



INSTRUCTION MANUAL

VHF/UHF DIGITAL TRANSCEIVER

IC-80AD

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

WARNING: MODIFICATION OF THIS DEVICE TO RECEIVE CELLULAR RADIOTELEPHONE SERVICE SIGNALS IS PROHIBITED UNDER FCC RULES AND FEDERAL LAW.

Icom Inc.





FOREWORD

Thank you for purchase this fine Icom product. We understand you have a choice of many different radios in the market place. Many hours of research and development went into the design of your IC-80AD, following Icom's philosophy of "technology first."

The IC-80AD VHF/UHF DIGITAL TRANSCEIVER is designed with Icom's superior technology and craftsmanship combining traditional analog technologies with the new digital technology, Digital Smart Technologies for Amateur Radio (D-STAR), for a balanced package.

With proper care, this product should provide you with years of trouble-free operation. We want to take a couple of moments of your time to thank you for making your IC-80AD your radio of choice, and hope you agree with Icom's philosophy of "technology first."

EXPLICIT DEFINITIONS

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

FEATURES

- *DV mode (Digital voice + Low-speed data communication) operation-ready*
 - *Text message and call sign exchange*
 - *Transmitting position data with a GPS receiver*
- *GPS receiver connectable*
 - *Optional HM-189GPS is required*
- *DR (D-STAR Repeater) mode and repeater list allow you to operate D-STAR repeater simply*
- *Splash-resistant construction (IPX4*)*
 - *Only when the supplied battery pack (or optional battery case), antenna and jack cover are attached.

IMPORTANT

READ ALL INSTRUCTIONS carefully and completely before using the transceiver.

SAVE THIS INSTRUCTION MANUAL— This instruction manual contains important operating instructions for the IC-80AD.

PRECAUTIONS

⚠ WARNING RF EXPOSURE! This device emits Radio Frequency (RF) energy. Caution should be observed when operating this device. If you have any questions regarding RF exposure and safety standards please refer to the Federal Communications Commission Office of Engineering and Technology's report on Evaluating Compliance with FCC Guidelines for Human Radio Frequency Electromagnetic Fields (OET Bulletin 65)

⚠ WARNING! NEVER hold the transceiver so that the antenna is very close to, or touching exposed parts of the body, especially the face or eyes, while transmitting. The transceiver will perform best if the microphone is 5 to 10 cm (2 to 4 inches) away from the lips and the transceiver is vertical.

⚠ WARNING! NEVER operate the transceiver with an earphone, headphones 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 level or discontinue use.

⚠ WARNING! NEVER operate the transceiver while driving a vehicle. Safe driving requires your full attention—anything less may result in an accident.

NEVER connect the transceiver to a power source of more than 16 V DC. This will ruin the transceiver.

NEVER connect the transceiver to a power source using reverse polarity. This will ruin the transceiver.

DO NOT operate the transceiver near unshielded electrical blasting caps or in an explosive atmosphere.

DO NOT push the PTT unless you actually intend to transmit.

BE CAREFUL! The transceiver will become hot when operating it continuously for long periods.

DO NOT use or place the transceiver in direct sunlight or in areas with temperatures below -20°C (-4°F) or above $+60^{\circ}\text{C}$ ($+140^{\circ}\text{F}$).

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

DO NOT use harsh solvents such as benzene or alcohol to clean the transceiver, because they can damage the transceiver's surfaces.

PRECAUTIONS

KEEP away from heavy rain, and never immerse the IC-80AD in the water. The transceiver meets IPX4* requirements for splash resistance. However, once the transceiver has been dropped, splash resistance cannot be guaranteed because of possible damage to the transceiver's case or waterproof seal.

*Only when the supplied battery pack (or optional battery case), antenna and jack cover are attached.

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

Even when the transceiver power is OFF, a slight current still flows in the circuits. Remove the battery pack or batteries from the transceiver when not using it for a long time. Otherwise, the installed battery pack or batteries will become exhausted, and will need to be recharged or replaced.

• Important notes when using GPS receiver

Please do not use the HM-189GPS close to the transceiver's antenna. The transmit signal may cause GPS receiver malfunction.

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.

For U.S.A. only

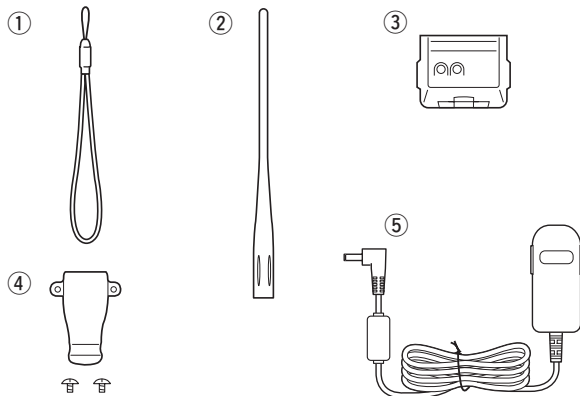
CAUTION: Changes or modifications to this device, not expressly approved by Icom Inc., could void your authority to operate this device under FCC regulations.

SUPPLIED ACCESSORIES

The following accessories are supplied with the transceiver.

- ① Hand strap 1
- ② Antenna 1
- ③ Battery pack (BP-217) 1
- ④ Belt clip 1
- ⑤ Battery charger (BC-167SA/SC/SV)* 1

* The BC-167SA, BC-167SC and BC-167SV have different shapes.



Icom, Icom Inc. and the Icom logo are registered trademarks of Icom Incorporated (Japan) in the United States, the United Kingdom, Germany, France, Spain, Russia and/or other countries.

Microsoft, Windows and Windows Vista are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.

TABLE OF CONTENTS

FOREWORD	i	■ Setting squelch level	17
EXPLICIT DEFINITIONS	i	■ Monitor function	17
FEATURES	i	■ Mode selection	18
IMPORTANT	i	■ [DIAL] function assignment	20
PRECAUTIONS	ii, iii	■ Operating band selection	20
FCC INFORMATION	iii	■ Setting a tuning step	22
SUPPLIED ACCESSORIES	iv	■ Setting a frequency	22
TABLE OF CONTENTS	v–vii	■ Lock function	24
		■ Receiving	24
		■ Operating mode selection	25
		■ Attenuator function	25
		■ Transmitting	26
		■ Transmit power selection	27
		■ TV channel operation	27
1 ACCESSORY ATTACHMENT	1–2	5 REPEATER AND DUPLEX OPERATIONS	29–33
■ Antenna	1	■ Repeater operation	29
■ Belt clip	1	■ Duplex operation	31
■ Hand strap	2	■ Auto repeater function	32
■ Battery pack	2	■ 1750 Hz tone	33
2 PANEL DESCRIPTION	3–9	6 DV MODE PROGRAMMING	34–46
■ Front, top and side panels	3	■ About the D-STAR system	34
■ Function display	8	■ Call sign programming	36
3 BATTERY CHARGING	10–15	■ Repeater list	39
■ Caution	10	■ Repeater list programming	40
■ Regular charging	12	■ Changing a repeater list	45
■ Rapid charging	13	■ Clearing a repeater list	46
■ Optional battery case	14		
■ Battery information	14		
■ External DC power operation	15		
4 BASIC OPERATION	16–28		
■ Power ON	16		
■ Setting audio volume	16		

TABLE OF CONTENTS

7 DV MODE OPERATION	47–74	■ Copying memory/call contents.....	97
■ Digital mode operation.....	47	■ Memory clearing.....	98
■ Current call sign setting.....	47	■ Erasing/transferring bank contents.....	99
■ Receiving a D-STAR repeater.....	48	10 SCAN OPERATION	100–108
■ Received call sign.....	49	■ Scan types.....	100
■ Copying the call sign.....	51	■ Full/band/programmed scan.....	102
■ DR (D-STAR Repeater) mode operation.....	53	■ Scan edges programming.....	103
■ Simplex operation in VFO.....	58	■ Memory scan.....	104
■ D-STAR repeater operation in VFO.....	60	■ Memory bank scan.....	105
■ Message operation.....	66	■ Skip channel/frequency setting.....	106
■ Automatic reply function.....	68	■ Scan resume condition.....	108
■ EMR (Emergency) communication.....	69	11 PRIORITY WATCH	109–112
■ Break-in communication.....	70	■ Priority watch types.....	109
■ Low-speed data communication.....	72	■ Priority watch operation.....	110
■ Other function for DV mode operation.....	74	12 MENU SCREEN OPERATION	113–140
8 GPS/GPS-A OPERATION	75–88	■ General.....	113
■ GPS operation.....	75	■ MENU screen indication and arrangement.....	114
■ GPS-A operation.....	88	■ Items list.....	115
9 MEMORY/CALL CHANNELS	89–99	■ DUP/TONE items (DUP.T).....	117
■ General description.....	89	■ Scan items (SCAN).....	119
■ Selecting a memory channel.....	90	■ Set mode items (SET).....	122
■ Selecting a call channel.....	91	□ Function set mode items (FUNC).....	122
■ Memory channel programming.....	92	□ Display set mode items (DISP).....	127
■ Memory bank setting.....	93	□ Sounds set mode items (SOUNDS).....	128
■ Memory bank selection.....	94	■ DV set mode items.....	130
■ Programming memory/bank/scan name.....	95	■ GPS set mode items.....	134
■ Selecting memory/bank name indication.....	96		

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

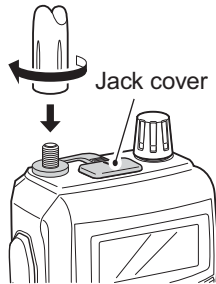
16

TABLE OF CONTENTS

13 OTHER FUNCTIONS	141–157	15 SPECIFICATIONS	159–160
■ Programming a DTMF code	141	16 OPTIONS	161–164
■ Transmitting a DTMF code	142	■ Optional HM-75A REMOTE CONTROL SPEAKER MICROPHONE	162
■ Clearing a DTMF memory	143	■ Optional HM-189GPS GPS SPEAKER MICROPHONE	164
■ Confirming a DTMF memory	144	INDEX	165–169
■ Setting DTMF transfer speed	144		
■ Tone frequency and DTCS code	145		
■ Digital code and digital call sign setting	146		
■ Tone/DTCS squelch	148		
■ Digital squelch	149		
■ Pocket beep function	149		
■ DTCS polarity setting	150		
■ Tone scan	150		
■ Beep tones	151		
■ Dial speed acceleration	151		
■ Key lock effect	152		
■ Weather channel operation	152		
■ Power save	154		
■ Auto power OFF	154		
■ Auto power ON	154		
■ Time-out timer	155		
■ PTT lock	155		
■ Display backlighting	155		
■ LCD contrast	155		
■ Cloning function	156		
■ Resetting	157		
14 TROUBLESHOOTING	158		

■ Antenna

Insert the supplied antenna into the antenna connector and screw down the antenna as shown below.



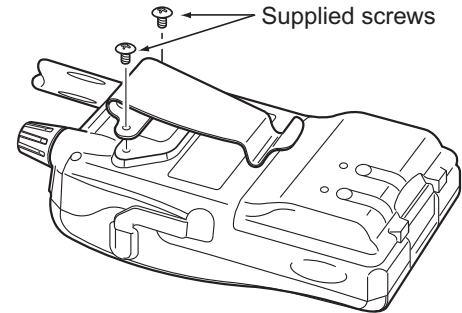
NEVER carry the transceiver by holding the antenna.

KEEP the jack cover attached when jack is not in use to protect the connector from dust and moisture.

✓ *For your information*

Third-party antennas may increase transceiver performance. An optional AD-92SMA ANTENNA CONNECTOR ADAPTER is available to connect an antenna that has a BNC connector.

■ Belt clip



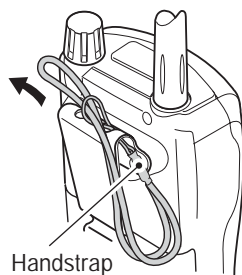
CAUTION:

USE the supplied screws only. Using screws longer than specified could damage the transceiver.

1 ACCESSORY ATTACHMENT

■ Hand strap

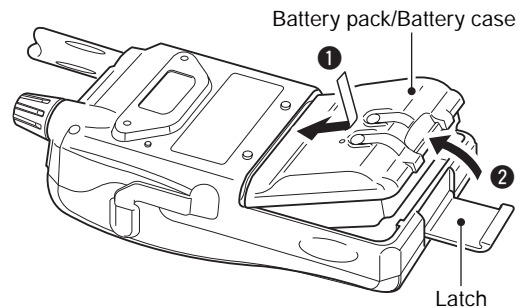
To facilitate carrying the transceiver, slide the hand strap through the loop on the top of the belt clip as illustrated below.



■ Battery pack

Attach the Li-Ion battery pack (BP-217) or battery case (BP-216) as illustrated below.

- Charge the Li-Ion battery pack before use. (pgs. 12, 13)



■ Front, top and side panels



1 ANTENNA CONNECTOR (p. 1)

Connects the supplied antenna.

- An optional AD-92SMA adapter (p. 161) is available for connecting an antenna with a BNC connector.

2 PTT SWITCH [PTT] (p. 26)

Push and hold to transmit, release to receive.

3 TX/RX INDICATOR [TX/RX] (pgs. 24, 26)

Lights green while receiving a signal or when the squelch is open; lights red while transmitting.

4 SQUELCH KEY [SQL] (p. 17)

- Push and hold to open the squelch temporarily and monitor the operating frequency.
- While pushing and holding this key, rotate [DIAL] to adjust the squelch level.

5 MENU • LOCK KEY [MENU

- Push to enter menu screen indication ON and OFF.
- Pushing [V/MHz] also exits from the menu screen.
- Push and hold for 1 sec. to toggle the lock function ON and OFF. (p. 24)

6 POWER KEY [PWR] (p. 16)

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

2 PANEL DESCRIPTION



⑦ VOLUME CONTROL KEY [Δ]/[∇]

- ➔ Adjust audio volume level. (p. 17)
- ➔ [Δ] enters or sends the DTMF code 'D'. (pgs. 141–143)

⚡ The function of tuning control and volume control can be traded. See page 20 for details.

⑧ CONTROL DIAL [DIAL]

- ➔ Rotate to tune the operating frequency. (p. 22)
- ➔ During memory mode, rotate to select the memory channel. (pgs. 18, 90)
- ➔ While scanning, changes the scanning direction. (pgs. 102, 104, 105)
- ➔ While pushing and holding [SQL], sets the squelch level. (p. 17)
- ➔ After pushing [BAND] during memory mode operation, selects the programmed bank. (p. 94)
- ➔ During menu screen operation, rotate to select the set items or values. (p. 113)

⚡ The function of tuning control and volume control can be traded. See page 20 for details.

⑨ EXTERNAL SPEAKER/MICROPHONE JACK [SP/MIC]

Connect a cloning cable, optional speaker microphone or headset, if desired.

See page 161 for a list of available options.

⚡ Be sure to turn power OFF before connecting/disconnecting optional equipment to/from the [SP/MIC] jack.

