ICOM

INSTRUCTION MANUAL

HF/50 MHz TRANSCEIVER

IC-7600

Icom Inc.

FOREWORD

Thank you for making the IC-7600 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-7600.

◇ *FEATURES*

- ❍ *Ultimate receiver performance: third-order intercept (IP3) of +30 dBm (HF bands only)*
- ❍ *Built-in Baudot RTTY and PSK modulator/demodulator and direct PC keyboard connection capability for RTTY and PSK operations without a PC*
- ❍ *High resolution spectrum scope— center frequency and fixed frequency modes, plus mini-scope displays*
- ❍ *USB connectors on front and rear panels*
- ❍ *Large LCD with LED backlight*

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-7600.

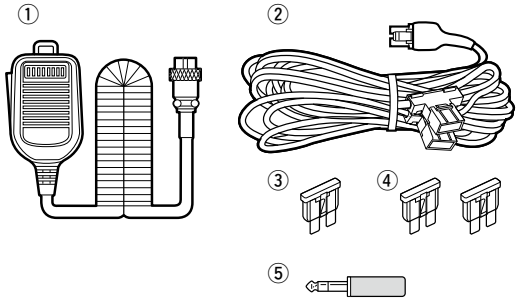
EXPLICIT DEFINITIONS

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.

SUPPLIED ACCESSORIES

The transceiver comes with the following accessories.

	Qty.
① Hand microphone	1
② DC power cable	1
③ Spare fuse (ATC 5 A)	1
④ Spare fuse (ATC 30 A)	2
⑤ 3.5 (d) mm plug	1



FCC INFORMATION

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

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

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 injury and/or damage to the transceiver.

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

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

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

⚠ **CAUTION! NEVER** apply AC power to the [DC13.8V] socket on the transceiver rear panel. This could cause a fire or damage the transceiver.

⚠ **CAUTION! NEVER** apply more than 16 V DC, such as a 24 V battery, to the [DC13.8V] socket on the transceiver rear panel. This could cause a fire or damage the transceiver.

⚠ **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.

DO NOT use chemical agents such as benzine or alcohol when cleaning the IC-7600, as they can damage the transceiver's surfaces.

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

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

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

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

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

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

BE CAREFUL! The heatsink will become hot when operating the transceiver continuously for long periods of time.

Use Icom microphones only (supplied or optional). Other manufacturers' microphones have different pin assignments, and connection to the IC-7600 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 the transceiver power OFF and/or disconnect the DC power cable 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.

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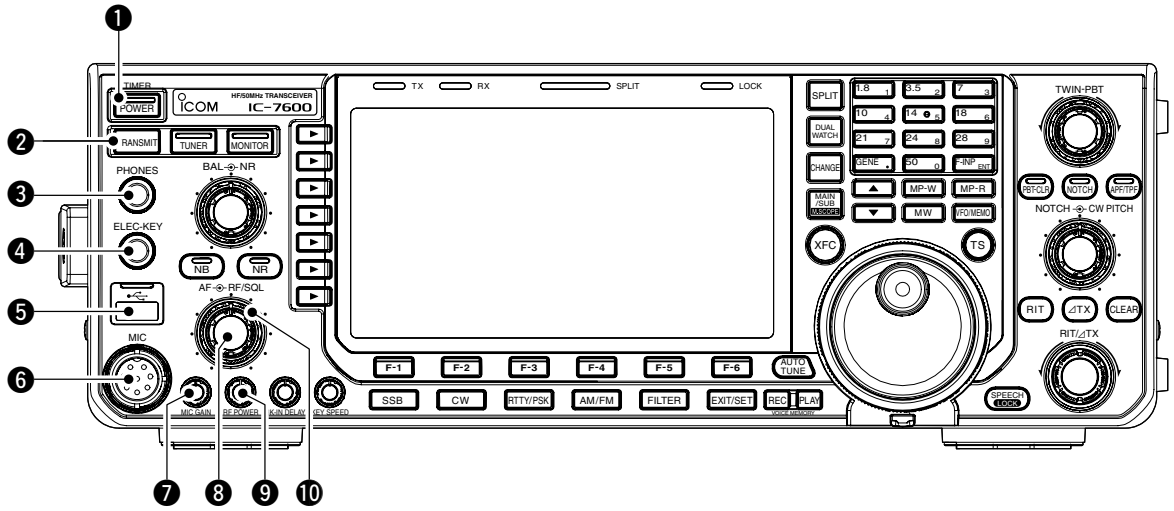
1 PANEL DESCRIPTION

■ Front panel



❶ POWER SWITCH [POWER•TIMER] (p. ??)

While transceiver's power is OFF:

➥ Push to turn the transceiver power ON.
- Turn the optional DC power supply ON in advance.
- The indicator on this switch lights green when powered ON.

While transceiver's power is ON:

➥ Push momentarily to toggle the timer function ON and OFF. (p. ??)
- The indicator on this switch lights red when the timer function is ON.

➥ Push and hold for 1 sec. to turn the transceiver power OFF.

❷ TRANSMIT SWITCH [TRANSMIT]

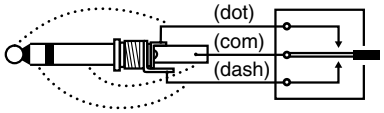
Selects transmit or receive.
- The [TX] indicator lights red while transmitting and the [RX] indicator lights green when the squelch is open.

❸ 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.

❹ ELECTRONIC KEYER JACK [ELEC-KEY]

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



❺ USB (Universal Serial Bus) CONNECTOR (A type) [USB] (A) (p. ??)

➥ 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 should be performed before removing the USB-Memory* (p.??).

➥ Connects a PC keyboard for RTTY and PSK operations.
- USB keyboards* are supported.

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

❻ MICROPHONE CONNECTOR [MIC]

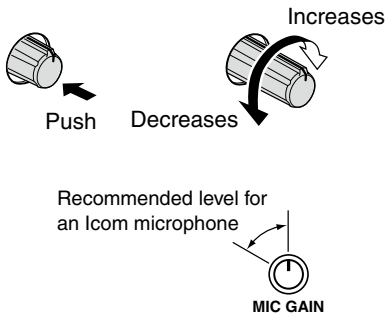
Accepts the supplied or optional microphone.
- See p. ?? for appropriate microphones.
- See p. ?? for microphone connector information.

❼ MIC GAIN CONTROL [MIC GAIN] (p. ??)

Adjusts microphone input gain.
- The transmit audio tone in SSB, AM and FM modes can be adjusted independently in set mode. (p. ??)

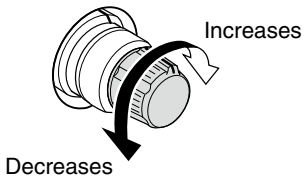
✔ How to set the microphone gain.

Set the [MIC GAIN] control so that the ALC meter occasionally moves up-scale during normal voice transmission in SSB, AM or FM mode.



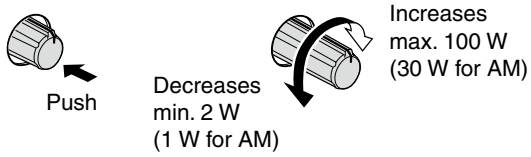
❽ AF CONTROL [AF] (inner control; p. ??)

Varies the audio output level of the speaker or headphones.



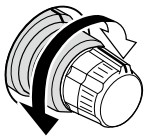
❾ RF POWER CONTROL [RF PWR] (p. ??)

Continuously varies the RF output power from minimum (2 W*) to maximum (100 W*).
*AM mode: 1 W to 30 W



❿ RF GAIN CONTROL/SQUELCH CONTROL [RF/SQL] (outer control; p. ??)

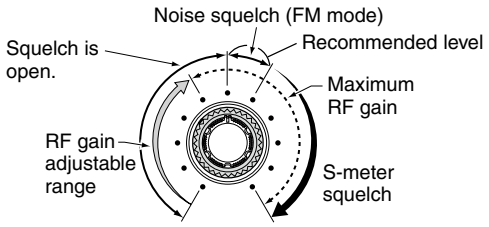
Adjusts the RF gain and squelch threshold level.
The squelch removes noise output from the speaker (closed condition) when no signal is received.



- The squelch is particularly effective for FM. It is also available for other modes.
- 12 to 1 o'clock position is recommended for any setting of the **[RF/SQL]** control.
- The control can be set as 'Auto' (RF gain control in SSB, CW and RTTY; squelch control in AM and FM) or squelch control (RF gain is fixed at maximum) in set mode as follows. (p. ??)

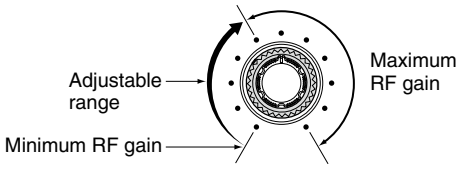
MODE	SET MODE SETTING		
	AUTO	SQL	RF GAIN + SQL
SSB, CW RTTY/PSK	RF GAIN	SQL	RF GAIN + SQL
AM, FM	SQL	SQL	RF GAIN + SQL

• When setting as RF gain/squelch control



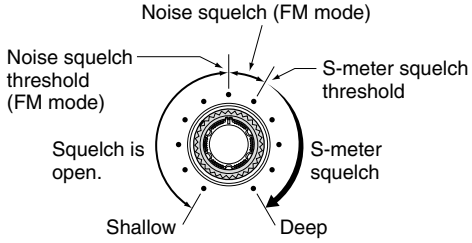
• When functioning as RF gain control

(Squelch is fixed open; SSB, CW, RTTY only)



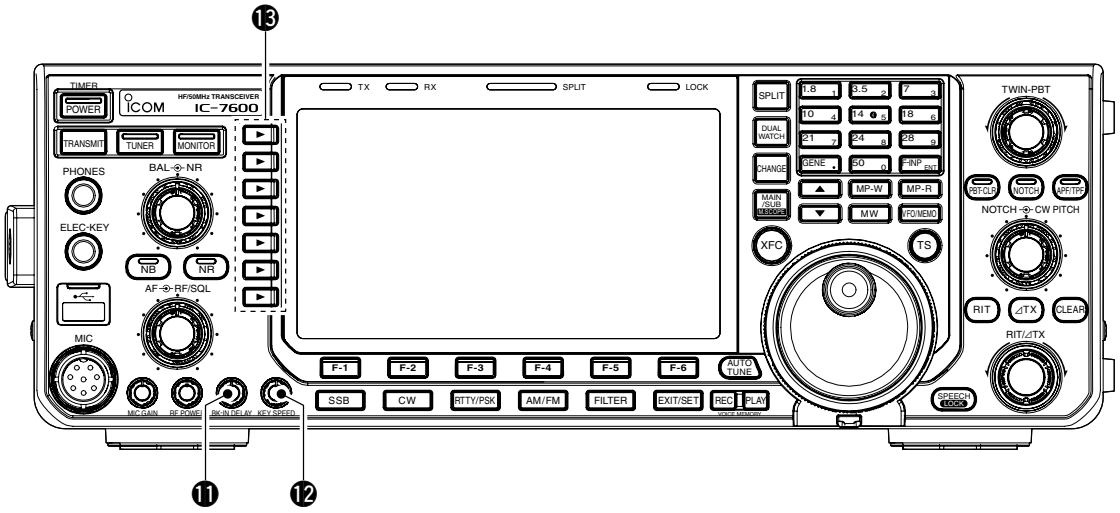
• When functioning as squelch control

(RF gain is fixed at maximum.)



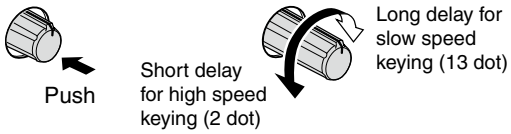
While rotating the RF gain control, noise may be heard. This comes from the DSP unit and does not indicate an equipment malfunction.

■ Front panel (continued)



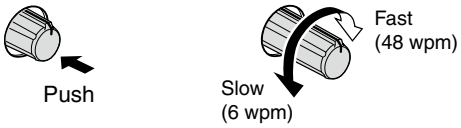
⓫ BREAK-IN DELAY CONTROL [BK-IN DELAY] (p. ??)

Adjusts the transmit-to-receive switching delay time for CW semi-break-in operations.



⓬ ELECTRONIC CW KEYER SPEED CONTROL [KEY SPEED] (p. ??)

Adjusts keying speed for the internal electronic CW keyer from 6 wpm (min.) to 48 wpm (max.).



⓭ 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 SWITCH (ANT)

➥ Selects the antenna connector between ANT1 and ANT2 when pushed. (p. ??)

➥ Turns the **[RX ANT]** (receive antenna) ON and OFF when pushed and held for 1 sec.

• When the receive antenna is activated, the antenna which is connected to the **[ANT1]** or **[ANT2]** is used for transmission only.

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

MF2 (MULTI-FUNCTION 2 SWITCH) METER SWITCH (METER)

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

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

MF3 (MULTI-FUNCTION 3 SWITCH) P.AMP SWITCH (P.AMP)

➥ Selects one of 2 receive RF preamps or bypasses them. (p. ??)
- "P. AMP1" activates 10 dB preamp.
- "P. AMP2" activates 16 dB high-gain preamp.
- "P. AMP OFF" can also be selected.

➥ Turns the preamp function OFF when pushed and held for 1 sec. (p. ??)

✔ What is the preamp?

The preamp amplifies signals in the 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 SWITCH (ATT)

➥ Selects 6 dB, 12 dB or 18 dB attenuator when pushed. (p. ??)
- "ATT OFF" can also be selected.

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

✔ 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 SWITCH (AGC)

➥ Activates and selects fast, middle or slow AGC time constant when pushed. (p. ??)
- In FM mode, only "FAST" is available.

➥ Enters the AGC set mode when pushed and held for 1 sec. (p. ??)

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) VOX SWITCH (VOX)

➥ Push to turn the VOX function ON and OFF during SSB, AM and FM mode operation. (p. ??)

➥ Push and hold for 1 sec. to enter VOX set mode. (p. ??)

✔ 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.

BK-IN SWITCH (BK-IN)

➥ Selects semi break-in, full break-in operation, or turns the break-in operation OFF when pushed in CW mode. (p. ??)

✔ What is the break-in function?

The break-in function switches transmit and receive with CW keying. Full break-in function (QSK) can monitor the receive signal during keying.

MF7 (MULTI-FUNCTION 7 SWITCH) COMP SWITCH (COMP)

➥ Turns the speech compressor ON and OFF in SSB mode. (p. ??)

➥ 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.

¼ SWITCH (¼)

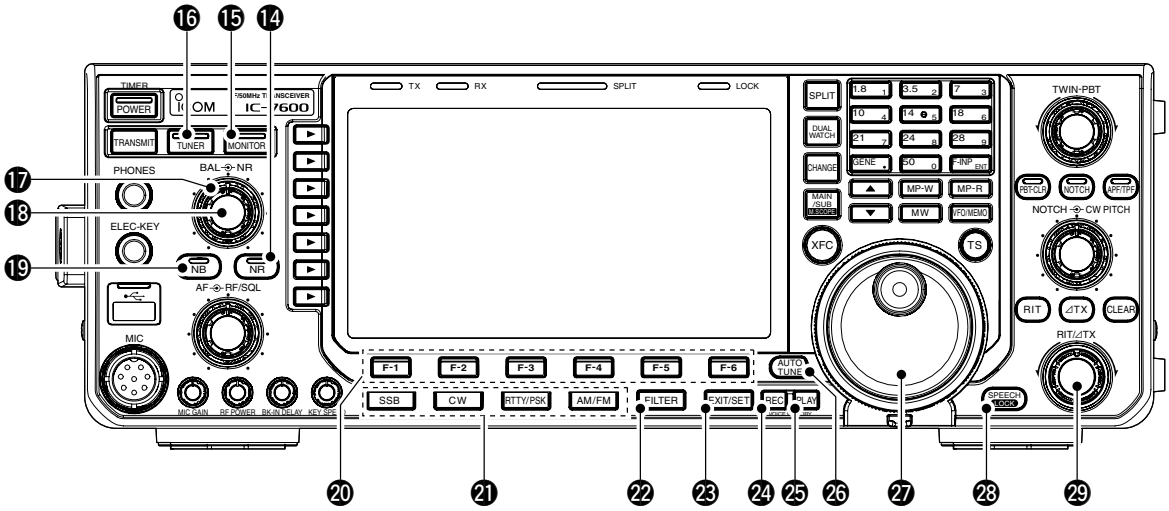
➥ Turns the ¼ speed tuning function ON and OFF in SSB data, CW, RTTY and PSK modes. (p. ??)
- ¼ function sets dial rotation to ¼ of normal speed for fine tuning.

TONE SWITCH (TONE)

➥ Switches between the tone encoder, tone squelch function and no-tone operation when pushed in FM mode. (pgs. ??, ??)

➥ Enters the tone set mode when pushed and held for 1 sec. in FM mode. (pgs. ??, ??)

■ Front panel (continued)



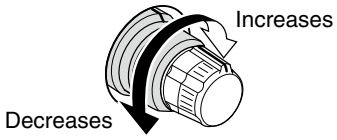
⑭ NOISE REDUCTION SWITCH [NR] (p. ??)
Push to switch DSP noise reduction ON and OFF.
- The indicator on this switch lights green when the function is activated.

⑮ MONITOR SWITCH [MONITOR] (p. ??)
Monitors your transmitted IF signal.
- The CW sidetone functions regardless of the [MONITOR] switch setting in CW mode.
- The indicator on this switch lights green while the function is activated.

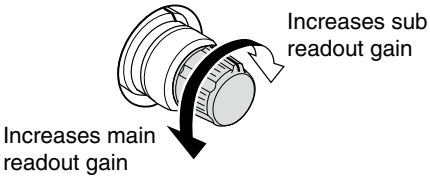
⑯ ANTENNA TUNER SWITCH [TUNER] (p. ??)
➥ Turns the internal antenna tuner ON and OFF (bypass) when pushed momentarily.
- The indicator on this switch lights green when the tuner is turned ON, goes off when tuner is turned OFF (bypassed).

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

⑰ NOISE REDUCTION LEVEL CONTROL [NR]
(outer control; p. ??)
Adjusts the DSP noise reduction level when the noise reduction function is in use. Set for maximum readability.
- To use this control, push [NR] (⑭) in advance.



⑱ BALANCE CONTROL [BAL] (inner control; p. ??)
Adjusts the audio output balance between main and sub readout frequencies while in dualwatch.



⑲ NOISE BLANKER SWITCH [NB] (p. ??)
➥ 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 on non-pulse-type noise.
- The indicator on this switch lights green while the function is activated.

➥ Enters the noise blanker level set mode when pushed and held for 1 sec.

⑳ LCD FUNCTION SWITCHES [F-1] to [F-6]
Push to select the function indicated in the LCD display above these switches.
- Functions vary depending on the operating condition.

㉑ MODE SWITCHES
Selects the desired mode. (p. ??)
• Announces the selected mode via the speech synthesizer. (p. ??)

[SSB]
➥ Selects USB and LSB modes alternately when pushed.
➥ Selects SSB data mode (USB-D, LSB-D) when pushed and held for 1 sec. in SSB mode.
• In SSB data mode, push to return to SSB mode.
➥ Switches D1, D2 and D3 when pushed and held for 1 sec. in SSB data mode.

[CW]
Selects CW and CW-R (CW reverse) modes alternately when pushed.

[RTTY/PSK]
➥ Selects RTTY and PSK modes alternately when pushed.
➥ 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.
➥ Selects AM or FM data mode (AM-D/FM-D) when pushed and held for 1 sec. in AM or FM mode, respectively.
• In AM or FM data mode, push to return to AM or FM mode, respectively.
➥ Switches D1, D2 and D3 when pushed and held for 1 sec. in AM or FM data mode.

㉒ FILTER SWITCH [FILTER] (p. ??)
➥ Push to select one of 3 IF filter settings.
➥ Push and hold for 1 sec. to display the filter set screen.

㉓ 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.
➥ Push and hold for 1 sec. to display the set mode menu screen.

㉔ VOICE MEMORY RECORD SWITCH [REC] (p. ??)
➥ Push to record the previous received signal for the preset time period.
• The preset time period can be set in voice set mode. (p. ??)
➥ Push and hold for 1 sec. to record the received signal until the recording is cancelled.
• Push this switch momentarily to stop recording.
• The memory records the latest 30 sec. of audio.

㉕ VOICE MEMORY PLAYBACK SWITCH [PLAY] (p. ??)
➥ Push to playback the previously recorded audio for the preset time period.
➥ Push and hold for 1 sec. to playback all of the previously recorded audio.

㉖ AUTOMATIC TUNING SWITCH [AUTO TUNE] (p. ??)
Turns the automatic tuning function ON and OFF in CW and AM modes.

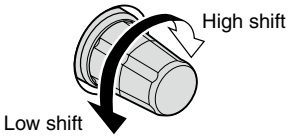
IMPORTANT!
When receiving a weak signal, or receiving a signal with interference, the automatic tuning function may tune the receiver to an undesired signal.

㉗ MAIN DIAL
Changes the displayed frequency, selects set mode setting, etc.

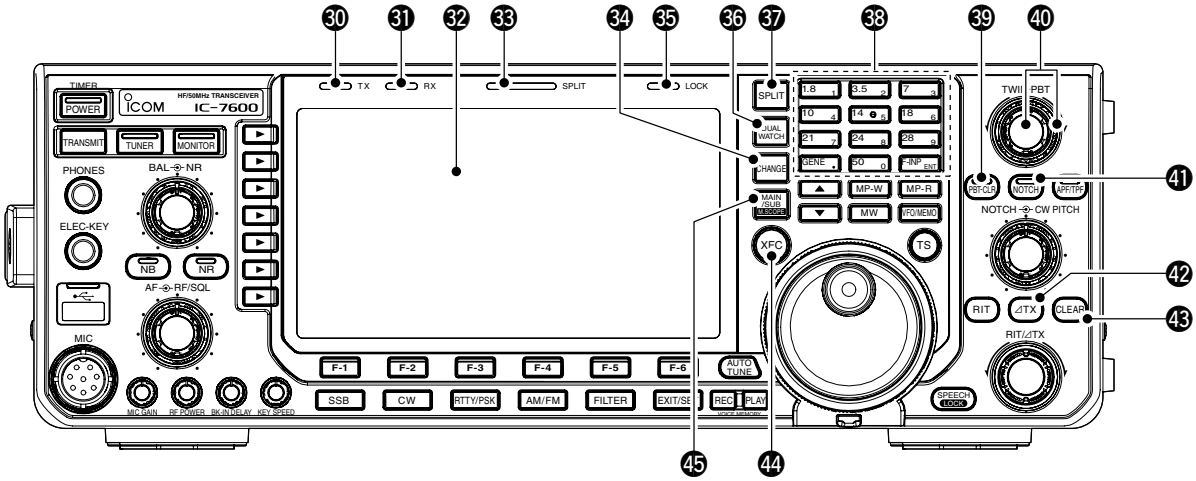
㉘ SPEECH/LOCK SWITCH [SPEECH/LOCK]
➥ Push to announce the S-meter indication and the selected frequency. (p. ??)
• The parameters to be announced can be selected in the others set mode. (p. ??)
➥ Push and hold for 1 sec. to turn the dial lock function ON and OFF. (p. ??)
• The dial lock function electronically locks the main dial.
• The lock indicator lights while the dial lock function is activated.

NOTE: The [SPEECH/LOCK] switch operation to activate the voice synthesizer or the dial lock functions can be replaced in others set mode screen. (p. ??)

㉙ RIT/⊿TX CONTROL [RIT/⊿TX] (pgs. ??, ??)
Shifts the receive and/or transmit frequency without changing the transmit and/or receive frequency shown on the main VFO while the RIT and/or ⊿TX functions are/is ON.
• Rotate the control clockwise to increase the frequency, or rotate the control counterclockwise to decrease the frequency. The RIT or ⊿TX functions must be ON.
• The shift frequency range is ±9.999 kHz in 1 Hz steps (or ±9.99 kHz in 10 Hz steps).



■ Front panel (continued)



㉚ TRANSMIT INDICATOR [TX]
Lights red while transmitting.

㉛ RECEIVE INDICATOR [RX]
Lights green while receiving a signal and when the squelch is open.

㉜ LCD FUNCTION DISPLAY (p. ??)
Shows the operating frequency, function switch menus, spectrum scope screen, memory list screen, set mode settings, etc.

㉝ SPLIT OPERATION INDICATOR [SPLIT]
Lights during split frequency operation.

㉞ MAIN/SUB CHANGE SWITCH [CHANGE]
➥ Switches the frequency and selected memory channel between main and sub readouts when pushed.
• Switches between transmit frequency and receive frequency when the split frequency function is ON. (p. ??)
➥ Equalizes the sub readout frequency to the main readout frequency when pushed and held for 1 sec.

