KENWOOD

INSTRUCTION MANUAL



ProTalk DIGITAL

UHF DIGITAL TRANSCEIVER

TK-3401D

JVCKENWOOD Corporation

© B5A-0037-00 (E,T)

THANK YOU

We are grateful you have chosen **KENWOOD** for your dPMR446 applications.

OPERATING CONDITIONS

Open locations (no obstructions) : Up to 9.0 km

Note:

- The above range is based on field testing and may vary with your operating conditions and individual transceiver.
- **Digital technology provides superior clarity in extended coverage.** As RF signal strength weakens with distance, analog reception becomes increasingly noisy and intermittent. dPMR's low BER improves reception in fringe areas, thereby "effectively" increasing coverage as much as twenty percent over analog.

The AMBE+2™ voice coding Technology embodied in this product is protected by intellectual property rights including patent rights, copyrights and trade secrets of Digital Voice Systems, Inc. This voice coding Technology is licensed solely for use within this Communications Equipment. The user of this Technology is explicitly prohibited from attempting to extract, remove, decompile, reverse engineer, or disassemble the Object Code, or in any other way convert the Object Code into a human-readable form. U.S. Patent Nos. #5,826,222, #5,754,974, #5,701,390, #5,715,365, #5,649,050, #5,630,011 and #5,581,656

NOTICES TO THE USER

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.

This equipment complies with the essential requirements of Directive 1999/5/EC.

Information on Disposal of Old Electrical and Electronic Equipment and Batteries (applicable for countries that have adopted separate waste collection systems)



Products and batteries with the symbol (crossed-out wheeled bin) cannot be disposed as household waste.
Old electrical and electronic equipment and batteries should be recycled at a facility capable of handling these items and their waste byproducts.
Contact your local authority for details in locating a recycle facility nearest to you.
Proper recycling and waste disposal will help conserve resources whilst preventing detrimental effects on our health and the environment.
Notice: The sign “Pb” below the symbol for batteries indicates that this battery contains lead.



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 aircraft. (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.
- Danger of explosion if the battery is incorrectly replaced; replace only with the same type.
- When attaching a commercial strap to the transceiver, ensure that the strap is durable. In addition, do not swing the transceiver around by the strap; you may inadvertently strike and injure another person with the transceiver.
- If a commercially available neck strap is used, take care not to let the strap get caught on nearby machine.
- 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.

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-necklaces 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.
- **Avoid 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

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

SUPPLIED ACCESSORIES

- Battery charger/ AC adapter (KSC-35S) **1**
- Li-ion Battery pack (KNB-45L) **1**
- Cap **1**
- Locking bracket **1**
- Belt clip (KBH-10) **1**
- Screw (M3 x 8 mm) **2**
- Quick Reference Guide **1**

Note:

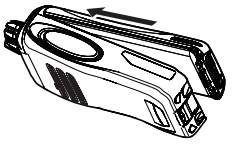
◆ Refer to “PREPARATION” {p.2} for accessory installation instructions.

PREPARATION

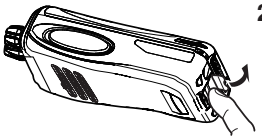
INSTALLING/ REMOVING THE BATTERY PACK

CAUTION

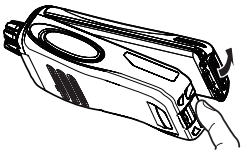
- Do not short the battery terminals or dispose of the battery by fire.
- Never attempt to remove the casing from the battery pack.
- Install the battery pack after cleaning the battery pack contacts and the transceiver terminals.



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.

CHARGING THE BATTERY PACK

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

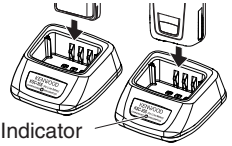
ATTENTION:

- 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 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.

Note:

- When an abnormality occurs during charging, the indicator performs as follows:
  Blinks Red: The battery pack is either defective or the battery pack contacts are not properly mated with those of the charger.
  Alternates Flashing 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 5°C and 40°C while charging is in progress. Charging outside this range may not fully charge the battery.

