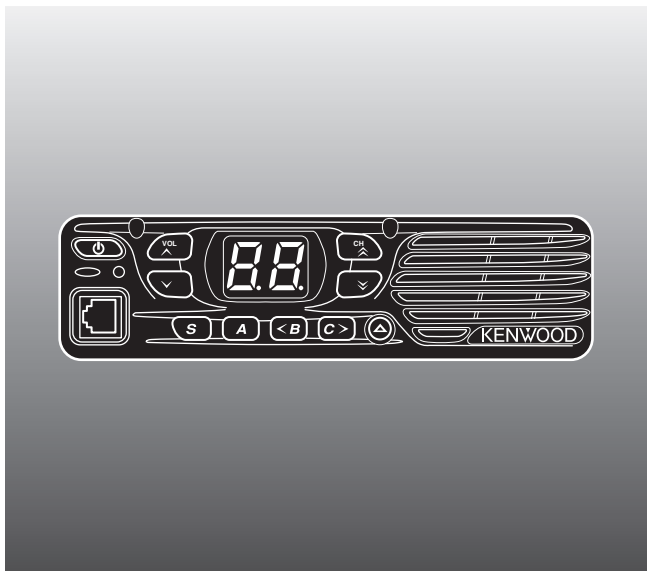


KENWOOD

**TK-7302V/ TK-8302U
TK-7302H/ TK-8302H
TK-7302HV/ TK-8302HU**



**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

© B62-2167-00 (K,K2)
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VHF FM TRANSCEIVER/ UHF FM TRANSCEIVER

TK-7302V/ TK-8302U

TK-7302H/ TK-8302H

TK-7302HV/ TK-8302HU

INSTRUCTION MANUAL

Kenwood Corporation

ENGLISH

THANK YOU

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

This instruction manual covers only the basic operations of your portable radio. Ask your dealer for information on any customized features they may have added to your radio.

NOTICES TO THE USER

- ◆ Government law prohibits the operation of unlicensed 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.



WARNING

- ◆ **EXPLOSIVE ATMOSPHERES (GASES, DUST, FUMES, etc.)**
Turn OFF your transceiver while taking on fuel or while parked in gasoline service stations. Do not carry spare fuel containers in the trunk of your vehicle if your transceiver is mounted in the trunk area.
- ◆ **INJURY FROM RADIO FREQUENCY TRANSMISSIONS**
Do not operate your transceiver when somebody is either touching the antenna or standing within 2 to 3 feet (60 to 90 cm) of it, to avoid the possibility of radio frequency burns or related physical injury.
- ◆ **DYNAMITE BLASTING CAPS**
Operating the transceiver within 500 feet (150 m) of dynamite blasting caps may cause them to explode. Turn OFF your transceiver when in an area where blasting is in progress, or where "TURN OFF TWO-WAY RADIO" signs have been posted. If you are transporting blasting caps in your vehicle, make sure they are carried in a closed metal box with a padded interior. Do not transmit while the caps are being placed into or removed from the container.

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

Observe the following precautions to prevent fire, personal injury, and transceiver damage.

- Do not attempt to configure the transceiver while driving; it is too dangerous.
- Do not disassemble or modify the transceiver for any reason.
- Do not expose the transceiver to long periods of direct sunlight, nor place it near heating appliances.
- If an abnormal odor or smoke is detected coming from the transceiver, switch the transceiver power off immediately, 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 use options not specified by **Kenwood**.



CAUTION

- ◆ The transceiver operates in 12 V negative ground systems only! Check the battery polarity and voltage of the vehicle before installing the transceiver.
- ◆ Use only the supplied DC power cable or a **Kenwood** optional DC power cable.
- ◆ Do not cut and/or remove the fuse holder on the DC power cable.



WARNING

For passenger safety, install the transceiver securely using the supplied mounting bracket and screw set so the transceiver will not break loose in the event of a collision.

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GETTING STARTED

Note: The following instructions are for use by your **Kenwood** dealer, an authorized **Kenwood** service facility, or the factory.

SUPPLIED ACCESSORIES

Carefully unpack the transceiver. We recommend that you identify the items listed below before discarding the packing material. If any items are missing or have been damaged during shipment, file a claim with the carrier immediately.