㉟ LOCK INDICATOR [LOCK] (p. ??)
Lights when the dial lock function is activated.

㊱ DUALWATCH SWITCH [DUALWATCH] (p. ??)
➥ Push to turn the dualwatch function ON and OFF.
• "DUAL-W" appears when the dualwatch function is in use.
➥ Push and hold for 1 sec. to turn the dualwatch function ON and equalizes the sub readout frequency to the main readout. (Quick dualwatch function)
• The quick dualwatch function can be turned OFF in others set mode. (p. ??)

㊲ SPLIT SWITCH [SPLIT] (p. ??)
➥ Push to turn the split function ON and OFF.
• "SPLIT" appears when the split function is in use.
➥ Push and hold for 1 sec. to activate the quick split function.
• The split function ON and equalize the sub readout frequency to the main readout and sets the sub readout for frequency input in non-FM modes. (p. ??)
• The offset frequency is shifted from the selected VFO frequency in FM mode. (p. ??)
• The quick split function can be turned OFF in others set mode. (p. ??)

㊳ KEYPAD
➥ Pushing a key selects the operating band. (p. ??)
• **[GEN •]** selects the general coverage band.
➥ Pushing the same key 2 or 3 times calls up other stacked frequencies in the band. (p. ??)
• Icom's triple band stacking register memorizes 3 frequencies in each band.
➥ After pushing **[F-INP ENT]**, push a key on the keypad to enter a numeric frequency. After entering, push **[F-INP ENT]** to select the desired frequency directly (p. ??)
• e.g. to enter 14.195 MHz;
Push **[F-INP ENT] [1] [4] [•] [1] [9] [5] [F-INP ENT]**.
➥ After pushing **[F-INP ENT]**, push a key on the keypad to enter a memory channel. after entering, push **[▲]/[▼]** to select the desired memory channel directly. (p. ??)

㊴ PBT CLEAR SWITCH [PBT-CLR] (p. ??)
Push and hold for 1 sec. to clear the PBT settings.
• The indicator on this switch lights green when PBT is in use.

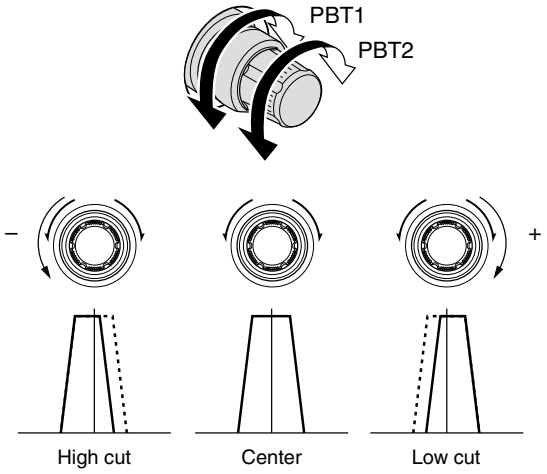
㊵ PASSBAND TUNING CONTROLS [TWIN-PBT] (p. ??)

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.



㊶ NOTCH SWITCH [NOTCH] (p. ??)

➥ 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 PSK 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.
- No indicator appears when the notch function is not in use.

➥ Push and hold for 1 sec. to switch the manual notch characteristics from wide, middle and narrow when manual notch function is activated.

- The indicator on this switch lights green when the function is activated.

✔ 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 notch frequency to effectively eliminate unwanted tones.

㊷ ⊿TX SWITCH [⊿TX] (p. ??)

➥ Push to turn the ⊿TX function ON and OFF.

- Use [RIT/⊿TX] control to vary the ⊿TX frequency.

➥ Push and hold for 1 sec. to add the ⊿TX shift frequency to the operating frequency.

✔ What is the ⊿TX function?

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

㊸ CLEAR SWITCH [CLEAR] (pgs. ??, ??)

Push or push and hold for 1 sec.* to clear the RIT/⊿TX shift frequency.

* Depending on the quick RIT/⊿TX clear function setting (p. ??).

㊹ TRANSMIT FREQUENCY CHECK SWITCH [XFC] (p. ??)

Monitors the transmit frequency (including ⊿TX frequency offset) when pushed and held during split frequency operation.

- While pushing and holding 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. ??)

㊺ MAIN/SUB•M.SCOPE SWITCH [MAIN/SUB•M.SCOPE]

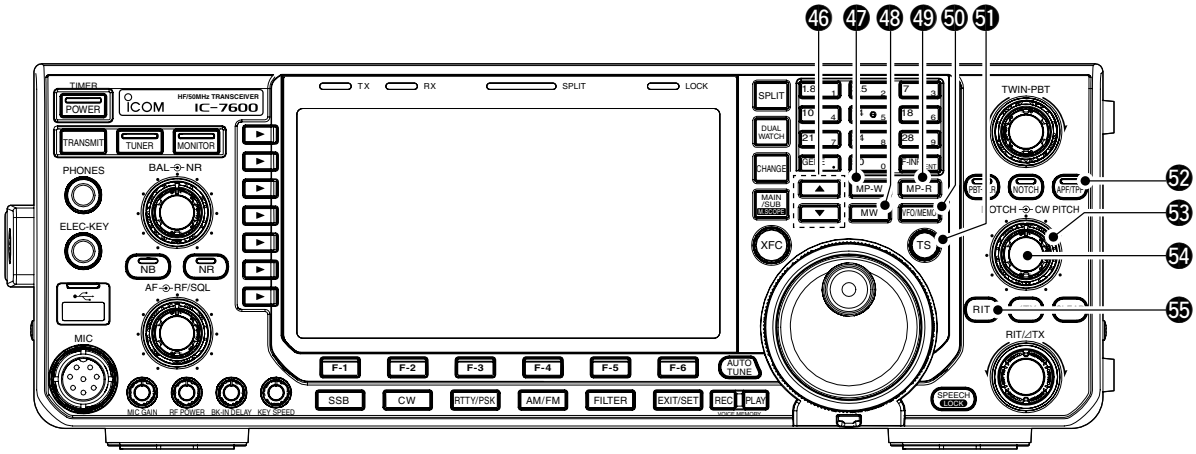
➥ Push to select access to the main or sub readout. (p. ??)

- The selected readout frequency is displayed clearly. The sub readout functions only during split operation or dualwatch.

➥ Push and hold for 1 sec. to turn the mini spectrum scope screen indication ON and OFF. (p. ??)

- The mini spectrum scope screen can be indicated with another screen, such as memory, set mode screen, simultaneously.

■ Front panel (continued)



㊻ MEMORY UP/DOWN SWITCHES [▲]/[▼] (p. ??)

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

➥ Push to select the desired memory channel directly after pushing **[F-INP ENT]** and a memory channel number.

㊼ MEMO PAD-WRITE SWITCH [MP-W] (p. ??)

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 others set mode. (p. ??)

㊽ MEMORY WRITE SWITCH [MW] (p. ??)

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.

㊾ MEMO PAD-READ SWITCH [MP-R] (p. ??)

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 others set mode. (p. ??)

㊿ VFO/MEMORY SWITCH [VFO/MEMO]

➥ Switches the selected readout operating mode between the VFO and memory when pushed. (pgs. ??, ??)

➥ Transfers the memory contents to VFO when pushed and held for 1 sec. (p. ??)

(51) QUICK TUNING SWITCH [TS]

➥ Turns the quick tuning step ON and OFF. (p. ??)
- 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 ON, push and hold for 1 sec. to enter quick tuning step set mode. (p. ??)

➥ When the quick tuning step is OFF, push and hold for 1 sec. to turn the 1 Hz tuning step ON and OFF. (p. ??)

(52) AUDIO PEAK FILTER/TWIN PEAK FILTER SWITCH [APF/TPF]

During CW mode operation (p. ??)

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

➥ When the audio peak filter is ON, push and hold for 1 sec. to select the APF passband width from WIDE, MID and NAR or from 320, 160 and 80 Hz depending on APF type setting.

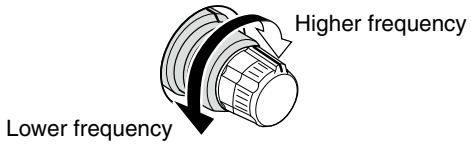
During RTTY mode operation (p. ??)

➥ Push to turn the twin peak filter ON and OFF.
- "TPF" appears when twin peak filter is in use.
- The indicator on this switch lights green when the function is activated.

⓷ CW PITCH CONTROL [CW PITCH]

(outer control; p. ??)

Shifts the received CW audio pitch and the CW side tone pitch without changing the operating frequency.

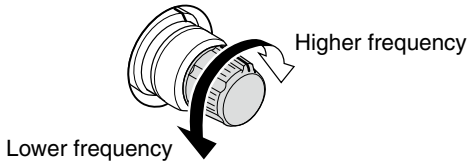


⓸ MANUAL NOTCH FILTER CONTROL [NOTCH]

(inner control; p. ??)

Varies the notch frequency of the manual notch filter to reject an interfering signal while the manual notch function is ON.

- Notch filter center frequency:
  - LSB : –1040 Hz to 4060 Hz
  - USB : –1060 Hz to 4040 Hz
  - CW : CW pitch freq. –2540 Hz to CW pitch freq. 2540 Hz
  - AM : –5100 Hz to 5100 Hz



⓹ RIT SWITCH [RIT] (p. ??)

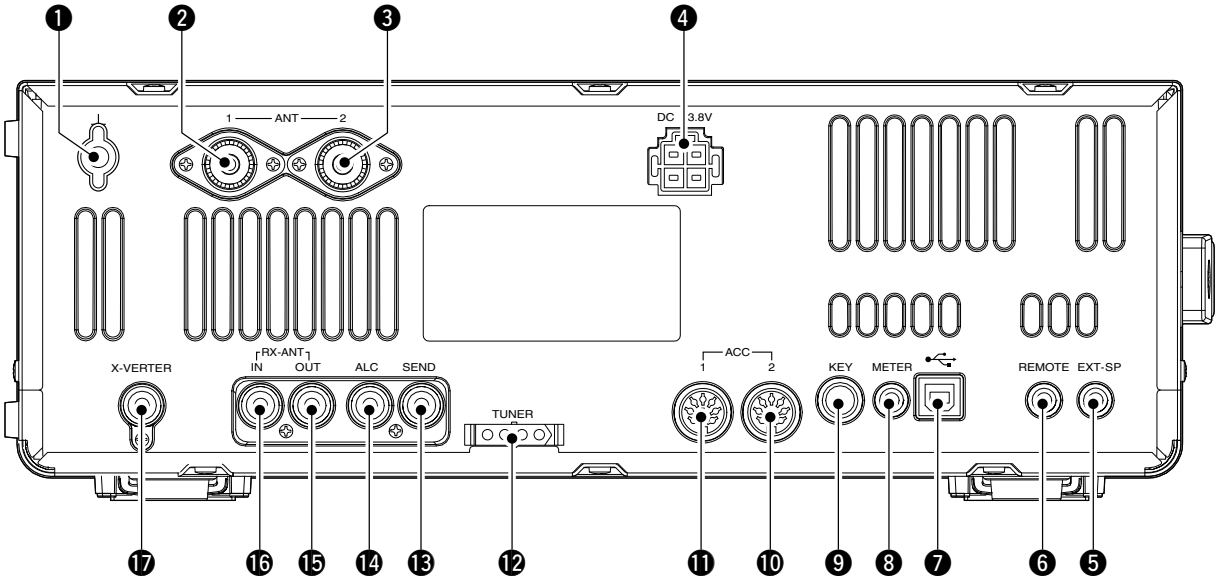
➥ Push to turn the RIT function ON and OFF.
- Use [RIT/ΔTX] control to vary the RIT frequency.

➥ Push and hold for 1 sec. to add the RIT shift frequency to the operating frequency.

✔ What is the RIT function?

The RIT (Receiver Incremental Tuning) 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.

■ Rear panel



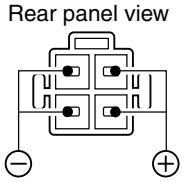
❶ GROUND TERMINAL [GND] (p. ??)
Connect this terminal to a ground to prevent electrical shocks, TVI, BCI and other problems.

❷ ANTENNA CONNECTOR 1 [ANT1]
❸ ANTENNA CONNECTOR 2 [ANT2] (pgs. ??, ??)
Accept a 50 Ω antenna with a PL-259 plug connector.

When using an optional AH-4 HF/50 MHz AUTOMATIC ANTENNA TUNER, connect it to the **[ANT1]** connector. The internal antenna tuner activates for **[ANT2]** and deactivates for **[ANT1]** when connecting the AH-4.

❹ DC POWER SOCKET [DC 13.8V] (p. ??)
Accepts 13.8 V DC through the supplied DC power cable.

Rear panel view



❺ EXTERNAL SPEAKER JACK [EXT-SP] (p. ??)
Connects an external speaker (4–8 Ω), if desired.

❻ CI-V REMOTE CONTROL JACK [REMOTE] (pgs. ??, ??)
- ➥ 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.

❼ USB (Universal Serial Bus) CONNECTOR (B type) [USB] (B)
Connect an USB cable to be used for the modulation input (p. ??), the transceiver operation with PC and the received audio import to the PC.

CAUTION:
For Windows® XP/2000:
NEVER install the USB driver into the PC before connecting the transceiver and PC using with an USB cable.
For Windows Vista™:
NEVER connect a PC using with an USB cable until the USB driver installation has been completed.

About the USB driver:
Icom HP (http://www.icom.co.jp/world/support/index.html) gives the USB driver and the installation guide download service.

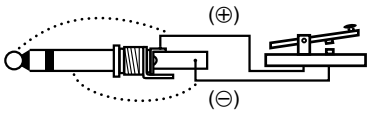
The following items are required:
PC
- Microsoft® Windows® XP/2000 or Microsoft® Windows Vista™ installed
- With USB port

Other items
- USB cable (third party's)
- PC software

About the modulation input:
Select "USB" in the ACC set mode item 'DATA OFF MOD,' 'DATA1 MOD,' 'DATA2 MOD' or 'DATA3 MOD.' And the modulation input level from USB jack can be set in the ACC set mode item 'USB MOD Level.' (p. ??)

❽ METER JACK [METER] (p. ??)
Outputs a signal showing received signal strength, transmit output power, VSWR, ALC, speech compression, VD or ID level for external meter indication.

❾ STRAIGHT KEY JACK [KEY] (p. ??)
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. ??)



❿ ACCESSORY SOCKET 1 [ACC 1]
⓫ 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. ?? for socket information.

⓬ TUNER CONTROL SOCKET [TUNER] (p. ??)
Accepts the control cable from an optional AH-4 HF/50 MHz AUTOMATIC ANTENNA TUNER.

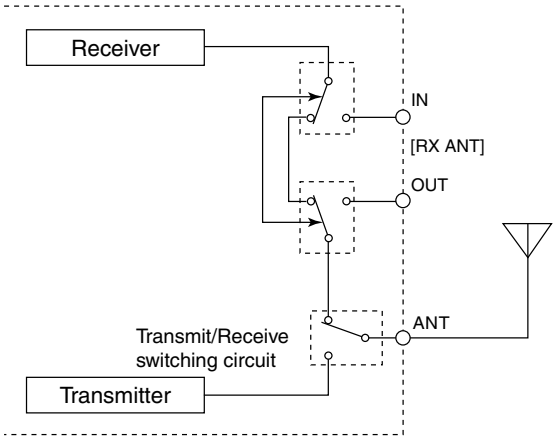
⓭ SEND CONTROL JACK [SEND] (p. ??)
Connects to ground when transmitting to control an external unit, such as a non-Icom linear amplifier.

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).

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

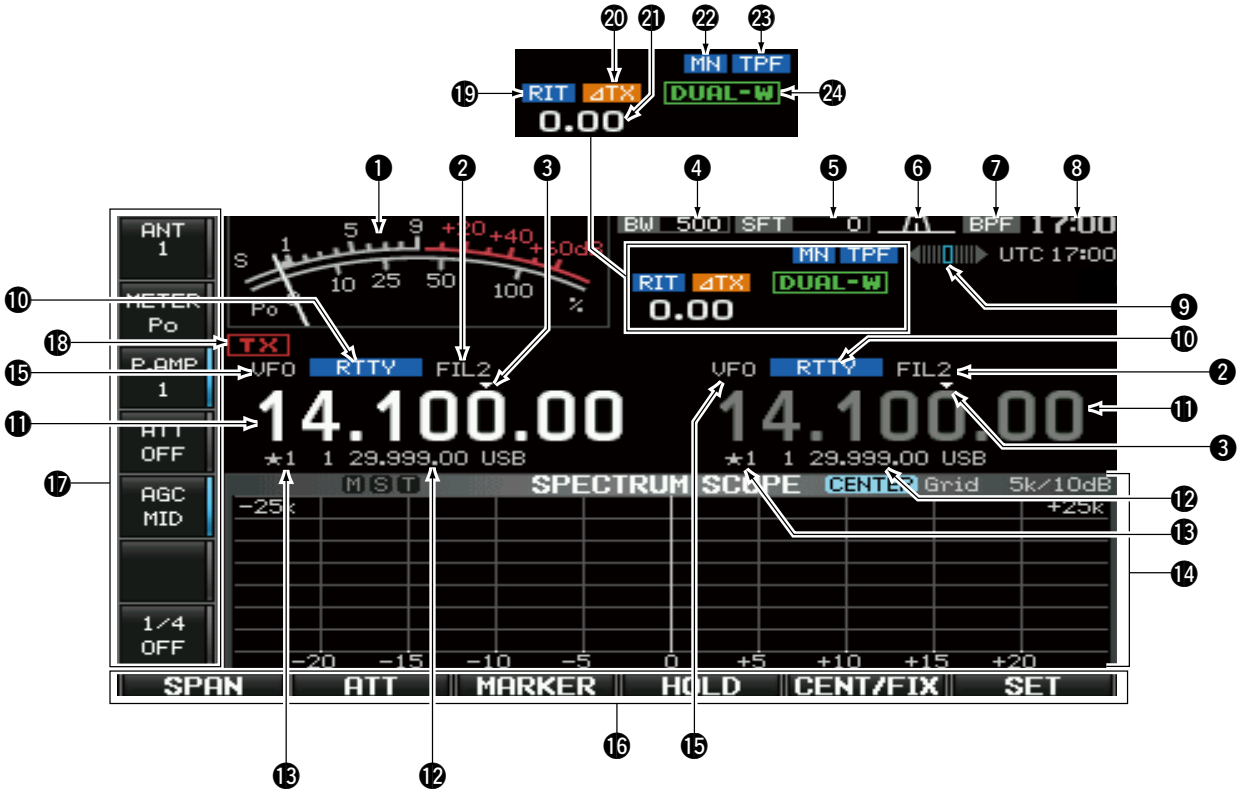
⓯ RECEIVE ANTENNA IN [RX ANT– IN]
⓰ RECEIVE ANTENNA OUT [RX ANT– OUT]
Located between the transmit/receive switching circuit and receiver's RF stage.

Connects an external unit, such as preamplifier or RF filter, using RCA connectors, if desired.
In this case, the antenna connector must be selected as "ANT 1/R" or "ANT 2/R." (p. ??)
• When no external unit is connected, "ANT 1" or "ANT 2" must be selected.



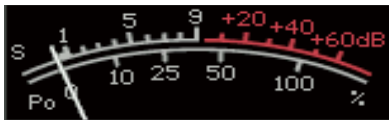
⓱ TRANSVERTER CONNECTOR [X-VERTER] (p. ??)
External transverter input/output connector.
Activated by voltage applied to [ACC 2] pin 6, or when the transverter function is in use. (p. ??)

■ LCD display

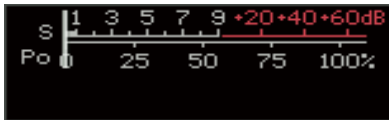


❶ S/RF METER (pgs. ??, ??)
Shows the signal strength while receiving. Shows the relative output power, SWR, ALC, VD, ID or compression levels while transmitting.
• A total of 3 meter types are available.

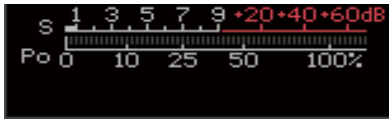
• Standard meter



• Edgewise meter



• Bar meter



❷ IF FILTER INDICATOR (p. ??)
Shows the selected IF filter number.

❸ QUICK TUNING INDICATOR (p. ??)
Appears when the quick tuning step function is in use.

❹ BAND WIDTH INDICATOR (p. ??)
Shows the passband width of the IF filter.

❺ SHIFT FREQUENCY INDICATOR (p. ??)
Shows the shift frequency of the IF filter.

❻ PASSBAND WIDTH INDICATOR (p. ??)
Graphically displays the passband width for twin PBT operation and center frequency for IF shift operation.

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

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

❾ RTTY TUNING INDICATOR
Shows the tuning condition in RTTY mode.

❿ MODE INDICATOR
Shows the selected mode.

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

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

⓭ SELECT MEMORY CHANNEL INDICATOR (p. ??)
Indicates the displayed memory channel is set as a select memory channel.

⓮ 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.

⓯ VFO/MEMORY CHANNEL INDICATOR (p. ??)
Indicates the VFO mode or selected memory channel number.

⓰ LCD FUNCTION SWITCH GUIDE
Indicates the function of the LCD function switches ([F-1] to [F-6]).

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

⓲ TX INDICATOR
Indicates the frequency readout for transmit.
• "TX" appears during an operating frequency is not in an amateur band. When the band edge warning beep is set to "OFF" (p. ??), "TX" does not appear.
• Appears on the sub band readout when the split function is turned ON.

⓳ RIT INDICATOR
"RIT" appears when RIT function is in use.

⓴ ⊿TX INDICATOR
"⊿TX" appears when ⊿TX function is in use.

㉑ RIT/⊿TX SHIFT FREQUENCY INDICATOR
Shows the shift frequency for the RIT or ⊿TX function.

㉒ NOTCH INDICATOR (p. ??)
➥ "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.

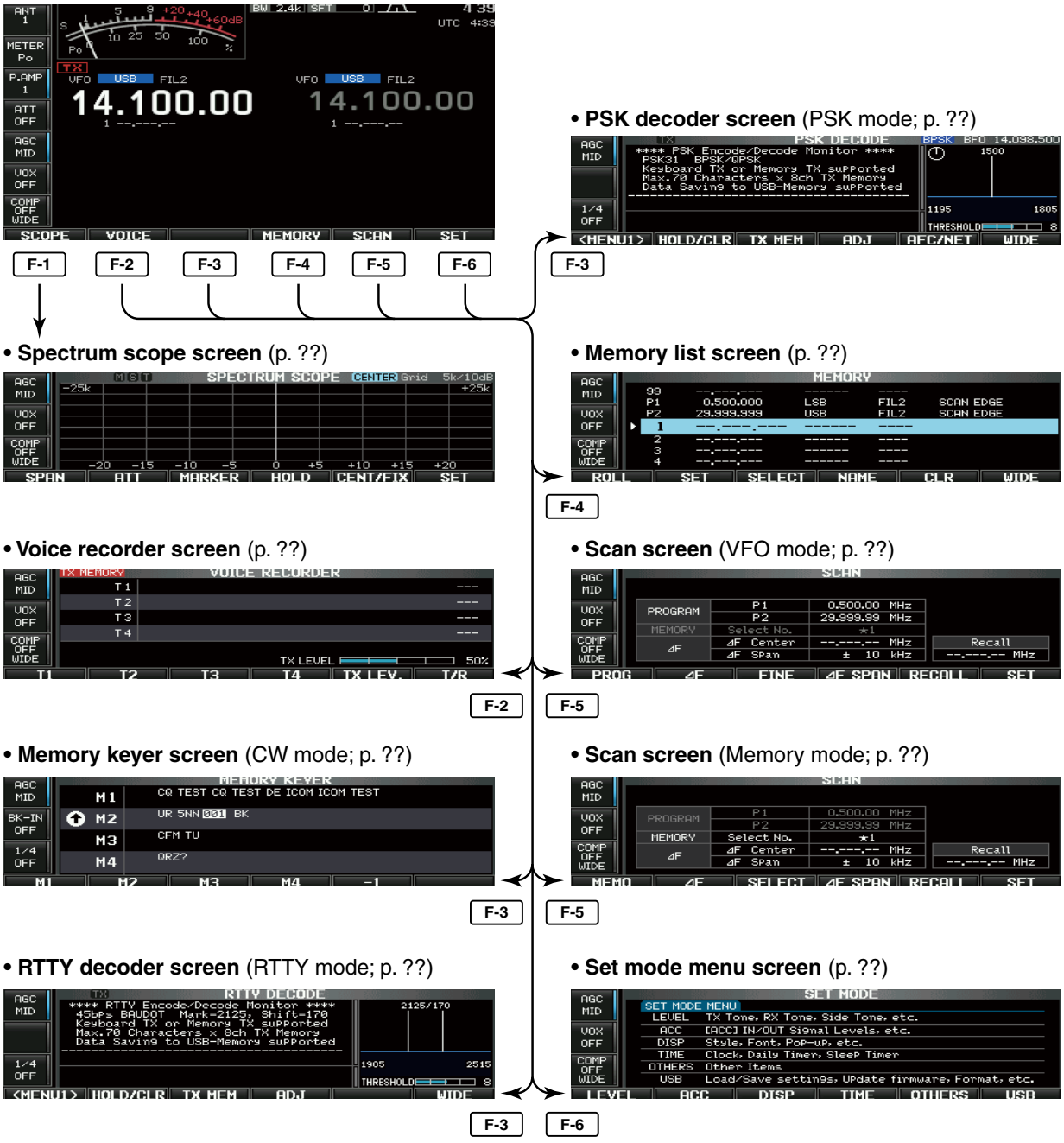
㉓ APF/TPF INDICATOR
➥ "APF" appears when the audio peak filter function is in use. This function is available in CW mode. (p. ??)
➥ "TPF" appears when the twin peak filter function is in use. This function is available in RTTY mode. (p. ??)