⑩ EXTERNAL DC IN JACK [DC IN]

- ➔ Connects the supplied wall charger, BC-167SA/SC/SV, to charge the attached battery pack. (p. 12)
- ➔ Connect an external DC power supply through the optional CP-12L, CP-19R or OPC-254L for external DC operation. (p. 15)

⑪ DATA JACK [DATA] (pgs. 72, 75)

Connects a PC through the optional data communication cable, OPC-1529R, for low-speed data communication or connects a GPS receiver.

◇ KEYPAD



- ➔ Push to input numeral for frequency input, memory channel selection, etc.
- ➔ Push to enter or send the DTMF code. (pgs. 141–143)

1 • VOLUME/DIAL KEY [1] • [V⇔D](1)

- ➔ Numeral input and DTMF code: ‘1’
- ➔ Push and hold for 1 sec. to exchange the assigned functions between [DIAL] and [Δ]/[▽]. (p. 20)

2 • TUNING STEP KEY [2] • [TS](2)

- ➔ Numeral input and DTMF code: ‘2’
- ➔ Push and hold for 1 sec. to enter tuning step set mode. (p. 22)
- ➔ During menu screen operation or select memory write mode, push to select the set items or values. (p. 113)

3 • OUTPUT POWER KEY [3] • [LOW](3)

- ➔ Numeral input and DTMF code: ‘3’
- ➔ Push and hold for 1 sec. to select the output power. (p. 27)
 - Selects the transmit output power from high, mid, low and S-low.
 - While pushing and holding this key, [DIAL] rotation selects the output power.

4 • DUPLEX KEY [4] • [DUP](4)

- ➔ Numeral input and DTMF code: ‘4’
- ➔ Push and hold for 1 sec. to select minus duplex, plus duplex, and simplex operation. (p. 31)
 - “DUP-” (minus duplex), “DUP” (plus duplex) and no indication (simplex) appear in order.
 - While pushing and holding this key, [DIAL] rotation selects the duplex operation.
- ➔ During menu screen operation, push to select the upper layer. (p. 113)

2 PANEL DESCRIPTION

5 • SKIP KEY [5] • [SKIP](5)



- ➔ Numeral input and DTMF code: '5'
- ➔ Push and hold to turn the frequency skip function ON and OFF in VFO mode, or set the memory channel as the following skip channel in memory mode in order.
 - "SKIP" appears when memory skip, "PSKIP" appears when frequency skip and no indication appears when non skip channel is set.
 - While pushing and holding this key, [DIAL] rotation selects the skip condition.
- ➔ During menu screen operation, push to enter or exit to/from the selected set items, etc. (p. 113)

6 • MEMORY NAME KEY [6] • [M.N](6)



- ➔ Numeral input and DTMF code: '6'
- ➔ Push and hold for 1 sec. to turn the memory or bank name indication ON and OFF. (p. 96)
 - While pushing and holding this key, [DIAL] rotation selects the memory or bank indication.
- ➔ During menu screen operation, push to select the lower layer. (p. 113)

7 • TONE/DIGITAL SQUELCH KEY

[7] • [TONE](7)/[DSQ](7)



- ➔ Numeral input and DTMF code: '7'
- ➔ During FM/FM-N mode operation, push and hold for 1 sec. to select repeater tone, tone squelch, tone squelch reverse, DTCS squelch, DTCS squelch reverse and no tone operation in sequence. (p. 148)
 - Pocket beep function is available for tone squelch and DTCS squelch. (p. 149)
- ➔ During DV mode operation, push and hold for 1 sec. to select digital call sign squelch, digital code squelch and no squelch operation in sequence. (p. 149)
 - Pocket beep function is available. (p. 149)

8 • RX CALL SIGN SET KEY [8] • [RX→CS](8)



- ➔ Numeral input and DTMF code: '8'
- ➔ During DV mode operation, push and hold for 1 sec. to set the received call signs (station and repeaters) to current call sign. (p. 50)

9 • TONE SCAN/CALL SIGN KEY

[9] • [T.SCAN](9)/[CS](9)



- ➔ Numeral input and DTMF code: '9'
- ➔ During FM/FM-N mode operation, push and hold for 1 sec. to start tone scan function. (p. 150)
- ➔ During DV mode operation (including DR mode operation), push and hold for 1 sec. to enter the call sign mode. (p. 48, 57)

0 • DTMF KEY [0] • [DTMF](0)



- Numeral input and DTMF code: '0'
- Push and hold for 1 sec. to select DTMF memory mode. (p. 141)

VFO/MHz • SCAN KEY [V/MHz] • [SCAN](V/MHz)



- DTMF code: 'A'
- Push to select VFO mode. (p. 18)
- During VFO mode operation, push to select 1 MHz and 10 MHz tuning steps. (p. 22)
- Push and hold for 1 sec. to enter scan type selection mode. (pgs. 102, 104, 105)
 - Push again to start the scan.
- Aborts numeral key input. (p. 23)
- During menu screen operation, select memory write mode etc., or push to return to previous operating condition. (pgs. 92, 113)

MEMORY/CALL • SELECT MEMORY WRITE KEY [M/CALL] • [S.MW](M/CALL)



- DTMF code: 'B'
- Push to select memory mode, call channel, TV channel and weather channel. (pgs. 18, 19, 27, 90, 91, 152)
- Push and hold for 1 sec. to enter select memory write mode. (p. 92)

DR (D-STAR REPEATER) KEY [DR]



- DTMF code: 'C'
- Push to select DR mode. (pgs. 19, 53)
- During DR mode operation, push to enter the access repeater selection.

VOLUME CONTROL (UP) KEY [Δ]



- DTMF code 'D.'
- Adjust audio volume level. (p. 17)

BAND • MODE KEY [BAND] • [MODE](BAND)



- DTMF code: '* (indication: E)'
- During VFO mode operation, push to select an operating frequency band. (pgs. 20, 21)
- During memory mode operation, push to enter memory bank group selection. (p. 94)
- Push and hold for 1 sec. to select the operating mode. (p. 25)

■ • UR KEY [.] • [UR](.)

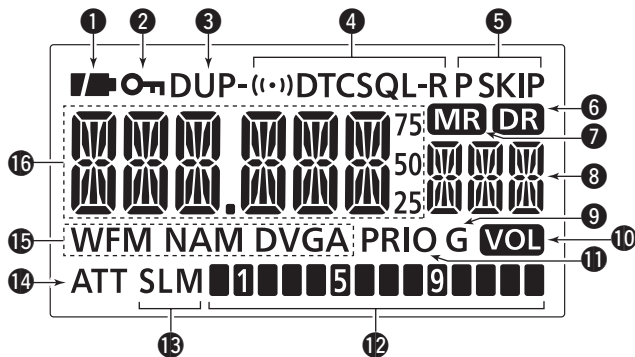


- DTMF code '# (indication: F).'
- Inputs MHz digit for frequency input.
- During DV mode operation (including DR mode operation), push and hold for 1 sec. to enter the station call sign selection mode.
 - Rotate [DIAL] to select the call sign.

During other than DV mode operation, pushing and holding this key enters the station call sign selection mode with changing the operating mode to DV mode.

2 PANEL DESCRIPTION

■ Function display



1 BATTERY INDICATOR (pgs. 12, 14)

- ➔ “” (battery indicators) appear when the battery pack is attached.
- ➔ “” appears when the battery cells/pack must be changed/charged.
- ➔ The indicators show “,” “” and “” in sequence while charging the attached battery pack.

2 KEY LOCK INDICATOR (p. 24)

Appears when the key lock function is activated.

3 DUPLEX INDICATOR (p. 31)

“DUP” appears when plus duplex, “DUP-” appears when minus duplex is selected.

4 TONE INDICATOR

• While operating in FM/FM-N mode;

- ➔ “T” appears while the subaudible tone encoder is in use. (p. 29)
- ➔ “T SQL” appears while the tone squelch function is in use. (p. 148)
- ➔ “T SQL-R” appears while the reverse tone squelch function is in use. (p. 148)
- ➔ “DTCS” appears while the DTCS squelch function is in use. (p. 148)
- ➔ “DTCS -R” appears while the reverse DTCS squelch function is in use. (p. 148)
- ➔ “((.))” appears with the “T SQL” or “DTCS” indicator while the pocket beep function (with CTCSS or DTCS) is in use. (p. 149)

• While operating in DV mode;

- ➔ “D SQL” appears while the digital call sign squelch function is in use. (p. 149)
- ➔ “CSQL” appears while the digital code squelch function is in use. (p. 149)
- ➔ “((.))” appears with the “D SQL” or “CSQL” indicator while the pocket beep function (with digital call sign or digital code squelch) is in use. (p. 149)

5 SKIP INDICATOR (pgs. 106, 107)

- “SKIP” appears when the selected memory channel is set as a skip channel.
- “P SKIP” appears when the displayed frequency is set as a skip frequency.

6 DR (D-STAR REPEATER) INDICATOR (pgs. 19, 53)

Appears when DR mode is selected.

7 MEMORY INDICATOR (pgs. 18, 90)

Appears when memory mode is selected.

8 MEMORY CHANNEL NUMBER INDICATOR

- Shows the selected memory channel number. (pgs. 18, 90)
- “C0” or “C1” appears when the call channel is selected. (pgs. 19, 91)
- “TV” appears when the TV channel is selected. (pgs. 19, 27)

9 GPS INDICATOR

Appears while GPS function is in use.

- GPS indicator can be turned OFF in GPS.SET mode. (p. 135)
- Stays ON when GPS receiver is connected and a valid position data is received.
- Blinks when an invalid position data is received.

11 PRIORITY WATCH INDICATOR (pgs. 110–112)

Appears when priority watch is in use.

12 S/RF METER

- Shows the relative signal strength while receiving signals. (p. 24)
- Shows the output power level while transmitting. (p. 26)

13 POWER INDICATOR (p. 27)

- “L” appears when low power is selected.
- “SL” appears when S-low power is selected.
- “M” appears when middle power is selected.
- No indicator appears when high power is selected.

14 ATTENUATOR INDICATOR (p. 25)

Appears when the RF attenuator is in use.

15 OPERATING MODE INDICATOR (p. 25)

Shows the selected operating mode.

- DV, FM, FM-N, WFM and AM are available, depending on operating band.
- “DVG” or “DV A” appears when GPS transmission or GPS-A transmission is selected in DV mode. (p. 136)

16 FREQUENCY READOUT

- Displays a variety of information, such as operating frequency, set mode contents.
 - The decimal point blinks during scan.
- During memory mode operation, the programmed memory or memory bank name is displayed.

■ Caution

Misuse of Lithium-Ion batteries may result in the following hazards: smoke, fire, or the battery may rupture. Misuse can also cause damage to the battery or degradation of battery performance.

- ⚠ **DANGER!** Use and charge only specified Icom battery packs with Icom radios. Only Icom battery packs are tested and approved for use with Icom radios. Using third-party or counterfeit battery packs may cause smoke, fire, or cause the battery to burst.

◇ Battery caution

- ⚠ **DANGER! DO NOT** hammer or otherwise impact the battery. Do not use the battery if it has been severely impacted or dropped, or if the battery has been subjected to heavy pressure. Battery damage may not be visible on the outside of the case. Even if the surface of the battery does not show cracks or any other damage, the cells inside the battery may rupture or catch fire.
- ⚠ **DANGER! NEVER** use or leave battery pack in areas with temperatures above +60°C (+140°F). High temperature buildup in the battery, such as could occur near fires or stoves, inside a sun heated car, or in direct sunlight may cause the battery to rupture or catch fire. Excessive temperatures may also degrade battery performance or shorten battery life.

- ⚠ **DANGER! DO NOT** expose the battery to rain, snow, seawater, or any other liquids. Do not charge or use a wet battery. If the battery gets wet, be sure to wipe it dry before using.
- ⚠ **DANGER! NEVER** incinerate a used battery pack since internal battery gas may cause it to rupture, or may cause an explosion.
- ⚠ **DANGER! NEVER** solder the battery terminals, or **NEVER** modify the battery pack. This may cause heat generation, and the battery may burst, emit smoke or catch fire.
- ⚠ **DANGER!** Use the battery only with the transceiver for which it is specified. Never use a battery with any other equipment, or for any purpose that is not specified in this instruction manual.
- ⚠ **DANGER!** If fluid from inside the battery gets in your eyes, blindness can result. Rinse your eyes with clean water, without rubbing them, and see a doctor immediately.
- **WARNING!** Immediately stop using the battery if it emits an abnormal odor, heats up, or is discolored or deformed. If any of these conditions occur, contact your Icom dealer or distributor.
- **WARNING!** Immediately wash, using clean water, any part of the body that comes into contact with fluid from inside the battery.

- **WARNING! NEVER** put the battery in a microwave oven, high-pressure container, or in an induction heating cooker. This could cause a fire, overheating, or cause the battery to rupture.
- **CAUTION!** Always use the battery within the specified temperature range, -20°C to $+60^{\circ}\text{C}$ (-4°F to $+140^{\circ}\text{F}$). Using the battery out of its specified temperature range will reduce the battery's performance and battery life.
- **CAUTION!** Shorter battery life could occur if the battery is left fully charged, completely discharged, or in an excessive temperature environment (above $+50^{\circ}\text{C}$; $+122^{\circ}\text{F}$) for an extended period of time. If the battery must be left unused for a long time, it must be detached from the radio after discharging. You may use the battery until the battery indicator shows half-capacity, then keep it safely in a cool dry place at the following temperature range:
 - -20°C (-4°F) to $+50^{\circ}\text{C}$ ($+122^{\circ}\text{F}$) (within a month).
 - -20°C (-4°F) to $+35^{\circ}\text{C}$ ($+95^{\circ}\text{F}$) (within three months).
 - -20°C (-4°F) to $+20^{\circ}\text{C}$ ($+68^{\circ}\text{F}$) (within a year).

◇ Charging caution




- **⚠ DANGER! NEVER** charge the battery pack in areas with extremely high temperatures, such as near fires or stoves, inside a sun-heated vehicle, or in direct sunlight. In such environments, the safety/protection circuit in the battery will activate, causing the battery to stop charging.
- **WARNING! DO NOT** charge or leave the battery in the battery charger beyond the specified time for charging. If the battery is not completely charged by the specified time, stop charging and remove the battery from the battery charger. Continuing to charge the battery beyond the specified time limit may cause a fire, overheating, or the battery may rupture.
- **WARNING! NEVER** insert the transceiver (battery attached to the transceiver) into the charger if it is wet or soiled. This could corrode the battery charger terminals or damage the charger. The charger is not waterproof.
- **CAUTION! DO NOT** charge the battery outside of the specified temperature range: 0°C to $+35^{\circ}\text{C}$ ($+32^{\circ}\text{F}$ to $+95^{\circ}\text{F}$). Icom recommends charging the battery at $+25^{\circ}\text{C}$ ($+77^{\circ}\text{F}$). The battery may heat up or rupture if charged out of the specified temperature range. Additionally, battery performance or battery life may be reduced.

