

KENWOOD

TH-D72A/ TH-D72E



144/440 MHz FM DUAL BANDER/
144/430 MHz FM DUAL BANDER

INSTRUCTION MANUAL

144/440 MHz FM DOUBLE BANDE/
144/430 MHz FM DOUBLE BANDE

MODE D'EMPLOI

DOBLE BANDA DE 144/440 MHz EN FM/
DOBLE BANDA DE 144/430 MHz EN FM

MANUAL DE INSTRUCCIONES

Only basic operations are explained in this instruction manual. For a detailed explanation on the operations, refer to the PDF file supplied on the CD-ROM.

Seules les fonctions de base sont expliquées dans ce mode d'emploi. Pour le détail sur les autres opérations, reportez-vous au fichier PDF à votre disposition sur le CD-ROM.

En este manual de instrucciones solamente se explican las operaciones básicas. Si desea obtener una descripción detallada de las operaciones, consulte el archivo PDF correspondiente incluido en el CD-ROM.

Kenwood Corporation

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144/440 MHz FM DUAL BANDER/
144/430 MHz FM DUAL BANDER

TH-D72A/ TH-D72E

INSTRUCTION MANUAL

Kenwood Corporation

ENGLISH

NOTIFICATION

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

The use of the warning symbol ⓘ means the equipment is subject to restrictions of use in certain countries.

This equipment requires a licence and is intended for use in the countries as below.

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

ISO3166

THANK YOU

We are grateful you decided to purchase this **Kenwood** FM transceiver. **Kenwood** always provides Amateur Radio products which surprise and excite serious hobbyists. This transceiver is no exception. **Kenwood** believes that this product will satisfy your requirements for both voice and data communications.

The models listed below are covered by this manual.

TH-D72A: 144/440 MHz FM Dual Bander (The Americas)

TH-D72E: 144/430 MHz FM Dual Bander (Europe)

FEATURES

This transceiver has the following main features:


- A built-in GPS receiver unit.
- A built-in TNC which conforms to the AX.25 protocol. With a portable computer, it allows you to easily enjoy Packet operation.
- Includes a program for dealing with data formats supported by Automatic Packet/ Position Reporting System (APRS®).
- Contains a total of 1000 Memory channels to program frequencies and other various data. Each Memory channel can be named using up to 8 alphanumeric characters.
- Continuous Tone Coded Squelch System (CTCSS) or Digital Code Squelch (DCS) rejects unwanted calls from other stations.

WRITING CONVENTIONS FOLLOWED IN THIS MANUAL

The writing conventions described below have been followed to simplify instructions and avoid unnecessary repetition.

Instruction	Action
Press [KEY].	Momentarily press KEY.
Press [KEY] (1s).	Press and hold KEY for 1 second or longer.
Press [KEY1], [KEY2].	Press KEY1 momentarily, release KEY1, then press KEY2.
Press [F], [KEY].	Press the F key to enter Function mode, then press KEY to access its secondary function.
Press [KEY] + Power ON.	With the transceiver power OFF, press and hold KEY while turning the transceiver power ON.

Information on Disposal of Old Electrical and Electronic Equipment and Batteries (applicable for EU 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.

NOTICES TO THE USER

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.

WHEN CONDENSATION OCCURS INSIDE THE TRANSCEIVER

Condensation may occur inside the transceiver in such a case where the room is warmed using a heater on cold days or where the transceiver is quickly moved from a cold room to a warm room. When condensation occurs, the microcomputer and/or the transmit/receive circuits may become unstable, resulting in transceiver malfunction. If this happens, turn OFF the transceiver and just wait for a while. When the condensation droplets disappear, the transceiver will function normally.



ATTENTION: (USA only)

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

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

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

This product contains a CR Coin Cell Lithium Battery which contains Perchlorate Material – special handling may apply.

See www.dtsc.ca.gov/hazardouswaste/perchlorate

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.
- For safety reasons, we recommend that the AC adapter (for the battery charger) be connected to an easily accessible AC socket.



