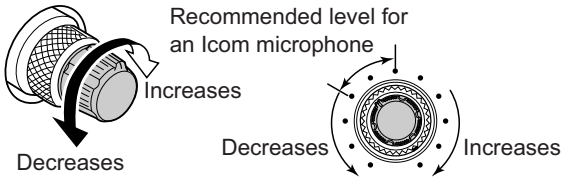
Accepts a paddle to activate the internal electronic keyer for CW operation.
- You can select internal electronic keyer, bug-key or straight key operation in keyer set mode. (p. 4-12)
- A straight key jack is located on the rear panel. See [CW KEY] on p. 1-12.
- Keyer polarity (dot and dash) can be reversed in keyer set mode. (p. 4-12)
- 4-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 MIC GAIN CONTROL [MIC] (p. 3-12)
Adjusts microphone input gain.
- The transmit audio tone in SSB, AM and FM modes can be adjusted independently in set mode. (p. 12-5)

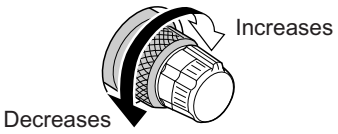
✔ How to set the microphone gain.
Set the [MIC] control so that the ALC meter occasionally moves up-scale during normal voice transmission in SSB, AM or FM mode.



❾ VOX SWITCH [VOX]
➥ Push to turn the VOX function ON and OFF during SSB, AM and FM mode operation. (p. 6-2)
➥ Push and hold for 1 sec. to enter VOX set mode. (p. 6-2)

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

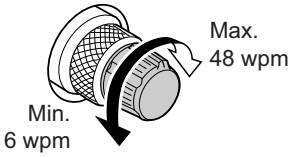
❿ RF POWER CONTROL [RF PWR] (p. 3-12)
Continuously varies the RF output power from minimum (5 W*) to maximum (200 W*).
*AM mode: 5 W to 50 W



⓫ BREAK-IN SWITCH [BK-IN]
Push to turn the break-in function ON (semi-break-in, full-break-in) and OFF during CW mode operation. (p. 6-3)

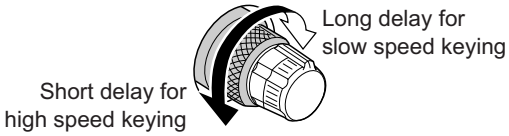
✔ What is the break-in function?
The break-in function switches transmit and receive with CW keying. Full break-in (QSK) can monitor the receive signal between CW dots and dashes.

⓬ ELECTRONIC CW KEYER SPEED CONTROL [KEY SPEED] (p. 4-4)
Adjusts the internal electronic CW keyer's speed.
- 6 wpm (min.) to 48 wpm (max.) is the available range.

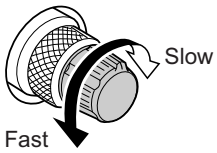


⓭ MONITOR SWITCH [MONITOR] (p. 6-4)
Monitors your transmitted IF signal.
- The CW sidetone functions regardless of [MONITOR] switch setting in CW mode.
- The [MONITOR] indicator above this switch lights green while the function is activated.

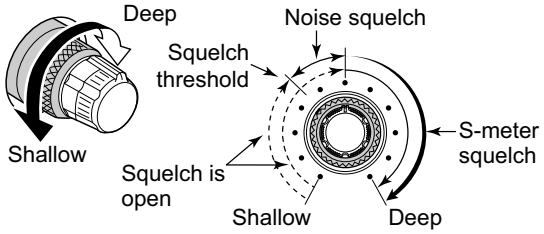
⓮ BREAK-IN DELAY CONTROL [DELAY] (p. 6-3)
Adjusts the transmit-to-receive switching delay time for CW semi-break-in operations.



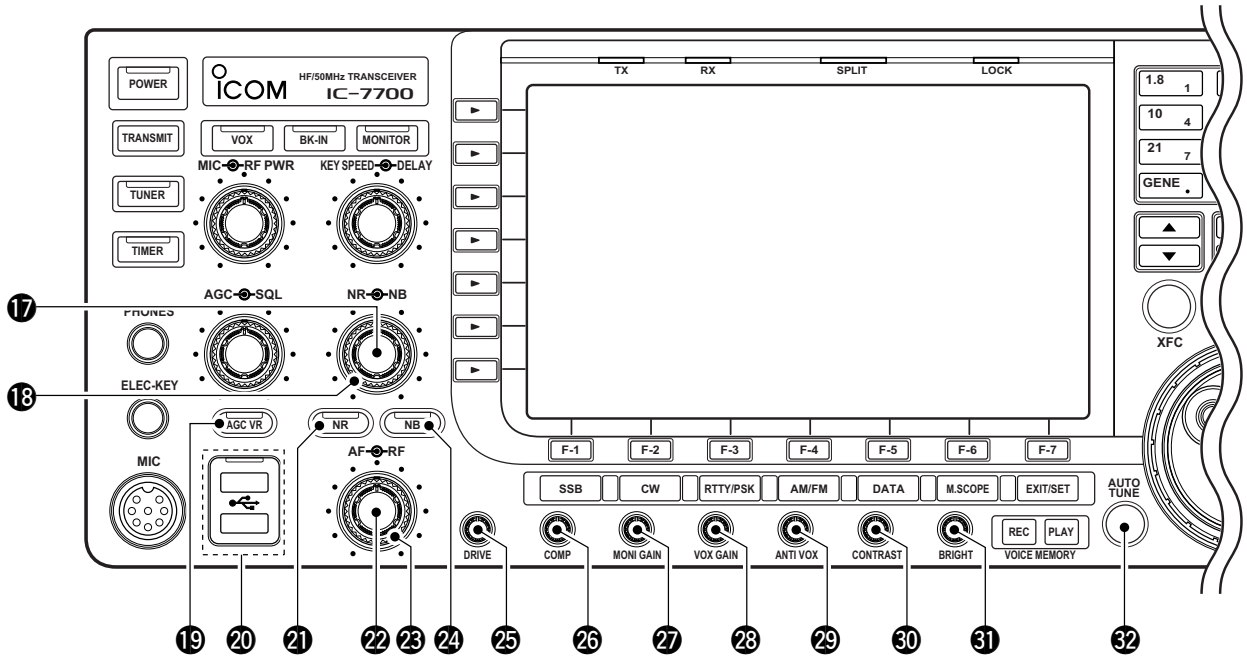
⓯ AGC CONTROL [AGC] (p. 5-11)
Adjusts the continuously-variable AGC circuit time constant.
- To use [AGC] control, push [AGC VR] ([AGC VR] indicator lights).



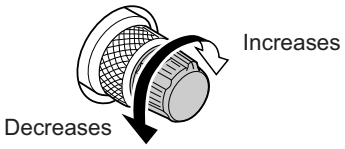
⓰ SQUELCH CONTROL [SQL]
(outer control; p. 3-9)
Adjusts the squelch threshold level. The squelch mutes noise output from the speaker (closed condition) when no signal is received.
- The squelch is particularly effective for FM. It is also available in other modes.
- The 11 to 12 o'clock position is recommended for the most effective use of the [SQL] control.



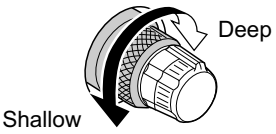
■ Front panel (continued)



⓱ NOISE REDUCTION LEVEL CONTROL [NR]
(inner control; p. 5-17)
Adjusts the DSP noise reduction level when the noise reduction function is in use. Set for maximum readability.
• To use this control, push [NR].



⓲ NOISE BLANKER CONTROL [NB]
(outer control; p. 5-16)
Adjust the noise blanker threshold level.
• To use this control, push [NB].

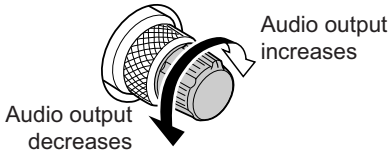


⓳ AGC VOLUME SWITCH [AGC VR] (p. 5-11)
➥ Push to toggle [AGC] control usage ON and OFF.
• Use [AGC] control to set the AGC time constant when switched ON.
• The [AGC VR] indicator above this switch lights green when the control is ON.
➥ Turns the AGC function OFF when pushed and held for 1 sec.

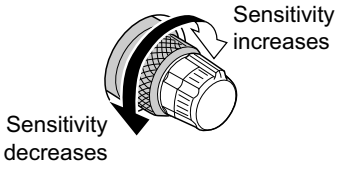
⓴ USB (Universal Serial Bus) CONNECTOR [USB]
(p. 2-4)
➥ Insert USB-Memory* for both reading/storing a wide variety of the transceiver's information and data.
• The indicator above the connectors lights or blinks when the transceiver reads or writes to the memory data.
• Unmount operation is necessary before removing the USB-Memory* (p.12-25).
➥ Connects a PC keyboard for RTTY and PSK31 operations.
• USB keyboard* is supported.
*: USB-Memory or USB keyboard is not supplied by Icom.

㉑ NOISE REDUCTION SWITCH [NR] (p. 5-17)
Push to switch DSP noise reduction ON and OFF.
• The [NR] indicator above this switch lights green when the function is activated.

㉒ AF CONTROL [AF] (inner control; p. 3-9)
Varies the audio output level of the speaker or headphones.

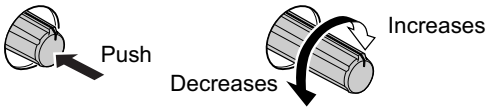


㉓ **RF GAIN CONTROL [RF]** (outer control; p. 3-9)
Adjusts the RF gain level.
While rotating the RF gain control, you may hear noise. This comes from the DSP unit and does not indicate a malfunction.

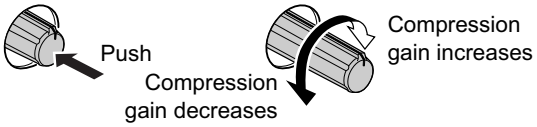


㉔ **NOISE BLANKER SWITCH** NB (p. 5-16)
➥ Switches the noise blanker ON and OFF when pushed. The noise blanker reduces pulse-type noise such as that generated by automobile ignition systems. This function cannot be used in FM mode, or non-pulse-type noise.
• The [NB] indicator above this switch lights green while the function is activated.
➥ Enters blanking-width set mode when pushed and held for 1 sec.

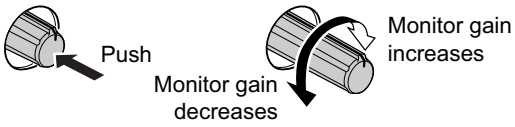
㉕ **DRIVE GAIN CONTROL [DRIVE]** (p. 3-13)
Adjusts the transmitter level at the driver stage. Active in all modes (other than SSB mode with [COMP] OFF).



㉖ **COMPRESSION LEVEL CONTROL [COMP]** (p. 6-5)
Adjusts the speech compression level in SSB.

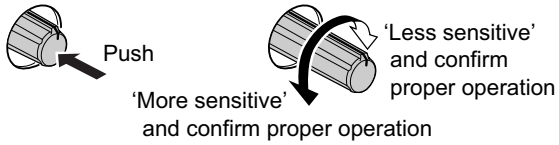


㉗ **MONITOR GAIN CONTROL [MONI GAIN]** (p. 6-4)
Adjusts the transmit IF signal monitor level.

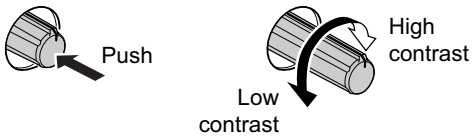


㉘ **VOX GAIN CONTROL [VOX GAIN]** (p. 6-2)
Adjusts the transmit/receive switching threshold level for VOX operation.

㉙ **ANTI VOX CONTROL [ANTI VOX]** (p. 6-2)
Adjusts the VOX sensitivity to speaker audio to prevent unwanted VOX activation.



㉚ **LCD CONTRAST CONTROL [CONTRAST]**
Adjusts the LCD contrast.

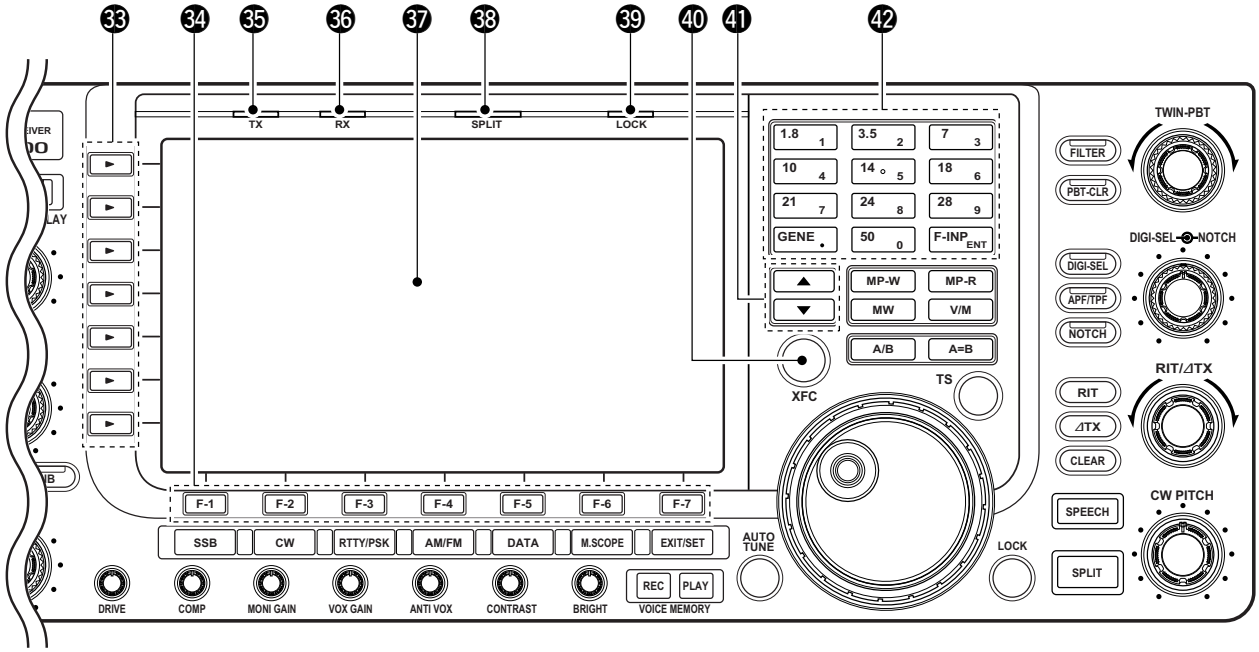


㉛ **LCD BRIGHTNESS CONTROL [BRIGHT]**
Adjusts the LCD brightness.

㉜ **AUTOMATIC TUNING SWITCH [AUTOTUNE]** (p. 5-19)
Turns the automatic tuning function ON and 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.

■ Front panel (continued)



33 MULTI-FUNCTION SWITCHES

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

• Functions vary depending on the operating condition.

MF1 (MULTI-FUNCTION 1 SWITCH)

ANT 1

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

➥ Displays antenna selection memory when pushed and held for 1 sec.

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

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

MF2 (MULTI-FUNCTION 2 SWITCH)

METER Po

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

➥ Switches the multi-function digital meter ON and OFF when pushed and held for 1 sec. (p. 3-10)

MF3 (MULTI-FUNCTION 3 SWITCH)

P.AMP 1

➥ Selects one of 2 receive RF preamps or bypasses them. (p. 5-9)

• "P. AMP1" activates 10 dB preamp.

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

✔ What is the preamp?

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

MF4 (MULTI-FUNCTION 4 SWITCH)

ATT OFF

➥ Selects 6 dB, 12 dB or 18 dB attenuator when pushed. (p. 5-9)

➥ Turns the attenuator function OFF when pushed and held for 1 sec. (p. 5-9)

✔ What is the attenuator?

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

MF5 (MULTI-FUNCTION 5 SWITCH)

AGC MID

➥ Activates and selects fast, mid-range or slow AGC time constant when pushed. (p. 5-11)
• In FM mode, only "FAST" is available.
➥ Enters the AGC set mode when pushed and held for 1 sec. (p. 5-11)

AGC time constant can be set between 0.1 to 8.0 sec. (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.

MF6 (MULTI-FUNCTION 6 SWITCH)

COMP OFF WIDE

➥ Turns the speech compressor ON and OFF in SSB mode. (p. 6-5)
➥ Switches the narrow, middle or wide compression when pushed and held for 1 sec.

✔ 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.

1/4 ON

➥ Turns the ¼-speed tuning function ON and OFF in SSB data, CW, RTTY and PSK modes. (p. 3-6)
• ¼ function sets dial rotation to ¼ of normal speed for fine tuning.

TONE OFF

➥ Switches between the tone encoder, tone squelch function and no-tone operation when pushed in FM mode. (pgs. 4-33, 4-34)
➥ Enters the tone set mode when pushed and held for 1 sec. in FM mode. (pgs. 4-33, 4-34)

MF7 (MULTI-FUNCTION 7 SWITCH)

VSC OFF

➥ Switches the voice squelch control function ON and OFF; useful for scanning. (p. 9-3)

㉞ LCD FUNCTION SWITCHES [F-1] – [F-7]

Push to select the function indicated in the LCD display above these switches.
• Functions vary depending on the operating condition.

㉟ TRANSMIT INDICATOR [TX]

Lights red while transmitting.

㊱ RECEIVE INDICATOR [RX]

Lights green while receiving a signal and when the squelch is open.

㊲ LCD FUNCTION DISPLAY (p. 1-14)

Shows the operating frequency, function switch menus, spectrum scope screen, memory list screen, set mode settings, etc.

㊳ SPLIT OPERATION INDICATOR [SPLIT]

Lights during split frequency operation.

㊴ LOCK INDICATOR [LOCK] (p. 5-17)

Lights when the dial lock function is activated.

㊵ TRANSMIT FREQUENCY CHECK SWITCH [XFC] (p. 6-6)

Monitors the transmit frequency (including ⊿TX frequency offset) when pushed and held during split frequency operation.
• While pushing this switch, the transmit frequency can be changed with the main dial, keypad, memo pad or [▲] / [▼] switches.
• When the split lock function is turned ON, pushing [XFC] cancels the dial lock function. (p. 6-7)

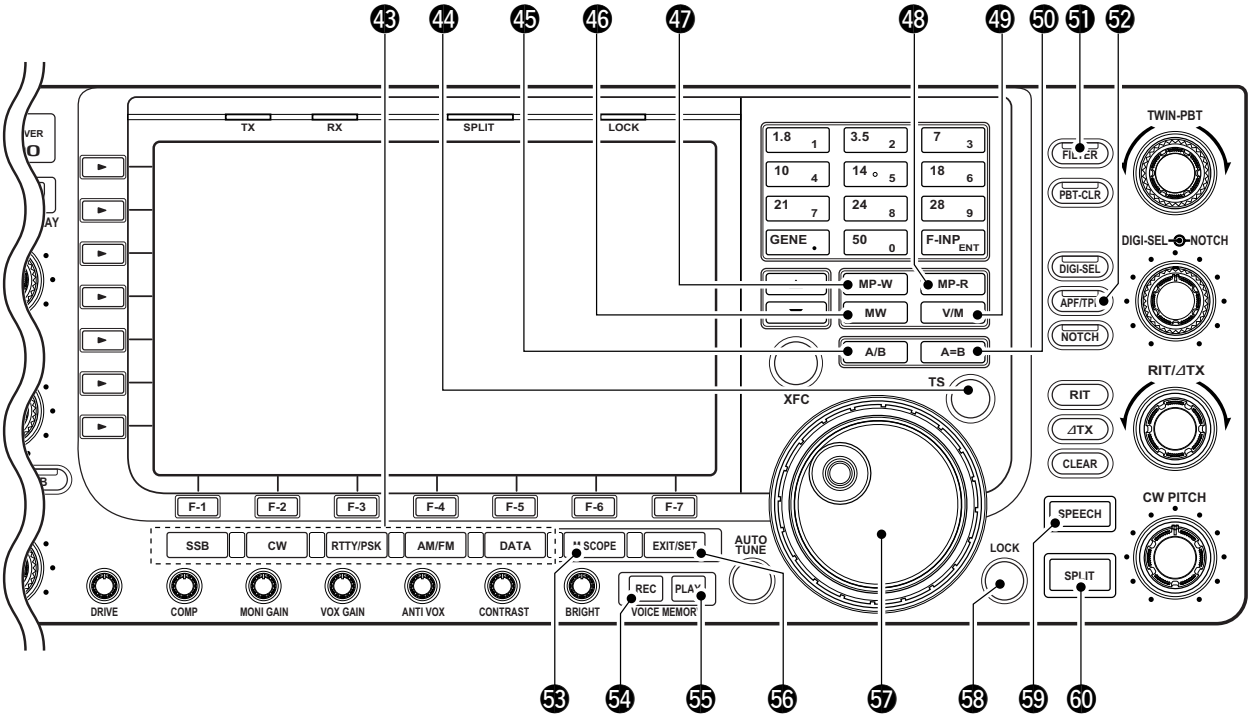
㊶ MEMORY UP/DOWN SWITCHES [▲] / [▼] (p. 8-2)

Push to select the desired memory channel.
• Memory channels can be selected both in VFO and memory modes.

㊷ KEYPAD

➥ Pushing a key selects the operating band. (p. 3-4)
• [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 the entry. (pgs. 3-5, 8-2)
• e.g. to enter 14.195 MHz, push [F-INP ENT] [1.8 1] [10 4] [GENE .] [1.8 1] [28 9] [14 5] [F-INP ENT].

■ Front panel (continued)



43 MODE SWITCHES

Selects the desired mode. (p. 3-8)

- Announces selected mode via the speech synthesizer. (p. 12-15)

SSB Selects USB and LSB modes alternately.

CW Selects CW and CW-R (CW reverse) modes alternately.

RTTY/PSK
- ➥ Switches between RTTY and PSK mode.
- ➥ Switches RTTY and RTTY-R (RTTY reverse) mode when pushed and held for 1 sec. in RTTY mode.
- ➥ Switches PSK and PSK-R (PSK reverse) mode when pushed and held for 1 sec. in PSK mode.

AM/FM Selects AM and 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.
- ➥ Switches D1, D2 and D3 when pushed and held for 1 sec.

44 QUICK TUNING SWITCH [TS]

- ➥ Turns the quick tuning step ON and 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, push and hold for 1 sec. to turn the 1 Hz tuning step ON and OFF. (p. 3-7)
- ➥ When the quick tuning step is ON, push and hold for 1 sec. to enter quick tuning step set mode. (p. 3-6)

45 VFO SELECT SWITCH A/B

Switches the selected VFO between the VFO-A and VFO-B when pushed.

- Switches between transmit frequency and receive frequency when the split frequency function is ON. (p. 6-6)

46 MEMORY WRITE SWITCH MW (p. 8-3)

Stores the selected readout frequency and operating mode into the displayed memory channel when pushed and held for 1 sec.

- This function is available both in VFO and memory modes.

㊼ MEMO PAD-WRITE SWITCH [MP-W] (p. 8-7)
Programs the displayed readout frequency and operating mode into a memo pad.
- The 5 most recent entries remain in memo pads.
- The memo pad capacity can be expanded from 5 to 10 in set mode. (p. 12-15)

㊽ MEMO PAD-READ SWITCH [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 capacity can be expanded from 5 to 10 in set mode. (p. 12-15)

㊾ VFO/MEMORY SWITCH [V/M]
➥ Switches the selected readout operating mode between the VFO and memory when pushed. (pgs. 3-3, 8-2)
➥ Transfers the memory contents to VFO when pushed and held for 1 sec. (p. 8-4)

㊿ VFO EQUALIZING SWITCH [A=B] (p. 3-3)
Transfers the undisplayed VFO frequency to the displayed VFO frequency when pushed and held for 1 sec.

(51) FILTER SWITCH [FILTER] (p. 5-13)
➥ Selects one of 3 IF filter settings.
➥ Enters the filter set screen when pushed and held for 1 sec.

(52) AUDIO PEAK FILTER/TWIN PEAK FILTER SWITCH [APF/TPF]
➥ Push to turn the audio peak filter ON and OFF during CW mode operation. (p. 4-6)
- "APF" appears when audio peak filter is in use.

➥ Push to turn the twin peak filter ON and OFF during RTTY mode operation. (p. 4-14)
- "TPF" appears when twin peak filter is in use.

➥ During CW mode operation, push and hold for 1 sec. to select the APF passband width from 320, 160 and 80 Hz. (p. 4-6)

(53) MINI SPECTRUM SCOPE SWITCH [M.SCOPE] (p. 5-4)
➥ Turns the mini spectrum scope screen ON and OFF when pushed.
- The mini spectrum scope screen can be displayed with another screen, such as memory or set mode screen, simultaneously.

➥ Turns the spectrum scope screen ON when pushed and held for 1 sec.

(54) VOICE MEMORY RECORD SWITCH [REC] (p. 7-3)
➥ Push to record the received signal for the preset time period.
- After the preset time has passed, stops recording automatically.

➥ Push and hold for 1 sec. to record the received signal until the recording is canceled.
- Push this switch momentarily to stop recording.
- The memory records the latest 30 sec. of audio.

(55) VOICE MEMORY PLAYBACK SWITCH [PLAY] (p. 7-4)
➥ Plays back the previously recorded audio for the preset time period when pushed.
➥ Plays back all of the previously recorded audio when pushed and held for 1 sec.

(56) EXIT/SET SWITCH [EXIT/SET]
➥ Push to exit, or return to the previous screen indication during spectrum scope, memory, scan or set mode screen display.
➥ Displays set mode menu screen when pushed and held for 1 sec.

(57) MAIN DIAL
Changes the displayed frequency, selects set mode setting, etc.

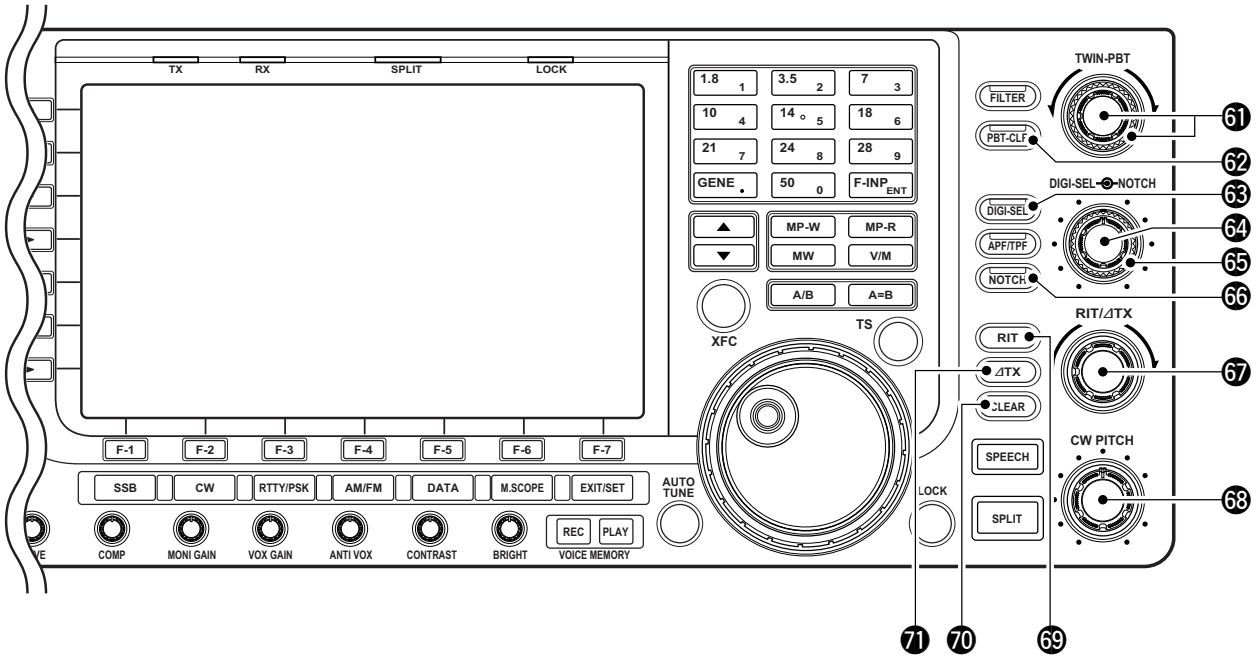
(58) LOCK SWITCH [LOCK] (p. 5-17)
Push to switch the dial lock function ON and OFF.

(59) SPEECH SWITCH [SPEECH] (p. 3-11)
➥ Push to announce the S-meter indication and the selected frequency.
➥ The selected operating mode is additionally announced when pushed and held for 1 sec.

(60) SPLIT SWITCH [SPLIT] (p. 6-6)
➥ Turns the split function ON and OFF when pushed.
➥ Turns the split function ON. When pushed and held for 1 sec. in non-FM modes, transfers the unselected VFO's readout frequency to the selected VFO's readout and sets the unselected VFO to transmit VFO. (Quick split function)
- The offset frequency is shifted from the selected VFO frequency in FM mode. (p. 12-13)
- The quick split function can be turned OFF using set mode. (p. 12-12)

➥ Turns the split function ON and shifts the unselected VFO frequency after inputting an offset.