㉔ DUAL WATCH INDICATOR
"DUAL-W" appears when the dualwatch function is in use.

■ 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. ?? for set mode arrangement.



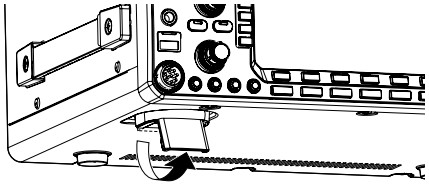
■ Unpacking

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-7600, see 'Supplied accessories' on p. ?? of this manual.

■ 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.

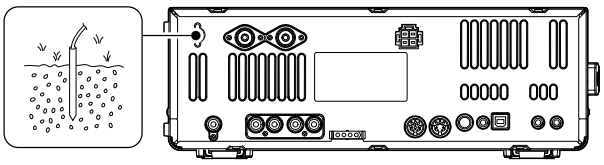
The base of the transceiver has adjustable feet for desktop use. Set the feet to one of two angles depending on your operating preference.



■ 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 ground 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.

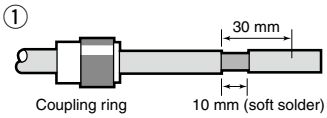


■ Antenna connection

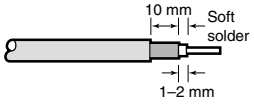
For radio communications, the antenna is of critical importance, along with output power and receiver sensitivity. Select antenna(s), such as a well-matched 50 Ω antenna, and feedline. We recommend 1.5:1 or better of Voltage Standing Wave Ratio (VSWR) on your operating bands. The transmission line should be a coaxial cable.
When using a single antenna, use the [ANT1] connector.

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

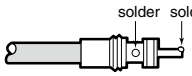
PL-259 CONNECTOR INSTALLATION EXAMPLE

① 

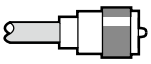
Slide the coupling ring down. Strip the cable jacket and soft solder.

② 

Strip the cable as shown at left. Soft solder 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)

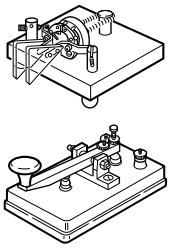
Antenna SWR

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-7600 has an SWR meter to monitor the antenna SWR continuously.

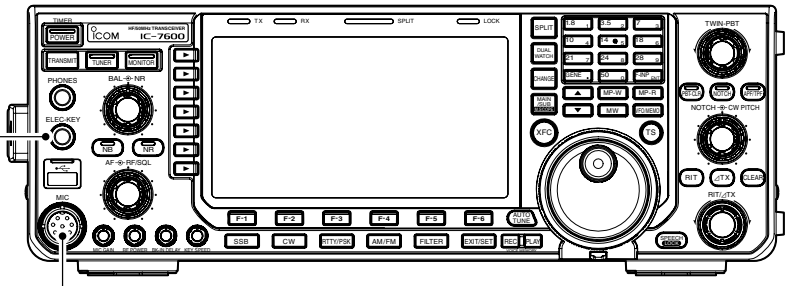
■ Required connections

◇ Front panel

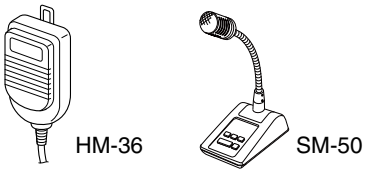
CW KEY



A straight key can be used when the internal electronic keyer is turned OFF in keyer set mode. (p. ??)



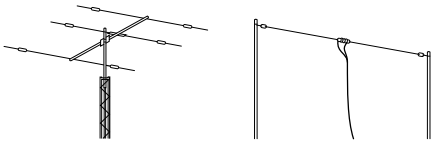
MICROPHONES (p. ??)



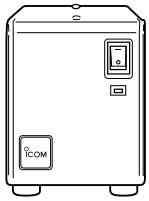
HM-36 SM-50

◇ Rear panel

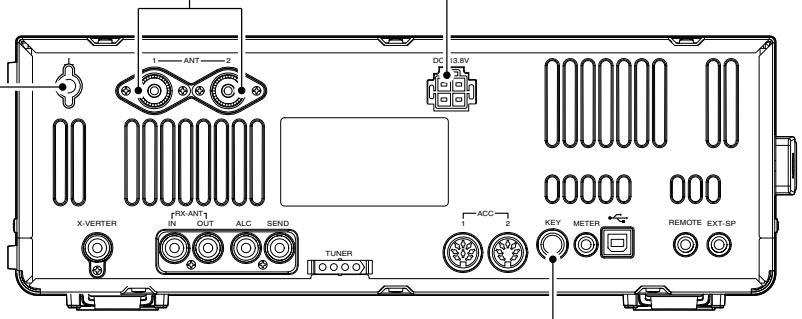
ANTENNA 1, 2 (p. ??)
[Example]: ANT1 for 1.8–18 MHz bands
ANT 2 for 21–28 MHz bands



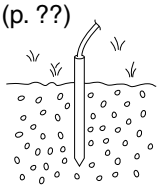
DC POWER SUPPLY (p. ??)



PS-126



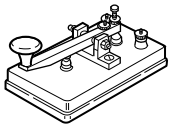
GROUND (p. ??)



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

Grounding prevents electrical shocks, TVI and other problems.

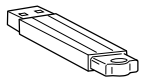
STRAIGHT KEY



■ Advanced connections

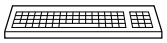
◇ Front panel

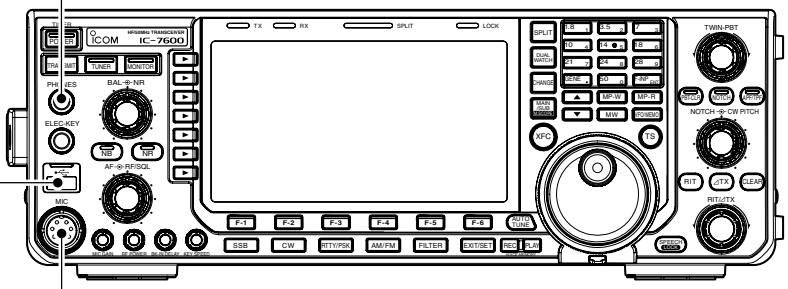
USB-MEMORY



HEADPHONES

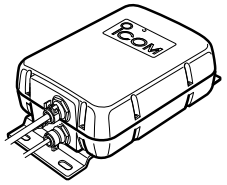
KEYBOARD
Connects an USB type PC keyboard directly for RTTY/PSK operation, as well as other text edit operations.





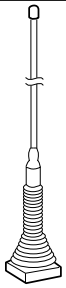
MIC
The AFSK modulation signal can also be input to [MIC].

◇ Rear panel— 1



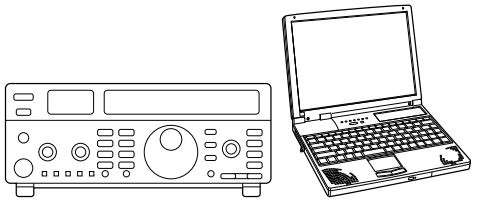
AH-4 (p. ??)

with



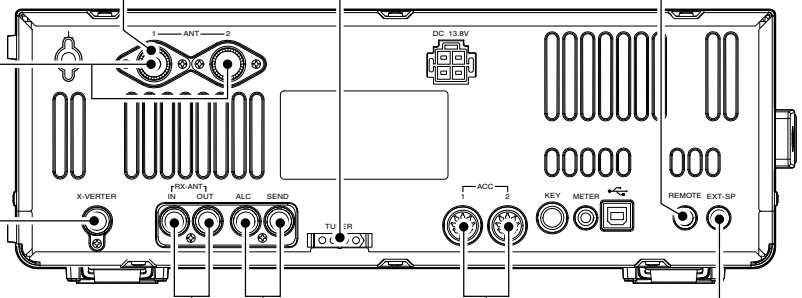
AH-2b
or long wire

[REMOTE] (p. ??)
Used for computer control and transceive operation.
The optional CT-17 is required when connecting a PC to [REMOTE].



ANTENNA 1, 2 (p. ??)
Connects a linear amplifier, antenna selector, etc.

[X-VERTER]
Connects a transverter for V/UHF band use.



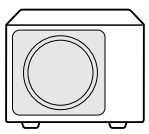
RX ANT IN/OUT
Connects an external preamp or lowpass filter.

RX ANT IN/OUT must be activated in the antenna set screen (p. ??).

ACC SOCKETS 1, 2
(pgs. ??, ??)

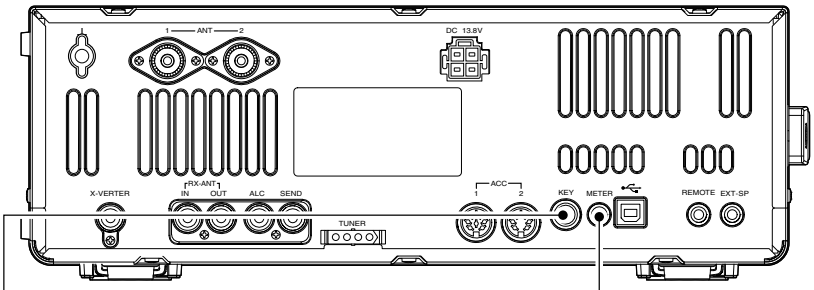
[ALC], [SEND] (p. ??)
Used for connecting a non-Icom linear amplifier.

EXTERNAL SPEAKER
(p. ??)

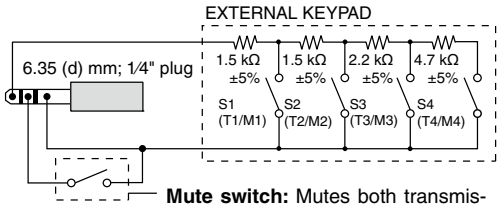


SP-23
(option)

◇ Rear panel— 2

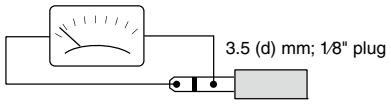


EXTERNAL KEYPAD
Connects an external keypad for direct voice memory, keyer memory, RTTY TX memory and PSK TX memory controls.



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

[METER]
Connects an external meter, etc.



Output impedance : 4.7 kΩ
Output voltage (open circuit) : 2.5 V (default)

Output voltage can be adjusted 0 to 5 V in ACC set mode. (p. ??)

■ USB connection

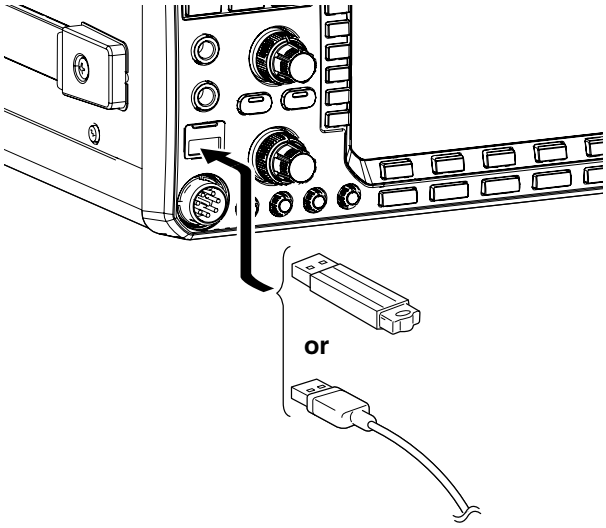
Connect the USB-Memory* to the USB connector (A type) on the front panel.
• Unmount operation is recommended before removing the USB-Memory* (p.??).

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

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

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

When the transceiver is connected to PC, an USB cable (third party) should be connected to the USB connector (B type) on the rear panel. (p. ??)

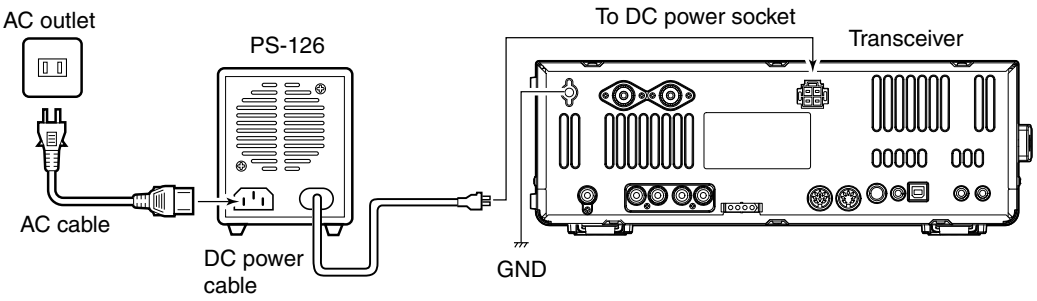


■ Power supply connections

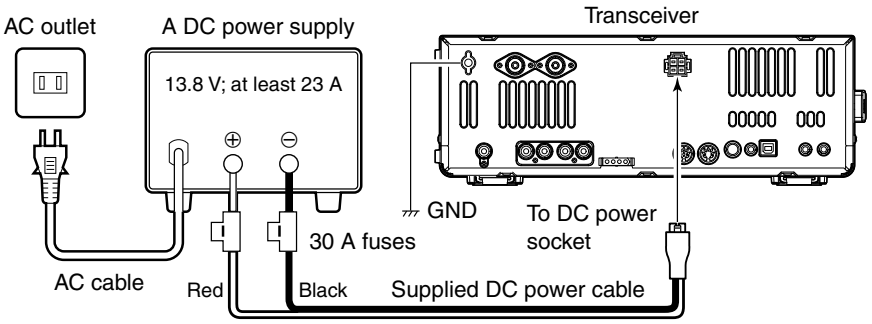
Use a DC power supply with a 23 A capacity when operating the transceiver with AC power. Refer to the diagrams below.

CAUTION: Before connecting the DC power cable, check the following important items. Make sure:
- The **[POWER]** switch is OFF.
- Output voltage of the power source is 12–15 V when you use a non-Icom power supply.
- DC power cable polarity is correct.
  Red : Positive ⊕ terminal
  Black : Negative ⊖ terminal

CONNECTING PS-126 DC POWER SUPPLY



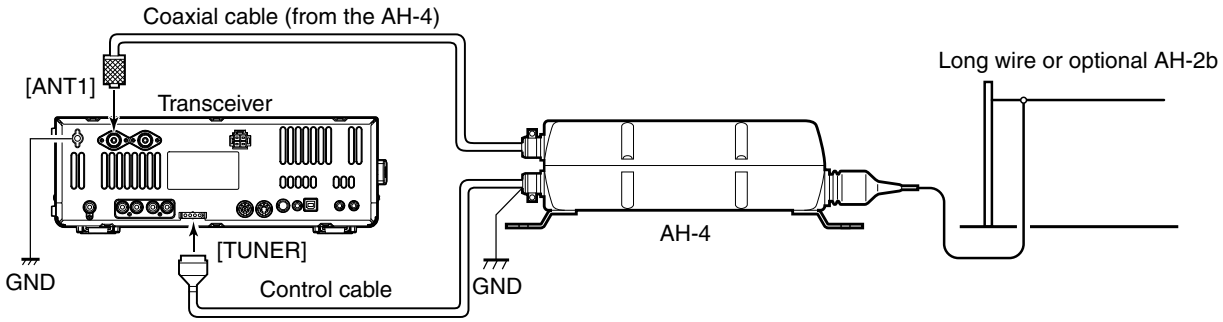
CONNECTING A DC POWER SUPPLY



■ External antenna tuner connection

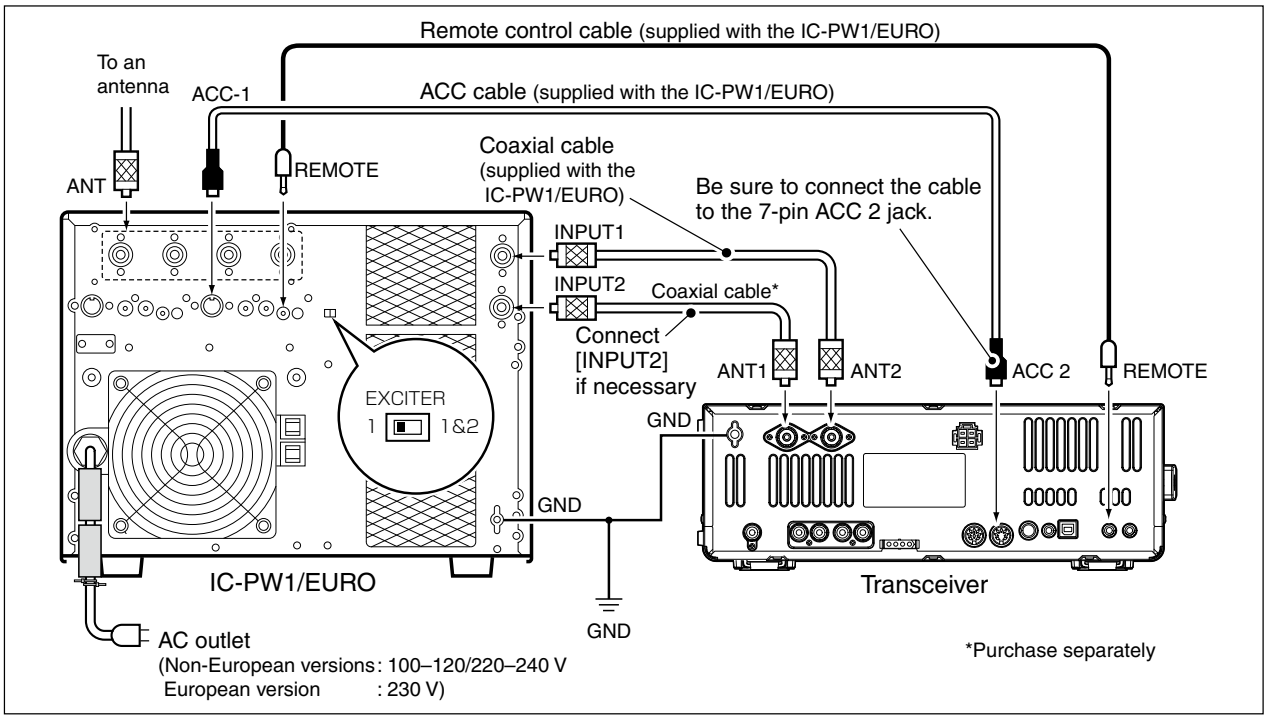
CONNECTING THE AH-4

▨ The AH-4 must be connected to **[ANT1]**.

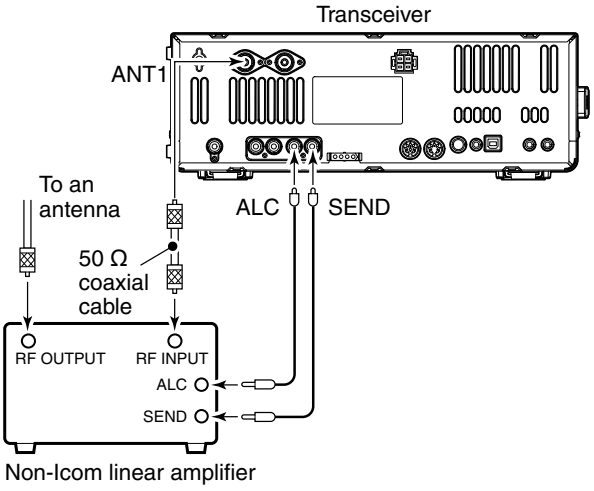


■ Linear amplifier connections

◇ Connecting the IC-PW1/EURO



◇ Connecting a non-Icom linear amplifier



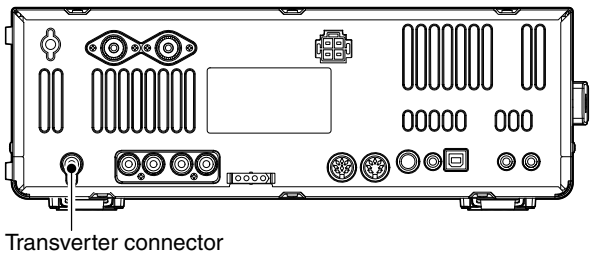
⚠ WARNING:

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 [SEND] jack is 16 V/0.5 A DC with initial setting, and 250 V/200 mA with “MOSFET” setting (see p. ?? 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



Transverter connector

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, the [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.

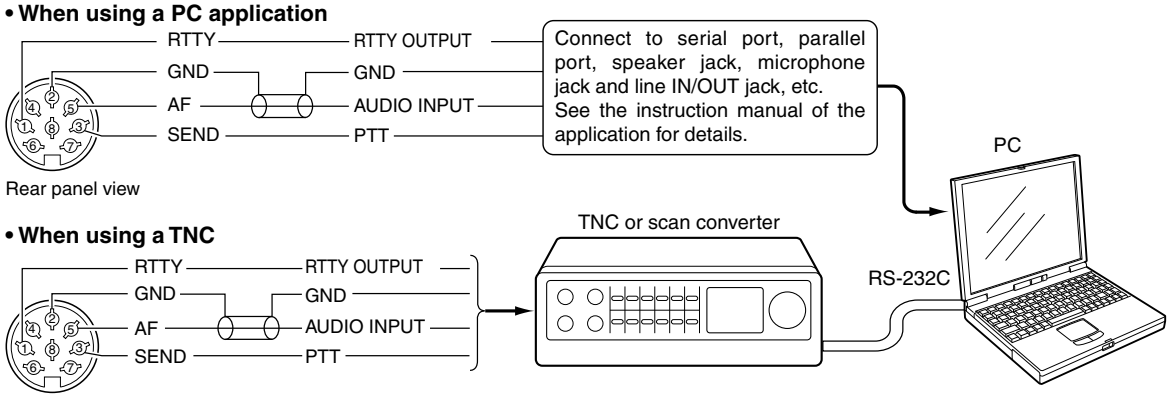
■ FSK and AFSK (SSTV) connections

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

2

◇ FSK operation— when connecting to [ACC 1]

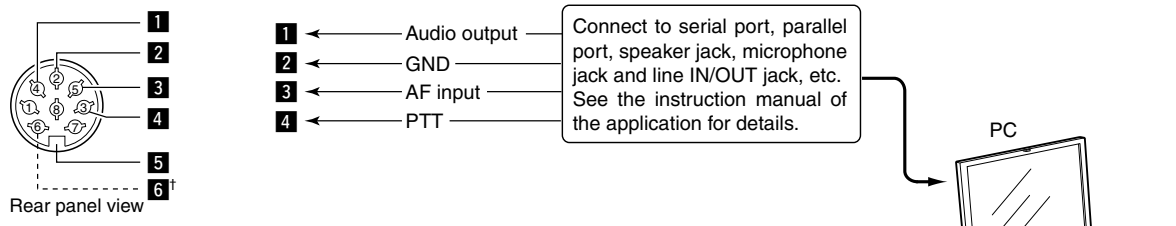
• When using a PC application



◇ AFSK operation

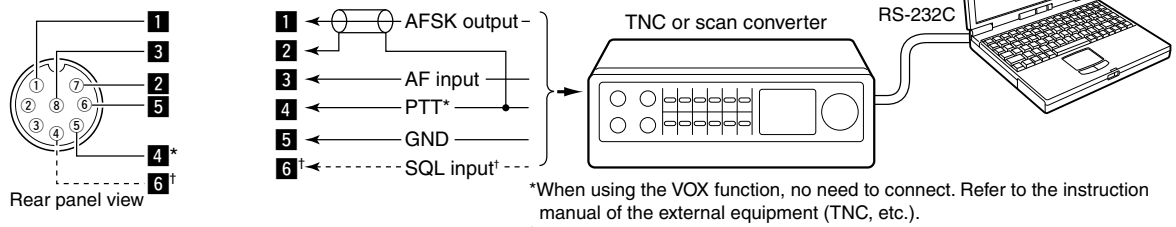
• When connecting to [ACC 1]

• 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.).