WARNING

Turn the transceiver power off in the following locations:

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



CAUTION

- Do not disassemble or modify the transceiver for any reason.
- Do not place the transceiver on or near airbag equipment while the vehicle is running. When the airbag inflates, the transceiver may be ejected and strike the driver or passengers.
- Do not transmit while touching the antenna terminal or if any metallic parts are exposed from the antenna covering. Transmitting at such a time may result in a high-frequency burn.
- If an abnormal odor or smoke is detected coming from the transceiver, switch the transceiver power off immediately, remove the battery pack from the transceiver, and contact your **Kenwood** dealer.
- Use of the transceiver while you are driving may be against traffic laws. Please check and observe the vehicle regulations in your area.
- Do not expose the transceiver to extremely hot or cold conditions.



CAUTION

- Do not carry the battery pack (or battery case) with metal objects, as they may short the battery terminals.
- When operating the transceiver in areas where the air is dry, it is easy to build up an electric charge (static electricity). When using a earphone accessory in such conditions, it is possible for the transceiver to send an electric shock through the earphone and to your ear. We recommend you use only a speaker/microphone in these conditions, to avoid electric shocks.

Information concerning the battery pack:

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



DANGER

- **Do not disassemble or reconstruct battery!**
The battery pack has a safety function and protection circuit to avoid danger. If they suffer serious damage, the battery may generate heat or smoke, rupture, or burst into flame.
- **Do not short-circuit the battery!**
Do not join the + and – terminals using any form of metal (such as a paper clip or wire). Do not carry or store the battery pack in containers holding metal objects (such as wires, chain-necklace or hairpins). If the battery pack is short-circuited, excessive current will flow and the battery may generate heat or smoke, rupture, or burst into flame. It will also cause metal objects to heat up.
- **Do not incinerate or apply heat to the battery!**
If the insulator is melted, the gas release vent or safety function is damaged, or the electrolyte is ignited, the battery may generate heat or smoke, rupture, or burst into flame.
- **Do not 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.

**DANGER**

- **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.

**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 odour, 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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For a detailed explanation on transceiver operation, refer to the PDF file supplied on the CD-ROM.

Operation	File name
CONTENTS	00-CONTENTS-E.pdf
OPERATING THROUGH REPEATERS	01-REPEATER-E.pdf
MEMORY CHANNELS	02-MEMORY CHANNEL-E.pdf
SCAN	03-SCAN-E.pdf
CTSSS/ DCS/ CROSS TONE	04-CTCSS_DCS_CROSS TONE-E.pdf
DUAL TONE MULTI-FREQUENCY (DTMF)	05-DTMF-E.pdf
EchoLink®	06-EchoLink-E.pdf
OTHER OPERATIONS	07-OTHER OPERATIONS-E.pdf
GPS OPERATION	08-GPS-E.pdf
PACKET OPERATION	09-PACKET-E.pdf
APRS® OPERATION	10-APRS-E.pdf
TRANSCEIVER RESET	11-RESET-E.pdf
SKY COMMAND	12-SKY COMMAND (K TYPE)-E.pdf
WEATHER ALERT (K TYPE MODELS ONLY)	13-WEATHER ALERT (K TYPE)-E.pdf

Note: The Operations file is available in PDF file format. To read the file, you must use Adobe® Reader®.

PREPARATION

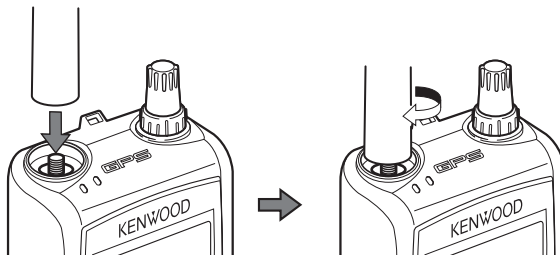
SUPPLIED ACCESSORIES

After carefully unpacking the transceiver, identify the items listed in the table below. We recommend you keep the box and packaging for shipping.