■ Front panel (continued)



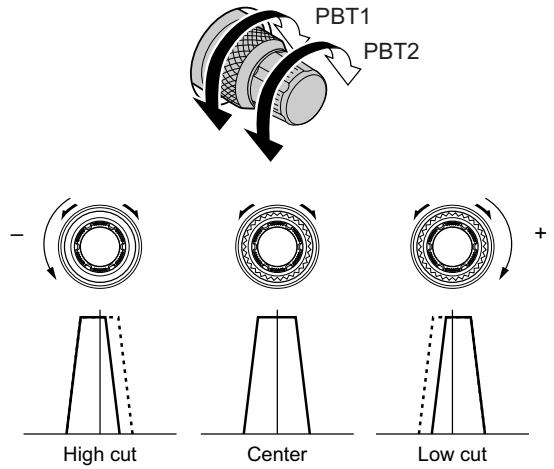
61 PASSBAND TUNING CONTROLS [TWIN-PBT] (p. 5-12)

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

- Passband width and shift frequency are displayed in the multi-function display.
- Push and hold [PBT-CLR] for 1 sec. to clear the PBT settings.
- Adjustment range is set to half of the IF filter passband width. 25 Hz steps and 100 Hz steps are available.

✔ 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.



62 PBT CLEAR SWITCH [PBT-CLR] (p. 5-12)

Clears the PBT settings when pushed and held for 1 sec.

- The [PBT-CLR] indicator above this switch lights when PBT is in use.

63 DIGITAL RF SELECTOR SWITCH [DIGI-SEL] (p. 5-18)

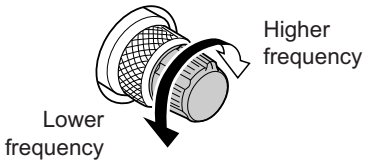
Turns the digital RF preselector ON and OFF.

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

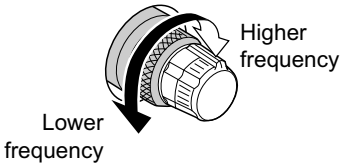
64 DIGITAL RF SELECTOR CONTROL [DIGI-SEL] (p. 5-18)

Adjusts the digital RF selector center frequency.

- The control can be reassigned as the audio peak filter adjustment (p. 12-16)



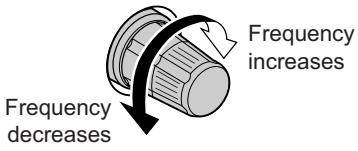
⑮ MANUAL NOTCH FILTER CONTROL [NOTCH] (outer control; p. 5-18)
Varies the "valley" frequency of the manual notch filter to reject an interfering signal while the manual notch function is ON.
• Notch filter center frequency:
SSB : –1060 Hz to 4040 Hz
CW : CW pitch freq. + 2540 Hz to CW pitch freq. –2540 Hz
AM : –5100 Hz to 5100 Hz



⑯ NOTCH SWITCH [NOTCH] (p. 5-18)
➥ Switches the notch function between auto, manual and OFF in SSB and AM modes.
➥ Turns the manual notch function ON and OFF when pushed in CW, RTTY and PSK31 mode.
➥ Turns the auto notch function ON and OFF when pushed in FM mode.
• "MN" appears when manual notch is in use.
• "AN" appears when auto notch is in use.
➥ Switches the manual notch characteristics from wide, middle and narrow when pushed and held for 1 sec.

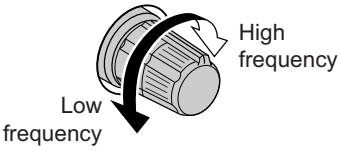
✔ What is the notch function?
The notch function is a narrow filter that eliminates unwanted CW or AM carrier tones while preserving the desired voice signal. The DSP circuit automatically adjusts the filtering frequency to effectively eliminate unwanted tones.

⑰ RIT/ΔTX CONTROL [RIT/ΔTX] (pgs. 5-10, 6-4)
Shifts the receive and/or transmit frequency without changing the transmit and/or receive frequency shown on the main VFO.
• 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).

⑱ 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.



⑲ RIT SWITCH [RIT] (p. 5-10)
➥ Turns the RIT function ON and OFF when pushed.
• Use [RIT/ΔTX] control to vary the RIT frequency.
➥ Adds the RIT shift frequency to the operating frequency when pushed and held for 1 sec.

✔ What is the RIT function?
Receiver incremental tuning (RIT) shifts the receive frequency without shifting the transmit frequency.

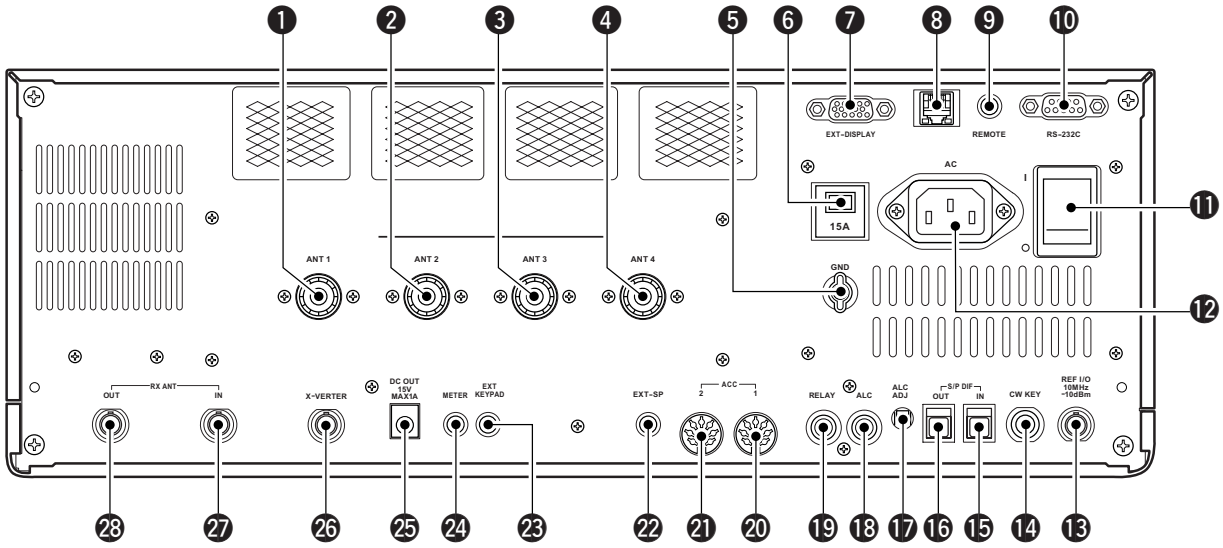
This is useful for fine tuning stations calling you off-frequency or when you prefer to listen to slightly different-sounding voice characteristics, etc.

⑳ CLEAR SWITCH [CLEAR] (pgs. 5-10, 6-4)
Clears the RIT/ΔTX shift frequency when pushed and held for 1 sec. or when pushed momentarily, depending on the quick RIT/ΔTX clear function setting (p. 12-15).

㉑ ΔTX SWITCH [ΔTX] (p. 6-4)
➥ Turns the ΔTX function ON and OFF when pushed.
• Use [RIT/ΔTX] control to vary the ΔTX frequency.
➥ Adds the ΔTX shift frequency to the operating frequency when pushed and held for 1 sec.

✔ What is the ΔTX function?
ΔTX shifts the transmit frequency without shifting the receive frequency. This is useful for simple split frequency operation in CW, etc.

■ Rear panel



❶ ANTENNA CONNECTOR 1 [ANT 1] (p. 2-5)
❷ ANTENNA CONNECTOR 2 [ANT 2] (p. 2-5)
❸ ANTENNA CONNECTOR 3 [ANT 3] (p. 2-5)
❹ ANTENNA CONNECTOR 4 [ANT 4] (p. 2-5)
Accept a 50 Ω antenna with a PL-259 plug connector.

❺ GROUND TERMINAL [GND] (p. 2-4)
Connect this terminal to a ground to prevent electrical shocks, TVI, BCI and other problems.

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

❼ EXTERNAL DISPLAY TERMINAL [EXT-DISPLAY] (p. 2-7)
Connects to an external display monitor.
• At least 800×600 pixel display is necessary.

❽ ETHERNET CONNECTOR (p. 16-6)
Connects to a PC through a LAN (Local Area Network).

❾ CI-V REMOTE CONTROL JACK [REMOTE] (pgs. 2-6, 14-2)
➥ 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.

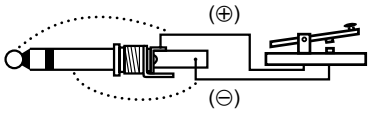
❿ RS-232C TERMINAL [RS-232C] (p. 2-6)
Connects an RS-232C cable, D-sub 9-pin to connect the IC-7700 to a PC.
Can be used to remotely control the IC-7700 without the optional CT-17, or for RTTY/PSK31 decoded signal output. The [RS-232C] interface is wired as a modem (DCE).

⓫ MAIN POWER SWITCH [I/O] (p. 3-2)
Turns the internal power supply ON and OFF.

⓬ AC POWER SOCKET [AC] (p. 2-5)
Connects the supplied AC power cable to an AC line-voltage receptacle.

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

⓮ STRAIGHT KEY JACK [CW KEY] (p. 2-5)
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 keyer set mode. (p. 4-12)



⓯ **S/P DIF INPUT TERMINAL [S/P DIF– IN]** (p. 2-7)
⓰ **S/P DIF OUTPUT TERMINAL [S/P DIF– OUT]** (p. 2-7)
Connects external equipment that supports S/P DIF input/output.

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

⓲ **ALC INPUT JACK [ALC]** (p. 2-8)
Connects to the ALC output jack of a non-Icom linear amplifier.

⓳ **T/R CONTROL JACK [RELAY]** (p. 2-8)
Connects 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 MOSFET switching).

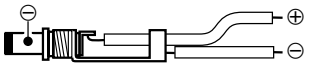
⓴ **ACCESSORY SOCKET 1 [ACC 1]**
㉑ **ACCESSORY SOCKET 2 [ACC 2]**
Enable connection of external equipment such as a linear amplifier, an automatic antenna selector/tuner, a TNC for data communications, etc.
• See p. 2-11 for socket information.

㉒ **EXTERNAL SPEAKER JACK [EXT-SP]** (p. 2-6)
Connects an external speaker (4–8 Ω), if desired.

㉓ **EXTERNAL KEYPAD JACK [EXT KEYPAD]** (p. 2-7)
Connects an external keypad for direct voice memory or electronic keyer control.
Transceiver mute control line (both transmit and receive) is also supported.

㉔ **METER JACK [METER]** (p. 2-7)
Outputs a signal showing received signal strength, transmit output power, VSWR, ALC, speech compression, V_D or I_D level for external meter indication.

㉕ **DC OUTPUT JACK [DC OUT]** (p. 2-7)
Outputs a regulated 14 V DC (approx.) for external equipment. Connected in parallel with 13.8 V outputs of [ACC 1] and [ACC 2]. (max. 1 A in total)

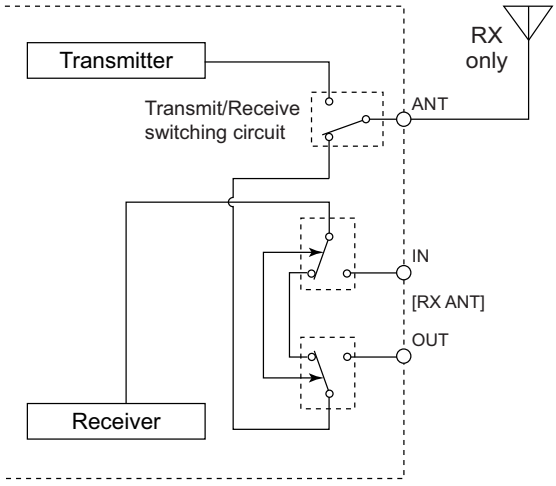


㉖ **TRANSVERTER CONNECTOR [X-VERTER]** (p. 2-6)
External transverter input/output connector.
Activated by voltage applied to [ACC 2] pin 6, or when the transverter function is in use. (pgs. 2-11)

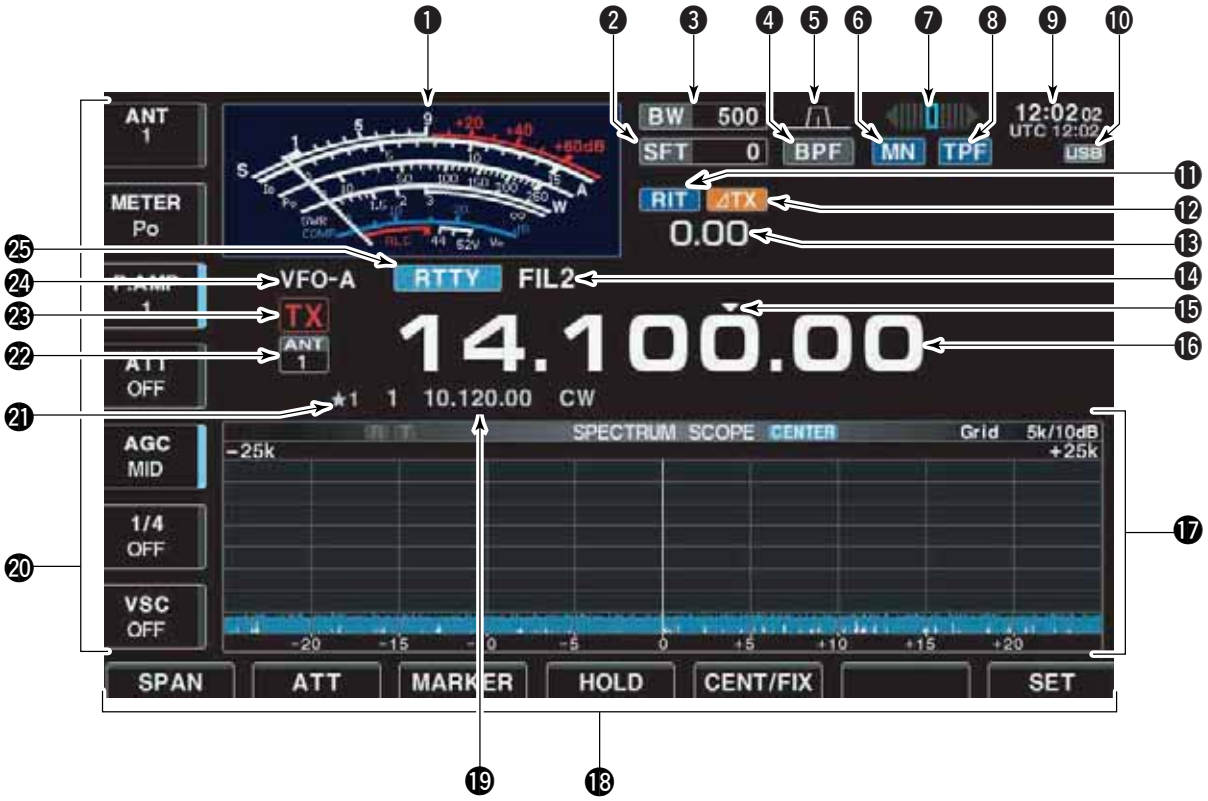
㉗ **RECEIVE ANTENNA IN [RX ANT– IN]**
㉘ **RECEIVE ANTENNA OUT [RX ANT– OUT]**
Located between the transmit/receive switching circuit and receiver's RF stage.

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

When no external unit is connected, [RX ANT– IN] and [RX ANT– OUT] must be deactivated and shorted by the switching relay internally. This setting is available on the antenna set screen. (p. 10-5)

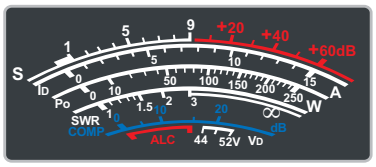


■ LCD display

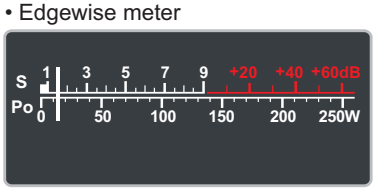


❶ **S/RF METER** (pgs. 3-10, 3-11)
Shows the signal strength while receiving. Shows the relative output power, SWR, ALC or compression levels while transmitting.
• A total of 3 meter types are available.

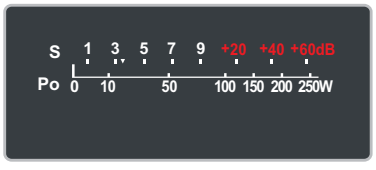
• Standard meter



• Edgewise meter



• Bar meter



❷ **SHIFT FREQUENCY INDICATOR** (p. 5-12)
Shows the shift frequency of the IF filter.

❸ **BAND WIDTH INDICATOR** (p. 5-12)
Shows the passband width of the IF filter.

❹ **BANDPASS FILTER INDICATOR**
Appears when the narrow filter (500 Hz or less) is selected during CW, RTTY or PSK31 operation.

❺ **PASSBAND WIDTH INDICATOR** (p. 5-12)
Graphically displays the passband width for twin PBT operation and center frequency for IF shift operation.

❻ **NOTCH INDICATOR** (p. 5-18)
➥ " MN " appears when the manual notch function is in use. This function is available in SSB, CW, RTTY, PSK and AM modes.
➥ " AN " appears when the auto notch function is in use. This function is available in SSB, AM and FM modes.

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

❽ APF/TPF INDICATOR
- ➥ "APF" appears when the audio peak filter function is in use. This function is available in CW mode. (p. 4-6)
- ➥ "TPF" appears when the twin peak filter function is in use. This function is available in RTTY mode. (p. 4-14)

❾ CLOCK READOUT
Shows the current time. Local and UTC time can be indicated at the same time.

❿ USB-MEMORY INDICATOR
Appears when USB-Memory is connected and blinks while reading or writing the USB-Memory.

⓫ RIT INDICATOR
Appears when RIT function is in use.

⓬ ⊿TX INDICATOR
Appears when ⊿TX function is in use.

⓭ RIT/⊿TX SHIFT FREQUENCY INDICATOR
Shows the shift frequency for the RIT or ⊿TX function.

⓮ IF FILTER INDICATOR (p. 5-13)
Shows the selected IF filter number.

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

⓰ FREQUENCY READOUTS
Shows the operating frequency.

⓱ MULTI-FUNCTION SCREEN
Shows the screens for the multi-function digital meter, spectrum scope, voice recorder, memory list, scan, memory keyer, RTTY decoder, PSK decoder, IF filter selection or set modes, etc.

⓲ LCD FUNCTION SWITCH GUIDE
Indicates the function of the LCD function switches (F-1 – F-7).

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

⓴ MULTI-FUNCTION SWITCH GUIDE
Indicates the function of the multi-function switches.

㉑ SELECT MEMORY CHANNEL INDICATOR (p. 9-7)
Indicates the displayed memory channel is set as a select memory channel.

㉒ SELECT ANTENNA INDICATOR
Indicates the selected antenna.

㉓ TX INDICATOR
Indicates the frequency readout for transmit.

㉔ VFO/MEMORY CHANNEL INDICATOR (p. 3-3)
Indicates the VFO mode or selected memory channel number.

㉕ MODE INDICATOR
Shows the selected mode.

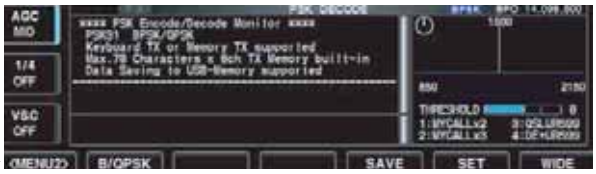
■ Screen menu arrangement

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 p. 12-3 for set mode arrangement.

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

• **PSK31 decoder screen** (PSK mode; p. 4-21)



F-3

• **Spectrum scope screen** (p. 5-2)

• **Memory list screen** (p. 8-5)

F-4

• **Voice recorder screen** (p. 7-3)

F-2

• **Scan screen** (VFO mode; p. 9-4)

F-5

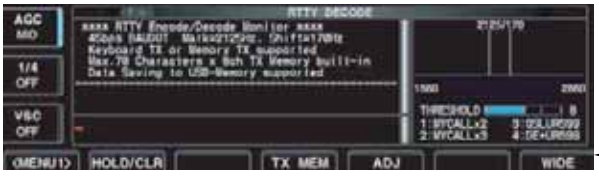
• **Memory keyer screen** (CW mode; p. 4-8)

F-3

• **Scan screen** (Memory mode; p. 9-6)

F-5

• **RTTY decoder screen** (RTTY mode; p. 4-13)



F-3

• **Set mode menu screen** (p. 12-2)

F-7

INSTALLATION AND CONNECTIONS Section 2

CAUTION!: The transceiver weighs approx. 24 kg (53 lb). Always have two people available to carry, lift or turn over the transceiver.

■ Unpacking

After unpacking, immediately report any damage to the delivering carrier or dealer. Keep the shipping cartons.

For a description and a diagram of accessory equipment included with the IC-7700, see ‘Supplied accessories’ on p. iii of this manual.

■ Main dial attachment

The main dial is shipped unattached to the transceiver to prevent possible damage to the dial shaft or rotary encoder during shipping. Please attach the dial as described below.

⚠ CAUTION!: NEVER hold any controller knob(s), such as the main dial, when carrying or lifting the transceiver. This will damage the dial shaft or rotary encoder.

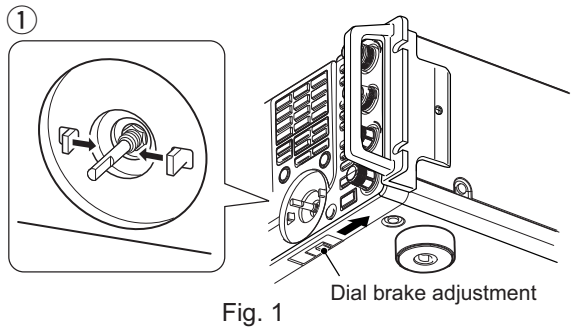


Fig. 1

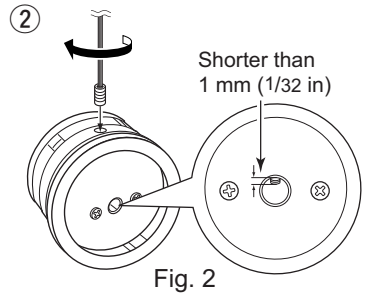


Fig. 2

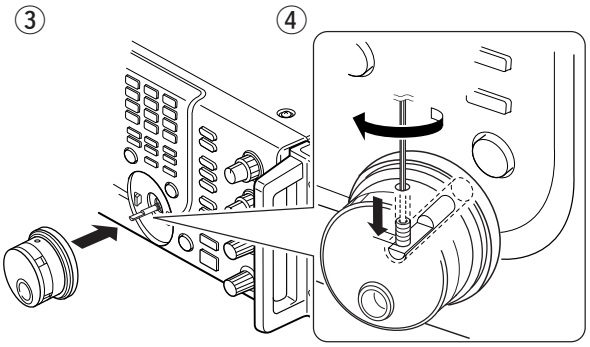


Fig. 3

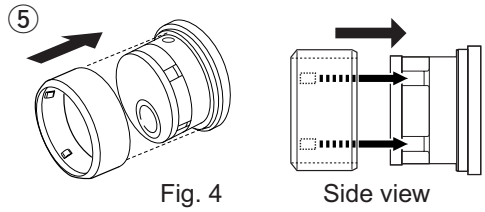


Fig. 4 Side view

① Slide the dial brake adjustment to the right position (Fig. 1).
- The dial brakes move inward as shown.

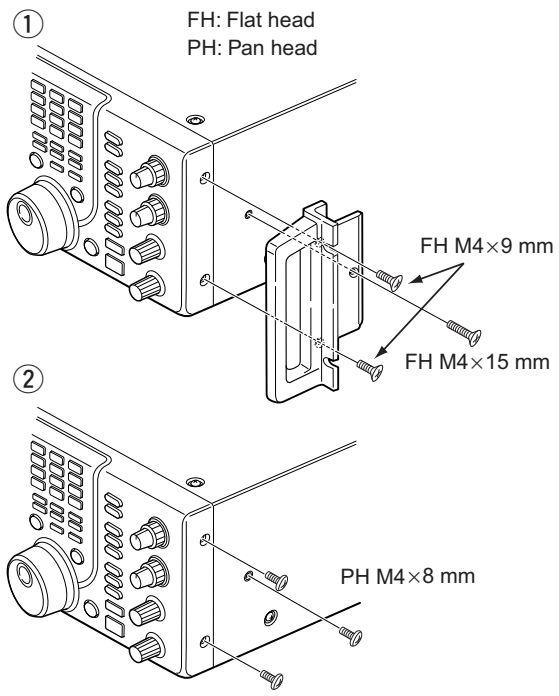
② Insert the main dial set-screw into the screw hole of the main dial, then tighten the screw until the screw extends into the shaft hole out slightly using supplied hexagonal wrench (2 mm) (Fig. 2).
- Be careful that the screw does not extend out more than 1 mm (1/32 in).

③ Attach the main dial as illustrated (Fig. 3).
- Be careful to match the correct orientation of the flat face of the shaft and the screw hole of the dial knob.

④ Tighten the screw using supplied hexagonal wrench as illustrated (Fig. 3).

⑤ Install the rubber cover of the main dial (Fig. 4). Then adjust the main dial brake as desired.
- Be careful to match the correct position of the convex part of the cover and the concavo part of the dial knob.

■ Rack mounting handle detachment

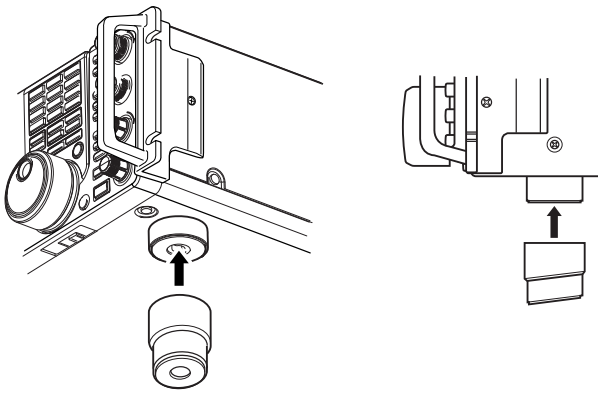


The rack mounting handles are supplied attached to the transceiver to stabilize the transceiver in the shock absorber material in the box. If you want to remove them, use the supplied screws as described below.

① Remove the six screws from the rack mounting handles on both side and remove the rack mounting handles.
② Tighten the supplied six screws (PH M4×8) on both sides of the front panel and side panel.

✔ When re-packing and shipping the transceiver:
Attach the rack mounting handles using original screws when re-packing and shipping the transceiver at any time.

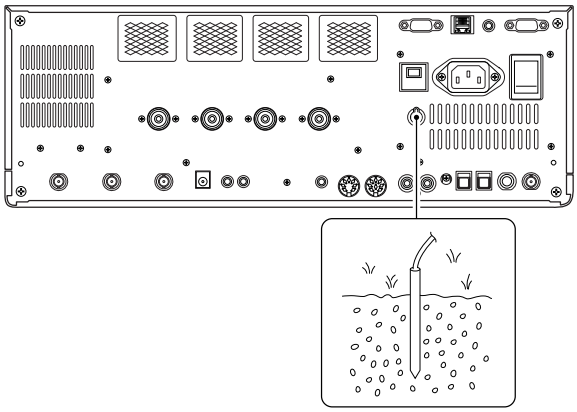
■ Selecting a location



Select a location for the transceiver that allows adequate air circulation, free from extreme heat, cold, or vibrations, and away from TV sets, TV antenna elements, radios and other electromagnetic sources.

The base of the transceiver has an adjustable feet for desktop use. Set the feet to one of two angles depending on your operating preference.

■ Grounding



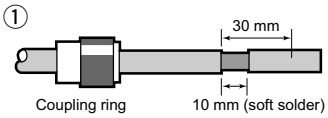
To prevent electrical shock, television interference (TVI), broadcast interference (BCI) and other problems, ground the transceiver through the GROUND terminal on the rear panel.

For best results, connect a heavy gauge wire or strap to a long earth-sunk copper rod. Make the distance between the [GND] terminal and ground as short as possible.

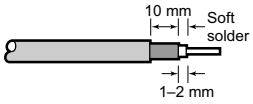
⚠ **WARNING: NEVER** connect the [GND] terminal to a gas or electric pipe, since the connection could cause an explosion or electric shock.

■ Antenna connection

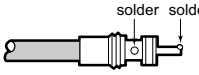
PL-259 CONNECTOR INSTALLATION EXAMPLE

① 

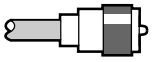
Slide the coupling ring down. Strip the cable jacket and in the braid.

② 

Strip the cable as shown at left. Tin the center conductor.

③ 

Slide the connector body on and solder it.

④ 
Screw the coupling ring onto the connector body.

