ICOM

BASIC MANUAL

UHF TRANSCEIVER

ID-31A PLUS
ID-31E PLUS

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.

Thank you for choosing this Icom product. This product is designed and built with Icom' s state of the art technology and craftsmanship. With proper care, this product should provide you with years of trouble-free operation.

This product combines traditional analog technologies with the new digital technology, Digital Smart Technologies for Amateur Radio (D-STAR), for a balanced package.

IMPORTANT

READ ALL INSTRUCTIONS carefully and completely before using the transceiver.

SAVE THIS INSTRUCTION MANUAL— This instruction manual contains basic operating instructions for the ID-31A PLUS/ID-31E PLUS.

For advanced features and instructions, see **ADVANCED MANUAL** on the Icom website for details.

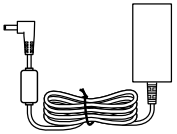
Icom is not responsible for the destruction, damage to, or performance of any Icom or non-Icom equipment, if the malfunction is because of:
- Force majeure, including, but not limited to, fires, earthquakes, storms, floods, lightning, other natural disasters, disturbances, riots, war, or radioactive contamination.
- The use of Icom transceivers with any equipment that is not manufactured or approved by Icom.

EXPLICIT DEFINITIONS

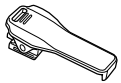
WORD	DEFINITION
⚠ **DANGER!**	Personal death, serious injury or an explosion may occur.
⚠ **WARNING!**	Personal injury, fire hazard or electric shock may occur.
CAUTION	Equipment damage may occur.
NOTE	Recommended for optimum use. No risk of personal injury, fire or electric shock.

SUPPLIED ACCESSORIES

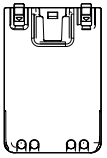
Antenna
(For only the
ID-31A PLUS/ID-31E PLUS)



Battery charger*



Belt clip



Battery pack

Hand strap

* Not supplied, or the shape is different, depending on the transceiver version.

ABOUT THE CONSTRUCTION OF THE MANUAL

Use the following manuals to understand this transceiver. (As of October 2017)

Basic manual (This manual)

Instructions for the basic operations and precautions.
D-STAR GUIDE that explains registering your call sign to a gateway repeater and the basic operations of D-STAR is also included.

About the DV Gateway function (PDF type)

Instructions for the system requirements or operations to use the DV Gateway function.
ⓘ "About the DV Gateway function" can be downloaded from the Icom website.

Advanced manual (PDF type)

Instructions for the advanced operations, as shown below.
- Using a microSD card <Advanced>*
- Battery charging <Advanced>*
- Menu screen <Advanced>*
- Memory operation <Advanced>*
- Scan operation <Advanced>*
- D-STAR operation <Advanced>*
- GPS operation
- Voice memory operation
- Priority watch operation
- Repeater and duplex operations
- Other functions
- Options

ⓘ This manual can be downloaded from the Icom website.

* The basic instructions are described on this manual.

TIP:
- You can download each manual and guide from the Icom website, **http://www.icom.co.jp/world/support/**. Enter "ID-31A PLUS" or "ID-31E PLUS" into the Search box in the site.
- If necessary, you can see a glossary of HAM radio terms that can be downloaded from the Icom website.
- To read the guide or manual, Adobe Acrobat Reader is required. If you have not installed it, download the Adobe Acrobat Reader from Adobe Systems Incorporated's website.

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D-STAR GUIDE

TABLE OF CONTENTS BY TOPIC

*“AM” indicates the Advanced manual.

IMPORTANT NOTES

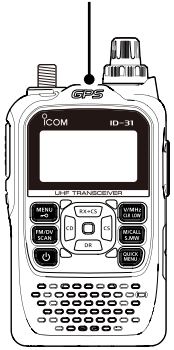
◇ When using the GPS receiver

- The GPS receiver is installed under the transceiver's top panel. Therefore, when the GPS receiver is activated, do not cover the top with anything that will block the satellite signals.
- GPS signals cannot pass through metal objects. When using the transceiver inside a vehicle, you may not receive GPS signals. We recommend you use it near a window.
- The GPS receiver may not work if used in the following locations:
  1. Tunnels or high-rise buildings
  2. Underground parking lots
  3. Under a bridge or viaduct
  4. In remote forested areas
  5. Under bad weather conditions (rainy or cloudy day)
- The GPS receiver may not work if the transceiver operates near the 440.205 MHz. This is due to signals made in the internal circuit and does not indicate a transceiver malfunction.
- The Global Positioning System (GPS) is built and operated by the U.S. Department of Defense. The Department is responsible for accuracy and maintenance of the system. Any changes by the Department may affect the accuracy and function of the GPS system.

◇ Spurious signals

When operating in the DV mode, you may hear some noises around 430.080 MHz. These may be caused by spurious signals generated in the transceiver's circuit but they do not indicate a transceiver malfunction.

The GPS receiver is installed here.



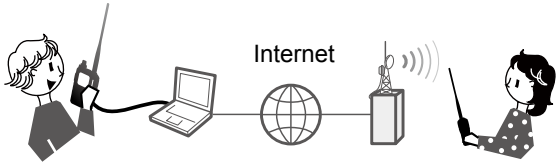
UNIQUE FUNCTIONS

1 DV Gateway function

Even if you cannot access a D-STAR repeater, you can make a direct Gateway call through the Internet.

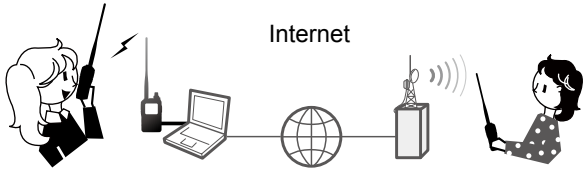
NOTE: A Global IP connection is necessary for your Windows or Android device. Download and install the RS-MS3W TERMINAL MODE/ACCESS POINT MODE SOFTWARE or RS-MS3A TERMINAL MODE/ACCESS POINT MODE APPLICATION from the Icom website or Google Play. See "About the DV Gateway function" that can be downloaded from the Icom website, for details.
http://www.icom.co.jp/world/support/

Terminal mode
The Terminal mode enables you to make a direct Gateway call through the Internet using the optional OPC-2350LU and a Windows or Android device.



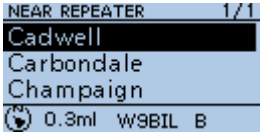
Access Point mode
The Access Point mode enables the D-STAR transceiver to make a Gateway call through an ID-31A PLUS/ ID-31E PLUS using the optional OPC-2350LU and a Windows or Android device.

IMPORTANT: Before you set up an access point, check any regulations or laws in your country.



2 Near Repeater (DV/FM) search function

You can select near repeaters using the DR function.
The function can find only repeaters in your transceiver's repeater list.



3 DV Fast data mode

In addition to the low-speed data communication, you can send data at high-speed using the DV Fast data mode.
The data speed of the DV Fast data mode is approximately 3480 bps, and is 3.5 times faster than the low-speed data communication mode of approximately 950 bps.

4 Add-on functions for D-PRS

D-PRS enables the transceiver to receive the Object, Item, or Weather data in addition to position data.
With the D-PRS add-on functions, you can receive information such as an event, traffic, emergency, or weather while making a voice call in the DV mode.

5 Connecting an Android™ device

You can connect an Android device to the transceiver. When you connect an Android device to the transceiver, you can use the extended D-STAR functions with the RS-MS1A*, such as remote control operation or sending messages and pictures.

* Freeware application for an Android device.

PRECAUTIONS

⚠ **DANGER! NEVER** short the terminals of the battery pack. Shorting may occur if the terminals touch metal objects such as a key, so be careful when placing the battery packs (or the transceiver) in bags, and so on. Carry them so that shorting cannot occur with metal objects. Shorting may damage not only the battery pack, but also the transceiver.

⚠ **DANGER! NEVER** operate the transceiver near unshielded electrical blasting caps or in an explosive atmosphere. This could cause an explosion and death.

⚠ **DANGER! NEVER** use or charge Icom battery packs with non-Icom transceivers or non-Icom chargers. Only Icom battery packs are tested and approved for use with Icom transceivers or charged with Icom chargers. Using third-party or counterfeit battery packs or chargers may cause smoke, fire, or cause the battery to burst.

⚠ **WARNING RF EXPOSURE!** This transceiver emits Radio Frequency (RF) energy. Extreme caution should be observed when operating this transceiver. 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.

⚠ **WARNING! NEVER** operate or touch the transceiver with wet hands. This could cause an electric shock or damage the transceiver.

⚠ **WARNING! NEVER** operate with earphone, headphones or other audio accessories at high volume levels. If you experience a ringing in your ears, reduce the volume level or discontinue use.

⚠ **WARNING! NEVER** connect the transceiver to a power source of more than 16 V DC or use reverse polarity. This could cause a fire or damage the transceiver.

CAUTION: DO NOT operate the transceiver unless the flexible antenna, battery pack, and jack cover are securely attached to the transceiver, and that the antenna and battery pack are dry before attachment. Exposing the inside of the transceiver to dust or water will result in serious damage to the transceiver. After exposure to water, clean the battery contacts thoroughly with fresh water and dry them completely to remove any water or salt residue.

CAUTION: DO NOT operate the transceiver while driving a vehicle. Safe driving requires your full attention—anything less may result in an accident.

CAUTION: DO NOT use harsh solvents such as benzine or alcohol when cleaning. This could damage the equipment surfaces. If the surface becomes dusty or dirty, wipe it clean with a soft, dry cloth.

CAUTION: DO NOT place or leave the transceiver in direct sunlight or in areas with temperatures below –20°C (–4˚F) or above +60°C (+140˚F).

CAUTION: DO NOT operate the transceiver if it becomes hot after continuously transmitting for long periods of time. This may damage the transceiver.

DO NOT push PTT unless you actually intend to transmit.

BE CAREFUL! The transceiver meets IPX7* requirements for waterproof protection. However, once the transceiver has been dropped, waterproof protection cannot be guaranteed because of possible damage to the transceiver's case or waterproof seal.

* Only when the BP-271 or BP-272 (option), flexible antenna, [MIC/SP] cap, [DATA/DC IN] cap, and [micro SD] slot cap are attached.

NEVER place in an insecure place to avoid inadvertent use by unauthorized persons.

NOTE: When the BP-273 is connected to the transceiver, it meets IPX4 requirements for splash resistance. When it is connected, the transceiver corresponds to IPX4.

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.

BATTERY CAUTIONS

◇ Battery caution

Misuse of Li-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's performance.

⚠ **DANGER! NEVER** strike or otherwise impact the battery pack. Do not use the battery pack if it has been severely impacted or dropped, or if the pack has been subjected to heavy pressure. Battery pack 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** leave the battery pack in places with temperatures above 60˚C (140˚F). High temperature buildup in the battery cells, such as could occur near fires or stoves, inside a sun-heated vehicle, or in direct sunlight for long periods of time may cause the battery cells to rupture or catch fire. Excessive temperatures may also degrade pack's performance or shorten the battery cell's life.

⚠ **DANGER! NEVER** expose the battery pack to rain, snow, seawater, or any other liquids. Do not charge or use a wet pack. If the pack gets wet, be sure to wipe it dry before using.

⚠ **DANGER! NEVER** place or leave battery packs near fire. Fire or heat may cause them to rupture or explode. Dispose of used battery packs in accordance with local regulations.

⚠ **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! NEVER** let fluid from inside the battery get in your eyes. This can cause blindness. Rinse your eyes with clean water, without rubbing them, and immediately go to a doctor.

⚠ **WARNING! NEVER** use 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! NEVER** let fluid from inside the battery cells come in contact with your body. If it does, immediately wash with clean water.

⚠ **WARNING! NEVER** put the battery pack in a microwave oven, high-pressure container, or in an induction heating cooker. This could cause a fire, overheating, or cause the battery cells to rupture.

⚠ **CAUTION: DO NOT** use the battery pack out of the specified temperature range –20˚C ~ +60˚C (–4˚F ~ +140˚F). Using the pack out of this range will reduce the pack's performance and battery cell life.

CAUTION: DO NOT leave the pack fully charged, completely discharged, or in an excessive temperature environment (above 50˚C, 122˚F) for an extended period of time. Otherwise a shorter battery pack life could occur. If the battery pack must be left unused for a long time, it must be

detached from the transceiver after discharging. You may use the pack until the remaining capacity is about half, then keep it safely in a cool dry place in the following temperature range:

–20˚C (–4˚F) ~ +50˚C (+122˚F) (within a month).
–20˚C (–4˚F) ~ +35˚C (+95˚F) (within three months).
–20˚C (–4˚F) ~ +20˚C (+68˚F) (within a year).

BE SURE to replace the battery pack with a new one approximately five years after manufacturing, even if it still holds a charge. The material inside the battery cells will become weak after a period of time, even with little use. The estimated number of times you can charge the pack is between 300 and 500. Even when the pack appears to be fully charged, the operating time of the transceiver may become short when:

- Approximately five years have passed since the pack was manufactured.
- The pack has been repeatedly charged.

◇ 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 pack will activate and stop the charging.

⚠ **DANGER! NEVER** charge the transceiver during a lightning storm. It may result in an electric shock, cause a fire or damage the transceiver. Always disconnect the power adapter before a storm.

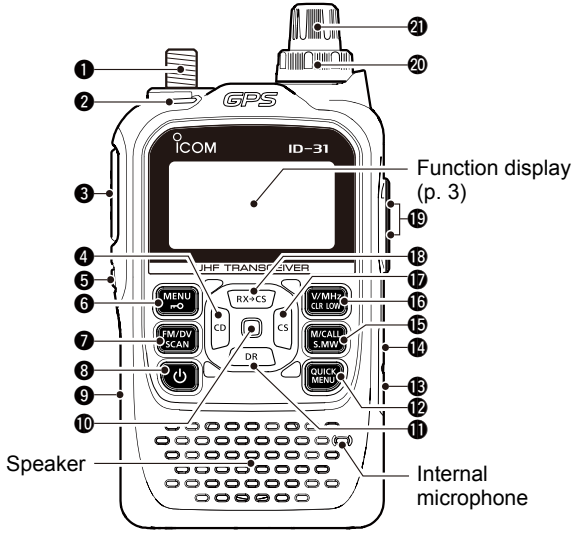
⚠ **WARNING! NEVER** charge or leave the battery in the battery charger beyond the specified time for charging. If the pack is not completely charged by the specified time, stop charging and remove it from the battery charger. Continuing to charge the pack beyond the specified time limit may cause a fire, overheating, or the battery may rupture.

⚠ **WARNING! NEVER** insert the transceiver with the battery pack attached 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 pack outside of the specified temperature range: 0˚C ~ 40˚C (32˚F ~ 104˚F). Icom recommends charging the pack at 25˚C (77˚F). The pack may heat up or rupture if charged out of the specified temperature range. Additionally, battery performance or battery life may be reduced.

1 PANEL DESCRIPTION

■ Front, top and side panels



❶ ANTENNA CONNECTOR
Connect the antenna here.