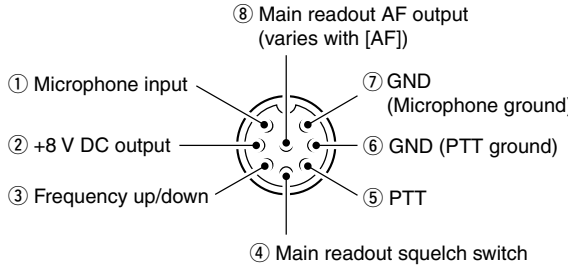
◇ When connecting to the [USB] connector

Connect an USB cable (third party's) between the transceiver's USB connector [USB] (B) on the rear panel and PC. (p. ??)

• Icom HP (http://www.icom.co.jp/world/support/index.html) gives the USB driver and the installation guide download service.

■ Microphone connector information

(Front panel view)

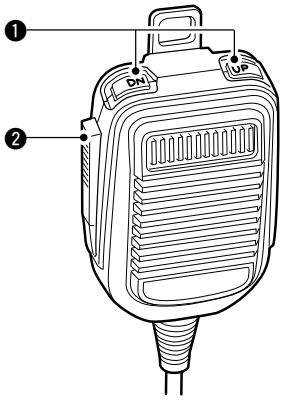


[MIC] Pin No.	FUNCTION	DESCRIPTION
②	+8 V DC output	Max. 10 mA
③	Frequency up	Ground
	Frequency down	Ground through 470 Ω
④	Squelch open	"Low" level
	Squelch closed	"High" level

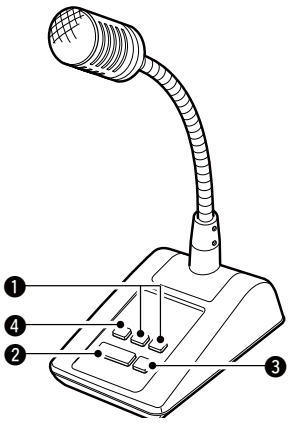
CAUTION: DO NOT short pin 2 to ground as this can damage the internal 8 V regulator. DC voltage is applied to pin 1 for microphone operation. Use caution when using a non-Icom microphone.

■ Microphones

◇ HM-36



◇ SM-50 (option)



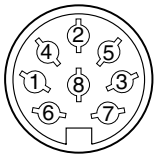
❶ UP/DOWN SWITCHES [UP]/[DN]
Change the selected readout frequency or memory channel.
- Pressing a switch continuously changes the frequency or memory channel number continuously.
- While pushing [XFC], the transmit readout frequency can be controlled while in split frequency operation.
- The [UP]/[DN]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

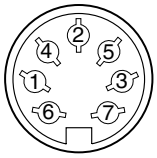
❷ PTT SWITCH
Push and hold to transmit; release to receive.

❸ PTT LOCK SWITCH (available for SM-50 only)
Push to toggle between transmit and receive.

❹ LOW CUT SWITCH (available for SM-50 only)
Push to cut out the low frequency components of input voice signals.

■ 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 : 8.0 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.	

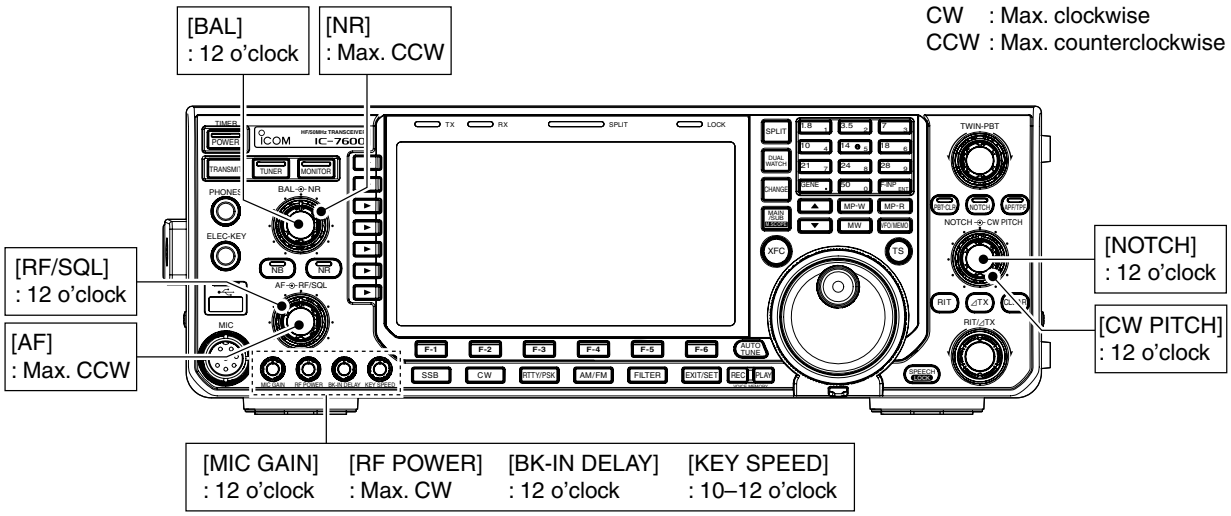
NOTE: If the CW side tone level limit or beep level limit is in use, the CW side tone or beep tone decreases from the fixed level when the [AF] control is rotated above a specified level. (p. ??)

3 BASIC OPERATION

■ Before first applying power

Before first applying power, make sure all connections required for your system are complete by referring to Chapter 2.

After all connections have been done, set controls and switches as shown in the figure below.



■ Applying power (CPU resetting)

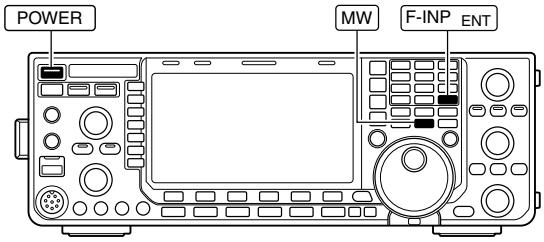
First applying power:
Reset the transceiver using the following procedure.

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

① Make sure the transceiver power is OFF.
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.

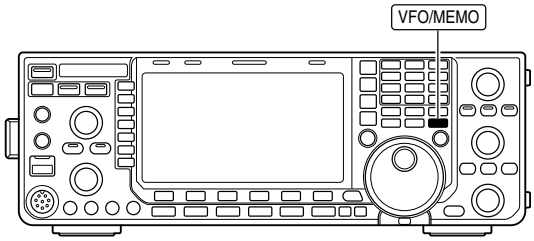
Normal applying power:
Push **[POWER]** to turn power ON, then check the display. When any of indicators appear, turn them OFF if necessary. (See the appropriate page for details.)

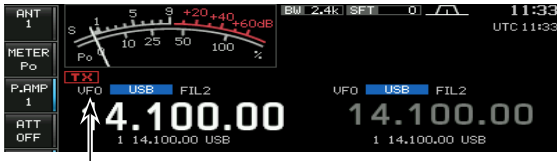


In cooler temperatures, the LCD may appear dark and unstable after turning power ON. This is normal and does not indicate any equipment malfunction.

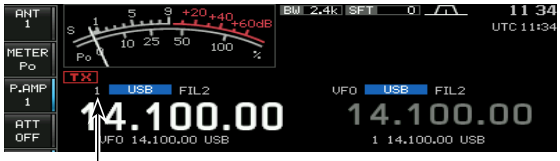
■ Selecting VFO/memory mode

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





"VFO" indicator

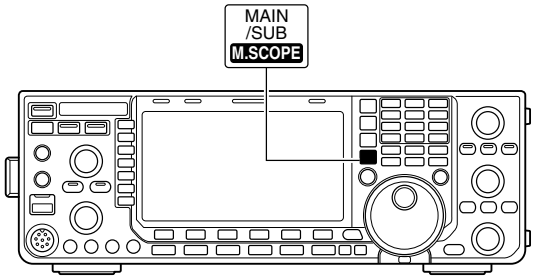


Memory channel number

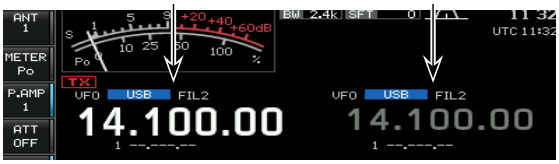
■ Main/Sub band selection

The IC-7600 has 2 identical receivers, main and sub. The main band is displayed on the left hand side, and the sub band is displayed on the right hand side of the LCD. Some functions can only be applied to the selected band and transmission occurs on the main band (except during split frequency operation).

➥ Push **[MAIN/SUB M.SCOPE]** to select access to the main or sub readout.
- The selected readout frequency is displayed clearly. The sub readout functions only during split operation or dualwatch.

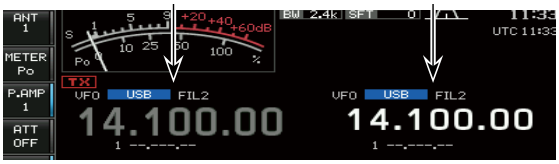


MAIN VFO SUB VFO



Access to MAIN VFO

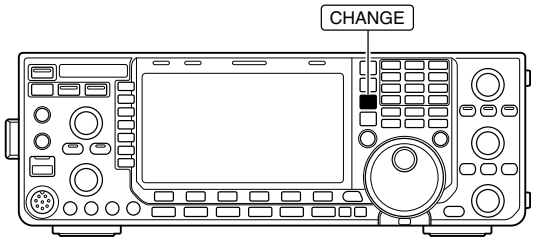
MAIN VFO SUB VFO



Access to SUB VFO

◇ Main/Sub band switching

➥ Push **[CHANGE]** to switch the frequency and selected memory channel between main and sub readouts.
- Switches between transmit frequency and receive frequency when the split frequency function is ON. (p. ??)



◇ Main/Sub band equalization

➥ Push and hold **[CHANGE]** for 1 sec. to equalizes the sub readout frequency to the main readout frequency.

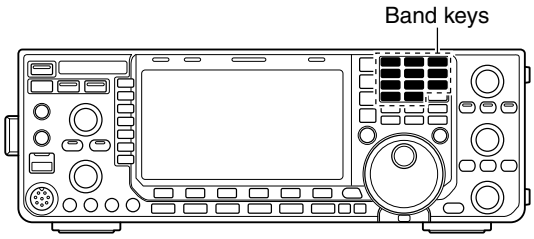
■ Selecting an operating band

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 operating modes on one band. For example, one register is used for a CW frequency, another for a SSB frequency and the other one for a 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

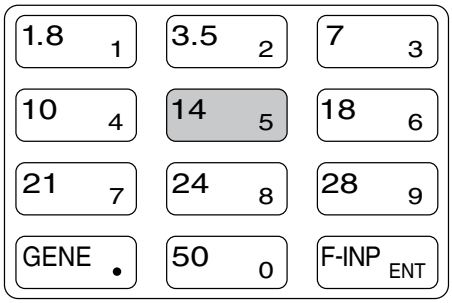
◇ Using the band stacking registers

[Example]: 14 MHz band

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

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

③ Push **[14 5]** again, then select 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

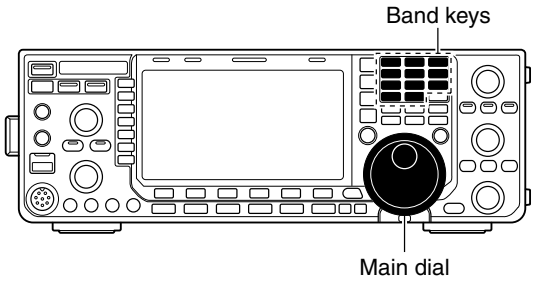
The transceiver has several tuning methods for convenient frequency tuning.

◇ Tuning with the main dial

①Push the desired band key on the keypad 1–3 times.
- 3 different frequencies can be selected on each band with the band key. (See previous page "Using the band stacking registers.")

②Rotate 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 and hold **[SPEECH/LOCK]** for 1 sec. to deactivate the lock function.
When "LOCK/SPEECH" is selected in "[SPEECH/LOCK] Switch" item in others set mode, pushing **[SPEECH/LOCK]** deactivates the lock function. (see p. ?? for details)



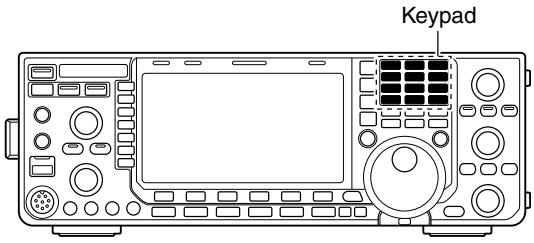
◇ Direct frequency entry with the keypad

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

①Push **[F-INP ENT]**.
- "F-INP" indicator appears.

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

③Push **[F-INP ENT]** to set the input frequency.
- To cancel the input, push any other key instead of **[F-INP ENT]** or keypad.



[EXAMPLE]

14.025 MHz
F-INP ENT | 1.8 1 | 10 4 | GEN • | 50 0 | 3.5 2 | 14 5 | F-INP ENT

18.0725 MHz
F-INP ENT | 1.8 1 | 24 8 | GEN • | 50 0 | 21 7 | 3.5 2 | 14 5 | F-INP ENT

706 kHz
F-INP ENT | GEN • | 21 7 | 50 0 | 18 6 | F-INP ENT

5.100 MHz
F-INP ENT | 14 5 | GEN • | 1.8 1 | F-INP ENT

7.000 MHz
F-INP ENT | 21 7 | F-INP ENT

21.280 MHz ➪ 21.245 MHz
F-INP ENT | GEN • | 3.5 2 | 10 4 | 14 5 | F-INP ENT

◇ 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.

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-7600 displays carrier frequency. Therefore, tune the transceiver to 1.5 kHz below the specified FCC channel center frequency.

IC-7600 Displayed 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.

◇ Quick tuning step

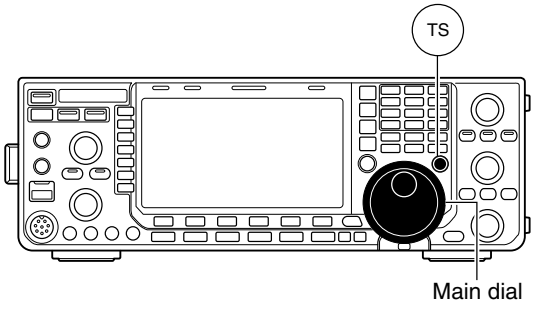
The operating frequency can be changed in larger steps (0.1, 1, 5, 9, 10, 12.5, 20 or 25 kHz selectable) for quick tuning.

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 the quick tuning function OFF.
- "▼" disappears.

④ Rotate the main dial for normal tuning if desired.



◇ Selecting "kHz" step

① Push **[TS]** to turn the quick tuning function ON.
- "▼" 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.

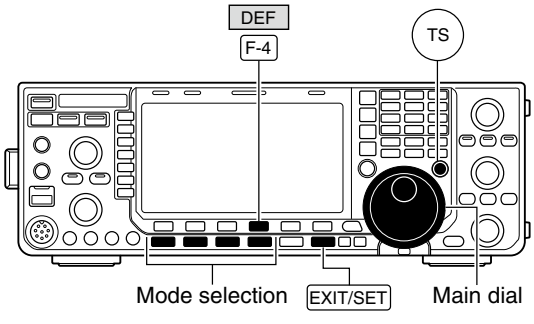
③ Select the desired operating mode.

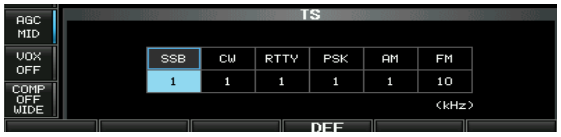
④ Rotate the main dial to select the desired tuning step.
- Push and hold **[DEF] (F-4)** for 1 sec. to return to the default setting, if desired.

⑤ Repeat steps ③ and ④ to select quick tuning steps for other modes, if desired.

⑥ Push **[EXIT/SET]** to exit the setting display.

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



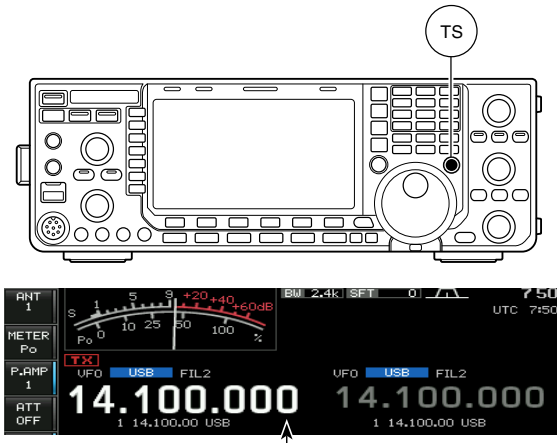


◇ Selecting 1 Hz step

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.

NOTE:
- RIT and/or ⊿TX also functions in 1 Hz tuning step when used.
- The frequency is changed in 50 Hz step when the **[UP]/[DN]** switches of the microphone are used for the frequency setting (when the programmable tuning step is not selected.)



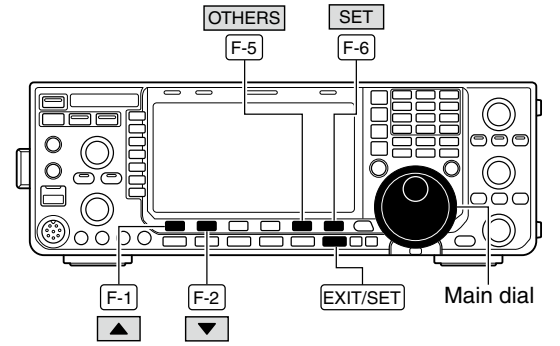
◇ Auto tuning step function

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-6)** 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 when the tuning step is set to 1 kHz or smaller steps; approx. 2 times faster when the tuning step is set to 5 kHz or larger steps.
- LOW : Approx. 2 times faster
- OFF : Auto tuning step is turned OFF.

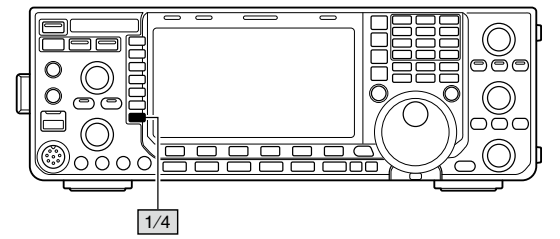
⑥ Push **[EXIT/SET]** to exit the set mode.



◇ ¼ tuning step function

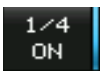
When operating in SSB data, CW, RTTY or PSK, the ¼ tuning function is available. Dial rotation is reduced to ¼ of normal speed when the ¼ tuning function is ON for finer tuning control.

➥ Push **[1/4] (MF7)** to toggle the ¼ tuning function ON and OFF.
- " 1/4 " appears when the ¼ tuning function is ON.



¼ tuning step OFF

¼ tuning step ON



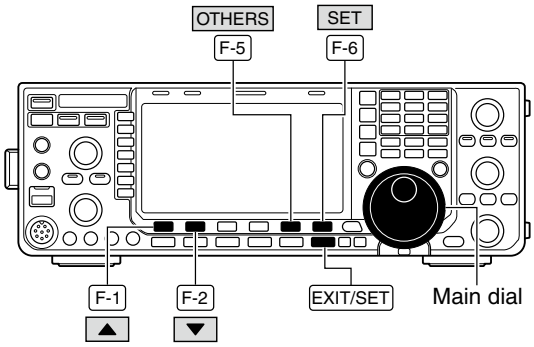
◇ Band edge warning beep

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.

①Push **[EXIT/SET]** several times to close a multi-function screen, if necessary.
②Push **[SET] (F-6)** to select set mode menu screen.
- Pushing and holding **[EXIT/SET]** for 1 sec. also selects set mode menu screen.

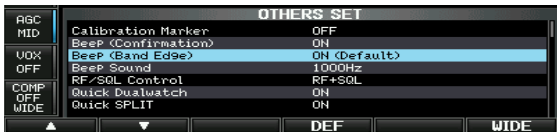
③Push **[OTHERS] (F-5)** to enter others set mode.
④Push **[▲] (F-1)** or **[▼] (F-2)** to select "Beep (Band Edge)."
⑤Rotate the main dial to select the band edge warning beep function.
⑥Push **[EXIT/SET]** to exit the set mode.

The beep output level can be set in level set mode. (p. ??)

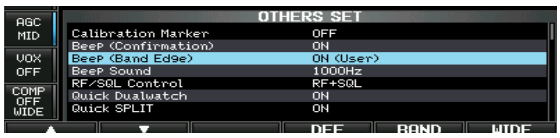


When the band edge warning beep is set to "ON":
The band edge warning beep is activated according to the set mode setting as follows.

- **ON (Default)**
  Band edge beep sounds when an operating frequency enters or exits a default amateur band. (default)
- **ON (User)**
  A beep sounds when an operating frequency enters or exits an amateur band that is set in band edge screen.
- **ON (User) & TX Limit**
  A beep sounds when an operating frequency enters or exits an amateur band that is set in band edge screen and transmission is limited out of the band.



ON (Default) (default)



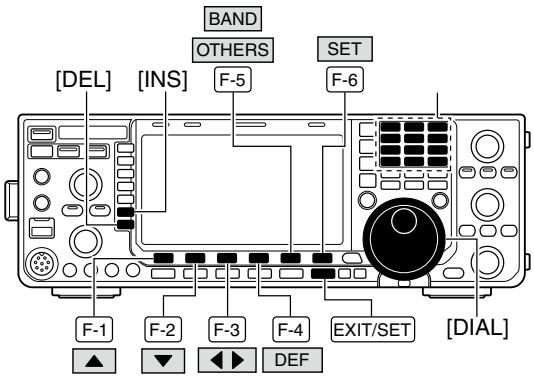
ON (User)

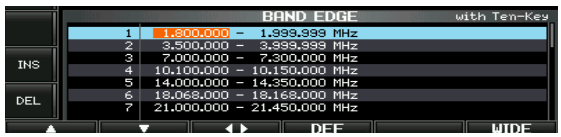
To programming the band edge:
When "ON (User)" or "ON (User) & TX Limit" is selected, **[BAND]** appears in the display above the function switch (F-5), and up to 30 band edge frequencies can be set in band edge screen.

①Push **[BAND] (F-5)** to enter the band edge screen.
②Push **[▲] (F-1)** or **[▼] (F-2)** to select the desired band edge.
- Push **[◄ ►] (F-3)** to select the set content for band edge, lower or upper.
- Push **[INS] (MF6)** to insert a new blank band edge line.
- Push and hold **[DEL] (MF7)** for 1 sec. to delete the selected band edge line.
- Push and hold **[DEF] (F-4)** for 1 sec. to display the band edge initialize screen. Then, push and hold **[OK] (F-5)** to initialize all band edge frequency settings.

③Input the desired frequency with the keypad.
- Push **[GENE •]** to input ". (decimal point)" between the MHz units and kHz units.
- Program the frequency in ascending order.
- The frequency that is duplicated or out of an amateur band cannot be programmed.

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





Band edge screen

NOTE: All 30 band edge frequencies are set in default. So you should delete a one of band edges before programming.

■ 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-7600. Push the desired mode switch momentarily to select a mode of operation.

See the diagram as at right for the order of selection.

Microphone signals are muted when data mode is selected.

• Selecting SSB mode

➥ Push **[SSB]** to select USB or LSB.
- USB is selected first when above 10 MHz; or LSB is selected first when below 10 MHz operation.
- After USB or LSB is selected, push **[SSB]** to toggle between USB and LSB.
- After USB or LSB is selected, push and hold **[SSB]** for 1 sec. to select USB or LSB data mode, respectively.
- After USB or LSB data mode is selected, push and hold **[SSB]** for 1 sec. to select data 1, 2 and 3, in sequence.
- In USB or LSB data mode, push **[SSB]** to return to USB or LSB mode, respectively.

• Selecting CW mode

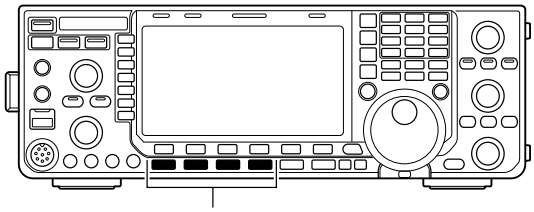
➥ Push **[CW]** to select CW.
- After CW is selected, push **[CW]** to toggle between CW and CW reverse mode.