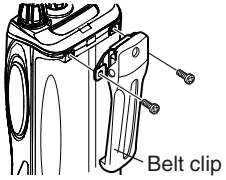
- The battery pack life is over when its operating time decreases even though it is fully and correctly charged. Replace the battery pack.
- While operating the transceiver using a Li-ion battery pack in areas of an ambient temperature of –10°C and lower, operating time may be shortened.

BATTERY LIFE

The operating times listed in the table below are measured under the following cyclic conditions:
Calculated using 5% transmit time, 5% receive time, and 90% standby time.

Battery Type	Operating Time/ Hours (Approx.)			
	Digital Mode		Analog Mode	
	Battery Saver On	Battery Saver Off	Battery Saver On	Battery Saver Off
KNB-45L Supplied battery	16 H	14H	18H	14H
KNB-69L Optional battery	22 H	18H	24H	18H

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.

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 CAP OVER THE SPEAKER/ MICROPHONE JACKS

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

Note:

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



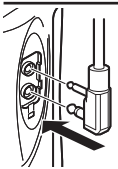


1. Place the cap over the jacks so that the locking tabs insert into the transceiver grooves.
2. While holding the cap in place, push it towards the bottom of the transceiver until the tabs on the cap click into place.
   - To remove the cap, hold the top of the cap in place with your finger while inserting 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.

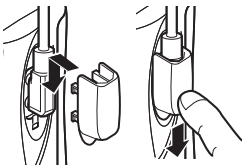
INSTALLING THE OPTIONAL SPEAKER/ MICROPHONE (OR HEADSET)

Note:

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



1 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.

SWITCHING THE AUDIO OUTPUT

It is necessary to switch the audio output if you listen only through the earphone (ϕ2.5).

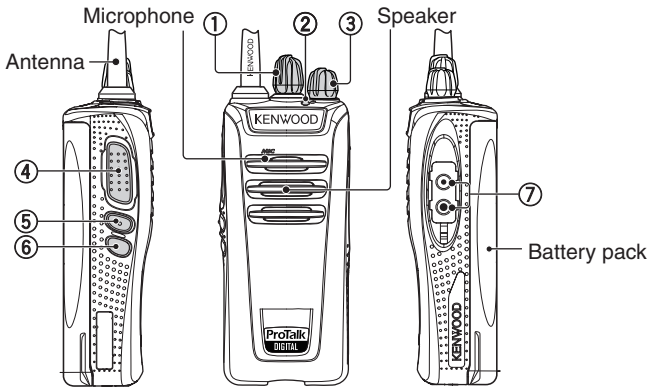
1 Switch the transceiver power OFF.

2 Press and hold the **PTT** switch and **Side 2** key while turning the transceiver power ON.

3 Continue to hold the **PTT** switch and **Side 2** key until a beep sounds.

- Repeat steps 1 to 3 to switch the audio output.
- When the audio output is switched to earphone, you will hear the beep from the earphone; and a beep will sound from the speaker when the audio output is switched to built-in speaker.

ORIENTATION



① Selector

Rotate to change the operating channel.

- To change the operating frequency, Common ID or QT/DQT settings of a channel, refer to "CHANNEL SETUP MODE" {p.11}.
- **Channel Annunciation:** When changing channels, the transceiver will announce the newly selected channel number.

② LED indicator

Refer to the LED indicator status. {p.9}

③ Power switch/ Volume control

Turn clockwise to switch the transceiver ON. To switch the transceiver OFF, 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**

Press to activate its programmable function.

The default setting is **[Zone]**.

- For function descriptions and details on how to change the function of the **Side 1** key, refer to “KEY ASSIGNMENT MODE” {p.17}.

⑥ **Side 2 key**

Press to activate its programmable function.

The default setting is **[Squelch Off Momentary]**.

- For function descriptions and details on how to change the function of the **Side 2** key, refer to “KEY ASSIGNMENT MODE” {p.17}.

⑦ **Speaker/ microphone jacks**

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

LED Indicator Status

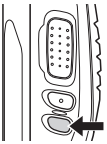
Indicator Color	Meaning
Flashes blue	Digital mode
Flashes orange	Analog mode
Lights red	Transmitting
Lights green	Receiving a call
Blinks red	Battery power is low
Blinks green	Scanning
Blinks red/orange	The selected channel has not been programmed and cannot be used.