Item	Quantity
Antenna	1
Li-ion Battery Pack	1
AC adapter	1
AC power cable	1
Belt hook	1
USB cable	1
Warranty Card	1
Instruction manual	1
CD-ROM (For a detailed explanation on transceiver operations)	1

INSTALLING THE ANTENNA

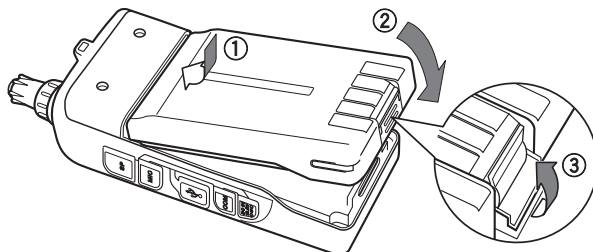
Hold the supplied antenna by its base, then screw it into the connector on the top panel of the transceiver until secure.



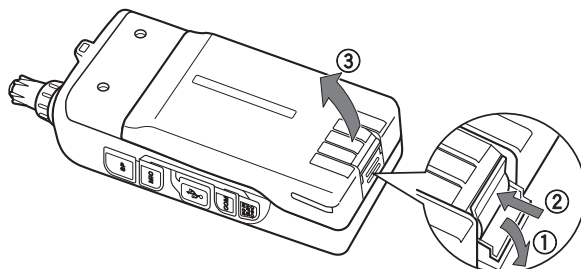
INSTALLING THE BATTERY PACK

Note: Because the battery pack is provided uncharged, you must charge the battery pack before using it with the transceiver. To charge the battery pack, refer to "CHARGING THE PB-45L BATTERY PACK" {page 4}.

- 1 Unlock (open) the safety catch located at the bottom of the battery pack.
- 2 Match the guides of the battery pack with the corresponding grooves on the upper rear of the transceiver, then firmly press the battery case to lock it in place.

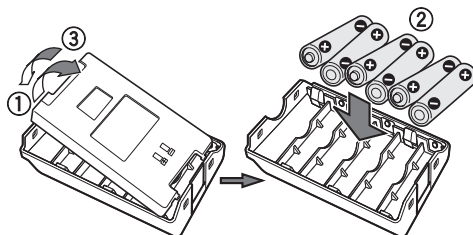


- 3 Flip the safety catch into place to prevent accidentally pressing the release latch and removing the battery pack.
- 4 To remove the battery pack, lift the safety catch, then press the release latch to unlock the battery pack. Lift the battery pack away from the transceiver.



INSTALLING ALKALINE BATTERIES

- 1 To open the optional BT-15 battery case lid, insert your thumb or finger into the hole on the top of the battery case, then pull the cover up.



- 2 Insert (or remove) six AAA (LR1) Alkaline batteries.
 - Be sure to match the battery polarities with those marked in the bottom of the battery case.

- 3 Align the two tabs at the bottom of battery case, then close the cover until the locking tabs on top click.
- 4 To install the battery case onto (or remove it from) the transceiver, follow steps 1 to 3 of "INSTALLING THE BATTERY PACK".

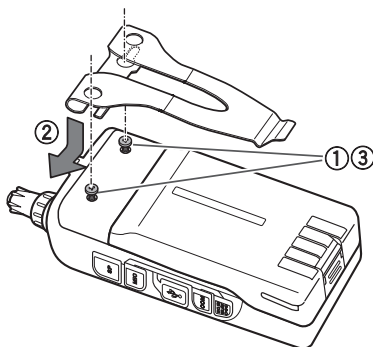
Note:

- ◆ Do not use Manganese batteries or Rechargeable batteries in place of Alkaline batteries.
 - ◆ Always replace all batteries at the same time. Mixing old and new batteries or mixing types (such as Alkaline with zinc carbon) will reduce the overall performance and could cause leakage or rupture.
 - ◆ Remove all batteries from the case when it is not expected to be in use for several months.
 - ◆ The voltage of new Alkaline batteries varies slightly, depending on the manufacturer. Thus, the high battery power indicator may not appear even though new Alkaline batteries are installed.
 - ◆ To lift the battery pack safety catch, use a piece of hardened plastic or metal, such as a screwdriver, that is no more than 6 mm wide and 1 mm thick. It is imperative that you place the implement under only the lip of the safety catch so that you do not damage the release latch.
-

INSTALLING THE BELT CLIP

If desired, you can install the supplied belt clip to the transceiver.

