THE TRANSCEIVER
IC-7800
Instruction Manual

A-6328H-1EX
Printed in Japan
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FOREWORD

Congratulations! You are the owner of the world's most advanced amateur HF/50 MHz transceiver— IC-7800. The IC-7800 is designed and built with Icom's superior technology and craftsmanship. With proper care, this product should provide you with years of trouble-free operation.

We would like to take a couple of moments of your time to thank you for making your IC-7800 your radio of choice, and hope you agree with Icom's philosophy of "technology first." Many hours of research and development went into the design of your IC-7800.

◇ *FEATURES*

❍ *Ultimate receiver performance +40 dBm of IP3 characteristics (HF bands only)*

❍ *Built-in Baudot RTTY and PSK31 modulator/demodulator and direct PC keyboard connection capability for RTTY and PSK31 operation without a PC*

❍ *Independent receiver circuits for main and sub bands provide perfect Dualwatch operation*

❍ *Up-graded real-time spectrum scope— center frequency and fix frequency modes, and mini-scope indications*

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-7800.

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 or personal injury, fire or electric shock.

TRADEMARKS

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PRECAUTIONS

⚠ **WARNING HIGH 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.

⚠ **CAUTION! NEVER** change the internal settings of the transceiver. This result in reduced transceiver performance and/or damage to the transceiver.

⚠ **CAUTION! NEVER** touch the transceiver top cover when transmitting continuously for long periods. It will become hot.

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!** The transceiver weighs approx. 25 kg (55 lb). 2 peoples should be present to carry, lift up or turn over the transceiver, etc.

⚠ **CAUTION!** The socket-outlet must be near the transceiver and must be easily accessible.

⚠ **ACHTUNG!** Die Steckdose muß nabe bei diesem Gerät angebracht und zugänglich sein.

⚠ **NEVER** let metal, wire or other objects touch any internal part or connectors on the rear panel of the transceiver. This may result in an electric shock.

⚠ **NEVER** let objects impede the operation of the cooling fan on the rear panel.

⚠ **NEVER** expose the transceiver to rain, snow or any liquids.

⚠ **NEVER** installing the transceiver in a place without adequate ventilation. Heat dissipation may be affected, and the transceiver may be damaged.

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

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

DO NOT push the PTT when not actually desiring to transmit.

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

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

AVOID placing the transceiver against walls or putting anything on top of the transceiver. This will obstruct heat dissipation.

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

BE CAREFUL! The top panel will become hot when operating the transceiver continuously for long periods.

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

Use Icom microphones only (supplied or optional). Other manufacturer's microphones have different pin assignments, and connection to the IC-7800 may damage the transceiver.

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

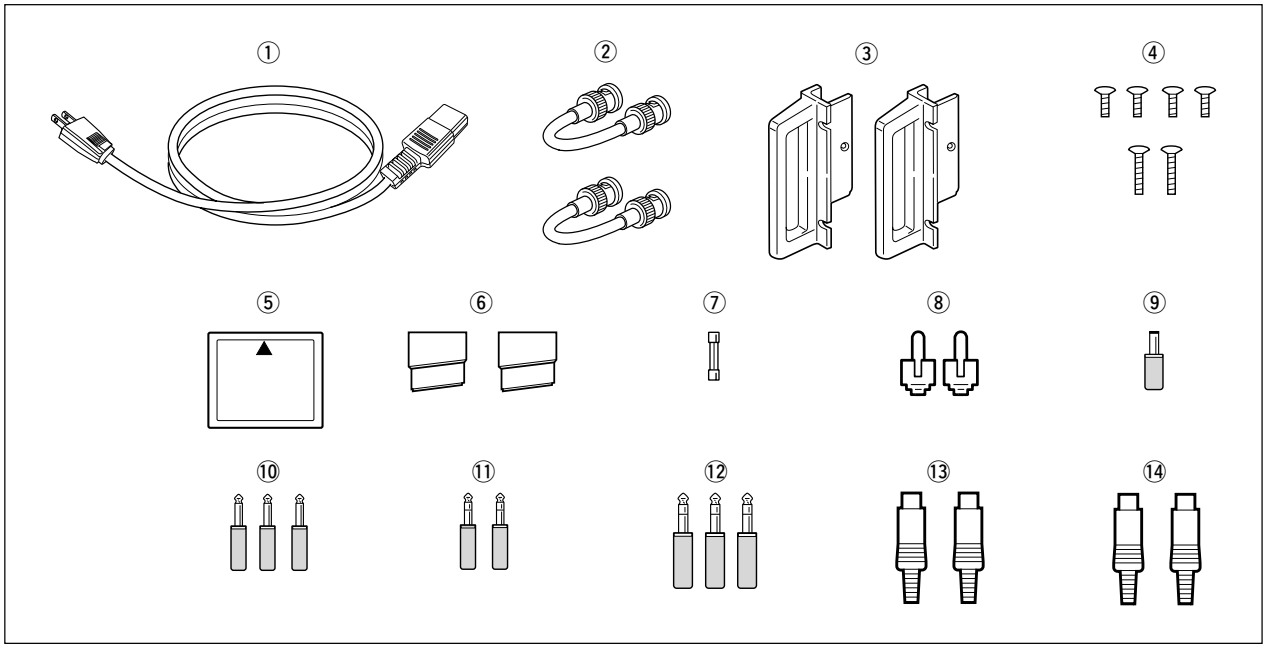
During maritime mobile operation, keep the transceiver and microphone as far away as possible from the magnetic navigation compass to prevent erroneous indications.

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

For U.S.A. only

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

SUPPLIED ACCESSORIES



① AC power cable* 1
② Antenna jumper cables 2
③ Rack mounting handles ..... 1 pair
④ Screws for rack mounting handles ..... 1 set
⑤ CF (Compact Flash) memory card 1
⑥ Stands ..... 1 pair
⑦ Spare fuse (FGB 2 A) 1
⑧ RCA plugs 2
⑨ DC power plug 1
⑩ 2-conductor 1⁄8″ plugs 3
⑪ 3-conductor 1⁄8″ plugs 2
⑫ 3-conductor 1⁄4″ plugs 3
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*May differ from that shown according to version

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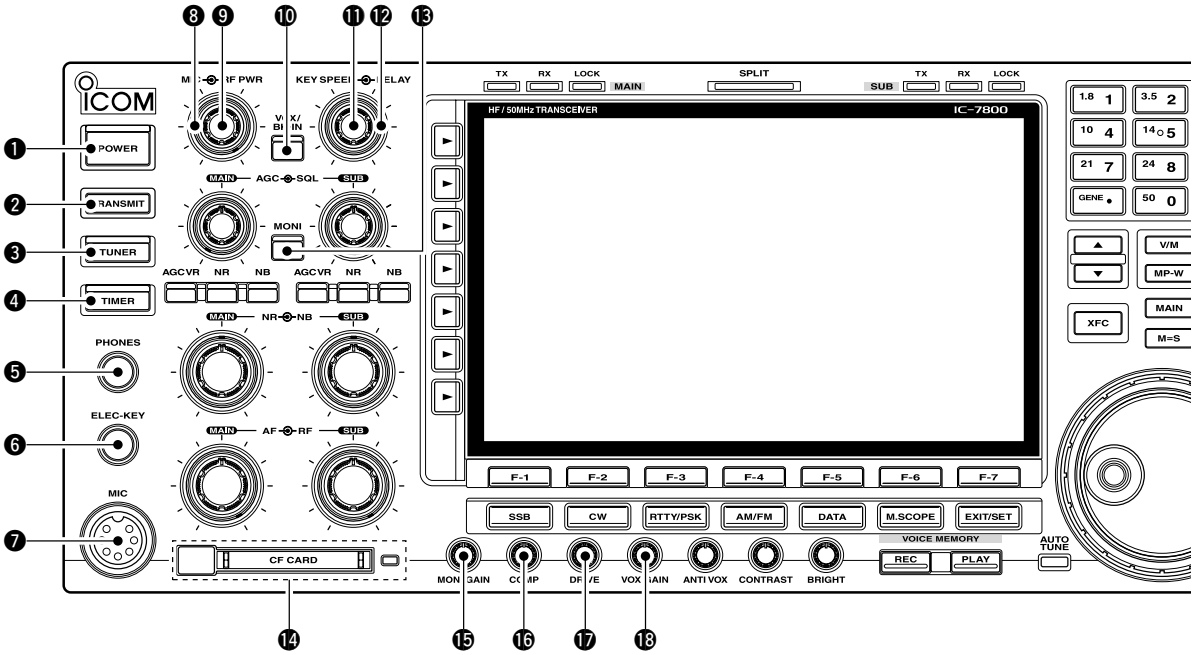
■ Front panel



❶ POWER SWITCH [POWER] (p. 3-2)

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

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

➥ Push for 1 sec. to turn the transceiver power OFF.
- The [POWER] indicator lights orange even the transceiver is powered OFF when the internal power supply is switched ON.

❷ TRANSMIT SWITCH [TRANSMIT]

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

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

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

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

❹ TIMER SWITCH [TIMER] (p. 11-4)

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

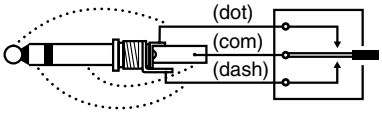
➥ Enters timer set mode when pushed for 1 sec.

❺ HEADPHONE JACK [PHONES]

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

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

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

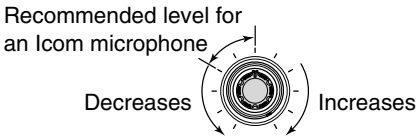


❼ MICROPHONE CONNECTOR [MIC]

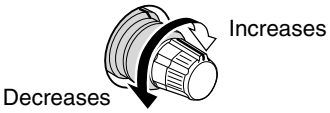
Accepts an optional microphone.
- See p. 15-4 for appropriate microphones.
- See p. 2-9 for microphone connector information.

❽ MIC GAIN CONTROL [MIC]
Adjusts microphone input gain.
- The transmit audio tone in SSB, AM and FM modes can be adjusted independently in set mode. (p. 12-4)

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



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

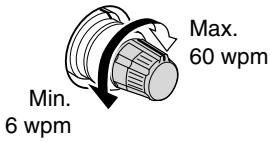


❿ VOX/BREAK-IN SWITCH [VOX/BK-IN]
➥ Push to turn the VOX function ON and OFF during SSB, AM and FM mode operation. (p. 6-2)
➥ Push to turn the break-in function ON (semi-break-in, full break-in) and OFF during CW mode operation. (p. 6-3)
➥ Push for 1 sec. to enter VOX set mode. (p. 6-2)

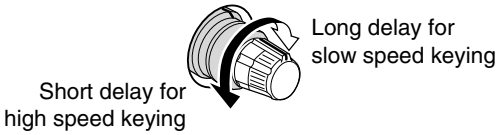
✔ What is the VOX function?
The VOX function (voice operated transmission) starts transmission without pushing the transmit switch or PTT switch when you speak into the microphone; then, automatically returns to receive when you stop speaking.

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

⓫ ELECTRONIC CW KEYER SPEED CONTROL [KEY SPEED] (p. 4-4)
Adjusts the internal electronic CW keyer's speed.
- 6 wpm (min.) to 60 wpm (max.) can be set.



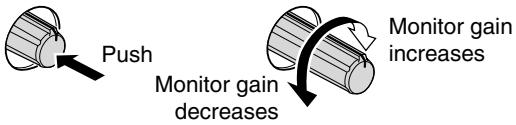
⓬ BREAK-IN DELAY CONTROL [DELAY] (p. 6-3)
Adjusts the transmit-to-receive switching delay time for CW semi break-in operations.



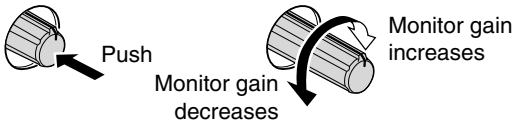
⓭ MONITOR SWITCH [MONI] (p. 6-4)
Monitors your transmitted IF signal.
- The CW sidetone functions regardless of [MONI] switch setting in CW mode.
- The [MONI] indicator above this switch lights green while the function is activated.

⓮ MEMORY CARD SLOT [CF CARD] (p. 2-3)
Insert the supplied CF (Compact Flash) memory card for both reading/storing a variety of transceiver's information or data.
- The indicator beside the slot lights or blinks when the transceiver accessing to the memory card for reading or writing data.
- Push-in the eject button to remove the memory card.

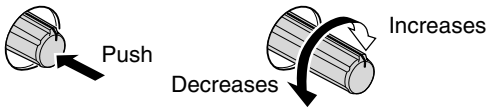
⓯ MONITOR GAIN CONTROL [MONI GAIN] (p. 6-4)
Adjusts the transmit IF signal monitor level.



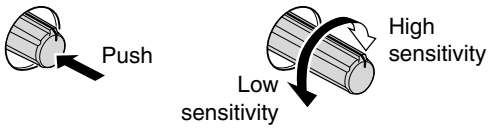
⓰ COMPRESSION LEVEL CONTROL [COMP] (p. 6-5)
Adjusts the speech compression level in SSB.