1 Turn the **Power** switch**/ Volume** control clockwise to switch the transceiver power ON.

- A beep will sounds.



2 Press the key programmed with the **[Monitor]** or **[Squelch Off]** (**Side 2** key default) function to hear background noise, then rotate the **Power** switch**/ Volume** control to adjust the volume.





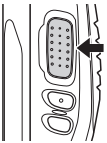
3 Rotate the **Selector** to select your desired channel.

- 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 3 to 4 cm (1.5 inches) 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.

CHANNEL SETUP MODE

This transceiver allows you to reprogram each of the channels with different frequencies and Common ID (Digital)/ QT/DQT (Analog) settings. The table below lists the default channel settings.

Zone type	Digital	
Channel Number	**Frequency**	**Common ID**
1	446.103125 MHz	1
2	446.109375 MHz	2
3	446.115625 MHz	3
4	446.121875 MHz	4
5	446.128125 MHz	5
6	446.134375 MHz	6
7	446.140625 MHz	7
8	446.146875 MHz	8
9	446.153125 MHz	9
10	446.159375 MHz	10
11	446.165625 MHz	11
12	446.171875 MHz	12
13	446.178125 MHz	13
14	446.184375 MHz	14
15	446.190625 MHz	15
16	446.196875 MHz	16

Zone type	Analog	
Channel Number	Frequency	QT/DQT
1	446.00625 MHz	94.8 Hz
2	446.09375 MHz	88.5 Hz
3	446.03125 MHz	103.5 Hz
4	446.06875 MHz	79.7 Hz
5	446.04375 MHz	118.8 Hz
6	446.01875 MHz	123.0 Hz
7	446.08125 MHz	127.3 Hz
8	446.05625 MHz	85.4 Hz
9	446.00625 MHz	107.2 Hz
10	446.09375 MHz	110.9 Hz
11	446.03125 MHz	114.8 Hz
12	446.06875 MHz	82.5 Hz
13	446.04375 MHz	D132N
14	446.01875 MHz	D155N
15	446.05625 MHz	D134N
16	446.08125 MHz	D243N

Note:

- You must first select an operating frequency for a channel before you can select a Common ID (Digital)/ QT/DQT (Analog) setting for that same channel.

ZONE SELECTION

To change the operating zone:

1 With the transceiver power OFF, press and hold the **PTT** switch and **Side 1** key while turning the transceiver power ON.
   - Continue to hold the **PTT** switch and **Side 1** key until the LED lights orange and the transceiver announces “Self”.

2 Release the **PTT** switch and **Side 1** key.
   - The transceiver announces Zone number (1 or 2).

3 Press the **Side 1** or **Side 2** key to select the zone number.
   - A voice announcement will inform you of the currently selected zone number.

4 Press the **PTT** switch to set the zone number.
   - A beep will sound.
   - A voice announcement will inform you of the currently selected zone type (Digital/ Analog).

5 Press the **Side 1** or **Side 2** key to select the zone type.
   - A voice announcement will inform you of the currently selected zone type.
   - Proceed to the next step if you are not changing the zone type.

6 Press the **PTT** switch to save the setting.
   - A beep will sound if there is no change in the zone type. The transceiver will move to the Frequency Setting and announces “Channel”.
   - If the zone type is changed, the transceiver announces “Confirm”.

7 Press the **PTT** switch and **Side 1** key.
   - All channel frequencies, Common ID and QT/DQT values in the selected zone will be restored to the default value.
   - The transceiver will move to the Frequency Setting.

Note:

◆ The transceiver will automatically return to normal operation if no action is performed for 5 seconds.

CHANNEL OPERATING FREQUENCIES

To change the operating frequency of a channel:

1 Follow the operating steps in Zone Selection to select the zone.

2 Rotate the **Selector** to your desired channel.

- The transceiver announces Channel number.

3 Press and release the **PTT** switch.

- A beep will sound and the transceiver announces Table number.

4 Press the **Side 1** or **Side 2** key to increment/ decrement the Table number, to select the new channel frequency.

- Table numbers and their corresponding operating frequencies are provided in the table {p.15}.
- A voice announcement will inform you of the currently selected Table number.