❷ TX/RX INDICATOR [TX/RX]
Lights red while transmitting, lights green while receiving a signal or when the squelch is open.

❸ PTT SWITCH [PTT]
Hold down to transmit, release to receive.
ⓘ For the ID-31E PLUS only:
Push briefly and release, then hold down to transmit a 1750 Hz tone burst.

❹ RX CALL SIGN DISPLAY KEY [CD]
- In the MENU screen, push to select an upper tier menu. (p. 19)
- In the DV mode, hold down for 1 second to open the received call history. (p. 46)

❺ SQUELCH KEY [SQL]
- While holding down, rotate [DIAL] to adjust the squelch level. (p. 11)
- Hold down to temporarily open the squelch and monitor the operating frequency. (p. 11)

❻ MENU • LOCK KEY [MENU]/[🔒]
- Push to display the MENU screen. (p. 19)
- Hold down for 1 second to turn the Lock function ON or OFF. (p. 14)

❼ FM/DV • SCAN KEY [FM/DV]
- Push to select an operating mode. (p. 14)
- Hold down for 1 second to open the Scan Type Select window. (p. 16)

❽ POWER KEY [⏻]
Hold down for 1 second to turn the transceiver ON or OFF. (p. 7)

❾ microSD CARD SLOT [micro SD]
Insert a microSD card (User supplied). (p. 7)

⑩ ENTER KEY [ENT]
Push to set the selected item or option.

⑪ DR KEY [DR]
- In the DR screen, MENU screen, or QUICK MENU screen, push to move the option or value selector bar down. (p. 19)
- Hold down for 1 second to turn the DR function ON or OFF. (p. 14)

⑫ QUICK MENU KEY [QUICK]
- Push to enter or exit the QUICK MENU screen. (p. 12)
- Hold down for 1 second to audibly announce the displayed frequency, operating mode, or call sign. (p. 16)

⑬ EXTERNAL DC IN JACK [DC IN]
Connects to the supplied battery charger to charge the attached battery pack. (p. 6)

⑭ DATA JACK [DATA]
Connect to a PC through the optional data communication cable. 2.5 mm (0.09 in) (d)
Used to clone the transceiver, to operate in the Terminal mode or Access Point mode, or for data communication in the DV mode.

⑮ MEMORY/CALL • SELECT MEMORY WRITE KEY [M/CALL S.MW]
- Push to enter the Memory Selection mode, and then push again to enter the Call Channel mode. (p. 13)
- Hold down for 1 second to enter the Select Memory Write mode. (p. 21)

⑯ VFO/MHz • CLEAR • OUTPUT POWER KEY [V/MHz]
- Push to select the VFO mode. (p. 13)
- In the VFO mode, push to select 1 MHz tuning step. (p. 15)
- In the MENU screen, push to select an upper tier menu. (p. 19)
- Push to delete an entered character.
- Hold down for 1 second to select an output power. (p. 18)

⑰ CALL SIGN SELECT KEY [CS]
- In the MENU screen, push to select a lower tier menu. (p. 19)
- Hold down for 1 second to enter the Operating Call Sign Select mode.

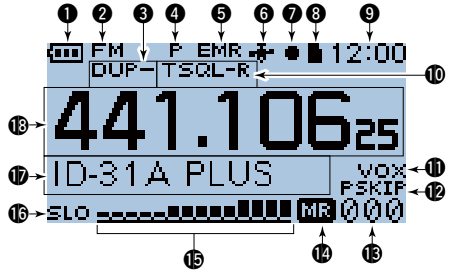
⑱ RX CALL SIGN CAPTURE KEY [RX→CS]
- In the DR screen, MENU screen, or QUICK MENU screen, push to move the value or option selector bar up. (p. 19)
- Hold down for 1 second to capture the calling station's call sign. (p. 47)

⑲ EXTERNAL MICROPHONE/SPEAKER JACK [MIC/SP]
Connect a data cable, optional speaker microphone, or headset.

⑳ VOLUME CONTROL [VOL]
Rotate to adjust an audio level. (p. 7)

㉑ CONTROL DIAL [DIAL]
- Rotate to select an operating frequency. (p. 15)
- In the Memory mode, rotate to select a Memory channel.
- Rotate to select a setting item or value.
- In the Character Entry mode, rotate to enter characters.

■ Function display



❶ BATTERY ICON
Displays the capacity of the attached battery pack. (p. 6)
ⓘ "▬" is displayed when the optional battery case is attached.

❷ OPERATING MODE ICONS
Displays the selected operating mode.

❸ DUPLEX ICON
- DUP+: Displayed while the plus duplex operation.
- DUP–: Displayed while the minus duplex operation.

❹ PRIORITY WATCH ICON
Displayed when the Priority Watch function is ON.

❺ EMR/BK/PACKET LOSS/AUTO REPLY ICONS
- EMR: Displayed when you select the Enhanced Monitor Request (EMR) mode.
- BK: Displayed when you select the Break-in (BK) mode.
- L: Displayed when a packet loss has occurred.
- : Displayed when you select the Automatic Reply function.

❻ GPS ICON
Displays the status of the GPS receiver. (p. 10)

❼ RECORD ICON
- ●: Displayed while the transceiver is recording.
- ❚❚: Displayed while the recording is paused.

❽ microSD CARD ICON
- Displayed when a microSD card is inserted.
- Blinks while accessing the microSD card.

❾ CLOCK DISPLAY

❿ TONE ICONS

Mode: FM/FM-N

- TONE: Enables the subaudible tone encoder.
- TSQL (((•))): Enables the tone squelch with the Pocket Beep function.
- TSQL: Enables the Tone Squelch function.
- DTCS (((•))): Enables the DTCS squelch with the Pocket Beep function.
- DTCS: Enables the DTCS Squelch function.
- TSQL-R: Enables the Reverse Tone Squelch function.
- DTCS-R: Enables the Reverse DTCS Squelch function.
- DTCS(T) ("DTCS" blinks): When you transmit, the selected DTCS code is superimposed on your normal signal. When you receive, the function is OFF.

- TONE(T)/DTCS(R) (“T-DTCS” is displayed, “T” blinks.):
  When you transmit, the selected subaudible tone is superimposed on your normal signal.
  When you receive, the DTCS squelch opens only for a signal that includes a matching DTCS code and polarity. (Audio is heard)
- DTCS(T)/TSQL(R) (“D-TSQL” is displayed, “D” blinks.):
  When you transmit, the selected DTCS code is superimposed on your normal signal.
  When you receive, the tone squelch opens only for a signal that includes a matching tone frequency. (Audio is heard)
- TONE(T)/TSQL(R) (“T-TSQL” is displayed, “T” blinks.):
  When you transmit, the selected subaudible tone is superimposed on your normal signal.
  When you receive, the tone squelch opens only for a signal that includes a matching tone frequency. (Audio is heard)

Mode: DV

- DSQL ((•)) : Enables the Digital Call Sign Squelch function with the Pocket Beep function.
- DSQL: Enables the Digital Call Sign Squelch function.
- CSQL ((•)) : Enables the Digital Code Squelch function with the Pocket Beep function.
- CSQL: Enables the Digital Code Squelch function.

⓫ VOX ICON
Displayed when the optional headset is connected with the OPC-2006LS PLUG ADAPTER CABLE, and the VOX function is ON.

⓬ SKIP ICON
- SKIP: Displayed when Memory Skip is selected.
- PSKIP: Displayed when Program Skip is selected.

⓭ MEMORY CHANNEL NUMBER
Displays the selected Memory channel number, Memory Bank, and so on.
ⓘ “TM” or “AP” is displayed when using the DV Gateway function. See “About the DV Gateway function” on the Icom website for details.

⓮ MEMORY MODE ICON

⓯ S/RF METER
- Displays the relative signal strength of the receive signal.
- Displays the output power level of the transmit signal.

⓰ POWER ICONS
Displays the output power level of the transmit signal in 5 levels (SLO/LO1/LO2/MID/no icon).
ⓘ When you select a high power, the power icon disappears.

⓱ MEMORY NAME DISPLAY
ⓘ You can change the display type in the Quick Menu window.

⓲ FREQUENCY READOUT
Displays an operating frequency.

2 INITIAL SETUP

Before starting using the transceiver, follow these steps for an initial setup.

STEP 1 Attach the battery pack, and charging the battery. (pp. 5, 6)

STEP 2 Insert a microSD card. (p. 7)

STEP 3 Turn ON the transceiver. (p. 7)

STEP 4 Adjust the audio level. (p. 7)

STEP 5 Save your initial setting onto a microSD card. (p. 8)

STEP 6 Receiving GPS data. (p. 10)

STEP 7 * Enter your Call sign (MY) into the transceiver. (p. 39)

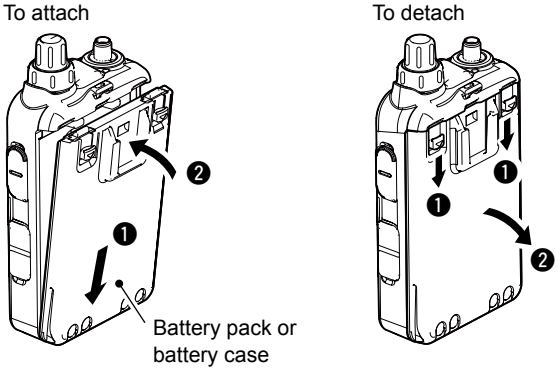
STEP 8 * Register your call sign at a Gateway repeater. (p. 41)

► You have completed the steps!!

* You can skip the step if you do not operate D-STAR right now.

■ Attaching the Battery pack

Attach or detach the battery pack or battery case, as illustrated below.



ⓘ Illustrations of the battery pack

NOTE: Even when the transceiver is OFF, a small current still flows in the transceiver. Remove the battery pack or case from the transceiver when not using it for a long time. Otherwise, the batteries in the pack or the case will become exhausted.
When the temperature is around 0°C (32°F) or below, the Battery Protection function automatically sets the transceiver power to Low1 power (0.5 W), and disables power selections High, Mid, and Low2.

■ Charging the battery pack

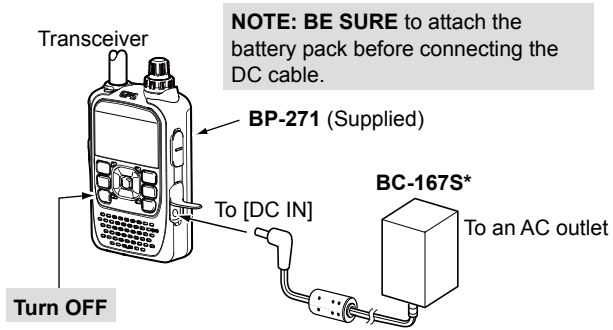
◇ Charging time

Charger / Battery pack	BC-167S (Supplied)	BC-202 (Optional)
BP-271 (Supplied)	Approximately 6 hours	Approximately 2 hours
BP-272 (Optional)	Approximately 9 hours	Approximately 3.5 hours

◇ Capacity of the battery pack

Icon	Battery status
	The battery has sufficient capacity.
	The battery is exhausted a little.
	The battery is nearing exhaustion.
Blinking	The battery is almost fully exhausted.

NOTE:
- Prior to using the transceiver for the first time, the battery pack must be fully charged for optimum life and operation.
- **BE SURE** to turn OFF the transceiver while charging with the supplied battery charger. Otherwise the attached battery pack cannot be charged.
- While charging, the charging icon " " sequentially displays 11 level steps with "Charging...."
- The icon disappears when the battery pack is completely charged.



* The shape is different, and supplied or optional depending on the charger version.

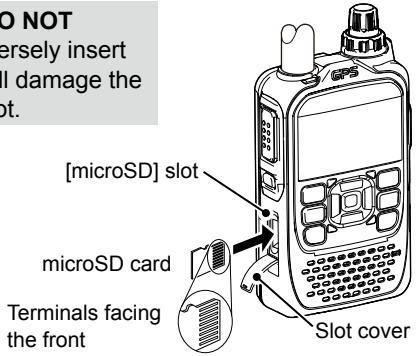
■ Inserting a microSD card

1. Turn OFF the transceiver.
2. Lift OFF the [micro SD] slot cover on the side panel.
3. With the terminals facing the front, insert the card into the slot until it locks in place and makes a ‘click’ sound.
   ⓘ **DO NOT** touch the terminals.

NOTE: When removing, push in the microSD card until a ‘click’ sounds. The card is unlocked, and you can pull it out.
DO NOT remove the card from the transceiver while the card is being accessed. Otherwise, the card data may be corrupted or deleted.

4. Completely close the [micro SD] slot cover.

CAUTION: DO NOT forcibly or inversely insert the card. It will damage the card or the slot.



■ Turning ON the transceiver

- Hold down [⏻] for 1 second to turn ON the transceiver.
  - A beep sounds.
  - After the opening message and power source voltage are is displayed, the operating frequency or repeater name is displayed.
- Hold down [⏻] for 1 second again to turn OFF the power.

■ Adjusting an audio level

Rotate [VOL] to adjust an audio level.
ⓘ The display shows the volume level while adjusting.

■ Saving a setting data onto a microSD card

IMPORTANT: Before using a microSD card, format the card using the transceiver.

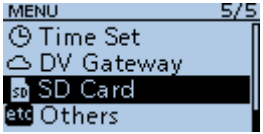
◇ Formatting the microSD card

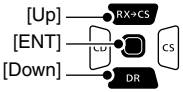
Before using a microSD card, format it to use with the transceiver by doing the following steps.

ⓘ Formatting a card deletes all its data. Before formatting any used card, back up its data onto your PC.

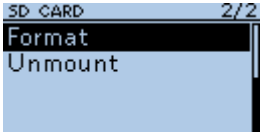
MENU > SD Card > **Format**

1. Turn OFF the transceiver, then insert the card into the slot.
2. Turn ON the transceiver.
   • Displays "■."
3. Push [MENU].
4. Select "SD Card."



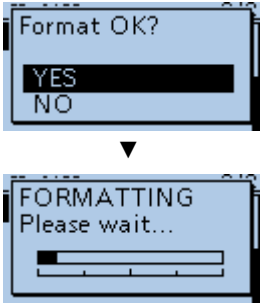


5. Select "Format."



• The confirmation dialog "Format OK?" is displayed.

6. Select "Yes."



• The formatting starts and the display shows the formatting progress.
• After the formatting ends, returns to the SD CARD screen.

ⓘ To exit the MENU screen, push [MENU].

■ Saving a setting data onto a microSD card

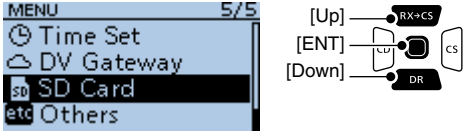
◇ Saving a setting data

You can save the Memory channels, Menu screen item settings, and repeater lists on a microSD card.
Saving settings on a card enables you to easily restore the transceiver to its previous settings, even if you perform an All Reset.

TIP: The setting data are saved in the “icf” file format that is used in the CS-31PLUS CLONING SOFTWARE. When the saved data on a card is copied to a PC, you can edit it with the software.

