

# INSTRUCTION MANUAL



VHF FM TRANSCEIVER

TK-2407

**UHF FM TRANSCEIVER** 

TK-3407

JVCKENWOOD Corporation

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#### 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.

#### **Firmware Copyrights**

The title to and ownership of copyrights for firmware embedded in KENWOOD product memories are reserved for JVC KENWOOD Corporation.

#### **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.



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
  an 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.



#### 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 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.



 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.



· 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.



- 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**

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

## SUPPLIED ACCESSORIES

•	Speaker/ microphone jack cover1
•	Speaker/ microphone locking bracket1
•	Belt clip (KBH-10)1
•	Screw (M3 x 8 mm)1
•	Channnel stopper1
•	Instruction manual1

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

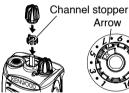
## **PREPARATION**

### INSTALLING THE CHANNEL STOPPER

For transceivers with less than 16 channels, insert a Channel stopper.

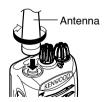
- 1 Set the Channel selector to channel 1, then pull the Channel selector knob off the transceiver
  - If the Channel selector is not positioned at channel 1, the Channel selector knob may not install correctly and the channel may be unable to be changed.
- 2 Insert the channel stopper.
- 3 Set the arrow of the Channel stopper to the highest channel number for the transceiver
  - You can set the Channel stopper position for channels 2, 4, 6. 8. 10. 12. and 14.
- 4 Reinsert the Channel selector knob.







# **INSTALLING THE (OPTIONAL) 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

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 vour transceiver's performance.

# INSTALLING/ REMOVING THE (OPTIONAL) BATTERY PACK



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



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.

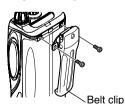


2 To remove the battery pack, lift the safety catch on the base of the transceiver, then press the release latch underneath the safety catch.



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

#### INSTALLING THE BELT CLIP



If necessary, attach the belt clip using the two supplied M3 x 8 mm screws.

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.



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.

# CHARGING THE BATTERY PACK (OPTIONAL BATTERY CHARGER)

The battery pack is not charged at the factory; charge it before use.

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

- 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 Match the Holder to the type of battery pack to be charged so that when inserting the Holder, the battery type name can be seen on the bottom of the charger. After inserting the Holder into the charger, press the locking tabs to secure it in place. <KSC-43 only>

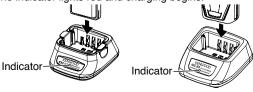
Holder

Li-ion battery charger

Li-ion battery charger

Ni-MH battery charger

- To remove the Holder, squeeze the locking tabs together then pull the Holder out of the charger. <KSC-43 only>
- 4 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.



- 5 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.

#### 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.
- When the indicator flashes green and orange, the battery pack has not satisfied the charging start temperature. Remove the battery pack from the charger and wait until it reaches a normal temperature before charging it again.
- 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.

# INSTALLING THE CAP OVER THE SPEAKER/ MICROPHONE JACKS

Install the cap over the speaker/ microphone jacks when not using an optional speaker/ microphone.

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



- 1 Place the cap over the jacks so that the locking tabs insert into the transceiver grooves.
- While holding the cap in place, push it towards the bottom of the transceiver until the tabs on the cap click into place.
  - To remove the cap, hold the top of the cap in place with your finger while inserting a
     2 mm or smaller flat blade screwdriver under the bottom of the cap. Slowly slide the screwdriver in until its tip touches the tab inside the cap, then gently pry the cap up (handle of screwdriver moving away from the transceiver) to remove the cap.



5

# INSTALLING THE OPTIONAL SPEAKER/ MICROPHONE (OR HEADSET)

**Note:** The transceiver is not fully water resistant when using a speaker/ microphone or headset.



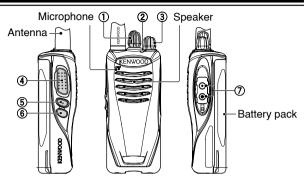
 Insert the speaker/ microphone (or headset) plugs into the speaker/ microphone jacks of the transceiver.





- 2 Place the locking bracket over the speaker/ microphone (or headset) plugs so that the locking tabs insert into the transceiver grooves.
  - Push down on the locking bracket to slide it into place.
- 3 While holding the locking bracket in place, push it towards the bottom of the transceiver until the tabs on the bracket click into place.
  - To remove the locking bracket, push the bracket up from the base.

## ORIENTATION



## 1 Channel selector

Rotate to change the operating channel.

 Channel Annunciation: When changing channels, the transceiver will announce the newly selected channel number (if enabled by your dealer).

#### ② LED indicator

For the LED indicator status, refer to page 11.

## 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 around the microphone area to transmit.

- Side 1 key {refer to page 8} Press to activate its programmable function.
- (6) Side 2 key {refer to page 8} Press to activate its programmable function.
- ⑦ Speaker/ microphone jacks Insert the Speaker/ microphone or Headset plug into this jack.

## PROGRAMMABLE AUXILIARY FUNCTIONS

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

**Note:** The duration of pressing a key to activate a function is dependent on your dealer setting. Your dealer may have set some keys to be held down for a short duration instead of being momentarily pressed. Ask your dealer for details on which keys need to be held down to activate their functions.

#### None

No function has been programmed.

#### ■ 2-Tone

Press this key to transmit a 2-tone code.

#### Autodial

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

## ■ Calling Alert

A calling alert tone allows you to alert party members that you are making a call. When making a call, first hold down this key.

While holding down the key, the calling alert tone will sound.
 Release the key to end the tone, then hold down the PTT switch and speak into the microphone to transmit.

## ■ Emergency

Press and hold this key to enter Emergency mode.

## Key Lock

Press this key to lock /unlock the transceiver keys. Without Status Memory, when the transceiver power is turned OFF and then ON again, the Key Lock function will be cancelled.