5 Press the **PTT** switch to save the setting.

- A beep will sound.
- Repeat steps 2 to 5 to set up another channel.

6 Turn the transceiver power OFF and then ON again to activate the new settings.

Note:

◆ The transceiver will automatically return to normal operation if no action is performed for 5 seconds.

Frequency Table

Digital	
Table Number	**Operating Frequency**
1	446.103125 MHz
2	446.109375 MHz
3	446.115625 MHz
4	446.121875 MHz
5	446.128125 MHz
6	446.134375 MHz
7	446.140625 MHz
8	446.146875 MHz
9	446.153125 MHz
10	446.159375 MHz
11	446.165625 MHz
12	446.171875 MHz
13	446.178125 MHz
14	446.184375 MHz
15	446.190625 MHz
16	446.196875 MHz

Analog	
Table Number	**Operating Frequency**
1	446.00625 MHz
2	446.01875 MHz
3	446.03125 MHz
4	446.04375 MHz
5	446.05625 MHz
6	446.06875 MHz
7	446.08125 MHz
8	446.09375 MHz

COMMON ID SETTINGS (DIGITAL)

To change the Common ID settings of a channel of Digital:

1 Follow the operating steps in Zone Selection to select the zone type (digital).

2 Rotate the **Selector** to your desired channel.

- The transceiver announces Channel number.

3 Press the **Side 1** or **Side 2** key to select Common ID setup.

- The transceiver announces “ID” and “Channel” alternately with each press of the **Side 1** or **Side 2** key.

4 Press and release the **PTT** switch.

- A beep will sound and the transceiver announces Common ID number (1-255).

5 Press the **Side 1** or **Side 2** key to set the channel and select the Common ID .

- The transceiver announces Common ID number.
- Press and hold the **Side 1** or **Side 2** key to increment/ decrement the Common ID number by 10 at a time.
- A voice announcement will inform you of the currently selected Common ID number.

6 Press the **PTT** switch to save the setting.

- A beep will sound.
- Repeat steps 2 to 6 to set up another channel.

7 Turn the transceiver power OFF and then ON again to activate the new settings.

Note:

◆ The transceiver will automatically return to normal operation if no action is performed for 5 seconds.

QT/ DQT SETTINGS (ANALOG)

Quiet Talk (QT) and Digital Quiet Talk (DQT) are functions that reject undesired signals on your channel. You will hear a call only when you receive a signal that contains a matching QT tone or DQT code. If a call containing a different tone or code is received, squelch will not open and you will not hear the call. Likewise, when transmitting using QT or DQT, the receiving station must have a matching tone or code to hear your call.

Be aware that other parties can still hear your calls if they set up their transceiver with the same tone or code.

The default QT/DQT settings for each channel are provided in the table {p.18}.

To change the QT/DQT settings of a channel of Analog:

1 Follow the operating steps in Zone Selection to select the zone type (analog).

2 Rotate the **Selector** to select the channel to change.

- The transceiver announces Channel number.

3 Press the **Side 1** or **Side 2** key to select the QT/DQT setup.

- The transceiver announces “QT/DQT” and “Channel” alternately with each press of the **Side 1** or **Side 2** key.

4 Press and release the **PTT** switch.

- A beep will sound and the transceiver announces QT/DQT number.

5 Press the **Side 1** or **Side 2** key to increment/ decrement the Tone number, to select the new tone or code.

- QT/DQT table numbers and their corresponding tones/ codes are provided in the table {p.18}.
- Press and hold the **Side 1** or **Side 2** key to increment/ decrement the Tone number by 5 at a time.
- A voice announcement will inform you of the currently selected Tone number.

6 Press the **PTT** switch to save the setting.
- A beep will sound.
- Repeat steps 2 to 6 to set up another channel.

7 Turn the transceiver power OFF and then ON again to activate the new settings.

Note:

◆ The transceiver will automatically return to normal operation if no action is performed for 5 seconds.