MENU > SD Card > **Save Setting**

1. Push [MENU].
2. Select “SD Card.”

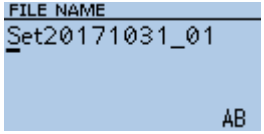


3. Select “Save Setting.”

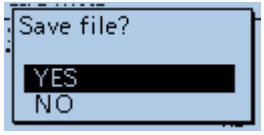
4. Select “<<New File>>.”

• Displays the FILE NAME screen.
ⓘ The file name is automatically named in the following manner: Setyyyymmdd_xx (yyyy: Year, mm: month, dd: day, xx: serial number).
Example: If a second file is saved on November 1, 2017, the file is named “Set20171101_02.”

5. Push [ENT].



6. Select <YES>.



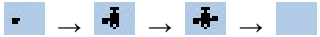
• Saves the data settings.
ⓘ While saving, a progress bar is displayed, then returns to the SD CARD screen after the saving is completed.
ⓘ To exit the MENU screen, push [MENU].

■ Confirming the GPS signal receiving

The transceiver has a built-in GPS receiver. You can check your current location, and transmit GPS data in the DV mode. See the ADVANCED MANUAL for details. (Section 5)

Confirm the GPS receiver is receiving your location.

The GPS icon blinks when searching for satellites.



The GPS icon stops blinking when the minimum needed number of satellites are found.

ⓘ It may take only a few seconds to receive, or it may take a few minutes, depending on your operating environment. If you have difficulties receiving, we recommend that you try a different location.

ⓘ When **GPS Select** is set to “Manual,” the icon is not displayed.
(MENU > GPS > GPS Set > **GPS Select**)

NOTE: If you cannot receive GPS data, manually set the date and time.
(MENU > Time Set > **Date/Time**)

TIP: To prolong the battery life in the GPS mode
To prolong the battery life while operating in the GPS mode, manually update your location with the received GPS data.

1. Confirm the GPS receiver is receiving your location data. (See to the left).
2. Display the MANUAL POSITION screen.
(MENU > GPS > GPS Set > **Manual Position**)
3. Push [QUICK].
   • Quick Menu window is displayed.
4. Select “Capture From GPS.”
5. Set GPS Select to “Manual.”
(MENU > GPS > GPS Set > **GPS Select**)

TIP: The GPS log data is saved on the microSD card. (p. 28)

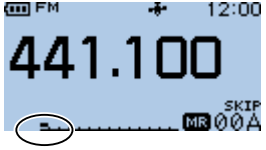
■ Receiving

To receive, the following settings are required.
- Selecting the Frequency Selecting mode (p. 13)
- Selecting the operating mode (p. 14)
- Setting a frequency (p. 15)
- Setting a squelch level (p. 11)

■ Monitor function

The Monitor function is used to listen to weak signals without disturbing the squelch setting.
ⓘ In the DV mode, the Monitor function is disabled.

While holding down [SQL], the transceiver monitors the operating frequency.
- The squelch opens.
- The 1st segment of the S-meter blinks.



Blinks

TIP: You can set the Monitor Hold function in the MENU screen. The transceiver opens or closes the squelch each time you push [SQL].
(MENU > Function > **Monitor**)

■ Setting a squelch level

1. While holding down [SQL], rotate [DIAL] 1 click.
   - The current squelch level is displayed.
   ⓘ "AUTO" is set as the default.
2. While holding down [SQL], rotate [DIAL] to select the squelch level.

ⓘ **Information**
- "LEVEL 1" is loose squelch (for weak signals) and "LEVEL 9" is tight squelch (for strong signals).
- "AUTO" is an automatic level adjustment by a noise pulse counting system.
- "OPEN" is a continuously open setting. (This option is not selectable in the DV mode.)

Automatic squelch

Maximum squelch level

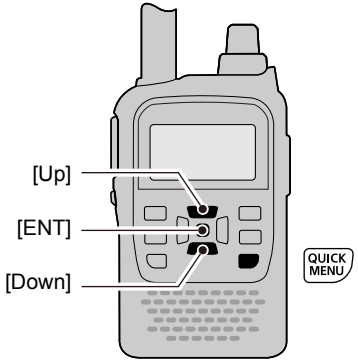
■ Quick Menu window

You can open the Quick Menu window by pushing [QUICK]. In the window, the selectable items may differ, depending on the operating mode or function. The items listed below are examples.

VFO mode	Memory mode	Call CH mode	DR function
DUP	Bank Select	DUP	Group Select
TONE*	DUP	TONE*	Repeater Detail
TS	TONE*	TS	DTMF TX
DTMF TX	TS	DTMF TX	Voice TX
Voice TX	SKIP	Voice TX	GPS Information
GPS Information	DTMF TX	GPS Information	GPS Position
GPS Position	Voice TX	GPS Position	PRIO Watch
PRIO Watch	GPS Information	PRIO Watch	Display Type
Home CH Set	GPS Position	Display Type	DSQL
Voltage	PRIO Watch	Voltage	SKIP
Band Scope	Home CH Set	Band Scope	Home CH Set
<<REC Start>>	Display Type	<<REC Start>>	Voltage
<<GPS Logger Only>>	Voltage	<<GPS Logger Only>>	<<REC Start>>
	Band Scope		<<GPS Logger Only>>
	<<REC Start>>		
	<<GPS Logger Only>>		

* “DSQL” is displayed in the DV mode.

◇ Quick Menu window operation

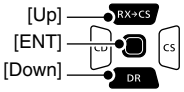


Simplified description—‘Select’ operation

In this manual, user’s ‘Select’ operation is simplified, as described below.

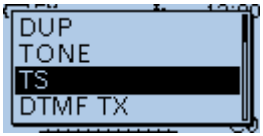
Simplified description:

1. Push [QUICK].
2. Select “TS.”



Operation:

1. Push [QUICK] to open the Quick Menu window.
2. Push [Up] (RX→CS) or [Down] (DR) to select “TS.”



■ Selecting the Frequency Selecting mode

◇ VFO mode

Rotate [DIAL] to set an operating frequency.

◇ Memory mode

Select a Memory channel where an operating frequency and other parameters are saved.

ⓘ In the Memory mode, "MR" and Memory Channel number are displayed.

◇ Call Channel mode

Select a Call channel to quickly recall your most-often used frequencies.

ⓘ In the Call Channel mode, "C0" or "C1" is displayed.

V/MHz CLR LOW Push to select the VFO mode.

M/CALL S.MW Push to select the Memory mode or the Call Channel mode.

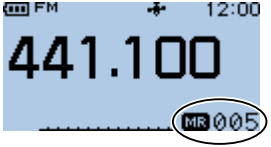
1. Select a mode.

ⓘ **Information**

- Push [V/MHz] to select the VFO mode.
- In the VFO mode, push [V/MHz] to select 1 MHz tuning step.

VFO mode

- Push [M/CALL] to select the Memory mode or the Call Channel mode.



Memory mode

Call Channel mode

2. Rotate [DIAL] to select an operating frequency or a channel.

■ Selecting the operating mode

The transceiver has a total of 3 operating modes, FM, FM-N, and DV.
Push [FM/DV] to select the operating mode.

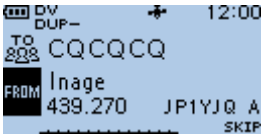
ⓘ While in the FM-N mode, the TX modulation is automatically set to narrow (approximately ±2.5 kHz).
ⓘ When setting **GPS TX Mode**, “DV-A” or “DV-G” is displayed instead of “DV.”
(MENU > GPS > **GPS TX Mode)**

TIP: You can make a simplex call not only in the FM mode, but also in the DV mode.

■ DR function operation

Using the D-STAR Repeater (DR) function, you can easily select the entered repeaters and Your call signs by rotating [DIAL]. You can make not only a repeater call but also a simplex call.

Hold down [DR] for 1 second.
• Displays the DR screen.



ⓘ Hold down [DR] again to cancel the DR function.
ⓘ See D-STAR GUIDE (p. 35) for the DR function details.

■ Lock function

You can use the Lock function to prevent accidental frequency changes and unnecessary function access.

Hold down [LOCK] for 1 second to turn the Lock function ON or OFF.
• “LOCK ON” or “LOCK OFF” is briefly displayed when the Lock function is turned ON or OFF.

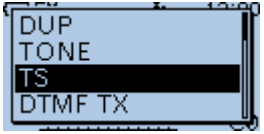
ⓘ **Information**
• When the Lock function is ON, “LOCK ON” is displayed when you push a key.
• You can still use [⏻], [PTT], [SQL], [VOL] and [MONI], even if the Lock function is ON.
• You can change the [SQL] and [VOL] key settings when the Lock function is ON.
(MENU > Function > **Key Lock**)

■ Setting a frequency

◇ Selecting a tuning step

When you select the operating frequency by rotating [DIAL] in the VFO mode, the frequency changes in the selected tuning step.

1. Push [QUICK].
2. Rotate [DIAL] to select “TS.”



3. Select a tuning step.
Options (kHz):

5.0	6.25	10.0	12.5	15.0	20.0
25.0	30.0	50.0	100.0	125.0	200.0

• Sets the tuning step, then returns to the standby screen.
ⓘ You can set the tuning step for both the VFO and Memory mode.
ⓘ The VFO mode scan and the Band Scope function also use this step to search for a signal.

◇ Selecting the 1 MHz tuning

You can change the operating frequency in ‘MHz’ steps for quick tuning.

1. In the VFO mode, push [V/MHz].
• Enters the 1 MHz Tuning Select mode.
• The 1 MHz digit blinks.

2. Rotate [DIAL].
• The frequency changes in 1 MHz steps.

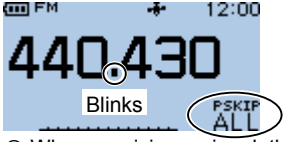
3. Push [ENT].
• Sets the frequency, then returns to the standby screen.
ⓘ The tuning step setting (to the left) remains.

■ Scan operation

Scanning is a versatile function that can automatically search for signals. A scan makes it easier to locate stations to contact or listen to, or to skip unwanted channels or frequencies.
This section describes the basic scan operation. See Section 8 of ADVANCED MANUAL for details.

Example: Scanning in the VFO mode

1. Push [V/MHz] to enter the VFO mode.
2. Hold down [SCAN] for 1 second.
   • Opens the Scan Type Select window.
3. Select “ALL.”
   • The scan starts.
   • The decimal point and the selected scan type icon blink.



ⓘ When receiving a signal, the S-meter displays the received signal strength.

4. Push [CLR].
   • Cancels the scan.

■ Speech function

The Speech function audibly announces information after holding down [QUICK]. Also, you can set various Speech functions, such as the DIAL Speech function or Mode Speech function in the MENU screen.
(MENU > SPEECH > **DIAL SPEECH**)
(MENU > SPEECH > **MODE SPEECH**)

ⓘ **Information**

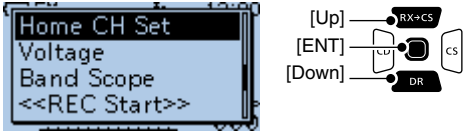
- In the VFO, Memory, or Call Channel mode, the Speech function announces the displayed frequency and operating mode.
- When using the DR function, the Speech function announces the displayed call sign.
- When you push [QUICK] while recording a receive audio in the DV mode, the received audio will be muted, and no audio is recorded onto the microSD card. In modes other than the DV mode, the received audio will be recorded.

■ Home Channel function

You can set an often-used frequency, Memory channel, or repeater as the Home channel in each mode (VFO/Memory/DR). When the Home CH is selected by rotating [DIAL], a beep sounds. You will know the Home CH selection without looking at the display.

◇ Setting a Home channel

1. Select the VFO or Memory mode, or the DR screen to set a Home channel. (pp. 13, 14)
2. Select a frequency, Memory channel, or an access repeater to be set as a Home channel. (pp. 15, 22, 43)
3. Push [QUICK].
4. Select “Home CH Set.”



5. Select “Set Frequency” (VFO mode), “Set Channel” (Memory mode), or “Set Repeater” (DR screen), then push [↵].

• Sets a Home channel, then returns to the standby screen.

■ Transmitting

◇ Transmitting a simplex call

⚠ **WARNING! NEVER** transmit for long periods of time. During prolonged transmissions at high power or mid power, the transceiver radiates heat to protect itself from overheating. The transceiver’s chassis will become hot and may cause a burn.
To prevent the transceiver’s overheating, the default setting of the time-out timer function is set to 5 minutes. Be careful when the time-out timer function is turned OFF or set to a long time period, and you transmit for long periods.

CAUTION: DO NOT operate the transceiver where heat dissipation will be obstructed if the transceiver is also being charged with an external power supply. Poor heat dissipation may cause a burn, warp the casing or damage the transceiver.

CAUTION: DO NOT transmit without an antenna. This may damage the transceiver.

NOTE: When the transceiver becomes hot, the transceiver’s heat protection function gradually reduces the output power to approximately 2.5 watts, then it stops transmission after that. This is done to protect the transceiver itself until it can cool down.

NOTE: You can transmit on only the amateur band frequencies.

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

1. Select the operating mode. (p. 14)
2. Rotate [DIAL] to set the operating frequency. (p. 15)
3. Hold down [LOW] for 1 second to set an output power.

ⓘ **Information**
- You can select S-LOW, LOW 1, LOW 2, MID, or HIGH each time you hold down [LOW] for 1 second.
- You can also select an output power by rotating [DIAL] to while holding down [LOW].
- When you select a high power, the power icon disappears.
- Select a level to suit your operating requirements.

4. Hold down [PTT] to transmit, and speak into the microphone at your normal voice level.
   - The TX/RX indicator lights red.
   - The S/RF meter displays the output power level.
5. Release [PTT] to receive.

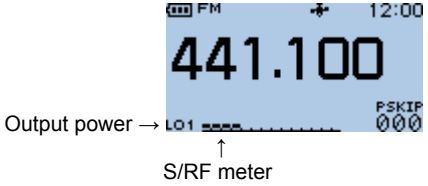
TIP: To maximize the readability of your signal
1. After pushing [PTT], pause briefly before you start speaking.
2. Hold the microphone 5 to 10 cm (2 to 4 inches) from your mouth, then speak at your normal voice level.

◇ About the transmit power levels

- When an external DC power cable (13.5 V DC) is connected, or a BP-271/BP-272 is used:
  5 W (HIGH)/2.5 W (MID)/1.0 W (LOW 2)/
  0.5 W (LOW 1)/0.1 W (S-LOW) (approximately)

- When the BP-273 is used:
  Approximately 0.1 W (S-LOW) (fixed)

NOTE: When using the BP-273 BATTERY CASE, "SLO," "LO1," "LO2," "MID," or no icon (high power) is displayed by holding down [LOW] for 1 second.
However, "SLO" is displayed while transmitting, and the output power is limited to approximately 0.1 watts.



4 MENU SCREEN

The MENU screen is displayed after pushing [MENU].
You can use the MENU screen to set infrequently changed values or function settings.
See the appendix for the MENU item list. (p. 67)
For details of each item, see Section 11 of ADVANCED MANUAL.