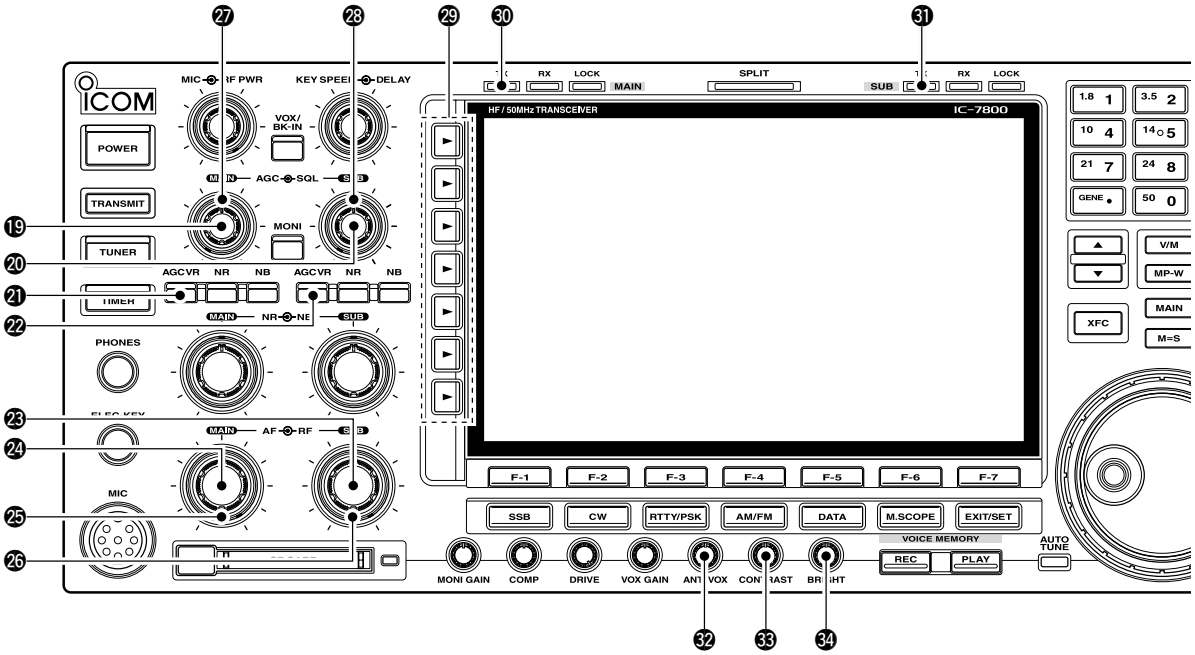
⓱ DRIVE GAIN CONTROL [DRIVE] (p. 3-13)
Adjusts the amplifying gain level at the drive stage. Activated in all modes (except SSB with [COMP] OFF).



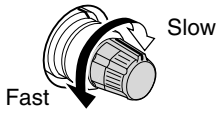
⓲ VOX GAIN CONTROL [VOX GAIN] (p. 6-2)
Adjusts the transmit/receive switching threshold level for VOX operation.



■ Front panel (continued)



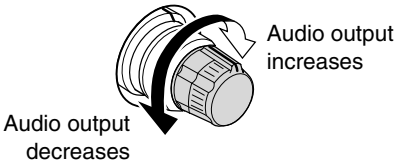
⓳ **AGC CONTROL [AGC]** (for MAIN band; p. 5-11)
⓴ **AGC CONTROL [AGC]** (for SUB band; p. 5-11)
Adjusts the AGC circuit time constant.
- To use the set value, push appropriate band's [AGC VR] ([AGC VR] indicator lights).



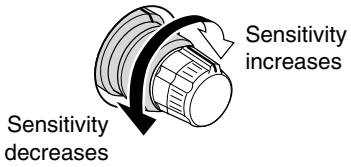
㉑ **AGC VOLUME SWITCH [AGC VR]** (for MAIN band; p. 5-11)
㉒ **AGC VOLUME SWITCH [AGC VR]** (for SUB band; p. 5-11)
➥ Push to toggle [AGC] control usage ON and OFF.
- The set level with [AGC] control is used for the operation when switched ON.
- The [AGC VR] indicator above this switch lights green when the control setting is in use.

➥ Turns the AGC function OFF when pushed for 1 sec.

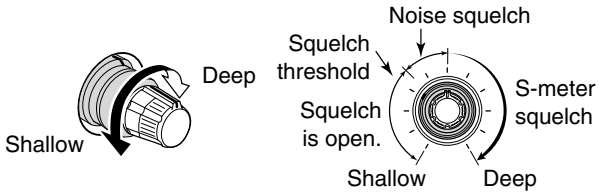
㉓ **AF CONTROL [AF]** (inner control; for SUB band)
㉔ **AF CONTROL [AF]** (inner control; for MAIN band)
Varies the audio output level from the speaker.



㉕ **RF GAIN CONTROL [RF]** (outer control; for MAIN band; p. 3-9)
㉖ **RF GAIN CONTROL [RF]** (outer control; for SUB band; p. 3-9)
Adjusts the RF gain level.
While rotating the RF gain control, noise may be heard. This comes from the DSP unit and does not indicate an equipment malfunction.



㉗ **SQUELCH CONTROL [SQL]** (outer control; for MAIN band; p. 3-9)
㉘ **SQUELCH CONTROL [SQL]** (outer control; for SUB band; p. 3-9)
Adjusts the squelch threshold level. The squelch removes noise output from the speaker (closed condition) when no signal is received.
- The squelch is particularly effective for FM. It is also available for other modes.
- 11 to 12 o'clock position is recommended for any setting of the [SQL] control.



㉙ 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.

ANT 1
➥ Selects the antenna connector from ANT1, ANT2, ANT3 and ANT4 when pushed. (p. 10-2)
➥ Displays antenna selection memory when pushed for 1 sec.
• When the receive antenna is activated, the antenna which is connected to the [ANT4] is used for receive only.

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

METER Po
➥ Selects RF power (Po), SWR, ALC, COMP, VD or ID metering during transmit. (p. 3-10)
➥ Switches the multi-function digital meter ON and OFF when pushed for 1 sec. (p. 3-10)

P.AMP 1
➥ Selects one of 2 receive RF preamps or bypasses them. (p. 5-9)
• "P. AMP1" activates 10 dB preamp.
• "P. AMP2" activates 16 dB high-gain preamp.

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

ATT OFF
➥ Selects 6 dB, 12 dB or 18 dB attenuator when pushed. (p. 5-9)
➥ Selects 3 dB, 6 dB, 9 dB, 12 dB, 18 dB, or 21 dB attenuator when pushed for 1 sec. (p. 5-9)

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

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

AGC time constant can be set between 0.1 to 8.0 sec. (depends on mode), or turned OFF. While "OFF" is selected, 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 is varied by fading, etc. Select "FAST" for tuning and select "MID" or "SLOW" depending on the receiving condition.

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

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

1/4 ON
➥ Turns the 1/4 function ON and OFF in SSB data, CW, RTTY and PSK modes. (p. 3-6)
• 1/4 function sets dial rotation to 1/4 of normal for fine tuning.

TONE OFF
➥ Switches the tone encoder, tone squelch function and no tone operation when pushed in FM mode. (pgs. 4-32, 4-33)
➥ Enters the tone set mode when pushed for 1 sec. in FM mode. (pgs. 4-32, 4-33)

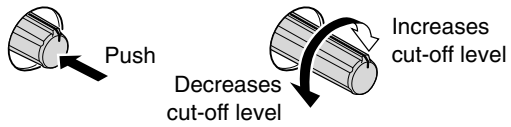
VSC OFF
➥ Switches the voice squelch control function ON and OFF. (p. 9-3)

㉚ TRANSMIT INDICATOR [TX] (for MAIN band)
㉛ TRANSMIT INDICATOR [TX] (for SUB band)

Lights red while transmitting.
• SUB band's [TX] indicator lights only when the split operation.

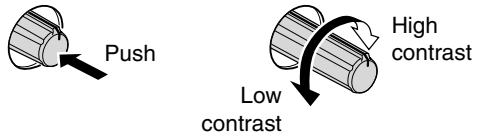
㉜ ANTI VOX CONTROL [ANTI VOX] (p. 6-2)

Adjusts the VOX deactivate level to prevent unwanted VOX control from the speaker audio.



㉝ LCD CONTRAST CONTROL [CONTRAST]

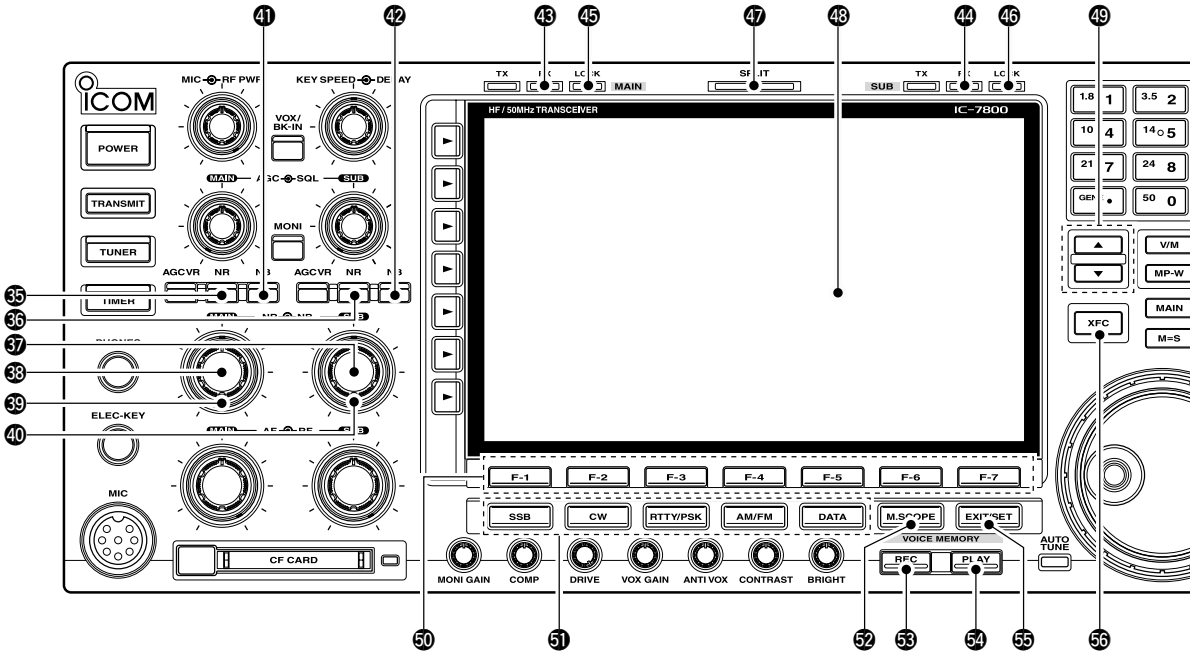
Adjusts the LCD contrast.



㉞ LCD BRIGHTNESS CONTROL [BRIGHT]

Adjusts the LCD brightness.

■ Front panel (continued)



㉟ **NOISE REDUCTION SWITCH [NR]** (for MAIN band; p. 5-18)

㊱ **NOISE REDUCTION SWITCH [NR]** (for SUB band; p. 5-18)

Push to switches the noise reduction ON and OFF.

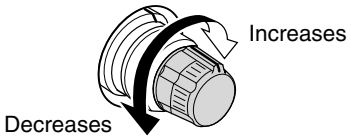
- The [NR] indicator above this switch lights green when the function is activated.

㊲ **NOISE REDUCTION LEVEL CONTROL [NR]** (inner control; for SUB band; p. 5-18)

㊳ **NOISE REDUCTION LEVEL CONTROL [NR]** (inner control; for MAIN band; p. 5-18)

Adjusts the noise reduction level when the noise reduction is in use. Set for maximum readability.

- To activate this control, push the appropriate band's [NR] in advance.

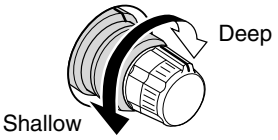


㊴ **NOISE BLANKER CONTROL [NB]** (outer control; for MAIN band; p. 5-17)

㊵ **NOISE BLANKER CONTROL [NB]** (outer control; for SUB band; p. 5-17)

Adjust the noise blanker threshold level.

- To activate this control, push appropriate band's [NB] switch in advance.



㊶ **NOISE BLANKER SWITCH [NB]** (for MAIN band; p. 5-17)

㊷ **NOISE BLANKER SWITCH [NB]** (for SUB band; p. 5-17)

➥ 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 for FM, or non-pulse-type noise.

- The [NB] indicator above this switch lights green while the function is activated.

➥ Enters blank-width set mode when pushed for 1 sec.

㊸ **RECEIVE INDICATOR [RX]** (for MAIN band)

㊹ **RECEIVE INDICATOR [RX]** (for SUB band)

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

㊺ **LOCK INDICATOR [LOCK]** (for MAIN band; p. 5-18)

㊻ **LOCK INDICATOR [LOCK]** (for SUB band; p. 5-18)

Lights when the dial lock function is activated.

㊼ **SPLIT OPERATION INDICATOR [SPLIT]**

Lights during split frequency operation.

㊽ **LCD FUNCTION DISPLAY** (p. 1-14)

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

㊾ MEMORY UP/DOWN SWITCHES [▲]/[▼] (p. 8-2)
Push to select the memory channel number for the selected readout.
- Memory channels can be selected both in VFO and memory modes.

㊿ LCD FUNCTION SWITCHES [F-1]–[F-7]
Push to select the function indicated in the LCD display above these switches.
- Functions vary depending on the operating condition.

51 MODE SWITCHES
Selects the desired mode. (p. 3-8)
- Announces the selected mode. (p. 12-16)

SSB
➥ Selects USB and LSB modes alternately.

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

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

AM/FM
➥ Selects AM and FM modes alternately.

DATA
➥ Selects SSB, AM or FM data mode (USB-D, LSB-D, AM-D, FM-D) when pushed in SSB, AM or FM mode, respectively.
➥ Switches D1, D2 and D3 when pushed for 1 sec.

52 MINI SPECTRUM SCOPE SWITCH [M.SCOPE]
(p. 5-4)
Turns the mini spectrum scope screen indication ON and OFF.
- The mini spectrum scope screen can be indicated with another screen, such as memory, set mode screen, simultaneously.

53 VOICE MEMORY RECORD SWITCH [REC]
(p. 7-3)
➥ Records the receiving signal contents for the preset time period when pushed.
- After the preset time has passed, stops recording automatically.