3 BATTERY CHARGING

■ Regular charging

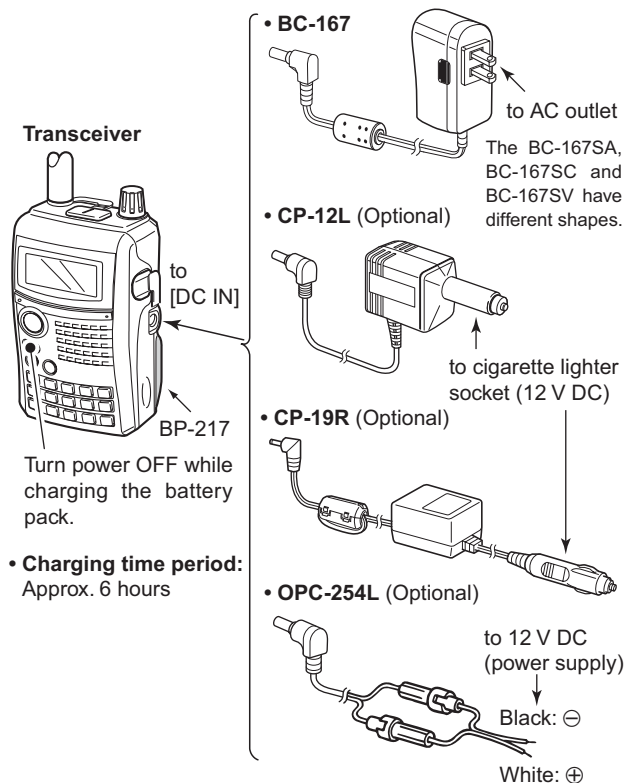
Prior to using the transceiver for the first time, the battery pack must be fully charged for optimum life and operation.

◇ Battery indicators

The indicators show “”, “” and “” in sequence and “CHARGE” appears while charging (when the transceiver’s power is OFF). The indicators and “CHARGE” disappear when the battery pack is completely charged.

◇ Charging note

- Be sure to turn the transceiver power OFF. Otherwise the battery pack will not be charged completely or will take much longer to charge.
- External DC power operation becomes possible when using an optional CP-12L, CP-19R or OPC-254L. The attached battery pack is also charged simultaneously, except during transmit. (see p. 15 for more details)
- The external DC power supply voltage must be between 10–16 V to charge the battery pack and for operation when using an optional OPC-254L.



■ Rapid charging

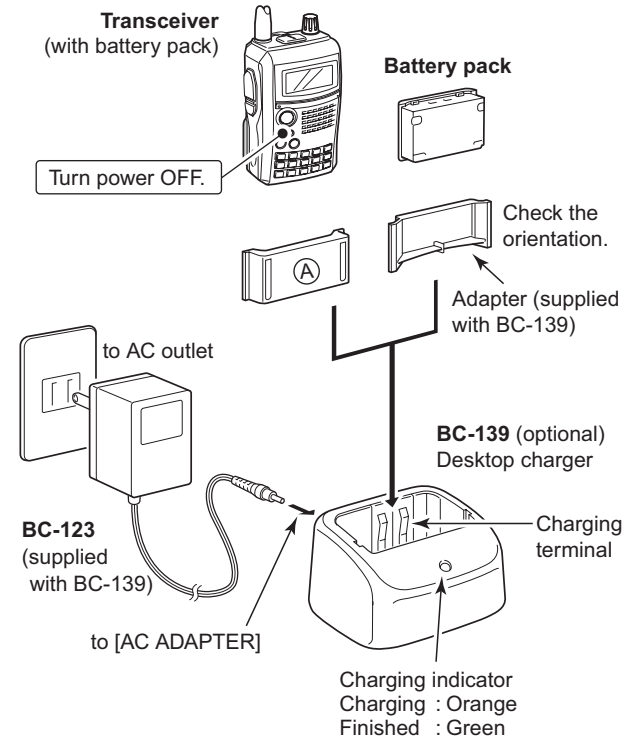
The optional BC-139 provides rapid charging of the battery pack.

◇ Charging note

- Be sure to turn the transceiver power OFF.
Detach the battery pack from the transceiver then charge the battery pack by itself, or charge the battery with regular charging when the transceiver power cannot be turned OFF. Otherwise the battery pack will not be charged (charging indicator on the BC-139 blinks orange about 10 sec. after the battery pack is installed in BC-139).
- The desktop charger, BC-139, can only charge BP-217 battery packs. Other types of rechargeable battery, Ni-Cd or Ni-MH cannot be charged.
- If the charging indicator blinks orange, there may be a problem with the battery pack or charger. If this occurs, try charging the battery pack alone, without the transceiver, or try using the standard (non-rapid) charger. Contact your dealer if you have problems charging a new battery pack.
- The optional CP-12L and OPC-254L can be used instead of the supplied AC adapter. Connect one of these to the [DC 13.5V] jack in this case.

NOTE: If the charging indicator blinks orange for 10 sec. or more with the battery pack installed in the transceiver, try charging the BP-217 alone. You can also try charging the BP-217 alone using the standard (non-rapid) battery charger.

- **Charging period:** approx. 2.5 hours (with BP-217)

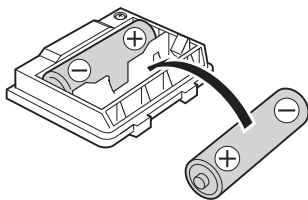


3 BATTERY CHARGING

■ Optional battery case

➤ Install 2 × LR6 (AA) size alkaline batteries into the optional BP-216 BATTERY CASE.

- Be sure to observe the correct polarity.



/// A built-in step-up converter in the BP-216 increases the voltage to 5 V DC.

/// Approx. 100 mW of output power is possible with the BP-216 operation. Also, no transmit output power selection (TX inhibit) is available.

/// Keep battery contacts clean. It's a good idea to clean battery terminals once a week.

◇ Battery information

The batteries may seem to have low capacity when used in low temperatures such as -10°C ($+14^{\circ}\text{F}$) or below. Keep the batteries warm in this case.

◇ Battery replacement

When the batteries become exhausted, the function display may blink or have a lower contrast. In this cases, replace all batteries with new, same brand, alkaline batteries.

■ Battery information

◇ Battery life


The transceiver operates with the BP-217 Li-ion as follows. When operating in DV mode, operating time may be shortened by one-half hour.

- **VHF band** : Approx. 6.5 hours
- **UHF band** : Approx. 6.0 hours (Tx: Rx: Stand-by=1: 1: 8)



/// Even when the transceiver power is OFF, a small current still flows in the radio. Remove the battery pack or case from the transceiver when not using it for a long time. Otherwise, the battery pack or installed batteries will become exhausted.

/// The battery protection function sets transceiver to Low power (0.5 W) automatically when temperature is 0°C ($+32^{\circ}\text{F}$) or below. In this case, transmit power selections (Hi/Mid) are also disable.

◇ Battery indicator

The battery indicator, “,” appears only when the BP-217 Li-ion is attached to the transceiver.

/// The battery indicator does not appear when turning power ON after charging is completed without disconnecting the battery charger or external DC power.

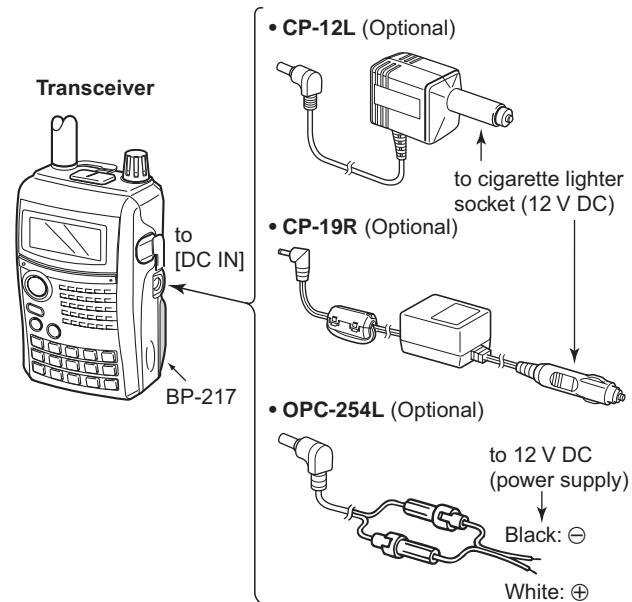
Indication	Battery condition
	The battery has ample capacity.
	The battery is nearing exhaustion. Charging is necessary.

External DC power operation

An optional cigarette lighter cable (CP-12L or CP-19R; for 12 V cigarette lighter socket) or external DC power cable (OPC-254L) can be used for external power operation.

Operating note

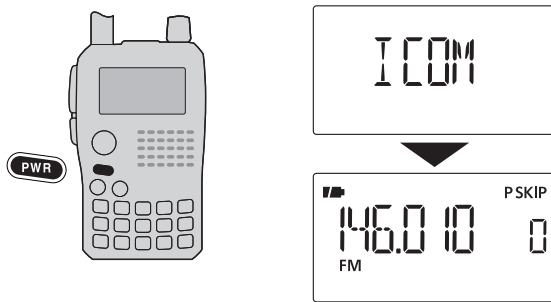
- Power supply voltage must be between **10.0–16.0 V DC**. **NEVER CONNECT OVER 16 V DC** directly into the [DC IN] jack of the transceiver.
- **BE SURE** to use **CP-12L, CP-19R** or **OPC-254L** when connecting a regulated 12 V DC power supply.
Use an external DC-DC converter to connect the transceiver through optional CP-12L, CP-19R or OPC-254L to a 24 V DC power source.
- The voltage of the external power supply must be within 10–16 V DC when using either CP-12L, CP-19R or OPC-254L, otherwise, use the battery pack.
- Disconnect the power cables from the transceiver when not using it. Otherwise, the vehicle battery will become exhausted.
- The power save function is deactivated automatically during external DC power operation.



NOTE: Up to 5 W (approx.) of maximum output power is available when using external DC power. However, when the supplied voltage exceeds 14 V, the built-in protection circuit activates to reduce the transmit output power to 2.5 W (approx.).

■ Power ON

- ➔ Push and hold **[PWR]** for 1 sec. to turn power ON.
 - Push and hold **[PWR]** for 1 sec. to turn power OFF.

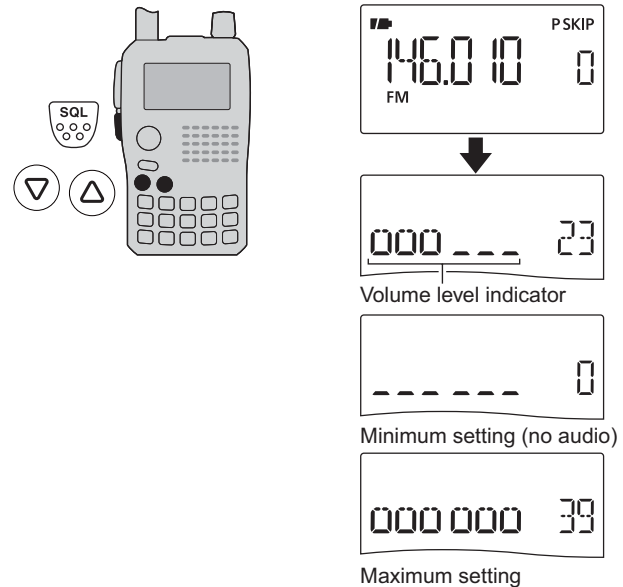


Opening message is selectable in DISP set mode.

MENU ⇨ SET ⇨ DISP ⇨ **OPN.MSG** (p. 128)

■ Setting audio volume

- ➔ Push **[△]** or **[▽]** several times to adjust the audio level.
 - If squelch is closed, push and hold **[SQL]** while setting the audio level.
 - The display shows the volume level while setting.



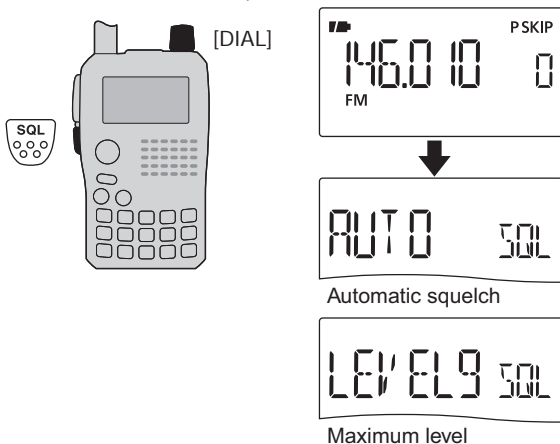
Beep level is adjustable in SOUNDS set mode.

MENU ⇨ SET ⇨ SOUNDS ⇨ **BEEPLV** (p. 128)

■ Setting squelch level

The squelch circuit mutes the received audio signal depending on the signal strength. The transceiver has 9 squelch levels, a continuously open setting and an automatic squelch setting.

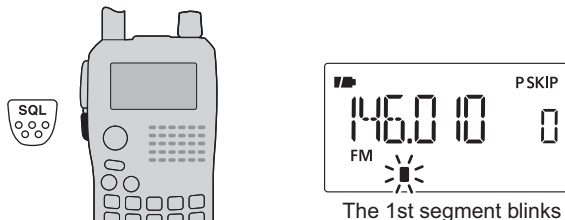
- ➔ While pushing and holding **[SQL]**, rotate **[DIAL]** to select the squelch level.
 - “LEVEL1” is loose squelch (for weak signals) and “LEVEL9” is tight squelch (for strong signals).
 - “AUTO” indicates automatic level adjustment by a noise pulse counting system.
 - “OPEN” indicates continuously open setting. (This selection is not available in DV mode.)



■ Monitor function

This function is used to listen to weak signals without disturbing the squelch setting or to open the squelch manually even when mute functions such as the tone squelch are in use.

- ➔ Push and hold **[SQL]** to monitor the operating frequency.
 - The 1st segment of the S-meter blinks.



▨ The **[SQL]** key can be set to 'sticky' operation in FUNC set mode (SET). See page 123 for details.

MENU ⇨ SET ⇨ FUNC ⇨ **MONI** (p. 123)

4 BASIC OPERATION

■ Mode selection

◇ VFO mode

VFO mode is used to set the desired frequency.

➔ Push **[V/MHz]** to select VFO mode.



What is VFO?

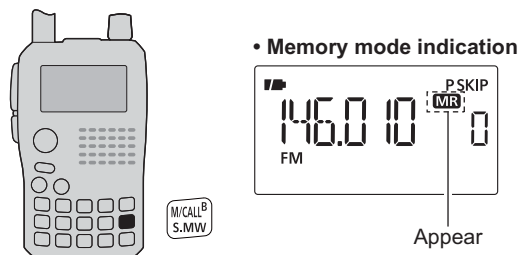
VFO is an abbreviation of Variable Frequency Oscillator. Frequencies for both transmitting and receiving are generated and controlled by the VFO.

Set the attenuator function ON (p. 25) if the received signal is blocked by another radio transmitter when using a third party high-gain antenna.