30 mm ≈ 9⁄8 in 10 mm ≈ 3⁄8 in 1–2 mm ≈ 1⁄16 in

For radio communications, the antenna is of critical importance, along with output power and receiver sensitivity. Select antenna(s), such as a well-matched 50 Ω antenna, and feedline. We recommend 1.5:1 or better of Voltage Standing Wave Ratio (VSWR) for your desired band. Of course, the transmission line should be a coaxial cable.

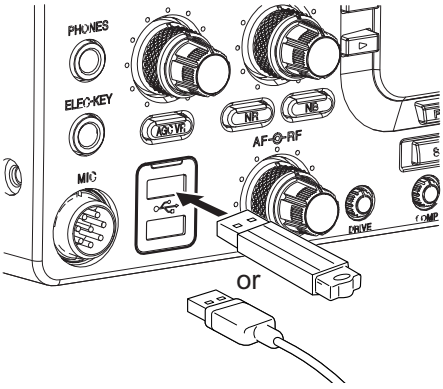
When using 1 antenna, use the [ANT1] connector.

CAUTION: Protect your transceiver from lightning by using a lightning arrestor.

Antenna SWR

Each antenna is tuned for a specified frequency range and SWR may be increased out-of-range. When the SWR is higher than approx. 2.0:1, the transceiver's power drops to protect the final transistors. In this case, an antenna tuner is useful to match the transceiver and antenna. Low SWR allows full power for transmitting. The IC-7700 has an SWR meter to monitor the antenna SWR continuously.

■ USB-Memory connection (USB-Memory: Not supplied by Icom)



Connect the USB-Memory* to the USB connector.

- Unmount operation is necessary before removing the USB-Memory* (p.12-25).

Make sure to connect the USB-Memory correctly. **NEVER** connect or remove the USB-Memory when the read/write indicator lights or blinks.

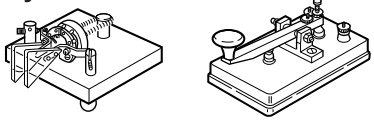
A USB keyboard* or USB hub* can also be connected to the USB connector.

*: USB-Memory, USB keyboard or USB hub is not supplied by Icom.

■ Required connections

◇ Front panel

CW key

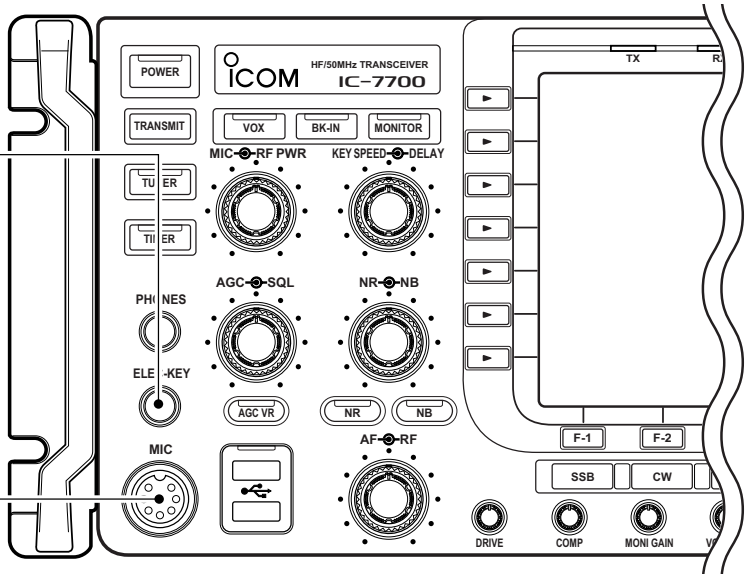


A straight or bug key can be used when the internal electronic keyer is turned OFF in keyer set mode. (p. 4-12)

Microphones (p. 2-10)

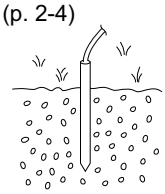
Optional SM-20

Optional HM-36



◇ Rear panel

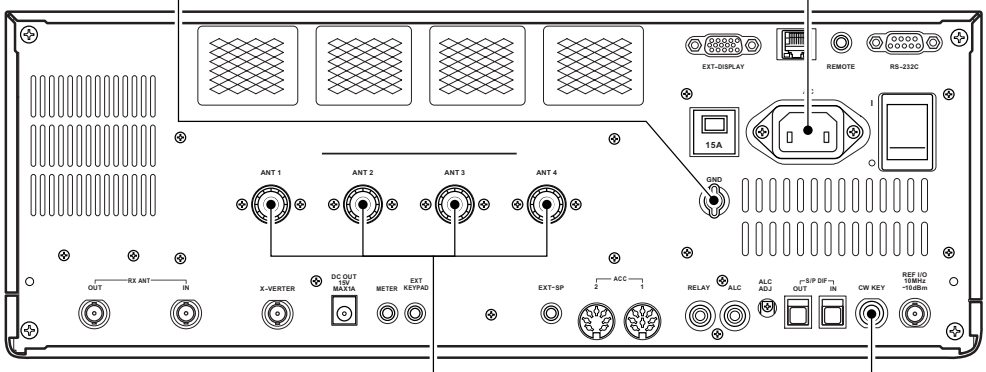
Ground (p. 2-4)



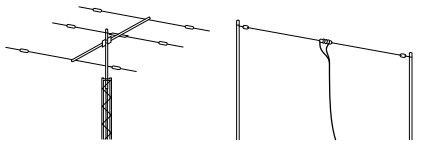
Use the heaviest gauge wire or strap available and make the connection as short as possible.

Grounding prevents electrical shocks, TVI and other problems.

AC outlet
⚠ WARNING:
Use the supplied AC power cable only.

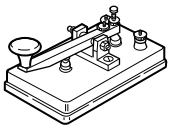


Antenna 1, 2, 3, 4 (p. 2-4)
[Example]: ANT1 for 1.8–18 MHz bands, ANT 2 for 21–28 MHz bands
ANT3 for 50 MHz band, ANT 4 for receive antenna.



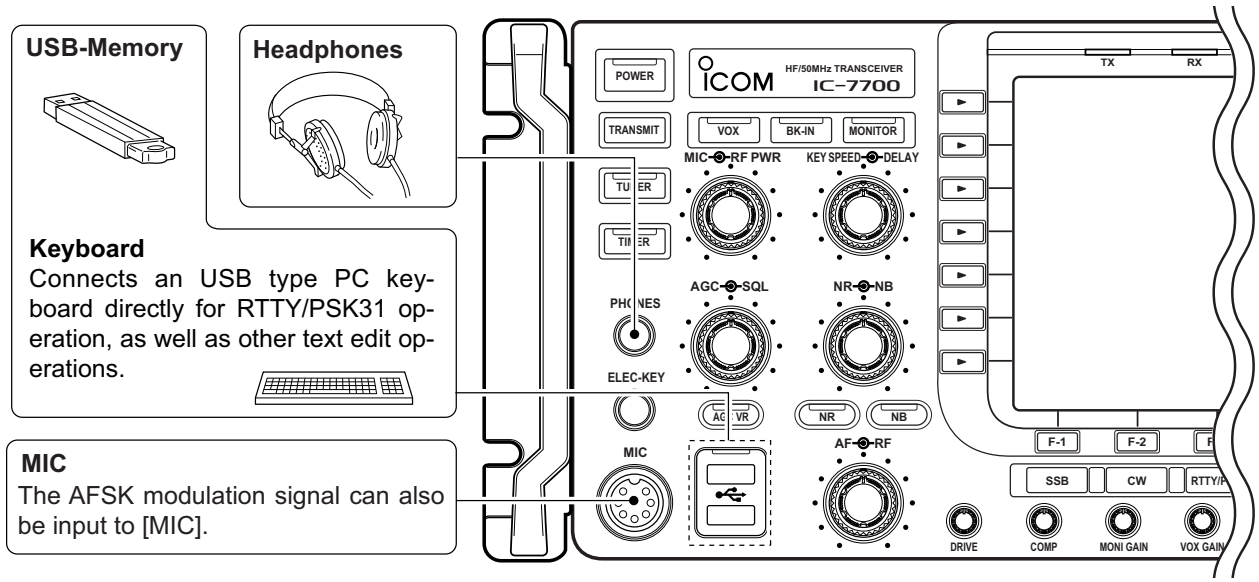
NOTE: Attach the supplied antenna connector cap when no antenna or external equipment is connected.

Straight key

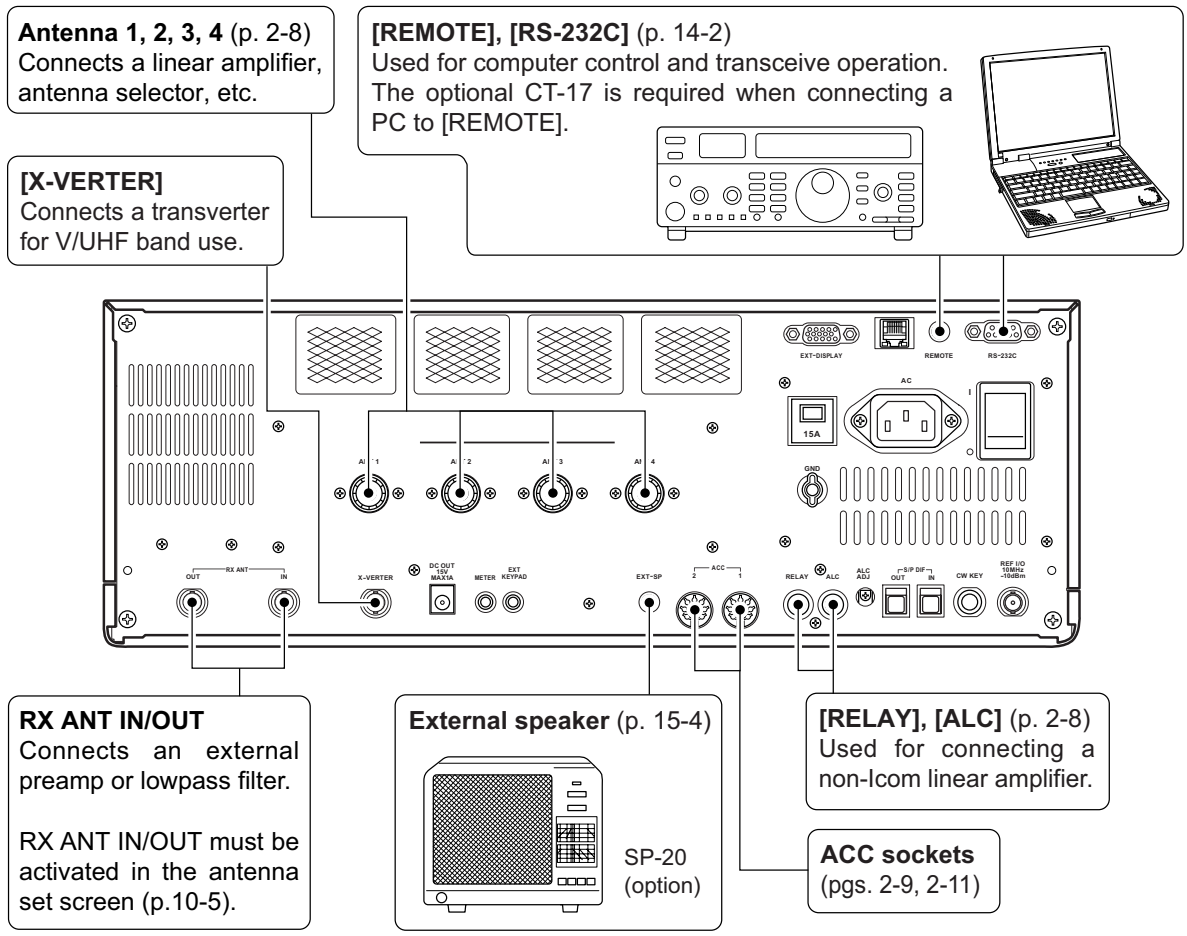


■ Advanced connections

◇ Front panel



◇ Rear panel— 1

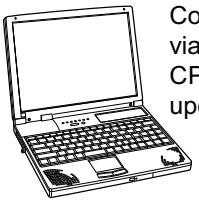


◇ Rear panel— 2

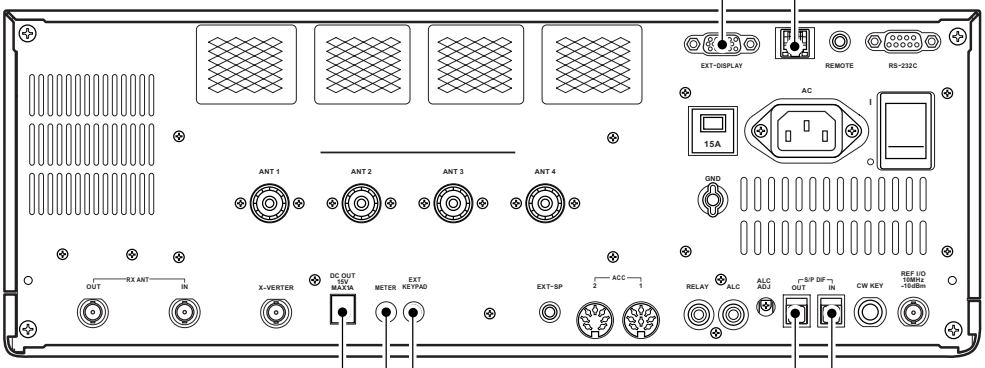
External Display

Connects a PC-style monitor display (at least 800×600 resolution). Video output signal can be turned ON and OFF in set mode (p. 12-11)

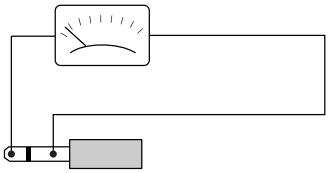
Ethernet connector (p. 16-6)



Connects a PC via a LAN for the CPU firmware update.



[METER]
Connects an external meter, etc.



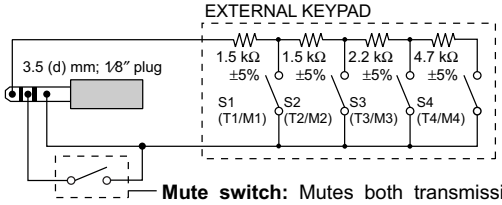
3.5 (d) mm; 1⁄8″ plug

[S/P DIF IN/OUT]

Connects a PC for audio signal data (48 kHz, 16-bit) input/output.

[DC OUT]
Outputs regulated 14 V (approx.) DC for external equipment power supply. (max. 1 A capacity)

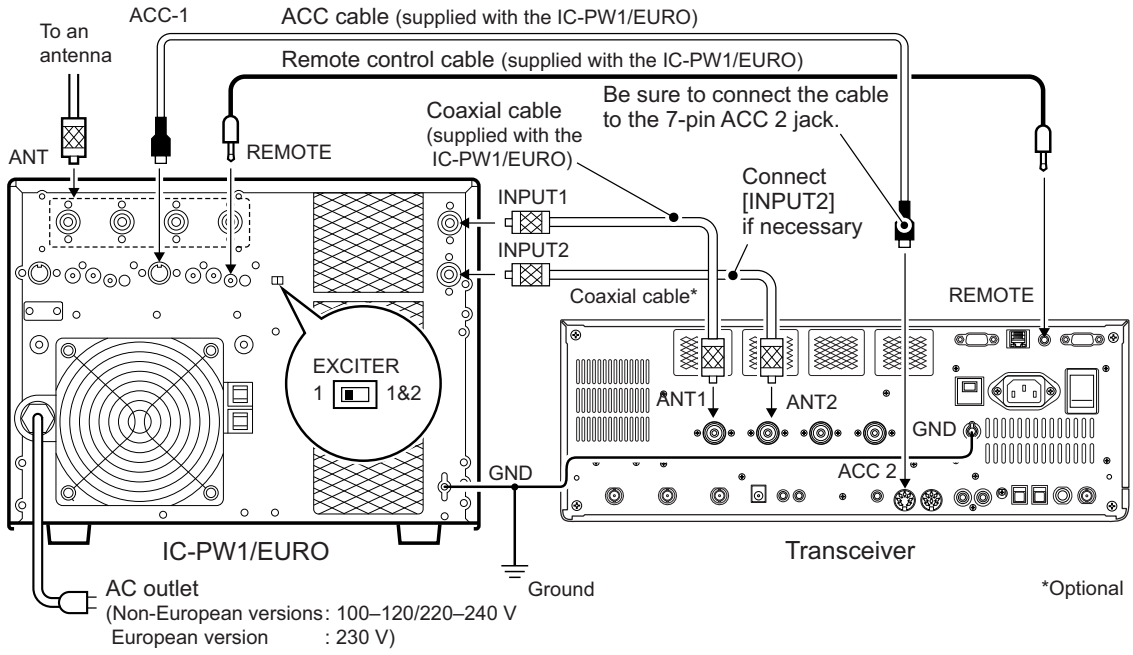
External keypad
Connects an external keypad for direct voice memory and memory keyer controls.



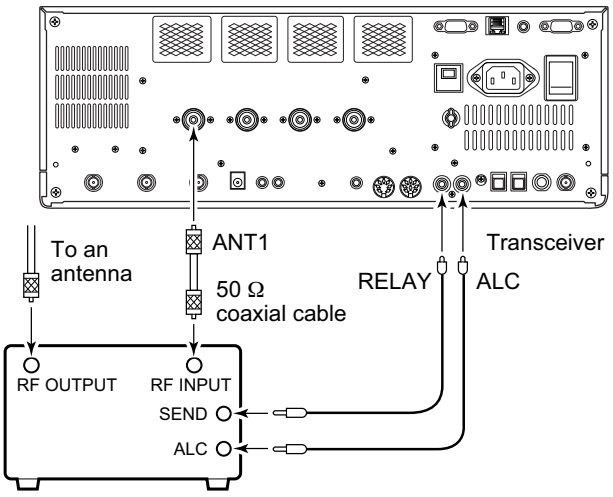
Mute switch: Mutes both transmission and reception when switched ON during transceive operation, etc.

■ Linear amplifier connections

◇ Connecting the IC-PW1/EURO



◇ Connecting a non-Icom linear amplifier



Non-Icom linear amplifier

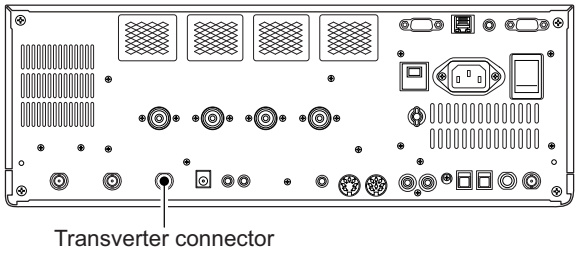
⚠ WARNING:

Set the transceiver output power and linear amplifier ALC output level after referring to the linear amplifier instruction manual.

The ALC input level must be in the range 0 V to –4 V. The transceiver does not accept positive voltage. Non-matched ALC and RF power settings could overheat or damage the linear amplifier.

The maximum signal level of [RELAY] jack is 16 V/0.5 A DC with initial setting, and 250 V/200 mA with “MOSFET” setting (see p. 12-8 for details). Use an external relay unit if your non-Icom linear amplifier requires control voltage and/or current greater than specified.

■ Transverter jack information



When 2 to 13.8 V is applied to pin 6 of [ACC 2], the [X-VERTER] connector is activated for transverter operation and the antenna connectors do not receive or transmit any signals.

While receiving, [X-VERTER] connector can be activated as an input terminal from an external transverter.

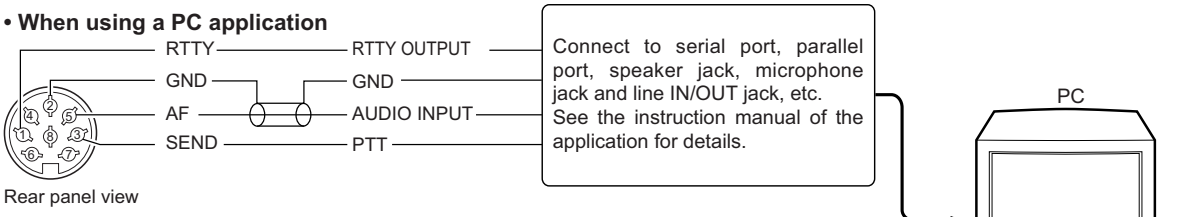
While transmitting, the [X-VERTER] connector outputs signals of the displayed frequency at –20 dBm (22 mV) as signals for the external transverter.

■ FSK and AFSK (SSTV) connections

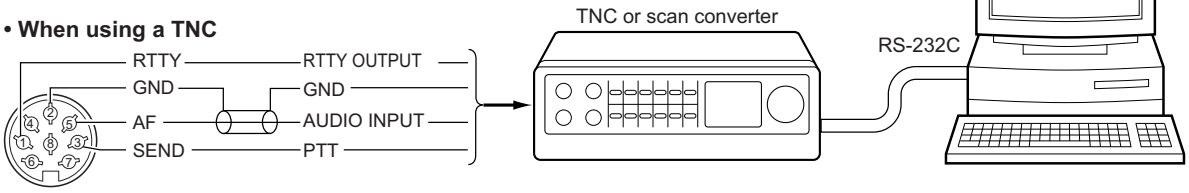
To connect a TNC or scan converter, etc., refer to the diagram below.

◇ **FSK operation— when connecting to [ACC 1]**

• When using a PC application

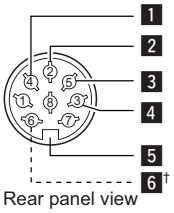


• When using a TNC

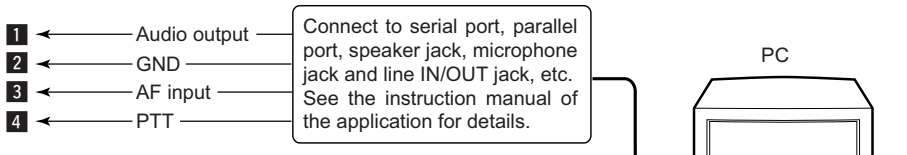


◇ **AFSK operation**

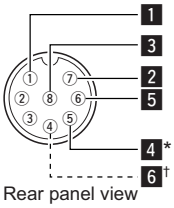
• When connecting to [ACC 1]



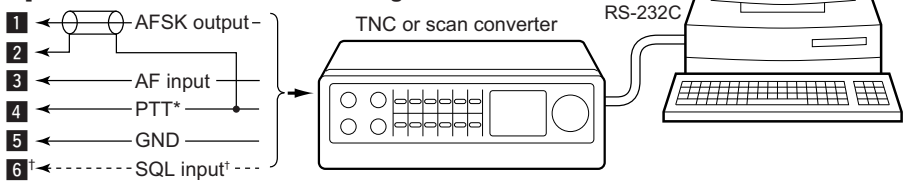
• When using a PC application



• When connecting to [MIC]



• When using a TNC

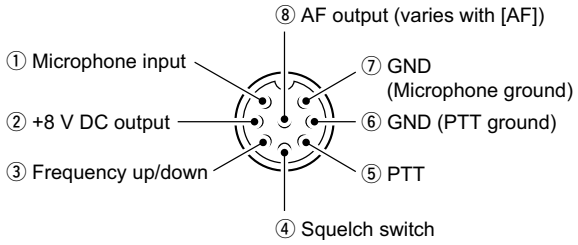


*When using the VOX function, no need to connect. Refer to the instruction manual of the external equipment (TNC, etc.).

†When connecting the squelch line, consult the necessary manual (TNC, etc.).

■ Microphone connector information

(Front panel view)

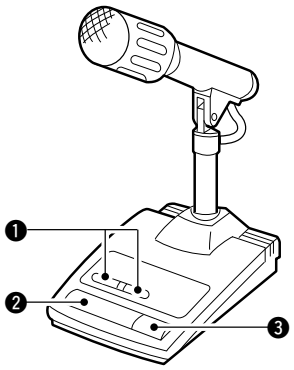


[MIC] Pin No.	FUNCTION	DESCRIPTION
②	+8 V DC output	Max. 10 mA
③	Frequency up	Ground
	Frequency down	Ground through 470 Ω
④	Squelch open	"Low" level
	Squelch closed	"High" level

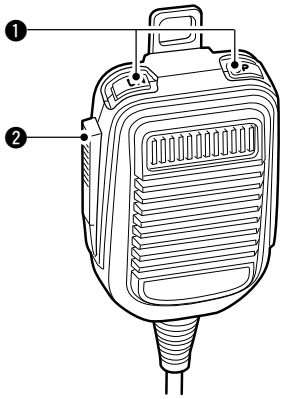
CAUTION: DO NOT short pin 2 to ground as this can damage the internal 8 V regulator.
NOTE: DC voltage is applied to pin 1 for microphone operation. Use caution when using a non-Icom microphone.

■ Microphones (options)

◇ SM-20



◇ HM-36

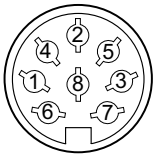


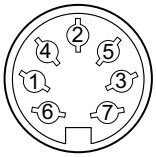
❶ UP/DOWN SWITCHES [UP]/[DN]
Change the selected readout frequency or memory channel.
- Continuous pushing changes the frequency or memory channel number continuously.
- While pushing [XFC], the transmit readout frequency can be controlled while in split frequency operation.
- The [UP]/[DN] switch can simulate a key paddle. Preset in the keyer set mode. (p. 4-12)

❷ PTT SWITCH
Push and hold to transmit; release to receive.

❸ PTT LOCK SWITCH (available for SM-20 only)
Push to toggle between transmit and receive.

■ Accessory connector information

ACC 1	PIN No.	NAME	DESCRIPTION	SPECIFICATIONS
	1	RTTY	Controls RTTY keying	"High" level : More than 2.4 V "Low" 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. Goes to ground when transmitting. When grounded, transmits.	Ground level : –0.5 V to 0.8 V Output current : Less than 20 mA Input current (Tx) : Less than 200 mA Connected in parallel with ACC 2 pin 3.
	4	MOD	Modulator input. Connects to a modulator.	Input impedance : 10 kΩ Input level : Approx. 100 mV rms
	5	AF	AF detector output. Fixed, 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. Goes to ground 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.	Output current : Max. 1 A Connected in parallel with ACC 2 pin 7.
	8	ALC	ALC voltage input.	Control voltage : –4 V to 0 V Input impedance : More than 10 kΩ Connected in parallel with ACC 2 pin 5.

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 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 to 13.8 V
	7	13.8 V	Same as ACC 1 pin 7.	

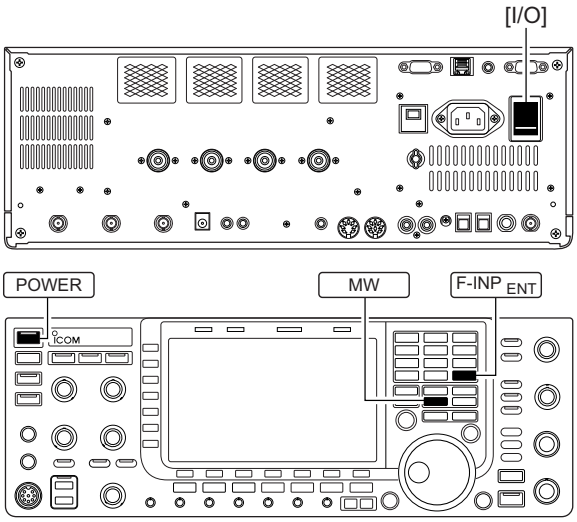
NOTE: If the CW side tone level limit or beep level limit is in use, the CW side tone or beep tone decreases from the fixed level when the [AF] control is rotated above a specified level. (p. 12-6)

BASIC OPERATIONS Section 3

■ When first applying power (CPU resetting)

Before first applying power, make sure all connections required for your system are complete by referring to Section 2. 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 the main power ON with [I/O] on the rear panel.
- The transceiver power is still OFF and the power indicator lights orange.