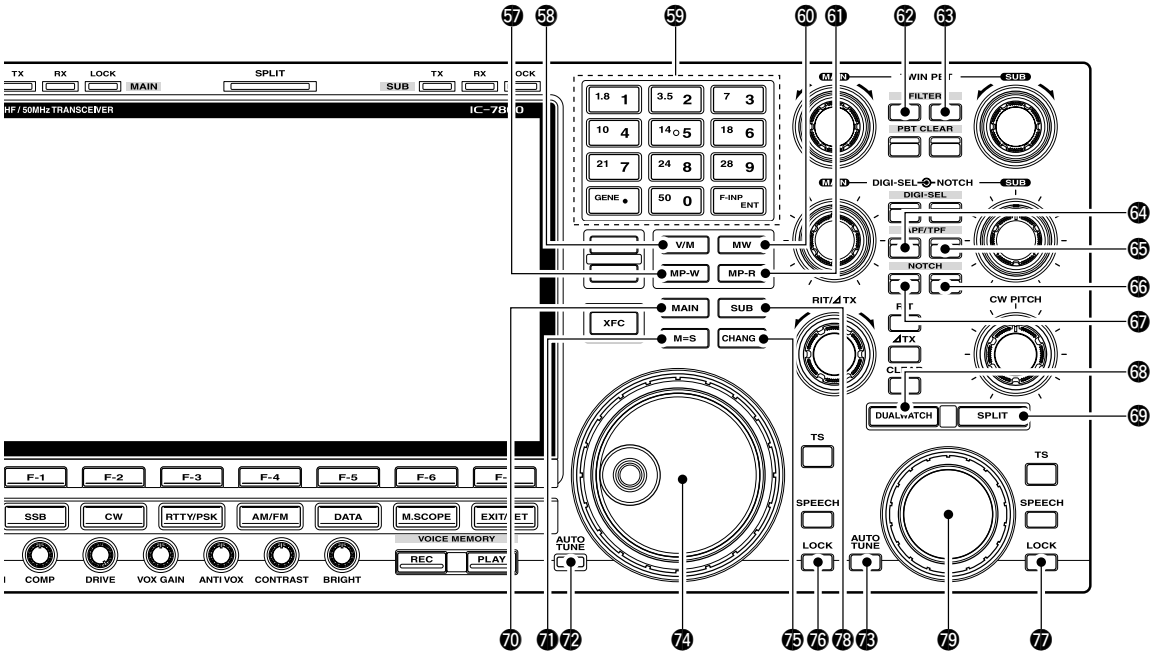
➥ Records the receiving signal contents until cancelling the record when pushed for 1 sec.
- Push this switch momentarily to stops recording.
- The memory records the latest 30 sec. audio only.

54 VOICE MEMORY PLAY BACK SWITCH [PLAY]
(p. 7-4)
➥ Play back the previously recorded audio for the preset time period when pushed.
➥ Play back all of the previously recorded audio when pushed for 1 sec.

55 EXIT/SET SWITCH [EXIT/SET]
➥ Push to exits or returns to the previous screen indication during spectrum scope, memory, scan or set mode screen indication, etc.
➥ Displays set mode menu screen when pushed for 1 sec.

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

■ Front panel (continued)



㊼ MEMO PAD-WRITE SWITCH [MP-W] (p. 8-7)
Programs the selected readout frequency and operating mode into a memo pad.
- The 5 most recent entries remain in memo pads.
- The memo pad capacity can be expanded from 5 to 10 in set mode for your convenience. (p. 12-16)

㊽ VFO/MEMORY SWITCH [V/M]
➥ Switches the selected readout operating mode between the VFO mode and memory mode when pushed. (pgs. 3-3, 8-2)
➥ Transfers the memory contents to VFO when pushed for 1 sec. (p. 5-5)

㊾ KEYPAD
➥ Pushing a key selects the operating band.
- [GENE•.] selects the general coverage band.

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

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

㊿ MEMORY WRITE SWITCH [MW] (p. 8-4)
Stores the selected readout frequency and operating mode into the displayed memory channel when pushed for 1 sec.
- This function is available both in VFO and memory modes.

(51) MEMO PAD-READ SWITCH [MP-R] (p. 8-7)
Each push calls up a frequency and operating mode in a memo pad. The 5 (or 10) most recently programmed frequencies and operating modes can be recalled, starting from the most recent.
- The memo pad capacity can be expanded from 5 to 10 in set mode for your convenience. (p. 12-16)

(52) FILTER SWITCH [FILTER] (for MAIN band; p. 5-13)
(53) FILTER SWITCH [FILTER] (for SUB band; p. 5-13)
➥ Selects one of 3 IF filter settings.
➥ Enters the filter set screen when pushed for 1 sec.

(54) AUDIO PEAK FILTER/TWIN PEAK FILTER SWITCH [APF/TPF] (for MAIN band)
(55) AUDIO PEAK FILTER/TWIN PEAK FILTER SWITCH [APF/TPF] (for SUB band)
➥ Push to turn the audio peak filter ON and OFF during CW mode operation. (p. 4-6)
➥ Push to turn the twin peak filter ON and OFF during RTTY mode operation. (p. 4-14)
- "APF" appears when audio peak filter is in use.
- "TPF" appears when twin peak filter is in use.

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

⑥⑥ NOTCH SWITCH [NOTCH] (for SUB band; p. 5-19)
⑥⑦ NOTCH SWITCH [NOTCH] (for MAIN band; p. 5-19)
- ➥ Switches the notch function between auto, manual and OFF in SSB and AM modes.
- ➥ Turns the manual notch function ON and OFF when pushed in CW, RTTY and PSK31 mode.
- ➥ Turns the auto notch function ON and OFF when pushed in FM mode.
  - "AN" appears when auto notch is in use.
  - "MN" appears when manual notch is in use.
- ➥ Switches the manual notch characteristics from wide, middle and narrow when pushed for 1 sec.

✔ What is the notch function?
The notch function eliminates unwanted CW or AM carrier tones while preserving the desired signal's audio response. The filtering frequency is adjusted to effectively eliminate unwanted tones via the DSP circuit.

⑥⑧ DUALWATCH SWITCH [DUALWATCH] (p. 5-16)
- ➥ Turns the dualwatch function ON and OFF when pushed.
- ➥ Turns the dualwatch function ON and equalizes the main/sub readout frequency to the sub/main readout when pushed for 1 sec. (Quick dualwatch function)
  - The quick dualwatch function can be turned OFF using set mode. (p. 12-13)

⑥⑨ SPLIT SWITCH [SPLIT] (p. 6-6)
- ➥ Turns the split function ON and OFF when pushed.
- ➥ Turns the split function ON, equalizes the sub readout frequency to the main readout and sets the sub readout for frequency input when pushed for 1 sec. in non-FM modes. (Quick split function)
  - The offset frequency is shifted from the main readout frequency in FM mode. (p. 12-14)
  - The quick split function can be turned OFF using set mode. (p. 12-14)
- ➥ Turns the split function ON and shifts the sub readout frequency after inputting an offset.

⑦⓪ MAIN BAND ACCESS SWITCH [MAIN]
Selects access to the main readout.
- The main readout frequency is clearly displayed. The sub readout functions only during split operation or dualwatch.

⑦① MAIN/SUB EQUALIZING SWITCH [M=S]
Equalizes the sub readout frequency to the main readout frequency when pushed for 1 sec.

⑦② AUTOMATIC TUNING SWITCH [AUTO TUNE] (for MAIN band)
⑦③ AUTOMATIC TUNING SWITCH [AUTO TUNE] (for SUB band)
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 not be tuned, or tuned into an undesired signal.

⑦④ MAIN DIAL
Changes the displayed frequency (main band), selects set mode setting, etc.

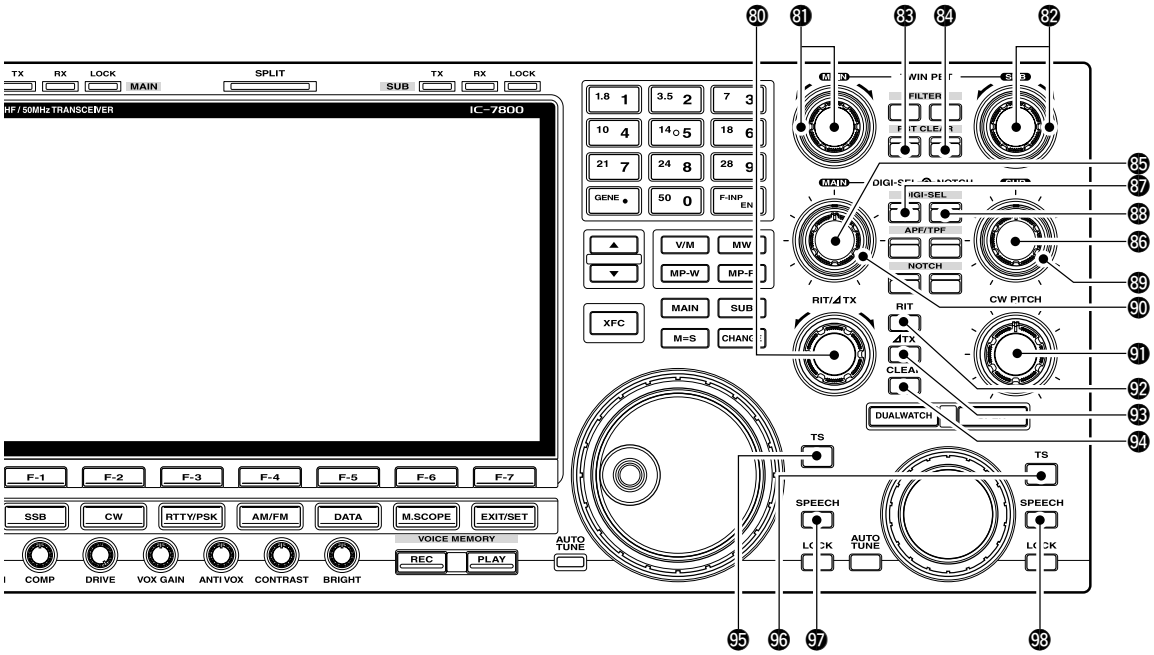
⑦⑤ MAIN/SUB CHANGE SWITCH [CHANGE]
Switches the frequency and selected memory channel between main and sub readouts when pushed.
- Switches between transmit frequency and receive frequency when the split frequency function is ON. (p. 6-6)

⑦⑥ LOCK SWITCH [LOCK] (for MAIN band; p. 5-18)
⑦⑦ LOCK SWITCH [LOCK] (for SUB band; p. 5-18)
Push to switch the dial lock function ON and OFF.

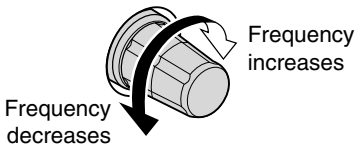
⑦⑧ SUB BAND ACCESS SWITCH [SUB]
Selects access to the sub readout.
- The sub readout frequency is clearly displayed. The main readout functions only during split operation or dualwatch.

⑦⑨ SUB DIAL
Changes the displayed frequency in sub band.

■ Front panel (continued)



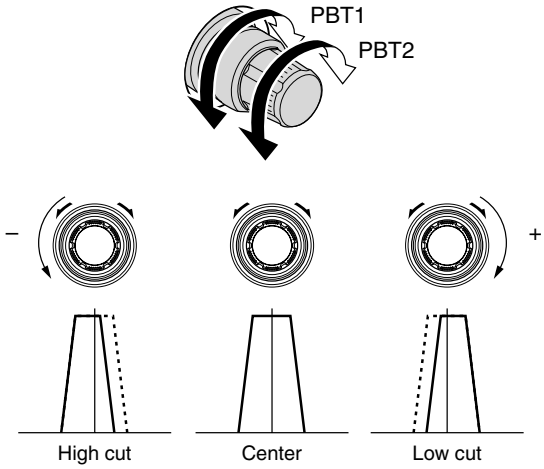
80 RIT/ΔTX CONTROL [RIT/ΔTX] (pgs. 5-10, 6-4)
Shifts the receive and/or transmit frequency without changing the transmit and/or receive frequency while the RIT and/or ΔTX functions are ON.
- Rotate the control clockwise to increase the frequency, or rotate the control counterclockwise to decrease the frequency.
- The shift frequency range is ±9.999 kHz in 1 Hz steps (or ±9.99 kHz in 10 Hz steps).



81 PASSBAND TUNING CONTROLS [TWIN PBT]
(for MAIN band; p. 5-12)

82 PASSBAND TUNING CONTROLS [TWIN PBT]
(for SUB band; p. 5-12)
Adjust the receiver's "passband width" of the DSP filter.
- Passband width and shift frequency are displayed in the multi-function display.
- Push [PBT CLEAR] for 1 sec. to clear the settings when not in use.
- Variable range is set to half of the IF filter passband width. 25 Hz steps and 50 Hz steps are available.

✔ What is the PBT control?
General PBT function electronically narrows the IF passband width to reject interference. This transceiver uses the DSP circuit for the PBT function.



83 PBT CLEAR SWITCH [PBT CLEAR]
(for MAIN band; p. 5-12)

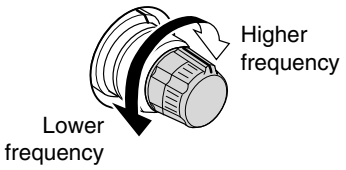
84 PBT CLEAR SWITCH [PBT CLEAR]
(for SUB band; p. 5-12)
Clears the PBT settings when pushed for 1 sec.
- The [PBT CLEAR] indicator above this switch lights when PBT is in use.

⑧⑤ DIGITAL RF SELECTOR CONTROL [DIGI-SEL] (for MAIN band; p. 5-19)

⑧⑥ DIGITAL RF SELECTOR CONTROL [DIGI-SEL] (for SUB band; p. 5-19)

Adjusts the digital RF selector center frequency.

- The control can be used as the audio peak filter adjustment (p. 12-17)



⑧⑦ DIGITAL RF SELECTOR SWITCH [DIGI-SEL] (for MAIN band; p. 5-19)

⑧⑧ DIGITAL RF SELECTOR SWITCH [DIGI-SEL] (for SUB band; p. 5-19)

Turns the digital RF selector ON and OFF.

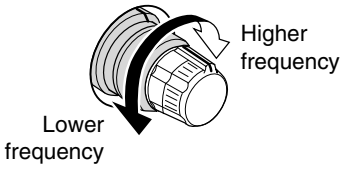
- The [DIGI-SEL] indicator lights green when the selector is in use.

⑧⑨ MANUAL NOTCH FILTER CONTROL [NOTCH] (for SUB band; outer control; p. 5-19)

⑨⓪ MANUAL NOTCH FILTER CONTROL [NOTCH] (for MAIN band; outer control; p. 5-19)

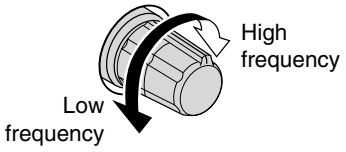
Varies the peak frequency of the manual notch filter to pick out a receive signal from interference while the manual notch function is ON.