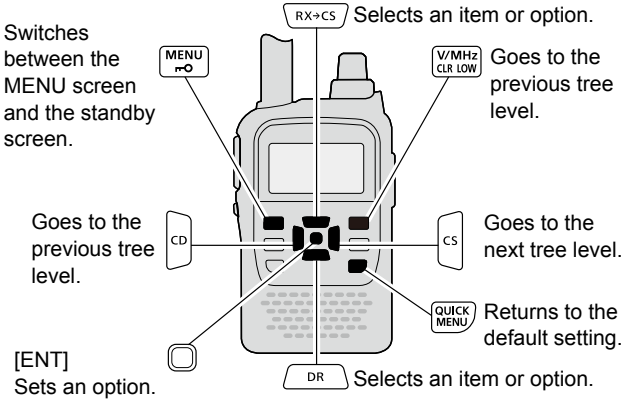
MENU screen structure

DUP/TONE...	QSO/RX Log
Scan	Function
Voice Memo	Display
Voice TX	Sounds
GPS	Time Set
Call Sign	DV Gateway
RX History	SD Card
DV Memory	Others
My Station	
DV Set	
SPEECH	
DTMF/T-CALL	

TIP: The MENU screen is constructed in a tree structure. You may go to the next tree level, or go back a level, depending on the selected item.

■ Selecting a Menu item

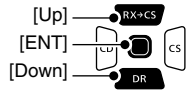
◇ MENU screen operation



Simplified description—'Select' operation

In this manual, user's 'Select' operation is simplified, as described below.

Simplified description:
1. Push [MENU].
2. Select "30min."



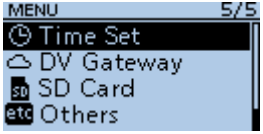
Operation:
1. Push [MENU] to enter the MENU screen.
2. Push [Up] (RX→CS) or [Down] (DR) to select "30min."

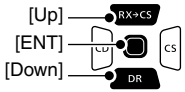
◇ Selecting a Menu item

Example: Set **Auto Power OFF** to “30 min.”

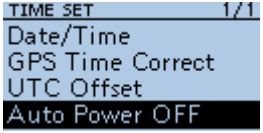
MENU > Time Set > **Auto Power OFF**

1. Push [MENU].
2. Select “Time Set.”

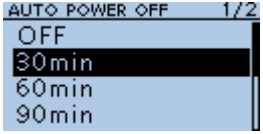




3. Select “Auto Power OFF.”



4. Select “30min.”



• Sets the option, then goes back a tree level. (TIME SET screen is displayed.)

ⓘ To exit the MENU screen, push [MENU].

TIP: To return to the default setting

1. Push [QUICK] in step 4.
2. Select “Default” and push [ENT].
   • The setting returns to the default.

ⓘ The default settings of each item are described in ADVANCED MANUAL.

■ Entering Memory channels

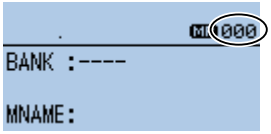
The transceiver has a total of 500 Memory channels to save often-used frequencies.
In the Memory mode, you can quickly select the saved memories. This section describes the basic channel content entry.

Example: Entering 441.600 MHz/FM mode into the Memory channel 011.

1. Push [V/MHz] to enter the VFO mode.
2. Push [FM/DV] to enter the FM mode.

3. Rotate [DIAL] to set a frequency to 441.600 MHz.

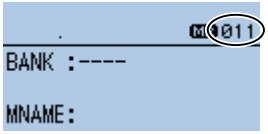
4. Hold down [S.MW] for 1 second to enter the Select Memory Write mode.



Blinks

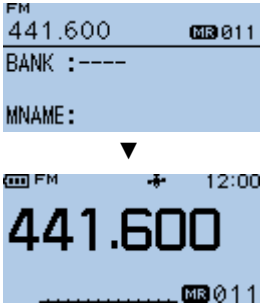
- A short and a long beep sound.
- The Memory channel number blinks and the Memory contents are displayed.

5. Rotate [DIAL] to select Memory channel 11.



Blinks

6. Hold down [S.MW] for 1 second to save the Memory contents.
   • Beeps sound and the Memory contents are briefly displayed, then returns to the VFO mode.



TIP:
- You can also save the Memory contents to another channel by selecting:
  - 00A/00B ~ 24A/24B: Saves to the Program channel
  - C0, C1: Overwrites to the Call channel
  - VFO: Overwrites to the VFO
- To enter content into the selected channel, see Section 7 of ADVANCED MANUAL for details.

■ Selecting a Memory channel

In the Memory mode, you can select the Memory channels by rotating [DIAL].

1. Push [M/CALL] several times to enter the Memory mode.
   ⓘ Pushing [M/CALL] each time selects the VFO and Memory modes.

Memory mode is selected.

2. Rotate [DIAL].

   • Selects a Memory channel.
   ⓘ Blank channels are not selected.

6 RECORDING A QSO ONTO A microSD CARD

■ About the microSD card

NOTE: The microSD and microSDHC cards are not available from Icom (User supplied).

A microSD card of up to 2 GB, or a microSDHC of up to 32 GB, can be used with this transceiver.
Icom has checked the compatibility with the following cards.

(As of October 2017)

Brand	Type	Memory size
SanDisk®	microSD	2 GB
	microSDHC	4 GB
		8 GB
		16 GB
		32 GB

- The performance of the cards listed above is not guaranteed.
- Throughout this document, the microSD card and microSDHC card are simply called microSD cards or the cards.
- Before using the microSD card, format the card using the transceiver, even preformatted for PCs or other uses. (p. 8)

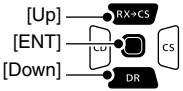
TIP: Saving the factory default data is recommended. (MENU > SD Card > **Save Setting**) (p. 9)

NOTE:
- Before using the microSD card, thoroughly read the instructions of the card.
- If you do any of the following, the card data may be corrupted or deleted.
  - You remove the card from the transceiver while accessing the card.
  - You change the external power supply's voltage while accessing the card.
  - You drop, impact or vibrate the card.
- DO NOT touch the contacts of the card.
- The transceiver takes a longer time to recognize a high capacity card.
- The card will get warm if used continuously for a long period of time.
- The card has a certain lifetime, so data reading or writing may not be possible after using it for a long period of time.
- When reading or writing data is impossible, the card's lifetime has ended. In this case, purchase a new one. We recommend you make a backup file of the important data onto your PC.
- Icom will not be responsible for any damage caused by data corruption of a card.

■ Recording a QSO audio

NOTE: Once a voice recording starts, the Recording function will be continuously turned ON until you stop recording, even if you turn OFF the transceiver.

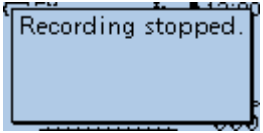
1. Push [QUICK].
2. Select “<<REC Start>>.”



• “Recording started” is displayed.

ⓘ **Information**
- ■ is displayed while recording.
- ❚❚ is displayed while the recording is paused.
- Recording continues until you stop recording or the card becomes full.
- If the recording file reaches 2GB, the transceiver automatically creates a new file, and continues recording.

3. Push [QUICK].
4. Select “<<REC Stop>>.”



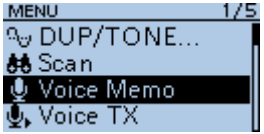
• “Recording stopped” is briefly displayed, and voice recording stops.

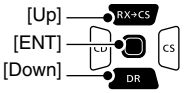
TIP: When the PTT Automatic Recording function is ON, the recording automatically starts when you start to transmit by pushing [PTT].
(MENU > Voice Memo > QSO Recorder > Recorder Set > **PTT Auto REC**)

■ Playing a recorded audio

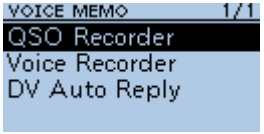
MENU > Voice Memo > QSO Recorder > **Play Files**

1. Push [MENU].
2. Select “Voice Memo.”



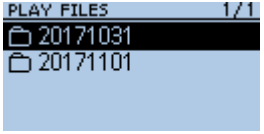


3. Select “QSO Recorder.”



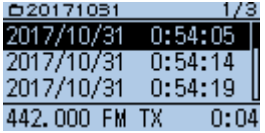
4. Select “Play Files.”

5. Select the folder that contains the file you want to play.

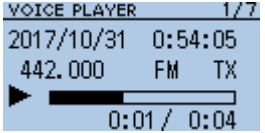


ⓘ The folder is named yyyymmdd (y: year, m: month, d: day).

6. Select the file that you want to play.



• The VOICE PLAYER screen is displayed and starts playing.

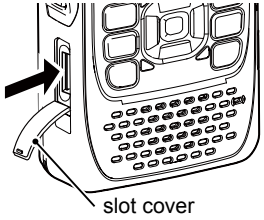


ⓘ To pause, push [ENT]. To restart, push [ENT] again.
ⓘ To exit the MENU screen, push [MENU].

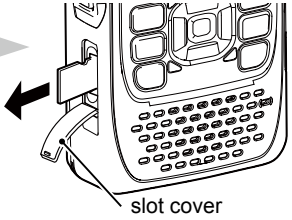
■ Removing the microSD card

◇ Removing while the transceiver is OFF

1. Turn OFF the transceiver.
2. Open the [micro SD] slot cover.
3. Push in the microSD card until a click sounds, and then carefully pull it out.
   ⓘ **DO NOT** touch the terminals.
4. Completely close the [micro SD] slot cover.



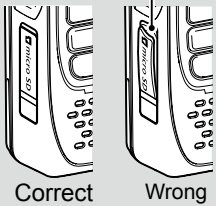
Push in the microSD card until a click sounds.



Pull the microSD card out.

NOTE:
After removing the microSD card, completely close the [micro SD] slot cover as shown to the right.

Close the cover, leaving no gap.

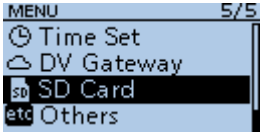


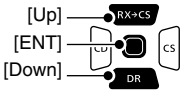
Correct Wrong

◇ Removing while the transceiver is ON

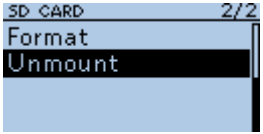
MENU > SD Card > **Unmount**

1. Push [MENU].
2. Select “SD Card.”

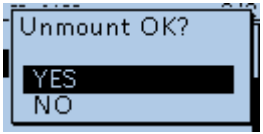




3. Select “Unmount.”



4. Select <YES>.



- When the unmounting is completed, “Unmount is completed.” is briefly displayed, then the display automatically returns to the screen in step 3.

5. Push in the microSD card until a click sounds, and then carefully pull it out.
   ⓘ See the left column for details.

7 GPS OPERATION

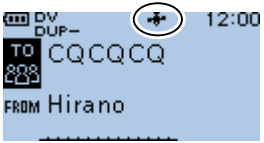
NOTE: The built-in GPS receiver cannot calculate its location if it cannot receive signals from the GPS satellites.
Refer to page 10 for details.

■ Checking your GPS location

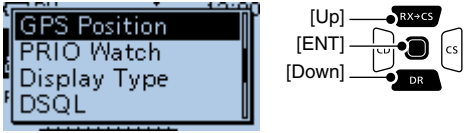
You can check your current location.
If you transmit while displaying the GPS POSITION screen, the screen closes.
To check your current location or caller's location while transmitting, push [QUICK], then select "GPS Position."

◇ Displaying Location Data

1. Confirm the GPS icon is displayed.

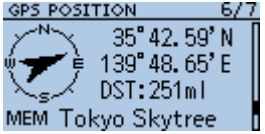


2. Push [QUICK].
3. Select "GPS Position."



• The GPS POSITION screen is displayed.

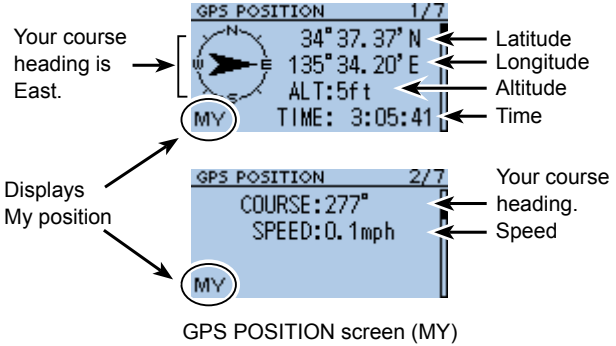
4. Push [Up] or [Down].
   • Changes between the MY (My position), RX (Received position), MEM (GPS Memory position), or ALM (GPS Alarm position) screen.



Example: GPS POSITION screen (MEMORY)

5. Push [CLR].
   • Returns to the standby screen.

About the GPS POSITION screen



GPS POSITION screen (MY)

■ GPS Logger function

The GPS Logger function enables you to save the location data from a GPS receiver into a microSD card as a log.
The GPS Logger saves Latitude, Longitude, Altitude, Positioning state, Course, Speed, Date, and Time.
If you use this GPS Logger while driving, you can check your driving history on a mapping software.

<About the log file>
If you have the log file imported to a mapping software, you can display your route as you move on the software map.
ⓘ The log files may not be compatible with all mapping software.
ⓘ See the Advanced Manual for details on copying the log files onto your PC.

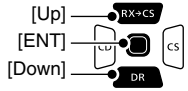
NOTE:
- The GPS logger function requires a microSD card (User supplied). See page 7 for attaching details.
- This function is turned ON as the default setting. Therefore when you insert a microSD card, this function continuously saves the location data from the GPS receiver, even if you turn OFF the transceiver, then ON again.
- To turn OFF the function, do the steps to the right.
- When the microSD card is full, this function will automatically be paused.

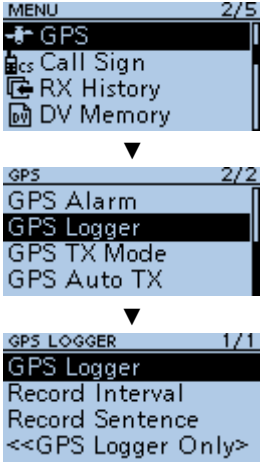
◇ Turning OFF the GPS Logger function

You can turn OFF the GPS logger function by following the steps below.