DC power cable (with fuses)	1
• 10 A fuse (TK-7302V/ TK-8302U)	2
• 15 A fuse (TK-7302H/ TK-7302HV/ TK-8302H/ TK-8302HU)	2
Mounting Bracket	1
Screw set	
• 5 x 16 mm self-tapping screw	4
• Hex-headed screw with washer	4
• Spring washer	4
• Flat washer	4
Microphone (with cable)	
• KMC-30 (TK-7302H/ TK-8302H)	1
• KMC-35 (TK-7302V/ TK-7302HV/ TK-8302U/ TK-8302HU)	1
Microphone hanger (with 4 x 16 mm self-tapping screws)	1
Instruction manual	1

PREPARATION



WARNING

Various electronic equipment in your vehicle may malfunction if they are not properly protected from the radio frequency energy which is present while transmitting. Typical examples include electronic fuel injection, anti-skid braking, and cruise control. If your vehicle contains such equipment, consult the dealer for the make of vehicle and enlist his/her aid in determining if they will perform normally while transmitting.

■ Power Cable Connection



CAUTION

The transceiver operates in 12 V negative ground systems only! Check the battery polarity and voltage of the vehicle before installing the transceiver.

- 1 Check for an existing hole, conveniently located in the firewall, where the power cable can be passed through.
 - If no hole exists, use a circle cutter to drill a hole, then install a rubber grommet.
- 2 Run the power cable through the firewall and into the engine compartment.
- 3 Connect the red lead to the positive (+) battery terminal and the black lead to the negative (-) battery terminal.
 - Place the fuse as close to the battery as possible.

- 4 Coil the surplus cable and secure it with a retaining band.
 - Be sure to leave enough slack in the cables so the transceiver can be removed for servicing while keeping the power applied.

■ Installing the Transceiver



WARNING

For passenger safety, install the transceiver securely using the supplied mounting bracket and screw set, so the transceiver will not break loose in the event of a collision.

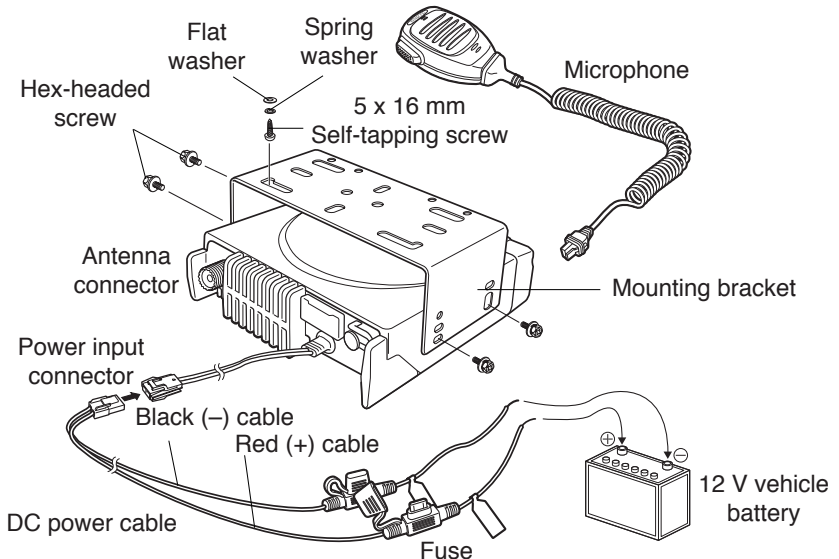
Note: Before installing the transceiver, check how far the mounting screws will extend below the surface. When drilling mounting holes, be careful not to damage vehicle wiring or parts.

- 1 Mark the position of the holes in the dash, using the mounting bracket as a template. Using a 4.2 mm (5/32 inch) drill bit, drill the holes, then attach the mounting bracket using the supplied screws.
 - Mount the transceiver within easy reach of the user and where there is sufficient space at the rear of the transceiver for cable connections.
- 2 Connect the antenna and the supplied power cable to the transceiver.
- 3 Slide the transceiver into the mounting bracket and secure it using the supplied hex-headed screws.
- 4 Mount the microphone hanger in a location where it will be within easy reach of the user.
 - The microphone and microphone cable should be mounted in a place where they will not interfere with the safe operation of the vehicle.