- Notch filter center frequency:
  SSB : –1060 Hz to 4040 Hz
  CW : CW pitch freq. + 2540 Hz to CW pitch freq. –2540 Hz
  AM : –5100 Hz to 5100 Hz



⑨① CW PITCH CONTROL [CW PITCH] (p. 4-5)

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



⑨② RIT SWITCH [RIT] (p. 5-10)

➥ Turns the RIT function ON and OFF when pushed.
- Use [RIT/ΔTX] control to vary the RIT frequency.

➥ Adds the RIT shift frequency to the operating frequency when pushed for 1 sec.

✔ 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 on an off-frequency or when you prefer to listen to slightly different-sounding voice characteristics, etc.

⑨③ ΔTX SWITCH [ΔTX] (p. 6-4)

➥ Turns the ΔTX function ON and OFF when pushed.
- Use [RIT/ΔTX] control to vary the ΔTX frequency.

➥ Adds the ΔTX shift frequency to the operating frequency when pushed for 1 sec.

✔ What is the ΔTX function?

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

⑨④ CLEAR SWITCH [CLEAR] (pgs. 5-10, 6-4)

Clears the RIT/ΔTX shift frequency when pushed for 1 sec. or when pushed momentarily, depending on the quick RIT/ΔTX clear function setting (p. 12-17).

⑨⑤ QUICK TUNING SWITCH [TS] (for MAIN band)

⑨⑥ QUICK TUNING SWITCH [TS] (for SUB band)

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

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

➥ When the quick tuning step is ON, push for 1 sec. to enter quick tuning step set mode. (p. 3-6)

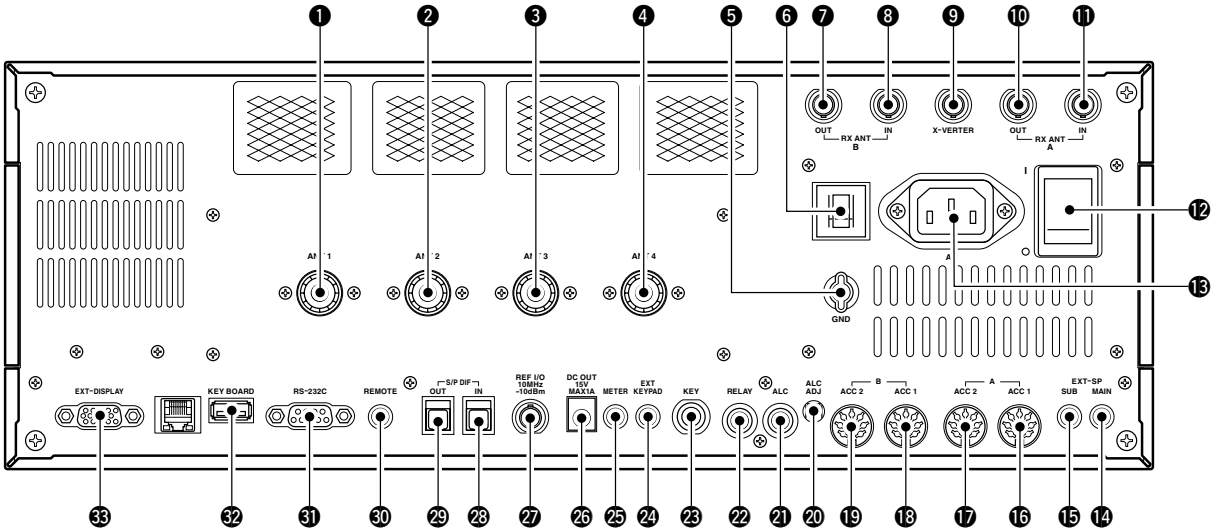
⑨⑦ SPEECH SWITCH [SPEECH] (for MAIN band; p. 13-3)

⑨⑧ SPEECH SWITCH [SPEECH] (for SUB band; p. 13-3)

➥ Push to announce the S-meter indication and the selected readout frequency.

➥ The selected operating mode is additionally announced when pushed for 1 sec.

■ Rear panel



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

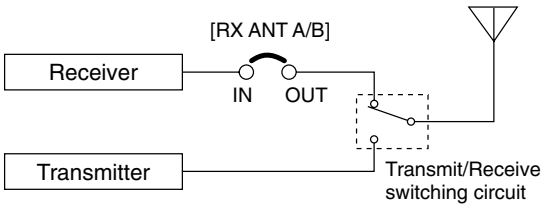
❺ **GROUND TERMINAL [GND]** (p. 2-3)
Connect this terminal to a ground to prevent electrical shocks, TVI, BCI and other problems.

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

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

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

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



❾ **TRANSVERTER CONNECTOR [X-VERTER]** (p. 2-5)
External transverter input/output connector. Activated by voltage applied to [ACC 2] pin 6, or the transverter function is in use. (pgs. 2-10, 4-6)

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

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

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

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

⓭ **AC POWER SOCKET [AC]** (p. 2-4)
Connects the supplied AC power cable to an AC outlet.

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

⑯ ACCESSORY SOCKET 1 A [ACC 1–A]
⑰ ACCESSORY SOCKET 2 A [ACC 2–A]
⑱ ACCESSORY SOCKET 1 B [ACC 1–B]
⑲ ACCESSORY SOCKET 2 B [ACC 2–B]
Enable connection of external equipment such as a liner amplifier, an automatic antenna selector/tuner, TNC for data communications, etc.
• See p. 2-10 for socket information.

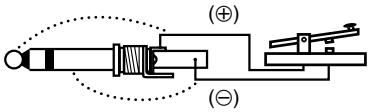
⑳ ALC LEVEL ADJUSTMENT POT [ALC ADJ]
Adjusts the ALC levels.
No adjustment is required when the ALC output level of the connected non-Icom linear amplifier is 0 to –4 V DC.

㉑ ALC INPUT JACK [ALC] (p. 2-7)
Connects to the ALC output jack of a non-Icom linear amplifier.

㉒ T/R CONTROL JACK [RELAY] (p. 2-7)
Goes to ground when transmitting to control an external unit.

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

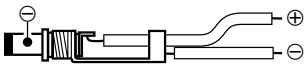
㉓ STRAIGHT KEY JACK [KEY] (p. 2-4)
Accepts a straight key or external electronic keyer with ¼ inch standard plug.
• [ELEC-KEY] on the front panel can be used for a straight key or external electronic keyer. Deactivate the internal electronic keyer in keyer set mode. (p. 4-12)



㉔ EXTERNAL KEYPAD JACK [EXT KEYPAD] (p. 2-6)
Connects an external keypad for direct voice memory or electronic keyer control.
Transceiver mute control (both transmit and receive) line is also equipped.

㉕ METER JACK [METER] (p. 2-6)
Outputs the receiving signal strength level signal, transmit output power, VSWR, ALC, speech compression, V_D or I_D level for external meter indication.

㉖ DC OUTPUT JACK [DC OUT] (p. 2-6)
Outputs a regulated 14 V DC (approx.) for external equipment. Connected in parallel with 13.8 V outputs of [ACC 1] and [ACC 2]. (max. 1 A in total)



㉗ REFERENCE SIGNAL INPUT/OUTPUT TERMINAL [REF I/O]
Inputs/outputs a 10 MHz reference signal.

㉘ S/P DIF INPUT TERMINAL [S/P DIF– IN] (p. 2-6)
㉙ S/P DIF OUTPUT TERMINAL [S/P DIF– OUT] (p. 2-6)
Connects an external equipment, that S/P DIF input/output are supported.

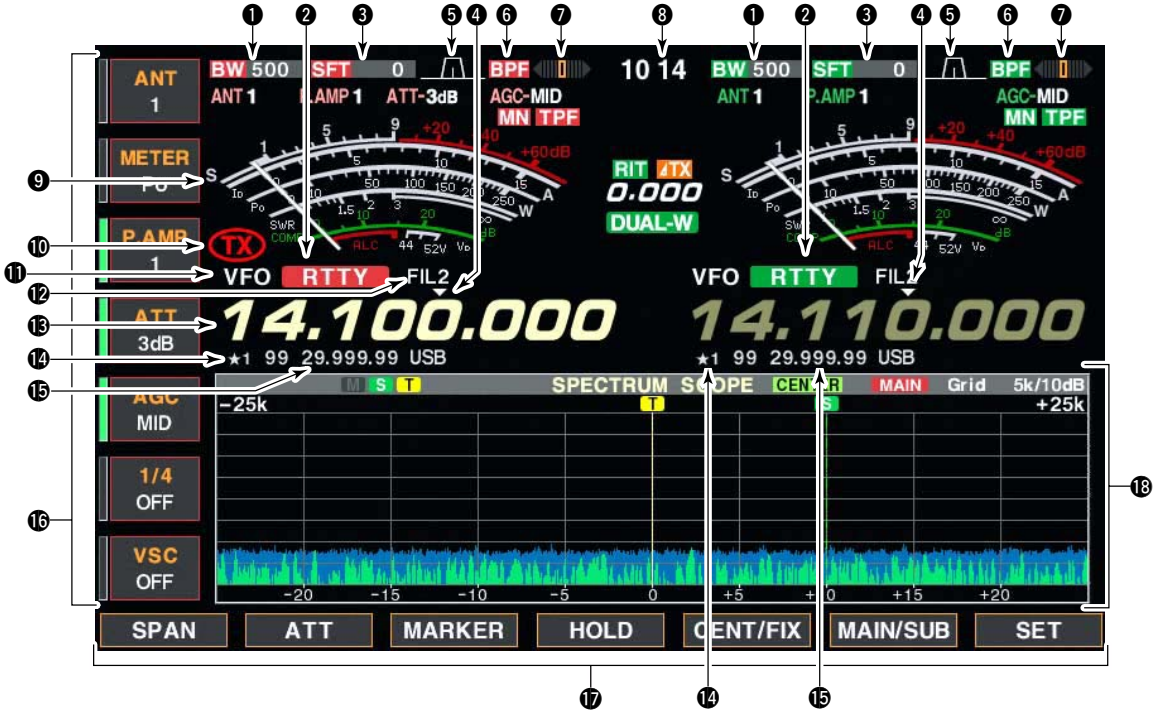
㉚ CI-V REMOTE CONTROL JACK [REMOTE] (p. 2-5)
➥ Connects a PC via the optional CT-17 CI-V LEVEL CONVERTER for external control of the transceiver functions.
➥ Used for transceive operation with another Icom CI-V transceiver or receiver.

㉛ RS-232C TERMINAL [RS-232C] (p. 2-5)
Connects an RS-232C cable, D-sub 9-pin to connect the IC-7800 to a PC.
Can be used for remotely control the IC-7800 without the optional CT-17, or for RTTY/PSK31 decoded signal output.

㉜ KEYBOARD CONNECTOR [KEYBOARD] (p. 2-6)
Connects a PC keyboard for RTTY and PSK31 operations.
• USB (Universal Serial Bus) type keyboard can be connected.

㉝ EXTERNAL DISPLAY TERMINAL [EXT-DISPLAY] (p. 2-6)
Connects to an external display.
• At least 800×600 pixel display is necessary.

■ LCD display



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

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

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

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

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

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

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

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

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

❿ **TX INDICATOR**
Indicates the frequency readout for transmit.

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

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

⓭ **FREQUENCY READOUTS**
Shows the operating frequency.
• Outline characters are used for non-accessing readout.

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

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

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

⓱ **LCD FUNCTION SWITCH GUIDE**
Indicates the function of the LCD function switches ([F-1] – [F-7]).

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

■ Screen menu arrangement

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

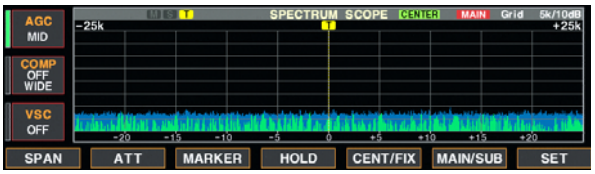
Pushing [EXIT/SET] several times returns to the start up screen. See p. 12-3 for set mode arrangement.

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

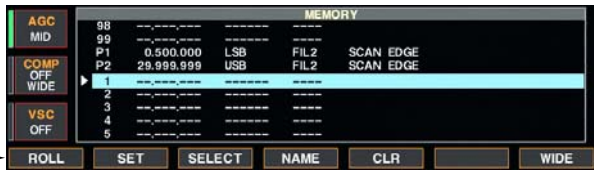
• **PSK31 decoder screen** (p. 4-21)

F-3

• **Spectrum scope screen** (p. 5-2)



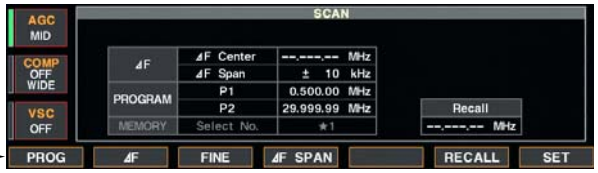
• **Memory channel screen** (p. 8-3)



F-4

• **Voice recoder screen** (p. 7-3)

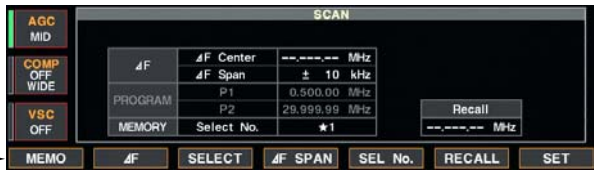
• **Scan screen** (VFO mode; p. 9-4)



F-2 F-5

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

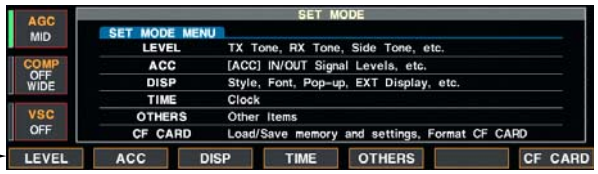
• **Scan screen** (Memory mode; p. 9-6)



F-3 F-5

• **RTTY decoder screen** (p. 4-13)

• **Set mode menu screen** (p. 12-2)



F-3 F-7

INSTALLATION AND CONNECTIONS Section 2

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■ Selecting a location 2-2
■ Rack mounting handle attachment 2-2
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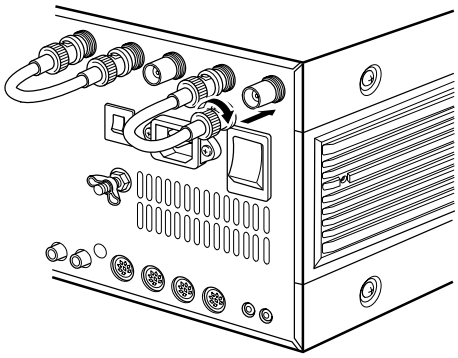
CAUTION!: The transceiver weighs approx. 25 kg (55 lb). 2 peoples should be present to carry, lift up or turn over the transceiver, etc.