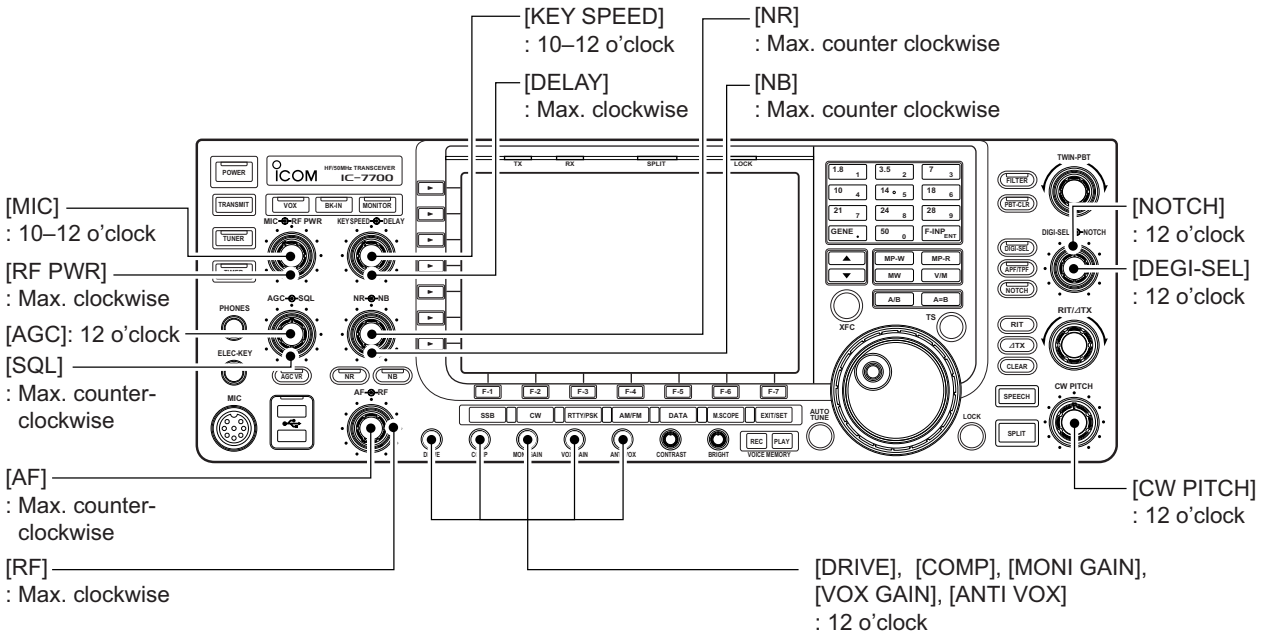
② While pushing and holding [F-INP ENT] and [MW], push [POWER] to turn power ON.
- The CPU is reset.
- The CPU start-up takes approx. 5 sec.
- The transceiver displays its initial VFO frequencies when resetting is complete.

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

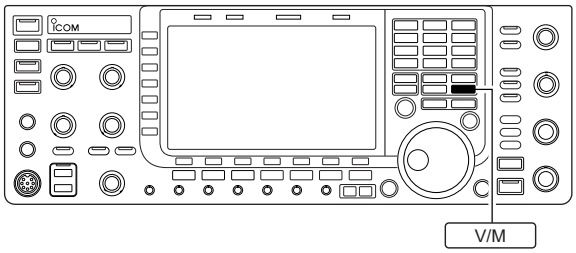
In cooler temperatures, the LCD may appear dark and unstable after turning power ON. This is normal and does not indicate any equipment malfunction.

■ Initial settings

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



■ Selecting VFO/memory mode



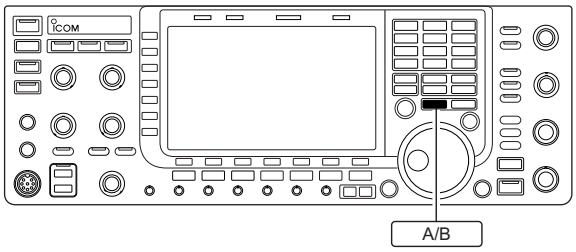
➥ Push [V/M] to switch between VFO and memory modes.
- "VFO-A" or "VFO-B" appears when in VFO mode, or the selected memory channel number appears when in memory mode.
- Pushing and holding [V/M] for 1 sec. transfers the contents of the selected memory channel to VFO. (p. 8-4)

■ VFO selection

VFO is an abbreviation of Variable Frequency Oscillator, and is commonly referred to as a main tuning function.

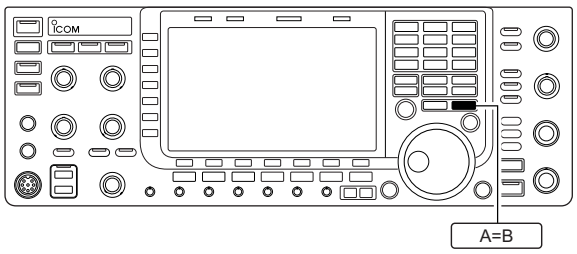
The main dial is often called the "VFO knob."

◇ Selecting VFO-A/VFO-B



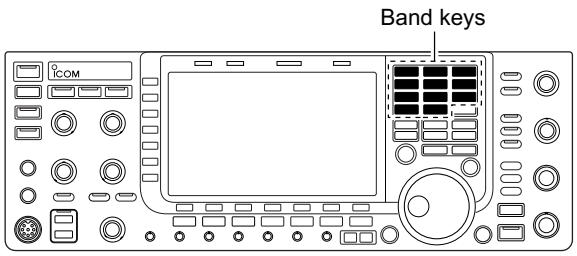
➥ In VFO mode, push [A/B] to toggle VFO-A and VFO-B.
- "VFO-A" or "VFO-B" appears when VFO-A or VFO-B is selected, respectively

◇ VFO equalization



➥ In VFO mode, push and hold [A=B] for 1 sec. to set the undisplayed VFO frequency and mode to those of the displayed VFO.
- Three beeps sound when the VFO equalization is completed.

■ Selecting an operating band



The triple band stacking register provides 3 memories for each band key, storing frequency and mode information.

This function is convenient when you operate 3 modes on one band. For example, one register is used for a CW frequency, another for an SSB frequency and the other one for an RTTY frequency.

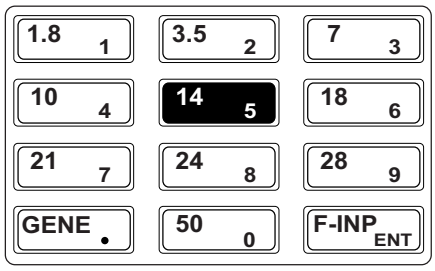
If a band key is pushed once, the frequency and operating mode last used are called up. When the key is pushed again, another stored frequency and operating mode are called up.

See the table below for a list of the bands available and the default settings for each band.

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

[Example]: 14 MHz band



① Push [14 5], then select a frequency and an operating mode.
- Frequency and operating mode are memorized in the first band stacking register.

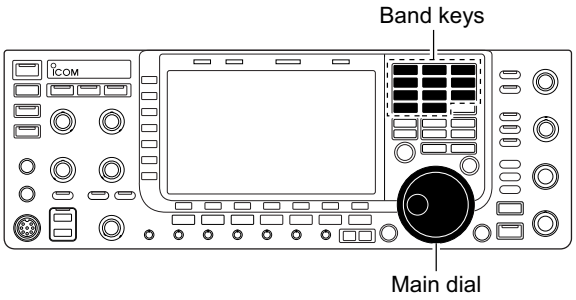
② Push [14 5] again, then tune to another frequency and operating mode.
- This frequency and operating mode are memorized in the second band stacking register.

③ Push [14 5] again, then tune to another frequency and operating mode.
- This frequency and operating mode are memorized in the third band stacking register.
- When a fourth frequency and operating mode are selected on a band, the first register set in step ①, is over written.

■ Frequency setting

The transceiver has several tuning methods for convenient frequency tuning.

◇ Tuning with the main dial

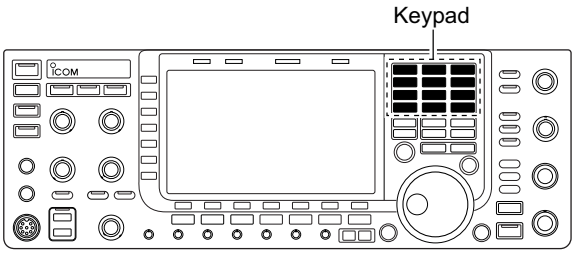


① Push the desired band key on the keypad 1–3 times.
- 3 different frequencies can be selected on each band with the band key.

② Rotate the main dial to set the desired frequency.

If the dial lock function is activated, the lock indicator lights, and the main dial does not function. In this case, push [LOCK] to deactivate the lock function. (see p. 5-17 for details)

◇ Direct frequency entry with the keypad



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

① Push [F-INP/ENT].
- "F-INP" indicator appears and keypad backlight lights.

② Input the desired frequency
- Push [GENE .] to input ". (decimal point)" between the MHz units and kHz units.

③ Push [F-INP/ENT] to set the input frequency.
- To cancel the input, push [▲] / [▼] instead of [F-INP/ENT].

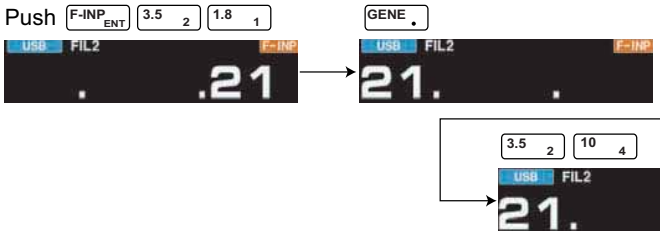
[EXAMPLE]

7.00000 MHz

Push [F-INP/ENT] [21 7]

21.24000 MHz

Push [F-INP/ENT] [3.5 2] [1.8 1]



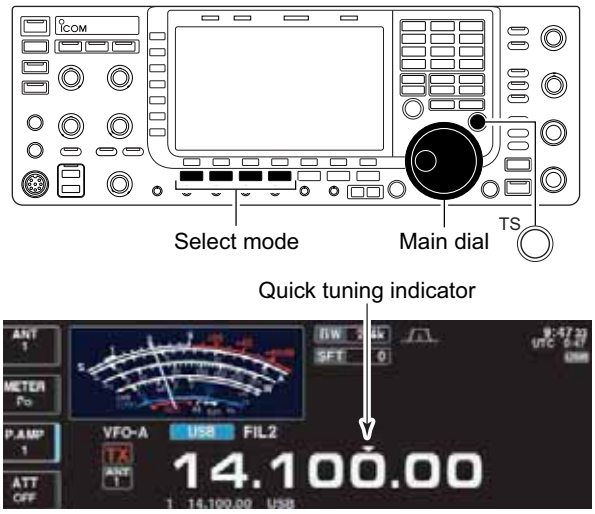
21.24000 MHz ⇒ 21.36000 MHz

Push [F-INP/ENT] [GENE .]

850 kHz (0.85000 MHz)

Push [F-INP/ENT] [50 0] [GENE .]

◇ Quick tuning step



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

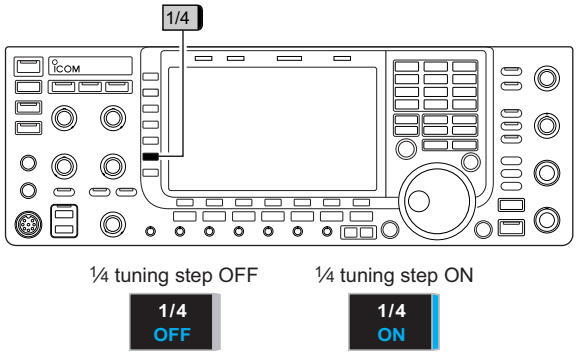
① Push [TS] to turn the quick tuning function ON.
  • "▼" appears when the quick tuning function is ON.
② Rotate the main dial to change the frequency in programmed kHz steps.
③ Push [TS] again to turn OFF the indicator.
④ Rotate the main dial for normal tuning if desired.

◇ Selecting "kHz" step

① Push [TS] to turn the quick tuning function ON and OFF.
  • "▼" appears when the quick tuning function ON.
② Push and hold [TS] for 1 sec. to enter quick tuning step set mode.
  • Selected tuning steps for all modes appear.
③ Select the desired operating mode.
④ Rotate the 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.

◇ ¼ tuning step function



When operating in SSB data, CW, RTTY or PSK, the ¼ tuning function is available. Dial rotation is reduced to ¼ of normal speed when the ¼ tuning function is ON for finer tuning control.

➥ Push [1/4] (MF6) to toggle the ¼ tuning function ON and OFF.
  • "¼" appears when the ¼ tuning function is ON.

◇ Selecting 1 Hz step

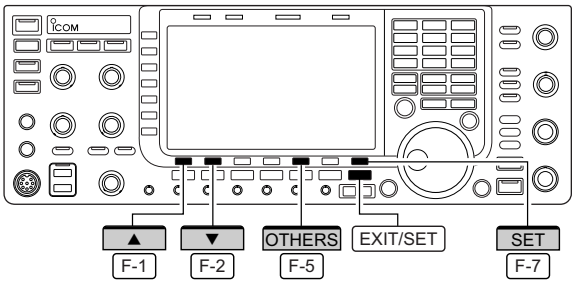
A minimum tuning step of 1 Hz can be used for fine tuning.

① Push [TS] to turn the quick tuning function OFF.
② Push and hold [TS] for 1 sec. to turn the 1 Hz tuning step ON and OFF.

1Hz step indicator

◇ Auto tuning step function

When rotating the main dial rapidly, the tuning speed accelerates automatically as selected.

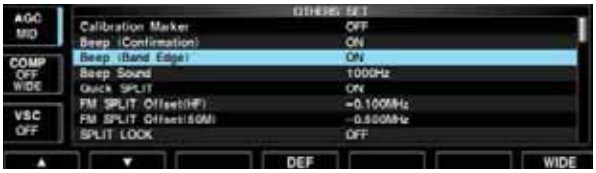


① Push [EXIT/SET] several times to close a multi-function screen, if necessary.
② Push [SET] [F-7] to select set mode menu screen.
• Pushing and holding [EXIT/SET] for 1 sec. also selects set mode menu screen.
③ Push [OTHERS] [F-5] to enter Others set mode.
④ Push [▲] [F-1] or [▼] [F-2] to select “MAIN DIAL Auto TS.”
⑤ Rotate the main dial to select the desired condition from high, low and OFF.
• High : Approx. 5 times faster
• Low : Approx. twice faster
• OFF : Auto tuning step is turned OFF.
⑥ Push [EXIT/SET] to exit the set mode.

◇ Band edge warning beep

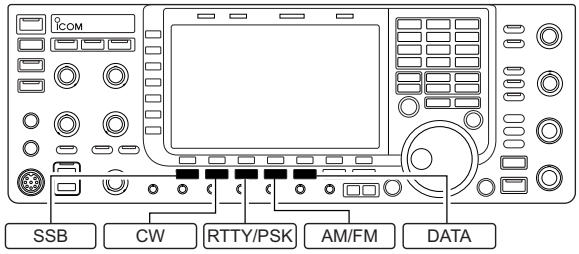
When you tune outside of an amateur band’s frequency range, a warning beep sounds.

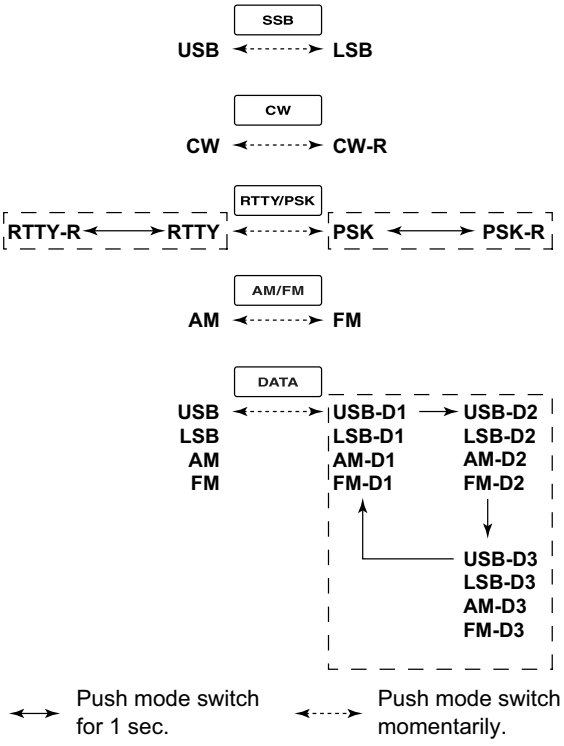
This function can be turned OFF in set mode, if desired.



① Push [EXIT/SET] several times to close a multi-function screen, if necessary.
② Push [SET] [F-7] to select set mode menu screen.
• Pushing and holding [EXIT/SET] for 1 sec. also selects set mode menu screen.
③ Push [OTHERS] [F-5] to enter Others set mode.
④ Push [▲] [F-1] or [▼] [F-2] to select “Beep (Band Edge).”
⑤ Rotate the main dial to turn the band edge warning beep ON and OFF.
⑥ Push [EXIT/SET] to exit 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 available in the IC-7700. Select the desired operation mode as follows.

To select a mode of operation, push the desired mode switch momentarily. Push the switch again to toggle between USB and LSB, CW and CW-R, RTTY/RTTY-R and PSK/PSK-R, AM and FM, if desired. Push and hold the switch for 1 sec. to toggle between RTTY and RTTY-R, PSK and PSK-R, if desired.

See the diagram below left 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, push and hold [RTTY/PSK] for 1 sec. to toggle between RTTY and RTTY reverse, or, PSK and PSK reverse mode, respectively.

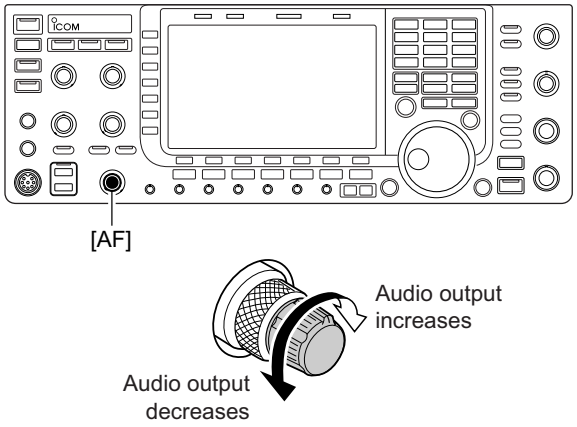
• Selecting AM/FM mode

➥ 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

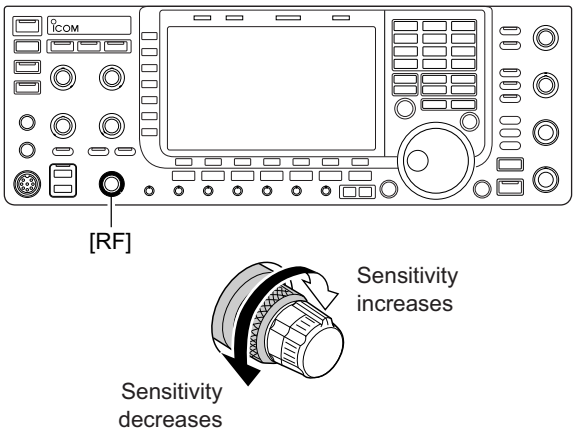
➥ After USB, LSB, AM or FM is selected, push [DATA] to select USB data, LSB data, AM data or FM data mode, respectively.
- After data mode is selected, push [DATA] to toggle between regular voice and data mode.
- After data mode is selected, push and hold [DATA] for 1 sec. to select data 1, 2 and 3 in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

■ Volume setting



➥ Rotate [AF] control clockwise to increase, counterclockwise to decrease the audio output level.
• Set a suitable audio level.

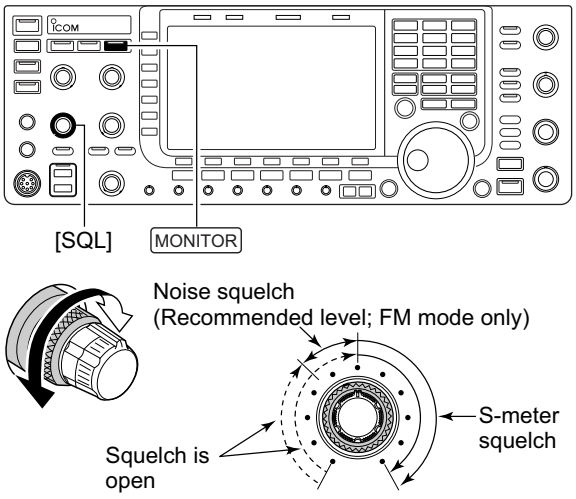
■ RF gain adjustment



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

NOTE:
When [RF] control is adjusted CCW in FM mode, audio output decreases then disappears. This is normal, not a malfunction.

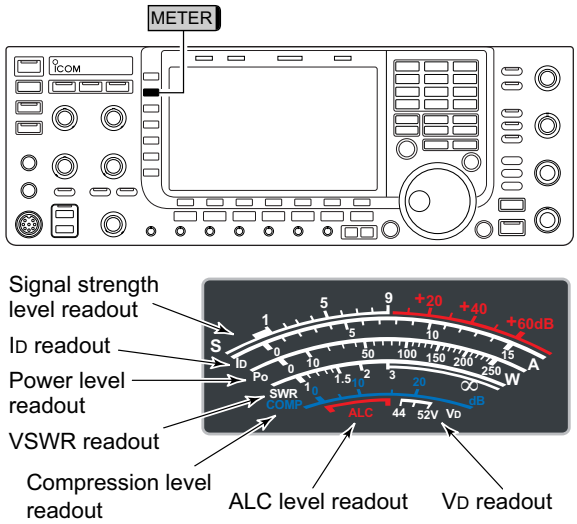
■ Squelch level adjustment



The squelch mutes noise output from the speaker (closed squelch) 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.
• Push and hold [MONITOR] to open the squelch temporarily.

■ Meter indication selection

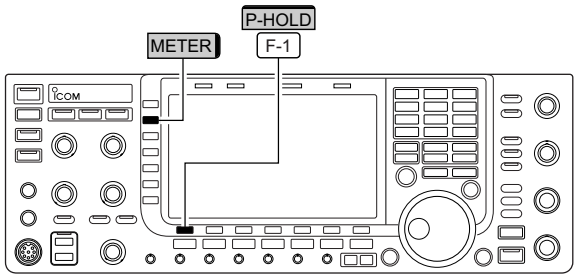


The S/RF meter indication, during transmit, can be selected from the following items as you desire.

➥ Push [METER] (MF2) several times to select the desired item.

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 ID	Indicates the drain current of the final amplifier MOSFETs.
METER VD	Indicates the drain terminal voltage of the final amplifier MOSFETs.

◇ Multi-function digital meter



"P-HOLD" indicator

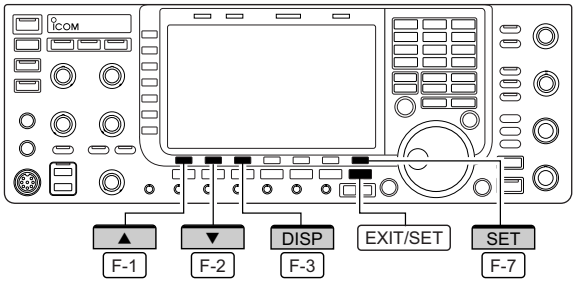
The IC-7700 can display the multi-function digital meter on the LCD display. This meter displays all transmit parameters simultaneously.

① Push and hold [METER] for 1 sec. to turn the multi-function digital meter ON.
② Push [P-HOLD] F-1 to toggle the peak level hold function ON.
- "P-HOLD" appears on the window title when the peak level hold function is ON.

③ Push and hold [METER] for 1 sec., or push EXIT/SET to turn the multi-function digital meter OFF.

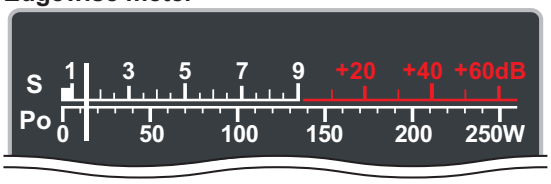
◇ Meter type selection

A total of 3 meter types are available in the IC-7700—Standard, Edgewise and Bar meters.
Follow the instructions below for the meter type selection.

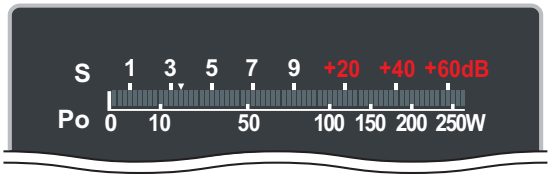


① Push [EXIT/SET] several times to return to normal screen, if necessary.
② Push [SET] [F-7], then push [DISP] [F-3] to select display set mode.
③ Push [▲] [F-1] or [▼] [F-2] to select “Meter type (Normal Screen)” item.
④ Rotate the main dial to select the desired meter type from “Standard,” “Edgewise” and “Bar.”
⑤ Push [EXIT/SET] to exit display set mode.

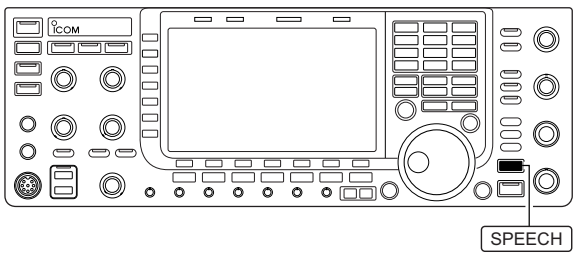
• Edgewise meter



• Bar meter



■ Voice synthesizer operation



The IC-7700 has built-in voice synthesizer to announce the frequency, mode, etc. (S-meter level can also be announced—p. 12-15) in clear, electronically-generated voice, in English (or Japanese).

➥ Push [SPEECH] to announce the currently selected frequency, etc.
• Push and hold [SPEECH] for 1 sec. to additionally announce the selected mode.

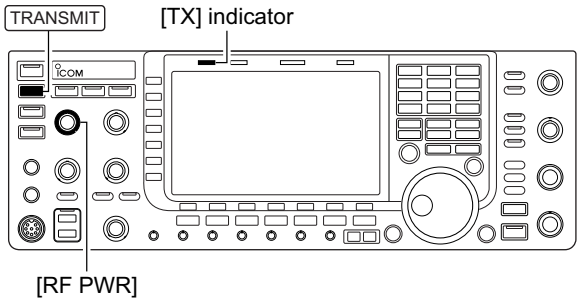
➥ Pushing a mode switch also announces the appropriate mode. (p. 12-15)

The output level of the voice synthesizer can be adjusted in level set mode. (p. 12-6)

■ Basic transmit operation

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 begin operating on that frequency.

◇ Transmitting

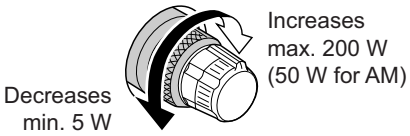


Before transmitting, monitor your selected operating frequency to make sure transmitting won't cause interference to other stations on the same frequency.

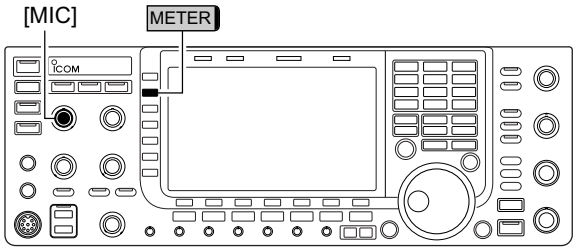
① Push TRANSMIT or [PTT] (microphone) to transmit.
  • The [TX] indicator lights red.
② Push TRANSMIT again or release [PTT] (microphone) to return to receive.

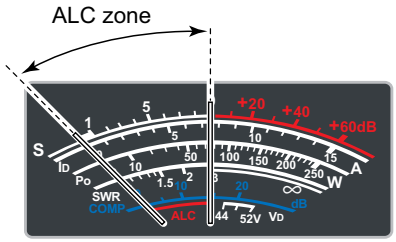
✔ Adjusting the transmit output power

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



◇ Microphone gain adjustment

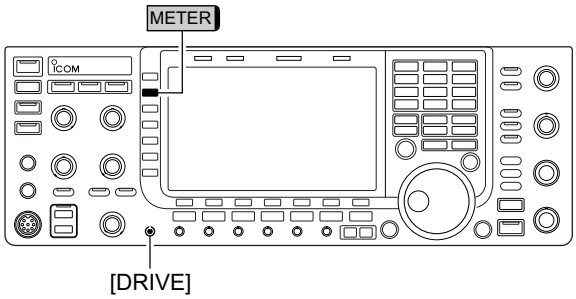


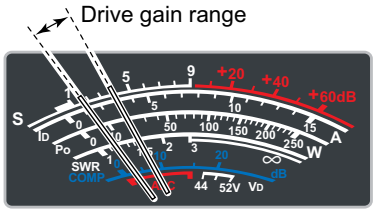


Before transmitting, monitor your selected operating frequency to make sure transmitting won't cause interference to other stations on the same frequency.

① Push [METER] (MF2) 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 at left)
④ Release [PTT] (microphone) to return to receive.

◇ Drive gain adjustment





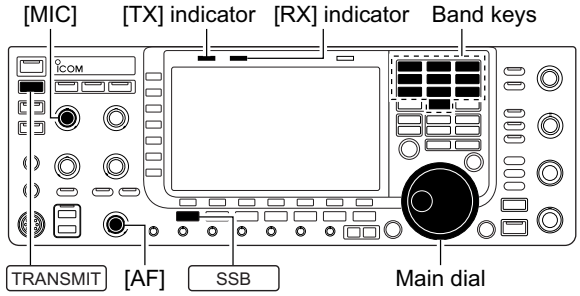
The drive gain is active for all modes other than SSB mode with speech compressor OFF. The [DRIVE] control adjusts the amplifying gain at the driver stage.

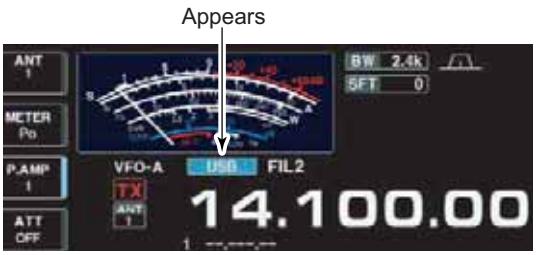
Before transmitting, monitor your selected operating frequency to make sure transmitting won't cause interference to other stations on the same frequency.