MENU > GPS > GPS Logger > **GPS Logger**

1. Push [MENU].
2. Select “GPS,” “GPS Logger,” and then “GPS Logger.”





3. Select “OFF.”
   ⓘ To exit the MENU screen, push [MENU].

7

8 SPECIFICATIONS

■ Specifications

◇ General

- Frequency coverage:
  - USA version
    - Receive
      - 400 ~ 479 MHz (Guaranteed only 440 ~ 450 MHz)
    - Transmit
      - 420 ~ 450 MHz (Guaranteed only 440 ~ 450 MHz)
  - EXP-02/04/06 versions
    - Receive
      - 400 ~ 479 MHz (Guaranteed only 430 ~ 440 MHz)
    - Transmit
      - 400 ~ 479 MHz (Guaranteed only 430 ~ 440 MHz)
  - EXP-03/05/07 versions
    - Receive
      - 400 ~ 479 MHz (Guaranteed only 430 ~ 440 MHz)
    - Transmit
      - 430 ~ 440 MHz
  - EUR version
    - Receive
      - 430 ~ 440 MHz
    - Transmit
      - 430 ~ 440 MHz
  - UK version
    - Receive
      - 400 ~ 479 MHz (Guaranteed only 430 ~ 440 MHz)
    - Transmit
      - 430 ~ 440 MHz
- Mode: F2D/F3E (FM/FM-N), F7W (DV)
- No. of memory channels: 500 channels
- No. of program scan channels: 50 channel (2 channels × 25 pairs)
- No. of call channels: 2 channels
- Usable temperature range: –20°C ~ +60°C, –4°F ~ +140°F
- Tuning steps: 5, 6.25, 10, 12.5, 15, 20, 25, 30, 50, 100, 125, and 200 kHz
- Frequency stability: ±2.5 ppm (–20°C ~ +60°C, –4°F ~ +140°F)
- Power supply: 10.0 ~ 16.0 V DC for external DC power, or specified Icom's battery pack
- Digital transmission speed: 4.8 kbps
- Voice coding speed: 2.4 kbps
- Current drain (at 7.4 V DC):
  - Transmit (at 5 W): Less than 2.5 A
  - Receive (Maximum output)
    - FM: Less than 350 mA (Internal speaker)
      Less than 200 mA (External speaker)
    - DV: Less than 450 mA (Internal speaker)
      Less than 300 mA (External speaker)
- Antenna connector: SMA (50 Ω)
- Dimensions: (projections not included) 58 (W) × 95 (H) × 25.4 (D) mm, 2.3 (W) × 3.7 (H) × 1 (D) inches
- Weight (approximately): 140 g, 4.94 oz (Without battery pack, battery case, and antenna

◇ Transmitter

• Modulation system:	
FM/FM-N	Variable reactance frequency modulation
DV	GMSK reactance frequency modulation
• Output power:	High: 5.0 W, Mid: 2.5 W, Low 2: 1.0 W, Low 1: 0.5 W, S-Low: 0.1 W
• Maximum frequency deviation:	
FM	±5.0 kHz
FM-N	±2.5 kHz
• Spurious emissions:	Less than –60 dBc at High/Mid Less than –13 dBm at Low 2/ Low 1/S-Low
• Microphone impedance:	2.2 kΩ

◇ Receiver

• Receive system:	Double Conversion Superheterodyne
• Intermediate frequencies:	1st IF 46.35 MHz, 2nd IF 450 kHz
• Sensitivity:	
FM	Less than 0.18 μV (at 12 dB SINAD)
DV	Less than 0.28 μV (1% BER)
• Audio output power:	
Internal speaker	More than 0.4 W at 10% distortion into a 16 Ω load
External speaker	More than 0.2 W at 10% distortion into an 8 Ω load
• Selectivity:	
FM	More than 55 dB
FM-N	More than 50 dB
DV	More than 50 dB
• Spurious and image rejection ratio:	More than 60 dB
• Squelch Sensitivity (threshold):	Less than 0.18 μV

■ Resetting

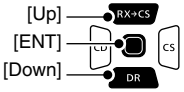
Occasionally, erroneous information is displayed when, for example, first applying power. This may be caused externally by static electricity or by other factors.
If this problem occurs, perform a Partial reset or an All reset.

BE CAREFUL! An All reset clears all programming and returns all settings to their factory defaults. (Section 10 of ADVANCED MANUAL)
After All resetting, you cannot use the DR function because the Repeater List contents are also cleared.

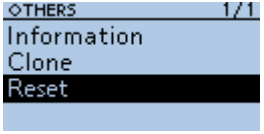
◇ Partial Reset

MENU > Others > **Reset**

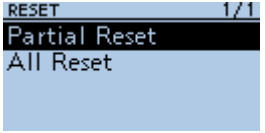
1. Push [MENU].
2. Select “Others.”



3. Select “Reset.”



4. Select “Partial Reset.”



• The confirmation dialog “Partial Reset?” is displayed.

5. Select <YES>.

6. “PARTIAL RESET” is displayed, and then the display automatically returns to the default screen.

TIP: A Partial Reset resets the operating settings to their defaults without clearing the following:

- Memory channel contents
- Message data
- Scan Edge contents
- DTMF memory contents
- Call channel contents
- GPS memory contents
- Call sign memories
- Repeater list

■ Troubleshooting

The following chart is designed to help you correct problems which are not equipment malfunctions.
If you are unable to locate the cause of a problem, or solve it through the use of this chart, contact your nearest Icom Dealer or Service Center.

PROBLEM	POSSIBLE CAUSE	SOLUTION	REF.
Transceiver does not turn ON.	• The battery is exhausted. • The battery polarity is reversed. • Loose connection of a battery pack (case).	• Charge the battery pack, or replace the batteries. • Check the battery polarity in the case. • Clean the battery terminals.	p. 6 — —
No sound comes from the speaker.	• Volume level is too low. • Squelch level is too high. • An external speaker is connected to the [SP] jack.	• Rotate [VOL] to adjust the level. • Adjust the squelch level. • Check the external speaker connection.	p. 7 p. 11 —
Sensitivity is too low, and only strong signals are heard.	• The coaxial cable is not connected, or shorted (External antenna is used).	• Check the coaxial cable connection or replace with a new one.	—
No reply is received after a call.	• The duplex is set, and the receive and transmit frequencies are different. • No station is in range or on the same frequency.	• Set the simplex operation. • Wait for a while, and try again.	ADVANCED MANUAL (Section 10)
Frequency cannot be set.	• The Key Lock function is activated. • The VFO mode is not selected.	• Cancel the Key Lock function. • Push [V/MHz] to select the VFO mode.	p. 14 p. 13
The displayed frequency is erroneous.	• The CPU has malfunctioned. • External factors have caused a fault.	• Reset the transceiver. • Remove and reattach the battery pack/case.	p. 31 p. 5

■ Troubleshooting

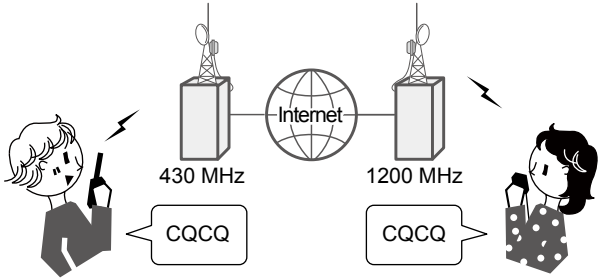
PROBLEM	POSSIBLE CAUSE	SOLUTION	REF.
Transmitting is impossible.	• The transmit power level is set to S-LOW, LOW 1, LOW 2 or MID.	• Set the transmit power level to HIGH.	p. 18
	• The PTT Lock function is activated.	• Turn OFF the PTT Lock function on the MENU screen.	p. 69
	• The Busy Lockout function is activated.	• Turn OFF the Busy Lockout function on the MENU screen.	p. 69
	• The transmit frequency is out of the amateur radio band.	• Set the transmit frequency within the amateur radio band.	pp. 17, 18
A Program Scan does not start.	• The VFO mode is not selected. • The same frequencies are entered into the scan edges.	• Push [V/MHz] to select the VFO mode. • Enter different frequencies into the scan edges.	p. 13 ADVANCED MANUAL (Section 8)
A Memory Scan does not start.	• The Memory mode is not selected.	• Push [M/CALL] to select the Memory mode.	p. 13
	• Only one or no memory channel is entered.	• Enter two or more memory channels.	p. 21

D-STAR GUIDE

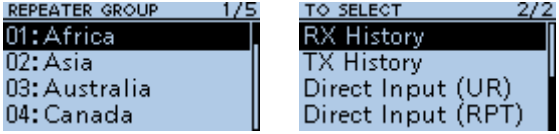
for the ID-31A PLUS/ID-31E PLUS

■ Unique features of D-STAR

- **Easy Cross band operation through the repeater!**



- **Easy call sign entry with the Repeater list or TX/RX History!**



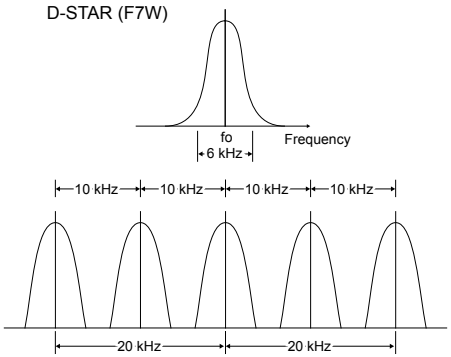
- **The Call Sign Capture key [RX>CS] makes call sign capture easy!**

■ What is D-STAR?

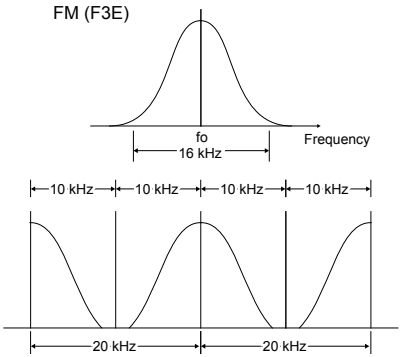
- D-STAR is a digital protocol standard developed by the Japan Amateur Radio League (JARL). The system includes the DV mode for Digital Voice and the DD mode for Digital Data communications.
- D-STAR supports a comprehensive repeater system linked through the Internet, enabling you to make QSOs with stations near or far from your location.
- D-STAR supports the DV mode at 4.8 kbps. Your call sign data, and either a short message, or GPS data can be transmitted simultaneously with your voice signal.

Advanced Amateur radio technology of D-STAR

The DV mode has a bandwidth of only 6 kHz, compared to 16 kHz for the analog FM mode, with 5 kHz deviation. D-STAR utilizes the well-know GMSK modulation method that makes very efficient use of occupied bandwidth.



D-STAR occupies 10 kHz. The sound quality is good even though the bandwidth is narrow.



The regular FM mode occupies 20 kHz that is a double the bandwidth of D-STAR.

IMPORTANT!

Before starting D-STAR, the following steps are needed.

STEP 1 Enter your call sign (MY) into the transceiver. (p. 39)

STEP 2 Register your call sign (MY) to a gateway repeater. (p. 41)

STEP 3 Enter your D-STAR equipment into your registration form. (p. 42)

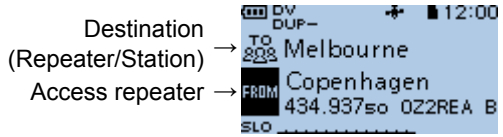
► **You have completed the steps!!**

■ About the DR function

You can easily use D-STAR repeaters with the D-STAR Repeater (DR) function. With this function, you can select the preset repeater or frequency in “FROM” (access repeater), and Your call sign in “TO” (destination) on the DR screen, as shown below.

- To display the DR screen, hold down [DR] for 1 second.
- On the DR screen, pushing [DR] selects “FROM” and pushing [RX→CS] selects “TO.”

NOTE: If the repeater set in “FROM” (Access Repeater) has no Gateway, you cannot make a Gateway call.



The DR screen (Example)

■ Ways to Communicate with the DR function

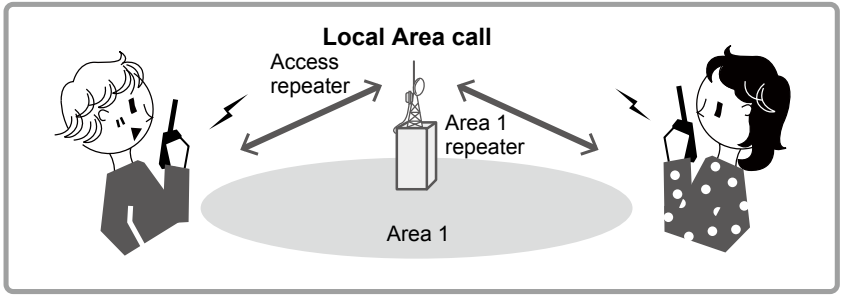
With the DR function, the transceiver has 3 ways to communicate.

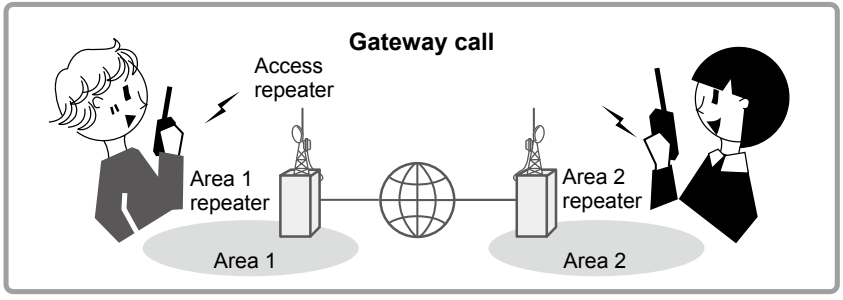
Local Area call: To call through your local area (access) repeater.

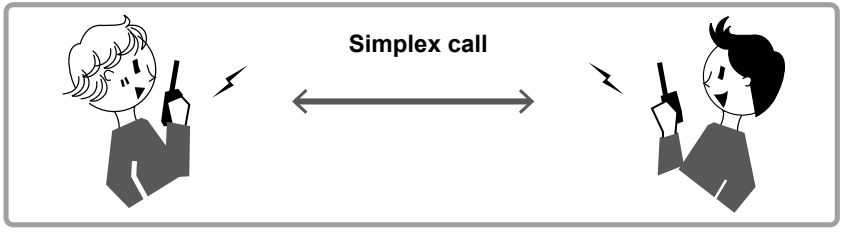
Gateway call: To call through your local area (access) repeater, repeater gateway, and the Internet to your destination repeater or individual station’s last used repeater, using Call Sign Routing.

Simplex call*: To call another station not using a repeater.

* You can make a simplex call in the VFO mode. (p. 51)







NOTE:

- Using the repeater list is required to use the DR function. (p. 57)
- Before operating in the Duplex mode, BE SURE to check whether the repeater is busy, or not. If the repeater is busy, wait until it is clear, or ask for a 'break' using a method acceptable to your local procedures.
- The transceiver has the Time-Out Timer function for the DV Repeater operation. The timer limits a continuous transmission. Warning beeps will sound approximately 30 seconds before time-out and then again immediately before the time-out.

■ Enter your call sign (MY) into the transceiver

To operate D-STAR, you must first enter your call sign into the MY call sign memory. You can enter up to 6 MY call signs, into MY call sign memory [MY1] ~ [MY6].

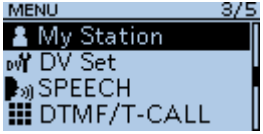
NOTE: Your MY call sign must match the call sign registered on a gateway repeater. (p. 41)

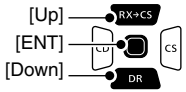
Example: Enter “JG3LUK” as your own call sign into [MY1].