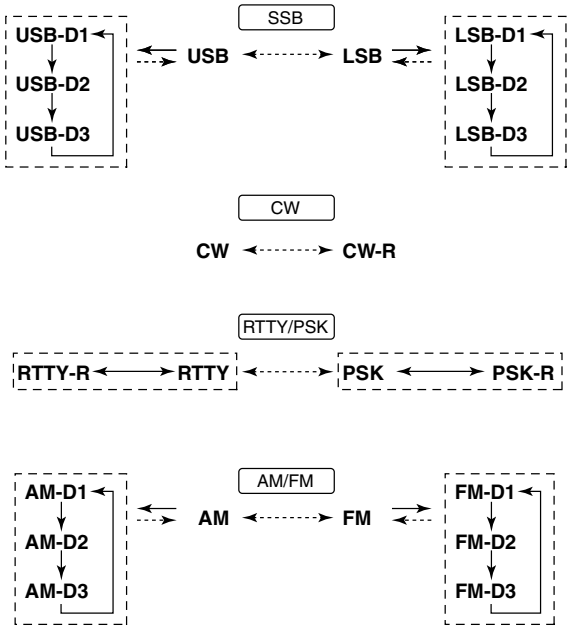
• Selecting RTTY/PSK mode

➥ 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.
- After AM or FM is selected, push and hold **[AM/FM]** for 1 sec. to select AM or FM data mode, respectively.
- After AM or FM data mode is selected, push and hold **[AM/FM]** for 1 sec. to select data 1, 2 and 3, in sequence.
- In AM or FM data mode, push **[AM/FM]** to return to AM or FM mode, respectively.





◄---► : Push mode switch momentary.

◄—► : Push and hold mode switch for 1 sec.

■ Squelch and receive (RF) sensitivity

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

- The squelch is particularly effective for AM and FM. It is also available for other modes.
- 12 to 1 o'clock position is recommended for any setting of the **[RF/SQL]** control.
- The control can be set as 'Auto' (RF gain control in SSB, CW, RTTY and PSK; squelch control in AM and FM) or squelch control (RF gain is fixed at maximum) in set mode as follows. (p. ??)

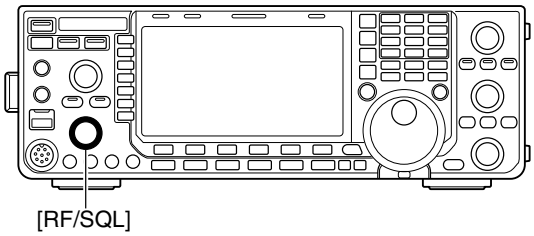
SET MODE	OPERATION
RF+SQL (default)	Can be used in all modes. Functions as noise squelch or S-meter squelch in FM modes; S-meter squelch only in other modes.
SQL	Operates as a squelch control. • RF gain is fixed at maximum sensitivity.
AUTO	Operates as an RF gain control in SSB, CW, RTTY and PSK modes. • Squelch is fixed open. Operates as a squelch control in AM and FM modes. • RF gain is fixed at maximum sensitivity.

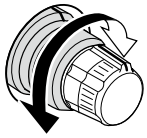
❍ **Adjusting RF gain** (Receive sensitivity)
Normally, **[RF/SQL]** is set to the 11 o'clock position. Rotate **[RF/SQL]** to the 11 o'clock position for maximum sensitivity.

- Rotating counterclockwise from the maximum position reduces sensitivity.
- The S-meter indicates receive sensitivity.

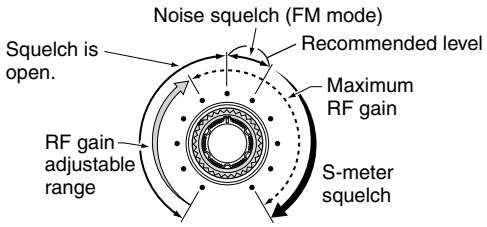
❍ **Adjusting squelch** (Removing non-signal noise)
Rotate **[RF/SQL]** clockwise when receiving no signal, until the noise just disappears.

- **[RX]** indicator light goes out.
- Rotating **[RF/SQL]** past the threshold point invokes the S-meter squelch— this allows you to set a minimum signal level needed to open the squelch.

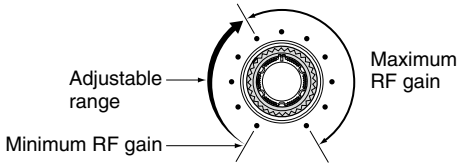




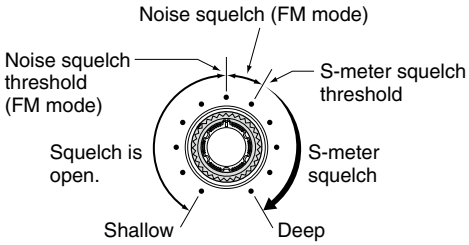
• When setting as RF gain/squelch control



• When functioning as RF gain control
(Squelch is fixed open; SSB, CW, RTTY only)



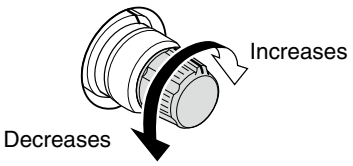
• When functioning as squelch control
(RF gain is fixed at maximum.)

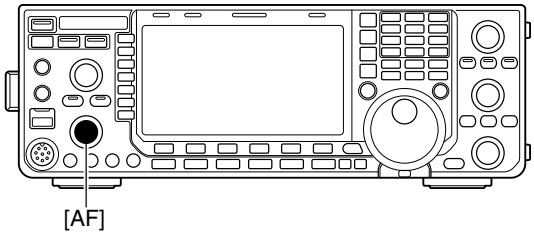


While rotating the RF gain control, noise may be heard. This comes from the DSP unit and does not indicate an equipment malfunction.

■ Volume setting

➥ Rotate **[AF]** control clockwise to increase, counter-clockwise to decrease the audio output level.



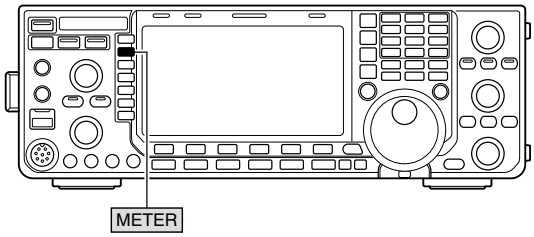


■ Meter indication selection

The transceiver has 6 transmit meter functions for your convenience.

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

METER Po	Indicates the RF output power in watts.
METER SWR	Indicates the SWR on the transmission line.
METER ALC	Indicates the ALC level. When the meter movement shows the input signal level exceeds the allowable level, the ALC limits the RF power. In such cases, reduce the **[MIC GAIN]** control.
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.



SWR readout

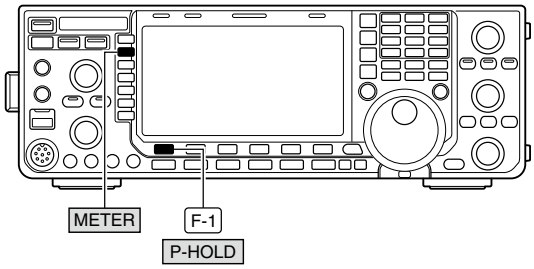
ALC level readout

◇ Multi-function digital meter

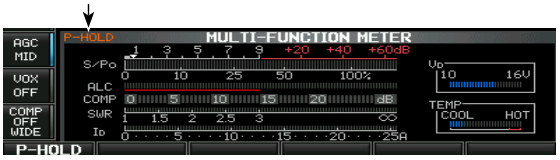
The IC-7600 can display the multi-function digital meter on the LCD display. This meter displays all transmit parameters simultaneously.

① Push and hold **[METER] (MF2)** 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] (MF2)** for 1 sec., or push **[EXIT/SET]** to turn the multi-function digital meter OFF.



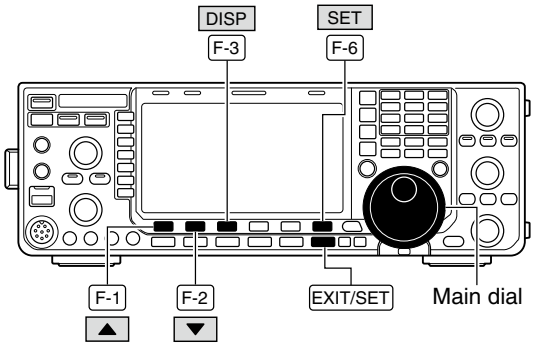
"P-HOLD" indicator



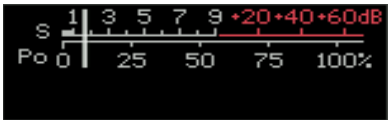
◇ Meter type selection

A total of 3 meter types are available in the IC-7600—Standard, Edgewise and Bar meters.
Follow the instructions below for the meter type selection.

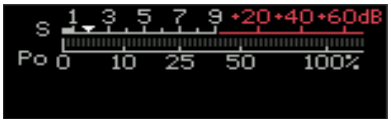
① Push **[EXIT/SET]** several times to return to normal screen, if necessary.
② Push **[SET] (F-6)**, then push **[DISP] (F-3)** to select display set mode.
③ Push **[▲] (F-1)** or **[▼] (F-2)** to select "Meter type (Normal Screen)" item.
④ Rotate the main dial to select the desired meter type from "Standard," "Edgewise" and "Bar."
⑤ Push **[EXIT/SET]** to exit display set mode.



• Edgewise meter



• Bar meter



■ Voice synthesizer operation

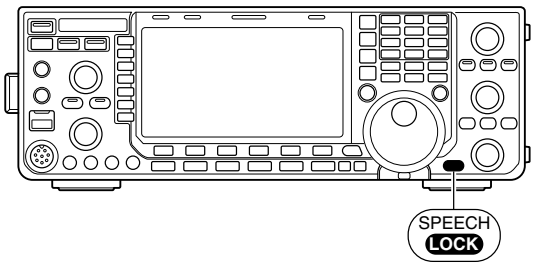
The IC-7600 has a built-in voice synthesizer to announce the operating frequency, mode* and S-meter* in clear, electronically-generated voice, in English (or Japanese).

Select the desired parameters to be announced, such as audio level, speed, language, contents, in the set mode in advance. (pgs. ??, ??)

➥ Push **[SPEECH/LOCK]** to announce the currently selected frequency and S-meter level*.
➥ Push a mode switch to announce the appropriate mode*.

* The S-meter level and operating mode announcements can be deactivated, respectively. (pgs. ??, ??)

NOTE: When "LOCK/SPEECH" is selected in [[SPEECH/LOCK] Switch] item in others set mode, pushing and holding **[SPEECH/LOCK]** activates the voice synthesizer. (p. ??)



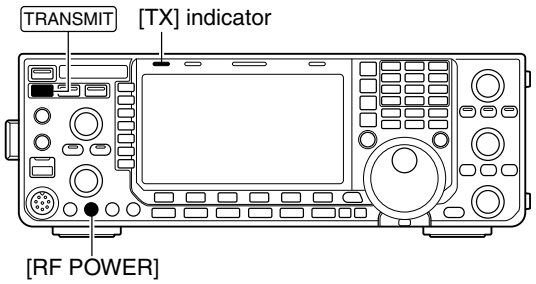
■ Basic transmit operation

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.

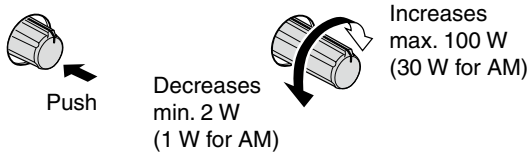
◇ Transmitting

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.



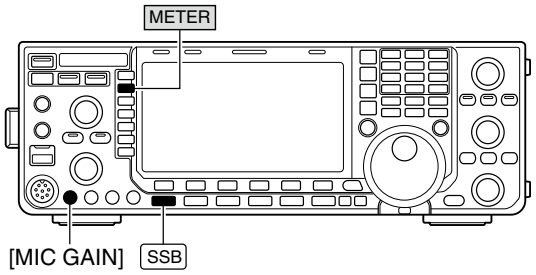
✔ ***Adjusting the transmit output power***
➥ Rotate **[RF POWER]**.
  • Adjustable range : 2 W to 100 W
    (AM mode: 1 W to 30 W)

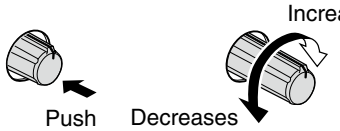


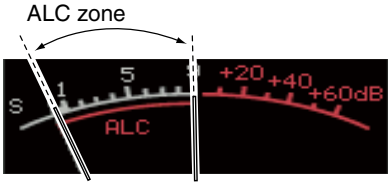
◇ Microphone gain adjustment

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

① Push **[SSB]** to select SSB mode.
② Push **[METER] (MF2)** to select the ALC meter.
③ Push **[PTT]** (microphone) to transmit.
  • Talk into the microphone at your normal voice level.
④ While talking into the microphone, rotate **[MIC GAIN]** so that the ALC meter reading doesn't go outside the ALC zone. (see at right)







⑤ Release **[PTT]** (microphone) to return to receive.

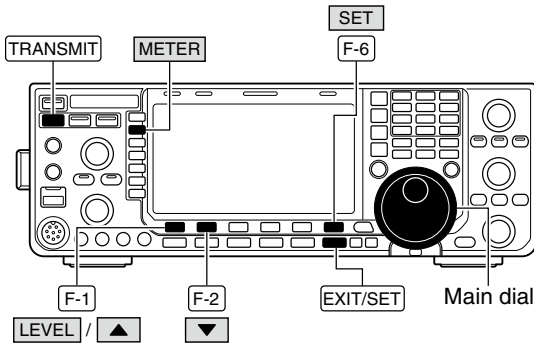
In addition, the transceiver can display the multi-function digital meter in the LCD, which displays all transmit meters simultaneously.

◇ Drive gain adjustment

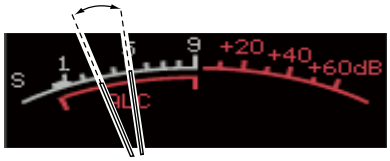
The drive gain is active for all modes other than SSB mode with speech compressor OFF.

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

① Push **[EXIT/SET]** several times to return to normal screen, if necessary.
② Push **[SET] (F-6)**, then push **[LEVEL] (F-1)** to select level set mode.
③ Push **[▲] (F-1)** or **[▼] (F-2)** to select "Drive Gain" item.
④ Push **[METER] (MF2)** to select the ALC meter.
⑤ Push **[PTT]** (microphone; SSB with [COMP] ON, AM or FM), key down (CW) or push **[TRANSMIT]** (RTTY or PSK) to transmit.
⑥ While talking into the microphone or keying down, rotate the main dial so that the ALC meter reading is within 30% to 50% of the ALC scale. (p. ??)
• Talk into the microphone at your normal voice level.
⑦ Release **[PTT]**, stop keying or push **[TRANSMIT]** again to return to receive.
⑧ Push **[EXIT/SET]** to exit display set mode.



Drive gain range

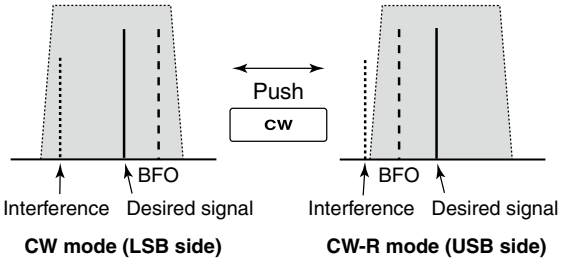


■ Functions for CW operation

◇ 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.

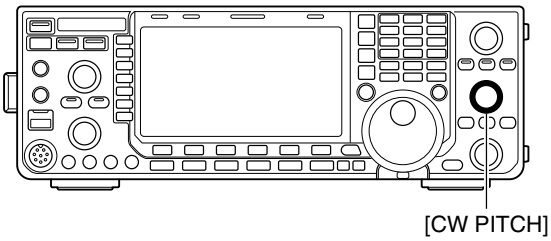
➥ During CW mode, push **[CW]** to select CW and CW-R mode.

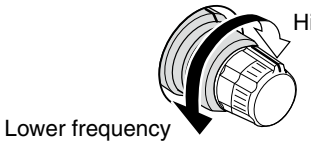


◇ About CW pitch control

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.





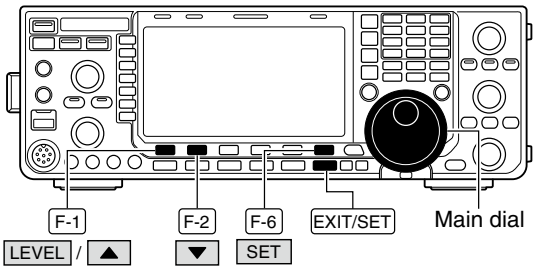
The filter set screen graphically displays the CW pitch operations. (See at right.)

◇ CW side tone function

When the transceiver is in receive (and the break-in function is OFF— p. ??) 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. ??).

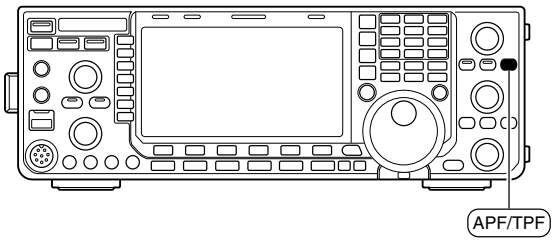
① Push **[SET] (F-6)**, then push **[LEVEL] (F-1)** to select level set mode.
② Push **[▲] (F-1)** or **[▼] (F-2)** to select "Side Tone Level" item.
③ Rotate the main dial to adjust the side tone level.
• Side tone level is adjustable within 0 to 100 % in 1% steps.
④ Push **[EXIT/SET]** to exit display set mode.



Matching the frequency of a transmitted and received signal is called "*Zero beat*."

◇ APF (Audio Peak Filter) operation

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



①During CW mode, push **[APF/TPF]** to turn the audio peak filter ON and OFF.
- "APF" appears in the display and the indicator on this switch lights green when the audio peak filter is ON.

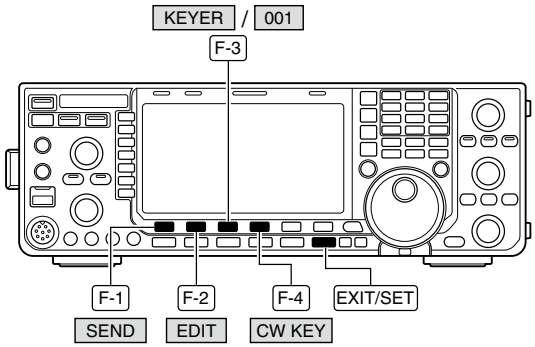
②Push and hold **[APF/TPF]** for 1 sec. several times to select the desired audio filter width.
- WIDE, MID and NAR filters, or 320, 160 and 80 Hz filters are available depending on APF type setting in other set mode. (p. ??)

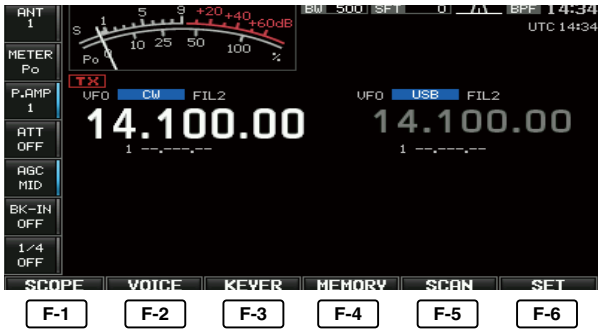
The audio filter shape is also selectable from "SOFT" and "SHARP" in others set mode (p. ??).

■ Electronic keyer functions

The IC-7600 has a number of convenient functions for the built-in electronic keyer that can be accessed from the memory keyer menu.

①During CW mode, push **[EXIT/SET]** several times to return to normal screen, if necessary.
②Push **[KEYER] (F-3)** to select memory keyer screen.
③Push **[EXIT/SET]** to select memory keyer menu screen.
④Push **[SEND] (F-1)**, **[EDIT] (F-2)**, **[001] (F-3)** or **[CW KEY] (F-4)** to select the desired menu. See the diagram below.
• Push **[EXIT/SET]** to return to the previous display.





• Memory keyer screen (p. ??)

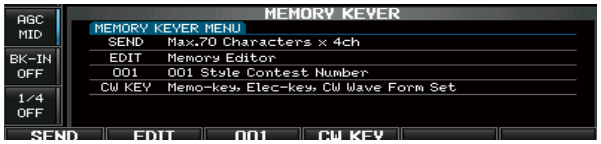
• Memory keyer edit screen (p. ??)

EXIT/SET

F-1

F-2

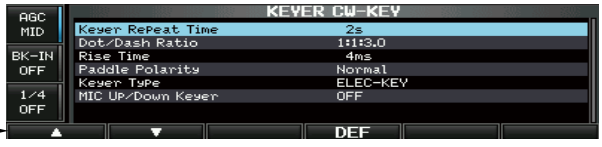
• Memory keyer menu screen



• Contest number set mode (p. ??)

F-3

• Keyer set mode screen (p. ??)



F-4

◇ 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

①During CW mode operation, push **[KEYER] (F-3)** to select memory keyer screen.

②Push **[TRANSMIT]** to set the transceiver to transmit, or set the break-in function ON (p. ??).

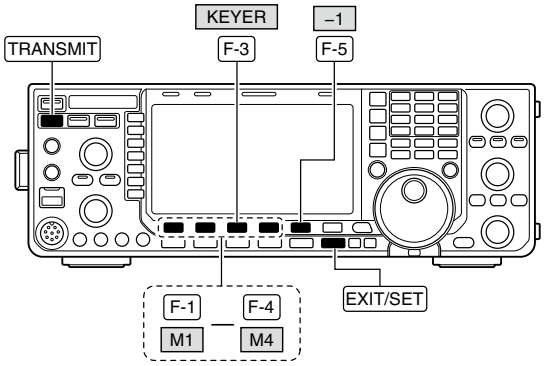
③Push one of the function keys (**[M1] (F-1)** to **[M4] (F-4)**) to send the contents of the memory keyer.

- Pushing and holding a function key for 1 sec. or push **[REPEAT] (F-6)** while sending the contents of the memory keyer to send the contents repeatedly; push any function key except for to cancel the transmission.
- The contest serial number counter counts each time the contents are sent.
- Push **[–1] (F-5)** to reduce the contest serial number count by 1 before sending the contents of the memory keyer to a station a second time.
- "M1"–"M4" are highlighted while transmitting.
- "" appears while transmitting repeatedly.
- Set the repeat interval of the memory keyer to 1–60 sec. (1 sec. steps). See p. ?? for keyer set mode.

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

For your information

When an external keypad is connected to [KEY] connector on the rear panel, or one of [F-1]–[F-4] key of the keyboard that is connected to the [USB] (A) connector on the front panel is pushed, the programmed contents, M1—M4, can be transmitted without selecting the memory keyer screen.
See pgs. ??, ?? for details.



• Memory keyer screen

◇ Editing a memory keyer

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-6)** 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	Characters
ABC	A to Z (capital letters)
123	0 to 9 (numbers)
Symbol	/ ? ^ . , @ ✱

NOTE:
"^" is used to transmit a string of characters with no inter-character space. 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 available only for one memory keyer channel at a time. Memory keyer channel M2 used "✱" by default.

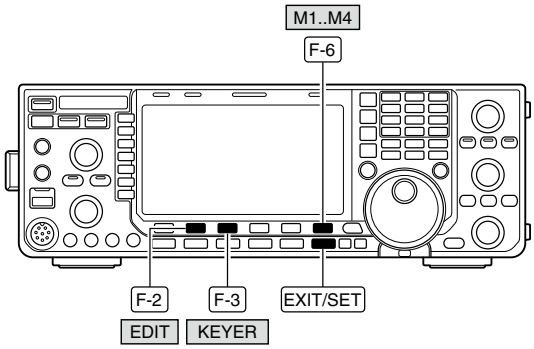
⑤ Push **[◀] (F-1)** or **[▶] (F-2)** to move the cursor backwards or forwards, respectively.
- Pushing **[DEL] (F-3)** deletes a character and **[SPACE] (F-4)** inserts a space.