◇ Memory mode

Memory mode is used for operation on memory channels which store programmed frequencies.

- ① Push **[M/CALL]** to select memory mode.
 - “**MR**” appears when memory mode is selected.
 - Push **[M/CALL]** several times to select call channels/TV* channels/Weather† channels. Call/TV*/Weather† channels can be selected in sequence.



- ② Rotate **[DIAL]** to select the desired memory channel.
 - Only programmed memory channels can be selected.
 - Enter the memory channel directly to select the desired memory channel. (p. 91)
 - See p. 92 for memory programming details.

/// *Appears only when TV channels are programmed via the CS-80/880 (free download software).

/// †Available for the U.S.A. version only.

◇ **Call/TV*/Weather† channels**

Call channels are used for quick recall of most-often used frequencies.

▨ *Appears only when TV channels are programmed via the CS-80/880 (free download software).

▨ †Available for the U.S.A. version only.

- ① Push **[M/CALL]** several times to select call channels/TV channels/Weather channels.
 - Memory/Call/TV/Weather channels can be selected in sequence.
- ② Rotate **[DIAL]** to select the desired channel.



M/CALL
S.MWV

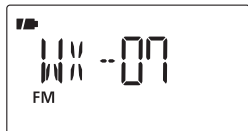
• **Call channel indication**



• **TV channel indication**



• **Weather channel indication**



TV reception is available for analog TV broadcasting only, but it is not available for digital TV broadcasting.

◇ **DR (D-STAR Repeater) mode**

DR (D-STAR Repeater) mode is used for D-STAR repeater operation. In this mode, you can select the pre-programmed repeaters and UR (your call sign) by using **[DIAL]**.

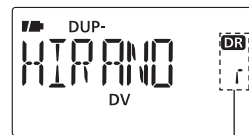
D-STAR is an abbreviation for Digital Smart Technologies for Amateur Radio.

- ① Push **[DR]** to select DR mode.
 - “**DR**” appears when DR mode is selected.



DR

• **DR mode indication**



Appear

- ② Rotate **[DIAL]** to select the desired access repeater.
 - While rotating **[DIAL]**, S/RF-meter indicates group number.
 - Only programmed access repeaters in RPT-L menu can be selected. See p. 40 for RPT-L (repeater lists) programming details.

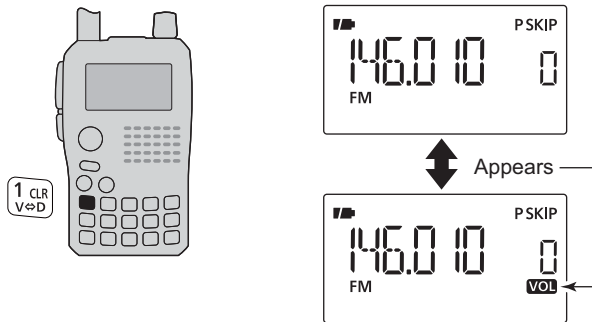
MENU ⇨ RPT-L ⇨ **ADD-L** (p. 40)

4 BASIC OPERATION

■ [DIAL] function assignment

The [DIAL] control can be used as an audio volume control instead of [△]/[▽] keys to suit your preference. However, when [DIAL] functions as an audio volume, [△]/[▽] keys function as tuning controls.

➔ Push and hold [V⇔D](1) for 1 sec. to toggle the dial function between tuning dial and audio volume.



• The following functions are switched between [DIAL] and [△]/[▽].

[DIAL]	[△]/[▽]
Frequency, Memory channel, Squelch level, Scanning direction	Audio volume set

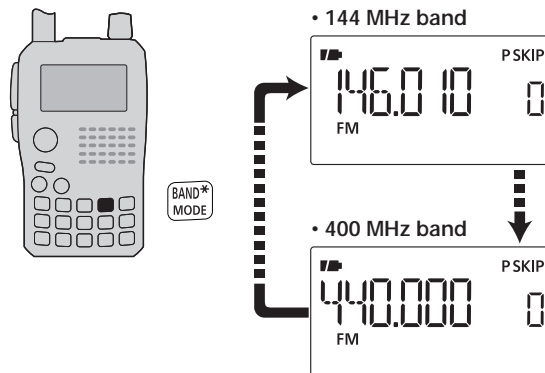
■ Operating band selection

The transceiver can receive the AM broadcast, HF bands, 50 MHz, FM broadcast, VHF air, 144 MHz, 300 MHz, 400 MHz or 800 MHz* bands.

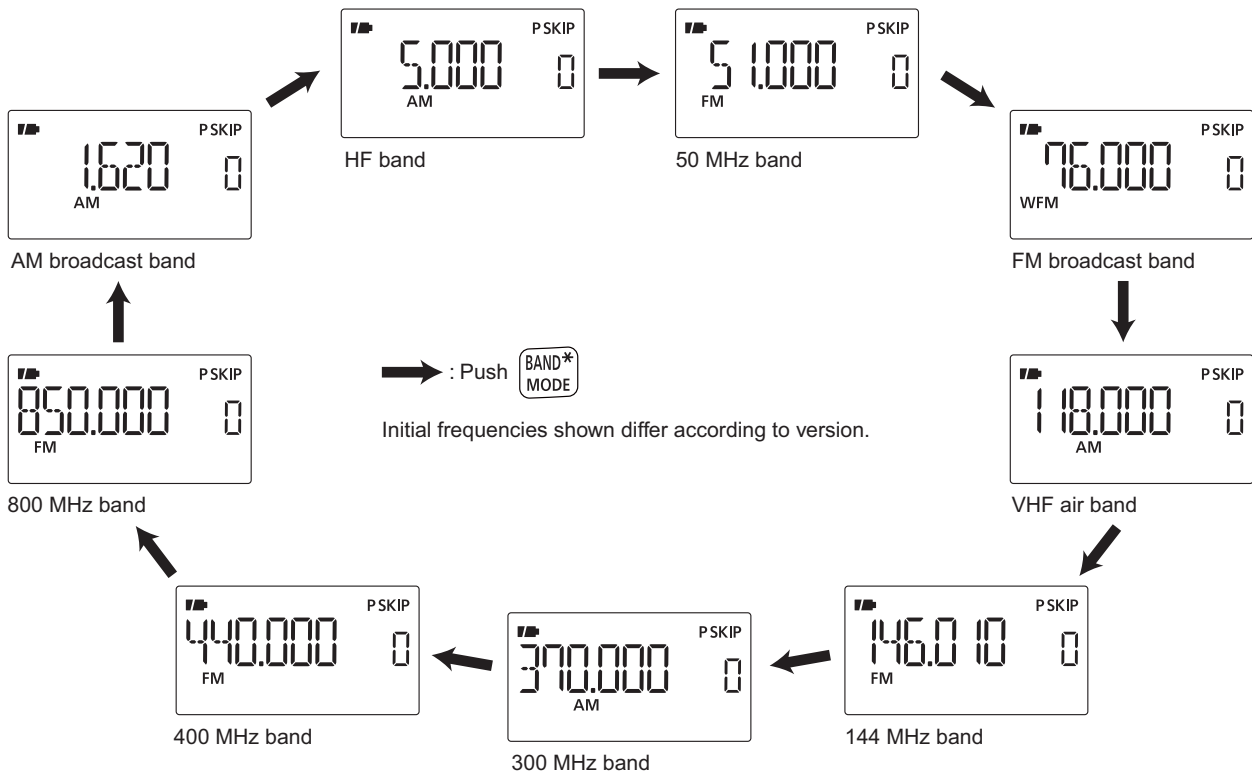
➔ In VFO mode, push [BAND] several times to select the desired frequency band.

- If VFO mode is not selected, such as a memory channel/call channel/TV channel/Weather channel, push [V/MHz] to select VFO mode first, then push [BAND] to select the desired band.

/// Available frequency bands are different depending on version. See the specification for details. (pgs. 159, 160)
 /// *Some frequency ranges are blocked for the U.S.A. version by regulation.



• Available frequency bands



4 BASIC OPERATION

■ Setting a tuning step

The tuning step can be selected for each frequency band. The following tuning steps are available for the IC-80AD.

- 5.0 kHz* • 6.25 kHz* • 8.33 kHz† • 9.0 kHz‡ • 10.0 kHz
- 12.5 kHz • 15.0 kHz* • 20.0 kHz • 25.0 kHz • 30.0 kHz
- 50.0 kHz • 100.0 kHz • 125.0 kHz • 200.0 kHz

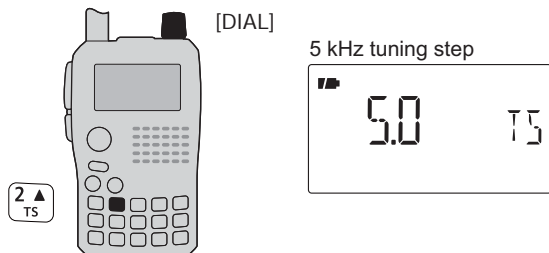
* Appears for bands below the 600 MHz only.

† Appears for the VHF air band only.

‡ Appears for the AM broadcast band only.

◇ Tuning step selection

- ① Push **[V/MHz]** to select VFO mode, if necessary.
- ② Push **[BAND]** to select the desired frequency band.
- ③ Push and hold **[TS](2)** for 1 sec. to enter tuning step set mode.
 - While pushing and holding **[TS](2)**, rotating **[DIAL]** is also selectable tuning step.
- ④ Rotate **[DIAL]** to select the desired tuning step.
- ⑤ Push **[TS](2)** (or **[V/MHz]**) to return to VFO mode.



■ Setting a frequency

◇ Using the dial

- ① Push **[V/MHz]** to select VFO mode, if necessary.
- ② Select the desired frequency band with **[BAND]**.
- ③ Rotate **[DIAL]** to select the desired frequency.
 - The frequency changes according to the preset tuning steps. See the previous content to set the tuning step.
 - When VFO mode is selected, push **[V/MHz]** then rotate **[DIAL]** to change the frequency in 1 MHz steps, or push **[V/MHz]** again then rotate **[DIAL]** to change the frequency in 10 MHz steps. Push **[V/MHz]** again to cancel it.)



[DIAL] changes the frequency according to the selected tuning step.



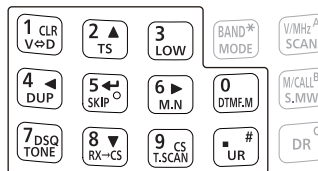
After pushing **[V/MHz]** on VFO mode, **[DIAL]** changes the frequency in 1 MHz/10 MHz steps.

◇ Using the keypad

The frequency can be directly set via numeric keys.

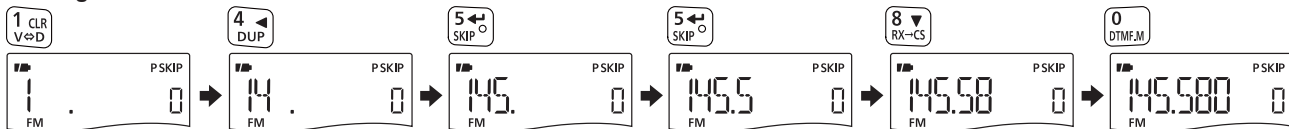
- If a frequency outside the frequency range is entered, the previously displayed frequency is automatically recalled after entering last digit.

- ① Push [V/MHz] to select VFO mode, if necessary.
- ② Enter the desired frequency via the keypad.

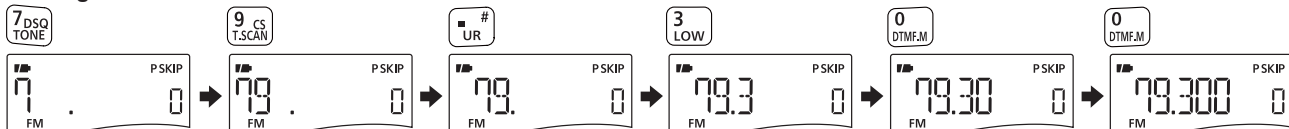


Depending on the tuning step setting, it may not be possible to input a 1 kHz digit. In this case, enter "0" as 1 kHz digit, then rotate [DIAL] to set the desired frequency.

• Entering 145.580 MHz

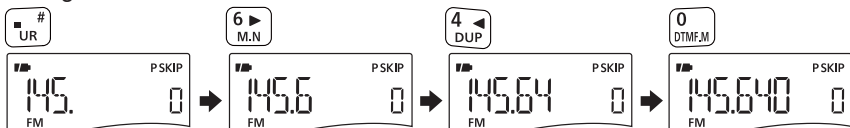


• Entering 79.300 MHz



• Changing 100 kHz and below

Editing 145.580 MHz to 145.640 MHz



• Editing to 684 kHz



Push [V/MHz A SCAN] to cancel numeral input.

4 BASIC OPERATION

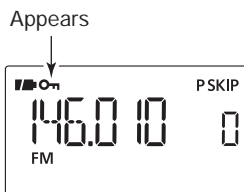
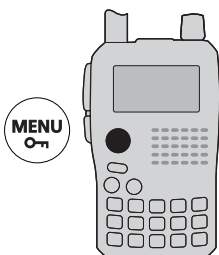
■ Lock function

To prevent accidental frequency changes and unnecessary function access, use the lock function.

➔ Push and hold **[MENU]** for 1 sec. to turn the lock function ON and OFF.

- “**LOCK**” appears while the lock function is activated.
- **[PWR]**, **[Δ]/[▽]**, **[SQL]**, **[PTT]** and **[MENU]** are operable while the lock function is activated.
- The squelch control and volume control can be used while the lock function is in use with default setting. Either or both the squelch control and volume control can also be locked in set mode.

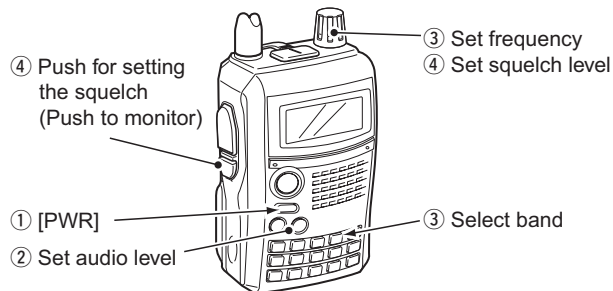
MENU ⇨ SET ⇨ FUNC ⇨ **LOCK** (p. 125)



■ Receiving

Make sure a charged battery pack (BP-217) or brand new alkaline batteries (BP-216) are installed (pgs. 2, 14).

- ① Push and hold **[PWR]** for 1 sec. to turn power ON.
- ② Push **[Δ]** or **[▽]** to set the desired audio level. (p. 16)
 - The frequency display shows the volume level while setting.
- ③ Set the receiving frequency. (p. 23)
- ④ Set the squelch level. (p. 17)
 - While pushing and holding **[SQL]**, rotate **[DIAL]**.
 - The first click of **[DIAL]** indicates the current squelch level.
 - “LEVEL 1” is loose squelch (for weak signals) and “LEVEL 9” is tight squelch (for strong signals).
 - “AUTO” indicates automatic level adjustment by a noise pulse counting system.
 - Push and hold **[SQL]** to open the squelch manually.
- ⑤ When a signal is received:
 - Squelch opens and audio is output.
 - The S/R-F-meter shows the relative signal strength level.