Step 1: Display the MY CALL SIGN edit screen

MENU > My Station > **My Call Sign**

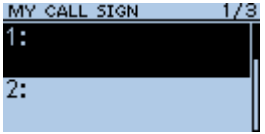
1. Push [MENU].
2. Select “My Station.”





3. Select “My Call Sign.”

4. Select MY call sign memory, then push [QUICK].



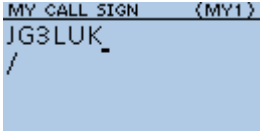
(Example: “1:”)

5. Select “Edit.”

• Displays the MY CALL SIGN edit screen.

Step 2: Enter and set your own call sign

1. Enter your own call sign, then push [ENT].

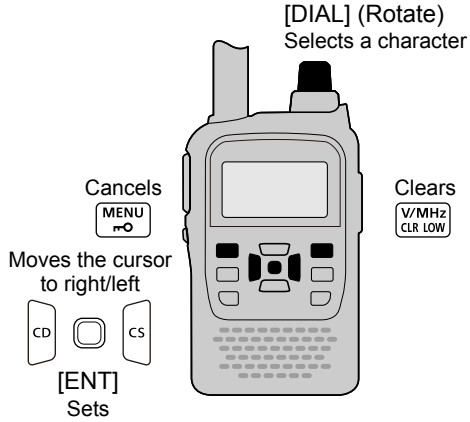


ⓘ See “How to enter characters:” on the right page.

2. Select the entered call sign, then push [ENT].

• Sets the call sign to be used as MY call sign.
ⓘ To exit the MENU screen, push [MENU].

How to enter characters:



TIP: You can enter a note of up to 4 characters, such as the model of the transceiver, name, area name, after your call sign.

1. After entering a call sign, push [CS] several times until the cursor moves to the right of the "/."

2. Enter a 4 character note. (Example: ID31)

■ Register your call sign at a gateway repeater

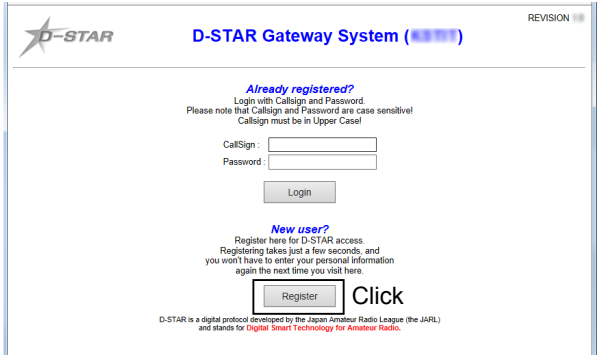
To make a Gateway call through the Internet, you must register your call sign at a repeater that has a gateway, usually one near you.

About the registration process described:
This section describes the call sign registration process at a repeater that is connected to the US Trust server.
There are other systems as well, and they have their own registration process. For information on how to register on one of them, contact the administrator of a repeater that uses the alternate system.

NOTE: If needed, ask the gateway repeater administrator for call sign registration instructions.

Step 1: Access the call sign registration screen

1. Access the following URL to find the gateway repeater closest to you.
   http://www.dstarusers.org/repeaters.php
2. Click the call sign of the repeater that you want to register to.
3. Click the “Gateway Registration URL:” link address.
4. The “D-STAR Gateway System” screen is displayed. Click <Register> to start the New User registration.



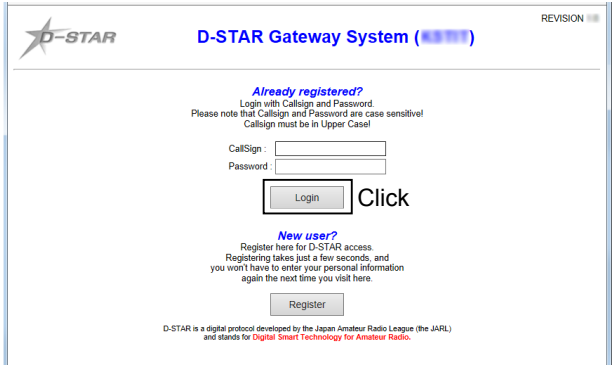
Step 2: Register your call sign

1. Follow the registration instructions found there.
2. When you receive a notification from the administrator, your call sign registration has been approved.

NOTE: It may take a few days for the administrator to approve you.

Step 3: Register your personal information

After your registration is approved, log in your personal account with your registered call sign and password.



Step 4: Register your D-Star equipment

1. Register your D-STAR equipment information.
   Ask the gateway repeater administrator for details.
2. When your registration is complete, log out of your personal account, and start using the D-STAR network.

NOTE: You must register your D-STAR equipment **BEFORE** you make Gateway Repeater calls.

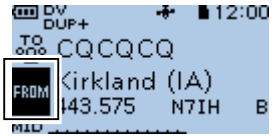
■ Accessing repeaters

This section describes how to check whether or not you can access your local area repeater (access repeater), and your signal is successfully sent to a destination repeater.

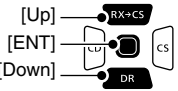
TIP: If your call sign (MY) has not been set, or your call sign and D-STAR equipment have not been registered at a D-STAR repeater, see pages 39 ~ 42.

Step 1: Set "FROM" (Access repeater).

1. Push [DR] to select "FROM" then push [ENT].



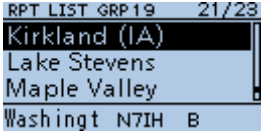
2. Select "Repeater List."



3. Select the repeater group where your access repeater is listed.

(Example: "USA West")

4. Select your access repeater.



(Example: "Kirkland (IA)")

- Returns to the DR screen, and the selected repeater name is displayed in "FROM."

ⓘ By just selecting the repeater name, the repeater call sign, its frequency, duplex setting, and frequency offset are automatically set.

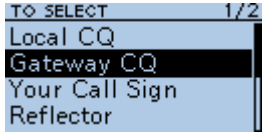
ⓘ A repeater list here is just an example.

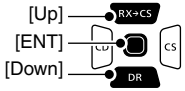
TIP: There are several ways to set your access repeater. (p. 60)
- Setting by [DIAL]
- Searching for a repeater using the DR scan
- Searching for the nearest repeater
- Setting from the TX History

Step 2: Set "TO" (Destination).

1. Push [RX→CS] to select "TO" then push [ENT].

2. Select "Gateway CQ."

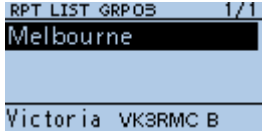




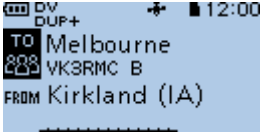
3. Select the repeater group where your destination repeater is listed.

(Example: "Australia")

4. Select your destination repeater.



• Returns to the DR screen, and the selected repeater name is displayed in "TO."

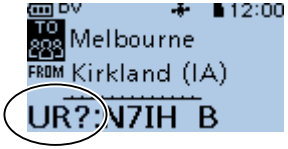


(Example: "Melbourne")

Step 3: Check whether you can access the repeater.

Hold down [PTT] for 1 second to access the repeater.

ⓘ If you get a reply call, or "UR?" is displayed within 3 seconds, your signal reached your access repeater and your call was successfully sent from your destination repeater.



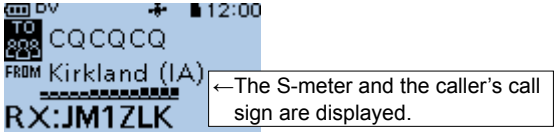
Successfully sent!

TIP: See page 62 for status indications after a reply is received.

■ Receiving

When a DV call is received, the call signs of the caller, the called station, and the called station's access repeater are saved in the RX History. Up to 50 calls can be saved.
Even if you turn OFF the transceiver, the RX History is retained.
This section describes how to display the RX History screen and how to save the call sign to your memory.

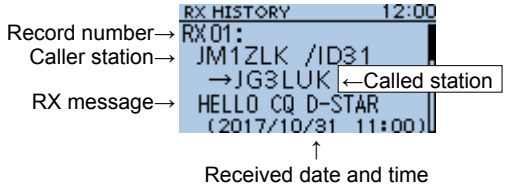
When receiving a call from "JM1ZLK":



Step 1: To display a received call sign

1. Hold down [CD] for 1 second.
   • Displays the RX HISTORY screen.
2. Push [Up] or [Down].
   • Displays other RX history records.

RX HISTORY screen (RX01)

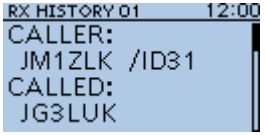


ⓘ "/" and a note may be displayed after the call sign.
ⓘ If a call is received from an area, not from a specific station, "CQCQCQ" is displayed.

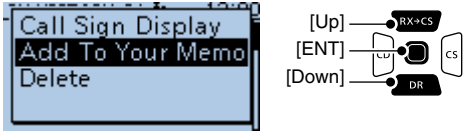
Step 2: Save the destination call sign into your call sign memory from RX History.

1. Push [Up] or [Down] to select the RX HISTORY record with the call sign that you want to save to memory.

2. Push [ENT].



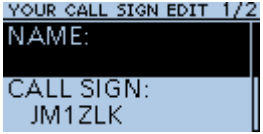
   • Displays the RX HISTORY DETAIL screen.
3. Push [QUICK].
4. Select "Add To Your Memory."



5. Select the call sign that you want to save.

(Example: “JM1ZLK”)

6. Select “NAME.”



7. Enter a name of up to 16 characters, then push [ENT].

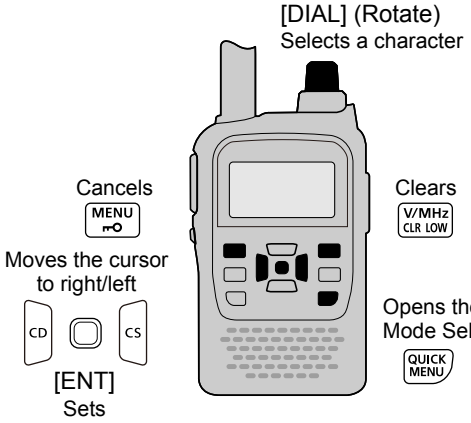
ⓘ See “How to enter characters:” to the right.

8. Scroll the screen and select “<<Add Write>>.”

• The confirmation dialog “Add write?” is displayed.

9. Select <YES>.The call sign is added to your memory.
• Returns to the RX HISTORY screen.
ⓘ To exit the screen, push [MENU].

How to enter characters:



• Push [QUICK] to display the Entry Mode Select window.
• In the Entry Mode Select window, rotate [DIAL] to select an entry mode, then push [ENT].
• Usable characters are A to Z, a to z, 0 to 9, ! " # $ % & ’ ( ) * + , - . / : ; < = > ? @ [\ ] ^ _ ` { | } ~ (space).
• Continuously holding down [CLR] clears characters.

■ Capturing a call sign

After you receive a signal, the calling station's call sign can be captured by holding down the Call Sign Capture key ([RX→CS]) for 1 second. After releasing, you can quickly and easily reply to the call.

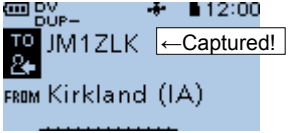
What is the Call Sign Capture key?
Holding down the Call Sign Capture key for 1 second sets the last received station's call sign as a temporary destination, and makes replying quick and easy.

Step 1: Set the received call sign to "TO" (Destination).

While receiving, hold down [RX→CS] for 1 second.

- After releasing the key, the transceiver announces the station call sign and the call sign is captured.

While holding down



After releasing

ⓘ Information

- If you want to select another call sign in the RX History, rotate [DIAL] while holding down [RX→CS].
- You can change the setting of the [RX→CS] key on the MENU screen. If **[RX→CS] Key** is set to "RX > CS List," the received call sign is not captured. The RX History list is displayed instead. (MENU > DV Set > **[RX>CS] Key**)
- When a received signal is weak, or during a DV scan, the call sign may not be correctly received. In that case, you cannot capture the call sign.
- When **RX > CS SPEECH** is set to "OFF," the transceiver does not announce the call sign. (MENU > SPEECH > **RX > CS SPEECH**)

Step 2: Hold down [PTT] to transmit.

- The TX/RX indicator lights red while transmitting.

ⓘ Push [RX→CS] to return to the previous call sign setting.

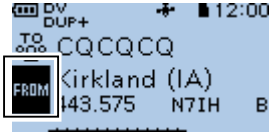
■ Making a Local CQ call

You can make a Local CQ call when “Local CQ” is set to “TO” (Destination).

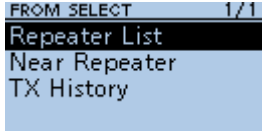
What is a Local CQ Call?
To call a CQ through only your local area (access) repeater.

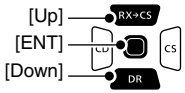
Step 1: Set “FROM” (Access repeater).

1. Push [DR] to select “FROM,” then push [ENT].



2. Select “Repeater List.”

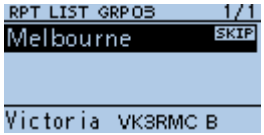




3. Select the repeater group where your access repeater is listed.

(Example: “Australia”)

4. Select your access repeater.

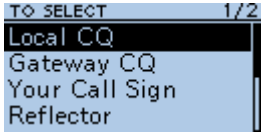


(Example: “Melbourne”)

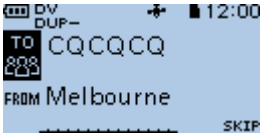
- Returns to the DR screen, and the selected repeater name is displayed in “FROM.”

Step 2: Set “TO” (Destination).

1. Push [RX→CS] to select “TO,” then push [ENT].
2. Select “Local CQ.”



- Returns to the DR screen, and “CQCQCQ” is displayed in “TO.”



Step 3: Hold down [PTT] to transmit.

- The TX/RX indicator lights red while transmitting.

TIP: The Local CQ call is used to call anyone, but you can call a specific station by simply saying their call sign.

■ Making a Gateway CQ call

You can make a Gateway CQ call when a destination repeater is selected in “TO” (Destination).

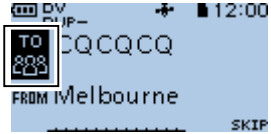
What is a Gateway CQ call?
- To call a CQ through a repeater connected to the Internet.
- You can call a CQ to the areas where you cannot directly access because the communication is routed through the Internet.

Step 1: Set “FROM” (Access repeater).

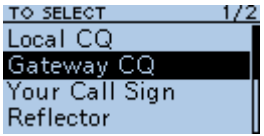
ⓘ Same as described in page 48.

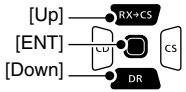
Step 2: Set “TO” (Destination).

1. Push [RX→CS] to select “TO,” then push [ENT].



2. Select “Gateway CQ.”

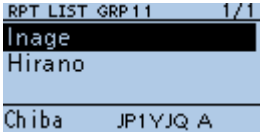




3. Select the repeater group where your destination repeater is listed.

(Example: “Japan”)

4. Select your destination repeater.



- Returns to the DR screen, and the selected repeater name is displayed in “TO.”

(Example: The destination repeater is set to “Inage.”)