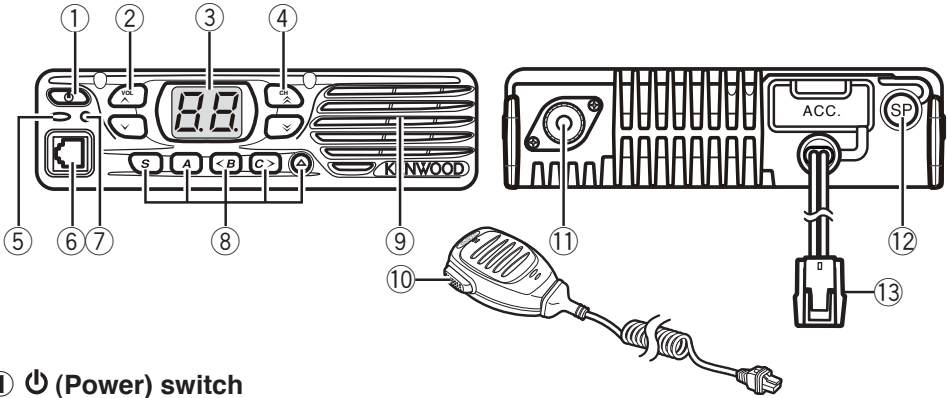
CAUTION

When replacing the fuse in the DC power cable, be sure to replace it with a fuse of the same value. Never replace a fuse with one that is rated with a higher value.



GETTING ACQUAINTED

FRONT/REAR PANEL



- ① Power switch**
Press to switch the transceiver ON or OFF.
- ② ^ / v keys**
Press to activate their programmable functions {page 4}.
- ③ Display**
Refer to page 4.
- ④ ^ / v keys**
Press to activate their programmable functions {page 4}.
- ⑤ TX/RX Indicator**
Lights red while transmitting. Lights green while receiving a signal. Flashes orange when receiving an optional signaling call.
- ⑥ Microphone jack**
Insert the microphone plug into this jack.
- ⑦ Status Indicator**
Lights during a specified mode, based on dealer programming.
- ⑧ S / A / <B / C> / Δ keys**
Press to activate their programmable functions {page 4}.
- ⑨ Speaker**
Internal speaker.
- ⑩ PTT switch**
Press this switch, then speak into the microphone to call a station.
- ⑪ Antenna connector**
Connect the antenna to this connector.
- ⑫ External speaker jack**
Connect an external speaker to this jack.
- ⑬ Power input connector**
Connect the DC Power Cable to this connector.

DISPLAY



The display shows the channel number and various modes of operation.

The center and right side dots on the display can be programmed to indicate specific modes of operation, as listed below.

- AUX
- Channel Delete/Add
- Horn Alert
- Lone Worker
- Operator Selectable Tone
- Priority Channel
- Scrambler
- Talk Around
- Zone Delete/Add

PROGRAMMABLE FUNCTIONS

The \wedge , \vee , $\hat{\wedge}$, $\hat{\vee}$, **S**, **A**, **<B, C>**, and \blacktriangle keys can be programmed with the functions listed below. Ask your dealer for details on these functions.

- None
- 2-tone Encode
- AUX
- Autodial
- Channel Down
- Channel Entry
- Channel Up
- Direct Zone Channel ¹
- Display Brightness
- Emergency ²
- Horn Alert
- Lone Worker
- Monitor
- Monitor Momentary
- Operator Selectable Tone
- Public Address
- Scan Del/Add
- Scan On/Off
- Scrambler
- Send the GPS Data
- Status 1
- Status 2
- Squelch Level
- Squelch Off
- Squelch Off Momentary
- Talk Around
- Volume Down
- Volume Up
- Zone Down
- Zone Up

¹ Direct Zone Channel can be programmed only on the **S**, **A**, **<B, C>**, and \blacktriangle keys.

² Emergency can be programmed only on the \blacktriangle key.

BASIC OPERATIONS

SWITCHING POWER ON/ OFF

Press **⏻** to switch the transceiver ON.

- A beep sounds and the display illuminates.
- If the Transceiver Password function is programmed, “PS” will appear on the display when the power is turned ON. Refer to “Transceiver Password”, below.

Press **⏻** again to switch the transceiver OFF.