QT/DQT Table

QT/DQT Number	QT/DQT Setting	QT/DQT Number	QT/DQT Setting	QT/DQT Number	QT/DQT Setting
1	67.0 Hz	**14**	107.2 Hz	**27**	D132N
2	71.9 Hz	**15**	110.9 Hz	**28**	D155N
3	74.4 Hz	**16**	114.8 Hz	**29**	D134N
4	77.0 Hz	**17**	118.8 Hz	**30**	D243N
5	79.7 Hz	**18**	123.0 Hz	**31**	D311N
6	82.5 Hz	**19**	127.3 Hz	**32**	D346N
7	85.4 Hz	**20**	131.8 Hz	**33**	D315N
8	88.5 Hz	**21**	136.5 Hz	**34**	D351N
9	91.5 Hz	**22**	141.3 Hz	**35**	D423N
10	94.8 Hz	**23**	146.2 Hz	**36**	D664N
11	97.4 Hz	**24**	151.4 Hz	**37**	D431N
12	100.0 Hz	**25**	156.7 Hz	**38**	D723N
13	103.5 Hz	**26**	162.2 Hz	**0**	OFF

Note:

◆ The Tone numbers corresponding to the QT/DQT values can be changed by your dealer.

CHANNEL CONFIRMATION MODE

To confirm your channel settings:

1 With the transceiver power OFF, press and hold the **PTT** switch while turning the transceiver power ON.

- Continue to hold the **PTT** switch until the LED lights orange and the transceiver announces “Confirm”.

2 Release the **PTT** switch.

- The transceiver announces the channel table number and Tone number of the selected channel.

3 Rotate the **Selector** to your desired channel within 5 seconds, otherwise the operation will cancel.

- The transceiver announces the channel table number and Tone number of the current channel.

Note:

◆ The transceiver will automatically return to normal operation if no action is performed for 5 seconds.

KEY ASSIGNMENT MODE

This transceiver allows you to reprogram the **Side 1** and **Side 2** keys with any of the functions listed in the table below. Explanations on the use of each function are provided under "PROGRAMMABLE FUNCTIONS" {p.22}.

Table Number	Function Name	Digital	Analog
0	None (no function)	✓	✓
1	Calling Alert	✓	✓
2	Key Lock	✓	✓
3	Monitor	✓	✓
4	Monitor Momentary	✓	✓
5	Scan/ Scan Temporary Delete*1	✓	✓
6	Scrambler	N/A	✓
7	Squelch Off	N/A	✓
8	Squelch Off Momentary (**Side 2** key default)	N/A	✓
9	Zone (**Side 1** key default)	✓	✓

✓ : Available
N/A: Not Available
*1 : Press and hold the **Side 1** or **Side 2** key for 2 seconds will activate the Scan Temporary Delete function.

To change the functions of the **Side 1** and **Side 2** keys:

1 With the transceiver power OFF, press and hold the **Side 1** and **Side 2** keys while turning the transceiver power ON.

- Continue to hold the **Side 1** and **Side 2** keys until the LED lights orange and the transceiver announces "Setup".

2 Continue to press and hold the key to be reprogrammed (either the **Side 1** or **Side 2** key), while releasing the remaining key.

- The transceiver will announce “Table zero”.
- If you continue to hold both keys, or if you release both keys, the operation will cancel in 5 seconds.

3 Release the key.

4 Press the **Side 1** or **Side 2** key to increment/ decrement the number, to select the new key function.

- Table numbers and their corresponding functions are provided in the table {p.20}.
- A voice announcement will inform you of the currently selected Table number.

5 Press the **PTT** switch to save the setting.

- A beep will sound and the transceiver will announce the new Table number.

6 Turn the transceiver power OFF and then ON again to activate the new settings.

Note:

◆ The transceiver will automatically return to normal operation if no action is performed for 5 seconds.

PROGRAMMABLE FUNCTIONS

■ **Calling Alert**

Calling alert tones help identify yourself to party members and inform them that you are calling. Your dealer can set up your transceiver with 1 of 10 calling alert tones. If each party member uses a different tone, it is easy to know who is calling. To make a call, press and hold the **PTT** switch, then press the key programmed as Calling Alert.

- Release the key to end the tone.