## ■ 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 remains locked.

#### ■ Lone Worker

Lone Worker Mode is a safety feature built into the transceiver. If the transceiver is not operated for a preprogrammed period of time, the transceiver will emit a tone and automatically enter Emergency operation.

Press this key to toggle the Lone Worker function ON or OFF.

#### 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).

#### ■ Monitor

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

### ■ Monitor Momentary

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

## Paging Call

Press this key to send a FleetSync paging call to an ID from the ID list.

## ■ Priority-channel Select

If the scan priority type is "Operator Selectable", press this key in normal mode to set the current channel as the priority channel.

#### ■ Scan

Press this key to start scanning the transceiver channels.

## ■ Scan + Temporary Delete

Scan pauses at an undesired channel, you can remove that channel from the scanning sequence by press or hold this key.

#### 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. Press this key to toggle the Scrambler function ON or OFF.

**Note:** This function cannot be used in certain countries. Contact **KENWOOD** dealer for further information.

#### Send the GPS data

Press this key when the GPS unit has been installed to send your positioning data to the base station.

## Squelch Off

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

## Squelch Off Momentary

Continuously hold down this key to hear background noise. Release the key to return to normal operation.

#### ■ Status 1/ Status 2

Press this key to send a status.

#### ■ Talk Around

The Talk Around function allows you to communicate directly with other transceivers, without the use of a repeater. Press this key to toggle the Talk Around function ON or OFF.

## **BASIC OPERATIONS**

- 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 around the microphone area 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.

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

#### **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/ blue *	Receiving an encoded call (FleetSync signaling, etc.)
Blinks red/orange	The selected channel has not been programmed and cannot be used.

 Your dealer can set the LED to blink either orange or blue for FleetSync, DTMF, or 2-tone operation.

# **VOICE OPERATED TRANSMISSION (VOX)**

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. This function can be turned off for specific channels by your dealer.

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 will announces the VOX Gain level.
- 4 Press the **Side 1** key to select the VOX Gain level of the radio.
  - Press the Side 2 key to enable or disable the VOX function for the current channel (you can change this setting for each channel by selecting a channel with the Channel selector). When turned ON, a beep sounds. When turned OFF, a double 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.

#### Note:

- The transceiver will automatically return to normal operation if no action is performed for 20 seconds.
- VOX Gain level 1 is the least sensitive and VOX Gain level is 10 is the most sensitive.
- 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.

## **BACKGROUND OPERATIONS**

# 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.

**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.

#### 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.

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

## **SIGNALING**

#### QT/ DQT

The Encoder/Decoder function uses QT/ DQT to segregate talk groups, so users only hear calls from their own group.

#### DTMF

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 JVC KENWOOD's FleetSync digital signaling protocol, this transceiver has PTT ID and Selective Calling capabilities for managed dispatch operations. For hazardous/hostile duty environments, a **Side1** or **Side2** key can be programmed for Emergency status to alert the dispatcher and/or operator in distress.

#### ■ MDC-1200

The following features are available with the built-in MDC signaling: PTT ID Encode, Emergency Encode, Stun/Revive Decode, and Radio Check Decode.

#### ■ STUN

When a transceiver is lost or stolen (for example), your dispatcher can transmit a stun code to that transceiver to disable transmission or transmission/reception. Stun can be cancelled with a stun reset code.

## **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.

#### ADDENDUM: Transceiver Password

If your transceiver is password protected, the LED will light blue when you turn the transceiver ON. Enter the password (up to 4 digits) using the following procedure.

- 1 Set the Channel selector to position "1".
- 2 Press the Side 1 or Side 2 key to enter the first digit.
  - The Side 1 key increases the digit value and the Side 2 key decreases it.
     The transceiver announces the digit number as it changes.
- 3 Repeat steps 1 and 2 for Channel selector positions 2 ~ 4.
- 4 Press the PTT switch to confirm the password.
  - · When a correct password is entered, the Blue LED turns off.

## ADDENDA: Mot de passe émetteur-récepteur

Si votre émetteur-récepteur est protégé par un mot de passe, le voyant DEL s'allume en bleu lorsque vous mettez l'émetteur-récepteur sous tension. Saisissez le mot de passe (jusqu'à 4 chiffres) en utilisant la procédure suivante.

- 1 Réglez le sélecteur de Canal sur la position "1".
- 2 Appuyez sur la touche Latérale 1 ou Latérale 2 pour saisir le premier chiffre.
  - La touche Latérale 1 permet d'augmenter la valeur du chiffre et la touche Latérale 2 permet de la diminuer. L'émetteur-récepteur annonce le chiffre lors de son changement.
- 3 Répétez les étapes 1 et 2 pour les positions 2 à 4 du sélecteur de Canal.
- 4 Appuyez sur le commutateur PTT pour confirmer le mot de passe.
  - Lorsqu'un mot de passe correct est saisi, le voyant DEL bleu s'éteint.

## **SUPLEMENTO: Clave del transceptor**

Si el transceptor está protegido mediante clave, el indicador LED se iluminará en azul al encender el aparato. Introduzca la clave (de hasta 4 dígitos) siguiendo estos pasos.

- 1 Ajuste el selector de Canales en la posición "1".
- 2 Pulse la tecla Lateral 1 o Lateral 2 para introducir el primer dígito.
  - La tecla Lateral 1 incrementa el valor del dígito y la tecla Lateral 2 lo disminuye. El transceptor anuncia el número del dígito a medida que cambia.
- 3 Repita los pasos 1 y 2 en las posiciones 2 ~ 4 del selector de Canales.
- 4 Presione el conmutador PTT para confirmar la clave.
  - · Una vez introducida la clave correcta. el indicador LED azul se apagará.