■ Transceiver Password

To enter the password:

- 1 Press **↗/↘** to select a digit.
 - When using a keypad, simply enter the password digits and proceed to step 3.
- 2 Press **C>** to accept the entered digit and move to the next digit.
 - Press **A** or **#** to delete an incorrect character. Press and hold **A** or **#** to delete all characters.
 - Repeat steps 1 and 2 to enter the entire password.
- 3 Press **S** or ***** to confirm the password.
 - If you enter an incorrect password, the transceiver remains locked.

ADJUSTING THE VOLUME

Press the **Volume Up** key to increase the volume. Press the **Volume Down** key to decrease the volume.

If Squelch Off has been programmed onto a key, you can use that function to listen to background noise while adjusting the volume level.

SELECTING A ZONE AND CHANNEL

Select the desired zone and channel using the keys programmed as **Zone Up/ Zone Down** and **Channel Up/ Channel Down**.

- “G1” (Zone 1) appears on the display.

TRANSMITTING/ RECEIVING

- 1 Select your desired zone and channel.
- 2 Press microphone **PTT** switch and speak into the microphone to transmit. Release the **PTT** switch to receive.
 - For best sound quality at the receiving station, hold the microphone approximately 1.5 inches (3 ~ 4 cm) from your mouth.

SCAN

Scan monitors for signals on the transceiver channels. While scanning, the transceiver checks for a signal on each channel and only stops if a signal is present.

To start/stop scanning, press the key programmed as **Scan On/Off**.

- “Sc” appears on the display during Scan.
- When a signal is detected, Scan pauses at that channel. The transceiver will remain on the busy channel until the signal is no longer present, at which time Scan resumes.

Note: To use Scan, there must be at least 2 channels added to the scanning sequence.

PRIORITY SCAN

If a Priority channel has been programmed, the transceiver will automatically change to the Priority channel when a call is received on that channel, even if call is being received on a normal channel.

- “P” appears on the display during Priority Scan.

TEMPORARY CHANNEL LOCKOUT

During scan, you can temporarily remove specific channels from the scanning sequence by pressing the key programmed as **Scan Delete/Add** while Scan is paused at the undesired channel. To temporarily remove a zone, press and hold **Scan Delete/Add** while Scan is paused at a channel in the undesired zone.

- The channel/zone is no longer scanned. However, when scanning is ended and restarted, the Scan settings return to normal.

SCAN DELETE/ADD

You can add and remove zones and/or channels to and from your scan list.

- 1 Select your desired zone and/or channel.
- 2 Press the key programmed as **Scan Delete/Add** to remove a channel or press and hold the key for approximately 1 second to remove a zone.

SCAN REVERT

The Scan Revert channel is the channel selected when you press the **PTT** switch to transmit during scan. Your dealer can program one of the following types of Scan Revert channels:

- **Selected:** The last channel selected before scan.
- **Selected + Talkback:** Same as “Selected”, plus you can respond to calls on the channel at which scan is paused.
- **Priority:** The Priority channel.
- **Priority + Talkback:** Same as “Priority”, plus you can respond to calls on the channel at which scan is paused.
- **Last Called + Selected:** The last channel on which you receive a call.

DTMF CALLS

Note: To make DTMF calls, you must use an optional microphone with a DTMF keypad.

STORE & SEND

- 1 Enter up to 16 digits using the keypad.
- 2 Press the **PTT** switch to transmit the entered digits.

MANUAL DIALING

- 1 Press and hold the **PTT** switch.
- 2 Enter the desired digits using the keypad.
 - If Keypad Auto-PTT is enabled by your dealer, you do not need to press the **PTT** switch to transmit; you can make the call simply by pressing the keys.

AUTODIAL

Autodial allows you to quickly call DTMF numbers that have been programmed onto your transceiver.

- 1 Press the microphone * key.
 - “Ad” appears on the display.
- 2 Enter the desired memory location number (1 ~ 9).
- 3 Press the **PTT** switch to make the call.

REDIALING

- 1 Press the microphone * key.
 - “Ad” appears on the display.
- 2 Press the microphone **0** key.
 - If there is no data in the redial memory, an error tone will sound.
- 3 Press the **PTT** switch to make the call.

Note: Switching the transceiver power OFF clears the redial memory.