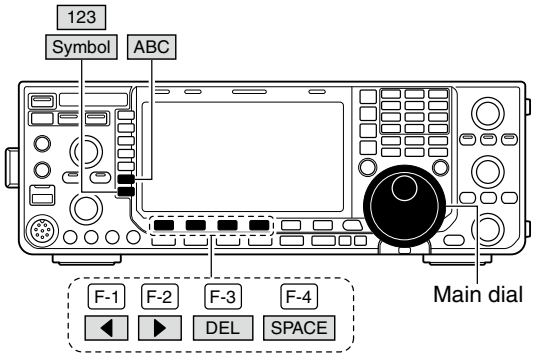
⑥ Repeat steps ④ and ⑤ to input the desired characters.

⑦ Push **[EXIT/SET]** twice to return to normal screen.

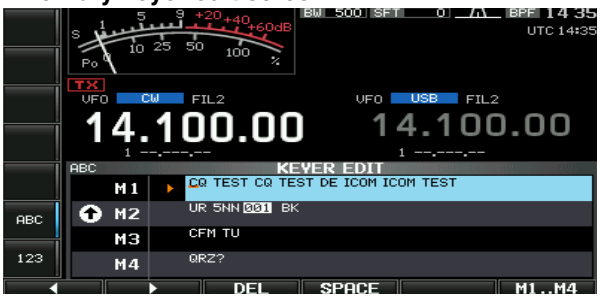
✔ For your convenience

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





• 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?

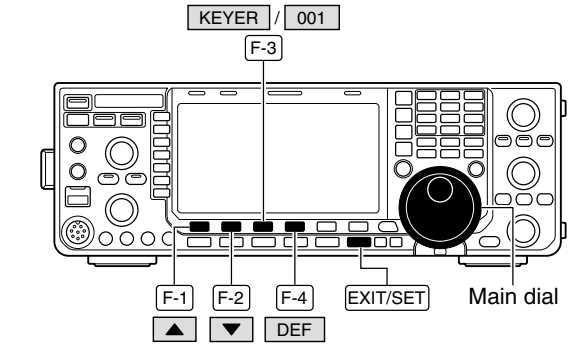
◇ Contest number set mode

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.

Short morse numbers are also referred to as “cut” 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.

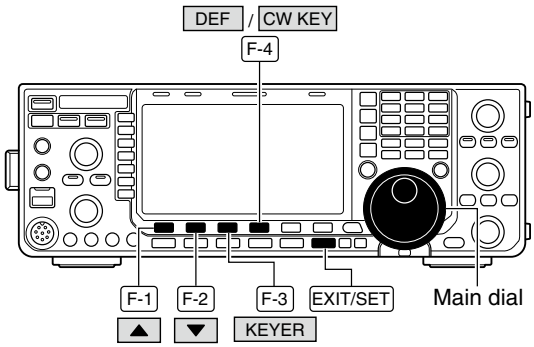
- Rotate the main dial to change the number, or push and hold **[001CLR] (F-4)** for 1 sec. to reset the current number to 001.

◇ Keyer set mode

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

• Setting contents

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



• Keyer set mode screen

Keyer Repeat Time — 2s

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

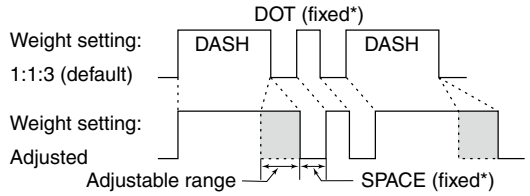
• 1 to 60 sec. in 1 sec. steps can be selected. (default: 2 sec.)

Dot/Dash Ratio — M2

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.

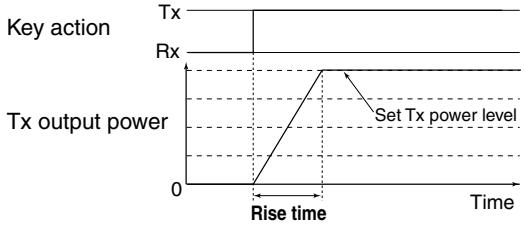
Rise Time — 4ms

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

• 2, 4, 6, 8 or 10 msec. can be selected. (default: 4 msec.)

Key clicks on nearby frequencies can be generated if the rise time of a CW waveform is too short.

• About rise time



Continues to the next page.

◇ Keyer set mode (continued)

Paddle Polarity	Normal
This item sets the paddle dot-dash 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]** keys can be used for CW. • OFF **: [UP]/[DN]** keys cannot be used for CW. **NOTE:** When "ON" is selected, the frequency and memory channel cannot be changed using the **[UP]/[DN]** keys.

■ RTTY (FSK) operation

A DSP-based high-quality Baudot RTTY encoder/decoder is built-in to the IC-7600. When connecting a PC keyboard (p. ??), 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-7600 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 PC's 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]** on the keyboard to transmit the TX memory contents.

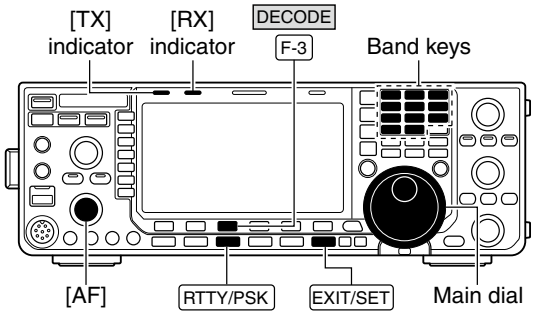
⑦ Press **[F12]** on the keyboard to return to receive.

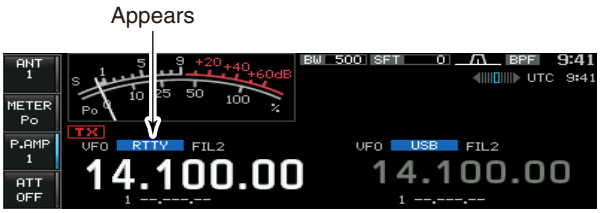
✔ For your convenience
The transmission contents can be typed before being transmitted.

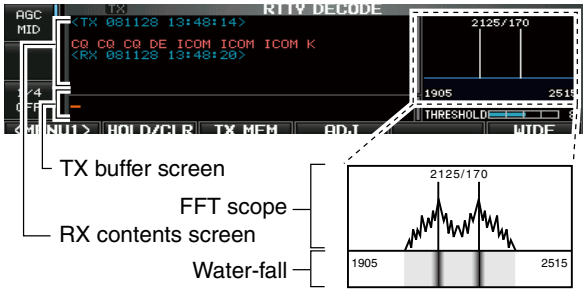
① Perform the steps ① to ④ above.
② Type from the connected keyboard to enter the message that you want to transmit.
- The typewritten contents are indicated in the TX buffer screen.

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.





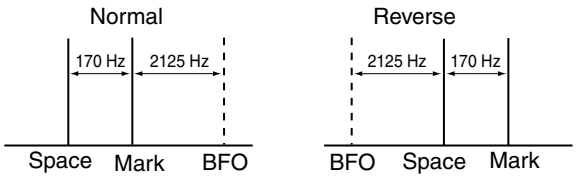


◇ About RTTY reverse mode

Received characters are occasionally garbled when the received signal is reversed between Mark and Space tones. This reversal can be caused by incorrect TNC connections, setting, commands, etc.

To receive a reversed RTTY signals correctly, select RTTY-R (RTTY Reverse) mode.

➥ During RTTY mode, push and hold **[RTTY/PSK]** for 1 sec. to select RTTY and RTTY-R mode.
• Check the received signal.

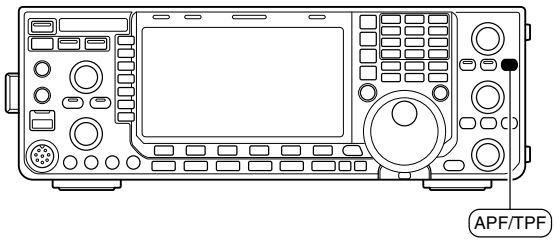


◇ Twin peak filter

The twin peak filter changes the 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 indicator on 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

①Push a band key to select the desired band.
②Push **[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.

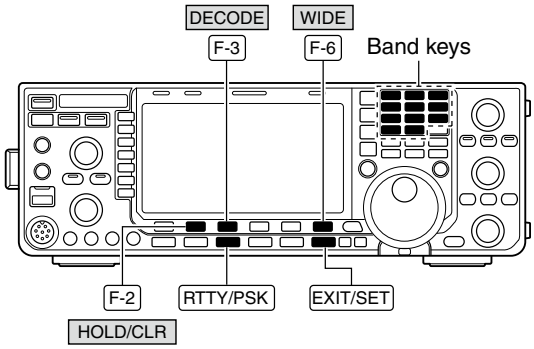
③Push **[DECODE] (F-3)** to display the decode screen.
- When tuned into an RTTY signal, decoded characters are displayed in the RX contents screen.

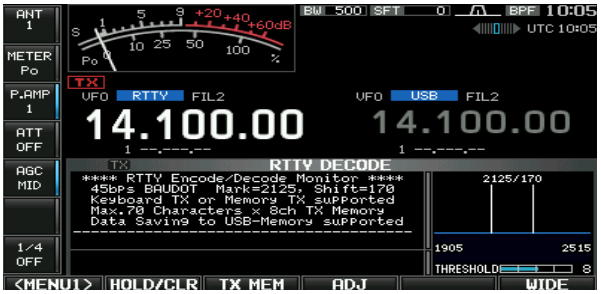
④Push **[HOLD/CLR] (F-2)** to freeze the current screen.
- "HOLD" appears while the function is in use.
- Push **[HOLD/CLR] (F-2)** again to cancel the function.

⑤Push **[WIDE] (F-6)** 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. ??, ??)

⑥Push 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.

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





• Wide screen indication

◇ Setting the decoder threshold level

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

①Select the RTTY decode screen as described above.
②Push **[ADJ] (F-4)** to select the threshold level setting condition.
③Rotate the main dial to adjust the RTTY decoder threshold level.
- Push and hold **[DEF] (F-5)** for 1 sec. to select the default setting.

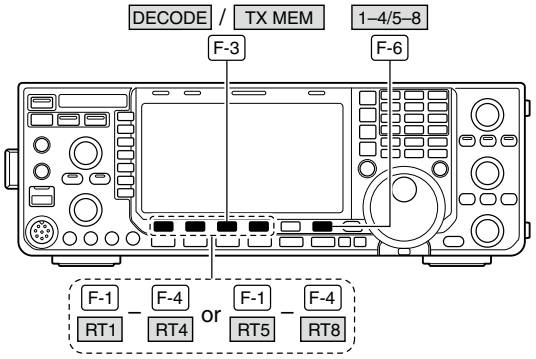
④Push **[ADJ] (F-4)** to exit from the threshold level setting condition.

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

◇ RTTY memory transmission

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

①During RTTY mode operation, push **[DECODE] (F-3)** to select RTTY decode screen.
②Push **[TX MEM] (F-3)** to select RTTY memory screen.
③Push **[1–4/5–8] (F-6)** 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.



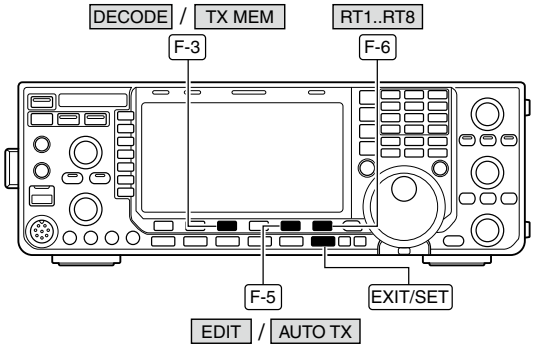
◇ Automatic transmission/reception setting

①During RTTY mode operation, push **[DECODE] (F-3)** to select RTTY decode screen.
②Push **[TX MEM] (F-3)** to select RTTY memory screen, then push **[EDIT] (F-5)** to select RTTY memory edit screen.
- RTTY memory contents of the Channel 1 (RT1) is selected.

③Push **[RT1..RT8] (F-6)** several times to select the desired RTTY memory.
④Push **[AUTO TX] (F-5)** 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.

⑤Push **[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

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

• Programming contents

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

②Push **[TX MEM] (F-3)** to select RTTY memory screen, then push **[EDIT] (F-5)** to select RTTY memory edit screen.
- RTTY memory contents of the Channel 1 (RT1) is selected.

③Push **[RT1..RT8] (F-6)** several times to select the desired RTTY memory channel to be edited.

④Push **[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.
- **[Symbol] (MF7)** appears when **[123] (MF7)** is pushed when "123" character group is selected.
- Selectable characters (using the main dial);

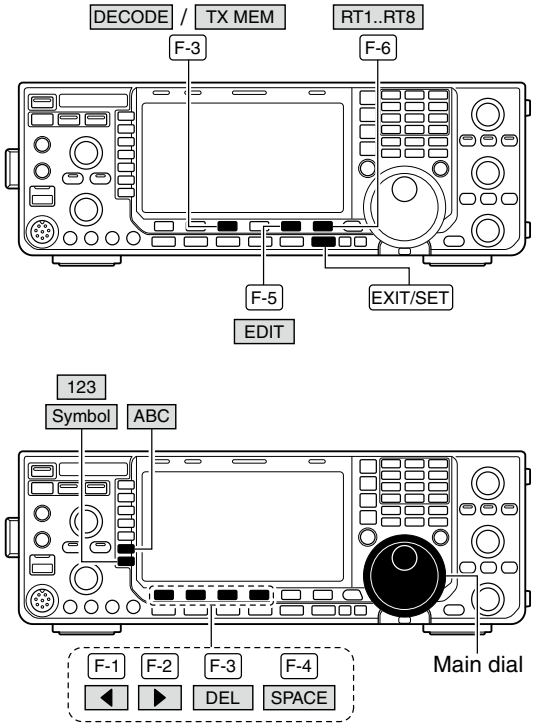
Key selection	Characters
ABC	A to Z (capital letters)
123	0 to 9 (numbers)
Symbol	! $ & ? " ' – / . , : ; ( ) ↵

⑤Push **[◀] (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.

⑥Repeat steps ④ and ⑤ to input the desired characters.

⑦Push **[EXIT/SET]** to set the contents and exit RTTY memory edit screen.

> ✔ ***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.



• RTTY memory edit screen

• Pre-programmed contents

CH	Contents
RT1	↵DE ICOM ICOM K↵
RT2	↵DE ICOM ICOM ICOM K↵
RT3	↵QSL UR 599–599 BK↵
RT4	↵QSL DE ICOM ICOM UR 599–599 BK↵
RT5	↵73 GL SK↵
RT6	↵CQ CQ CQ DE ICOM ICOM ICOM K↵
RT7	↵MY TRANSCEIVER IS IC–7600 & ANTENNA IS A 3–ELEMENT TRIBAND YAGI.↵
RT8	↵MY RTTY EQUIPMENT IS INTERNAL FSK UNIT & DEMODULATOR OF THE IC–7600.↵

◇ RTTY decode set mode

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

• Setting contents

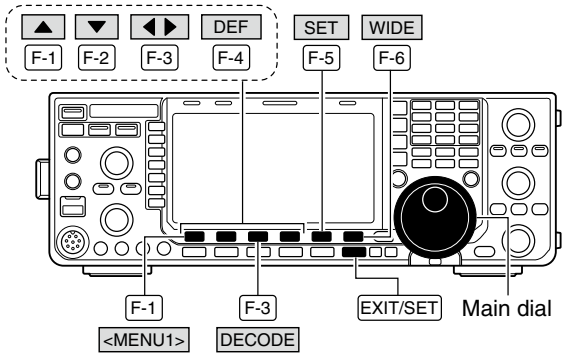
① During RTTY mode operation, push **[DECODE] (F-3)** to select RTTY decode screen.

② Push **[<MENU1>] (F-1)** to select the second RTTY decode menu, then push **[SET] (F-5)** to select RTTY decode set mode.
- Push **[WIDE] (F-6)** 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 decode set mode screen

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 of the default or smaller averaging 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 Docode 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.

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

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 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 — 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 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. ??). "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

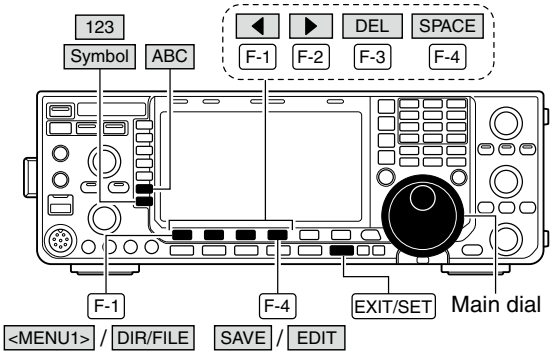
Set the text color in the TX buffer screen.
- The color is set in RGB format.
- The set color is indicated in the box beside the RGB scale.

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

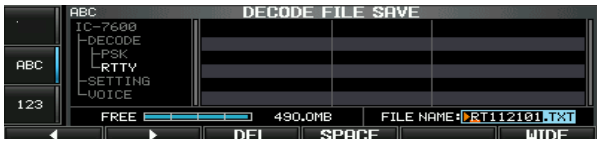
The USB-Memory is not supplied by Icom.



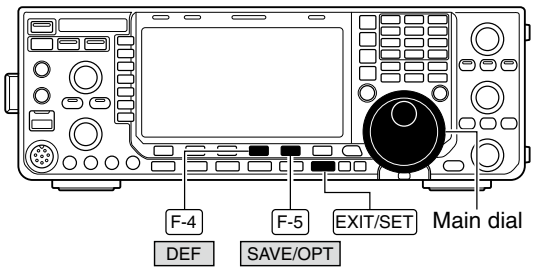
① During RTTY decode screen indication, push **[<MENU1>] (F-1)** to select the RTTY decode second menu.
② Push **[SAVE] (F-4)** to select decode file save screen.
③ Change the following conditions if desired.

- **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.

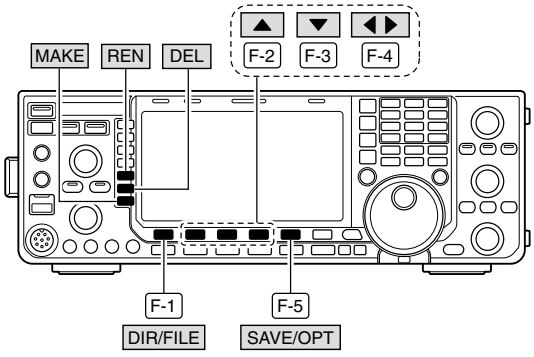
- **Decode file save screen— file name edit**



- **File format**
  1. Push and hold **[SAVE/OPT] (F-5)** for 1 sec. 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.

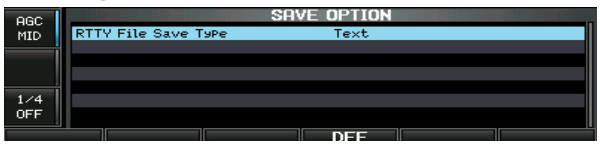


- **Saving location**
  1. Push **[DIR/FILE] (F-1)** to select tree view screen.
  2. Select the desired directory or folder in the USB-Memory.
     - Push **[◀ ▶] (F-4)** to select the upper directory.
     - Push **[▲] (F-2)** or **[▼] (F-3)** to select folder in the same directory.
     - Push and hold **[◀ ▶] (F-4)** for 1 sec. to select a folder in the directory.
     - Push **[REN] (MF5)** to rename the folder.
     - Push and hold **[DEL] (MF6)** for 1 sec. to delete the folder.
     - Push and hold **[MAKE] (MF7)** 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/OPT] (F-5)**.
- After saving is completed, returns to RTTY decode second menu automatically.

- **Save option screen**



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

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

■ PSK operation

A high-quality DSP-based PSK encoder/decoder is built-in to the IC-7600. When connecting a PC keyboard (p. ??), PSK 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-7600 has a built-in PSK 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 signals within the pass-band. Received PSK signals appear as vertical lines.

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.

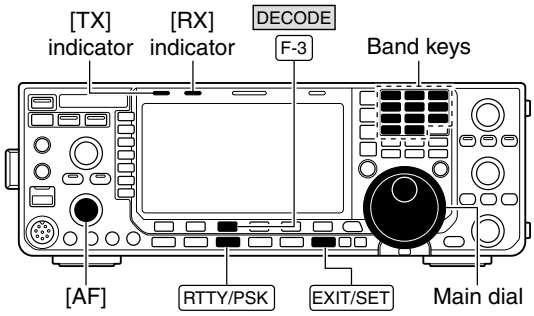
✔ For your convenience

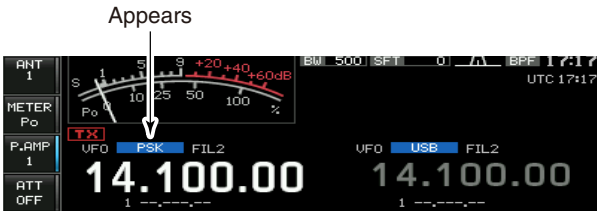
The transmission contents can be typed before being transmitted.

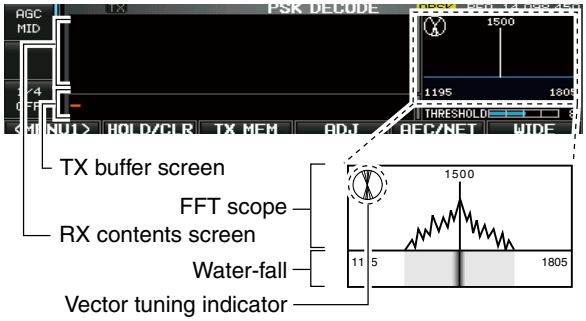
① Perform the steps ① to ④ above.
② Type from the connected keyboard to enter the message that you want to transmit.
- The message is shown in the TX buffer screen.

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.

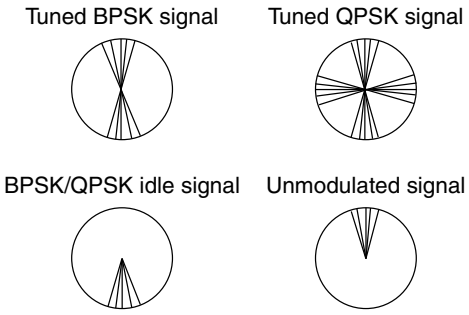
④ Press **[F12]** of the keyboard to return to receive.







• Vector tuning indicator indication example

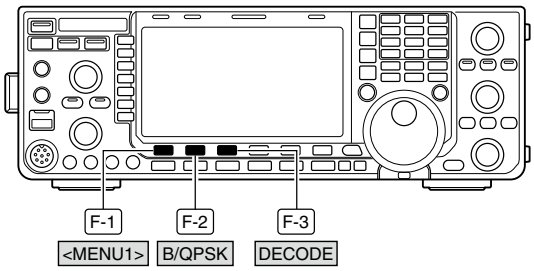


◇ About BPSK and QPSK modes

BPSK and QPSK modes are available for PSK.

- 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.

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



• PSK decode screen— BPSK mode

• PSK decode screen— QPSK mode

◇ Functions for the PSK decoder indication

①Push a band key to select the desired band.
②Push **[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.

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

④Push **[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.

⑤Push **[WIDE] (F-6)** 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. ??, ??)

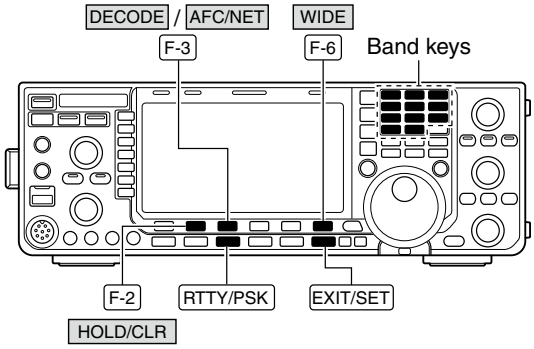
⑥Push and hold **[HOLD/CLR] (F-2)** for 1 sec. to clear the displayed characters.
- "HOLD" indicator disappears at the same time when the hold function is in use.

⑦Push **[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. ??)

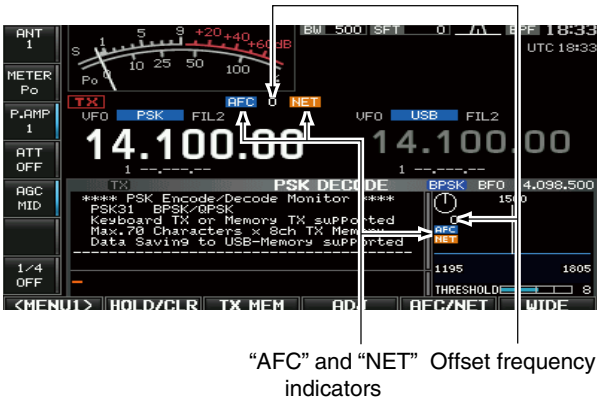
NOTE: The AFC function may not tune the signal properly when a weak PSK signal is received.