■ **Key Lock**

Press and hold this key for 2 second to lock/ unlock the transceiver keys.
The following keys/ functions can still be used when Key Lock is active:
Key Lock, **Monitor, Monitor Momentary**, **PTT**, **Squelch Off**, **Squelch Off Momentary**, and **Volume**.

■ **Monitor**

On digital mode, momentarily press this key to deactivate Common ID signaling. Press the key again to return to normal operation. Squelch will open with any dPMR446 signals received regardless of the Common ID setting.
On analog mode, momentarily press this key to deactivate QT or DQT signaling. Press the key again to return to normal operation.

■ **Monitor Momentary**

On digital mode, press and hold this key to deactivate Common ID signaling. Release the key to return to normal operation. Squelch will open with any dPMR446 signals received regardless of the Common ID setting.
On analog mode, press and hold this key to deactivate QT or DQT signaling. Release the key to return to normal operation.

■ **Scan**

Press this key to start scanning the transceiver channels.
Priority Scan: The Priority channel is a channel that is given first priority to while scanning. The Priority channel is set by your dealer.
Revert Channel: During Scan, pressing the **PTT** switch will automatically select the transceiver's Revert channel and you will begin transmitting. Your dealer can program the Revert channel using one of the following methods:

- Last Called + Selected
- Selected
- Selected + Talkback
- Priority
- Priority + Talkback

■ **Scan 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 2 seconds.

■ **Scrambler**

The Scrambler function allows you to hold a conversation in complete privacy. When the Scrambler function is activated, any other party that is listening to 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** (**Side 2** key default)

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

■ **Zone** (**Side 1** key default)

Press to select the Digital mode and Analog mode.

BACKGROUND OPERATIONS

TIME-OUT TIMER (TOT)

The Time-out Timer prevent callers from using a channel for an extended duration. If you continuously transmit for the duration programmed by your dealer (default is 60 seconds), 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:

- Battery Saver is disabled during a call on digital mode.
- 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.

CHANNEL ANNUNCIATION

When changing the channel, the transceiver will announce the newly selected channel number. Likewise, the transceiver will announce the current channel after you turn the transceiver power ON. (Channel Annunciation can be activated or deactivated by your dealer.)

VOICE OPERATED TRANSMISSION (VOX)

VOX operation allows you to transmit hands-free. VOX 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 turn orange.
- When the **Side 1** key is released, the transceiver will announces the VOX Gain level.

4 Press the **Side 1** key to set the VOX Gain level, from 1 (least sensitive) to 10 (most sensitive).

- 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 **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 then ON again to activate VOX.

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.
- The transceiver will automatically return to normal operation if no action is performed for 20 seconds.

ALL RESET MODE

At some point in time, you may desire to reset the transceiver settings to their default values. This function will reset all channels to their default frequencies and Common ID (Digital)/ QT/DQT (Analog), the VOX function to its default status, and all keys to their default functions.

To reset the transceiver:

1 With the transceiver power OFF, press and hold the **PTT** switch, the **Side 1** key, and the **Side 2** key while turning the transceiver power ON.

- Continue to hold the keys for 2 seconds, until the LED lights orange.

2 Release the keys.

- The transceiver beep sounds and returns to normal operation.
- If the keys are released before the LED lights orange, All Reset Mode will cancel.

TROUBLESHOOTING GUIDE

Problem	Solution
Cannot turn the transceiver power ON.	• The battery pack is discharged. Recharge the battery pack or replace the batteries. • The battery pack may not be installed correctly. Remove the battery pack and install again.
Battery deterioration occurs when a battery pack is charged repeatedly.	• The battery pack life is finished. Replace the battery pack with a new one.
Cannot talk to or hear other members in your group.	• Make sure you are using the same frequency and Common ID (Digital)/ QT/DQT (Analog) settings as the other members in your group. • Other group members may be too far away. Make sure you are within range of the other transceivers.
Other voices (besides group members') are present on the channel.	• Change the Common ID (Digital)/ QT/DQT(Analog) settings. Make sure all group members change the settings on their transceivers to match the new Common ID/ QT/DQT setting.

Note:

◆ If the problem persists, contact a KENWOOD authorized service center for repairs. You may return your transceiver for service to the authorized KENWOOD dealer from whom you purchased it or any authorized KENWOOD service center.

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