- 1 Loosely insert the two supplied screws into the holes on the back panel of the transceiver.



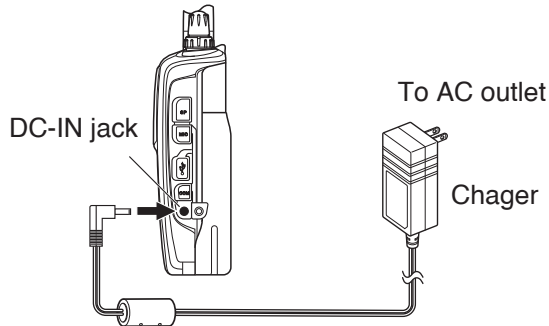
- 2 Slide the belt hook into position, under the screws.
- 3 Tighten the screws until secure.

Note: When the belt hook is not attached to the transceiver, remove the screws from the transceiver to avoid scratching other materials.

CHARGING THE PB-45L BATTERY PACK

The battery pack can be charged after it has been installed onto the transceiver. (The battery pack is provided uncharged for safety purposes.)

- 1 Confirm that the transceiver power is OFF.
 - While charging the battery pack, leave the transceiver power OFF.
- 2 Insert the charger plug into the DC IN jack of the transceiver.



- 3 Plug the charger into an AC wall outlet.
 - Charging starts.
- 4 It takes approximately 12 hours to charge an empty PB-45L Li-ion battery pack. After 12 hours, remove the charger plug from the transceiver DC IN jack.
- 5 Unplug the charger from the AC wall outlet.

Note:

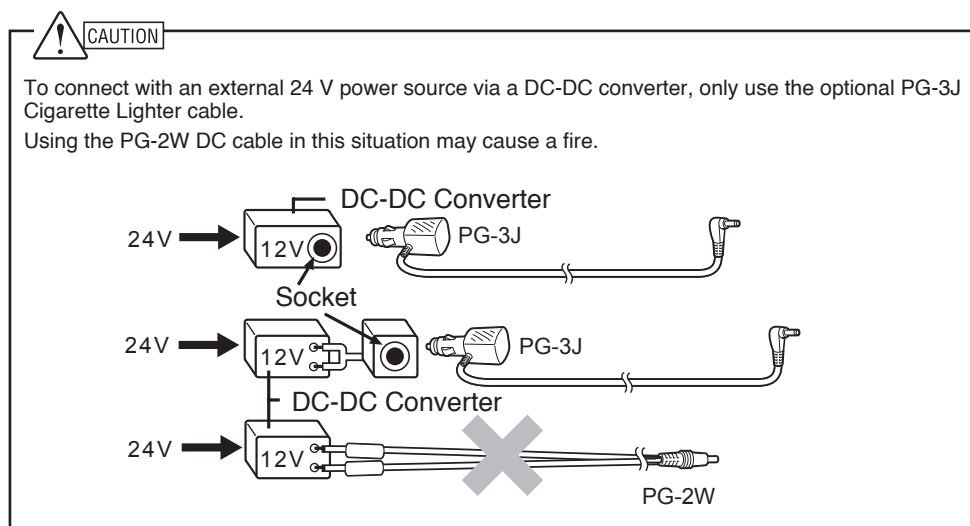
- ◆ Never leave the battery pack in direct sunlight.
- ◆ The transceiver becomes warm while charging the battery pack.
- ◆ While the battery pack is charged, the ambient temperature must be within 0°C ~ 40°C (32°F ~ 104°F). Otherwise, charging does not start. If the transceiver senses that the temperature is more than 60°C (140° F) during charging, the transceiver stops charging.
- ◆ Before recharging the battery pack, use the battery pack until the transceiver stops receiving.
- ◆ Do not plug the charger into the DC IN jack for more than 24 hours.
- ◆ Unplug the charger as soon as possible after the charging period is over.
- ◆ After the battery pack is charged, do not unplug and plug the charger into the AC outlet again. Unplugging the charger will reset the charging timer and the battery pack will be charged again. This could result in over-charging.
- ◆ If the battery pack is recharged repeatedly before the battery pack is not fully used, the memory effect (the battery pack will not allow the charger to recharge the battery to more than a certain voltage level) may occur. In this case, turn the transceiver ON until it stops receiving in order to discharge the battery pack, then recharge the battery pack as normal.
- ◆ If the battery pack is not used for a long time, the battery pack capacity temporarily decreases. In this case, charge the battery and use the battery pack until the transceiver stops receiving. Repeat this procedure several times. The battery pack should recover its capacity.
- ◆ If the charger is plugged into the DC IN jack before the battery pack is attached, turn the transceiver power ON and then OFF again to initiate charging.
- ◆ Exceeding the specified charge period shortens the useful life of the PB-45L battery pack.