STUN

This function is used when a transceiver is stolen or lost. When the transceiver receives a call containing a stun code, the transceiver becomes disabled. The stun code is cancelled when the transceiver receives a call with a revive code.

- “St” appears on the display while the transceiver is stunned.

SIGNALING

QUIET TALK (QT)/ DIGITAL QUIET TALK (DQT)

Your dealer may have programmed QT or DQT signaling on your transceiver channels. A QT tone/ DQT code is a sub-audible tone/code which allows you to ignore (not hear) calls from other parties who are using the same channel.

OPTIONAL SIGNALING

Your dealer may also program several types of optional signaling for your transceiver channels.

2-tone Signaling: 2-tone Signaling opens the squelch only when your transceiver receives a call containing matching 2 tones.

DTMF Signaling: DTMF Signaling opens the squelch only when the transceiver receives a call containing a matching DTMF code.

FleetSync Signaling: Refer to “SELCALL (SELECTIVE CALLING)” on page 9.

MDC-1200: MDC-1200 is a data system using Audio Frequency Shift Keying (AFSK). Transceivers communicate at a 1200 baud rate, using 1200 Hz and 1800 Hz tones.

OPERATOR SELECTABLE TONE (OST)

You can change the preset encode and decode tones for the selected channel. Up to 16 OST pairs can be pre-programmed by your dealer.

- 1 Select your desired channel.
- 2 Press the key programmed as **Operator Selectable Tone**.
 - “ot” appears on the display, followed by the current OST number.
- 3 Press **<B** and **>C** to select the desired OST number.
- 4 Use the transceiver the same as in a regular call; press the **PTT** switch to transmit and release it to receive.
- 5 To exit OST mode and return to the preset encode and decode tones, press **S**.

FleetSync: ALPHANUMERIC 2-WAY PAGING FUNCTION

FleetSync is an Alphanumeric 2-way Paging Function and is a protocol owned by **Kenwood** Corporation.

Note: If set up by your dealer, your transceiver may use the MDC-1200 feature in place of FleetSync. MDC-1200 and FleetSync cannot be operated simultaneously.

SELCALL (SELECTIVE CALLING)

A Selcall is a voice call to a particular station or to a group of stations.

■ Transmitting

- 1 Select your desired zone and channel.
- 2 Press the **<B** and **C>** keys to select the ID of the station you want to call, or enter a station ID using a DTMF keypad.
- 3 Press the microphone **PTT** switch and begin your conversation.

■ Receiving

If enabled by your dealer, an alert tone will sound and the LED will blink when a Selcall has been received.

To respond to the call, press the **PTT** switch and speak into the microphone.

■ Identification Codes

An ID code is a combination of a 3-digit Fleet number and a 4-digit ID number. Each transceiver must have its own Fleet and ID number.

Note: The ID range may be limited by programming.

PAGING CALL

- 1 Select your desired zone and channel.
- 2 Press and hold the key programmed as **Paging Call** for 1 second to transmit your PTT List ID, to request a call.

STATUS MESSAGE

You can transmit pre-programmed status messages by pressing the keys programmed as **Status 1** and **Status 2**.

Status messages are 2-digit codes ranging from 10 to 99 (80 ~ 99 are reserved for special messages), containing messages of up to 16 alphanumeric characters.

GPS REPORT

If a GPS unit (NMEA-0183 format) is installed on your transceiver, you can press the key programmed as **Send the GPS data** to send your location data.

ADVANCED OPERATIONS

EMERGENCY CALLS

If your transceiver has been programmed with the Emergency function, you can make emergency calls.

- 1 Press and hold the key programmed as **Emergency**.
 - Depending on the delay time programmed into your transceiver, the length of time you must hold the **Emergency** key will vary.
 - When the transceiver enters Emergency mode, the transceiver will change to the Emergency channel and begin transmitting based on how the transceiver is set up.
- 2 To exit Emergency mode, press and hold the **Emergency** key again.
 - If the Emergency mode completes the preset number of cycles, Emergency mode will automatically end and the transceiver will return to normal.

■ Lone Worker Mode

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

Press and hold the key programmed as **Lone Worker** for 2 seconds to toggle the Lone Worker function ON or OFF.

- “Ln” appears on the display while Lone Worker is activated.