■ 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-7800, see ‘Supplied accessories’ on p. iii of this manual.

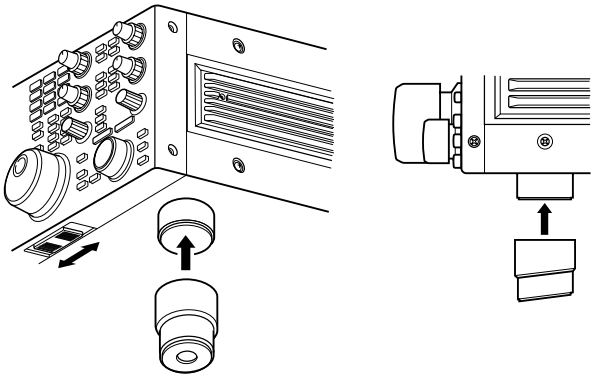
■ Antenna jumper cable connection



Connect the supplied coaxial cable (terminated with BNC connectors) between [RX ANT A— IN] and [RX ANT A— OUT], and, [RX ANT B— IN] and [RX ANT B— OUT], respectively.

When connecting an external filter unit, pre-amplifier, etc., connect the unit between [RX ANT A/B— IN] and [RX ANT A/B— OUT] connectors.

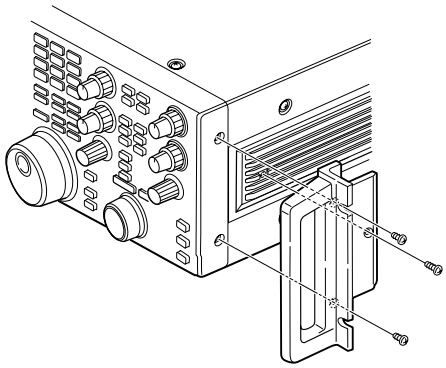
■ Selecting a location



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

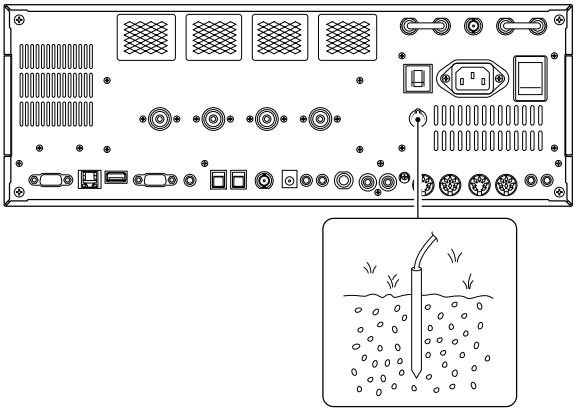
The base of the transceiver has an adjustable stand for desktop use. Set the stand to one of two angles depending on your operating conditions.

■ Rack mounting handle attachment



Remove the four screws from both sides of the front panel and the two screws from both sides of the side panel, then attach the rack mounting handles to the sides of the transceiver using the supplied screws.

■ Grounding



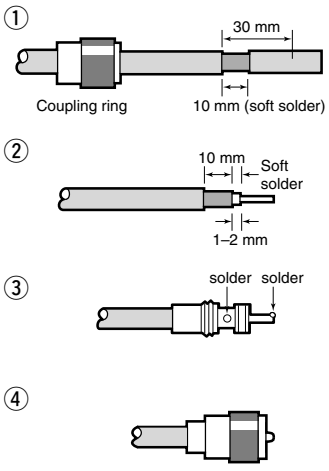
To prevent electrical shock, television interference (TVI), broadcast interference (BCI) and other problems, ground the transceiver through the GROUND terminal on the rear panel.

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

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

■ Antenna connection

PL-259 CONNECTOR INSTALLATION EXAMPLE



① Slide the coupling ring down. Strip the cable jacket and 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

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

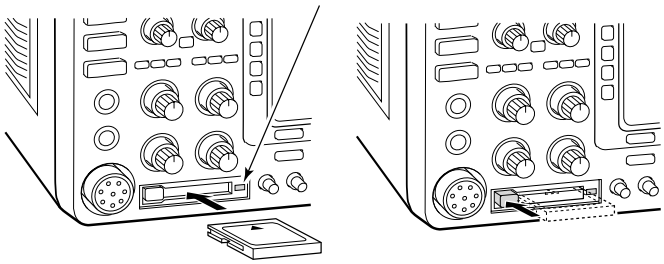
When using 1 antenna, use the [ANT1] connector.

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

Antenna SWR

Each antenna is tuned for a specified frequency range and SWR may be increased out-of-range. When the SWR is higher than approx. 2.0:1, the transceiver's power drops to protect the final transistor. In this case, an antenna tuner is useful to match the transceiver and antenna. Low SWR allows full power for transmitting even when using the antenna tuner. The IC-7800 has an SWR meter to monitor the antenna SWR continuously.

■ CF (Compact Flash) memory card



Insert the supplied CF (Compact Flash) memory card into the CF memory card slot.

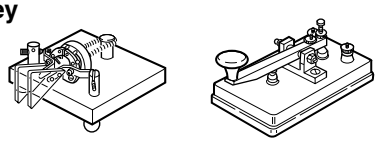
- To remove the CF memory card, push-in the button, located at left hand side of the slot.

Make sure the direction of the memory card.
NEVER insert or remove the CF memory card during accessing indicator lights or blinks.

■ Required connections

◇ Front panel

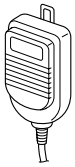
CW key



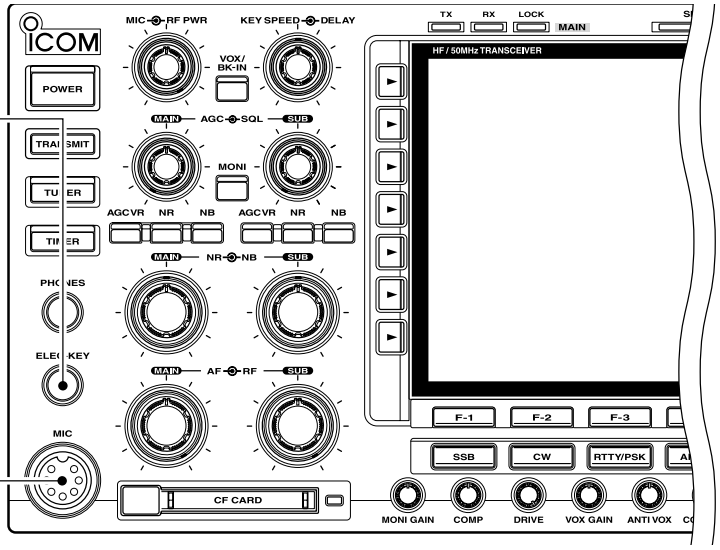
A straight key can be used when the internal electronic keyer is turned OFF in keyer set mode. (p. 4-12)

Microphones (p. 2-9)

Optional SM-20



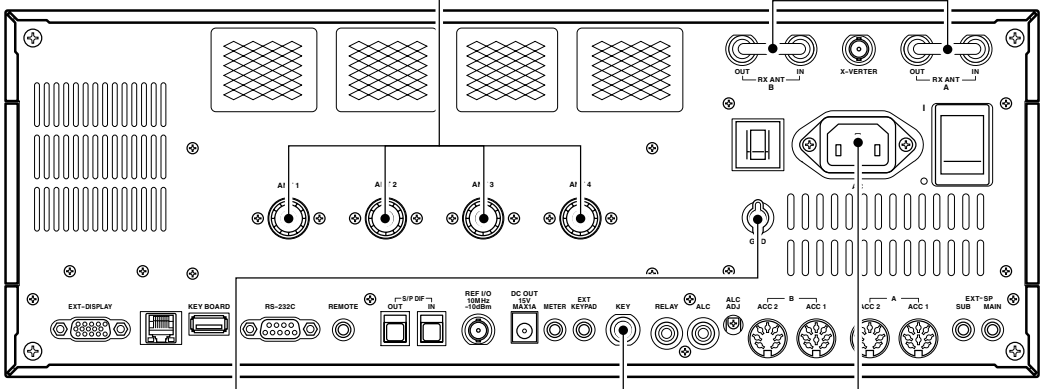
Optional HM-36



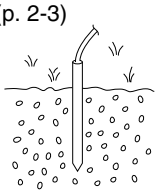
◇ Rear panel

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

A jumper cable is connected.



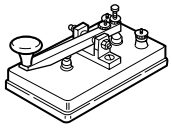
Ground (p. 2-3)



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

Grounding prevents electrical shocks, TVI and other problems.

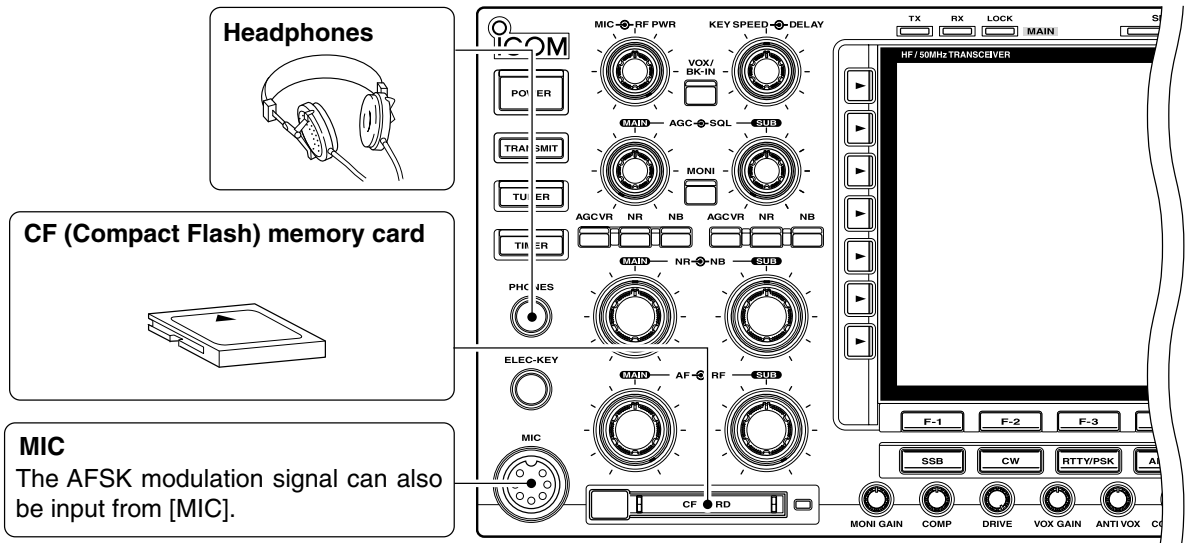
Straight key



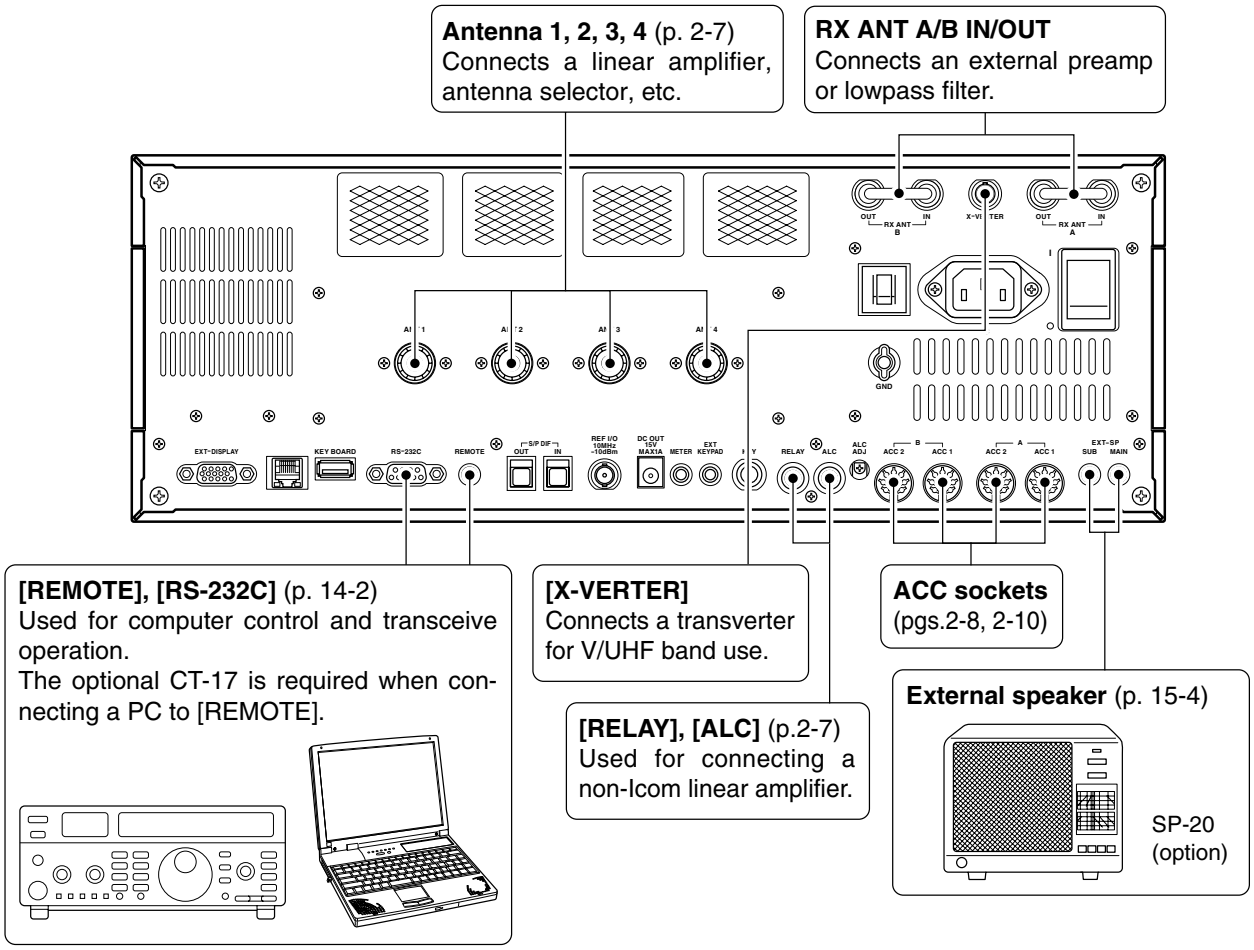
AC outlet
⚠ WARNING:
Use the supplied AC power cable only.