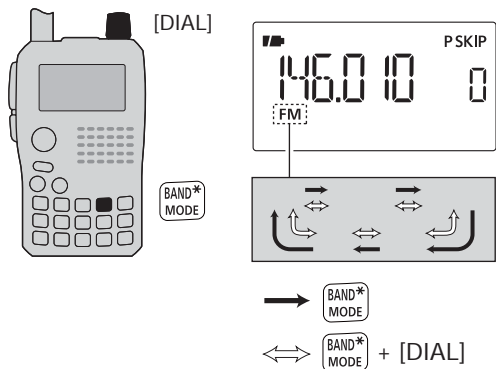


■ Operating mode selection

Operating modes are determined by the modulation of the radio signals. The transceiver has total 5 operating modes (FM, FM-N, WFM, AM and DV modes). The mode selection is stored independently for each band and memory channel.

Typically, AM mode is used for the AM broadcast stations (0.495–1.620 MHz) and air band (118–136.995 MHz), and WFM is used for FM broadcast stations (76–107.9 MHz). WFM mode cannot be selected above 810 MHz for U.S.A. version.

- ➔ Push and hold **[MODE]**(BAND) for 1 sec. several times to select the desired operating mode.
- While pushing and holding **[MODE]**(BAND), rotate **[DIAL]** is also available to select operating mode.



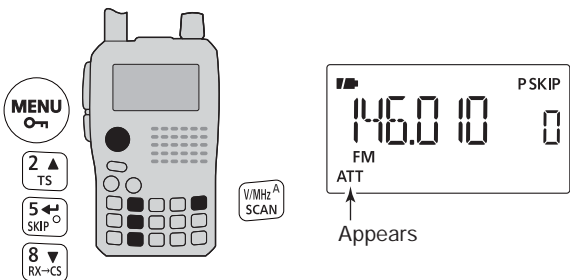
■ Attenuator function

The attenuator prevents distortion of a desired signal by very strong signals near the desired frequency or when very strong electric fields, such as from a broadcasting station, are present at your location. The attenuation is about 10 dB.

- ① Enter "ATT" in FUNC set mode (in SET).

MENU ⇄ SET ⇄ FUNC ⇄ **ATT** (p. 122)
 (Push **[MENU]**), (Push **[▲]**(2)/**[▼]**(8), then push **[←]**(5).)

- ② Push **[▲]**(2) or **[▼]**(8) to select "ON" or "OFF".
- ③ Push **[←]**(5) (or **[▶]**(4)) to return to set mode, and push **[V/MHz]** to return to frequency indication.
 - "ATT" appears on the function display when "ON" is selected.



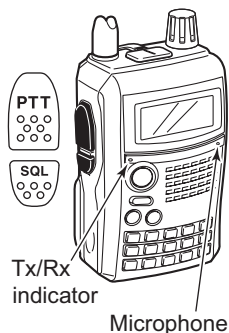
4 BASIC OPERATION

■ Transmitting

CAUTION: Transmitting without an antenna will damage the transceiver.

NOTE: To prevent interference, push and hold **[SQL]** to listen on the channel before transmitting.

- ① Set the operating frequency.
(p. 23)
 - Transmission is available on the 144 MHz/440 MHz amateur bands only.
 - Select output power if desired. See next page for details.
- ② Push and hold **[PTT]** to transmit.
 - Tx/Rx indicator lights red.
 - S/Rf meter shows the output power level.
- ③ Speak into the microphone using your normal voice level.
 - DO NOT hold the transceiver too close to your mouth or speak too loudly. This may distort your speech.
- ④ Release **[PTT]** to return to receive.



WARNING!

NEVER continuously transmit for long periods of time. When the transceiver is used for continuous prolonged transmission at high power, the transceiver radiates heat to protect itself from overheating and transceiver's chassis will become hot. This may cause a burn.

DO NOT operate the transceiver in a situation that will obstruct heat dissipation, especially if the transceiver is operated with an external power supply. Heat dissipation may be affected, and it may cause a burn, warp the casing or damage the transceiver.

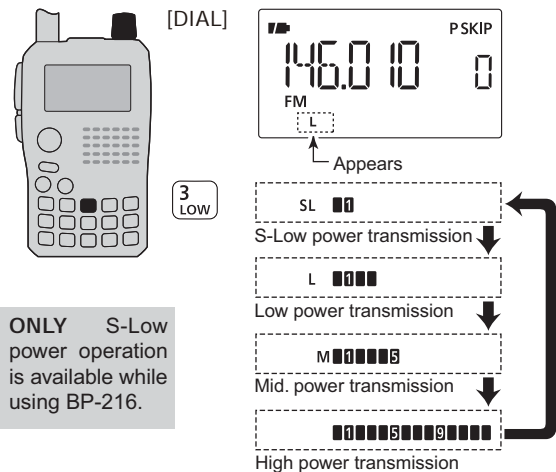
NOTE: Transmit power set 2.5 W (MID) automatically when the transceiver radiates heat.

CONNECT the rated range voltage when using external power supply.

■ Transmit power selection

The transceiver has four output power levels to suit your operating requirements. S-Low output power during short-range communications may reduce the possibility of interference to other stations and will conserve battery power.

- ➔ Push and hold **[LOW]**(3) for 1 sec. to toggle the transmit output power between High (5W*), Mid (2.5 W*), Low (0.5 W*) and S-Low (0.1 W*). *approx.
- While pushing and holding **[LOW]**(3), rotate **[DIAL]** is also available to select transmit power.

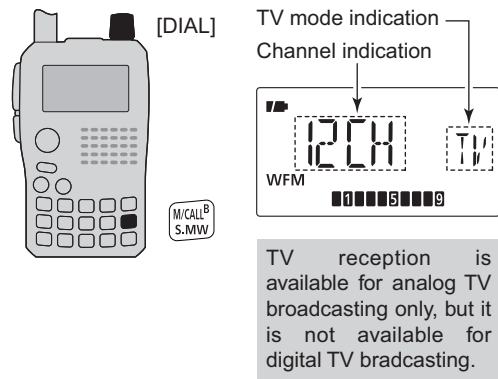


■ TV channel operation

TV channel operation is available only when TV channels are programmed using the CS-80/880 (free download software). (p. 161)

◇ TV channel receiving

- ① Push **[M/CALL]** several times to select TV channels.
 - “TV” and channel number appear.
- ② Rotate **[DIAL]** to select the desired channel.
 - While pushing and holding **[BAND]**, rotating **[DIAL]** selects the all channels including skip channel.

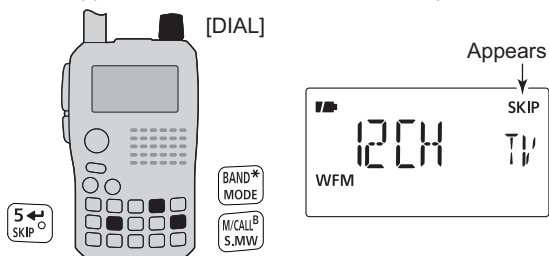


4 BASIC OPERATION

◇ Skip channel setting

Unwanted channels can be skipped for rapid selection, etc.

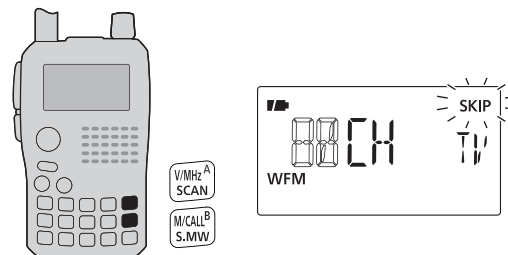
- ① Push **[M/CALL]** several times to select TV channels.
 - “TV” and channel number appear.
- ② Rotate **[DIAL]** to select the channel to be skipped.
 - To clear the skip setting, rotate **[DIAL]** while pushing and holding **[BAND]** to select a skip channel.
 - While pushing and holding **[SKIP]**(5), rotating **[DIAL]** also selects a skip channel.
- ③ Push and hold **[SKIP]**(5) for 1 sec. to toggle the skip setting ON and OFF.
 - “SKIP” appears when the channel is set as skip channel.



◇ Automatic TV channel programming

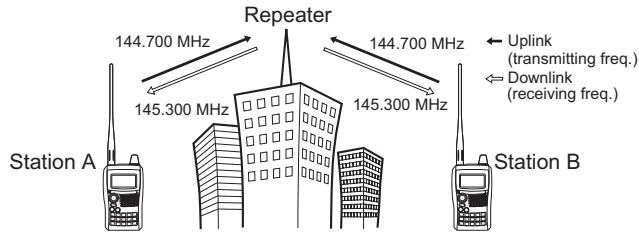
TV channels can be programmed automatically.

- ① Push **[M/CALL]** several times to select TV channels.
 - “TV” and channel number appear.
- ② Push and hold **[SCAN]**(V/MHz) for 1 sec. to start TV channel programming.
 - The programming will automatically stop after scanning all channels.



■ Repeater operation

When using a repeater, the transmit frequency is shifted from the receive frequency by the offset frequency. (p. 117) This is called duplex operation. It is convenient to program repeater information into memory channels. (p. 92)



- ① Set the receive frequency (repeater output frequency).
- ② Set the shift direction of the transmit frequency. (DUP- or DUP; see p. 31 for details.)
 - When the auto repeater function is in use (U.S.A. and Korean versions only), this selection and step ③ are not necessary. (p. 32)

"-DUP" or "DUP" appears



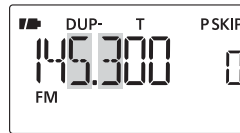
- ③ Push and hold **[TONE]**(7) for 1 sec. to activate the subaudible tone encoder, according to repeater requirements.

- "T" appears.

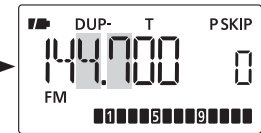
Refer to p. 117 for tone frequency settings.

- ④ Push and hold **[PTT]** to transmit.
 - The displayed frequency automatically changes to the transmit frequency (repeater input frequency).
 - If "OFF" appears, check the offset frequency or shift direction. (p. 30)

While receiving



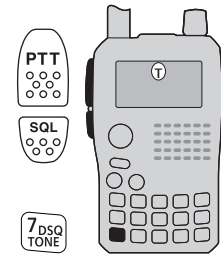
While transmitting



- ⑤ Release **[PTT]** to receive.
- ⑥ Push and hold **[SQL]** to check whether the other station's transmit signal can be directly received or not.

U.S.A. and Korean versions:

Auto repeater function uses standard values of the repeater tone frequency and offset frequency.



5 REPEATER AND DUPLEX OPERATIONS

◇ Checking the repeater input signal


The transceiver can check whether the other station's transmit signal can be received directly or not, by listening on the repeater input frequency.

- ➔ Push and hold [SQL] to check whether the other station's transmit signal can be received directly or not.
 - When the other station's signal can be directly received, move to a non-repeater frequency to use simplex. (duplex OFF)

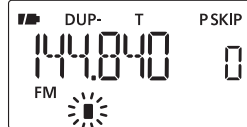


Indication while receiving



↓ Push and hold 

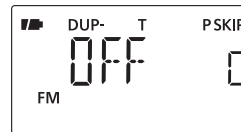
Receives -0.6 MHz shift frequency



Blinks while pushing and holding L

◇ Off band indication

If the transmit frequency is out of the amateur band, the off band indication, "OFF," appears on the display when [PTT] is pushed. Check the offset frequency or duplex direction in this case. (p. 31)



U.S.A. and Korean versions:

Auto repeater function uses standard values of the offset frequency.

✓ CONVENIENT!

Tone scan function: When you don't know the subaudible tone used for a repeater, the tone scan is convenient for detecting the tone frequency.

- ➔ Push and hold [T.SCAN](9) for 1 sec. to start the tone scan. See p. 150 for more information.

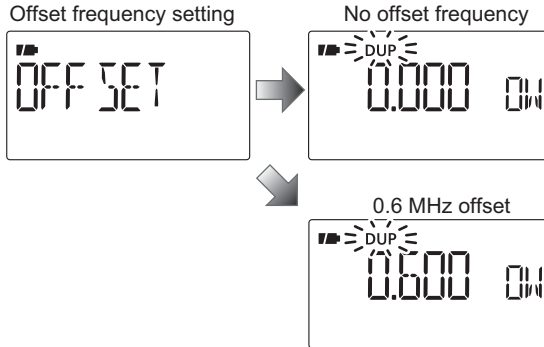
■ Duplex operation

◇ Setting offset frequency

- Enter "OFFSET" in DUP.T menu.

MENU ⇨ DUP.T ⇨ **OFFSET** (p. 117)
 (Push [MENU] (5)), (Push [▲]/[▼] (8)), then push [←] (5).

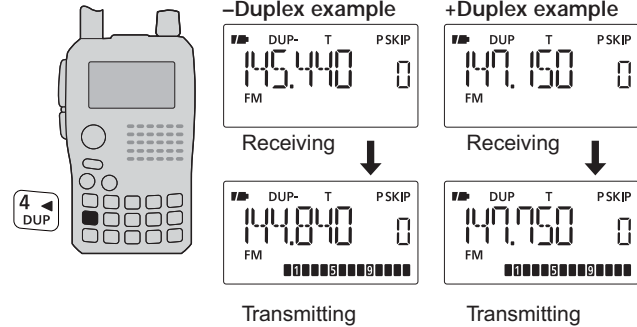
- Push [▲]/[▼] (or rotate [DIAL]) to set the offset frequency.
- Push [←] (5) to return to DUP.T menu, and then push [MENU] (5) to return to frequency indication.



◇ Setting duplex direction

- Push and hold [DUP] (4) for 1 sec. to select "DUP-" (negative offset) or "DUP" (positive offset).
 - "DUP-" or "DUP" indicates the transmit frequency for minus shift or plus shift, respectively.

• When offset frequency is 0.6 MHz



U.S.A. and Korean versions:

Auto repeater function has priority over the manual duplex setting. If the transmit frequency changes after setting, the auto repeater function may have changed the duplex setting.

5 REPEATER AND DUPLEX OPERATIONS

■ Auto repeater function

The U.S.A. and Korean versions automatically use standard repeater settings (duplex ON/OFF, duplex direction, tone encoder ON/OFF) when the operating frequency falls within or outside of the general repeater output frequency range. The offset and repeater tone frequencies are not changed by the auto repeater function. Reset these frequencies, if necessary.

◇ Frequency range and offset direction

• U.S.A. version

FREQUENCY RANGE	SHIFT DIRECTION
145.200–145.495 MHz 146.610–146.995 MHz	"DUP–" appears
147.000–147.395 MHz	"DUP" appears
442.000–444.995 MHz	"DUP" appears
447.000–449.995 MHz	"DUP–" appears

• Korean version

FREQUENCY RANGE	SHIFT DIRECTION
439.000–440.000 MHz	"DUP–" appears

U.S.A./KOREAN versions only

- Enter "AUTORP" in FUNC set mode (SET).