① Push [METER] (MF2) 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 is between 30 to 50% of the ALC scale. (see left)
• Talk into the microphone at your normal voice level.
④ Release [PTT], stop keying or push TRANSMIT again to return to receive.

RECEIVE AND TRANSMIT Section 4

■ Operating SSB





① Push a band key to select the desired band.
② Push SSB to select LSB or USB.
- "USB" or "LSB" appears.
- Below 10 MHz LSB is automatically selected; above 10 MHz USB is automatically selected.

③ Rotate the main dial to tune a desired signal.
- The S-meter indicates received signal strength when a signal is received.

④ Rotate [AF] to set audio to a comfortable listening level.
⑤ Push TRANSMIT or [PTT] (microphone) to transmit.
- [TX] indicator lights red.

⑥ Speak into the microphone at your normal voice level.
- Adjust the microphone gain with [MIC] at this step, if necessary.

⑦ Push TRANSMIT or release [PTT] (microphone) to return to receive.

◇ Convenient functions for receive

- **Preamp** (p. 5-9)
  ➥ Push [P.AMP] (MF3) several times to set the preamp OFF, preamp 1 ON or preamp 2 ON.
  - "P.AMP1" or "P.AMP2" appears when the preamp 1 or preamp 2 is ON, respectively.

- **Attenuator** (p. 5-9)
  ➥ Push [ATT] (MF4) several times to set the attenuator in 6 dB steps.
  - Push and hold [ATT] (MF4) for 1 sec. to turn the attenuator function OFF.
  - "ATT" and attenuation level appear when the attenuator is ON.

- **Noise blanker** (p. 5-16)
  ➥ Push NB to turn the noise blanker ON and OFF, and then rotate [NB] control to adjust the threshold level.
  - Noise blanker indicator (above NB switch) lights when the noise blanker is ON.
  - Push and hold NB for 1 sec. to enter noise blanker set mode.

- **Twin PBT (passband tuning)** (p. 5-12)
  ➥ Rotate [TWIN PBT] controls (inner/outer).
  - PBT indicator (above PBT-CLR switch) lights when PBT is in use.
  - Push and hold PBT-CLR for 1 sec. to clear the settings.

- **Audio tone control** (p. 12-4)
  ➥ Push [SET] F-7 then [LEVEL] F-1 to enter level set mode. Select an item with [▲] F-1 /[▼] F-2 then rotate the main dial to adjust the audio tone.

- **Noise reduction** (p. 5-17)
  ➥ Push NR to turn the noise reduction ON and OFF.
  - Rotate [NR] control to adjust the noise reduction level.
  - Noise reduction indicator (above NR switch) lights when the noise reduction is ON.

- **Notch filter** (p. 5-18)
  ➥ Push NOTCH to turn the auto or manual notch function ON and OFF.
  - Rotate [NOTCH] control to set the "valley" frequency for manual notch operation.
  - Notch indicator (above NOTCH switch) lights when either the auto or manual notch is ON.

- **AGC (auto gain control)** (p. 5-11)
  ➥ Push [AGC] (MF5) switch several times to select AGC FAST, AGC MID or AGC SLOW.
  ➥ Push AGC VR to turn the AGC time constant manual setting ON and OFF.
  - Rotate [AGC] control to adjust the time constant.

- **VSC (voice squelch control)** (p. 9-3)
  ➥ Push [VSC] (MF7) to turn the VSC function ON and OFF.
  - The VSC indicator appears when the voice squelch function is set to ON.

◇ Convenient functions for transmit

- **Speech compressor** (p. 6-5)
  ➥ Push [COMP] (MF6) to turn the speech compressor ON and OFF.
  • Push and hold [COMP] (MF6) for 1 sec. to select the compression bandwidth from wide, middle and narrow.
- **VOX (voice operated transmit)** (p. 6-2)
  ➥ Push [VOX] to turn the VOX function ON and OFF.
  • "VOX" appears when the VOX function is ON.
- **Transmit quality monitor** (p. 6-4)
  ➥ Push [MONITOR] to turn the monitor function ON and OFF.
  • Rotate [MONI GAIN] to adjust the monitor gain.
  • Monitor indicator (above [MONITOR] switch) lights when the monitor function is ON.
- **Audio tone control** (p. 12-5)
  ➥ Push [SET] [F-7] then [LEVEL] [F-1] to enter level set mode. Select an item with [▲] [F-1]/[▼] [F-2] then rotate the main dial to adjust the audio tone.

◇ About 5 MHz band operation (USA version only)

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

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

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

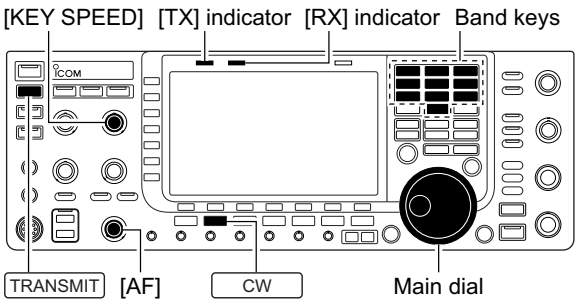
IC-7700 Tuning Frequency*	FCC Channel Center Frequency*
5.33050 MHz	5.33200 MHz
5.34650 MHz	5.34800 MHz
5.36650 MHz	5.36800 MHz
5.37150 MHz	5.37300 MHz
5.40350 MHz	5.40500 MHz

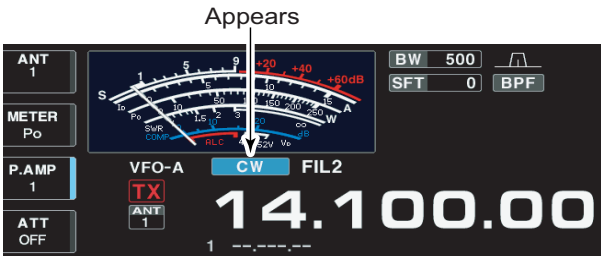
To assist you in operating the 5 MHz band within the rules specified by the FCC, transmission is illegal on any 5 MHz band frequency other than the five frequencies indicated in the table above.

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

*The FCC specifies center frequencies on the 5 MHz band. However, the IC-7700 displays carrier frequency. Therefore, tune the transceiver to 1.5 kHz below the specified FCC channel center frequency.

■ Operating CW





① Push a band key to select the desired band.
② Push [CW] to select CW.
- After CW mode is selected, push [CW] to toggle between CW and CW-R modes.
- "CW" or "CW-R" appears.

③ Rotate the main dial to tune a desired signal.
- Try to match the specified signal's tone to the side tone frequency.
- The S-meter indicates received signal strength when signal is received.

④ Rotate [AF] to set audio to a comfortable listening level.
⑤ Push [TRANSMIT] to transmit.
- [TX] indicator lights red.

⑥ Use the electric keyer or paddle to key your CW signals.
- The power meter indicates transmitted CW output power.

⑦ Adjust CW speed with [KEY SPEED].
- Adjustable within 6–48 WPM.

⑧ Push [TRANSMIT] to return to receive.

◇ Convenient functions for receive

- **Preamp** (p. 5-9)
  ➥ Push [P.AMP] (MF3) several times to set the preamp OFF, preamp 1 ON or preamp 2 ON.
  - "P.AMP1" or "P.AMP2" appears when the preamp 1 or preamp 2 is ON.

- **Attenuator** (p. 5-9)
  ➥ Push [ATT] (MF4) several times to set the attenuator in 6 dB steps.
  - Push and hold [ATT] (MF4) for 1 sec. to turn the attenuator function OFF.
  - "ATT" and attenuation level appear when the attenuator is ON.

- **Noise blanker** (p. 5-16)
  ➥ Push [NB] to turn the noise blanker ON and OFF, and then rotate [NB] control to adjust the threshold level.
  - Noise blanker indicator (above [NB] switch) lights when the noise blanker is ON.
  - Push and hold [NB] for 1 sec. to enter noise blanker set mode.

- **Noise reduction** (p. 5-17)
  ➥ Push [NR] to turn the noise reduction ON and OFF.
  - Rotate [NR] control to adjust the noise reduction level.
  - Noise reduction indicator (above [NR] switch) lights when the noise reduction is ON.

- **Twin PBT (passband tuning)** (p. 5-12)
  ➥ Rotate [TWIN PBT] controls (inner/outer).
  - PBT indicator (above [PBT-CLR] switch) lights when PBT is in use.
  - Push and hold [PBT-CLR] for 1 sec. to clear the settings.

- **Manual notch filter** (p. 5-18)
  ➥ Push [NOTCH] to turn the manual notch function ON and OFF.
  - Rotate [NOTCH] control to set the attenuating frequency.
  - Notch indicator (above [NOTCH] switch) lights when the manual notch is ON.

- **AGC (auto gain control)** (p. 5-11)
  ➥ Push [AGC] switch several times to select AGC FAST, AGC MID or AGC SLOW.
  ➥ Push [AGC VR] to turn the AGC time constant manual setting ON and OFF.
  - Rotate [AGC] control to adjust the time constant.

- **¼ function** (p. 3-6)
  ➥ Push [1/4] to turn the ¼ function ON and OFF.

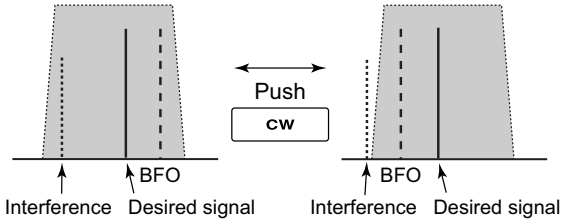
- **Auto tuning function** (p. 5-19)
  ➥ Push [AUTOTUNE] to turn the auto tuning function ON and OFF.
  - The transceiver automatically tunes the desired signal within a ±500 Hz range.

  IMPORTANT!
  When receiving a weak signal, or receiving a signal with interference, the automatic tuning function may not tune properly, or tune onto an undesired signal.

◇ Convenient functions for transmit

• **Break-in function** (p. 6-3)
➥ Push [BK-IN] several times to select the break-in OFF, semi break-in and full break-in.
• " BKIN " or " F-BKIN " appears when the semi break-in or full break-in function is ON, respectively.

◇ About CW reverse mode

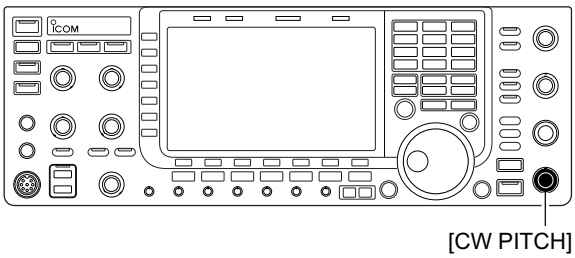


CW-R (CW Reverse) mode uses the opposite side band to receive CW signals.

Use when interfering signals are near a desired signal and you want to use CW-R to reduce the interference.

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

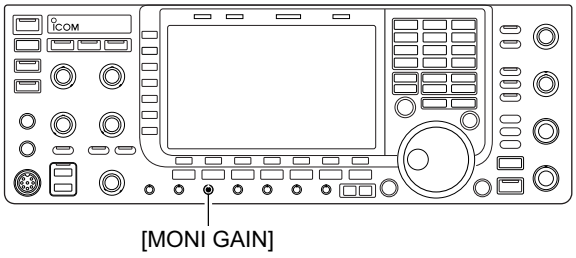
◇ About CW pitch control



The received CW audio pitch and CW side tone can be adjusted to suit your preference (from 300 to 900 Hz in 5 Hz steps). This does not change the operating frequency.

➥ Rotate [CW PITCH] to suit your preference.
• Adjustable within 300 to 900 Hz in 5 Hz steps.

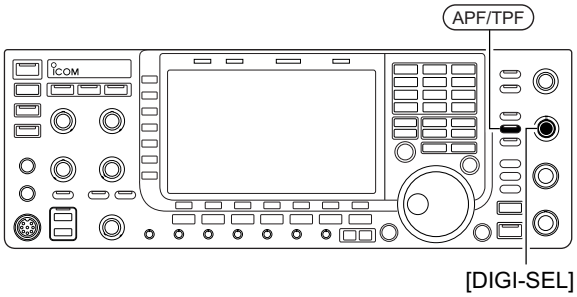
◇ CW side tone function



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

This allows you to match your transmit frequency exactly to another station's by matching the audio tone. You can also use the CW side tone (be sure to turn OFF break-in!) to practice CW sending. CW side tone level can be adjusted in level set mode (p. 12-6).

◇ APF (Audio Peak Filter) operation



The APF changes the audio frequency response by boosting a particular frequency to enhance a desired CW signal.

The peak frequency can be adjusted with [DIGI-SEL] control when “APF” is selected for “DIGI-SEL VR Operation” in Others set mode (p. 12-16).

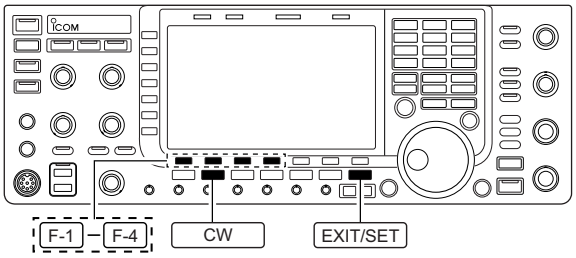
The audio filter shape is also selectable from “SOFT” and “SHARP” in Others set mode (p. 12-16).

① During CW mode, push [APF/TPF] to turn the audio peak filter ON and OFF.
- “ APF ” appears in the display and [APF/TPF] indicator above this switch lights green.

② Push and hold [APF/TPF] for 1 sec. several times to select the desired audio filter width.
- WIDE, MID and NAR filters, or, 320, 160 and 80 Hz filters are available depending on APF type setting in level set mode.

③ If “APF” is selected for “DIGI-SEL VR Operation,” rotate [DIGI-SEL] control to suit your preference.

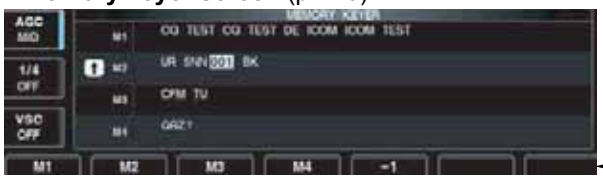
■ Electronic keyer functions



The IC-7700 has a number of convenient functions for the built-in electronic keyer.

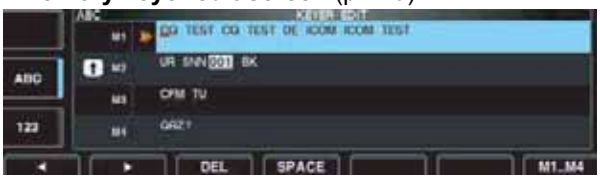
① During CW mode, push [EXIT/SET] several times to normal screen, if necessary.
② Push [KEYER] [F-3] to select memory keyer screen.
③ Push [EXIT/SET] to select memory keyer menu screen.
④ Push one of the LCD function switches ([F-1] to [F-4]) to select the desired menu. See the diagram below.
• Push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

• **Memory keyer screen** (p. 4-8)



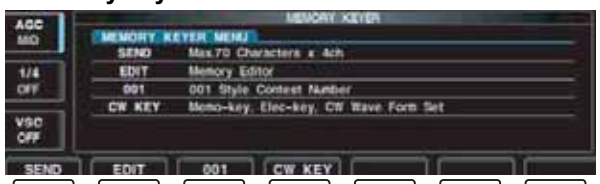
EXIT/SET

• **Memory keyer edit screen** (p. 4-9)



F-1 F-2

• **Memory keyer menu screen**



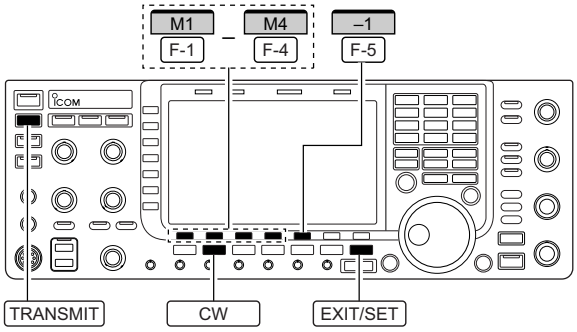
• **Contest number set mode** (p. 4-10)

F-3

• **Keyer set mode screen** (p. 4-11)

F-4

◇ Memory keyer screen



• Memory keyer screen

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

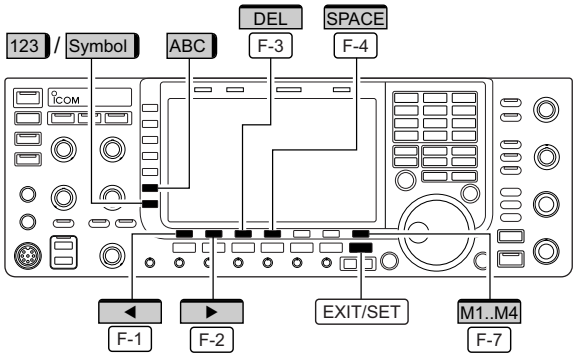
• Transmitting

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

For your information
When an external keypad is connected to [EXT KEYPAD] connector on the rear panel, the programmed contents, M1—M4, can be transmitted without selecting the memory keyer screen.
See p. 2-7 for details.

④ Push EXIT/SET twice to return to normal screen.

◇ Editing a memory keyer



• Memory keyer edit screen

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

• Pre-programmed contents

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

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

• Programming contents

① During CW mode operation, push [KEYER] F-3 to select memory keyer screen.
② Push EXIT/SET to select memory keyer menu, then push [EDIT] F-2 to select keyer edit screen.
  • Memory keyer contents of Channel 1 (M1) is selected.
③ Push [M1..M4] F-7 several times to select the desired memory keyer channel to be edited.
④ Push [ABC] (MF6) or [123] (MF7) or [Symbol] (MF7) to select the character group, then rotate the main dial to select the character, or push the keypad for number input.
  • [Symbol] appears when [123] (MF7) is pushed when "123" character group is selected.
  • Selectable characters (using the main dial);

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

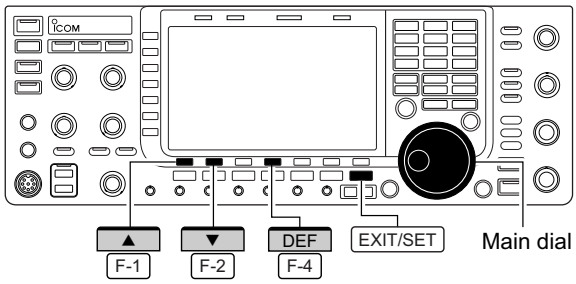
NOTE:
"^" is used to transmit a following word with no space such as AR. Put "^" before a text string such as ^AR, and the string "$\overline{AR}$" is sent with no space.
"✱" is used to insert the CW contest serial number. The serial number automatically increments by 1. This function is only available for one memory keyer channel at a time. Memory keyer channel M2 used "✱" by default.

✔ For your convenience
When a PC keyboard is connected to [USB] connector on the front panel, the memory keyer contents can also be edited from the keyboard.

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

◇ Contest number set mode

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



• Setting contents

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

• Contest number set mode screen

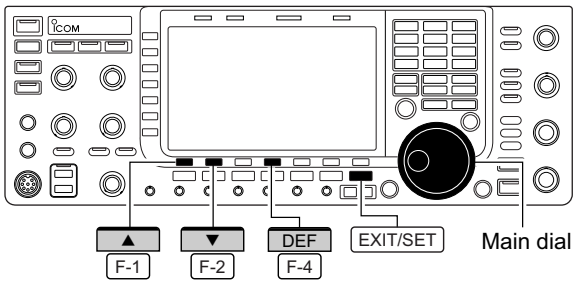
Number Style	Normal
This item sets the numbering system used for contest (serial) numbers— normal or short morse numbers.	• Normal : Does not use short morse numbers (default) • 190➔ANO : Sets 1 as A, 9 as N and 0 as O. • 190➔ANT : Sets 1 as A, 9 as N and 0 as T. • 90➔ NO : Sets 9 as N and 0 as O. • 90➔ NT : Sets 9 as N and 0 as T.

Count Up Trigger	M2
This selects which of the four memories will contain the contest serial number exchange. The count-up trigger allows the serial number to automatically increment after each complete serial number exchange is sent.	• M1, M2, M3 and M4 can be set. (default: M2)

Present Number	001
This item shows the current number for the count-up trigger channel set above.	• Rotate the main dial to change the number, or push and hold [001CLR] F-3 for 1 sec. to reset the current number to 001.

◇ Keyer set mode

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



• Keyer set mode screen

• Setting contents

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

Keyer Repeat Time — 2s

When sending CW using the repeat timer, this item sets the time between transmission.

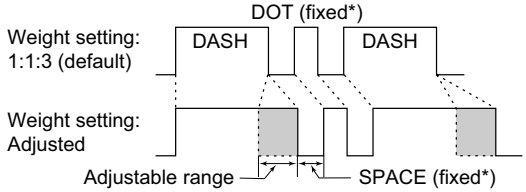
• 1 to 60 sec. in 1 sec. steps can be selected. (default: 2 sec.)

Dot/Dash Ratio — 1:1:3.0

This item sets the dot/dash ratio.

• 1:1:2.8 to 1:1:4.5 (in 0.1 steps) can be selected. (default: 1:1:3.0)

Keying weight example: Morse code “K”



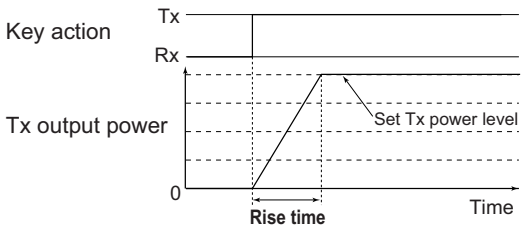
*SPACE and DOT length can be adjusted with [KEY SPEED] only.

Rise Time — 4ms

This item sets the rise time of the transmitted CW envelope.

• 2, 4, 6 or 8 msec. can be selected. (default: 4 msec.)

• About rise time



to be continued…

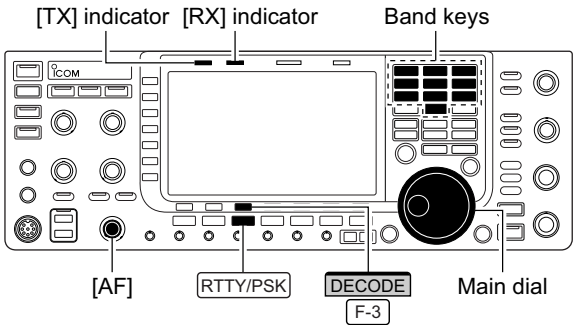
◇ Keyer set mode (continued)

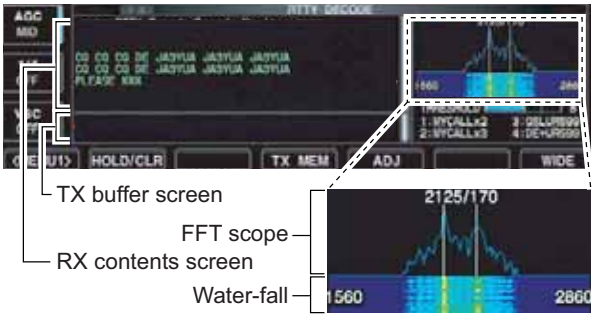
Paddle Polarity	Normal
This item sets the paddle polarity.	• Normal and reverse polarity can be selected.

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

Mic Up/Down Keyer	OFF
This item allows you to set the microphone [UP]/[DN] keys to be used as a paddle.	• ON : [UP]/[DN] switches can be used for CW. • OFF : [UP]/[DN] switches cannot be used for CW. **NOTE:** When “ON” is selected, the frequency and memory channel cannot be changed using the [UP]/[DN] switches.

■ Operating RTTY (FSK)





A DSP-based high-quality Baudot RTTY encoder/decoder is built-in to the IC-7700. When connecting a PC keyboard (p. 2-6), RTTY operation can be performed without an external RTTY terminal, TNC or PC.

If you would rather use your RTTY terminal or TNC, consult the manual that comes with the RTTY terminal or TNC.

① Push a band key to select the desired band.
② Push [RTTY/PSK] to select RTTY.
- After RTTY mode is selected, push and hold [RTTY/PSK] for 1 sec. to toggle between RTTY and RTTY-R modes.
- "RTTY" or "RTTY-R" appears.

③ Push [DECODE] [F-3] to display the decode screen.
- The IC-7700 has a built-in Baudot decoder.

④ To tune the desired signal, aim for a symmetrical waveform and ensure the peak points align with the mark (2125 Hz) and shift (170 Hz) frequency lines in the FFT scope.
- The S-meter indicates received signal strength when signal is received.

⑤ Press [F12] on the connected keyboard to transmit.
- [TX] indicator lights red.

⑥ Type from the keyboard to enter the contents that you want to transmit.
- The typewritten contents are indicated in the TX buffer screen and transmitted immediately.
- The text color will be changed when transmitted.
- Press one of [F1]–[F8] to transmit the TX memory contents.

⑦ Press [F12] on the keyboard to return to receive.

✔ For your convenience

The transmission contents can be typed before being transmitted.

① Perform the steps ① to ④ above.
② Type from the connected keyboard to enter the message that you want to transmit.
- The typewritten contents are indicated in the TX buffer screen.

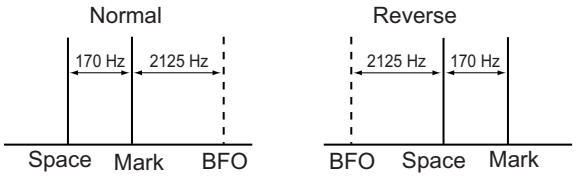
③ Press [F12] of the connected keyboard to transmit the typewritten contents.
- The color of displayed text, in the TX buffer screen, will be changed when transmitted.
- To cancel the transmission, press [F12] twice.

④ Press [F12] of the keyboard to return to receive.

◇ Convenient functions for receive

- **Preamp** (p. 5-9)
  - ➥ Push [P.AMP] (MF3) several times to set the preamp OFF, preamp 1 ON or preamp 2 ON.
    - "P.AMP1" or "P.AMP2" appears when the preamp 1 or preamp 2 is ON.
- **Attenuator** (p. 5-9)
  - ➥ Push [ATT] (MF4) several times to set the attenuator in 6 dB steps.
    - Push and hold [ATT] (MF4) for 1 sec. to turn the attenuator function OFF.
    - "ATT" and attenuation level appear when the attenuator is ON.
- **Noise blanker** (p. 5-16)
  - ➥ Push [NB] to turn the noise blanker ON and OFF, and then rotate [NB] control to adjust the threshold level.
    - Noise blanker indicator (above [NB] switch) lights when the noise blanker is ON.
    - Push and hold [NB] for 1 sec. to enter noise blanker set mode.
- **Twin PBT (passband tuning)** (p. 5-12)
  - ➥ Rotate [TWIN PBT] controls (inner/outer).
    - PBT indicator (above [PBT-CLR] switch) lights when PBT is in use.
    - Push and hold [PBT-CLR] for 1 sec. to clear the settings.
- **Noise reduction** (p. 5-17)
  - ➥ Push [NR] to turn the noise reduction ON and OFF.
    - Rotate [NR] control to adjust the noise reduction level.
    - Noise reduction indicator (above [NR] switch) lights when the noise reduction is ON.
- **Manual notch filter** (p. 5-18)
  - ➥ Push [NOTCH] to turn the manual notch function ON and OFF.
    - Rotate [NOTCH] control to set the attenuating frequency.
    - Notch indicator (above [NOTCH] switch) lights when the manual notch is ON.
- **AGC (auto gain control)** (p. 5-11)
  - ➥ Push [AGC] switch several times to select AGC FAST, AGC MID or AGC SLOW.
  - ➥ Push [AGC VR] to turn the AGC time constant manual setting ON and OFF.
    - Rotate [AGC] control to adjust the time constant.
- **¼ function** (p. 3-6)
  - ➥ Push [1/4] to turn the ¼ function ON and OFF.

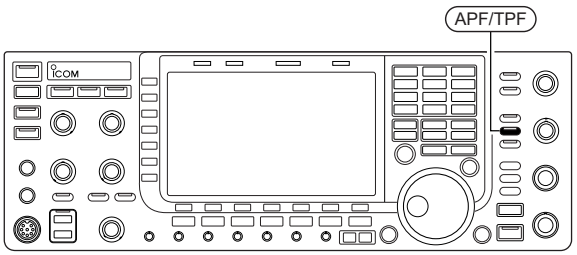
◇ About RTTY reverse mode



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

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

◇ Twin peak filter

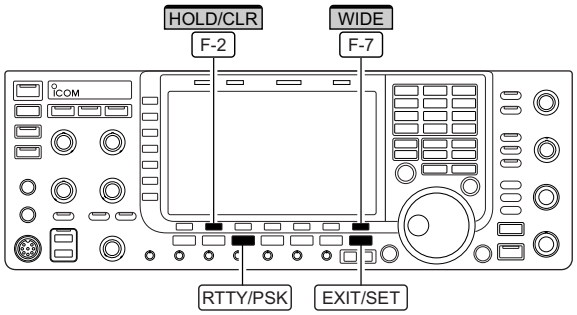


The twin peak filter changes audio frequency response by boosting the mark and space frequencies (2125 and 2295 Hz) for better reception of RTTY signals.

