

# KENWOOD

TK-2302/ TK-2302V  
TK-3302/ TK-3302U



VHF FM TRANSCEIVER/  
UHF FM TRANSCEIVER

## INSTRUCTION MANUAL

ÉMETTEUR-RÉCEPTEUR FM VHF/  
ÉMETTEUR-RÉCEPTEUR FM UHF

## MODE D'EMPLOI

TRANSCPTOR FM VHF/  
TRANSCPTOR FM UHF

## MANUAL DE INSTRUCCIONES

Kenwood Corporation

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VHF FM TRANSCEIVER/  
UHF FM TRANSCEIVER

TK-2302/ TK-2302V  
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INSTRUCTION MANUAL

Kenwood Corporation

ENGLISH



**ATTENTION:**

The RBRC Recycle seal found on **Kenwood** lithium-ion (Li-ion) battery packs indicates **Kenwood's** voluntary participation in an industry program to collect and recycle Li-ion batteries after their operating life has expired. The RBRC program is an alternative to disposing Li-ion batteries with your regular refuse or in municipal waste streams, which is illegal in some areas.

For information on Li-ion battery recycling in your area, call (toll free) 1-800-8-BATTERY (1-800-822-8837).

**Kenwood's** involvement in this program is part of our commitment to preserve our environment and conserve our natural resources.



**ATTENTION:**

The RBRC Recycle seal found on **Kenwood** nickel metal hydride (Ni-MH) battery packs indicates **Kenwood's** voluntary participation in an industry program to collect and recycle Ni-MH batteries after their operating life has expired. The RBRC program is an alternative to disposing Ni-MH batteries with your regular refuse or in municipal waste streams, which is illegal in some areas.

For information on Li-ion battery recycling in your area, call (toll free) 1-800-8-BATTERY (1-800-822-8837).

**Kenwood's** involvement in this program is part of our commitment to preserve our environment and conserve our natural resources.

## THANK YOU

We are grateful you have chosen **Kenwood** for your land mobile radio applications.

## NOTICES TO THE USER

- ◆ Government law prohibits the operation of unlicensed radio transmitters within the territories under government control.
- ◆ Illegal operation is punishable by fine and/or imprisonment.
- ◆ Refer service to qualified technicians only.

**Safety:** It is important that the operator is aware of, and understands, hazards common to the operation of any transceiver.

## Terminal Descriptions

### Speaker/ Microphone Jacks

It is possible to use a resin-based cover for the Speaker/ Microphone jacks.

NO.	Name	Description	Impedance	I/O
1	PTT / RXD	External PTT Input / Serial Data Input	CMOS	I
2	MIC	External MIC Input	1.8 k $\Omega$	I
3	MICIN	Internal MIC Output	1.8 k $\Omega$	O
4	OPTDET	External Option Detect	High Impedance	I
5	5M	5V Output	100 $\Omega$	O
6	AE	GND	GND	-
7	TXD	Serial Data Output	CMOS	O
8	NC	No Connection	-	-
9	SPO	Audio Input	8 $\Omega$	I
10	SPI	Received Audio Output	8 $\Omega$	O

### Antenna Terminal

50  $\Omega$  impedance

### Battery Terminal

The battery terminal uses a spring plate.

The negative terminal connects to the chassis ground.

The battery is mounted on the rear side of the transceiver using a latch mounting method.

**One or more of the following statements may be applicable:**

**FCC WARNING**

This equipment generates or uses radio frequency energy. Changes or modifications to this equipment may cause harmful interference unless the modifications are expressly approved in the instruction manual. The user could lose the authority to operate this equipment if an unauthorized change or modification is made.

**INFORMATION TO THE DIGITAL DEVICE USER REQUIRED BY THE FCC**

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 generate 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 the 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 to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer for technical assistance.