MENU ⇄ SET ⇄ FUNC ⇄ **AUTORP** (p. 124)
(Push [MENU] (), (Push [▲](2)/[▼](8), then push [←](5).)

- Push [▲](2) or [▼](8) to select the auto repeater setting.

U.S.A. version:

- "RPT1" : Activates duplex only. (default)
- "RPT2" : Activates duplex and tone.
- "OFF" : Auto repeater function is turned OFF.

Korean versions:

- "ON" : Activates duplex and tone. (default)
- "OFF" : Auto repeater function is turned OFF.

- Push [←](5) to return to FUNC set mode, and then push [MENU] () to return to frequency indication.

Auto repeater setting

AUTORP

U.S.A. version

RPT 1 RRP



Korean version

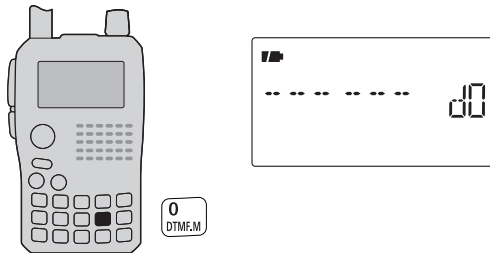
ON RRP

■ 1750 Hz tone

To access some European repeaters, the transceiver must transmit a 1750 Hz tone burst. For such European repeaters, perform the following.

- This tone can be used as a 'Call signal' in countries out of Europe.

- ① Push and hold **[DTMF.M]**(0) for 1 sec. to select DTMF memory.



- ② Push **[▼]**(8) several times (or rotate **[DIAL]** counter-clockwise) until "T-CALL" appears.

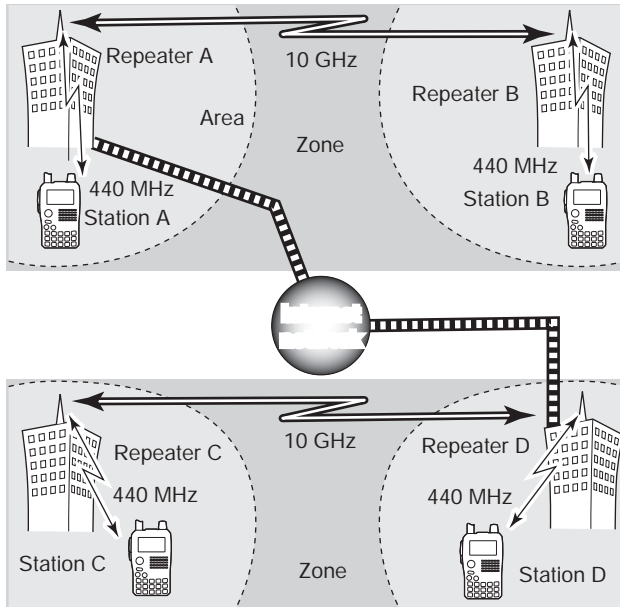


- ③ Push **[←]**(5) to set.
- ④ Push **[V/MHz]** to exit DTMF memory.
- ⑤ Set the receive frequency (repeater output frequency).
- ⑥ Set the shift direction of the transmit frequency. (-DUP or +DUP; see p. 31 for details.)
- ⑦ While pushing **[PTT]**, push **[SQL]** to transmit a 1750 Hz tone burst signal.
 - If "OFF" appears, check the offset frequency or shift direction. (p. 110)
 - The displayed frequency automatically changes to the transmit frequency (repeater input frequency).
- ⑧ Push and hold **[PTT]** to transmit.
- ⑨ Release **[PTT]** to receive.
- ⑩ Push and hold **[SQL]** to check whether the other station's transmit signal can be received directly or not, by listening on the repeater input frequency.

■ About the D-STAR system

In the D-STAR (Digital Smart Technologies for Amateur Radio) system, repeater linking via a 10 GHz backbone and/or internet gateway provides you with much wider coverage range during digital voice mode operation.

• D-STAR system outline



In traditional repeater operation, stations that are communicating must both be in the repeater's operating area. However, D-STAR repeaters can be linked via a 10 GHz backbone, as shown in the illustration at left. Using D-STAR, stations A and B can communicate even though they are in widely separated repeater operating areas.

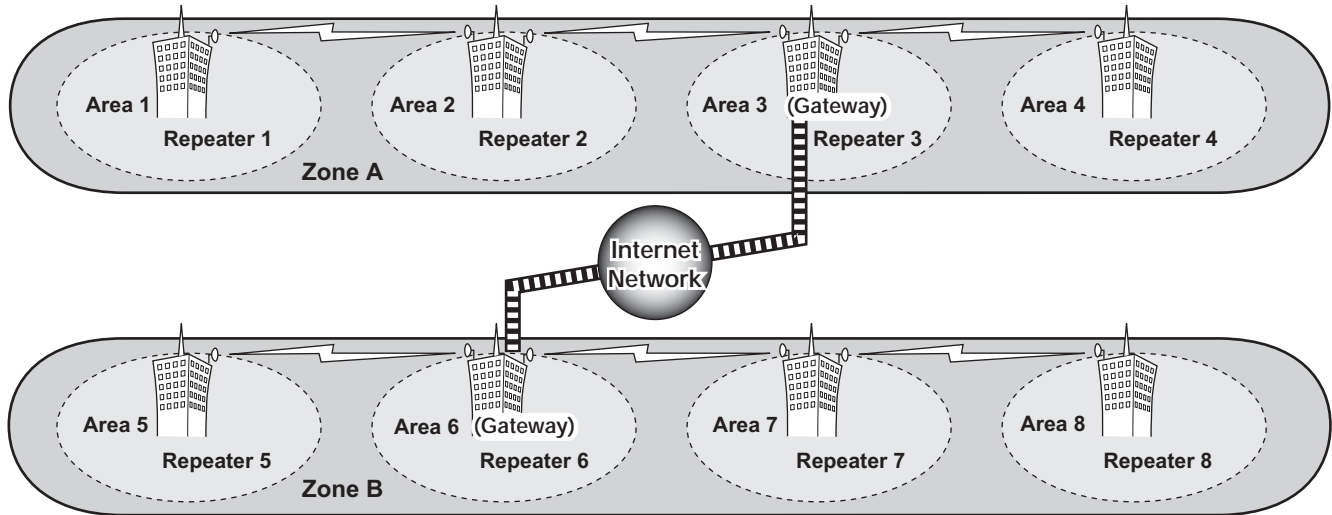
Furthermore, D-STAR repeaters can be linked through an internet gateway, which can extend the communication range dramatically. For example, when station B uses the internet gateway connection, it can communicate with station C even though they are thousands of miles apart! By using the gateway connection, long distance communication is possible using 144 or 440 MHz digital voice!

In the D-STAR system, an independent repeater's operating area is called an Area and a group that of linked repeaters via a 10 GHz backbone is called a Zone.

About time-out timer function

The IC-80AD has a time-out timer function for digital repeater operation. The timer limits a continuous transmission to approx. 10 min. Warning beeps will sound approx. 30 sec. before time-out and then again immediately before time-out.

◇ System description



Area:

The Area is the communication range that is covered by a single repeater. The repeater is called an area repeater in the D-STAR system.



Zone:

The Zone is composed of several areas, that are linked by a 10 GHz microwave link. The areas 1 to 4 and 5 to 8 make up a zone at the example above.



Link repeater:

The microwave (10 GHz) link repeater provides to linking with another repeater site (Area) for zone construction.



Gateway repeater:

Gateway repeaters provide communications between different zones via the internet. The repeater 3 and 6 are gateway repeaters at the example above.

6 DV MODE PROGRAMMING

■ Call sign programming

Four types of current call sign memory are available; "MY" (my call sign=your own call sign) "UR" (your call sign=other station call sign) "RPT1" (access repeater call sign) and "RPT2" (link repeater call sign). Each call sign can be programmed with up to 8 characters.

In addition, "MY" can store up to 6 call signs, and "UR" can store up to 60 call signs in the call sign memory. Up to 300 repeater call signs can be stored in the repeater list.

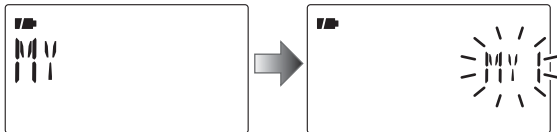
◇ Your own call sign programming

Your own call sign must be programmed for both digital voice and low-speed data communications (including GPS transmission).

- 1 Enter "MY" in call sign screen.

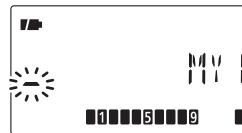
MENU ⇨ CALL-S ⇨ *MY*
(Push [MENU] (1), (push [▲](2)/[▼](8), then push [←](5).)

- MY call sign screen is displayed.

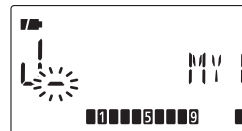


- 2 Push [▲](2) or [▼](8) to select the desired call sign memory, "MY1" to "MY6."

- 3 Push [▶](6) to enter call sign programming mode.
 - The 1st digit blinks.



- 4 Push [▲](2) or [▼](8) to select the desired character or code.
 - Push [▶](6) to move the cursor right; push [←](4) to move the cursor left.



- 5 Repeat the step 4 to enter your own call sign.
 - Up to an 8 digit of call sign can be set.
 - If an unwanted character is entered, push [▶](6) or [←](4) to select the character, then push [CLR](1) to erase the selected character, or push and hold [CLR](1) for 1 sec. to erase all characters following the cursor.
 - To program a note (up to 4 characters, for operating radio type, area, etc.), go to step 6, otherwise go to step 8.
- 6 Push [▶](6) several times to set the cursor beside "/" indication.

- ⑦ Repeat step ④ (at previous page) to program the desired 4 character note.



- ⑧ Push [←](5) to store the programmed call sign with note and return to call sign screen.



- ⑨ Push [MENU] to return to frequency indication.

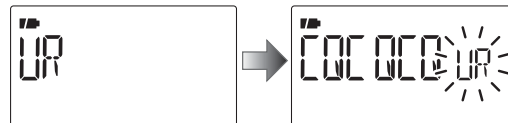
◇ Station call sign programming

Station call sign must be programmed to call a specific station as well as for repeater operation in both digital voice and low-speed data communications.

- ① Enter "UR" in call sign screen.

MENU ⇨ CALL-S ⇨ UR
(Push [MENU] (5), (push [▲](2)/[▼](8), then push [←](5).)

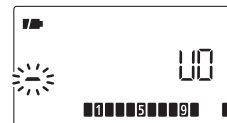
- UR (Your) call sign screen is displayed.



- ② Push [▲](2) or [▼](8) to select the desired call sign memory, "U01" to "U60."

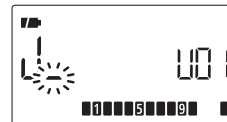
- ③ Push [▶](6) to enter call sign programming mode.

- The 1st digit blinks.



- ④ Push [▲](2) or [▼](8) to select the desired character or code.

- Push [▶](6) or [◀](4) to move the cursor right or left, respectively.



6 DV MODE PROGRAMMING

- Repeat the step ④ to enter the desired station call sign.
 - Up to an 8 digit call sign can be set.
 - If an unwanted character is entered, push **[▶]**(6) or **[◀]**(4) to select the character, then push **[CLR]**(1) to erase the selected character, or push and hold **[CLR]**(1) for 1 sec. to erase all characters following the cursor.
- Push **[←]**(5) to store the programmed call sign and return to UR (Your) call sign screen.



- Push **[MENU ⏏]** to return to frequency indication.

✓ For your information

The IC-80AD has a call sign edit record function. When editing a call sign stored in a call sign memory (or regular memory/call channel), the default setting is to store the edited call sign into blank channel automatically ("FULL" is displayed when all call sign memory is programmed).

The edited call sign can be over-written when the setting of the EDIT R (Edit record) is set to OFF or SEL. (p. 132)

However, you must manually over-write a reprogrammed call sign in regular memory/call channels (temporary operation without over-writing is possible).

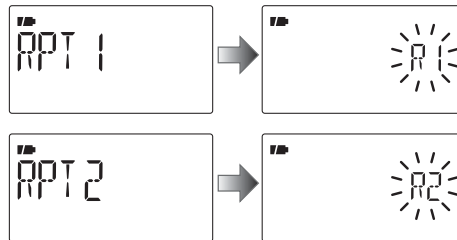
◇ Current repeater call sign programming

"RPT1" or "RPT2" can store current call only, and repeater call signs must be stored in the repeater list (p. 39).

- Enter "RPT1" or "RPT2" in call sign screen.

MENU ⇨ CALL-S ⇨ **RPT1 or RPT2**
(Push **[MENU ⏏]**), (push **[▲]**(2)/**[▼]**(8), then push **[←]**(5).)

- RPT1/RPT2 call sign screen is displayed.



- Push **[▶]**(6) to enter call sign programming mode.
 - The 1st digit blinks.
- Push **[▲]**(2) or **[▼]**(8) to select the desired character or code.
 - Push **[▶]**(6) or **[◀]**(4) to move the cursor right or left, respectively.
- Repeat the step ③ to enter the desired repeater call sign.
 - Up to an 8 digit call sign can be set.
 - If an unwanted character is entered, push **[▶]**(6) or **[◀]**(4) to select the character, then push **[CLR]**(1) to erase the selected character, or push and hold **[CLR]**(1) for 1 sec. to erase all characters following the cursor.
- Push **[←]**(5) to store the programmed call sign and returns to call sign screen.
- Push **[MENU ⏏]** to return to frequency indication.

■ Repeater list

The IC-80AD can store up to 300 repeater call signs. The repeater list also stores the repeater name and access repeater setting, etc.

The outline of repeater list is follows:

- ① Selection for new repeater program or changing a list
- ② Selection for a programmed repeater lists
- ③ Repeater programming (Repeater name, Call sign, Gateway repeater call sign, Repeater group, etc.)
- ④ Access repeater programming (Down link frequency, Duplex direction, Offset frequency)

◇ Repeater list contents

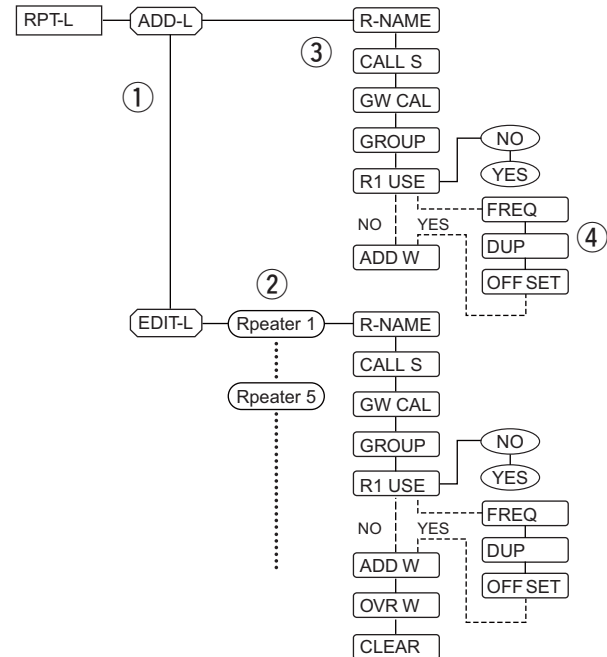
The following information can be programmed into repeater lists:

- R-NAME (Repeater name) (pgs. 40, 44)
- CALL-S (Repeater call sign) (pgs. 40, 44)
- GW CAL (Gateway repeater's call sign) (pgs. 41, 45)
- GROUP (Repeater group) (p. 41)
- R1 USE (RPT1 use) (p. 42)

When R1 USE is selected YES, following contents appear.