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

NOTE: When the twin peak filter is in use, the received audio output may increase. This is a normal, not a malfunction.

◇ Functions for the RTTY decoder indication



• Wide screen indication

① Push a band key to select the desired band.
② Push RTTY/PSK to select RTTY.
- After RTTY mode is selected, push and hold RTTY/PSK for 1 sec. to toggle between RTTY and RTTY-R modes.
- "RTTY" or "RTTY-R" appears.

③ Push [DECODE] F-3 to display the decode screen.
- When tuned into an RTTY signal, decoded characters are displayed in the RX contents screen.

④ Push [HOLD/CLR] F-2 to freeze the current screen.
- "HOLD" appears while the function is in use.
- Push [HOLD/CLR] F-2 again to release the function.

⑤ Push and hold [HOLD/CLR] F-2 for 1 sec. to clear the displayed characters.
- "HOLD" indicator disappears at the same time when the hold function is in use.

⑥ Push [WIDE] F-7 to toggle the RTTY decode screen size from normal and wide.
- S/RF meter type during wide screen indication can be selected in display set mode. (pgs. 3-11, 12-10)

⑦ Push EXIT/SET to close the RTTY decode screen.

◇ Setting the decoder threshold level

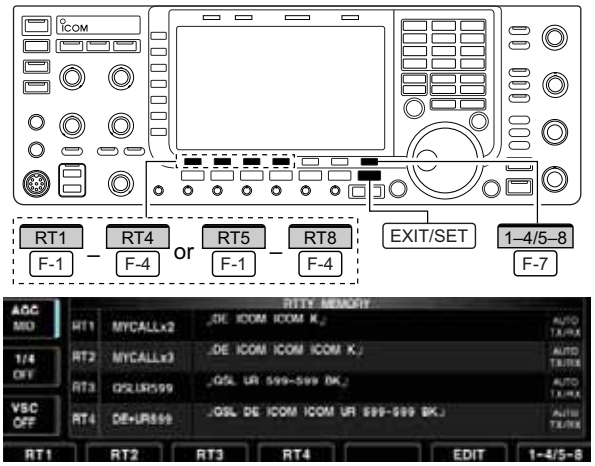
Adjust the RTTY decoder threshold level if some characters are displayed when no signal is received.

① Select the RTTY decode screen as described above.
② Push [ADJ] F-5 to select the threshold level setting condition.
③ Rotate the main dial to adjust the RTTY decoder threshold level.
- Push and hold [DEF] F-6 for 1 sec. to select the default setting.

④ Push [ADJ] F-5 to exit from the threshold level setting condition.

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

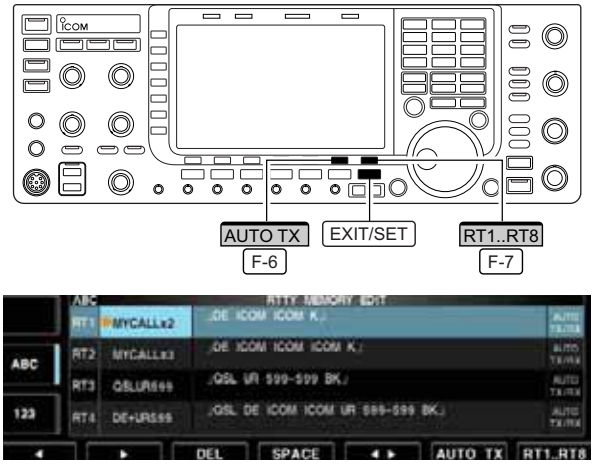
◇ RTTY memory transmission



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

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

◇ Automatic transmission/reception setting



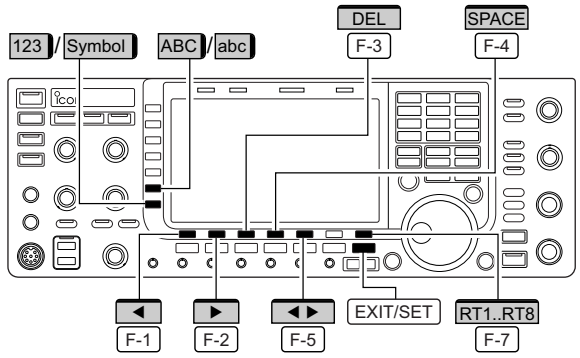
① During RTTY mode operation, push [F-3•DECODE] to select RTTY decode screen.
② Push [TX MEM] F-4 to select RTTY memory screen, then push [EDIT] F-6 to select RTTY memory edit screen.
- RTTY memory contents of the Channel 1 (RT1) is selected.

③ Push [RT1..RT8] F-7 several times to select the desired RTTY memory.
④ Push [AUTO TX] F-6 several times to select the desired condition as follow.
- AUTO TX/RX : Automatically transmits the selected memory and returns to receive after the transmission.
- AUTO TX : Automatically transmits the selected memory. To return to receive, press [F12] on the keyboard.
- AUTO RX : Press [F12] on the keyboard to transmit the selected memory. Automatically returns to receive after the transmission.
- No indication : Press [F12] on the keyboard to transmit the selected memory and press [F12] again to return to receive.

⑤ Push EXIT/SET to exit RTTY memory edit condition.

NOTE: The transceiver always functions in the "AUTO TX/RX" setting when no keyboard is connected.

◇ Editing RTTY memory



• RTTY memory edit screen

• Pre-programmed contents

CH	Name	Contents
RT1	MYCALLx2	↲DE ICOM ICOM K↲
RT2	MYCALLx3	↲DE ICOM ICOM ICOM K↲
RT3	QSLUR599	↲QSL UR 599–599 BK↲
RT4	DE+UR599	↲QSL DE ICOM ICOM UR 599–599 BK↲
RT5	73 GL SK	↲73 GL SK↲
RT6	CQ CQ CQ	↲CQ CQ CQ DE ICOM ICOM ICOM K↲
RT7	RIG&ANT	↲MY TRANSCEIVER IS IC–7700 & ANTENNA IS A 3–ELEMENT TRIBAND YAGI.↲
RT8	EQUIP.	↲MY RTTY EQUIPMENT IS INTERNAL FSK UNIT & DEMODULATOR OF THE IC–7700.↲

The contents of the RTTY memories can be set using the memory edit menu. The memory can store and retransmit 8 RTTY message for often-used RTTY information. Total capacity of the memory is 70 characters per memory channel.

• Programming contents

① During RTTY mode operation, push [F-3•DECODE] to select RTTY decode screen.

② Push [TX MEM] F-4 to select RTTY memory screen, then push [EDIT] F-6 to select RTTY memory edit screen.
- RTTY memory contents of the Channel 1 (RT1) is selected.

③ Push [RT1..RT8] F-7 to several times to select the desired RTTY memory channel to be edited.

④ Push [◄ ►] F-5 to select the edit item between memory contents and memory name.

⑤ Push [ABC] (MF6), [abc] (MF6), [123] (MF7) or [Symbol] (MF7) to select the character group, then rotate the main dial to select the character, or push the keypad for number input.
- [abc] (MF6) appears when [ABC] (MF6) is pushed when “ABC” character group is selected, and [Symbol] (MF7) appears when [123] (MF7) is pushed when “123” character group is selected.
- Selectable characters (with the main dial);

Key selection	Editable characters
ABC	A to Z (capital letters)
abc	a to z (small letters) (selectable for memory name only)
123	0 to 9 (numbers)
Symbol	! # $ % & ¥ ? “ ‘ ` ^ + – ✱ / . , : ; = < > ( ) [ ] { } | _ ~ @ (For the memory contents setting, ! $ & ? “ ‘ – / . , : ; ( ) ↲ are selectable.)

✔ For your convenience

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

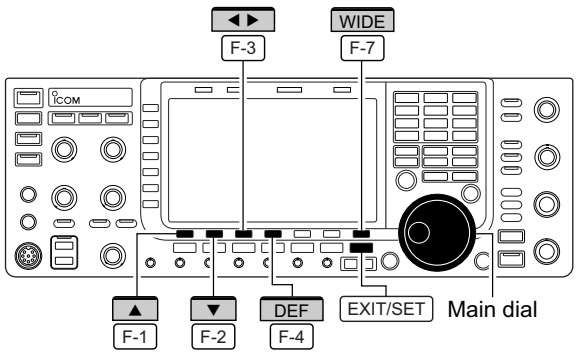
⑥ Push [◄] F-1 or [►] F-2 to move the cursor backwards or forwards, respectively.
- Pushing [DEL] F-3 deletes a character and [SPACE] F-4 inserts a space.

⑦ Repeat steps ⑤ and ⑥ to input the desired characters.

⑧ Push EXIT/SET to set the contents and exit RTTY memory edit screen.

◇ RTTY decode set mode

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



• RTTY decode set mode screen

• Setting contents

① During RTTY mode operation, push [DECODE] F-3 to select RTTY decode screen.
② Push [<MENU1>] F-1 to select the second RTTY decode menu, then push [SET] F-6 to select RTTY decode set mode.
  • Push [WIDE] F-7 to toggle the screen size from normal and wide.
③ Push [▲] F-1 or [▼] F-2 to select the desired set item.
④ Set the desired condition using the main dial.
  • Push and hold [DEF] F-4 for 1 sec. to select a default condition or value.
  • Push [◄ ►] F-3 to select the set contents for some items.
⑤ Push EXIT/SET to exit from set mode.

RTTY FFT Scope Averaging — OFF

Select the FFT scope waveform averaging function from 2 to 4 and OFF. (default: OFF)

Recommendation!
If you use the FFT scope waveform for tuning, use the default or smaller number setting is recommended.

RTTY FFT Scope Waveform Color — 51 / 153 / 255

Set the color for the FFT scope waveform.
• The color is set in RGB format.
• The set color is indicated in the box beside the RGB scale.

• Push [◄ ►] F-3 to select R (Red), G (Green) and B (Blue), and then rotate the main dial to set the ratio from 0 to 255.

RTTY Decode USOS — ON

Turn the capability of letter code decoding after receiving a “space” (USOS; UnShift On Space function) ON and OFF.

• ON : Decode as letter code.
• OFF : Decode as character code.

RTTY Decode New Line Code — CR,LF,CR+LF

Selects the new line code of the internal RTTY decoder.
CR: Carriage Return, LF: Line Feed

• CR,LF,CR+LF : Makes new line with any codes.
• CR+LF : Makes new line with CR+LF code only.

RTTY Diddle — BLANK

Selects the diddle condition.

• BLANK : Transmits blank code during no code transmission.
• LTRS : Transmits letter code during no code transmission.
• OFF : Turns the diddle function OFF.

◇ RTTY decode set mode (continued)

RTTY TX USOS — ON

Explicitly inserts the FIGS character even though it is not required by the receiving station.

- ON : Inserts FIGS.
- OFF : Does not insert FIGS.

RTTY Time Stamp — ON

Turn the time stamp (date, transmission or reception time) indication ON and OFF.

- ON : Displays the time stamp.
- OFF : No time stamp indication.

RTTY Auto CR+LF by TX — ON

Selects the automatic new line code (CR+LF) transmission capability.

- ON : Transmits CR+LF code once.
- OFF : Transmits no CR+LF code.

RTTY Time Stamp (Time) — Local

Selects the clock indication for time stamp usage.

NOTE: The time won't be displayed when "OFF" is selected in "RTTY Time Stamp" as above.

- Local : Selects the time that set in "Time (Now)."
- UTC* : Selects the time that set in "CLOCK2."

*The name of choice may differ according to "CLOCK2 Name" setting (p. 11-2). "UTC" is the default name of CLOCK2.

RTTY Time Stamp (Frequency) — OFF

Selects the operating frequency indication for time stamp usage.

NOTE: The frequency won't be displayed when "OFF" is selected in "RTTY Time Stamp" as above.

- ON : Displays the operating frequency.
- OFF : No operating frequency display.

RTTY Font Color (Receive) — 128 255 128

Set the text color for received characters.

- The color is set in RGB format.
- The set color is indicated in the box beside the RGB scale.
- Push [◀ ▶] F-3 to select R (Red), G (Green) and B (Blue), and then rotate the main dial to set the ratio from 0 to 255.

RTTY Font Color (Transmit) — 255 106 106

Set the text color for transmitted characters.

- The color is set in RGB format.
- The set color is indicated in the box beside the RGB scale.
- Push [◀ ▶] F-3 to select R (Red), G (Green) and B (Blue), and then rotate the main dial to set the ratio from 0 to 255.

RTTY Font Color (Time Stamp) — 0 155 189

Set the text color for time stamp indication.

- The color is set in RGB format.
- The set color is indicated in the box beside the RGB scale.
- Push [◀ ▶] F-3 to select R (Red), G (Green) and B (Blue), and then rotate the main dial to set the ratio from 0 to 255.

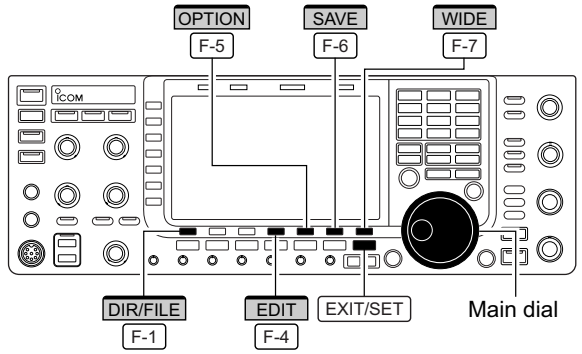
RTTY Font Color (TX Buffer) — 255 255 255

Set the text color in the TX buffer screen.

- The color is set in RGB format.
- The set color is indicated in the box beside the RGB scale.
- Push [◀ ▶] F-3 to select R (Red), G (Green) and B (Blue), and then rotate the main dial to set the ratio from 0 to 255.

◇ Data saving

The USB-Memory is not supplied by Icom.



• Decode file save screen

• Decode file save screen— file name edit

• Save option screen

When a PC keyboard is connected to [USB] connector on the front panel, the file name can also be edited from the keyboard.

The contents of the RTTY memory and received signal can be saved into the USB-Memory.

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

• File name:

1 Push [EDIT] F-4 to select file name edit condition.
- Push [DIR/FILE] F-1 several times to select the file name, if necessary.

2 Push [ABC] (MF6), [123] or [Symbol] (MF7) to select the character group, then rotate the main dial to select the character.
- [ABC] (MF6): A to Z (capital letters); [123] (MF7): 0 to 9 (numerals); [Symbol] (MF7): ! # $ % & ‘ ` ^ + – = ( ) [ ] { } _ ~ @ can be selected.
- Push [◀] F-1 to move the cursor left, push [▶] F-2 to move the cursor right, [DEL] F-3 delete a character and push [SPACE] F-4 to insert a space.

3 Push EXIT/SET to set the file name.

• File format

1 Push [OPTION] F-5 to enter save option screen.

2 Rotate the main dial to select the saving format from Text to HTML.
- “Text” is the default setting.
- Push and hold [DEF] F-4 for 1 sec. to select the default setting.

3 Push EXIT/SET to return to the previous indication.

• Saving location

1 Push [DIR/FILE] F-1 to select tree view screen.

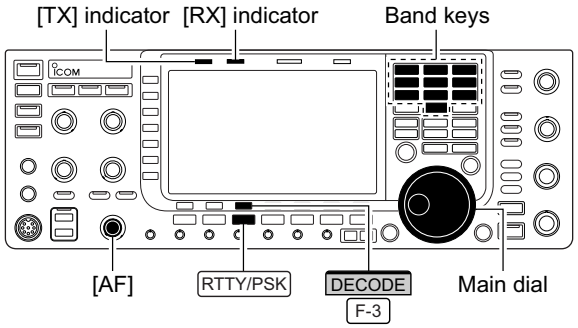
2 Select the desired directory or folder in the USB-Memory.
- Push [◀ ▶] F-4 to select the upper directory.
- Push [▲] F-2 or [▼] F-3 to select folder in the same directory.
- Push and hold [◀ ▶] F-4 for 1 sec. to select a folder in the directory.
- Push [REN/DEL] F-5 to rename the folder.
- Push and hold [REN/DEL] F-5 for 1 sec. to delete the folder.
- Push and hold [MAKE] F-6 for 1 sec. to making a new folder. (Edit the name with the same manner as the “• File name” above.)

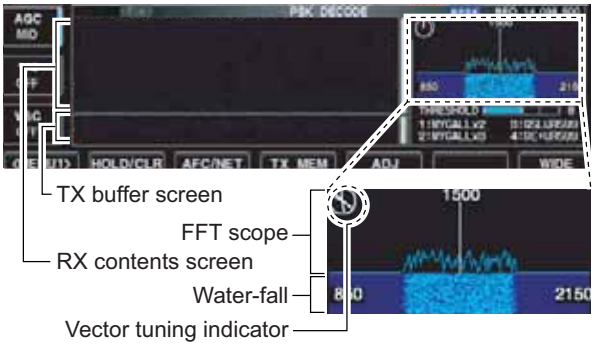
3 Push [DIR/FILE] F-1 twice to select the file name.

④ Push [SAVE] F-6 .
- After saving is completed, returns to RTTY decode second menu automatically.

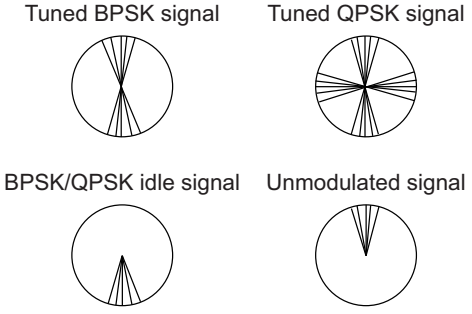
✔ For your convenience!
Two formats, Text and HTML, are available for storage of data to your PC.

■ Operating PSK





• Vector tuning indicator indication example



A high-quality DSP-based PSK31 encoder/decoder is built-in to the IC-7700. When connecting a PC keyboard (p. 2-6), PSK31 operation can be performed without PSK software installed on your PC.

If desired, you can also use your PSK software; consult the manual that comes with the software.

① Push a band key to select the desired band.
② Push [RTTY/PSK] to select PSK.
- After PSK mode is selected, push and hold [RTTY/PSK] for 1 sec. to toggle between PSK and PSK-R modes.
- "PSK" or "PSK-R" appears.

③ Push [DECODE] [F-3] to display the decode screen.
- The IC-7700 has a built-in PSK31 decoder.

④ Tune to the desired signal with the main dial.
- The signal is properly tuned when the radiated lines in the vector tuning indicator narrow, as show in the example below.
- The radiated lines in the vector tuning indicator may be displayed sporadically.
- When a PSK signal is received, the water-fall display is activated.
- The water-fall display shows the signal condition within the passband and a vertical line appears when a PSK signal is received.

⑤ Press [F12] of the connected keyboard to transmit.
- [TX] indicator lights red.

⑥ Type from the connected keyboard to enter the message that you want to transmit.
- The typewritten contents are indicated in the TX buffer screen and transmitted immediately.
- The text color will be changed when transmitted.
- Press one of [F1]–[F8] to transmit the TX memory contents.

⑦ Press [F12] of the keyboard to return to receive.

✔ For your convenience

The transmission contents can be typed before being transmitted.

① Perform the steps ① to ④ above.
② Type from the connected keyboard to enter the message that you want to transmit.
- The message is shown in the TX buffer screen.

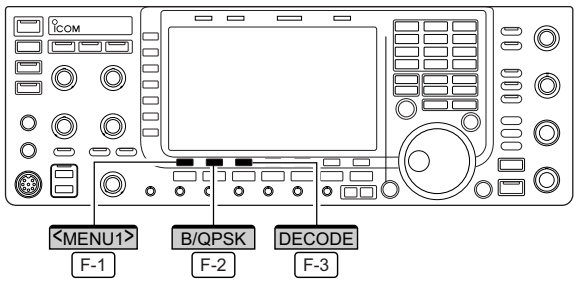
③ Press [F12] of the connected keyboard to transmit the message.
- The color of displayed text, in the TX buffer screen, will be changed when transmitted.
- To cancel the transmission, press [F12] twice.

④ Press [F12] of the keyboard to return to receive.

◇ Convenient functions for receive

- **Preamp** (p. 5-9)
  ➥ Push [P.AMP] (MF3) several times to set the preamp OFF, preamp 1 ON or preamp 2 ON.
  - "P.AMP1" or "P.AMP2" appears when the preamp 1 or preamp 2 is ON.
- **Attenuator** (p. 5-9)
  ➥ Push [ATT] (MF4) several times to set the attenuator in 6 dB steps.
  - Push and hold [ATT] (MF4) for 1 sec. to turn the attenuator function OFF.
  - "ATT" and attenuation level appear when the attenuator is ON.
- **Noise blanker** (p. 5-16)
  ➥ Push [NB] to turn the noise blanker ON and OFF, and then rotate [NB] control to adjust the threshold level.
  - Noise blanker indicator (above [NB] switch) lights when the noise blanker is ON.
  - Push and hold [NB] for 1 sec. to enter noise blanker set mode.
- **Noise reduction** (p. 5-17)
  ➥ Push [NR] to turn the noise reduction ON and OFF.
  - Rotate [NR] control to adjust the noise reduction level.
  - Noise reduction indicator (above [NR] switch) lights when the noise reduction is ON.
- **Twin PBT (passband tuning)** (p. 5-12)
  ➥ Rotate [TWIN PBT] controls (inner/outer).
  - PBT indicator (above [PBT-CLR] switch) lights when PBT is in use.
  - Push and hold [PBT-CLR] for 1 sec. to clear the settings.
- **AGC (auto gain control)** (p. 5-11)
  ➥ Push [AGC] switch several times to select AGC FAST, AGC MID or AGC SLOW.
  ➥ Push [AGC VR] to turn the AGC time constant manual setting ON and OFF.
  - Rotate [AGC] control to adjust the time constant.
- **Manual notch filter** (p. 5-18)
  ➥ Push [NOTCH] to turn the manual notch function ON and OFF.
  - Rotate [NOTCH] control to set the attenuating frequency.
  - Notch indicator (above [NOTCH] switch) lights when the manual notch is ON.
- **Fine tuning** (p. 3-7)
  ➥ During PSK, make sure that the kHz tuning step function is OFF (no "▼" indication), push and hold [TS] for 1 sec.
  - PSK may not be decoded correctly using the 10 Hz step tuning.
- **¼ function** (p. 3-6)
  ➥ Push [1/4] to turn the ¼ function ON and OFF.

◇ About BPSK and QPSK modes



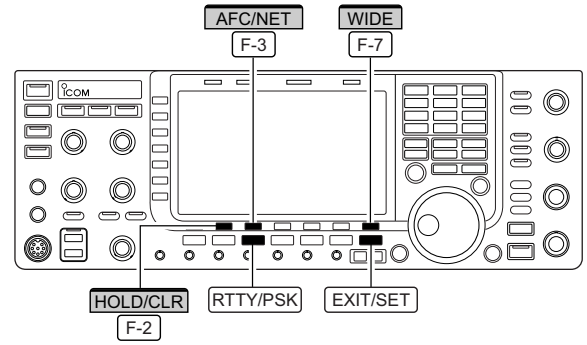
• PSK decode screen— BPSK mode

• PSK decode screen— QPSK mode

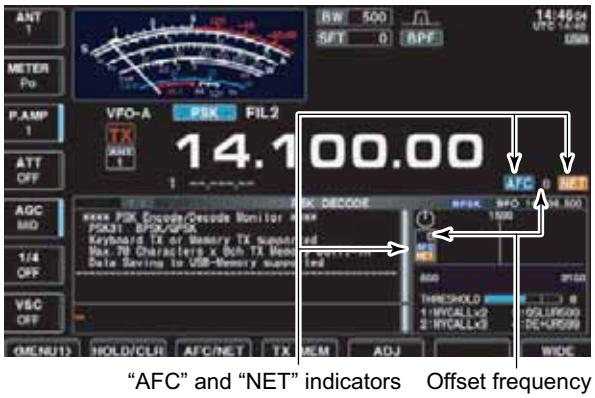
BPSK and QPSK modes are available for PSK31.
- BPSK (Binary Phase Shift Keying) mode is the most commonly used mode.
- QPSK (Quadrature Phase Shift Keying) mode has error correction capability to provide better decoding than BPSK mode in marginal condition. However, more accurate tuning is required with QPSK mode, due to the tight phase margin of QPSK.

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

◇ Functions for the PSK decoder indication



• AFC/NET indications



① Push a band key to select the desired band.
② Push [RTTY/PSK] to select PSK.
- After PSK mode is selected, push and hold [RTTY/PSK] for 1 sec. to toggle between PSK and PSK-R modes.
- "PSK" or "PSK-R" appears.

③ Push [DECODE] [F-3] to display the decode screen.
- When tuned into a PSK signal, decoded characters are displayed in the RX contents screen.

④ Push [HOLD/CLR] [F-2] to freeze the current screen.
- "HOLD" appears while the function is in use.
- Push [HOLD/CLR] [F-2] again to release the function.

⑤ Push and hold [HOLD/CLR] [F-2] for 1 sec. to clear the displayed characters.
- "HOLD" indicator disappears at the same time when the hold function is in use.

⑥ Push [AFC/NET] [F-3] to turn the AFC function ON.
- "AFC" appears.
- If a PSK signal is received within the AFC tuning range, the decoder automatically tunes into the signal and the offset frequency is displayed.
- The AFC tuning range is set to ±15 Hz as the default. Optional ±8 Hz setting is available in PSK decode set mode. (p. 4-26)

NOTE: The AFC function may not tune the signal properly when a weak PSK signal is received.

⑦ Push [AFC/NET] [F-3] again to turn the NET function ON.
- "NET" appears additionally.

⑧ Push and hold [AFC/NET] [F-3] for 1 sec. to add the offset frequency to the displayed frequency.
⑨ Push [WIDE] [F-7] to toggle the PSK decode screen size from normal and wide.
- S/RF meter type during wide screen indication can be selected in display set mode. (pgs. 3-11, 12-10)

⑩ Push [EXIT/SET] to close the PSK decode screen.

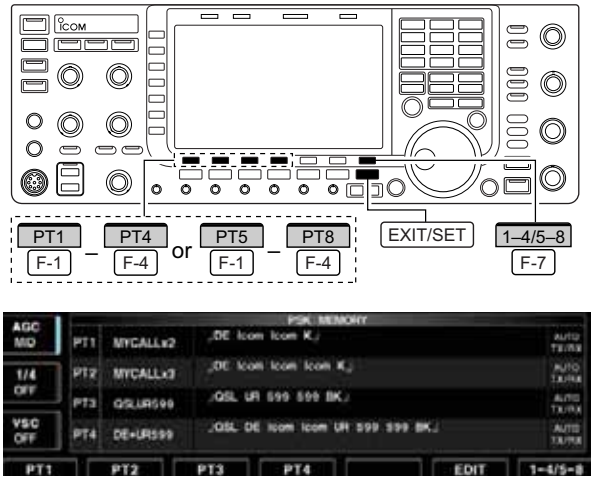
◇ Setting the decoder threshold level

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

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

④ Push [ADJ] [F-5] to exit from the threshold level setting condition.

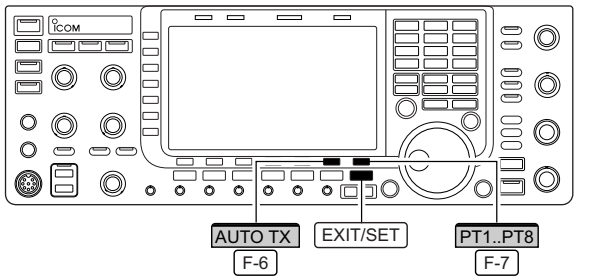
◇ PSK memory transmission



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

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

◇ Automatic transmission/reception setting



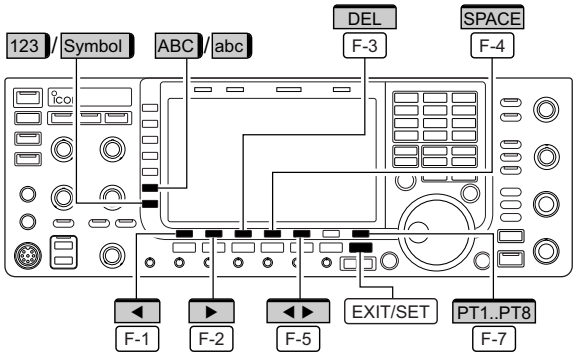
① During PSK mode operation, push [DECODE] F-3 to select PSK decode screen.
② Push [TX MEM] F-4 to select PSK memory screen, then push [EDIT] F-6 to select PSK memory edit screen.
- PSK memory contents of Channel 1 (PT1) is selected.