TALK AROUND

During interruptions in service (such as a power failure), you can continue to communicate by using the Talk Around feature. Talk Around allows you to communicate directly with other transceivers without the use of a repeater, as long as they are not too far away or there are no geographical obstacles in the way.

Press the key programmed as **Talk Around** to toggle the Talk Around function ON or OFF.

- “tA” appears on the display while Talk Around is activated.

VOICE SCRAMBLER

Note: Your dealer can activate the built-in scrambler function, or they can add a more secure optional scrambler board to your transceiver. Ask your dealer for details.

The built-in scrambler prevent others from easily listening in on your calls. When activated, the transceiver distorts your voice so that anybody listening to your conversation will not be able to clearly hear what you are saying.

In order for members of your own group to hear your call while you are using the scrambler, all members must activate their scrambler functions.

Press the key programmed as **Scrambler** to toggle the Scrambler function ON or OFF.

- “Sr” appears on the display while the Scrambler is activated.

When using an optional scrambler board, you can change the scrambler code:

- 1 Press and hold the key programmed as **Scrambler** for 2 seconds.
 - “co” (code) appears on the display, followed by the current scrambler code.
- 2 Press **<B** and **>C** to select your desired scrambler code.
- 3 Press **S** or **▲** to store the new setting.
 - After changing your scrambler code, be sure to inform all of your group members of the new code so they can also reset their transceivers. The scrambler function will not work with transceivers set up with different scrambler codes.

MONITOR/ SQUELCH OFF

You can use the key programmed as **Monitor** or **Squelch Off** to listen to weak signals that you cannot hear during normal operation and to adjust the volume when no signals are present on your selected channel.

Your dealer can program a key with one of 4 functions:

- **Monitor:** Press to deactivate QT, DQT, DTMF, or FleetSync Signaling. Press again to return to normal operation.
- **Monitor Momentary:** Press and hold to deactivate QT, DQT, DTMF, or FleetSync Signaling. Release to return to normal operation.
- **Squelch Off:** Press to hear background noise. Press again to return to normal operation.
- **Squelch Off Momentary:** Press and hold to hear background noise. Release to return to normal operation.

■ Squelch Level

If a key has been programmed as **Squelch Level**, you can readjust your transceiver’s squelch level:

- 1 Press the key programmed as **Squelch Level**.
 - “SL” appears on the display, followed by the current squelch level.
- 2 Press **<B** and **>C** to select the desired squelch level from 0 to 9.
- 3 Press **S** or **▲** to store the new setting.

PUBLIC ADDRESS (PA)

The PA system can only be used with an optional KAP-2 unit and external speaker.

- 1 Press the key programmed as **Public Address** to activate the Public Address function.
 - “PA” appears on the display.
- 2 Press and hold the **PTT** switch, then speak into the microphone to make your address through the external speaker.
- 3 Press the **Public Address** key again to exit Public Address.

HORN ALERT

The Horn Alert function can only be used with an optional KAP-2 unit.

Press the key programmed as **Horn Alert** to toggle the Horn Alert function ON or OFF.

- “HA” appears on the display while Horn Alert is activated.

BACKGROUND OPERATIONS

TIME-OUT TIMER (TOT)

The Time-out Timer is used to prevent you from using a channel for an extended duration. If you continuously transmit for a preset time, the transceiver will stop transmitting and an alert tone will sound. Release the **PTT** switch.

AUXILIARY PORT

Press the key programmed as **AUX** to activate the auxiliary port. The auxiliary port is used with optional boards.

DISPLAY BRIGHTNESS

You can toggle the display brightness between high and low by pressing the key programmed as **Display Brightness**.

DIRECT ZONE CHANNEL

Press the key programmed as **Direct Zone Channel** to immediately select the lowest channel of the lowest zone.

BUSY CHANNEL LOCKOUT (BCL)

If BCL is set up by your dealer, you will be unable to transmit if the channel is already in use. Use a different channel or wait until the channel becomes free.

PTT ID

PTT ID is the transceiver unique ID code which is sent each time the **PTT** switch is pressed and/or released.

COMPANDER

If programmed by your dealer for a channel, the compander will remove excessive noise from transmitted signals, to provide higher clarity of signals.

VOICE ANNOUNCEMENT

When changing the channel, an audio voice will announce the new channel.