- FREQ (Repeater output frequency) (p. 42)
- DUP (Duplex direction) (p. 43)
- OFF SET (Offset frequency) (p. 43)

NOTE: Repeater lists can be erased by static electricity, electric transients, etc. In addition, they can be erased by malfunction and during repairs. Therefore, we recommend that memory data be written down or be saved to a PC using the CS-80/880 CLONING SOFTWARE (free download).



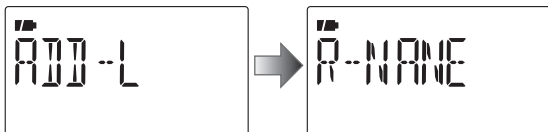
■ Repeater list programming

◇ New repeater list programming

- ① Enter "ADD-L" in RPT-L menu.

MENU ⇨ RPT-L ⇨ **ADD-L**
 (Push [MENU] (), (push [▲](2)/[▼](8), then push [←](5).)

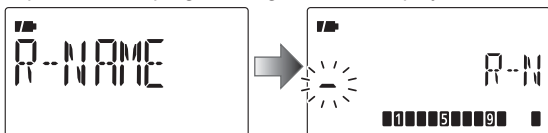
- "R-NAME" appears.



Repeater name programming (R-NAME)

- ② Push [←](5) to enter the repeater name programming state. See p. 44 for repeater name programming details.

- Repeater name programming screen is displayed.



- ③ Program the repeater name, then push [←](5) to exit the state.

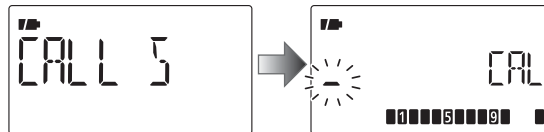
- Push [▲](2)/[▼](8) to select the desired character, number, symbol or space.
- Push [▶](6)/[◀](4) to move the cursor right or left, respectively.

- ④ Push [▲](2) or [▼](8) to select the next content (repeater call sign programming).

Repeater call sign programming (CALL S)

- ⑤ Push [←](5) to enter the repeater call sign programming state. See p. 44 for repeater call sign programming details.

- Repeater call sign programming screen is displayed.



- ⑥ Program the repeater call sign, then push [←](5) to exit the state.

- Push [▲](2)/[▼](8) to select the desired character, number, symbol ('/' only) or space.
- Push [▶](6)/[◀](4) to move the cursor right or left, respectively.

- ⑦ Push [▲](2) or [▼](8) to select the next content (gateway repeater call sign programming).

✓ CONVENIENT!

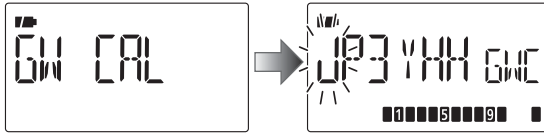
After you program the repeater call sign, you can skip the other programming and store the list.

- Push and hold [S.MW](M/CALL) for 1 sec. to enter memory write state, then push [←](5) to store the list.



Gateway repeater call sign programming (GW CAL)

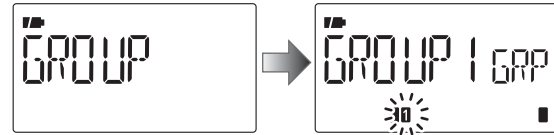
- ⑧ Push [←](5) to enter the gateway repeater call sign programming state. See p. 45 for gateway repeater call sign programming details.
 - Gateway repeater call sign programming screen is displayed.
 - Programmed repeater call sign is displayed and the 8th digit is automatically added or replaced to "G."



- ⑨ When the programmed repeater has gateway capability, push [←](5) to exit gateway repeater setting and skip to ⑫. Or when the programmed repeater has a different repeater for gateway communication, follow the next step ⑩.
 - When the repeater does not have a gateway repeater, follow the next step ⑩, too.
- ⑩ Program the other gateway repeater call sign, then push [←](5) to exit the state.
 - Push [▲](2)/[▼](8) to select the desired character, number, symbol (' only) or space.
 - Push [▶](6)/[◀](4) to move the cursor right or left, respectively.
 - Up to an 8 digit call sign can be set, but 8th digit must be set to "G."
 - When the repeater does not have a gateway repeater, push and hold [CLR](1) for 1 sec. to erase all characters.
- ⑪ Push [▲](2) or [▼](8) to select the next content (repeater group programming).

Repeater group programming (GROUP)

- ⑫ Push [←](5) to enter the repeater group programming state.
 - Repeater group programming screen is displayed.
 - Selected group number appears and group indicator blinks.



- ⑬ Push [▲](2) or [▼](8) to select the desired repeater group.
 - Selected group number appears and group indicator blinks.



- ⑭ Push [←](5) to set the repeater group and exit the state.
- ⑮ Push [▲](2) or [▼](8) to select the next content (access repeater setting).

2 ▲ TS	Push [▲](2) or [▼](8) (or rotate [DIAL]) to select the desired character, number, symbol or space.
8 ▼ RX-CS	
6 ▶ M.N	Push [▶](6) to move the cursor right; push [◀](4) to move the cursor left.
4 ◀ DUP	
1 CLR V⇄D	Push [CLR](1) to erase the selected character, or push and hold [CLR](1) for 1 sec. to erase all characters following the cursor.

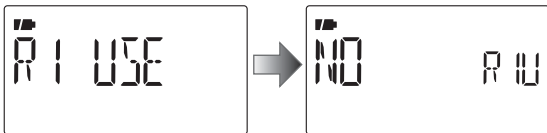
6 DV MODE PROGRAMMING

Access repeater setting (R1 USE)

The programmed repeater lists are assigned to use for the access repeater (RPT1) or no in DR mode. To use for RPT1, repeater frequency, duplex direction and offset frequency must be programmed.

- ⑩ Push [←](5) to enter the access repeater programming state.

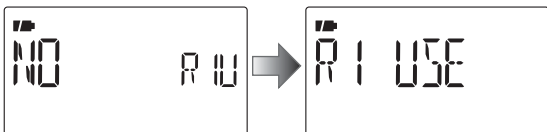
- Access repeater programming screen is displayed.



- ⑪ Push [▲](2) or [▼](8) to select “YES” or “NO.”
- When “NO” is selected, the repeater can be selected as the link repeater (RPT2) only in DR mode.
 - When “YES” is selected, the repeater can be selected as the access repeater (RPT1) and link repeater (RPT2) in DR mode.

- ⑫ Push [←](5) to exit the state.

- ↳ When “NO” is selected at step ⑪, skip to step ⑬.

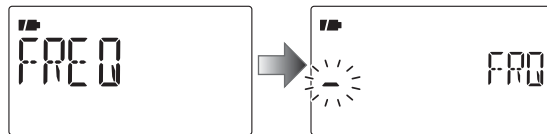


- ↳ When “YES” is selected at step ⑪, push [▲](2) or [▼](8) to select the access repeater (RPT1) programming. Follow the next step ⑭ to program the repeater.

Frequency programming (FREQ)

This content appears when R1 USE is selected YES.

- ⑭ Push [←](5) to enter the frequency programming state.
- Frequency programming screen is displayed.



- ⑮ Push [▲](2) or [▼](8) to select the frequency band.
- The selected number blinks at 1st digit.
 - Push [▶](6) to move the cursor right; push [←](4) to move the cursor left.
 - Push and hold [CLR](1) for 1 sec. to clear the displayed frequency.



- ⑯ Repeat step ⑮ until the repeater frequency is set.

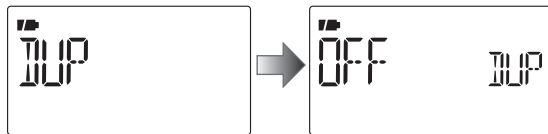


- ⑰ Push [←](5) to set the frequency and exit the state.
- ⑱ Push [▲](2) or [▼](8) to select the next content (duplex direction programming).

Duplex direction setting (DUP)

This content appears when R1 USE is selected YES.

- ②4 Push [←](5) to enter the duplex direction setting state.
 - Duplex direction setting screen is displayed.



- ②5 Push [▲](2) or [▼](8) to select the duplex direction.

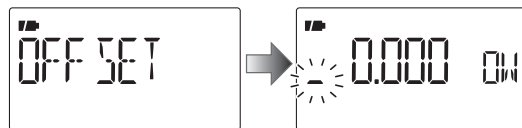


- ②6 Push [←](5) to set the duplex direction and exit the state.
- ②7 Push [▲](2) or [▼](8) to select the next content (offset frequency programming).

Offset frequency programming (OFF SET)

This content appears when R1 USE is selected YES.

- ②8 Push [←](5) to enter the offset frequency programming state.
 - Offset frequency programming screen is displayed.



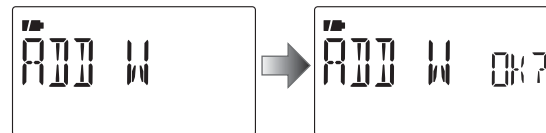
- ②9 Push [▲](2) or [▼](8) to select the offset frequency.
 - The selected number blinks.
 - Push [▶](6) to move the cursor right; push [◀](4) to move the cursor left.
 - Push and hold [CLR](1) for 1 sec. to clear the displayed frequency.



- ③0 Push [←](5) to set the offset frequency and exit the state.

Storing the repeater list (ADD W)

- ③1 Push [▲](2) or [▼](8) to select the store operation.
- ③2 Push [←](5) to enter storing state.
 - “ADD W OK?” appears.

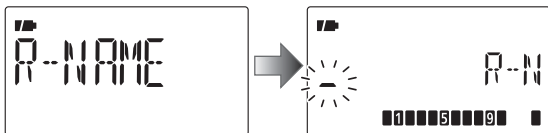


- ③3 Push [←](5) again to store the list.

6 DV MODE PROGRAMMING

◆ Repeater name programming (R-NAME)

- 1 Push [**←**](5) to enter the repeater name programming state.
 - Repeater name programming screen is displayed.
 - The 1st digit blinks.



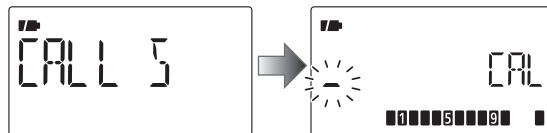
- 2 Push [**▲**](2) or [**▼**](8) to select the desired character, number, symbol or space.
 - The selected character blinks.
 - Push [**▶**](6) to move the cursor right; push [**◀**](4) to move the cursor left.
 - Push [**CLR**](1) to erase the selected character, or push and hold [**CLR**](1) for 1 sec. to erase all characters following the cursor.



- 3 Repeat step 2 until the desired repeater name is programmed.
 - Up to an 8 digit name can be set.
- 4 Push [**←**](5) to program the repeater name and exit the state.

◆ Repeater call sign programming (CALL S)

- 1 Push [**←**](5) to enter the repeater call sign programming state.
 - Repeater call sign programming screen is displayed.
 - The 1st digit blinks.



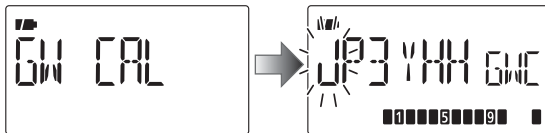
- 2 Push [**▲**](2) or [**▼**](8) to select the desired character, number or symbol ('/' only).
 - The selected character blinks.
 - Push [**▶**](6) to move the cursor right; push [**◀**](4) to move the cursor left.
 - Push [**CLR**](1) to erase the selected character, or push and hold [**CLR**](1) for 1 sec. to erase all characters following the cursor.



- 3 Repeat step 2 until the desired repeater call sign is programmed.
 - Up to an 8 digit call sign can be set.
- 4 Push [**←**](5) to program the repeater call sign and exit the state.

◆ Gateway repeater call sign programming (GW CALL)

- 1 Push [←](5) to enter the gateway repeater call sign programming.
 - Gateway repeater call sign programming screen is displayed.
 - Programmed repeater call sign is displayed, then the 1st character blinks.
 - The 8th digit is automatically added or replaced to “G.”



- 2 Push [▲](2) or [▼](8) to select the desired character, number, symbol (‘/’ only) or space.
 - The selected character blinks.
 - Push [▶](6) to move the cursor right; push [◀](4) to move the cursor left.
 - Push [CLR](1) to erase the selected character, or push and hold [CLR](1) for 1 sec. to erase all characters following the cursor.
- 3 Repeat step 2 until the desired repeater call sign is programmed.
 - Up to an 8 digit call sign can be set, but 8th digit must be set to “G.”



- 4 Push [←](5) to program the gateway repeater call sign and exit the state.

■ Changing a repeater list

You can edit the contents of a repeater list to correct errors or added information.

- 1 Enter “EDIT-L” in RPT-L menu.

MENU ⇄ RPT-L ⇄ **EDIT-L**
 (Push [MENU] (key)), (Push [▲](2)/[▼](8), then push [←](5).)

- Programmed repeater name appears.

➔

SKIP indicator
↓
SKIP

SKIP indicator shows the selected repeater can not be used for access repeater (RPT1) in DR mode as follow reasons.

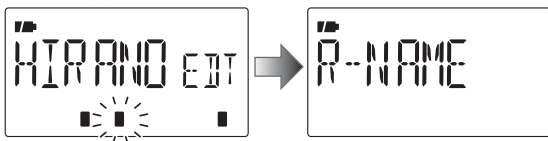
- “R1 USE” is set to “NO”
- Either “FREQ” (frequency) or “DUP” (duplex direction) has not been programmed

Push and hold for 1 sec. to select SKIP indicator ON and OFF when both of “FREQ” and “DUP” have been programmed.

- 2 Push and hold [BAND] for 1 sec. to enter group selection, rotate [DIAL] to select the desired group (0–9), then push [BAND].
- 3 Push [▲](2) or [▼](8) to select the desired repeater list to be changed.

6 DV MODE PROGRAMMING

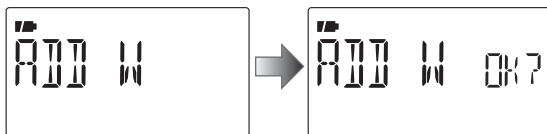
- ④ Push [←](5) to enter the list.