■ Advanced connections

◇ Front panel



◇ Rear panel— 1



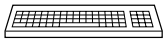
◇ Rear panel— 2

External Display

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

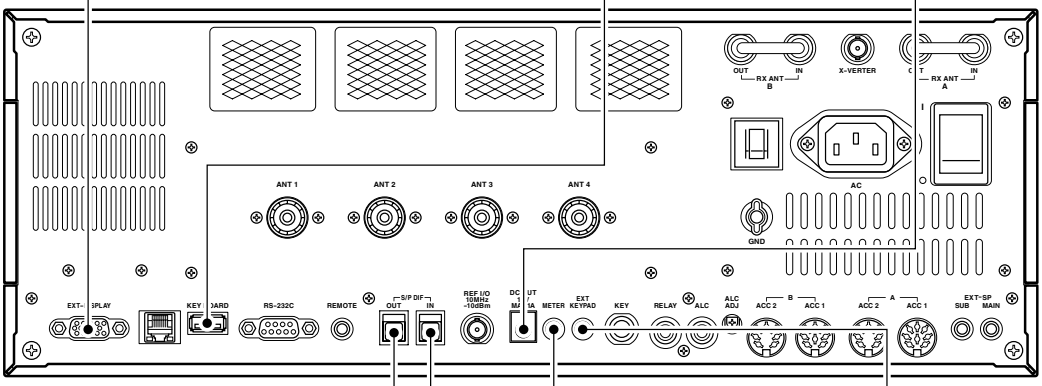
Keyboard

Connects an USB type PC keyboard directly for RTTY/PSK31 operation, as well as other text edit operation.



[DC OUT]

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

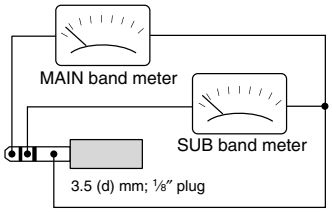


[S/P DIF— IN/OUT]

Connects a PC for audio signal data input/output.

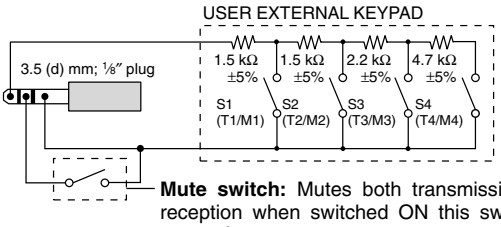
[METER]

Connects an external meter, etc.



External keypad

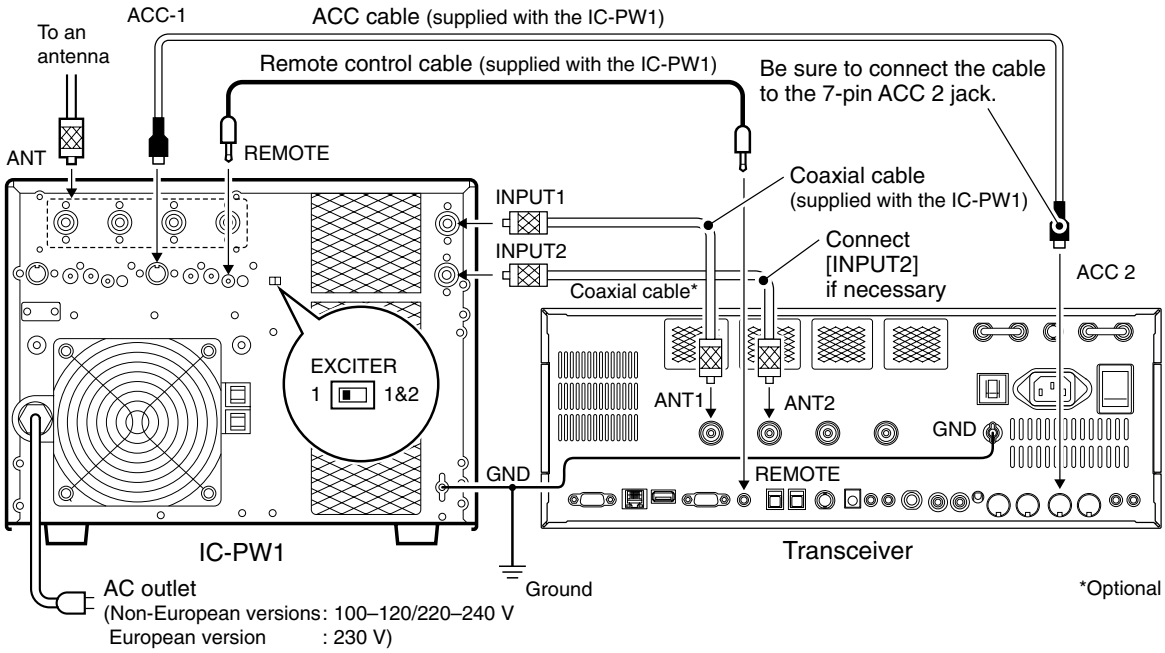
Connects an external keypad for direct voice memory and memory keyer controls.



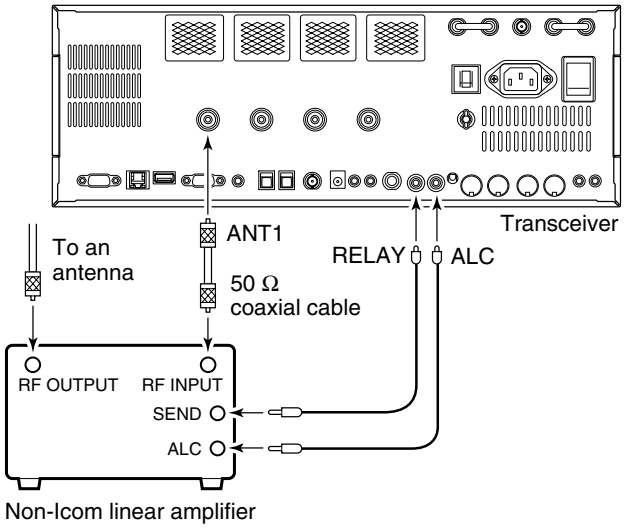
Mute switch: Mutes both transmission and reception when switched ON this switch for transceive operaton, etc.

■ Linear amplifier connections

◇ Connecting the IC-PW1



◇ Connecting a non-Icom linear amplifier



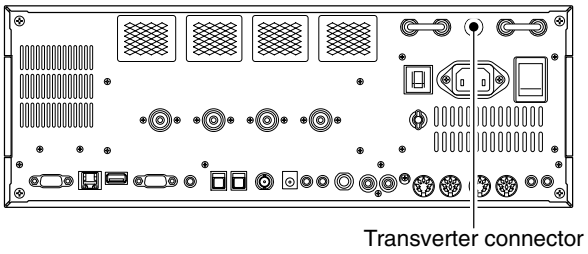
⚠ WARNING:

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

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

The maximum control level of [RELAY] jack is DC 16 V/0.5 A with initial setting, and 250 V/200 mA with "MOS-FET" setting (see p. 12-9 for details). Use an external relay unit when your non-Icom linear amplifier require the control level that higher voltage and/or larger current capacity.

■ Transverter jack information



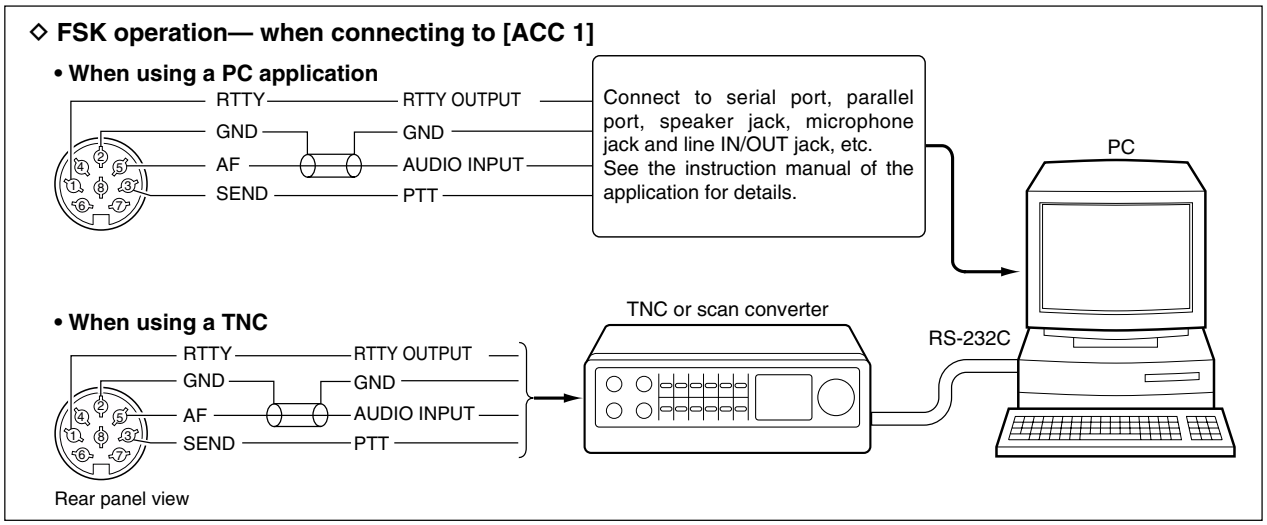
When 2 to 13.8 V is applied to pin 6 of [ACC 2], the [X-VERTER] connector is activated for transverter operation and the antenna connectors do not receive or transmit any signals. (p. 4-6)

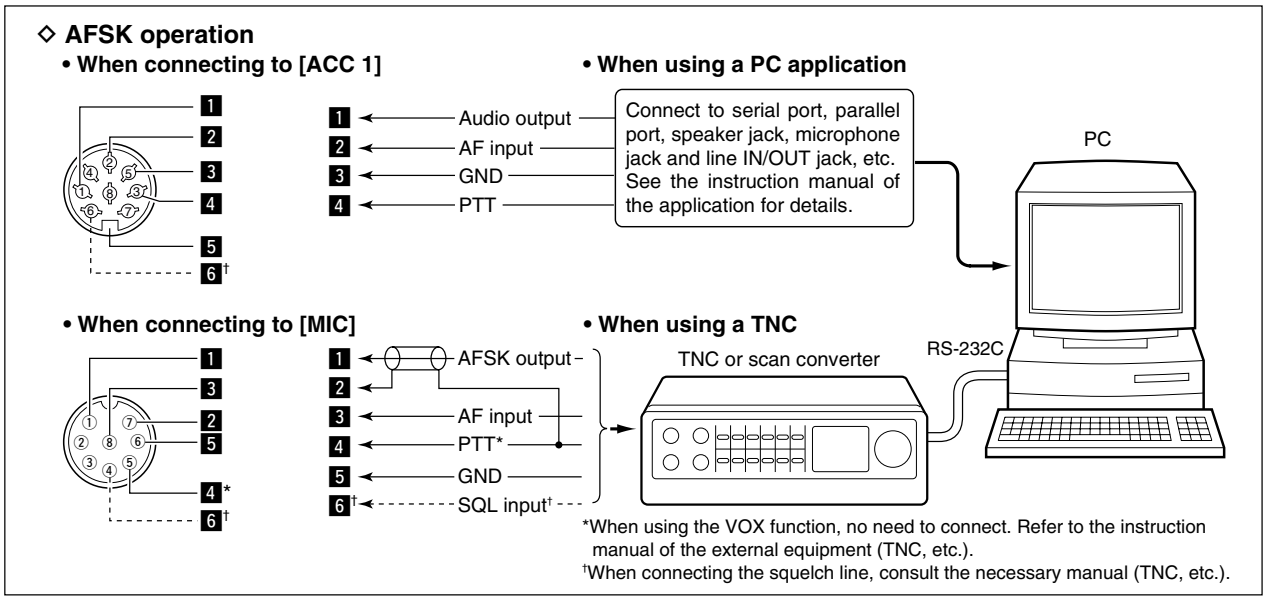
While receiving, [X-VERTER] connector can be activated as an input terminal from an external transverter.

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

■ FSK and AFSK (SSTV) connections

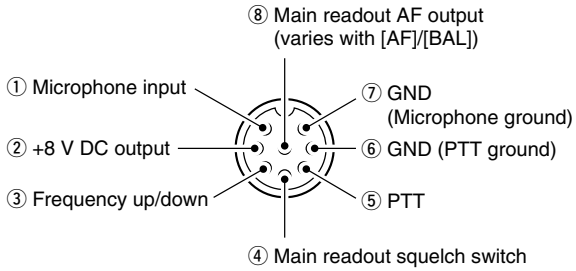
To connect a TNC or scan converter, etc., refer to the diagram below.