- ◆ The provided charger is designed to charge only the PB-45L battery pack. Charging other models of battery packs may damage the charger and battery pack.
- ◆ Do not transmit while charging.
- ◆ When not in use, store the battery pack in a cool and dry place.
- ◆ Before charging the battery pack, ensure that the safety catch is firmly closed.
- ◆ Attention should be drawn to the environmental aspects of battery disposal.

CONNECTING TO A CIGARETTE LIGHTER SOCKET

To connect the transceiver to the cigarette lighter socket in your vehicle, use an optional PG-3J Cigarette Lighter cable.

When the PG-3J is connected to the cigarette lighter plug, the transceiver automatically starts charging the PB-45L battery pack. While you operate the transceiver, it charges the PB-45L battery pack in the background.



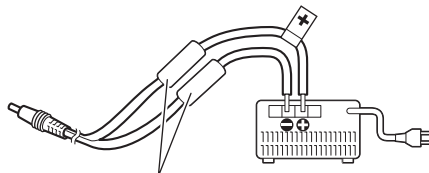
Note:

- ◆ Do not use the PG-2W to connect directly to a vehicle battery (12 V). Extensive voltage could result in damaging the transceiver.
- ◆ If the input voltage exceeds approximately 16.5 V, warning beeps sound and "DC ERR" appears.

CONNECTING TO A REGULATED POWER SUPPLY

To connect the transceiver to an appropriate regulated DC power supply, use an optional PG-2W DC cable.

- 1 Confirm that the power of both the transceiver and the DC power supply is OFF.
- 2 Connect the optional PG-2W DC cable to the DC power supply; the red lead to the positive (+) terminal, and the black lead to the negative (–) terminal.



Fuses (4 A)

- 3 Connect the barrel plug on the DC cable to the DC IN jack of the transceiver.
 - While a DC power supply is connected with the DC IN jack, the transceiver automatically initiates charging the PB-43N Ni-MH battery pack.

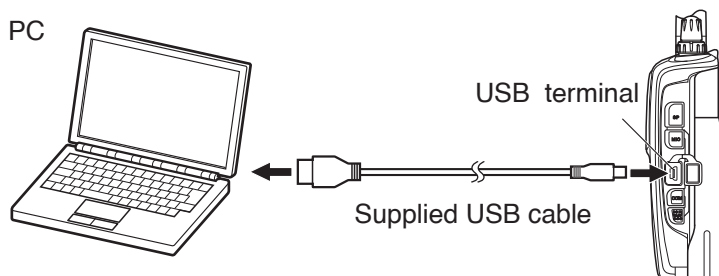
Note:

- ◆ If the DC power supply voltage is below 12.0 V DC, you may not be able to charge the PB-45L battery pack.
 - ◆ The supply voltage must be between 12.0 V and 16.0 V to prevent damaging the transceiver. If the input voltage exceeds approximately 16.5 V, warning beeps sound and “DC ERR” appears. Remove the DC IN jack plug immediately.
 - ◆ If the DC power supply voltage is above 14.5 V DC and “” (High Power) is selected, the “” icon blinks and the output power is gradually reduced to “” level (Medium Power) {page 95}.
-