## PRECAUTIONS

- Do not charge the transceiver and battery pack when they are wet.
- Ensure that there are no metallic items located between the transceiver and the battery pack.
- Do not use options not specified by **Kenwood**.
- If the die-cast chassis or other transceiver part is damaged, do not touch the damaged parts.
- If a headset or headphone is connected to the transceiver, reduce the transceiver volume. Pay attention to the volume level when turning the squelch off.
- Do not place the microphone cable around your neck while near machinery that may catch the cable.
- Do not place the transceiver on unstable surfaces.
- Ensure that the end of the antenna does not touch your eyes.
- When the transceiver is used for transmission for many hours, the radiator and chassis will become hot. Do not touch these locations when replacing the battery pack.
- Do not immerse the transceiver in water.
- Always switch the transceiver power off before installing optional accessories.
- The charger is the device that disconnects the unit from the AC mains line. The AC plug should be readily accessible.

**WARNING**

Turn the transceiver power off in the following locations:

- In explosive atmospheres (inflammable gas, dust particles, metallic powders, grain powders, etc.).
- While taking on fuel or while parked at gasoline service stations.
- Near explosives or blasting sites.
- In aircrafts. (Any use of the transceiver must follow the instructions and regulations provided by the airline crew.)
- Where restrictions or warnings are posted regarding the use of radio devices, including but not limited to medical facilities.
- Near persons using pacemakers.

**CAUTION**

- Do not disassemble or modify the transceiver for any reason.
- Do not place the transceiver on or near airbag equipment while the vehicle is running. When the airbag inflates, the transceiver may be ejected and strike the driver or passengers.
- Do not transmit while touching the antenna terminal or if any metallic parts are exposed from the antenna covering. Transmitting at such a time may result in a high-frequency burn.
- If an abnormal odor or smoke is detected coming from the transceiver, switch the transceiver power off immediately, remove the battery pack from the transceiver, and contact your **Kenwood** dealer.
- Use of the transceiver while you are driving may be against traffic laws. Please check and observe the vehicle regulations in your area.
- Do not expose the transceiver to extremely hot or cold conditions.
- Do not carry the battery pack (or battery case) with metal objects, as they may short the battery terminals.
- When operating the transceiver in areas where the air is dry, it is easy to build up an electric charge (static electricity). When using a earphone accessory in such conditions, it is possible for the transceiver to send an electric shock through the earphone and to your ear. We recommend you use only a speaker/microphone in these conditions, to avoid electric shocks.

## Information concerning the battery pack:

The battery pack includes flammable objects such as organic solvent. Mishandling may cause the battery to rupture producing flames or extreme heat, deteriorate, or cause other forms of damage to the battery. Please observe the following prohibitive matters.



**DANGER**

- **Do not disassemble or reconstruct battery!**

The battery pack has a safety function and protection circuit to avoid danger. If they suffer serious damage, the battery may generate heat or smoke, rupture, or burst into flame.

- **Do not short-circuit the battery!**

Do not join the + and – terminals using any form of metal (such as a paper clip or wire). Do not carry or store the battery pack in containers holding metal objects (such as wires, chain-necklace or hairpins). If the battery pack is short-circuited, excessive current will flow and the battery may generate heat or smoke, rupture, or burst into flame. It will also cause metal objects to heat up.

- **Do not incinerate or apply heat to the battery!**

If the insulator is melted, the gas release vent or safety function is damaged, or the electrolyte is ignited, the battery may generate heat or smoke, rupture, or burst into flame.

- **Do not use or leave the battery near fire, stoves, or other heat generators (areas reaching over 80°C/ 176°F)!**

If the polymer separator is melted due to high temperature, an internal short-circuit may occur in the individual cells and the battery may generate heat or smoke, rupture, or burst into flame.

- **Do not immerse the battery in water or get it wet by other means!**

If the battery's protection circuit is damaged, the battery may charge at extreme current (or voltage) and an abnormal chemical reaction may occur. The battery may generate heat or smoke, rupture, or burst into flame.

- **Do not charge the battery near fire or under direct sunlight!**

If the battery's protection circuit is damaged, the battery may charge at extreme current (or voltage) and an abnormal chemical reaction may occur. The battery may generate heat or smoke, rupture, or burst into flame.

**DANGER**

- **Use only the specified charger and observe charging requirements!**

If the battery is charged in unspecified conditions (under high temperature over the regulated value, excessive high voltage or current over regulated value, or with a remodeled charger), it may overcharge or an abnormal chemical reaction may occur. The battery may generate heat or smoke, rupture, or burst into flame.