■ Microphone connector information

(Front panel view)

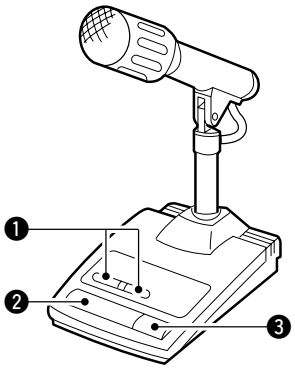


[MIC] Pin No.	FUNCTION	DESCRIPTION
②	+8 V DC output	Max. 10 mA
③	Frequency up	Ground
	Frequency down	Ground through 470 Ω
④	Squelch open	“Low” level
	Squelch closed	“High” level

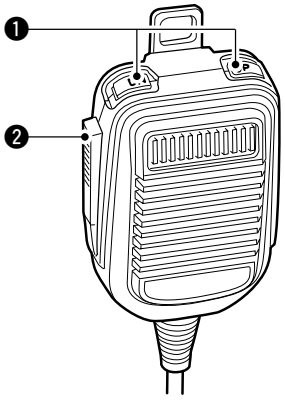
CAUTION: DO NOT short pin 2 to ground as this can damage the internal 8 V regulator.
NOTE: DC voltage is applied to pin 1 for microphone operation. Take care when using a non-Icom microphone.

■ Microphones (options)

◇ SM-20



◇ HM-36

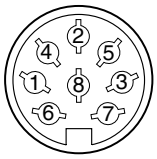


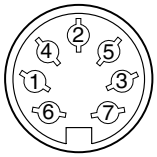
❶ UP/DOWN SWITCHES [UP]/[DN]
Change the selected readout frequency or memory channel.
- Continuous pushing changes the frequency or memory channel number continuously.
- While pushing [XFC], the transmit readout frequency can be controlled while in split frequency operation.
- The [UP]/[DN] switch can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

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

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

■ Accessory connector information

ACC 1	PIN No.	NAME	DESCRIPTION	SPECIFICATIONS
	1	RTTY	Controls RTTY keying	"High" level : More than 2.4 V "Low" level : Less than 0.6 V Output current : Less than 2 mA
	2	GND	Connects to ground.	Connected in parallel with ACC 2 pin 2.
	3	SEND	Input/output pin. Goes to ground when transmitting. When grounded, transmits.	Ground level : –0.5 V to 0.8 V Output current : Less than 20 mA Input current (Tx) : Less than 200 mA Connected in parallel with ACC 2 pin 3.
	4	MOD	Modulator input. Connects to a modulator.	Input impedance : 10 kΩ Input level : Approx. 100 mV rms
	5	AF	AF detector output. Fixed, regardless of [AF] position in default settings. (see notes below)	Output impedance : 4.7 kΩ Output level : 100–300 mV rms
	6	SQLS	Squelch output. Goes to ground when squelch opens.	SQL open : Less than 0.3 V/5 mA SQL closed : More than 6.0 V/100 µA
	7	13.8 V	13.8 V output when power is ON.	Output current : Max. 1 A Connected in parallel with ACC 2 pin 7.
	8	ALC	ALC voltage input.	Control voltage : –4 V to 0 V Input impedance : More than 10 kΩ Connected in parallel with ACC 2 pin 5.

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

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

BASIC OPERATIONS Section 3

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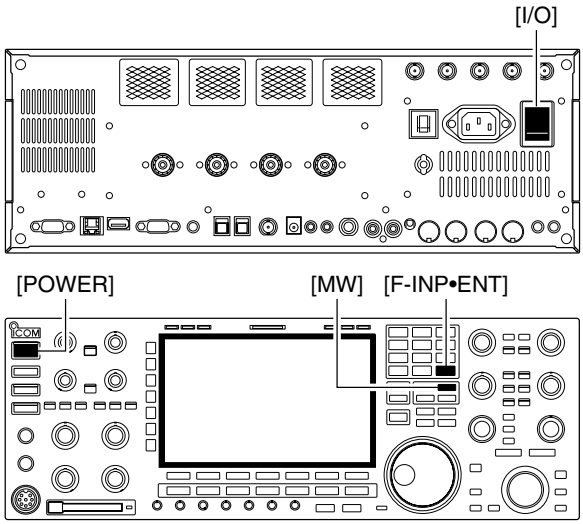
■ When first applying power (CPU resetting)

Before first applying power, make sure all connections required for your system are complete by referring to Section 2. Then, reset the transceiver using the following procedure.

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



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

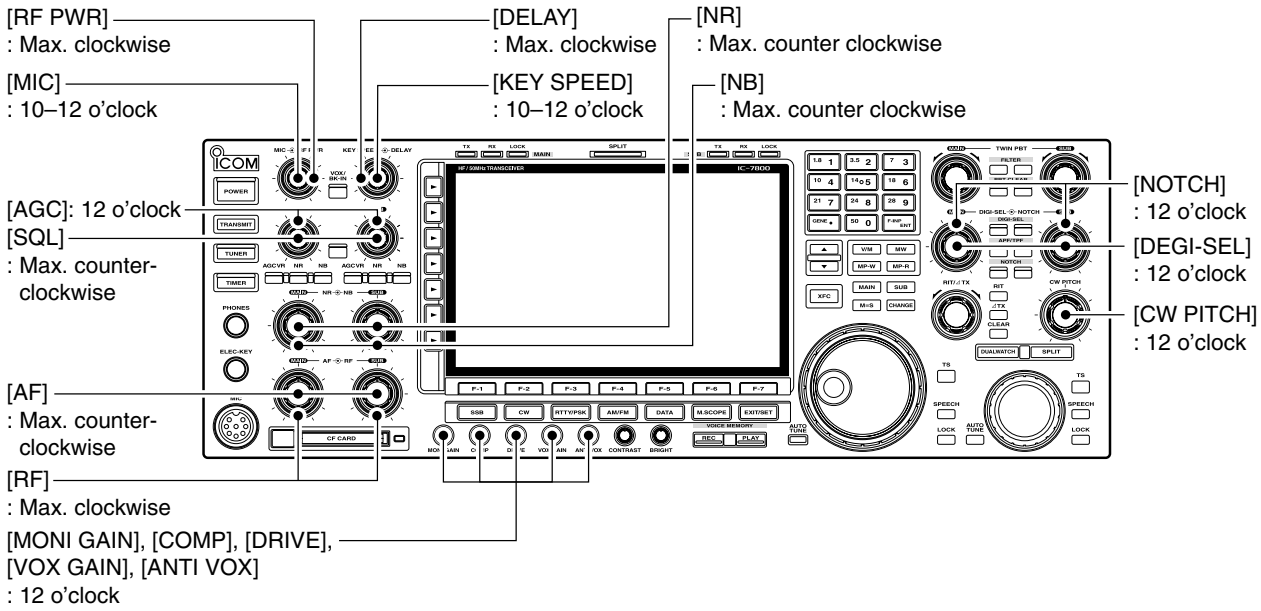
② While pushing and holding [F-INP•ENT] and [MW], push [POWER] to turn power ON.
- The CPU is reset.
- The CPU start up and it takes approx. 5 sec.
- The transceiver displays its initial VFO frequencies when resetting is complete.

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

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

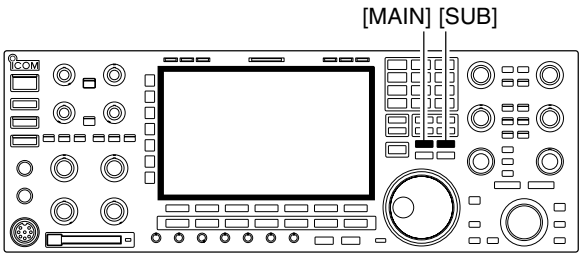
■ Initial settings

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



■ Main/Sub band selection

The IC-7800 has 2 bands, main and sub bands. 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 accessed to the selected band and the transmission is only permitted for the main band (except the split frequency operation).

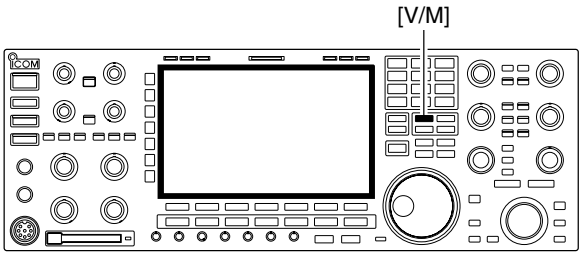


➥ Push [MAIN] to select the main band.
- The key backlight for [MAIN] lights.
- Main band's frequency readout highlighted.

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

■ Selecting VFO/memory mode

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

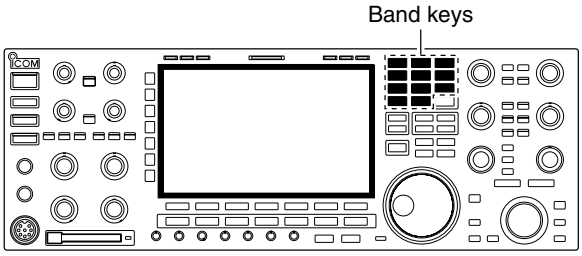


"VFO" indicator

Memory channel number

➥ Push [V/M] to switch between VFO and memory modes.
- "VFO" appears when VFO mode, or the selected memory channel number appears when memory mode is selected beside the frequency readout.
- Pushing [V/M] for 1 sec. transfers the contents of the selected memory channel to VFO mode. (p. 8-5)

■ Selecting an operating band



The triple band stacking register provides 3 memories in one band. 3 sets of a frequency and operating mode on each band are automatically stored when used.

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.

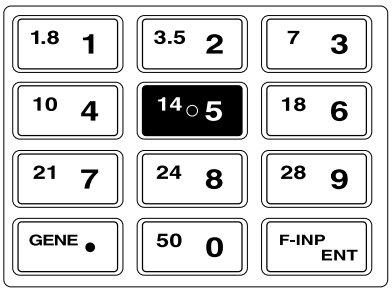
This function is convenient when you operate 3 operating modes on one band. For example, one register is used for a CW frequency, another for an SSB frequency and the other one for an RTTY frequency.

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

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

◇ Using the band stacking registers

[Example]: 14 MHz band



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

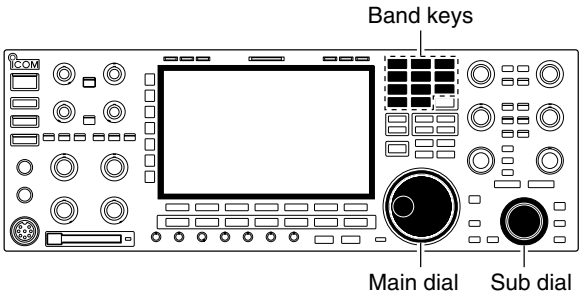
② Push [14•5] again, then select another frequency and operating mode.
- This frequency and operating mode are memorized in the second band stacking register.

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



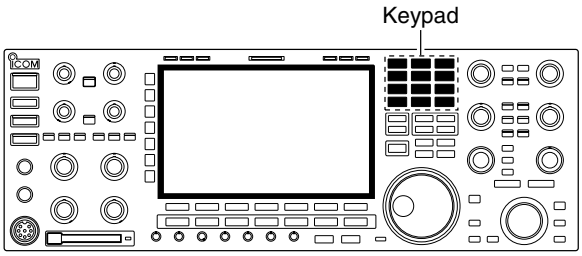
① Push the desired band key on the keypad 1–3 times.
- 3 different frequencies can be selected on each band with the band key.
- Push [MAIN] or [SUB] to select the band in advance.

② Rotate the main dial to set the desired frequency in main band, rotate the sub dial to set the desired frequency in sub band.

If the dial lock function is activated, the lock indicator lights, and the main dial does not function. In this case, push [LOCK] to deactivate the lock function. (see p. 5-18 for details)

✔ CONVENIENT!
The sub dial is available for when tuning frequency in sub band. The sub dial allows quick tuning in sub band without main/sub band selection.

◇ Direct frequency entry with the keypad



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

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

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

④ Push [F-INP•ENT] to set the input frequency.
- To cancel the input, push [▲]/[▼] instead of [GENE•.].

[EXAMPLE]

7.00000 MHz

Push [F-INP ENT] [21 7] → [F-INP ENT]

VFO USB FIL2 F-INP . . 7 → VFO USB FIL2 7.000.00

21.24000 MHz

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

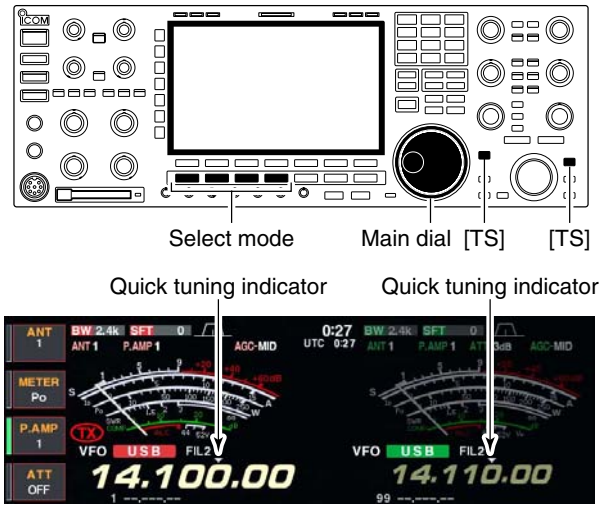
VFO USB FIL2 F-INP . .21 → VFO USB FIL2 F-INP 21. . → VFO USB FIL2 F-INP 21. .24 → VFO USB FIL2 21.240.00

21.24000 MHz ⇒ 21.36000 MHz

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

VFO USB FIL2 F-INP 21. . → VFO USB FIL2 F-INP 21. .36 → VFO USB FIL2 21.360.00

◇ Quick tuning step



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

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

② Rotate the main dial to change the frequency in programmed kHz steps.
③ Push [TS] again to turn OFF the indicator.
④ Rotate the main dial for normal tuning if desired.

◇ Selecting "kHz" step

① Push [TS] to turn the quick tuning function ON and OFF.
- "▼" appears when the quick tuning function ON.

② Push [TS] for 1 sec. to enter tuning step setting display.
- Selected tuning steps for all modes appear.

③ Select the desired operating mode.
④ Rotate the main dial to select the desired tuning step.
⑤ Repeat steps ③ and ④ to select quick tuning steps for other modes, if desired.
⑥ Push [EXIT/SET] to exit the setting display.