KENWOOD

Terminal Description

ACC (D-SUB 15 Pin Connector)

Pin NO.	Pin Name	Description	Specification	I/O	Notes
1	SB	DC Power Output	13.6 V \pm 15 %	O	
2	IGN	Ignition signal Input	Power ON: more than 8V Power OFF: less than 6V	I	
3	PA	Loudspeaker Output	4 Ω	O	
4	DO	Audio Output	500 mV p-p	O	
5	DI	Audio Input	5 k Ω	I	
6	FNC1	Programmable	High Impedance	I/O	
7	FNC2	Programmable	High Impedance	I/O	
8	FNC3	Programmable	High Impedance	I/O	
9	FNC4	Programmable	High Impedance	I/O	
10	FNC5	Programmable	High Impedance	I/O	
11	FNC6	Programmable	High Impedance	I/O	
12	5C	DC Power Output	5 V, Max 100 mA	O	
13	HR1	Horn Alert Signal Output	Max 3A	O	
14	HR2	Horn Alert Signal Output	Max 3A	O	
15	GND	Ground	Ground	-	

Speaker Jack (3.5 mm phone jack) 4W/ 4 Ω

Pin NO.	Pin Name	Description	Specification	I/O	Notes
1	SPO	External Speaker Output	4 Ω	O	
3	GND	Ground	Ground	-	

DC Input Connector

Pin NO.	Pin Name	Description	Specification	I/O	Notes
Red	B	DC Power Input	13.6 V \pm 15 %	I	
Black	GND	Ground	Ground	I	

Microphone Jack

Pin NO.	Pin Name	Description	Specification	I/O	Notes
1	MBL	Backlight of Microphone	-	O	
2	SB	DC Power Output	13.6 V \pm 15 %	O	
3	GND	Ground	Ground	-	
4	PTT	PTT / PC Serial Data from radio	High Impedance	I	
5	ME	MIC Ground	Ground	-	
6	MIC	MIC Signal Input	600 Ω	I	
7	HOOK	Hook / PC Serial Data to radio	High Impedance	I	
8	DM	MIC Data Detection	High Impedance	I/O	

Antenna Connector
Impedance is 50 Ω .

MANDATORY SAFETY INSTRUCTIONS TO INSTALLERS AND USERS

- Use only manufacturer or dealer supplied antennas.
- Antenna Minimum Safe Distance: **180 cm (6 feet), 50% duty Cycle.**
- Antenna Gain: **0 dBd** referenced to a dipole.

The Federal Communications Commission has adopted a safety standard for human exposure to RF (Radio Frequency) energy which is below the OSHA (Occupational Safety and Health Act) limits.

- Antenna Mounting: The antenna supplied by the manufacturer or radio dealer must not be mounted at a location such that during radio transmission, any person or persons can come closer than the above indicated minimum safe distance to the antenna, i.e. **180 cm (6 feet), 50% duty Cycle.**
- To comply with current FCC RF Exposure limits, the antenna must be installed at or exceeding the minimum safe distance shown above, and in accordance with the requirements of the antenna manufacturer or supplier.
- Vehicle installation: The antenna can be mounted at the center of a vehicle metal roof or trunk lid, if the minimum safe distance is observed.
- Base Station Installation: The antenna should be fixed-mounted on an outdoor permanent structure. RF Exposure compliance must be addressed at the time of installation.

Antenna substitution: Do not substitute any antenna for the one supplied or recommended by the manufacturer or radio dealer.

You may be exposing person or persons to excess radio frequency radiation. You may contact your radio dealer or the manufacturer for further instructions.



Maintain a separation distance from the antenna to person(s) of at least **180 cm (6 feet), 50% duty Cycle.**

“This transmitter is authorized to operate with a maximum duty factor of 50%, in typical push-to-talk mode, for satisfying FCC RF exposure compliance requirements.”

You, as the qualified end-user of this radio device must control the exposure conditions of bystanders to ensure the minimum separation distance (above) is maintained between the antenna and nearby persons for satisfying RF Exposure compliance. The operation of this transmitter must satisfy the requirements of Occupational/Controlled Exposure Environment, for work-related use, transmit only when person(s) are at least the minimum distance from the properly installed, externally mounted antenna. Transmit only when people outside the vehicle are at least the recommended minimum lateral distance away from the antenna/vehicle.