- ⑤ Push [▲](2) or [▼](8) to select the content to be changed, then push [←](5) to enter the content and reprogram the content (see pages 40–43 for new repeater list programming details).
- ⑥ After programming is finished, push [▲](2) or [▼](8) to select “ADD W” or “OVR W,” then push [←](5).

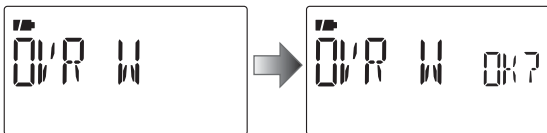
When “ADD W” is selected;

- “ADD W OK?” appears.



When “OVR W” is selected;

- “OVR W OK?” appears.



- ⑥ Push [←](5) again to store the list.

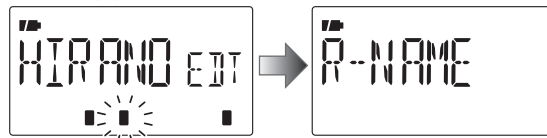
■ Clearing a repeater list

Contents of programmed list can be cleared (erased).

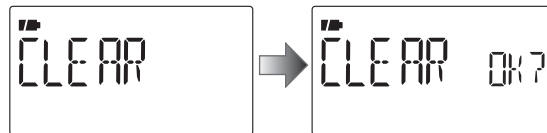
- ① Enter “EDIT-L” in RPT-L menu.

MENU ⇨ RPT-L ⇨ **EDIT-L**
(Push [MENU] (1)), (Push [▲](2)/[▼](8), then push [←](5).)

- Programmed repeater name appears.
- ② Push [▲](2) or [▼](8) to select the desired repeater list to be erased.
- Push and hold [BAND] for 1 sec. to enter group selection, rotate [DIAL] to select the desired group (0–9) then push [BAND].
- ③ Push [←](5) to enter the list.



- ④ Push [▲](2) or [▼](8) to select “CLEAR,” then push [←](5).
- “CLEAR OK?” appears.



- ⑤ Push [←](5) again to clear the list.

■ Digital mode operation

The IC-80AD can be operated in digital voice mode and low-speed data operation for both transmit and receive. It can also be connected to a GPS receiver (compatible with an RS-232 output/NMEA format/4800 bps/9600 bps) to transmit/receive position data.

■ Current call sign setting

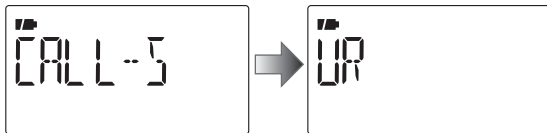
Set the current call sign for DV operation as follows.

- Enter "CALL-S" in MENU screen.

MENU ⇄ **CALL-S**

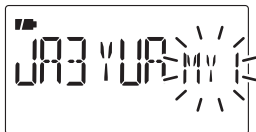
(Push [MENU] (9)), (Push [▲](2)/[▼](8), then push [←](5).)

- Call sign screen is displayed.



- Push [▲](2) or [▼](8) to select the desired call sign group, "UR," "RPT1," "RPT2" or "MY," then push [←](5).

- Current call sign is displayed.



Quick entry

Push and hold [CS](9) for 1 sec. to enter the current call sign mode. See next page for details.

• Call sign group

UR : Station call signs (U01–U60), "CQCQCQ" (U--) or repeater CQ* (R-L) can be selected.

* '/' plus repeater call sign (R-L), '/' stands for "CQCQCQ"

RPT1 : "NOTUSE"* (R--) or repeater call signs (R-L) can be selected.

* Direct communication (NOT USE repeater)

RPT2 : "NOTUSE"* (R--) or repeater call signs (R-L) can be selected.

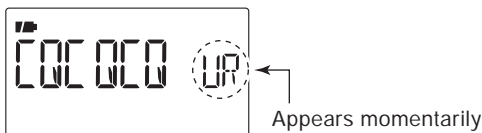
* Direct communication or using area repeater only (NOT USE link repeater)

MY : My call signs (MY1–MY6) can be selected.

- Push [▲](2) or [▼](8) to select the desired call sign. Or push [▶](6) to enter the current call sign programming state (pgs. 36–38).
 - When "UR," "RPT1" or "RPT2" is selected at step ②, push [BAND] several times to select the repeater call sign groups.
 - When "RPT1" or "RPT2" is selected at step ②, push and hold [CS](9) for 1 sec. to toggle the call sign and repeater name indications.
- Push [←](5) to set the selected call sign to the current call sign and exit the state.
- Repeat steps ② to ④ to set the other current call sign.
- Push [MENU] (9) to return to frequency indication.

◇ Confirming current call sign

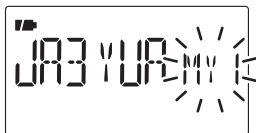
- Push and hold **[CS]**(9) for 1 sec. to enter the current call sign mode.
 - Current UR (your) call sign is displayed.



- Push **[▲]**(2) or **[▼]**(8) to select and confirm the other current call sign.
 - ("UR"), "R1," "R2" and "MY" appears in sequence.
 - When "R1" or "R2" is selected, push and hold **[CS]**(9) for 1 sec. to toggle the call sign and repeater name indications.

When changing the call sign

- Push **[←]**(5) to enter the call sign selection mode.

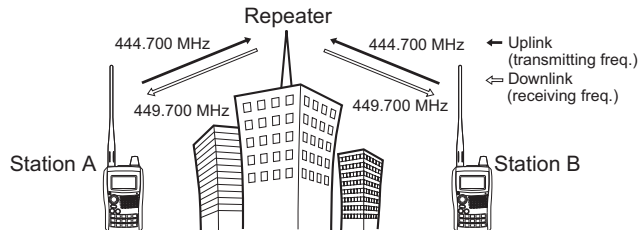


- Push **[▲]**(2) or **[▼]**(8) to select the desired call sign, then push **[←]**(5).
 - When "UR," "R1" or "R2" is selected, push **[BAND]** several times to select the repeater call sign groups.

- Push **[CS]**(9) again to return to frequency indication.

■ Receiving a D-STAR repeater

When the IC-80AD receives a signal from a D-STAR repeater, it receives four call sign: caller's call sign, called call sign, repeater call sign 1 (the repeater that caller accessed), and repeater call sign 2 (the liked repeater). You can copy the received call signs to current call signs, and you can also reply to a call.



• Presetting

- Set the desired repeater frequency. (p. 23)
 - Select output power, if desired. (p. 27)
- Set the shift direction of the transmit frequency. (DUP- or DUP; see p. 31 for details.)
 - When the auto repeater function is in use (U.S.A. and Korean versions only), this selection is not necessary. (p. 32)
- Select DV mode. (p. 25)
- When signal is received, display indicates received call sign.

See next page for information about received call signs.

■ Received call sign

When a call is received in DV mode, the calling station and the repeater call signs being used can be stored into the received call record. The stored call signs are viewable in the following manner. Up to 20 calls can be recorded.

◇ Desired call record indication

- ① Enter RX call sign set mode.

MENU ⇨ **RX-CAL**
(Push [MENU] (5)), (Push [▲](2)/[▼](8), then push [←](5).)

• RX call sign screen is displayed.

- ② Push [▲](2) or [▼](8) to select the desired record channel.
③ To confirm the received call, push [←](5) several times to select the desired call sign from CALLER, / (CALLER's note), CALLED, RXRPT1 and RXRPT2.

CALLER : The station call sign that made a call.

/ : 4 character note with call sign that made a call.

CALLED : The station call sign called by the caller.

RXRPT1 : The repeater call sign used by the caller station.

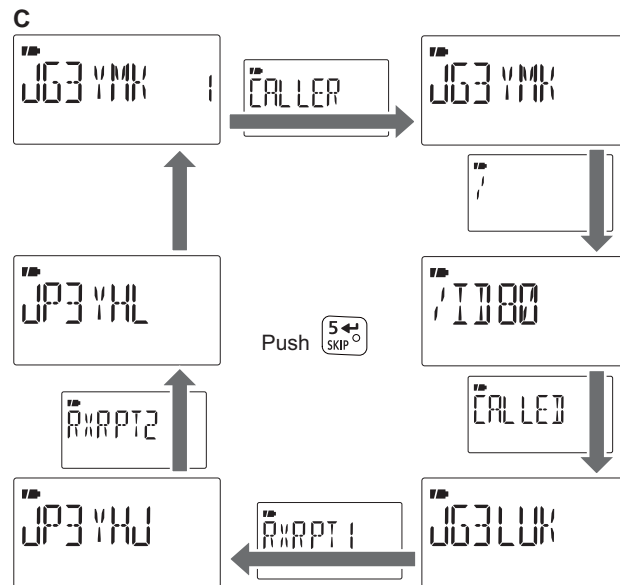
RXRPT2 : The repeater call sign linked from RXRPT1.

- ④ Push [MENU] (5) to return to frequency indication.

✓ For your information

When receiving a call, the received station call sign is automatically displayed and scrolled in sequence in the frequency display.

This can be turned OFF in DISP set mode. (p.132)



NOTE: When a call is received in DV mode when the power save function is activated, the call sign may not be received correctly.

This is normal, not a malfunction, because the call sign information cannot be detected during power save.

Turn the power save function OFF (p. 123) if you want to receive a call sign correctly even in stand-by operation.

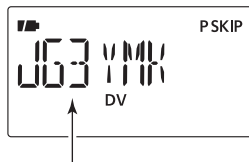
7 DV MODE OPERATION


◇ One-touch reply using the call record

The stored call signs in the call record can be used to the call.

① After receiving a call, push and hold **[RX→CS](8)** for 1 sec.

Or, while pushing and holding **[RX→CS](8)**, rotate **[DIAL]** to select the desired call sign record.



The received call sign is displayed while pushing and holding **[8 ▼ RX→CS]** with rotating .

- Set your own call sign (MY) in advance. (pgs. 36, 47, 48)
- The call sign in “CALLER” is stored as “UR,” “RXRPT1” is stored as “R2” and “RXRPT2” is stored as “R1.”
- Error beeps sound when a call sign is received incorrectly, and no call sign is set in this case.

② Push **[PTT]** to transmit; release to receive.

Important!

Setting call signs with the “One-touch reply using the call record” operation as at left are for temporary operation only. Therefore, the set call signs will be over-written when another call record is used to set call signs.

- Never saved into a call sign memory.

If you want to save the set call signs, see “Copying the call record contents into call sign memory” (p. 51) for details.

✓For your information

When a call specifying your call sign is received, the call signs of the calling station and the repeater it is using can be automatically used for operation.

- When “CALL W (RX call sign auto write)” (p. 131) is set to “AUTO,” the station call sign in “CALLER” is set to “UR” automatically.
- When “RPT W (Repeater call sign auto write)” (p. 131) is set to “AUTO,” the repeater call sign in “RXRPT1” is stored as “R2” and “RXRPT2” is stored as “R1” automatically.

■ Copying the call sign

◇ Copying the call sign memory contents

This function is convenient when or modifying a part of the current call sign.

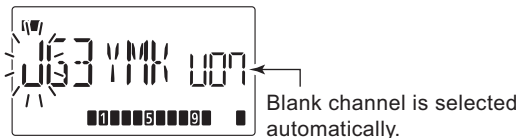
- ① During DV mode operation, enter call sign menu.

MENU ⇄ **CALL-S**
(Push [MENU] (), (Push [▲](2)/[▼](8), then push [←](5).)

- ② Push [▲](2) or [▼](8) to select “UR,” then push [←](5).
③ Push [▲](2) or [▼](8) to select the desired call sign channel to be copied.
• U01–U60 are available.

• When “AUTO” is set to “EDIT R” item

- ④ Push [▶](6) to select the call sign programming mode.
• The 1st digit of the selected call sign blinks.



- ⑤ Modify the selected call sign as described in “Station call sign programming” (p. 37).
⑥ Push [←](5) to store the modified call sign into the selected blank channel.

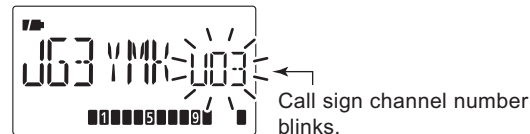
NOTE:

Make sure that the “EDIT R (EDIT RECORD)” item in DV set mode is set to “AUTO” or “SEL” in advance. (p. 132)

NOTE: The message “FULL” is displayed when no blank channel is available in station call sign memory.
In this case, select the desired call sign channel number as described in step ⑦ is set to “• When “SEL” is set to “EDIT R” item below.

• When “SEL” is set to “EDIT R” item

- ④ Push [▶](6) to select the call sign programming mode.
• The 1st digit of the selected call sign blinks.
⑤ Modify the selected call sign as described in “Station call sign programming” (p. 37).
⑥ Push [←](5).
• Call sign channel number blinks.



- ⑦ Push [▲](2) or [▼](8) to select the desired call sign channel to store.
⑧ Push [←](5) to store the modified call sign into the selected channel.

◇ Copying the call record contents into call sign memory

This is a way to copy the call record contents (“CALLER,” “RXRPT1” and “RXRPT2”) into call sign memory (“UR,” “R1” and “R2”) at the same time or individually.

- ① Enter RX-CS (RX call sign) mode.

MENU ⇨ **RX-CS**

(Push [MENU 

- RX call sign screen is displayed.

- ② Push [▲](2) or [▼](8) to select the desired record channel.
- ③ Push [←](5) several times to select the desired call sign from CALLER, / (CALLER’s note), CALLED, RXRPT1 and RXRPT2.

CALLER : The station call sign that made a call.
 / : 4-character note with call sign that made a call.
CALLED : The station call sign called by the caller.
RXRPT1 : The repeater call sign used by the caller station.
RXRPT2 : The repeater call sign linked from RXRPT1.

- ④ Push [▶](6) to enter copy select mode.

- Copy select screen is displayed.



- ⑤ Push [▲](2) or [▼](8) to select the desired call sign to be copied from “C ALL,” “C UR01”–“C UR60,” “C R-L” and “CLEAR.”

- “C ALL” selection won’t appear when either station call sign memory or repeater list has no blank channel.

- ⑥ Push [←](5) to copy the selected record’s contents into the appropriate call sign memory or repeater lists.

C ALL : Copy the caller call sign in “CALLER” to “UR” (station call sign memory) and the repeater call sign in “RXRPT1” / “RXRPT2” to the repeater lists. This selection won’t appear when either station call sign memory or repeater list has no blank channel.

C UR01– :

C UR60 : Copy the caller call sign in “CALLER” to “UR” (station call sign memory). This selection appears when entering the copy select mode (step ④) from “CALLER” only.

C R-L : Copy the repeater call sign in “RXRPT1” / “RXRPT2” to the repeater lists. This selection appears when entering the copy select mode (step ④) from “RXRPT1” or “RXRPT2” only.

CLEAR : Clear (erase) the selected call record contents.

- ⑦ Push [MENU 