CONNECTING TO A PC

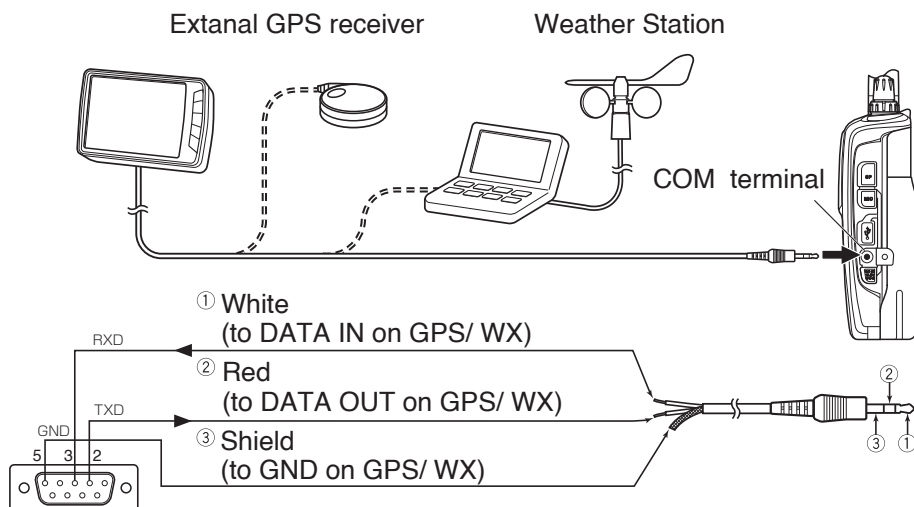
The USB connector allows you to directly connect to a computer by using a supplied USB. You must use the ARUA-10 software to control the USB audio system line of the PC, available at:

http://www.kenwood.com/i/products/info/amateur/software_download.html



CONNECTING TO AN EXTERNAL GPS UNIT OR WEATHER STATION

The GPS jack on this transceiver accepts a 2.5 mm (1/10") 3-conductor plug. If necessary, use the cable (service part: E30-3400-XX) to modify the cable end of external GPS receiver or Weather Station.



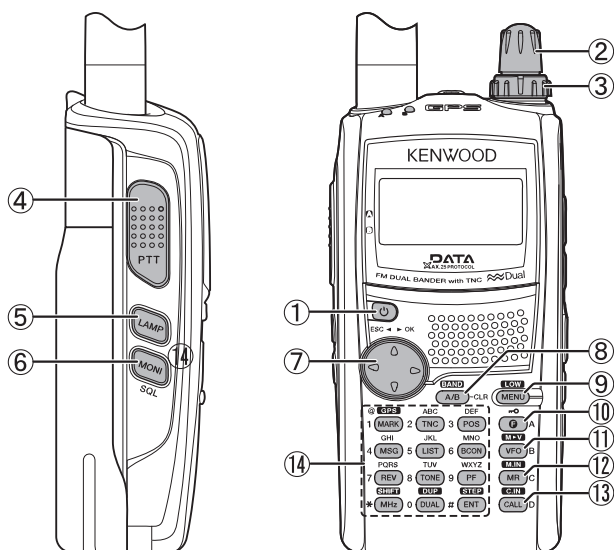
- Use a GPS receiver which conforms to the NMEA-0183 format and is compatible with RS-232C signal polarity output at the below mentioned levels.

[Low level: less than +0.5 V / High level: more than +3 V]

You cannot use GPS receivers with USB-type connections.

GETTING ACQUAINTED

KEY AND CONTROL KNOB OPERATIONS



①

Press [P] to turn the transceiver power ON and OFF.

② **Tuning Control**

Rotate the **Tuning** control to select an operating frequency, Memory channel, Menu number, setting value and change the scan direction, etc.

③ **VOL Control**

Rotate the **VOL** control to adjust the speaker volume.

④ **[PTT]**

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

⑤ **[LAMP]**

Press [LAMP] to illuminate the display and keys.

Press [F], [LAMP] to keep the light ON continuously.