- **Do not pierce the battery with any object, strike it with an instrument, or step on it!**

This may break or deform the battery, causing a short-circuit. The battery may generate heat or smoke, rupture, or burst into flame.

- **Do not jar or throw the battery!**

An impact may cause the battery to leak, generate heat or smoke, rupture, and/or burst into flame. If the battery's protection circuit is damaged, the battery may charge at an abnormal current (or voltage), and an abnormal chemical reaction may occur. The battery may generate heat or smoke, rupture, or burst into flame.

- **Do not use the battery pack if it is damaged in any way!**

The battery may generate heat or smoke, rupture, or burst into flame.

- **Do not solder directly onto the battery!**

If the insulator is melted or the gas release vent or safety function is damaged, the battery may generate heat or smoke, rupture, or burst into flame.

- **Do not reverse the battery polarity (and terminals)!**

When charging a reversed battery, an abnormal chemical reaction may occur. In some cases, an unexpected large amount of current may flow upon discharging. The battery may generate heat or smoke, rupture, or burst into flame.

- **Do not reverse-charge or reverse-connect the battery!**

The battery pack has positive and negative poles. If the battery pack does not smoothly connect with a charger or operating equipment, do not force it; check the polarity of the battery. If the battery pack is reverse-connected to the charger, it will be reverse-charged and an abnormal chemical reaction may occur. The battery may generate heat or smoke, rupture, or burst into flame.



**DANGER**

- **Do not touch a ruptured and leaking battery!**

If the electrolyte liquid from the battery gets into your eyes, wash your eyes with fresh water as soon as possible, without rubbing your eyes. Go to the hospital immediately. If left untreated, it may cause eye-problems.

**WARNING**

- **Do not charge the battery for longer than the specified time!**

If the battery pack has not finished charging even after the regulated time has passed, stop it. The battery may generate heat or smoke, rupture, or burst into flame.

- **Do not place the battery pack into a microwave or high pressure container!**

The battery may generate heat or smoke, rupture, or burst into flame.

- **Keep ruptured and leaking battery packs away from fire!**

If the battery pack is leaking (or the battery emits a bad odor), immediately remove it from flammable areas. Electrolyte leaking from battery can easily catch on fire and may cause the battery to generate smoke or burst into flame.

- **Do not use an abnormal battery!**

If the battery pack emits a bad odor, appears to have different coloring, is deformed, or seems abnormal for any other reason, remove it from the charger or operating equipment and do not use it. The battery may generate heat or smoke, rupture, or burst into flame.

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## UNPACKING AND CHECKING EQUIPMENT

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Carefully unpack the transceiver. If any of the items listed below are missing or damaged, file a claim with the carrier immediately.

### SUPPLIED ACCESSORIES

• Antenna .....	1
• Battery charger/ AC adapter.....	1
• TK-2302/ TK-3302: KSC-31	
• TK-2302V/ TK-3302U: KSC-35	
• Battery pack.....	1
• TK-2302/ TK-3302: KNB-29N (Ni-MH)	
• TK-2302V/ TK-3302U: KNB-45L (Li-ion)	
• Speaker/ microphone jack cover .....	1
• Speaker/ microphone locking bracket .....	1
• Belt clip (KBH-10) .....	1
• Screw set	
• 3 x 6 mm (Black) .....	1
• 3 x 8 mm .....	2
• Instruction manual .....	1

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**Note:** Refer to "PREPARATION" for accessory installation instructions.

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## PREPARATION

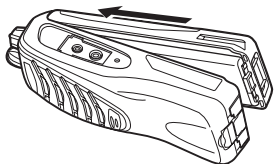
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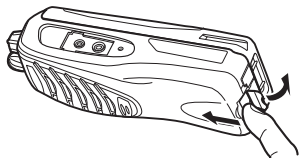
### INSTALLING/ REMOVING THE BATTERY PACK

**CAUTION**

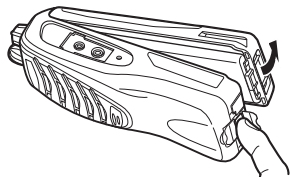
- ◆ Do not short the battery terminals or dispose of the battery by fire.
- ◆ Never attempt to remove the casing from the battery pack.