NOTE: When entering into quick tuning step set mode, the quick tuning function must be activated, and the set mode can be accessed from either band's quick tuning switch, [TS]. Therefore, use the same band's [TS] for quick tuning function selection and the set mode entering.

◇ ¼ tuning step function

¼ tuning step OFF

¼ tuning step ON

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

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

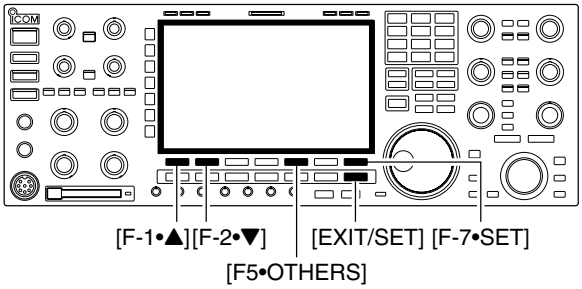
◇ Selecting 1 Hz step

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

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

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

◇ Auto tuning step function



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

① Push [EXIT/SET] several times to close a multi-function screen, if necessary.
② Push [F-7•SET] to select set mode menu screen.
- Pushing and holding [EXIT/SET] for 1 sec. also selects set mode menu screen.

③ Push [F-5•OTHERS] to enter miscellaneous (others) set mode.
④ Push [F-1•▲] or [F-2•▼] to select "MAIN DIAL Auto TS" or "SUB DIAL Auto TS."
- "MAIN DIAL Auto TS" for main dial, "SUB DIAL Auto TS" for sub dial selection.

⑤ Rotate main dial to select the desired condition from high, low and OFF.
- High : Approx. 5 times faster
- Low : Approx. twice faster
- OFF : Auto tuning step is turned OFF.

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

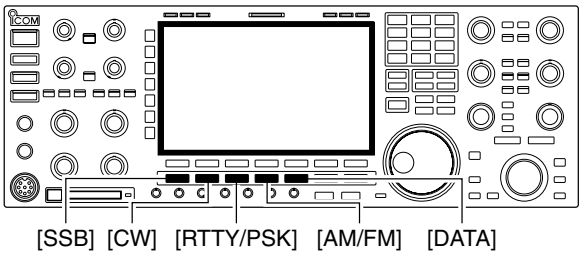
◇ Band edge warning beep

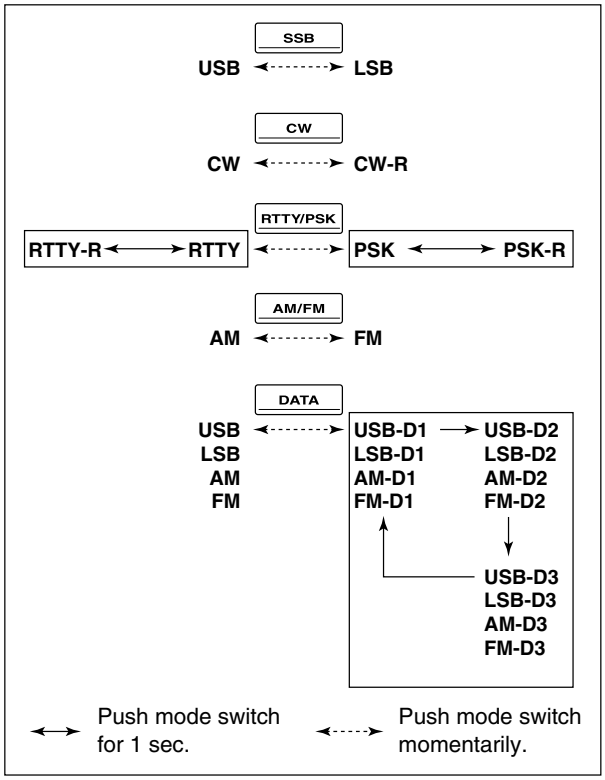
When selecting a frequency, that lies outside of a band's specified frequency range, a warning beep sounds. This function can be turned OFF in set mode, if desired.

① Push [EXIT/SET] several times to close a multi-function screen, if necessary.
② Push [F-7•SET] to select set mode menu screen.
- Pushing and holding [EXIT/SET] for 1 sec. also selects set mode menu screen.

③ Push [F5•OTHERS] to enter miscellaneous (others) set mode.
④ Push [F-1•▲] or [F-2•▼] to select "Beep (Band Edge)."
⑤ Rotate main dial to turn the band edge warning beep ON and OFF.
⑥ Push [EXIT/SET] to exit the set mode.

■ Operating mode selection





SSB (USB/LSB), SSB data (USB data/LSB data), CW, CW reverse (CW-R), RTTY, RTTY reverse (RTTY-R), PSK, PSK reverse (PSK-R), AM, AM data, FM and FM data modes are available in the IC-7800. Select the desired operation mode as follows.

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

Microphone signals are muted when data mode is selected.

• Selecting SSB mode

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

• Selecting CW mode

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

• Selecting RTTY/PSK mode

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

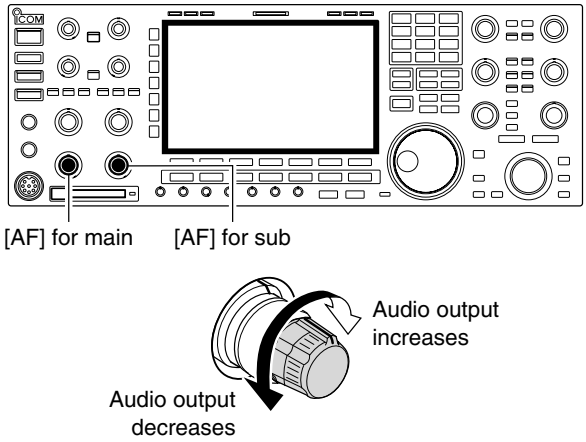
• Selecting AM/FM mode

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

• Selecting DATA mode

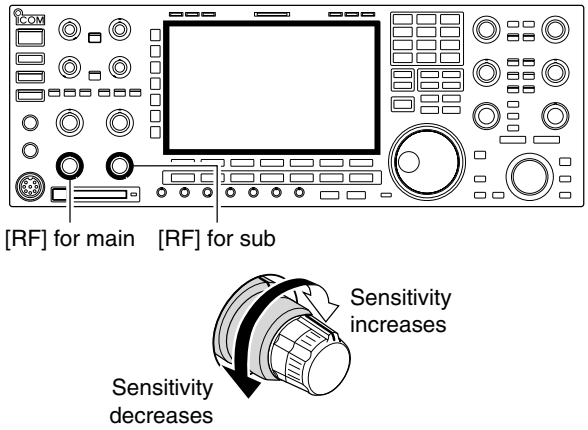
➥ After USB, LSB, AM, synchronous AM or FM is selected, push [DATA] to select USB data, LSB data, AM data, synchronous AM data or FM data mode, respectively.
- After data mode is selected, push [DATA] to toggle between regular voice and data mode.
- After data mode is selected, push [DATA] for 1 sec.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

■ Volume setting



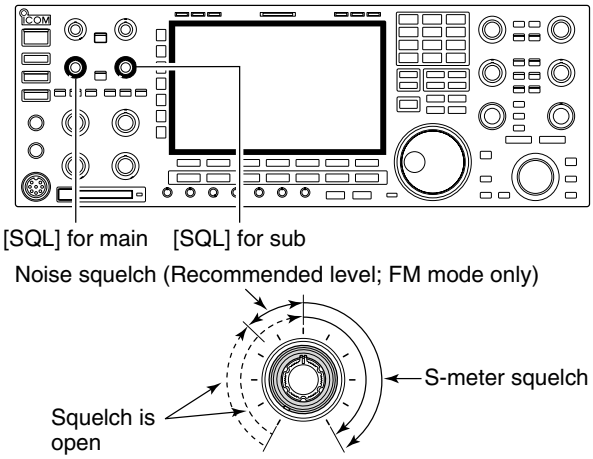
➥ Rotate [AF] control clockwise to increase; counterclockwise to decrease the audio output level.
• Set a suitable audio level.

■ RF gain adjustment



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

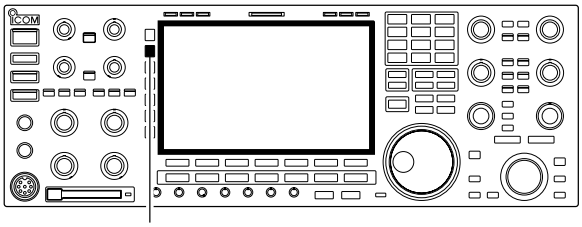
■ Squelch level adjustment

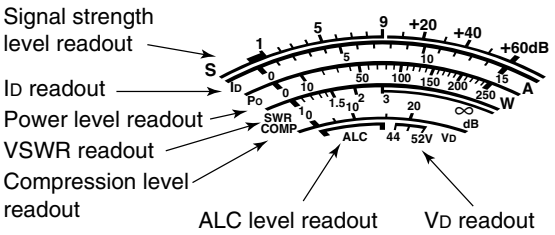


The squelch removes noise output from the speaker (closed position) when no signal is received.

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

■ Meter indication selection





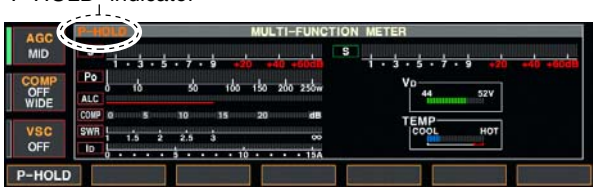
The S/RF meter indication, during transmit, can be selected from the following items as your desired.

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

METER Po	Indicates the relative RF output power in watts.
METER SWR	Indicates the VSWR over the transmission line.
METER ALC	Indicates the ALC level. The ALC circuit begins to activate when the RF output power reaches a preset level.
METER COMP	Indicates the compression level when the speech compressor is in use.
METER ID	Indicates the drain's current of the final FETs.
METER VD	Indicates the drain's terminal voltage of the final FETs.

◇ Multi-function digital meter

"P-HOLD" indicator



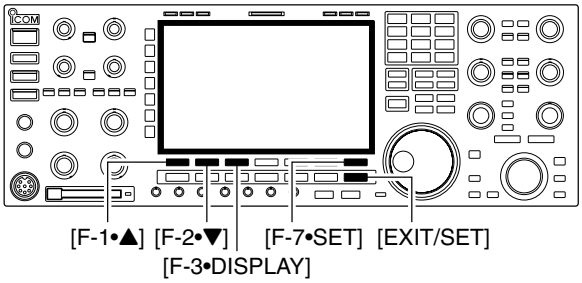
The IC-7800 can display the multi-function digital meter in the LCD display, which displays all transmit meters simultaneously.

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

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

◇ Meter type selection

Total of 3 meter types are available in the IC-7800—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 [F-7•SET], then push [F-3•DISPLAY] to select display set mode.
③ Push [F-1•▲] or [F-2•▼] to select “Meter type (Normal Screen)” item.
④ Rotate main dial to select the desired meter type from “Standard,” “Edgewise” and “Bar.”
⑤ Push [EXIT/SET] to exit display set mode.

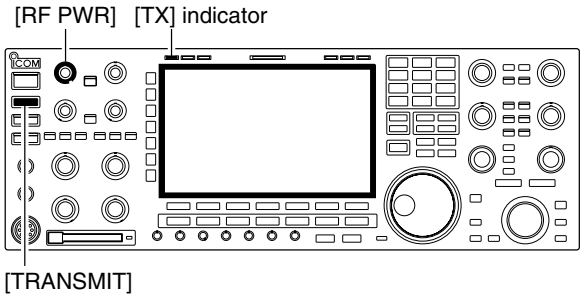
• Edgewise meter

• Bar meter

■ 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 being operating on that frequency.

◇ Transmitting



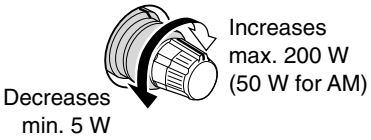
Before transmitting, monitor your selected operating frequency to make sure transmitting won't cause interference to other stations on the same frequency.

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

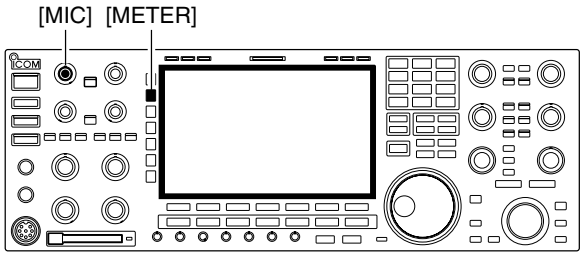
② Push [TRANSMIT] again or release [PTT] (microphone) to return to receive.

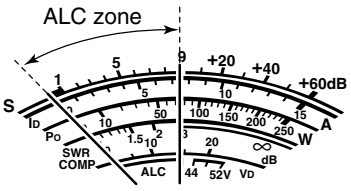
✔ ***Adjusting the transmit output power***

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



◇ Microphone gain adjustment





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

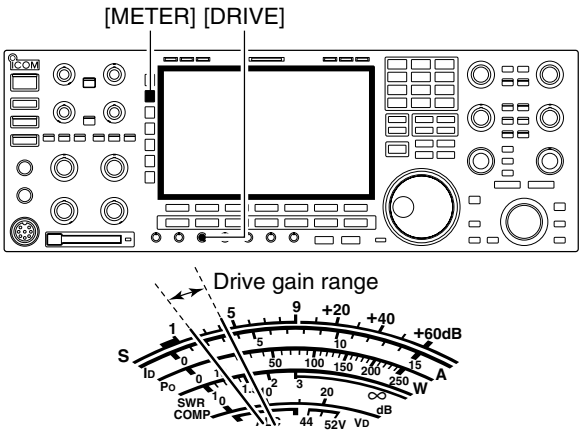
① Push [METER] to select the ALC meter.

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

③ While talking into the microphone, rotate [MIC] so that the ALC meter reading doesn't go outside the ALC zone. (see at left)

④ Release [PTT] (microphone) to return to receive.

◇ Drive gain adjustment



The drive gain can be activated for the all modes except SSB without speech compressor to adjust the amplifying gain at the drive stage.

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

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