③ Push [PT1..PT8] F-7 several times to select the desired RTTY memory.
④ Push [AUTO TX] F-6 several times to select the desired condition, as follows.
- AUTO TX/RX : Automatically transmits the selected memory and returns to receive after the transmission.
- AUTO TX : Automatically transmits the selected memory. To return to receive, press [F12] on the keyboard.
- AUTO RX : Press [F12] on the keyboard to transmit the selected memory. Automatically returns to receive after the transmission.
- No indication : Press [F12] on the keyboard to transmit the selected memory and press [F12] again to return to receive.

⑤ Push EXIT/SET to return to exit from PSK memory edit condition.

NOTE: The transceiver always functions in the "AUTO TX/RX" setting when no keyboard is connected.

◇ Editing PSK memory



• PSK memory edit screen

• Pre-programmed contents

CH	Name	Contents
PT1	MYCALLx2	↲DE Icom Icom K↲
PT2	MYCALLx3	↲DE Icom Icom Icom K↲
PT3	QSLUR599	↲QSL UR 599 599 BK↲
PT4	DE+UR599	↲QSL DE Icom Icom UR 599 599 BK↲
PT5	73 GL SK	↲73 GL SK↲
PT6	CQ CQ CQ	↲CQ CQ CQ DE Icom Icom Icom K↲
PT7	RIG&ANT	↲My transceiver is IC–7700 & Antenna is a 3–element triband yagi.↲
PT8	EQUIP.	↲My PSK equipment is internal modulator & demodulator of the IC–7700.↲

The contents of the PSK memories can be set using the memory edit menu. The memory can store 8 PSK messages for often-used PSK information. Total capacity of the memory is 70 characters per memory channel.

• Programming contents

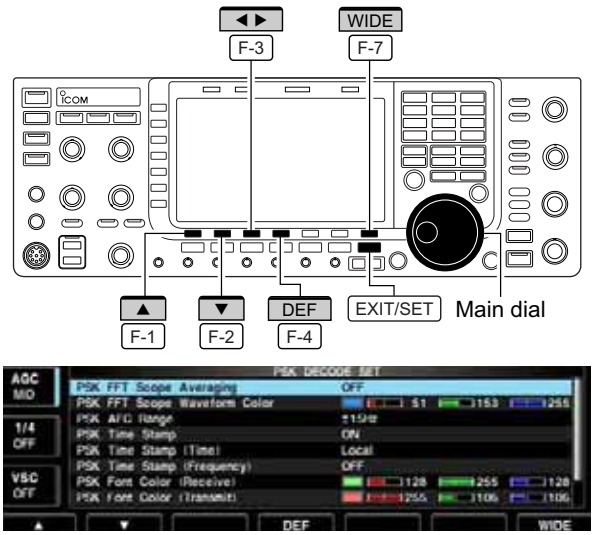
① During PSK mode operation, push [DECODE] F-3 to select PSK decode screen.
② Push [TX MEM] F-4 to select PSK memory screen, then push [EDIT] F-6 to select PSK memory edit screen.
  • PSK memory contents of the Channel 1 (PT1) is selected.
③ Push [PT1..PT8] F-7 several times to select the desired PSK memory channel to be edited.
④ Push [◄ ►] F-5 to select the edit item between memory contents and memory name.
⑤ Push [ABC] (MF6), [abc] (MF6), [123] (MF7) or [Symbol] (MF7) to select the character group, then rotate the main dial to select the character, or push the keypad for number input.
  • [abc] (MF6) appears when [ABC] (MF6) is pushed when "ABC" character group is selected, and [Symbol] (MF7) appears when [123] (MF7) is pushed when "123" character group is selected.
  • Selectable characters (with the main dial);

Key selection	Editable characters
ABC	A to Z (capital letters)
abc	a to z (small letters)
123	0 to 9 (numbers)
Symbol	! # $ % & ¥ ? " ' ` ^ + – ✱ / . , : ; = < > ( ) [ ] { } | _ ~ @ ↲ ("↲" is for the memory contents setting only.)

✔ For your convenience
When a PC keyboard is connected to [USB] connector on the front panel, the PSK memory contents can also be edited from the keyboard.

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

◇ PSK decode set mode



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

• Setting contents

① During PSK mode operation, push [DECODE] F-3 to select PSK decode screen.
② Push [<MENU1>] F-1 to select PSK decode second menu, then push [SET] F-6 to select PSK decode set mode.
  • Push [WIDE] F-7 to toggle the screen size from normal and wide.
③ Push [▲] F-1 or [▼] F-2 to select the desired set item.
④ Set the desired condition using the main dial.
  • Push and hold [DEF] F-4 for 1 sec. to select a default condition or value.
  • Push [◄ ►] F-3 to select the set contents for some items.
⑤ Push EXIT/SET to exit from set mode.

PSK FFT Scope Averaging — OFF

Select the FFT scope waveform averaging function from 2 to 4 and OFF. (default: OFF)

Recommendation!
If you use the FFT scope waveform for tuning, using the default or smaller number setting is recommended.

PSK FFT Scope Waveform Color — 51 153 255

Set the color for the FFT scope waveform.
• The color is set in RGB format.
• The set color is indicated in the box beside the RGB scale.

• Push [◄ ►] F-3 to select R (Red), G (Green) and B (Blue), and then rotate the main dial to set the ratio from 0 to 255.

PSK AFC Range — ±15Hz

Select the AFC (Automatic Frequency Control) function operating range from ±15 Hz (default) and ±8 Hz.

NOTE: The AFC function may not tune the signal properly when a weak PSK signal is received.

PSK Time Stamp — ON

Turn the time stamp (date, transmission or reception time) display ON and OFF.

• ON : Displays the time stamp.
• OFF : No time stamp display.

PSK Time Stamp (Time) — Local

Selects the clock display for time stamp usage.

NOTE: The time won't be displayed when "OFF" is selected in "PSK Time Stamp" as above.

• Local : Selects the time that set in "Time (Now)."
• UTC* : Selects the time that set in "CLOCK2."
*The name of choice may differ according to "CLOCK2 Name" setting (p. 11-2). "UTC" is the default name of CLOCK2.

◇ PSK decode set mode (continued)

PSK Time Stamp (Frequency) — OFF

Selects the operating frequency display for time stamp usage.

- ON : Displays the operating frequency.
- OFF : No operating frequency display.

NOTE: The frequency won't be displayed when "OFF" is selected in "PSK Time Stamp" as below left.

PSK Font Color (Receive) — 128 255 128

Set the text color for received characters.

- The color is set in RGB format.
- The set color is indicated in the box beside the RGB scale.
- Push [◀ ▶] F-3 to select R (Red), G (Green) and B (Blue), and then rotate the main dial to set the ratio from 0 to 255.

PSK Font Color (Transmit) — 255 106 106

Set the text color for transmitted characters.

- The color is set in RGB format.
- The set color is indicated in the box beside the RGB scale.
- Push [◀ ▶] F-3 to select R (Red), G (Green) and B (Blue), and then rotate the main dial to set the ratio from 0 to 255.

PSK Font Color (Time Stamp) — 0 155 189

Set the text color for time stamp indication.

- The color is set in RGB format.
- The set color is indicated in the box beside the RGB scale.
- Push [◀ ▶] F-3 to select R (Red), G (Green) and B (Blue), and then rotate the main dial to set the ratio from 0 to 255.

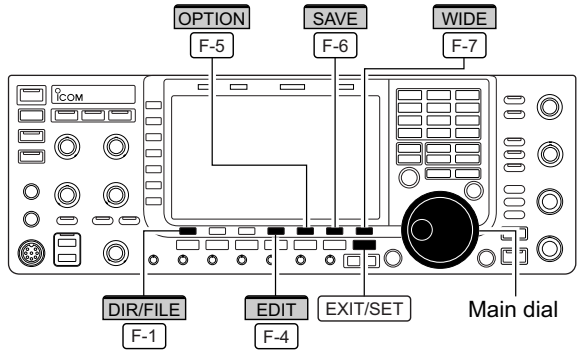
PSK Font Color (TX Buffer) — 255 255 255

Set the text color in the TX buffer screen.

- The color is set in RGB format.
- The set color is indicated in the box beside the RGB scale.
- Push [◀ ▶] F-3 to select R (Red), G (Green) and B (Blue), and then rotate the main dial to set the ratio from 0 to 255.

◇ Data saving

The USB-Memory is not supplied by Icom.



• Decode file save screen

• Decode file save screen— file name edit

• Save option screen

The contents of the PSK memory and received signal can be saved into the USB-Memory.

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

• File name:

1 Push [EDIT] [F-4] to select file name edit condition.
- Push [DIR/FILE] [F-1] several times to select the file name, if necessary.

2 Push [ABC] (MF6), [123] (MF7) or [Symbol] (MF7) to select the character group, then rotate the main dial to select the character.
- [ABC] (MF6) : A to Z (capital letters); [123] (MF7): 0 to 9 (numerals); [Symbol] (MF7): ! # $ % & ‘ ` ^ + – = ( ) [ ] { } _ ~ @ can be selected.
- Push [◀] [F-1] to move the cursor left, push [▶] [F-2] to move the cursor right, [DEL] [F-3] delete a character and push [SPACE] [F-4] to insert a space.

3 Push [EXIT/SET] to set the file name.

• File format

1 Push [OPTION] [F-5] to enter save option screen.
2 Rotate the main dial to select the saving format from Text and HTML.
- “Text” is the default setting.
- Push and hold [DEF] [F-4] for 1 sec. to select the default setting.

3 Push [EXIT/SET] to return to the previous indication.

• Saving location

1 Push [DIR/FILE] [F-1] to select tree view screen.
2 Select the desired directory or folder in the USB-Memory.
- Push [◀ ▶] [F-4] to select the upper directory.
- Push [▲] [F-2] or [▼] [F-3] to select folder in the same directory.
- Push and hold [◀ ▶] [F-4] for 1 sec. to select a folder in the directory.
- Push [REN/DEL] [F-5] to rename the folder.
- Push and hold [REN/DEL] [F-5] for 1 sec. to delete the folder.
- Push and hold [MAKE] [F-6] for 1 sec. to make a new folder. (Edit the name with the same manner as the “• File name” above.)

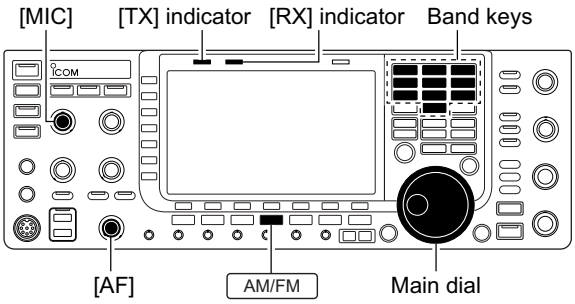
3 Push [DIR/FILE] [F-1] twice to select the file name.

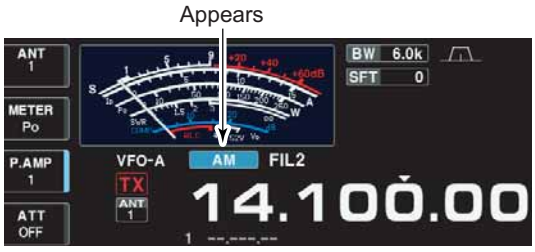
④ Push [SAVE] [F-6] .
- After saving is completed, return to PSK decode second menu automatically.

✔ For your convenience!

Two data formats, Text and HTML, are available for PC data storage.

■ Operating AM





① Push a band key to select the desired band.
② Push [AM/FM] to select AM.
- "AM" indicator appears.
- After AM mode is selected, push [AM/FM] to toggle between AM and FM modes.

③ Rotate the main dial to tune to the desired frequency.
- The S-meter indicates received signal strength when signal is received.

④ Rotate [AF] to set audio to a comfortable listening level.
⑤ Push [TRANSMIT] or [PTT] (microphone) to transmit.
- The TX indicator lights red.

⑥ Speak into the microphone at your normal voice level.
- Adjust the microphone gain with [MIC] at this step, if necessary.

⑦ Push [TRANSMIT] or release [PTT] (microphone) to return to receive.

◇ Convenient functions for receive

- **Preamp** (p. 5-9)
  ➥ Push [P.AMP] (MF3) several times to set the preamp OFF, preamp 1 ON or preamp 2 ON.
  - "P.AMP1" or "P.AMP2" appears when the preamp 1 or preamp 2 is ON.

- **Attenuator** (p. 5-9)
  ➥ Push [ATT] (MF4) several times to set the attenuator in 6 dB steps.
  - Push and hold [ATT] (MF3) for 1 sec. to turn the attenuator function OFF.
  - "ATT" and attenuation level appear when the attenuator is ON.

- **Noise blanker** (p. 5-16)
  ➥ Push [NB] to turn the noise blanker ON and OFF, and then rotate [NB] control to adjust the threshold level.
  - Noise blanker indicator (above [NB] switch) lights when the noise blanker is ON.
  - Push and hold [NB] for 1 sec. to enter noise blanker set mode.

- **Noise reduction** (p. 5-17)
  ➥ Push [NR] to turn the noise reduction ON and OFF.
  - Rotate [NR] control to adjust the noise reduction level.
  - Noise reduction indicator (above [NR] switch) lights when the noise reduction is ON.

- **Audio tone control** (p. 12-4)
  ➥ Push [SET] [F-7] then [LEVEL] [F-1] to enter level set mode. Select an item with [▲] [F-1]/[▼] [F-2] then rotate the main dial to adjust the audio tone.

- **Twin PBT (passband tuning)** (p. 5-12)
  ➥ Rotate [TWIN PBT] controls (inner/outer).
  - PBT indicator (above [PBT-CLR] switch) lights when PBT is in use.
  - Push and hold [PBT-CLR] for 1 sec. to clear the settings.

- **Notch filter** (p. 5-18)
  ➥ Push [NOTCH] to turn the manual notch function ON and OFF.
  - Rotate [NOTCH] control to set the attenuating frequency.
  - Notch indicator (above [NOTCH] switch) lights when either the auto or manual notch is ON.

- **AGC (auto gain control)** (p. 5-11)
  ➥ Push [AGC] switch several times to select AGC FAST, AGC MID or AGC SLOW.
  ➥ Push [AGC VR] to turn the AGC time constant manual setting ON and OFF.
  - Rotate [AGC] control to adjust the time constant.

- **Auto tuning function** (p. 5-19)
  ➥ Push [AUTOTUNE] to turn the auto tuning function ON and OFF.
  - The transceiver automatically tunes the desired signal within ±5 kHz range.

  IMPORTANT!
  When receiving a weak signal, or receiving a signal with interference, the automatic tuning function may not tune, or may tune to an undesired signal.

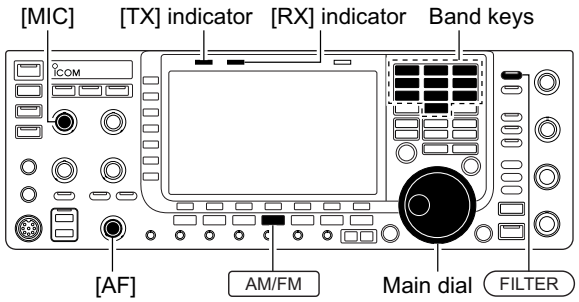
◇ Convenient functions for transmit

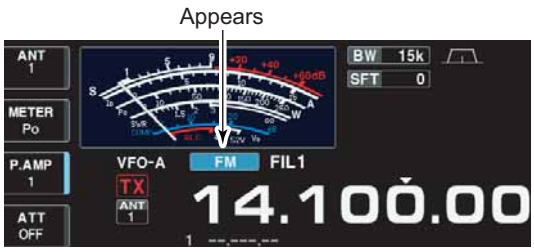
• **VOX (voice operated transmit)** (p. 6-2)
➥ Push [VOX] to turn the VOX function ON and OFF.
• " VOX " appears when the VOX function is ON.

• **Transmit quality monitor** (p. 6-4)
➥ Push [MONITOR] to turn the monitor function ON and OFF.
• Rotate [MONI GAIN] to adjust the monitor gain.
• Monitor indicator (above [MONITOR] switch) lights when the monitor function is ON.

• **Audio tone control** (p. 12-5)
➥ Push [SET] [F-7] then [LEVEL] [F-1] to enter level set mode. Select an item with [▲] [F-1]/[▼] [F-2] then rotate the main dial to adjust the audio tone.

■ Operating FM





① Push a band key to select the desired band.
② Push [AM/FM] to select FM.
- "FM" indicator appears.
- After FM mode is selected, push [AM/FM] to toggle between FM and AM modes.

③ Rotate the main dial to tune to the desired frequency.
- The S-meter indicates received signal strength when signal is received.
- 10 kHz tuning step is preset for the FM mode.
- Push [FILTER] several times to select the desired filter width.

④ Rotate [AF] to set audio to a comfortable listening level.
⑤ Push [TRANSMIT] or [PTT] (microphone) to transmit.
- The TX indicator lights red.

⑥ Speak into the microphone at your normal voice level.
- Adjust the microphone gain with [MIC] at this step, if necessary.
- FM narrow transmission is available when "FIL2" or "FIL3" is selected.

⑦ Push [TRANSMIT] or release [PTT] (microphone) to return to receive.

◇ Convenient functions for receive

- **Preamp** (p. 5-9)
  ➥ Push [P.AMP] (MF3) several times to set the preamp OFF, preamp 1 ON or preamp 2 ON.
  - "P.AMP1" or "P.AMP2" appears when the preamp 1 or preamp 2 is ON.
- **Auto notch filter** (p. 5-18)
  ➥ Push [NOTCH] to turn the auto notch function ON and OFF.
  - Notch indicator (above [NOTCH] switch) lights when the auto notch is ON.
- **Attenuator** (p. 5-9)
  ➥ Push [ATT] (MF4) several times to set the attenuator in 6 dB steps.
  - Push and hold [ATT] (MF4) for 1 sec. to turn the attenuator function OFF.
  - "ATT" and attenuation level appear when the attenuator is ON.
- **Audio tone control** (p. 12-4)
  ➥ Push [SET] [F-7] then [LEVEL] [F-1] to enter level set mode. Select an item with [▲] [F-1]/[▼] [F-2] then rotate the main dial to adjust the audio tone.

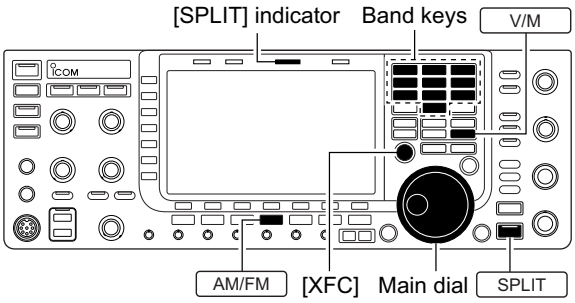
◇ Convenient functions for transmit

- **VOX (voice operated transmit)** (p. 6-2)
  ➥ Push [VOX] to turn the VOX function ON and OFF.
  - " VOX " appears when the VOX function is ON.
- **Transmit quality monitor** (p. 6-4)
  ➥ Push [MONITOR] to turn the monitor function ON and OFF.
  - Rotate [MONI GAIN] to adjust the monitor gain.
  - Monitor indicator (above [MONITOR] switch) lights when the monitor function is ON.
- **Audio tone control** (p. 12-5)
  ➥ Push [SET] [F-7] then [LEVEL] [F-1] to enter level set mode. Select an item with [▲] [F-1]/[▼] [F-2] then rotate the main dial to adjust the audio tone.

■ Repeater operation

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

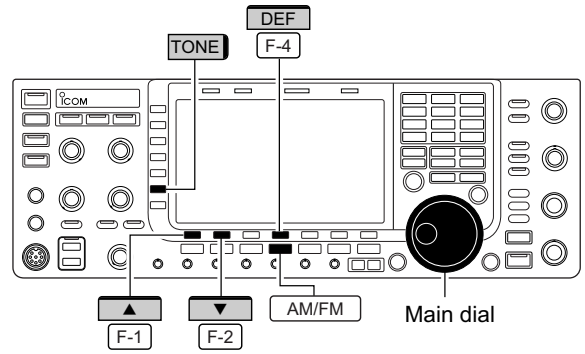
For accessing a repeater which requires a repeater tone, set the repeater tone frequency in tone frequency set mode as described below.



① Set the offset frequencies (HF, 50 MHz) and turn ON the quick split function in Others set mode in advance. (pgs. 12-12, 12-13)
② Push [V/M] to select VFO mode.
③ Push the desired band key.
④ Push [AM/FM] several times to select FM mode.
⑤ Set the receive frequency (repeater output frequency).
⑥ Push and hold [SPLIT] for 1 sec. to start repeater operation.
- Repeater tone is turned ON automatically.
- [SPLIT] indicator lights and "SPLIT" appears on the LCD.
- Shifted transmit frequency and "TX" appear in the sub band.
- The transmit frequency can be monitored while pushing [XFC].

⑦ Push and hold [PTT] to transmit; release [PTT] to receive.
⑧ To return to simplex, push [SPLIT] momentarily.

◇ Repeater tone frequency setting



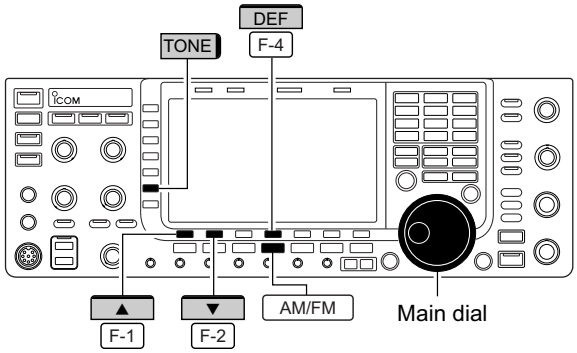
Some repeaters require subaudible tones to be accessed. Subaudible tones are superimposed on your normal signal and must be set in advance. The transceiver has 50 tones from 67.0 Hz to 254.1 Hz.

① Select FM mode.
② Push and hold [TONE] (MF6) for 1 sec. to tone frequency set mode.
③ Push [▲] F-1 or [▼] F-2 to select REPEATER TONE item.
④ Rotate the main dial to select the desired repeater tone frequency.
  • Push and hold [DEF] F-4 for 1 sec. to select the default setting.
⑤ Push EXIT/SET to return to the previous indication.

• Available tone frequencies (unit: Hz)

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

■ Tone squelch operation



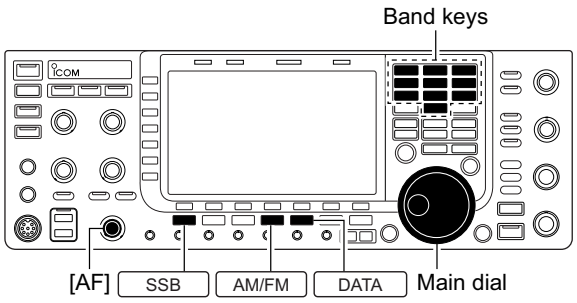
The tone squelch opens only when receiving a signal containing a matching subaudible tone. You can silently wait for calls from group members using the same tone.

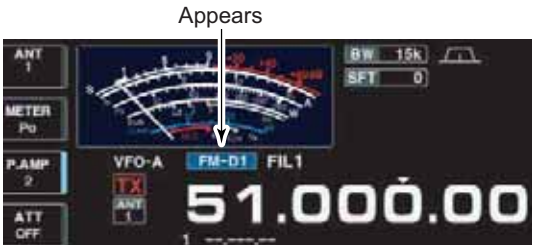
① Set the desired frequency band and select FM mode.
② Push [TONE] (MF6) to turn the tone squelch function ON.
  • "TSQL" appears
③ Push and hold [TONE] (MF6) for 1 sec. to tone frequency set mode.
④ Push [▲] F-1 or [▼] F-2 to select T-SQL TONE item.
⑤ Rotate the main dial to select the desired tone squelch frequency.
  • Push and hold [DEF] F-4 for 1 sec. to select the default setting.
⑥ Push EXIT/SET to return to the previous indication.
⑦ When the received signal includes a matching tone, squelch opens and the signal can be heard.
  • When the received signal's tone does not match, tone squelch does not open. However, the S-indicator shows signal strength.
  • To open the squelch manually, push [XFC].
⑧ Operate the transceiver in the normal way.
⑨ To cancel the tone squelch, push [TONE] (MF6) to clear "TSQL."

• Available tone frequencies (unit: Hz)

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

■ Data mode (AFSK) operation





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

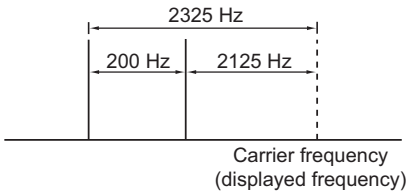
① Connect a PC and TNC to the transceiver. (p. 2-9)
② Push a band key to select the desired band.
③ Push [SSB] or [AM/FM] to select the desired operating mode.
④ Push [DATA] to turn data mode ON.
- One of "-D1," "-D2" or "-D3" is additionally appears.
- During data mode selection, push and hold [DATA] for 1 sec. to select data mode 1 (D1), 2 (D2) and 3 (D3) in sequence.

⑤ Rotate the main dial to tune to the desired signal and decode it correctly.
- Also use the tuning indicator of the TNC or software.
- During SSB data mode, ¼ tuning function can be used for critical tuning.

⑥ Operate the PC (software) or TNC to transmit.
- When operating in SSB data mode, adjust the TNC output level so that the ALC meter reading doesn't go outside the ALC zone.

NOTE: When SSB data mode is selected, the audio input from the [ACC1 (pin 6)] is used for transmission instead of [MIC]'s. (Modulation input connector can be changed in ACC set mode. (pgs. 12-7, 12-8))
The fixed condition is used for SSB data transmission as follows:
- [COMP] : OFF
- Tx bandwidth : MID
- Tx Tone (Bass) : 0
- Tx Tone (Trebles) : 0

• Tone-pair example



✔ For your information
Carrier frequency is displayed when SSB data mode is selected.

See the diagram left for the tone-pair example.

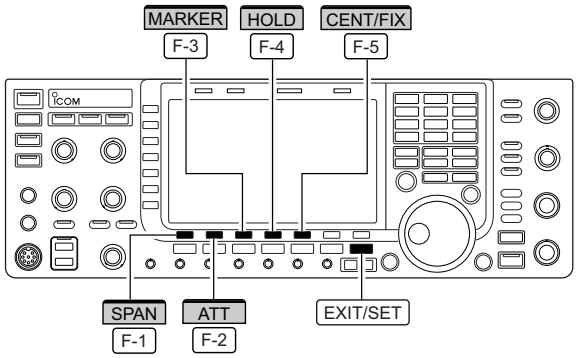
FUNCTIONS FOR RECEIVE Section 5

■ Spectrum scope screen

This DSP-based spectrum scope allows you to display the conditions on the selected band, as well as relative strengths of signals. The IC-7700 has two modes for the spectrum indication— one is center mode, and another one is fixed mode.

In addition, the IC-7700 has a mini scope screen to save screen space.

◇ Center mode



• Observed indication example

Displays signals around the set frequency within the selected span. The set frequency is always displayed at the center of the screen.

① Push [EXIT/SET] several times to close a multi-function screen, if necessary.
② Push [SCOPE] [F-1] to select the scope screen.
③ Push [CENT/FIX] [F-5] to select the center mode.
- "CENTER" is displayed when center mode is selected.

④ Push [SPAN] [F-1] several times to select the scope span.
- ±2.5, ±5.0, ±10, ±25, ±50, ±100 and ±250 kHz are available.
- Push and hold [F-1•SPAN] for 1 sec. to return to ±2.5 kHz span.
- Sweeping speed is selectable for each span independently in scope set mode. (pgs. 5-5, 5-6)

⑤ Push [ATT] [F-2] several times to activate an attenuator or turn the attenuator OFF.
- 10, 20 and 30 dB attenuators are available.
- Push and hold [ATT] [F-2] for 1 sec. to turn OFF the attenuator.

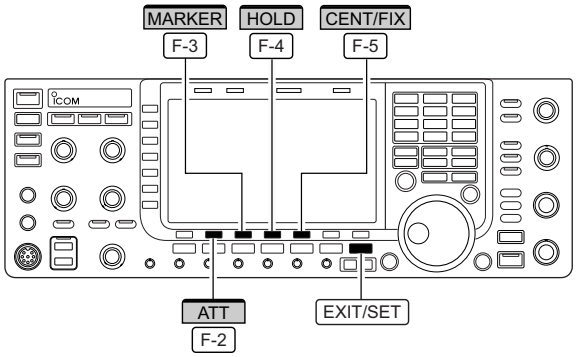
⑥ Push [MARKER] [F-3] to turn the marker for transmit frequency ON or OFF.
- "T" displays the marker at the transmit frequency.
- "<<" or ">>" appears when the marker is out of range.
- The spectrum scope shows the transmit signal waveform while transmitting. This can be deactivated in scope set mode. (p. 5-5)
- The spectrum scope shows the peak level holding function. Peak levels are displayed in the background of the current spectrum in a different color until the receive frequency changes. This can be deactivated and the waveform color can be set in scope set mode. (p. 5-5)

⑦ Push [HOLD] [F-4] to freeze the current spectrum waveform.
- "HOLD" appears while the function is in use.
- The peak hold function can be deactivated in scope set mode.