- 1 Align the battery pack with the back of the transceiver, then press the battery pack and transceiver firmly together until the release latch on the base of the transceiver locks.



- 2 To remove the battery pack, lift the safety catch on the base of the transceiver, then press the release latch underneath the safety catch.



- 3 While pressing the release latch, pull the battery pack away from the transceiver.

## INSTALLING THE ANTENNA



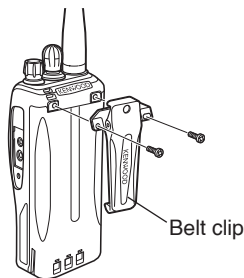
Screw the antenna into the connector on the top of the transceiver by holding the antenna at its base and turning it clockwise until secure.

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**Note:** The antenna is neither a handle, a key ring retainer, nor a speaker/microphone attachment point. Using the antenna in these ways may damage the antenna and degrade your transceiver's performance.

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## INSTALLING THE BELT CLIP



If necessary, attach the belt clip using the two supplied 3 x 8 mm screws.

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**Note:** If the belt clip is not installed, its mounting location may get hot during continuous transmission or when left sitting in a hot environment.

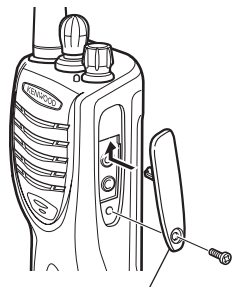
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### CAUTION

Do not use glue which is designed to prevent screw loosening when installing the belt clip, as it may cause damage to the transceiver. Acrylic ester, which is contained in these glues, may crack the transceiver's back panel.

## INSTALLING THE COVER OVER THE SPEAKER/ MICROPHONE JACKS



Speaker/ microphone  
jack cover

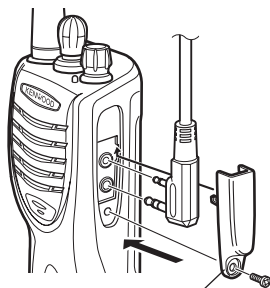
If you are not using a speaker/ microphone, install the cover over the speaker/ microphone jacks using the supplied 3 x 6 mm screw.

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**Note:** To keep the transceiver water resistant, you must cover the speaker/ microphone jacks with the supplied cover.

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## INSTALLING THE OPTIONAL SPEAKER/ MICROPHONE (OR HEADSET)



Speaker/ microphone  
locking bracket

- 1 Insert the speaker/ microphone (or headset) plugs into the speaker/ microphone jacks.
- 2 Attach the locking bracket using the supplied 3 x 6 mm screw.

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**Note:** The transceiver is not fully water resistant while using the speaker/ microphone.

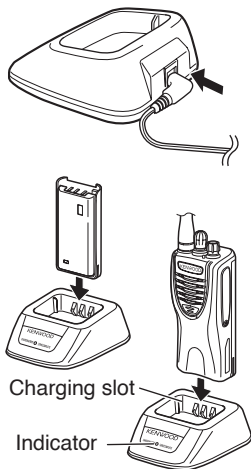
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## CHARGING THE BATTERY PACK

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**ATTENTION:** Always switch OFF a transceiver equipped with a battery pack before inserting the transceiver into the charger.

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**1** Plug the AC adapter cable into the jack located on the rear of the charger.

**2** Plug the AC adapter into an AC outlet.

**3** Slide a battery pack or a transceiver equipped with a battery pack into the charging slot of the charger.

- Make sure the metal contacts of the battery pack mate securely with the charger terminals.
- The indicator lights red and charging begins.

**4** When charging is completed, the indicator lights green. Remove the battery pack or the transceiver from the charging slot of the charger.

- It takes approximately 3 hours to charge the battery pack.
- When the charger will not be used for a long time, unplug the AC adapter from the AC outlet.