Step 3: Hold down [PTT] to transmit.

- The TX/RX indicator lights red while transmitting.

NOTE: If the selected Access repeater does not connect to the gateway, “ XGW ”is displayed. In that case, you cannot select “Gateway CQ.”

■ Calling an individual station

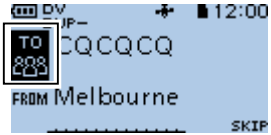
You can make a call to an individual station when the station call sign is selected in “TO” (Destination).
When you call an individual station through a gateway, your call is automatically sent to the last repeater that the station accessed. So, even if you don’t know where the station is, you can make a call using Call Sign Routing.

Step 1: Set “FROM” (Access repeater)

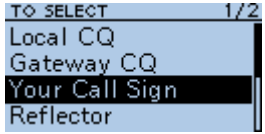
ⓘ Same as described in page 48.

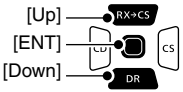
Step 2: Set “TO” (Destination)

1. Push [RX→CS] to select “TO,” then push [ENT].



2. Select “Your Call Sign.”





3. Select your destination station.

• Returns to the DR screen, and the selected station name is displayed in “TO.”

(Example: The destination station is set to “Rick.”)

Step 3: Hold down [PTT] to transmit.

• The TX/RX indicator lights red while transmitting.

■ Making a Simplex call

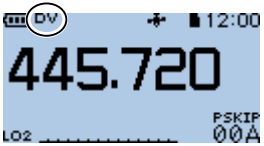
This section describes the simplex operation (through no repeater).

NOTE: Depending on the transceiver's version, the frequencies may be different. Check for usable frequencies for your operating area.

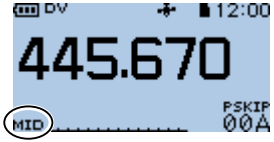
What is a Simplex Call?
A simplex call is a direct call to another station on a single frequency, not using a repeater.

◇ In the VFO mode

1. Push [V/MHz] to enter the VFO mode.
2. Push [FM/DV] to set the operating mode to DV.

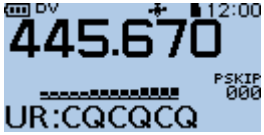


3. Rotate [DIAL] to set the operating frequency. (p. 15)
4. Hold down [LOW] for 1 second to set an output power.



ⓘ Information
- You can select S-LOW, LOW 1, LOW 2, MID, or HIGH each time you hold down [LOW] for 1 second.
- You can also select an output power by rotating [DIAL] while holding down [LOW].
- When you select a high power, the power icon disappears.
- Select a level to suit your operating requirements.

5. Hold down [PTT] to transmit, and speak into the microphone at your normal voice level.



- The TX/RX indicator lights red.
- The S/RF meter displays the output power level.

6. Release [PTT] to receive.

TIP: If you enter a DV simplex frequency to a Memory channel, you can also make a simplex call in the Memory mode. See page 21 on how to enter Memory channels.

◇ On the DR screen

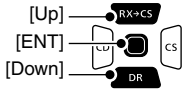
Example: Making a simplex call on 445.670 MHz.

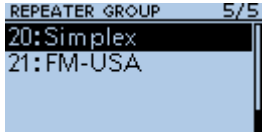
Step 1: Set “FROM” (Simplex channel).

1. Push [DR] to select “FROM” then push [ENT].

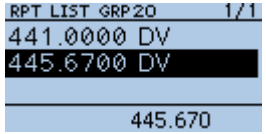
• Displays the FROM SELECT screen.

2. Select “Repeater List.”
3. Select a “Simplex” group.

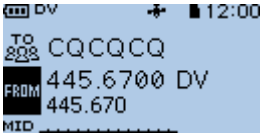




4. Select a frequency.



• Returns to the DR screen, and the selected frequency is displayed in “FROM.”
• “CQCQCQ” is displayed in “TO.”



ⓘ If a station call sign is set in “TO,” select “Local CQ” in the TO SELECT screen.

Step 2: Hold down [PTT] to transmit.

• The TX/RX indicator lights red while transmitting.

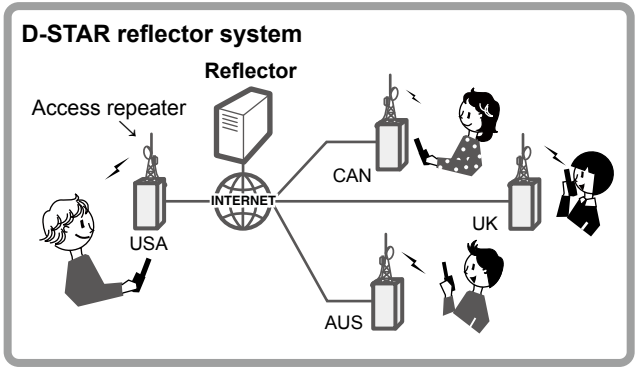
TIP: You can change the simplex frequencies on the MENU screen. (MENU > DV memory > **Repeater List**)

See Section 4 of the ADVANCED MANUAL for details.

■ About reflectors

◇ What is a reflector?

A reflector is a special server connected to the Internet and running a version of the D-Plus software. If the D-Plus software is installed on your access repeater, it provides various functions including gateway and reflector linking capabilities (It is known as the D-STAR reflector system). The D-STAR reflector system enables a number of D-STAR repeaters anywhere to link to a reflector. This means that when you transmit through a D-STAR repeater linked to a reflector, your voice can be heard on other repeaters linked to the reflector, and you can hear other stations that are connected to the reflector.

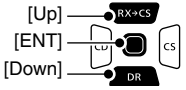


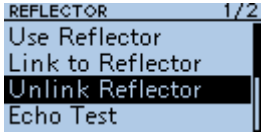
◇ Unlinking a reflector

Before trying to link to another reflector, BE SURE to unlink the current connected reflector.

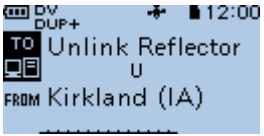
NOTE: If a reflector is already connected, ask on the air whether or not you can change reflectors and wait for responses. BE SURE to reconnect back to the same reflector when you finish your conversation.

1. Push [RX→CS] to select “TO,” then push [ENT].
   • Displays the TO SELECT screen.
2. Select “Reflector.”
   • Displays the REFLECTOR screen.
3. Select “Unlink Reflector.”





   • Returns to the DR screen, and “Unlink Reflector” and “U” are displayed in “TO.”



4. Hold down [PTT] to unlink the reflector.
   • The TX/RX indicator lights red.

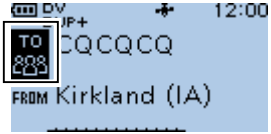
◇ Linking to a reflector

If your repeater is not currently linked to a reflector, or if you want to change it to another reflector, follow the steps below. Before linking to another reflector, BE SURE to unlink the current reflector. (p. 53)

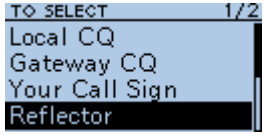
Direct inputting a reflector

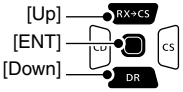
Example: Directly enter “REF030CL.”

1. Push [RX→CS] to select “TO,” then push [ENT].

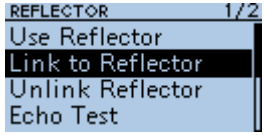


2. Select “Reflector.”

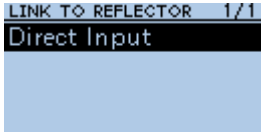




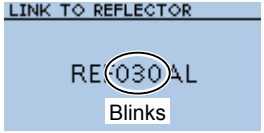
3. Select “Link to Reflector.”



4. Select “Direct Input.”

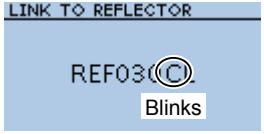


5. Rotate [DIAL] to select the reflector number.



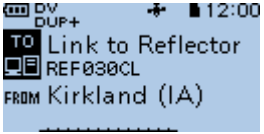
(Example: 030)

6. Push [CS] to move the cursor to the right box.
7. Rotate [DIAL] to select the module letter.



(Example: C)

8. Push [ENT].
   • Returns to the DR screen, and “Link to Reflector” and “REF030CL” are displayed in “TO.”



9. Hold down [PTT] to link to the reflector.
   • The TX/RX indicator lights red while transmitting.

■ Connecting to a Reflector

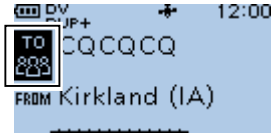
◇ Linking to a reflector (Continued)

Using the TX History

The TX History saves up to 5 reflectors that your access repeater linked before.

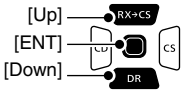
Example: Select the “REF030CL” in the TX History.

1. Push [RX→CS] to select “TO,” then push [ENT].

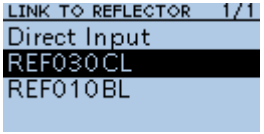


• Displays the TO SELECT screen.

2. Select “Reflector.”
• Displays the REFLECTOR screen.
3. Select “Link to Reflector.”
• Displays the LINK TO REFLECTOR screen.



4. Select the reflector that you want to link to.

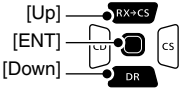


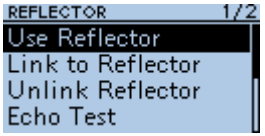
• Returns to the DR screen, and “Link to Reflector” and “REF030CL” are displayed in “TO.”

5. Hold down [PTT] to link to the reflector.
• The TX/RX indicator lights red while transmitting.

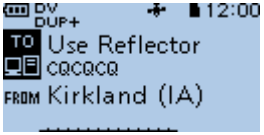
◇ Using a reflector

1. Push [RX→CS] to select “TO,” then push [ENT].
• Displays the TO SELECT screen.
2. Select “Reflector.”
• Displays the REFLECTOR screen.
3. Select “Use Reflector.”





• Returns to the DR screen, and “Use Reflector” and “CQCQCQ” are displayed in “TO.”

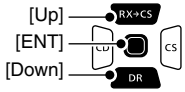


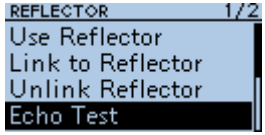
4. Hold down [PTT] to transmit.
• The TX/RX indicator lights red while transmitting.

◇ Reflector Echo Testing

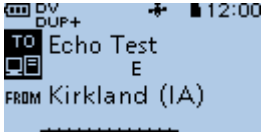
To confirm that your signal is correctly getting into the repeater, you can transmit a short message as a trial. After releasing [PTT], your message will be played back.

1. Push [RX→CS] to select “TO,” then push [ENT].
   • Displays the TO SELECT screen.
2. Select “Reflector.”
   • Displays the REFLECTOR screen.
3. Select “Echo Test.”





• Returns to the DR screen, and “Echo Test” and “E” are displayed in “TO.”

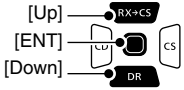


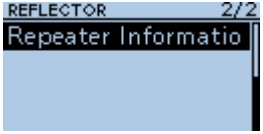
4. Hold down [PTT] and speak into the microphone.
   • The TX/RX indicator lights red while transmitting.
5. Release [PTT] to hear your message.

◇ Requesting repeater information

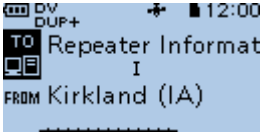
When you send the repeater information command, an ID message is sent back.

1. Push [RX→CS] to select “TO,” then push [ENT].
   • Displays the TO SELECT screen.
2. Select “Reflector.”
   • Displays the REFLECTOR screen.
3. Select “Repeater Information.”





• Returns to the DR screen, and “Repeater Information” and “I” are displayed in “TO.”



4. Hold down [PTT] to transmit the repeater information command.
   • The TX/RX indicator lights red while transmitting.
5. Release [PTT] to hear the repeater ID message.

■ Updating the repeater list

For easy operation, a repeater list is preloaded into your transceiver.
This section describes how to update the repeater list using a microSD card.
You can download the repeater list from the Icom website.

NOTE: Before using a microSD card, see Section 7 for details of a card.

TIP: The file name "31P_USA_yymmdd" is used as an example in the following instructions.

File Name: 31P_USA_yymmdd.zip

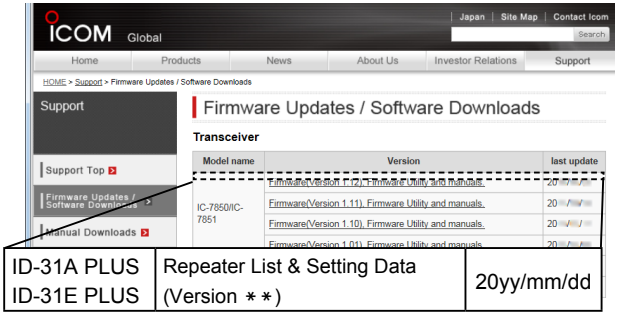
Depending on the updated file date.

Depending on the transceiver version.

Step 1: Downloading the repeater list

1. Access the following URL to download the data files.
   http://www.icom.co.jp/world/support/download/firm/index.html
   • The repeater list and GPS data (CSV: Comma Separated Values file), and settings file (ICF file) are contained in the downloaded ZIP file.

TIP: ID-31A PLUS/ID-31E PLUS's repeater list is uploaded to "Firmware updates/Software Downloads" in the Icom website.
ⓘ The displayed contents may differ.



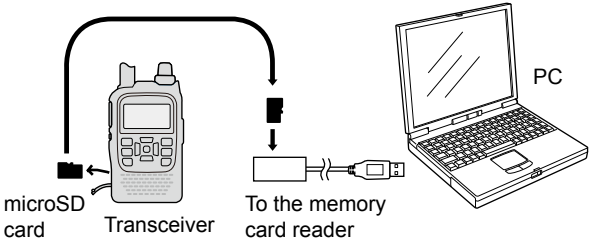
2. Decompress the file that is downloaded from the Icom website.
   • "31P_USA_yymmdd" folder is created on the same place where the downloaded file is saved.

Step 2: Inserting the microSD card into a PC

Turn OFF the transceiver, then remove the microSD card from the transceiver. Insert it into the microSD card drive or a memory card reader* on your PC.

*User supplied.

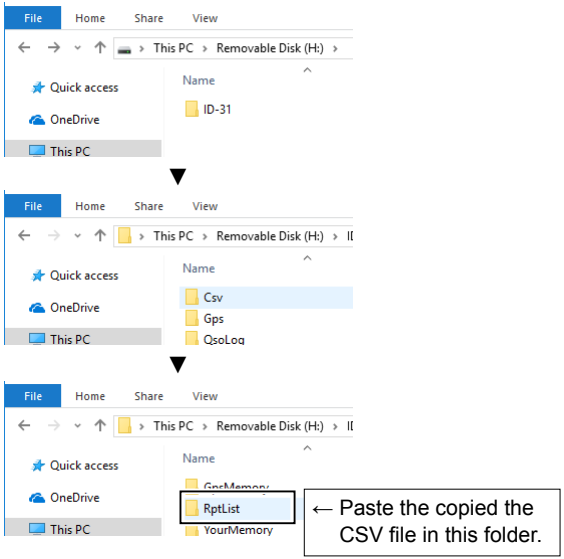
ⓘ To use the microSD card with the transceiver, format the card using the transceiver, even preformatted for PCs or other uses. See page 8 for details.