⑧ Push [EXIT/SET] to exit the scope screen.

NOTE: If a strong signal is received, a ghost waveform may appear. Push [ATT] [F-2] several times to activate the spectrum scope attenuator in this case. Spurious signal waveforms may be displayed. They are generated in the internal scope circuit and do not indicate a transceiver malfunction.

◇ Fixed mode



Displays signals within the specified frequency range. The selected frequency band conditions can be observed at a glance when using this mode.

① Push [EXIT/SET] several times to close a multi-function screen, if necessary.
② Push [SCOPE] [F-1] to select the scope screen.
③ Push [CENT/FIX] [F-5] to select the fixed mode.
- "FIX" is displayed when fixed mode is selected.

④ Push [ATT] [F-2] several times to activate an attenuator or turn the attenuator OFF.
- 10, 20 and 30 dB attenuators are available.
- Push and hold [ATT] [F-2] for 1 sec. to turn OFF the attenuator.

⑤ Push [MARKER] [F-3] several times to select the marker for transmit frequency or turn the marker OFF.
- "R" displays the marker at the receive frequency. (always displayed)
- "T" displays the marker at the transmit frequency.
- "<<" or ">>" appears when the marker is out of range.
- The spectrum scope shows the transmit signal waveform while transmitting. This can be deactivated in scope set mode. (p. 5-5)
- The spectrum scope shows the peak level holding function. Peak levels are displayed in the background of the current spectrum in a different color until the receive frequency changes. This can be deactivated and the waveform color can be set in scope set mode. (p. 5-5)

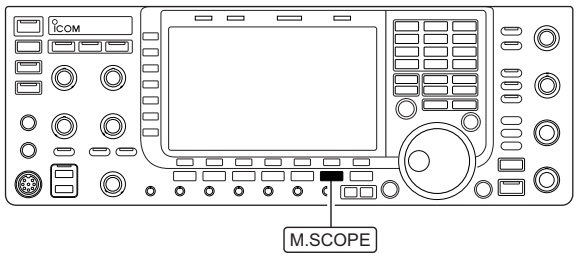
⑥ Push [HOLD] [F-4] to freeze the current spectrum waveform.
- "HOLD" appears while the function is in use.
- The peak hold function can be deactivated in scope set mode.

⑦ Push [EXIT/SET] to exit the scope screen.

NOTE: If a strong signal is received, a ghost waveform may appear. Push [ATT] [F-2] several times to activate the spectrum scope attenuator in this case.

The scope bandwidth can be specified for each operating frequency band independently in scope set mode. (pgs. 5-6 to 5-8)

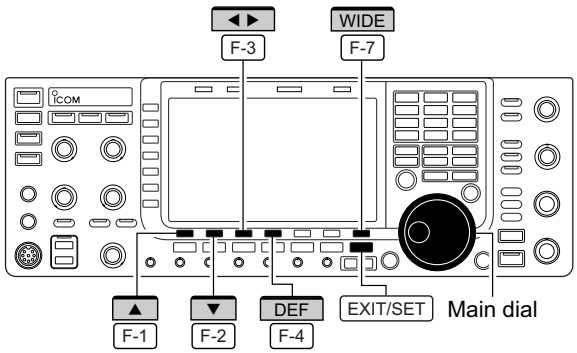
◇ Mini scope screen indication



The mini scope screen can be displayed with another screen display, such as set mode menu, decode screen, memory list screen, etc. simultaneously.

① Set the scope mode (center or fixed), marker, attenuator, span, etc. in advance. (pgs. 5-2, 5-3)
② Push [M.SCOPE] to toggle the mini scope indication ON and OFF.
- The S/RF meter type during mini scope indication can be selected in display set mode (Meter Type (Wide Screen) item). (p. 12-10)

◇ Scope set mode



This set mode is used to set the waveform color, sweeping speed, scope range for fixed mode, etc.

① During spectrum scope display ON, push [SET] [F-7] to select scope set mode screen.
- Push [WIDE] [F-7] to toggle the screen size between normal and wide.

② Push [▲] [F-1] or [▼] [F-2] to select the desired set item.
③ Set the desired condition using the main dial.
- Push and hold [DEF] [F-4] for 1 sec. to select the default condition or value.
- Push [◄ ►] [F-3] to select the set contents for some items.

④ Push [EXIT/SET] to exit from set mode.

◇ Scope set mode (continued)

Scope during Tx (CENTER Type)	ON
Turn the transmitting signal waveform indication ON and OFF.	**NOTE:** The transmitting signal waveform indication is available for the center mode only.

Max Hold	ON
Turn the peak level holding function ON and OFF.	

CENTER Type Display	Filter Center
Select the center frequency of the spectrum scope indication (center mode only).	• Filter center : Shows the selected filter's center frequency at the center. • Carrier Point Center : Shows the selected operating mode carrier point frequency at the center. • Carrier Point Center (Abs. Freq.) : In addition to the carrier point center setting above, the actual frequency is displayed for the bottom of the scope.

Waveform Color (Current)	0 204 102
Set the waveform color for the currently received signals.	• The color is set in RGB format. • Push [◀ ▶] F-3 to select R (Red), G (Green) and B (Blue), and rotate the ratio from 0 to 255 range. • The set color is indicated in the box beside the RGB scale.

Waveform Color (Max Hold)	0 102 153
Set the waveform color for the receiving signals maximum level.	• The color is set in RGB format. • Push [◀ ▶] F-3 to select R (Red), G (Green) and B (Blue), and rotate the ratio from 0 to 255 range. • The set color is indicated in the box beside the RGB scale.

Sweep Speed (± 2.5k)	MID
Select the sweep speed for the ±2.5 kHz span selection from SLOW, MID and FAST.	**NOTE:** The waveform may be displayed incorrectly with "FAST" setting.

(± 5k)	MID
Select the sweep speed for the ±5 kHz span selection from SLOW, MID and FAST.	**NOTE:** The waveform may be displayed incorrectly with "FAST" setting.

(± 10k)	FAST
Select the sweep speed for the ±10 kHz span selection from SLOW, MID and FAST.	

◇ Scope set mode (continued)

(± 25k) FAST

Select the sweep speed for the ±25 kHz span selection from SLOW, MID and FAST.

(± 50k) FAST

Select the sweep speed for the ±50 kHz span selection from SLOW, MID and FAST.

(± 100k) FAST

Select the sweep speed for the ±100 kHz span selection from SLOW, MID and FAST.

(± 250k) FAST

Select the sweep speed for the ±250 kHz span selection from SLOW, MID and FAST.

Fixed Edges (0.03 – 1.60) 0.750 – 1.250 MHz

Set the scope edge frequencies for fixed mode for bands below 1.6 MHz.

- Set the frequencies within 0.030 to 1.600 MHz range in 1 kHz steps.

  Up to 500 kHz band width can be specified, so either edge frequency will be set to the difference between higher and lower frequencies from 5 to 500 kHz automatically while setting another edge frequency.

(1.60 – 2.00) 1.800 – 2.000 MHz

Set the scope edge frequencies for fixed mode scope when the 1.6 to 2 MHz band is selected.

- Set the frequencies within 1.600 to 2.000 MHz range in 1 kHz steps.

(2.00 – 6.00) 3.500 – 4.000 MHz

Set the scope edge frequencies for fixed mode scope when the 2 to 6 MHz band is selected.

- Set the frequencies within 2.000 to 6.000 MHz range in 1 kHz steps.

  Up to 500 kHz band width can be specified, so either edge frequency will be set to the difference between higher and lower frequencies from 5 to 500 kHz automatically while setting another edge frequency.

(6.00 – 8.00) 7.000 – 7.300 MHz

Set the scope edge frequencies for fixed mode scope when the 6 to 8 MHz band is selected.

- Set the frequencies within 6.000 to 8.000 MHz range in 1 kHz steps.

  Up to 500 kHz band width can be specified, so either edge frequency will be set to the difference between higher and lower frequencies from 5 to 500 kHz automatically while setting another edge frequency.

◇ Scope set mode (continued)

(8.00 – 11.00)	10.100 – 10.150 MHz
Set the scope edge frequencies for fixed mode scope when the 8 to 11 MHz band is selected.	• Set the frequencies within 8.000 to 11.000 MHz range in 1 kHz steps. Up to 500 kHz band width can be specified, so either edge frequency will be set to the difference between higher and lower frequencies from 5 to 500 kHz automatically while setting another edge frequency.

(11.00 – 15.00)	14.000 – 14.350 MHz
Set the scope edge frequencies for fixed mode scope when the 11 to 15 MHz band is selected.	• Set the frequencies within 11.000 to 15.000 MHz range in 1 kHz steps. Up to 500 kHz band width can be specified, so either edge frequency will be set to the difference between higher and lower frequencies from 5 to 500 kHz automatically while setting another edge frequency.

(15.00 – 20.00)	18.068 – 18.168 MHz
Set the scope edge frequencies for fixed mode scope when the 15 to 20 MHz band is selected.	• Set the frequencies within 15.000 to 20.000 MHz range in 1 kHz steps. Up to 500 kHz band width can be specified, so either edge frequency will be set to the difference between higher and lower frequencies from 5 to 500 kHz automatically while setting another edge frequency.

(20.00 – 22.00)	21.000 – 21.450 MHz
Set the scope edge frequencies for fixed mode scope when the 20 to 22 MHz band is selected.	• Set the frequencies within 20.000 to 22.000 MHz range in 1 kHz steps. Up to 500 kHz band width can be specified, so either edge frequency will be set to the difference between higher and lower frequencies become 5 to 500 kHz automatically while setting another edge frequency.

(22.00 – 26.00)	24.890 – 24.990 MHz
Set the scope edge frequencies for fixed mode scope when the 22 to 26 MHz band is selected.	• Set the frequencies within 22.000 to 26.000 MHz range in 1 kHz steps. Up to 500 kHz band width can be specified, so either edge frequency will be set to the difference between higher and lower frequencies from 5 to 500 kHz automatically while setting another edge frequency.

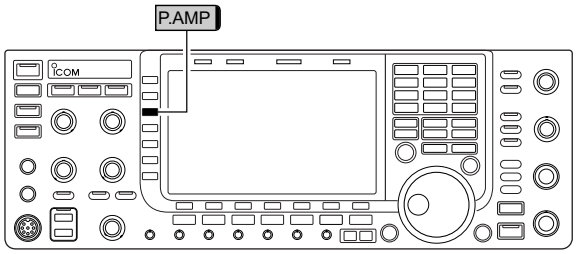
◇ Scope set mode (continued)

(26.00 – 30.00)	28.000 – 28.500 MHz
Set the scope edge frequencies for fixed mode scope when the 26 to 30 MHz band is selected.	• Set the frequencies within 26.000 to 30.000 MHz range in 1 kHz steps. Up to 500 kHz band width can be specified, so either edge frequency will be set to the difference between higher and lower frequencies from 5 to 500 kHz automatically while setting another edge frequency.

(30.00 – 45.00)	30.000 – 30.500 MHz
Set the scope edge frequencies for fixed mode scope when the 30 to 45 MHz band is selected.	• Set the frequencies within 30.000 to 45.000 MHz range in 1 kHz steps. Up to 500 kHz band width can be specified, so either edge frequency will be set to the difference between higher and lower frequencies from 5 to 500 kHz automatically while setting another edge frequency.

(45.00 – 60.00)	50.000 – 50.500 MHz
Set the scope edge frequencies for fixed mode scope when the 45 to 60 MHz band is selected.	• Set the frequencies within 45.000 to 60.000 MHz range in 1 kHz steps. Up to 500 kHz band width can be specified, so either edge frequency will be set to the difference between higher and lower frequencies from 5 to 500 kHz automatically while setting another edge frequency.

■ 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] (MF3) several times to set the preamp OFF, preamp 1 ON or preamp 2 ON.

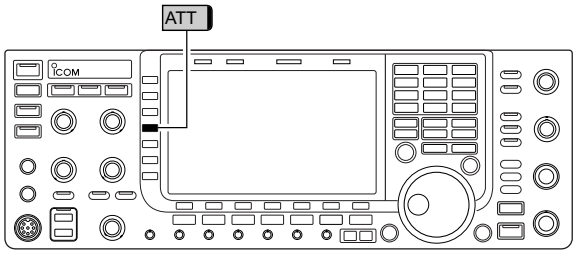
P.AMP 1	For all HF bands
P.AMP 2	High-gain preamp for 24 MHz band and above

✔ About the "P.AMP2"

The "P.AMP 2" is a high gain receive amplifier. When the "P.AMP 2" is used in the presence of strong electromagnetic 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 signals are weak.
- Receive sensitivity is insufficient when using low-gain antennas, 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 electromagnetic fields, such as from broadcasting stations near your location.

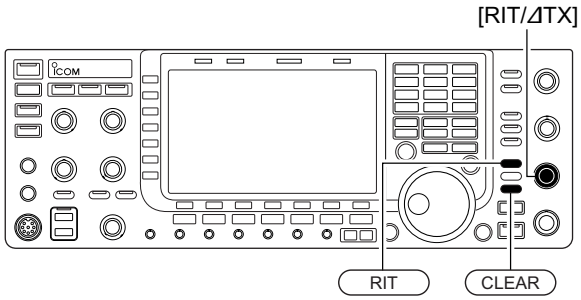
➥ Push [ATT] (MF4) several times to set the attenuator 6 dB, 12 dB, 18 dB or attenuator OFF.
➥ Push and hold [ATT] (MF4) for 1 sec. to turn the attenuator function OFF.

ATT 6dB	6 dB attenuation
ATT 12dB	12 dB attenuation
ATT 18dB	18 dB attenuation

■ RIT function

The RIT (Receive Increment Tuning) function compensates for off-frequency operation of the received station.

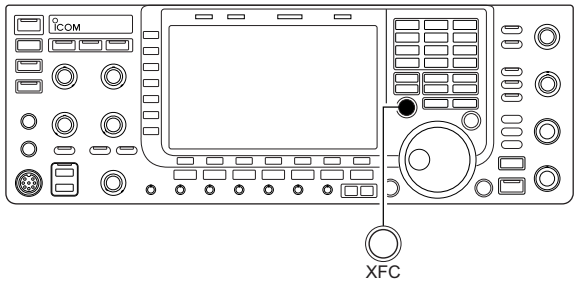
The function shifts the receive frequency up to ±9.99 kHz in 10 Hz steps without moving the transmit frequency.



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

② Rotate the [RIT/ΔTX] control.
- Push and hold [CLEAR] for 1 sec. to reset the RIT frequency.
- Push [CLEAR] momentarily to reset the RIT frequency when the quick RIT/ΔTX clear function is ON. (p. 12-15)
- Push and hold [RIT] for 1 sec. to add the shift frequency to the operating frequency.

◇ RIT monitor function



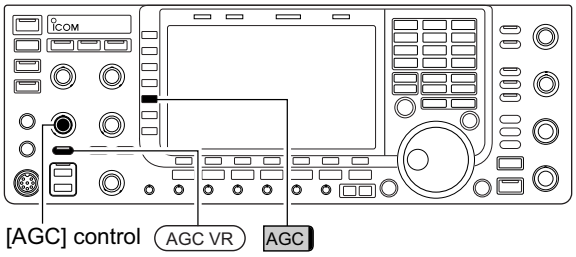
When the RIT function is ON, pushing and holding [XFC] allows you to monitor the operating frequency directly (RIT is temporarily cancelled).

✔ 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, push and hold [RIT] for 1 sec.

■ 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 3 preset AGC characteristics (time constant: fast, mid, slow) for non-FM mode.

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

◇ Selecting the preset value

① Select any non-FM mode.
② Push [AGC] (MF5) several times to select AGC fast, AGC medium (MID) or AGC slow.
• Push and hold [AGC VR] for 1 sec. to turn the AGC function OFF.

◇ Adjusting the AGC time constant

① Select any 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

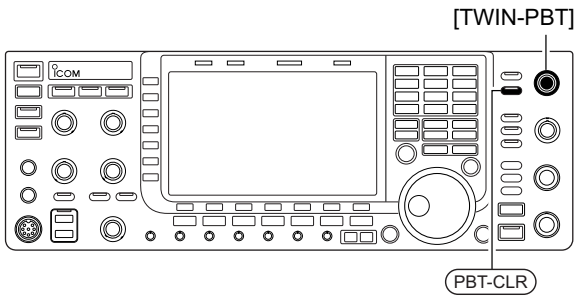
• Selectable AGC time constant (unit: sec.)

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

① Select any non-FM mode.
② Push and hold [AGC] (MF5) for 1 sec. to enter AGC set mode.
③ Push [AGC] (MF5) several times to select FAST time constant.
④ Rotate the main dial to set the desired time constant for 'AGC FAST.'
• AGC time constant can be set between 0.1 to 8.0 sec. (depends on mode) or turned OFF.
• Push and hold [DEF] [F-4] for 1 sec. to select a default value.
⑤ Push [AGC] (MF5) to select medium time constant.
⑥ Rotate the main dial to set the desired time constant for 'AGC MID.'
• AGC time constant can be set between 0.1 to 8.0 sec. (depends on mode) or turned OFF.
• Push and hold [DEF] [F-4] for 1 sec. to select a default value.
⑦ Push [AGC] (MF5) to select slow time constant.
⑧ Rotate the main dial to set the desired time constant for 'AGC SLOW.'
• AGC time constant can be set between 0.1 to 8.0 sec. (depends on mode) or turned OFF.
• Push and hold [DEF] [F-4] for 1 sec. to select a default value.
⑨ Select another non-FM mode. Repeat steps ③ to ⑧ if desired.
⑩ Push [EXIT/SET] to exit the AGC set mode screen.

■ Twin PBT operation

PBT (Passband Tuning) electronically narrows the IF passband width by shifting the IF frequency slightly outside of the IF filter passband to reject interference. The IC-7700 uses DSP for the PBT function. Moving both [TWIN-PBT] controls to the same position shifts the IF for both high and low frequencies.



➥ The LCD shows the passband width and shift frequency graphically.
- PBT indicator above [PBT-CLR] switch lights when PBT is in use.

➥ Push and hold [FILTER] for 1 sec. 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, push and hold [PBT-CLR] for 1 sec.

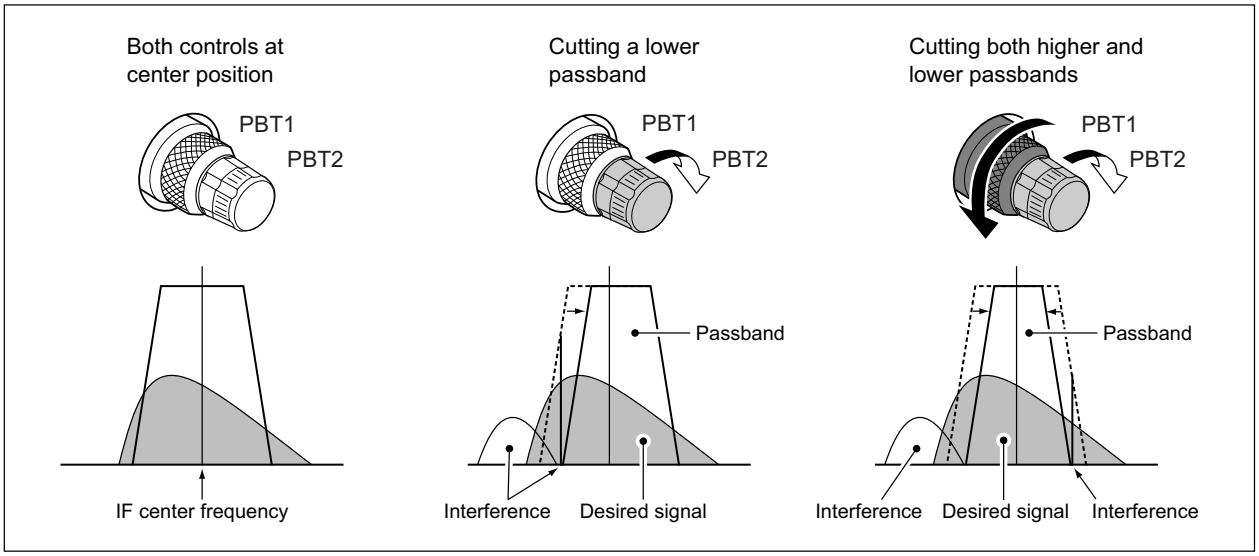
The variable range depends on the passband width and mode. The edge of the variable range is half of the passband width, and PBT is adjustable in 25 (SSB/CW/RTTY/PSK modes) or 100 Hz (AM mode) steps.

Shows filter width, shifting value and condition

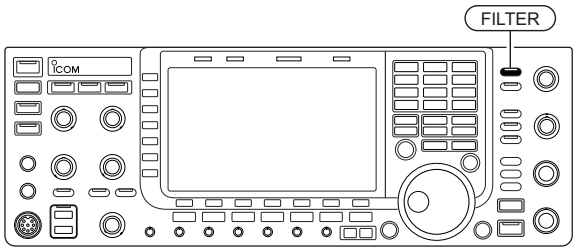
- [TWIN-PBT] should normally be set to the center positions (PBT setting is cleared) when there is no interference.
- When PBT is used, the audio tone may be changed.
- Not available for FM mode.
- While rotating [TWIN-PBT], noise may occur. This comes from the DSP unit and does not indicate an equipment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

• Filter set 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.

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

◇ 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.

◇ Filter passband width setting (except FM mode)

① Push and hold [FILTER] for 1 sec. to enter filter set screen.
② Select any mode except FM.
- Passband widths for FM modes are fixed and cannot be set.

③ Push [FILTER] several times to select the desired IF filter.
④ While pushing [BW] [F-1], rotate the main dial to set the desired passband width.
- In SSB, CW and PSK modes, the passband width can be set within the following range.
  50 to 500 Hz 50 Hz steps
  600 to 3600 Hz 100 Hz steps
- In RTTY mode, the passband width can be set within the following range.
  50 to 500 Hz 50 Hz steps
  600 to 2700 Hz 100 Hz steps
- In AM mode, the passband width can be set within the following range.
  200 Hz to 10 kHz 200 Hz steps
- Push and hold [DEF] [F-4] for 1 sec. to select the default value.

⑤ Repeat steps ② to ④ if desired for other modes.
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.

◇ Roofing filter selection

The IC-7700 has 3, 6 and 15 kHz roofing filters at the 1st IF frequency. The roofing filter provides interference reduction from nearby strong signals.

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

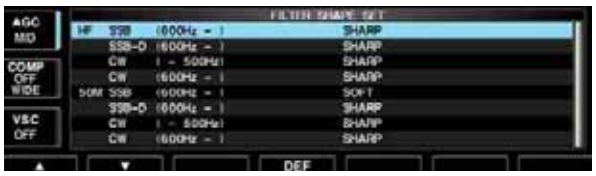
◇ DSP filter shape

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

① Push and hold [FILTER] for 1 sec. to enter filter set screen.
② Select SSB, SSB data or CW mode.
③ Push [SHAPE] [F-7] 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 from your default setting in filter shape set mode.

◇ Filter shape set mode



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

① Push and hold [FILTER] for 1 sec. to enter filter set screen.
② Push and hold [SHAPE] [F-7] for 1 sec. to enter filter shape set mode.
③ Push [▲] [F-1] or [▼] [F-2] to select the desired item.
④ Rotate the main dial to select the filter shape from soft and sharp.
⑤ Push [EXIT/SET] to exit filter shape set mode.

HF SSB (600Hz –)	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.

SSB–D (600Hz –)	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.

◇ Filter shape set mode (continued)

CW (– 500Hz) — **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.

CW (600Hz –) — **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 –) — **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.

SSB–D (600Hz –) — **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.

CW (– 500Hz) — **SHARP**

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

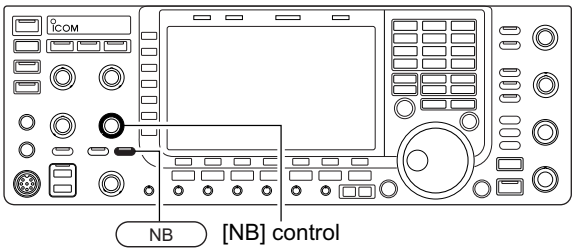
The set filter shape is automatically used only when the IF filter is set to 500 Hz or narrower.

CW (600Hz –) — **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.

■ 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 and OFF.
• [NB] indicator above this 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

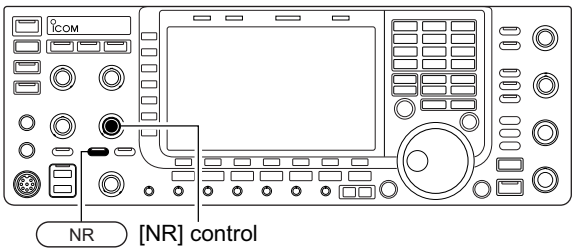
To deal with various type of noises, attenuation level and noise blank time can be set in NB set mode.

① Push and hold [NB] for 1 sec. to enter NB set mode.
② Push [▲] [F-1] or [▼] [F-2] to select the desired item.
③ Rotate the main dial to set the desired level or value.
• Push and hold [DEF] [F-4] for 1 sec. to select a default value.
④ Push [EXIT/SET] to exit NB set mode.

NB Depth	8
Set the noise attenuation level from 1 to 10.	

NB Width	50
Set the blank time 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 performs the random noise reduction function.

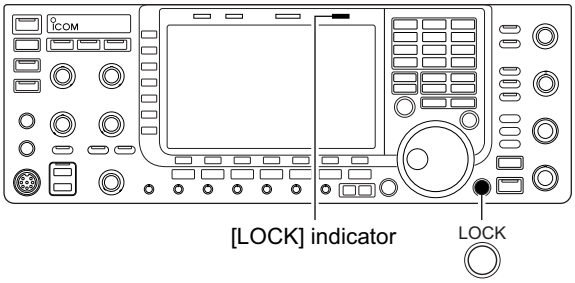
① Push NR to turn the noise reduction ON.
- [NR] indicator above this switch lights green.

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

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

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

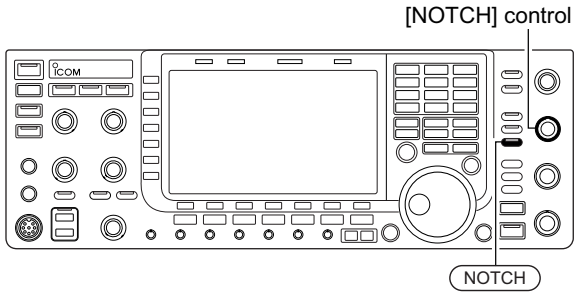
■ Dial lock function



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

➥ Push [LOCK] to toggle the dial lock function ON and OFF.
- The [LOCK] indicator lights when the dial lock function is in use.

■ Notch function



• Auto notch indication

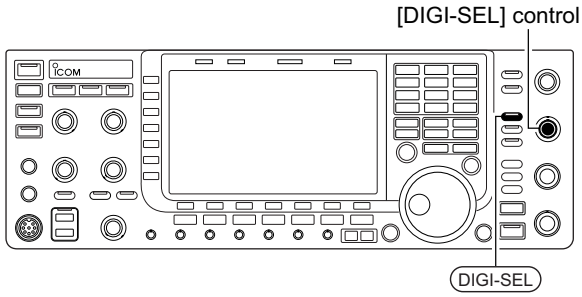
• Manual notch indication

This transceiver has auto and manual notch functions. The auto notch function uses DSP to automatically attenuate more than 3 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 mode. 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 and OFF in CW, RTTY, PSK modes.
➥ Push [NOTCH] to turn the auto notch function ON and OFF in FM mode.
- [NOTCH] indicator above this switch lights green.
- Push and hold [NOTCH] for 1 sec. 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.

■ Digital selector



The digital selector manually adjusts the center frequency of the automatic pre-selector.

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

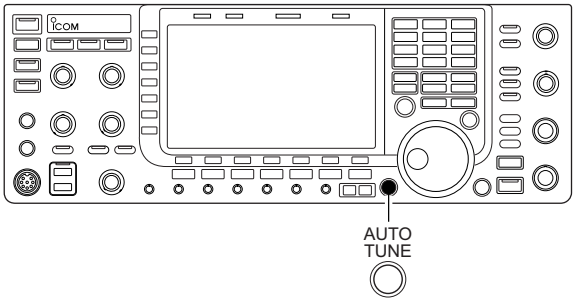
The automatic pre-selector tracks the frequency tuning, changing it's resonant frequency in discrete steps.

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

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

NOTE:
- When rotating the main dial 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.

■ Autotune function



Appears

The Automatic tuning function tunes the displayed frequency (max. CW: 500 Hz, AM: ±5 kHz) automatically when an off frequency signal is received. This function is active while in CW or AM mode is selected.

➥ Push [AUTOTUNE] to toggle the autotune function ON or OFF.
- "**AUTOTUNE**" blinks when autotune function is activate.
- After 30 sec. has passed, the autotune function stops tuning automatically even it's still off-frequency.