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### Note:

- ◆ When the indicator blinks red, the battery pack is either defective or the battery pack contacts are not properly mated with those of the charger.
  - ◆ The ambient temperature should be between 41°F and 104°F (5°C and 40°C) while charging is in progress. Charging outside this range may not fully charge the battery.
  - ◆ The battery pack life is over when its operating time decreases even though it is fully and correctly charged. Replace the battery pack.
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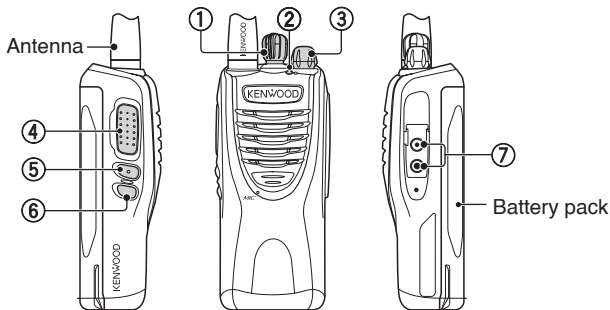
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## ORIENTATION

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### ① Channel selector

Rotate to change the operating channel.

- **Channel Annunciation:** When changing channels, the transceiver will announce the newly selected channel number. (This can be deactivated by your dealer.)

### ② LED indicator

For the LED indicator status, refer to page 9.

### ③ Power switch/ Volume control

Turn clockwise to switch ON the transceiver. To switch OFF the transceiver, turn counterclockwise until a click sounds. Rotate to adjust the volume level.

### ④ PTT (Push to Talk) switch

Press and hold, then speak into the microphone to transmit.

### ⑤ Side 1 key {refer to page 7}

Press to activate its programmable function.

### ⑥ Side 2 key {refer to page 7}

Press to activate its programmable function.

### ⑦ Speaker/ microphone jacks

Insert the Speaker/ microphone or Headset plug into this jack.

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## PROGRAMMABLE AUXILIARY FUNCTIONS

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Your dealer can program the **Side 1** and **Side 2** keys each with one of the following functions.

■ **None**

No function has been programmed.

■ **Autodial**

DTMF Autodial allows you to make a private call to another party.

■ **Key Lock**

Press and hold this key for 1 second to lock/ unlock the transceiver keys.

■ **Key Lock with Status Memory**

This operates the same as Key Lock except that when the transceiver power is turned OFF and then ON again, the keys remain locked. Without Status Memory, when the transceiver power is turned OFF and then ON again, the Key Lock function will be cancelled.

■ **Monitor**

Momentarily press this key to deactivate signaling (QT/DQT, FleetSync signaling, etc.). Press the key again to return to normal operation.

■ **Monitor Momentary**

Press and hold this key to deactivate signaling (QT/DQT, FleetSync signaling, etc.). Release the key to return to normal operation.

■ **Scan**

Press this key to start scanning the transceiver channels.

■ **Scan + Temporary Delete**

Press this key to start scanning the transceiver channels. When Scan pauses at an undesired channel, you can remove that channel from the scanning sequence by pressing and holding this key for 3 seconds.



## ■ Scrambler

The Scrambler function allows you to hold a conversation in complete privacy. When activated, any other party listening in on your channel will be unable to understand your conversation.

## ■ Squelch Off

Momentarily press this key to hear background noise. Press the key again to return to normal operation.

## ■ Squelch Off Momentary

Press and hold this key to hear background noise. Release the key to return to normal operation.

## ■ Talk Around

The Talk Around function allows you to communicate directly with other transceivers, without the use of a repeater.

## ■ Temporary Delete

When Scan pauses at an undesired channel, you can remove that channel from the scanning sequence by pressing and holding this key for 1 second.

## ■ Low Transmit Power

Each channel is programmed with either high or low transmit power. On high transmit power channels, press this key to change the transmit power to low power (you cannot change low transmit power channels to use high power).

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## BASIC OPERATIONS

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- 1 Turn the **Power** switch/ **Volume** control clockwise to switch the transceiver power ON.
  - A beep sounds if enabled by your dealer.
- 2 Press the key programmed with the **Monitor** or **Squelch Off** function to hear background noise, then rotate the **Power** switch/ **Volume** control to adjust the volume.
- 3 Rotate the **Channel** selector to select your desired channel.
  - When you receive an appropriate signal, you will hear audio from the speaker.
- 4 To make a call, press and hold the **PTT** switch, then speak into the microphone using your normal speaking voice.
  - Hold the microphone approximately 1.5 inches (3 to 4 cm) from your lips.
- 5 Release the **PTT** switch to receive.