⑧Push **[AFC/NET] (F-3)** again to turn the NET function ON.
- "NET" appears additionally.

⑨Push and hold **[AFC/NET] (F-3)** for 1 sec. to add the offset frequency to the displayed frequency.
⑩Push **[EXIT/SET]** to close the PSK decode screen.



• AFC/NET indications



◇ Setting the decoder threshold level

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

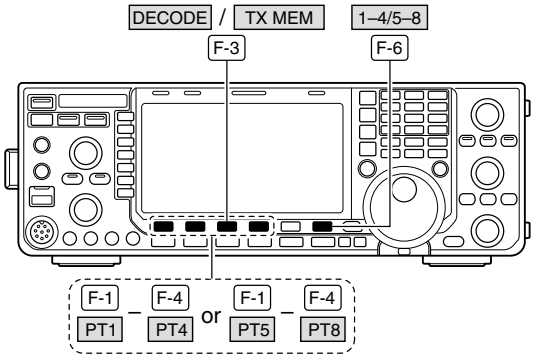
①Call up the PSK decode screen as described above.
②Push **[ADJ] (F-4)** to select the threshold level setting condition.
③Rotate the main dial to adjust the PSK decoder threshold level.
- Push and hold **[DEF] (F-5)** for 1 sec. to select the default setting.

④Push **[ADJ] (F-4)** 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.

①During PSK mode operation, push **[DECODE] (F-3)** to select PSK decode screen.
②Push **[TX MEM] (F-3)** to select PSK memory screen.
③Push **[1–4/5–8] (F-6)** to select memory bank then push one of the function keys (**[PT1] (F1)** 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.



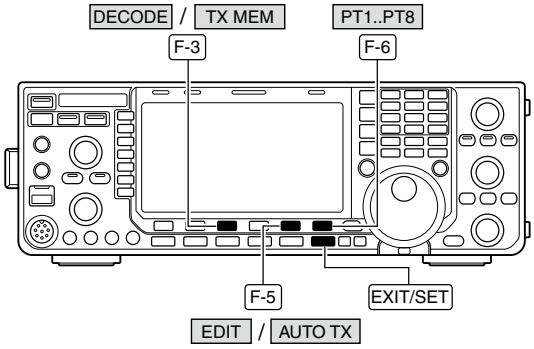
◇ Automatic transmission/reception setting

①During PSK mode operation, push **[DECODE] (F-3)** to select PSK decode screen.
②Push **[TX MEM] (F-3)** to select PSK memory screen, then push **[EDIT] (F-5)** to select PSK memory edit screen.
- PSK memory contents of Channel 1 (PT1) is selected.

③Push **[PT1..PT8] (F-6)** several times to select the desired PSK memory.
④Push **[AUTO TX] (F-5)** 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.

⑤Push **[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

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

• Programming contents

①During PSK mode operation, push **[DECODE] (F-3)** to select PSK decode screen.

②Push **[TX MEM] (F-3)** to select PSK memory screen, then push **[EDIT] (F-5)** to select PSK memory edit screen.
- PSK memory contents of the Channel 1 (PT1) is selected.

③Push **[PT1..PT8] (F-6)** several times to select the desired PSK memory channel to be edited.

④Push **[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 (using the main dial);

Key selection	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.)

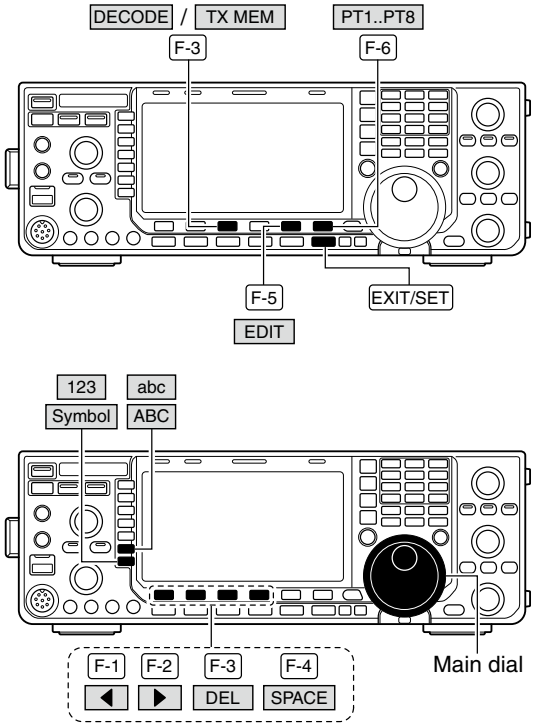
⑤Push **[◀] (F-1)** or **[▶] (F-2)** to move the cursor backwards or forwards, respectively.
- Pushing **[DEL] (F-3)** deletes a character and **[SPACE] (F-4)** inserts a space.

⑥Repeat steps ④ and ⑤ to input the desired characters.

⑦Push **[EXIT/SET]** to set the contents and exit PSK memory edit screen.

✔ 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.



• PSK memory edit screen

• Pre-programmed contents

CH	Contents
PT1	↵DE Icom Icom K↵
PT2	↵DE Icom Icom Icom K↵
PT3	↵QSL UR 599 599 BK↵
PT4	↵QSL DE Icom Icom UR 599 599 BK↵
PT5	↵73 GL SK↵
PT6	↵CQ CQ CQ DE Icom Icom Icom K↵
PT7	↵My transceiver is IC–7600 & Antenna is a 3–element triband yagi.↵
PT8	↵My PSK equipment is internal modulator & demodulator of the IC–7600.↵

◇ PSK decode set mode

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

• Setting contents

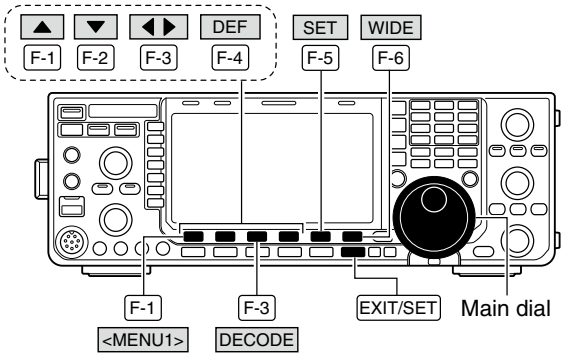
① During PSK mode operation, push **[DECODE] (F-3)** to select PSK decode screen.

② Push **[<MENU1>] (F-1)** to select the second PSK decode menu, then push **[SET] (F-5)** to select PSK decode set mode.
- Push **[WIDE] (F-6)** 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 averaging 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. ??). "UTC" is the default name of CLOCK2.

PSK Time Stamp (Frequency) — OFF

Selects the operating frequency display for time stamp usage.

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

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

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

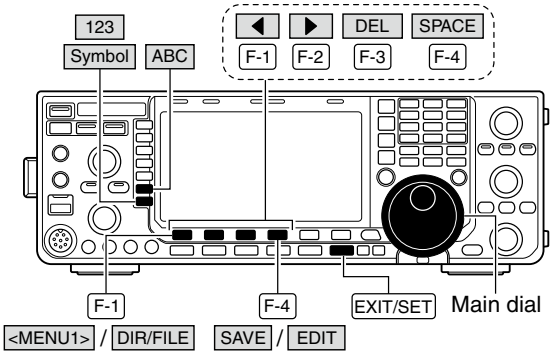
The contents of the PSK memory/received signal can be saved into the USB-Memory.

The USB-Memory is not supplied by Icom.

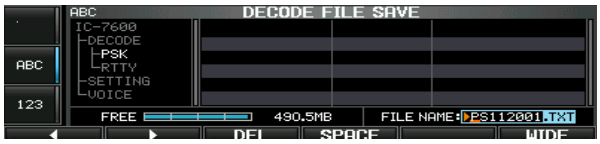
①During PSK decode screen indication, push **[<MENU1>] (F-1)** to select the PSK decode second menu.
②Push **[SAVE] (F-4)** to select decode file save screen.
③Change the following conditions if desired.

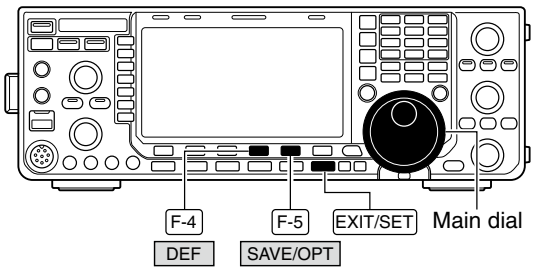
- **File name:**
  1 Push **[EDIT] (F-4)** to select file name edit condition.
    - Push **[DIR/FILE] (F-1)** several times to select the file name, if necessary.
  2 Push **[ABC] (MF6)**, **[123]** or **[Symbol] (MF7)** to select the character group, then rotate the main dial to select the character.
    - **[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 and hold **[SAVE/OPT] (F-5)** for 1 sec. 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] (MF5)** to rename the folder.
    - Push and hold **[DEL] (MF6)** for 1 sec. to delete the folder.
    - Push and hold **[MAKE] (MF7)** 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.

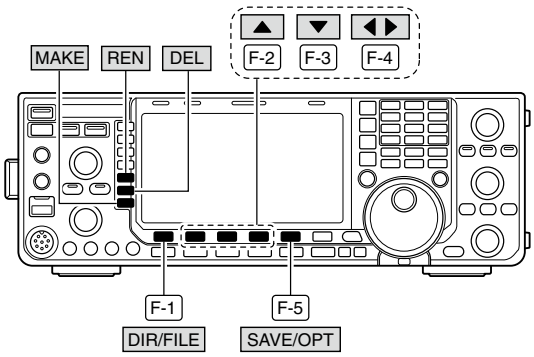
④Push **[SAVE/OPT] (F-5)**.
- After saving is completed, returns to PSK decode second menu automatically.



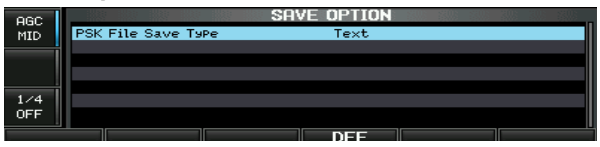
• Decode file save screen— file name edit







• Save option screen



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

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

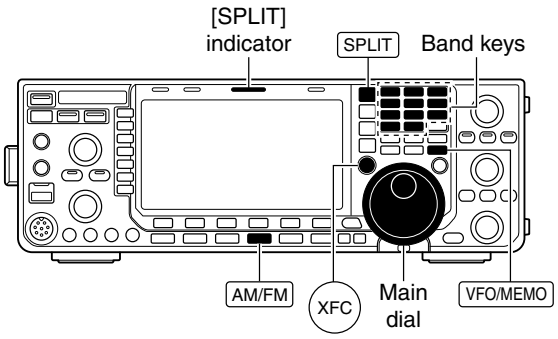
■ Repeater operation

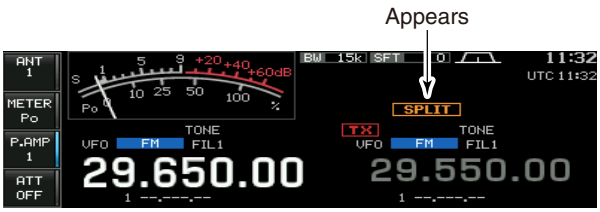
A repeater retransmits a received signal on a different frequency. When using a repeater, the transmit frequency is shifted from the receive frequency by an offset frequency. A repeater can be accessed using split frequency operation with the transmit frequency shifted to the repeater's receive frequency.

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

①Set the offset frequencies (HF, 50 MHz) and turn ON the quick split function in Others set mode in advance. (pgs. ??, ??)
②Push **[VFO/MEMO]** to select VFO mode.
③Push the desired band key.
④Push **[AM/FM]** several times to select FM mode.
⑤Set the receive frequency (repeater output frequency).
⑥Push 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].

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



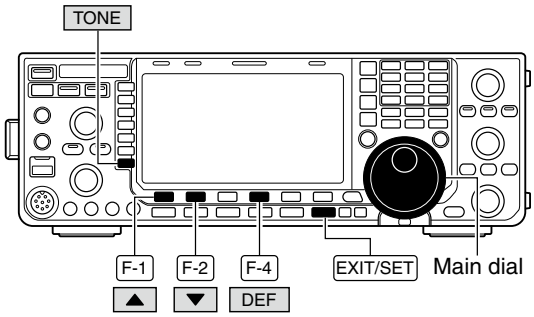


◇ Repeater access tone frequency setting

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.

①During FM mode operation, push and hold **[TONE] (MF7)** for 1 sec. to enter tone frequency set mode.
②Push **[▲] (F-1)** or **[▼] (F-2)** to select REPEATER TONE item.
③Rotate the main dial to select the desired repeater tone frequency.
- Push and hold **[DEF] (F-4)** for 1 sec. to select the default setting.

④Push **[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 frequency set mode

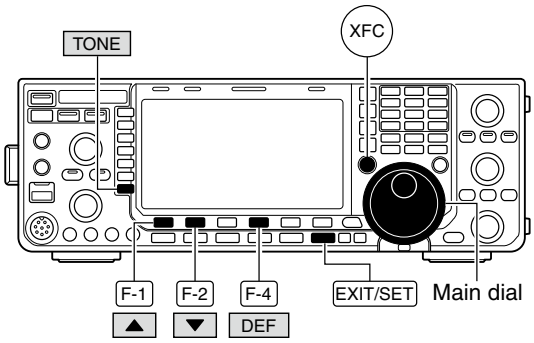
■ Tone squelch operation

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.

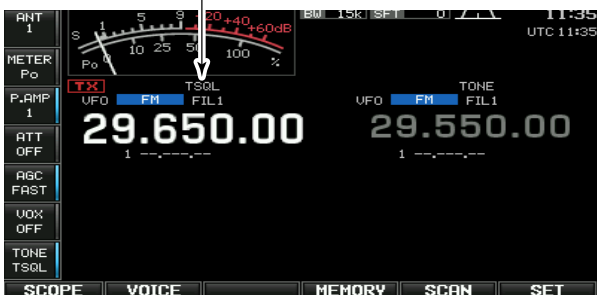
①Set the desired frequency band and select FM mode.
②Push **[TONE] (MF7)** to turn the tone squelch function ON.
• "TSQL" appears
③Push and hold **[TONE] (MF7)** for 1 sec. to enter tone frequency set mode.
④Push **[▲] (F-1)** or **[▼] (F-2)** to select T-SQL TONE item.
⑤Rotate the main dial to select the desired tone squelch frequency.
• Push and hold **[DEF] (F-4)** for 1 sec. to select the default setting.
⑥Push **[EXIT/SET]** to return to the previous indication.
⑦When 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]**.
⑧Operate the transceiver in the normal way.
⑨To cancel the tone squelch, push **[TONE] (MF7)** 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	



Appears



• Tone frequency set mode

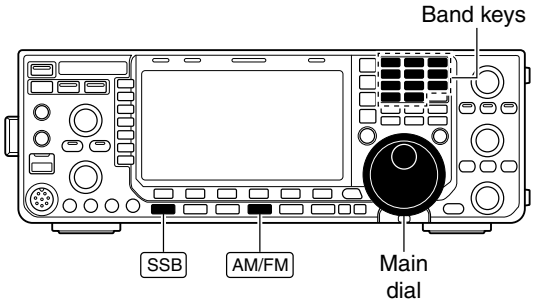
■ Data mode (AFSK) operation

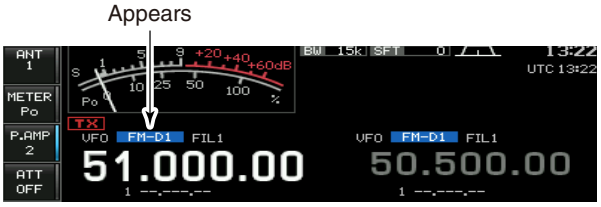
When operating AMTOR or PACKET with your TNC and/or PC software, consult the manual that comes with the TNC and/or the software.

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

⑤Rotate 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, the 1/4 tuning function can be used for critical tuning.

⑥Operate 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.

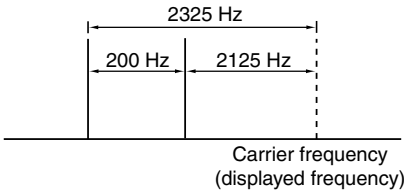




NOTE: When data mode 1 (D1) is selected, the audio input from the [ACC1] (pin 4) is used for transmission instead of [MIC]'s. (Modulation input connector can be changed in ACC set mode (pgs. ??, ??)
The fixed condition is used for SSB data transmission as follows:
- [COMP] : OFF
- Tx bandwidth : MID
- Tx Tone (Bass) : 0
- Tx Tone (Trebles) : 0

✔ For your information
Carrier frequency is displayed when SSB data mode is selected.
See the diagram at right for the tone-pair example.

• Tone-pair example



■ Spectrum scope screen

This DSP-based spectrum scope allows you to display the frequency and relative signal strength of received signals on the strengths of signals. The IC-7600 has two modes for the spectrum display— one is center mode, and the other is fixed mode.
In addition, the IC-7600 has a mini scope screen to save screen space.

◇ Center mode

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 **[SPAN] (F-1)** for 1 sec. to return to ±2.5 kHz span.
- Sweep speed is selectable for each span independently in scope set mode. (pgs. ??, ??)

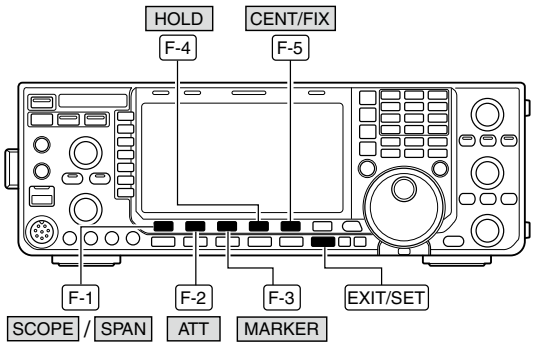
⑤ Push **[ATT] (F-2)** several times to activate an attenuator or turn the attenuator OFF.
- 10, 20 and 30 dB attenuators are available.
- Push and hold **[ATT] (F-2)** for 1 sec. to turn OFF the attenuator.

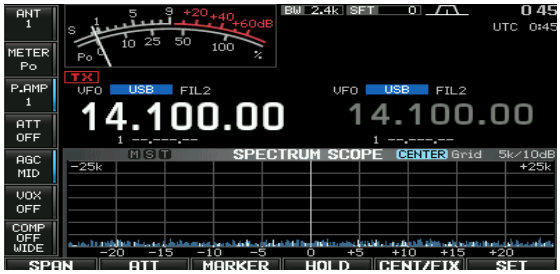
⑥ Push **[MARKER] (F-3)** to turn the marker for transmit frequency ON or OFF.
- "T" displays the marker at the transmit frequency.
- "S" displays the marker at the sub readout frequency.
- "<<" or ">>" appears when the marker is out of range.
- The spectrum scope shows the transmit signal while transmitting. This can be deactivated in scope set mode. (p. ??)
- The spectrum scope shows the peak level hold 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. ??)

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

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

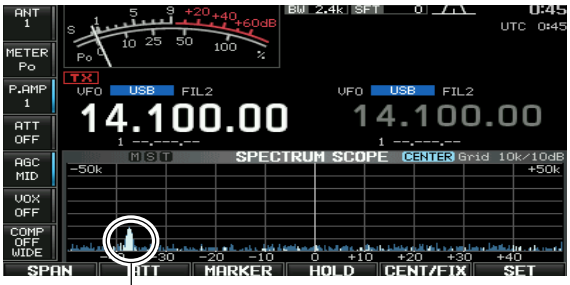
NOTE: If a strong signal is received, a ghost signal may also appear. Push **[ATT] (F-2)** several times to activate the spectrum scope attenuator in this case. Spurious signals may be displayed. They are generated in the internal scope circuit and do not indicate a transceiver malfunction.





• Scope spurious signal example

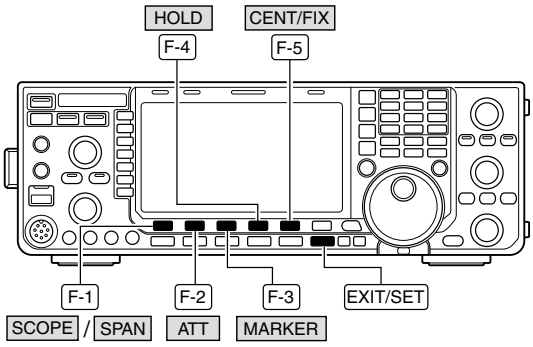
Spurious signals may be received on the spectrum scope screen regardless of the transceiver's state (TX or RX). They are generated in the scope circuit. This does not indicate a transceiver malfunction.

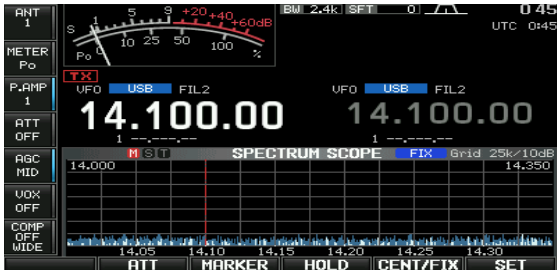


Scope spurious example

◇ Fixed mode

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





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

④Push **[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.

⑤Push **[MARKER] (F-3)** several times to select the marker for transmit frequency or turn the marker OFF.
- "T" displays the marker at the transmit frequency.
- "S" displays the marker at the sub readout frequency.
- "M" displays the marker at the main readout frequency. (always displayed)
- "<<" or ">>" appears when the marker is out of range.
- The spectrum scope shows the transmit signal while transmitting. This can be deactivated in scope set mode. (p. ??)
- The spectrum scope shows the peak level hold 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. ??)

⑥Push **[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.

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

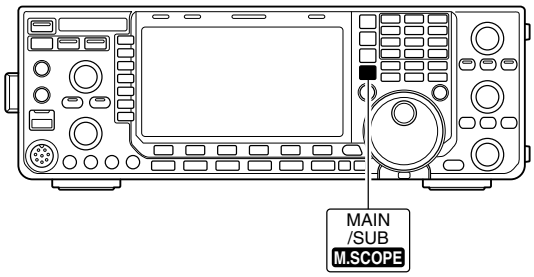
NOTE: If a strong signal is received, a ghost signal may appear. Push **[ATT] (F-2)** several times to activate the spectrum scope attenuator in this case.

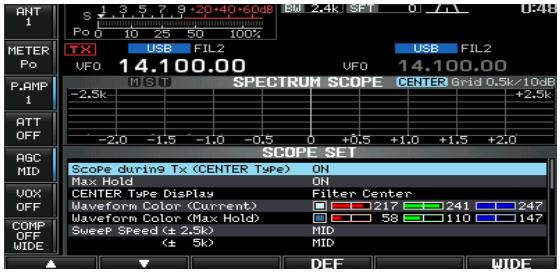
The scope bandwidth can be specified for each frequency band independently in scope set mode. (pgs. ?? to ??)

◇ 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.

①Set the scope mode (center or fixed), marker, attenuator, span, etc. in advance. (pgs. ??, ??)
②Push and hold **[MAIN/SUB M.SCOPE]** for 1 sec. to select the mini scope indication.
- The S/RF meter type during mini scope indication can be selected in display set mode (Meter Type (Wide Screen) item). (p. ??)





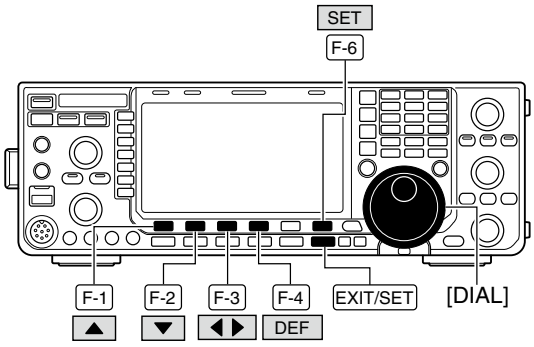
◇ Scope set mode

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

①During spectrum scope display ON, push **[SET] (F-6)** to select scope set mode screen.
- Push **[WIDE] (F-6)** to toggle the screen size between normal and wide.

②Push **[▲] (F-1)** or **[▼] (F-2)** to select the desired set item.
③Set 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.

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



◇ Scope set mode (continued)

Scope during Tx (CENTER Type) — **ON**

Turn display of the transmit signal ON and OFF.

NOTE: Transmit signal display is available for the center mode only.

Max Hold — **ON**

Turn the peak level hold 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) — 217 241 247

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) — 58 110 147

Set the waveform color for the received 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: Signals 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: Signals 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.

As edge frequencies are set, the other edge frequency will be automatically set for a display band width of 5 kHz to a maximum of 500 kHz.

(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.