Step 3: Copying the CSV file to the microSD card

1. Double-click the “31P_USA_yymmdd” folder created in the same place where the downloaded file is saved.
2. Copy the CSV file (Example: “31P_USA_Rpt_yymmdd.csv”) in the folder and paste it in the “RptList” folder (“ID-31” > “Csv” > “RptList”) of the microSD card.

TIP: You can copy one or more CSV files in the folder, but the transceiver imports only one file.

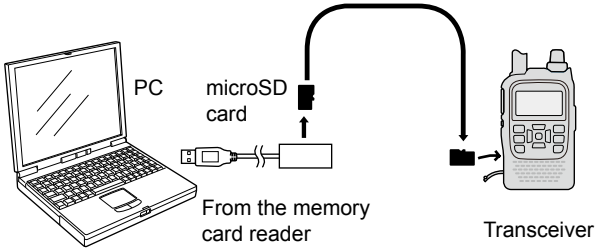


■ Updating the repeater list

Step 4: Removing the microSD card

Turn OFF the transceiver, then remove the microSD card from your PC, and insert it into the transceiver's slot.

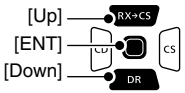
TIP: We recommends that you save the current data before loading other data into the transceiver.



Step 5: Updating the repeater list

MENU > SD Card > Import/Export > **Import**

1. Push [MENU].
2. Select "SD Card."
   • Displays the SD CARD screen.
3. Select "Import/Export."
   • Displays the IMPORT/EXPORT screen.
4. Select "Import."
   • Displays the IMPORT screen.
5. Select "Repeater List."
   • Displays the REPEATER LIST screen.



6. Select the CSV file to be loaded.

   • The confirmation dialog "Keep 'SKIP' settings in Repeater List?" is displayed.
7. Select <YES> or <NO>.
   • YES: Retains the skip settings of the repeater list. (See ADVANCED MANUAL Section 4)
   • NO: Does not retain the skip settings of the repeater list.
   • The confirmation dialog "Import file?" is displayed.
8. Select <YES>.
   • Starts the import.
   • While importing, "IMPORTING" and a progress bar are displayed.
   • After importing ends, "COMPLETED!" is displayed.
9. To complete the importing, reboot the transceiver.

TIP: If you copy the ICF file to the "Setting" folder of the microSD card, the repeater list can be updated with the same procedures. In that case, select "Load Setting" on the SD CARD screen. And on the LOAD FILE screen, select "Repeater List Only."
(MENU > SD Card > **Load Setting**)

■ “FROM” (Access repeater) setting

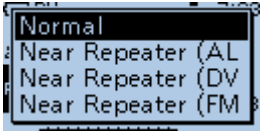
Set by rotating [DIAL]:
Select a preset repeater by rotating [DIAL] on the DR screen.

When you know your access repeater:

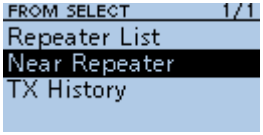
From the repeater list:
When your access repeater is in your transceiver’s repeater list, you can select it by selecting the repeater area and name, if entered, or call sign.

When you do not know which repeater you can access:

Search for a repeater using the DR scan:
The Normal DR scan searches for output repeater frequencies or simplex signals.
You can also find FM repeaters.

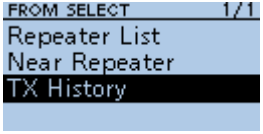


Search for the nearest repeater:
Searches for the nearest repeater by using your location and the repeater’s location if it is entered in the Repeater List.
The nearest repeaters in your transceiver’s Repeater List are displayed as selectable choices.
You can select a nearby repeater type (DV or FM).



When the “FROM” data is saved in the TX History:

Set from the TX History:
Select a repeater that you have accessed before, from the TX History record.



■ “TO” (Destination) setting

Set by rotating [DIAL]:
Rotate [DIAL] to select a repeater or Your Call Sign that is displayed on the DR screen. (This operation is disabled when “CQCQCQ” is set.)

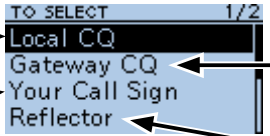
TIP: After you receive the individual station or repeater’s signal, the call sign can be captured by holding down the Call Sign Capture key ([RX>CS]), and you can quickly and easily reply to a call.

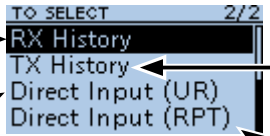
To make a Local Area CQ call:
Set “CQCQCQ” in “TO” (Destination).

To make a call to a specific station:
Select the station call sign in the Your Call Sign.

To select from RX History:
When you receive a call, the caller station data is saved in RX History. You can select the destination from the record.

To directly enter the destination station call sign:
Directly enter the destination station’s call sign.





To make a Gateway CQ call:
Select a repeater from the repeater list, if you want to make a Gateway call.

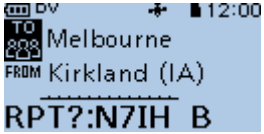
To make a call through a reflector:
Select a reflector that is connected to the repeater you want to call through.

To select from TX History:
When you make a call, the destination repeater or called station data is saved in TX History. You can select the destination from the record.

To directly enter the destination repeater call sign:
Directly enter the destination repeater’s call sign.

■ When receiving no reply

To communicate through the repeater, your signal must access to the repeater. The following chart is designed to help you correct problems which are not equipment malfunctions.

PROBLEM	POSSIBLE CAUSE	SOLUTION	REF.
After your call, the repeater does not return a status reply.	• The repeater setting is wrong. • Your transmission did not reach the repeater.	• Select the correct repeater. • Correct the repeater frequency, frequency offset, or duplex settings. • Wait until you are closer to the repeater and try again. • Try to access another repeater.	p. 60 — — —
After your call, the repeater replies 'UR?' and its call sign. 	The call was successfully sent, but no station immediately replied.	Wait for a while, and try again.	—
After your call, the repeater replies 'RX' or 'RPT?' and the access repeater's call sign. 	• Your own call sign (MY) has not been set. • Your own call sign (MY) has not been registered on a gateway repeater, or the registered contents do not match your transceiver's settings.	• Set your own call sign (MY). • Register your own call sign (MY) on a gateway repeater, or confirm the registration of the call sign.	p. 39 p. 41
After your call, the repeater replies 'RPT?' and the access repeater's call sign.	The call sign of the destination repeater is wrong.	Correctly set the destination repeater call sign.	—

PROBLEM	POSSIBLE CAUSE	SOLUTION	REF.
After your call, the repeater replies 'RPT?' and the destination repeater's call sign.	• The repeater cannot connect to the destination repeater. • The repeater is busy.	• Check the repeater settings. • Wait for a while, and try it again.	—
Even holding down [DR], the DR screen is not displayed.	• There is no repeater list in your transceiver. • The Lock function is activated.	• Import the repeater using a microSD card. • Directly enter the Repeater list data into the transceiver. • Hold down [🔒] for 1 second to turn OFF the Lock function.	p. 57 AM* Sec. 4 —
Even holding down [RX→CS], the received call sign will not set to the destination call sign.	• The call sign has not been correctly received. • When a received signal is weak, or a signal is received during scanning, the call sign may not be received correctly. In that case, "--------" is displayed and error beeps sound, and a reply call cannot be made.	Try it again, after the transceiver has correctly received the call sign.	—
A Local area call can be made, but the Gateway call or destination station call cannot be made.	• MY call sign has not been registered on a D-STAR repeater. • The repeater set in "FROM" (Access Repeater) has no Gateway.	• Register your own call sign (MY) on a gateway repeater, or confirm the registration of the call sign. • Check the repeater settings.	p. 41
"L" is displayed on the LCD. 	While receiving through the internet, some packets may be lost due to network error (poor data throughput performance).	Wait a while, and try it again. ⓘ When the transceiver receives corrupted data, and misidentifies it is as Packet Loss, "L" is displayed, even if it is a Local area call.	—
"DV" and "FM" icons alternately blink.	While in the DV mode, an FM signal is received.	Use a different operating frequency until there are no FM signals on the original frequency.	AM* Sec. 4

* "AM" indicates the PDF type ADVANCED MANUAL.

■ FCC information

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

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

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

■ Disposal

The crossed-out wheeled-bin symbol on your product, literature, or packaging reminds you that in the European Union, all electrical and electronic products, batteries, and accumulators (rechargeable batteries) must be taken to designated collection locations at the end of their working life. Do not dispose of these products as unsorted municipal waste. Dispose of them according to the laws in your area.

■ About CE and DOC

CE Hereby, Icom Inc. declares that the versions of ID-31E PLUS which have the “CE” symbol on the product, comply with the essential requirements of the Radio Equipment Directive, 2014/53/EU, and the restriction of the use of certain hazardous substances in electrical and electronic equipment Directive, 2011/65/EU. The full text of the EU declaration of conformity is available at the following internet address: http://www.icom.co.jp/world/support

■ Country code list

• ISO 3166-1

	Country	Codes		Country	Codes
1	Austria	AT	18	Liechtenstein	LI
2	Belgium	BE	19	Lithuania	LT
3	Bulgaria	BG	20	Luxembourg	LU
4	Croatia	HR	21	Malta	MT
5	Czech Republic	CZ	22	Netherlands	NL
6	Cyprus	CY	23	Norway	NO
7	Denmark	DK	24	Poland	PL
8	Estonia	EE	25	Portugal	PT
9	Finland	FI	26	Romania	RO
10	France	FR	27	Slovakia	SK
11	Germany	DE	28	Slovenia	SI
12	Greece	GR	29	Spain	ES
13	Hungary	HU	30	Sweden	SE
14	Iceland	IS	31	Switzerland	CH
15	Ireland	IE	32	Turkey	TR
16	Italy	IT	33	United Kingdom	GB
17	Latvia	LV			

INDEX

MENU SCREEN LIST

When pushing [MENU], the following MENU screens are displayed.
The first and second tree level of each MENU category are listed below.

DUP/TONE...	Offset Freq
	Repeater Tone
	TSQL Freq
	Tone Burst
	DTCS Code
	DTCS Polarity
	Digital Code
Scan	Pause Timer
	Resume Timer
	Temporary Skip Timer
	Program Skip
	Bank Link
	Program Link
Voice Memo	QSO Recorder
	<<REC Start>>
	Play Files
	Recorder Set
	Player Set
	Voice Recorder
	Record
	Play Files
	Recorder Set
	Player Set
	DV Auto Reply
Voice TX	Record
	TX Set
	<<Single TX>>
	<<Repeat TX>>

GPS	GPS Set
	GPS Select
	Power Save (Internal GPS)
	Manual Position
	GPS Indicator
	GPS Out (To DATA Jack)
	GPS Information
	GPS Position
	GPS Memory
	GPS Alarm
	Alarm Select:
	Alarm Area (Group)
	Alarm Area (RX/Memory)
	GPS Logger
	GPS Logger
	Record Interval
	Record Sentence
	<<GPS Logger Only>>
	GPS TX Mode
	OFF
	D-PRS (DV-A)
	NMEA (DV-G)
	GPS Auto TX
Call Sign	—
RX History	—
DV Memory	Your Call Sign
	Repeater List
My Station	My Call Sign
	TX Message

DV Set	Tone Control
	RX Bass
	RX Treble
	RX Bass Boost
	TX Bass
	TX Treble
	Auto Reply
	DV Data TX
	DV Fast Data
	Fast Data
	GPS Data Speed
	TX Delay (PTT)
	Digital Monitor
	Digital Repeater Set
	RX Call Sign Write
	RX Repeater Write
	DV Auto Detect
	RX Record (RPT)
	[RX>CS] Key
	BK
	EMR
	EMR AF Level
SPEECH	RX Call Sign SPEECH
	RX>CS SPEECH
	DIAL SPEECH
	MODE SPEECH
	SPEECH Language
	Alphabet
	SPEECH Speed
	SPEECH Level

DTMF/T-CALL	DTMF Memory
	DTMF Speed
QSO/RX Log	QSO Log
	RX History Log
	CSV Format
	Separator/Decimal
	Date

Function	Power Save
	Monitor
	Dial Speed-UP
	Auto Repeater*
	Remote MIC Key
	During RX/Standby
	During TX
	Key Lock
	PTT Lock
	Busy Lockout
	Time-Out Timer
	Active Band
	MIC Gain (Internal)
	MIC Gain (External)
	Data Speed
	VOX
	VOX
	VOX Level
	VOX Delay
	VOX Time-Out Timer
	Headset Select
	CI-V
	CI-V (DATA Jack)
	CI-V Address
	CI-V Baud Rate
	CI-V Transceive

Display	Backlight
	Backlight Timer
	LCD Dimmer
	LCD Contrast
	Busy LED
	RX Call Sign
	RX Message
	Reply Position Display
	DV RX Backlight
	TX Call Sign
	Scroll Speed
	Opening Message
	Voltage (Power ON)
	Display Unit
	Latitude/Longitude
	Altitude/Distance
	Speed
	Temperature
	Barometric
	Rainfall
	Wind Speed
	Display Language
	System Language

* May be displayed depending on the transceiver version.

Sounds	Beep Level
	Beep/Vol Level Link
	Key-Touch Beep
	Home CH Beep
	Scan Stop Beep
	Standby Beep
	Scope AF Output
Time Set	Date/Time
	GPS Time Correct
	UTC Offset
	Auto Power OFF
DV Gateway	<<Terminal Mode>>
	<<Access Point Mode>>
SD Card	Load Setting
	Save Setting
	Import/Export
	Import
	Export
	CSV Format
	SD Card Info
	Format
	Unmount
Others	Information
	Clone
	Reset

Count on us!

#12 EUR-01
#22 EUR-02
#32 EUR-03

<Intended Country of Use>

■ AT ■ BE ■ CY ■ CZ ■ DK ■ EE
■ FI ■ FR ■ DE ■ GR ■ HU ■ IE
■ IT ■ LV ■ LT ■ LU ■ MT ■ NL
■ PL ■ PT ■ SK ■ SI ■ ES ■ SE
■ GB ■ IS ■ LI ■ NO ■ CH ■ BG
■ RO ■ TR ■ HR

#13 UK-01
#23 UK-02
#33 UK-03

<Intended Country of Use>

☐ AT ☐ BE ☐ CY ☐ CZ ☐ DK ☐ EE
☐ FI ☐ FR ☐ DE ☐ GR ☐ HU ☐ IE
☐ IT ☐ LV ☐ LT ☐ LU ☐ MT ☐ NL
☐ PL ☐ PT ☐ SK ☐ SI ☐ ES ☐ SE
■ GB ☐ IS ☐ LI ☐ NO ☐ CH ☐ BG
☐ RO ☐ TR ☐ HR

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