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**Note:** When the battery pack voltage becomes too low, transmission will stop and an alert tone will sound.

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### LED Indicator Status

Indicator Color	Meaning
Lights red	Transmitting
Lights green	Receiving a call
Blinks red	Battery power is low while transmitting
Blinks green	Scanning
Blinks orange	Receiving an encoded call (QT/DQT, FleetSync signaling, etc.)
Blinks red/orange	The selected channel has not been programmed and cannot be used.

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## VOICE OPERATED TRANSMISSION (VOX)

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VOX operation allows you to transmit hands-free. This feature must first be activated by your dealer, and can only be used if you are using a supported headset.

To activate VOX and set the VOX Gain level, perform the following steps:

- 1 Connect the headset to the transceiver .
  - The VOX function does not activate when a headset is not connected to the accessory terminal of the transceiver.
- 2 With the transceiver power OFF, press and hold the **Side 1** key while turning the transceiver power ON.
- 3 Continue to hold the **Side 1** key until a beep sounds.
  - The LED indicator lights orange.
  - When the **Side 1** key is released, the transceiver announces the VOX Gain level.
- 4 Press the **Side 1** key to increase the VOX Gain level and the **Side 2** key to decrease the level.
  - The VOX Gain can be adjusted from levels 1 to 10 and OFF.
  - The transceiver announces the VOX Gain level as you adjust it. If OFF is selected, a beep sounds.
- 5 Press the **PTT** switch to save the setting.
  - A beep will sound.
  - The transceiver announces the new VOX Gain level.
- 6 Turn the transceiver power OFF and the ON again to activate VOX.

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**Note:** If a headset is connected to the transceiver while the VOX function is switched ON and the VOX Gain level is configured to a higher, more sensitive level, louder received signals may cause the transceiver to start transmission.

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## BACKGROUND OPERATIONS

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### TIME-OUT TIMER (TOT)

The Time-out Timer prevents callers from using a channel for an extended duration. If you continuously transmit for the duration programmed by your dealer (default is 1 minute), transmission will stop and an alert tone will sound. To stop the tone, release the **PTT** switch.

### BATTERY SAVER

When activated by your dealer, the Battery Saver function decreases the amount of power used after no signal is present and no operations are being performed for 5 seconds. When a signal is received or an operation is performed, Battery Saver turns off.

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**Note:** While the Battery Saver is operating, the LED may flash green when receiving a QT/DQT signal which does not match the QT/DQT tone/code set up in your transceiver.

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### LOW BATTERY WARNING

While operating the transceiver, the Low Battery Warning sounds an alert tone every 30 seconds and the LED indicator blinks red when the battery needs recharged or replaced.

### BUSY CHANNEL LOCKOUT (BCL)

When activated, BCL prevents you from interfering on a channel that is already in use. Pressing the **PTT** switch will cause an alert tone to sound and the transceiver will not transmit. Release the **PTT** switch to stop the tone.

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**Note:** Ask your dealer for an explanation on how BCL functions when using QT, DQT, DTMF, or FleetSync signaling.

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## **SIGNALING**

### **■ QT/ DQT/ DTMF**

The Encoder/Decoder function uses QT/ DQT to segregate talk groups, so users only hear calls from their own group. A DTMF PTT ID is included for dispatch operations or simple remote control applications.

The DTMF decode capabilities include Selective Call ID, Transpond with ID, and “Wild Card” Group Calling.

### **■ FleetSync**

Utilizing Kenwood’s FleetSync digital signaling protocol, this transceiver has PTT ID and Selective Calling capabilities for managed dispatch operations.

## **BEGINNING/ END OF TRANSMISSION SIGNAL**

The Beginning/ End of Transmission identification signals are used to access some repeaters and telephone systems. The Beginning of Transmission ID signal is transmitted when you press the PTT switch and the End of Transmission ID signal is transmitted when you release the PTT switch.