As edge frequencies are set, the other edge frequency will be automatically set for a display band width of 5 kHz to a maximum of 500 kHz.

(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.

As edge frequencies are set, the other edge frequency will be automatically set for a display band width of 5 kHz to a maximum of 500 kHz.

◇ 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. As edge frequencies are set, the other edge frequency will be automatically set for a display band width of 5 kHz to a maximum of 500 kHz.

(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. As edge frequencies are set, the other edge frequency will be automatically set for a display band width of 5 kHz to a maximum of 500 kHz.

(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. As edge frequencies are set, the other edge frequency will be automatically set for a display band width of 5 kHz to a maximum of 500 kHz.

(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. As edge frequencies are set, the other edge frequency will be automatically set for a display band width of 5 kHz to a maximum of 500 kHz.

(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. As edge frequencies are set, the other edge frequency will be automatically set for a display band width of 5 kHz to a maximum of 500 kHz.

◇ Scope set mode (continued)

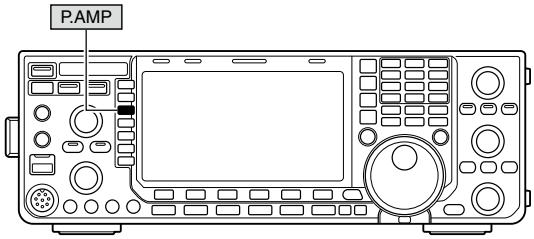
(26.00 – 30.00)	28.000 – 28.500 MHz
Set the scope edge frequencies for fixed mode scope when the 26 to 30 MHz band is selected.	• Set the frequencies within 26.000 to 30.000 MHz range in 1 kHz steps. As edge frequencies are set, the other edge frequency will be automatically set for a display band width of 5 kHz to a maximum of 500 kHz.

(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. As edge frequencies are set, the other edge frequency will be automatically set for a display band width of 5 kHz to a maximum of 500 kHz.

(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. As edge frequencies are set, the other edge frequency will be automatically set for a display band width of 5 kHz to a maximum of 500 kHz.

■ 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.
➥ Push and hold **[P.AMP] (MF3)** for 1 sec. to turn the preamp function OFF.

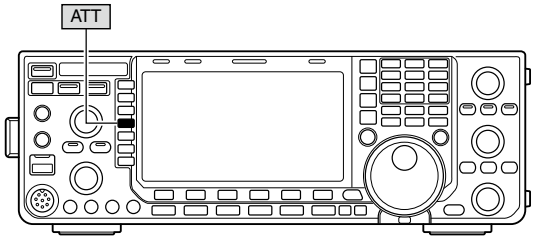
P.AMP 1	For all HF bands
P.AMP 2	High-gain preamp for 24 MHz band and above

✔ 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 broadcast 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

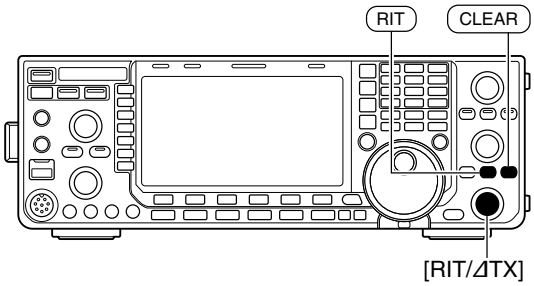
■ RIT function

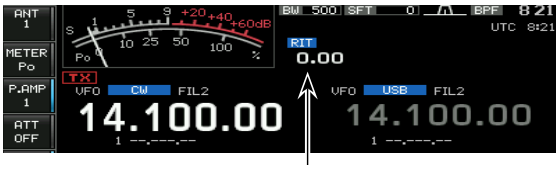
The RIT (Receive Increment Tuning) function compensates for off-frequency operation of the received station.

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

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

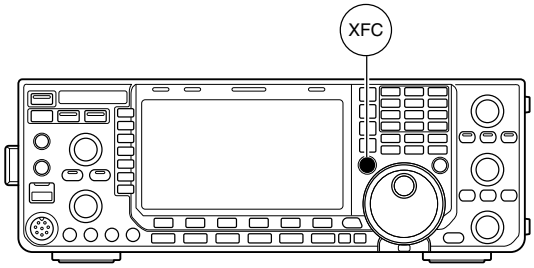
②Rotate the **[RIT/⊿TX]** control.
- Push and hold **[CLEAR]** for 1 sec. to reset the RIT frequency.
- Push **[CLEAR]** momentarily to reset the RIT frequency when the quick RIT/⊿TX clear function is ON. (p. ??)
- Push and hold **[RIT]** for 1 sec. to add the shift frequency to the operating frequency.





◇ 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.

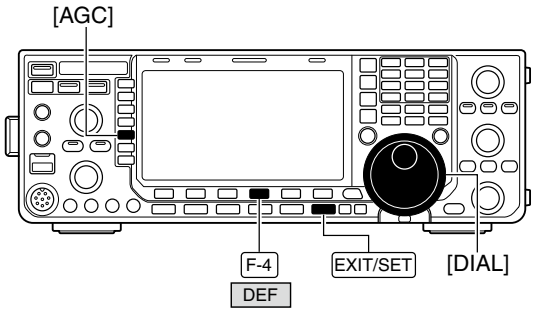
■ AGC function

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.



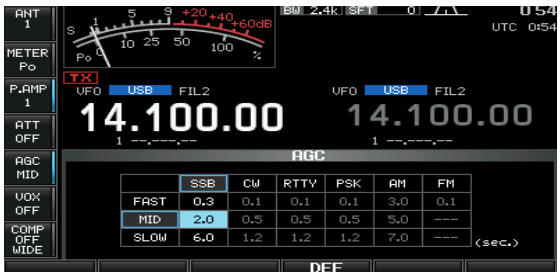
◇ Setting the AGC time constant preset value

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.



• Selectable AGC time constant (unit: sec.)

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

■ Twin PBT operation

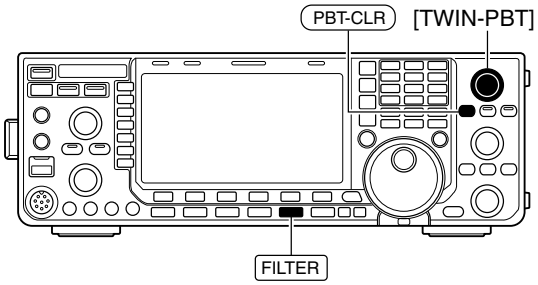
<MODE> SSB/CW/RTTY/PSK/AM

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-7600 uses DSP for the PBT function. Moving both **[TWIN-PBT]** controls to the same position shifts the IF both above and below the received frequency.

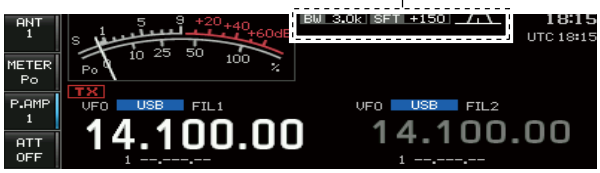
➥ The LCD shows the passband width and shift frequency graphically.
  • The indicator on the **[PBT-CLR]** switch lights when PBT is in use.
➥ Push and hold **[FILTER]** for 1 sec. to enter the filter set screen. Current passband width and shift frequency is displayed in the filter set screen.
➥ To set 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.

- The **[TWIN-PBT]** controls 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 the **[TWIN-PBT]** controls, noise may occur. This comes from the DSP unit and does not indicate an equipment malfunction.

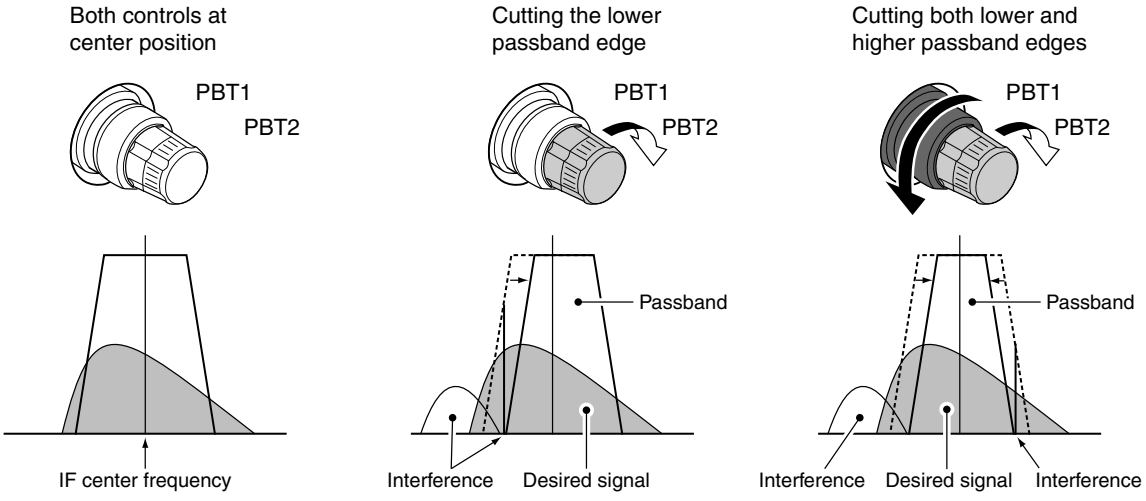


Shows filter width, shifting value and condition



• 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

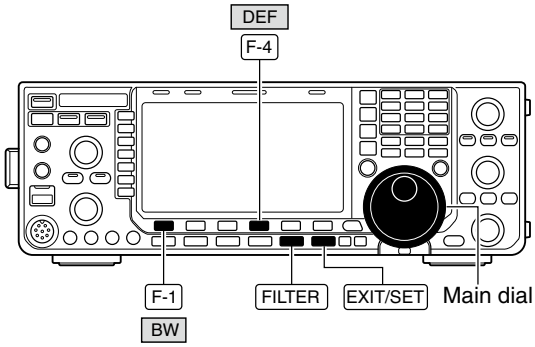
① Select the desired mode.
② Push **[FILTER]** several times to select the IF filter 1, 2 or 3.
- The selected passband width and filter number is displayed in the LCD.

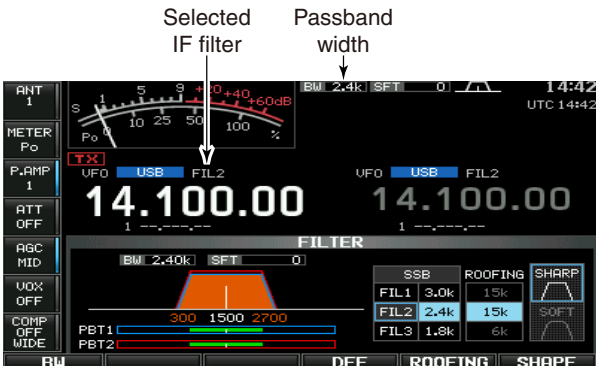
◇ Filter passband width setting (except FM mode)

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 Rotate the main dial after pushing **[BW] (F-1)** to set the desired passband width. Then push **[BW] (F-1)**.
- 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 a default value.

⑤ Repeat steps ② to ④ if desired for other modes.
⑥ Push **[EXIT/SET]** to exit filter set screen.





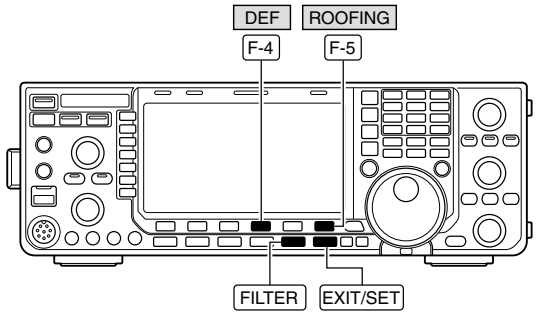
The PBT shift frequencies are cleared when the passband width is changed.

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

◇ Roofing filter selection

The IC-7600 has 3, 6 and 15 kHz roofing filters at the 1st IF frequency. The roofing filter provides interference reduction from nearby strong signals.

①Push and hold **[FILTER]** for 1 sec. to enter filter set screen.
②Select any mode except FM.
③Push **[ROOFING] (F-5)** to select the desired filter width from 15 kHz, 6 kHz and 3 kHz.
• Push and hold **[DEF] (F-4)** for 1 sec. to select a default value.
④Push **[EXIT/SET]** to exit filter set screen.



• Filter set screen

• Default roofing filter (unit: kHz)

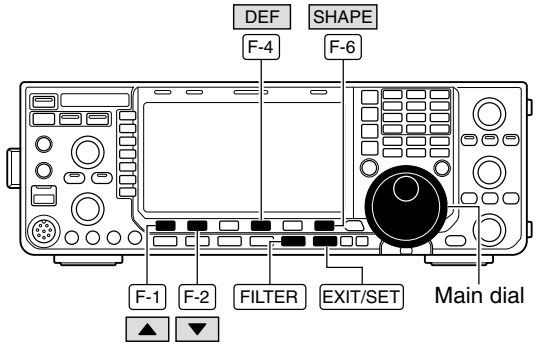
Mode	FIL1	FIL2	FIL3	Mode	FIL1	FIL2	FIL3
SSB	15	15	6	RTTY	15	6	6
SSB-D	6	6	6	PSK	6	6	6
CW	6	6	6	AM	15	15	15

◇ DSP filter shape

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

①Push and hold **[FILTER]** for 1 sec. to enter filter set screen.
②Select SSB, SSB data or CW mode.
③Push **[SHAPE] (F-6)** to select the desired filter shape from soft and sharp.
④Push **[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.

①Push and hold **[FILTER]** for 1 sec. to enter filter set screen.
②Push and hold **[SHAPE] (F-6)** for 1 sec. to enter filter shape set mode.
②Select the desired item using **[▲] (F-1)** or **[▼] (F-2)**.
③Rotate the main dial to select the filter shape from soft and sharp.
• Push and hold **[DEF] (F-4)** for 1 sec. to select a default value.
⑤Push **[EXIT/SET]** to exit filter shape set mode.

• Filter shape set mode

◇ Filter shape set mode (continued)

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.

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.

■ Dualwatch operation

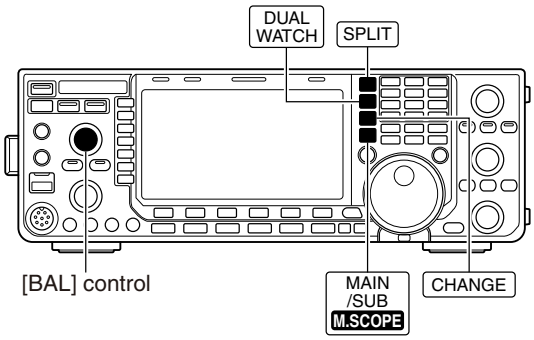
Dualwatch monitors 2 frequencies simultaneously. During dualwatch, both frequencies should be on the same band, because the bandpass filter in the RF circuit is selected for the main readout frequency.

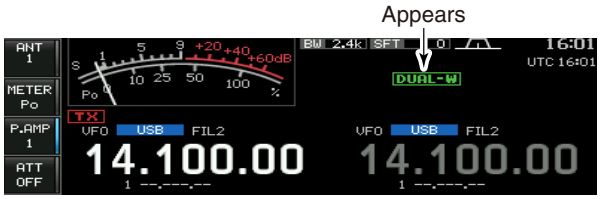
① Set a desired frequency into the main band.
② Push and hold **[DUALWATCH]** for 1 sec.
- "DUAL-W" appears.
- Equalized receive frequency appears on the sub band frequency readout. This quick dualwatch function can be turned OFF in set mode. (p. ??)
- Pushing **[DUALWATCH]** momentarily activates the dualwatch with the previously operated frequency.

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

⑤ Adjust the **[BAL]** control to set a suitable signal strength balance between the main and sub readout frequencies.
- S-meter shows the combined signal strength.

⑥ To transmit on the sub readout frequency, push **[CHANGE]** or **[SPLIT]**.





NOTE:
- A beat note may be heard depending on the frequency combination.
- The RIT function can be used for the main readout only.
- The ⊿TX function can be used for the transmit readout (main readout when the split function OFF; sub readout when the split function ON).

• Scanning during dualwatch

Scanning operates only for the main readout. To operate the scan during dualwatch, scan on the main readout and use the sub readout for your QSO using both dualwatch and split frequency operation.

① Program the desired programmed scan edges in the same amateur band. See p. ?? for programming.
- If you plan to operate a ⊿F scan, programming the scan edges may not be necessary.

② Push **[SPLIT]** to turn the split frequency function ON.
- "SPLIT" appears.

③ Select VFO mode for the main readout.

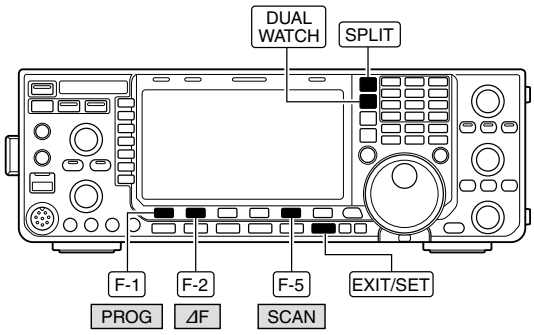
④ Set the desired operating frequency for the main readout.

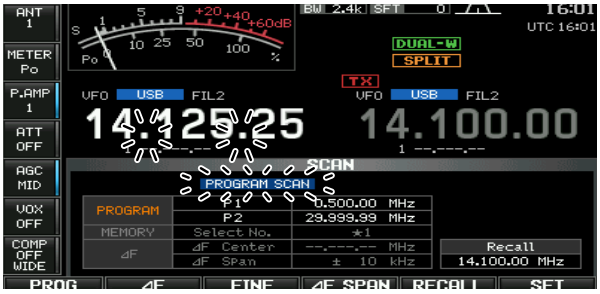
⑤ Push and hold **[DUALWATCH]** for 1 sec.
- "DUAL-W" appears.
- The main and sub readout frequencies are equalized and the dualwatch function is turned ON.

⑥ Push **[SCAN] (F-5)** to select the scan screen.
- Push **[EXIT/SET]** several times to close a multi-function screen, if necessary.

⑦ Push **[PROG] (F-1)** or **[⊿F] (F-2)** to start the programmed scan or ⊿F scan, respectively.
- Scan activates on the main readout between the programmed scan edges or within the ⊿F span.
- Transmitting on the sub readout stops the scan.

⑧ To cancel the scan, push **[EXIT/SET]**.





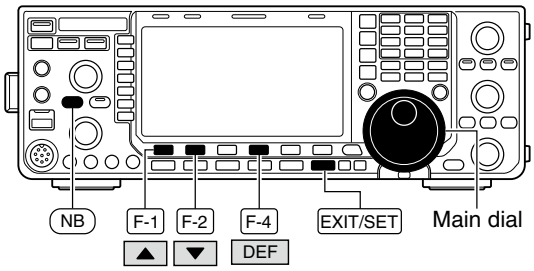
■ Noise blanker

<MODE> SSB/CW/RTTY/PSK/AM

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

➥ Push **[NB]** to turn the noise blanker function ON and OFF.
- The indicator on this switch lights green when when the noise blanker is ON.

When using the noise blanker, received signals may be distorted if they are excessively strong or for other types of noise than impulse. Turn the noise blanker OFF, or set the noise blanker threshold level (see below) to a shallow position in this case.



◇ NB set mode

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

①Push and hold **[NB]** for 1 sec. to enter NB set mode.
②Select the desired item using **[▲] (F-1)** or **[▼] (F-2)**.
③Rotate the main dial to the desired set value or condition.
- Push and hold **[DEF] (F-4)** for 1 sec. to select a default value.

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

• NB set mode

NB Level	50%
Set the noise blanker threshold level from 0% to 100%.	

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

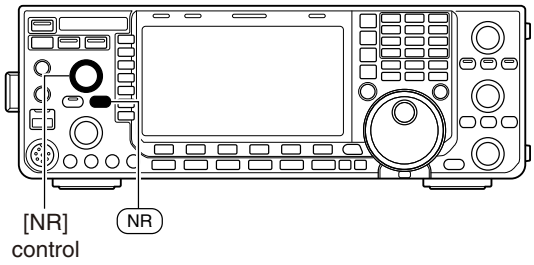
NB Width	50
Set the blanking duration from 1 to 100.	

■ Noise reduction

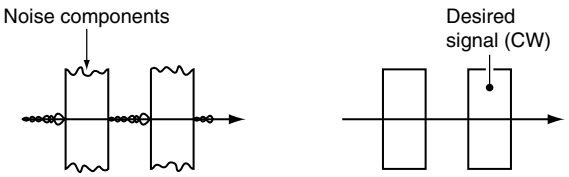
The noise reduction function reduces random noise components and enhances desired signals which are buried in noise. The DSP performs the random noise reduction function.

① Push **[NR]** to turn the noise reduction ON.
  • The indicator on this switch lights green.
② Rotate the **[NR]** control to adjust the noise reduction level.
③ Push **[NR]** to turn the noise reduction OFF.
  • The indicator goes off.

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



Noise reduction OFF **Noise reduction activated**

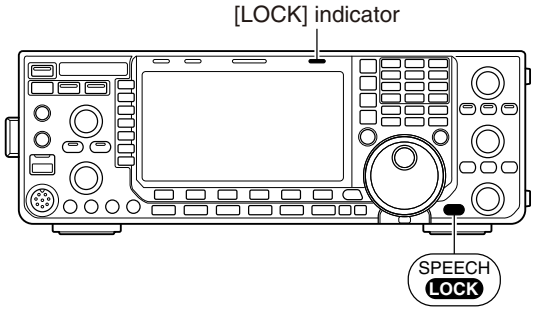


■ Dial lock function

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

➥ Push and hold **[SPEECH/LOCK]** for 1 sec. to toggle the dial lock function ON and OFF.
  • The [LOCK] indicator lights when the dial lock function is in use.

NOTE: When “LOCK/SPEECH” is selected in [[SPEECH/LOCK] Switch] item in others set mode, pushing **[SPEECH/LOCK]** activates the dial lock function. (p. ??)

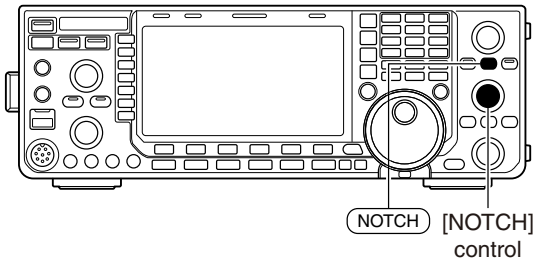


■ Notch function

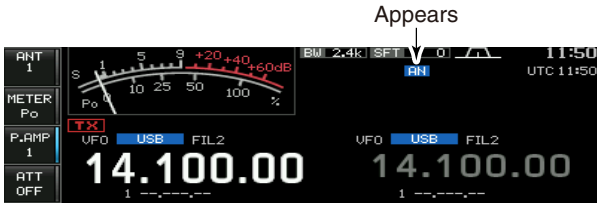
This transceiver has auto and manual notch functions.
The auto notch function uses DSP to automatically attenuate up to 3 beat tones, tuning signals, etc., even if they are moving. The manual notch can be set to attenuate a frequency via the **[NOTCH]** control.
The auto notch can be used in SSB, AM 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.
- The indicator on this switch lights green.
- When the manual notch function is ON, 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.

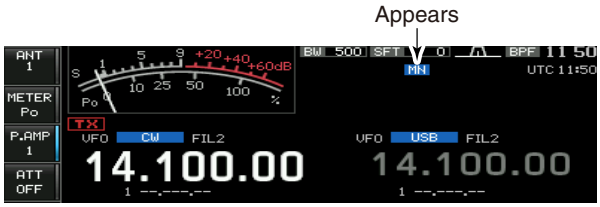
While tuning the manual notch, noise may be heard. This comes from the DSP unit and does not indicate an equipment malfunction.

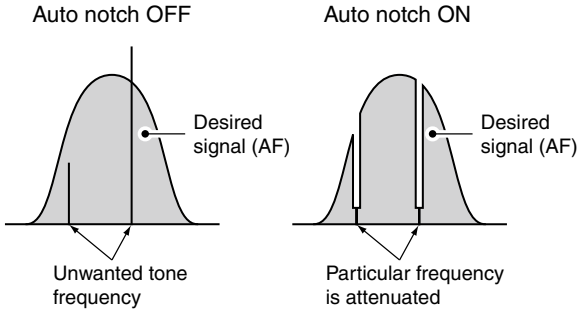


• Auto notch indication



• Manual notch indication





■ Autotune function

<MODE> CW/AM
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 activated.
- After 30 sec. has passed, the autotune function stops tuning automatically even it's still off-frequency.