⑥ **[MONI]**

Press and hold [MONI] to unmute the speaker in order to monitor signals.
Release [MONI] to return to normal operation.

⑦ **[▲], [▼]**

Press **[▲]** or **[▼]** to select an operating frequency, Memory channel, Menu number, setting value or to change the scan direction, etc.

The **[▲]/[▼]** keys function in the exact same way as the **Tuning** control. These keys change frequencies, memory channels, or other selections, depending on the current transceiver mode.

[▶OK]

Press **[▶OK]** to move to the next step or to complete the setting in various selection modes such as Function Select or Menu mode.

[ESC ◀]

Press **[ESC ◀]** to move back to the previous step or to quit the setting in various selection modes such as Function Select or Menu mode.

⑧ **[A/B]**

Press **[A/B]** to select operation band A or B.

Press **[F]**, **[A/B]** to select a frequency band.

⑨ **[MENU]**

Press **[MENU]** to enter Menu mode.

Press **[F]**, **[MENU]** to cycle the transmit output power between: High Power → Low Power → Economic Low Power.

⑩ **[F]**

Press **[F]** to enter Function mode.

Press **[F] (1s)** to turn the transceiver key lock function ON and OFF.

⑪ **[VFO]**

Press **[VFO]** to enter VFO mode, then press **[▲]/[▼]** or rotate the **Tuning** control to select an operating frequency.

Press **[F]**, **[MENU]** to copy the current Memory channel or Call channel to the VFO (memory shift).

⑫ **[MR]**

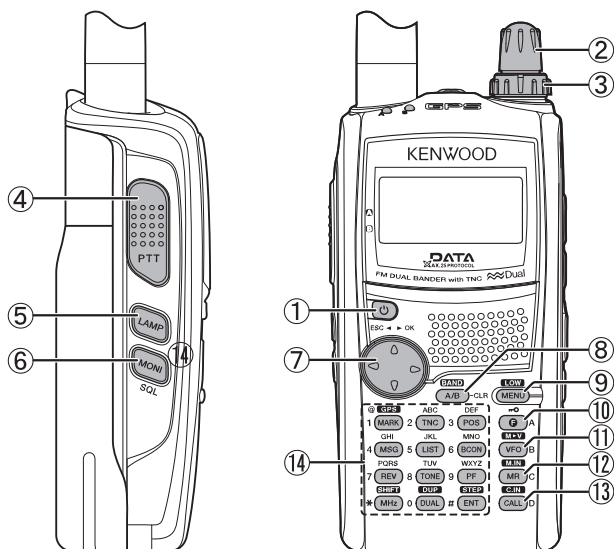
Press **[MR]** to enter Memory Channel mode, then press **[▲]/[▼]** or rotate the **Tuning** control to select a Memory channel.

Select a Memory channel, then press **[F]**, **[MR]** to store the current operating frequency in the Memory channel.

⑬ **[CALL]**

Press **[CALL]** to select the Call channel.

Press **[F]**, **[CALL]** to store the current operating frequency to the Call channel.



⑭ 12 Keypad

[MARK] (1)

Press **[MARK]** to display the Mark Way point list **<APRS>**.

Press **[MARK] (1s)** to enter the Mark Way point registration mode **<APRS>**.

Press **[F], [MARK]** to turn the internal GPS function ON or OFF.

[TNC] (2)

Press **[TNC]** to turn the built-in TNC ON and the APRS (or NAVITRA) mode ON.

- Each time you press **[TNC]**, the mode cycles through the following: APRS (or NAVITRA) mode ON >> PACKET mode ON >> TNC OFF.
- When the built-in TNC turns on, "OPENING TNC" appears on the display.
- When "OPENING TNC" appears on the display, the mode cannot be changed.

Press **[F], [TNC]** to turn the Tracking Log function ON or OFF **<APRS>**.

[POS] (3)

Press **[POS]** to display your "My position" (using the internal GPS) or to enter the Position registration mode (not using the internal GPS) **<APRS>**.

Press **[F], [POS]** to enter the My Weather data **<APRS>**.

[MSG] (4)

Press **[MSG]** to display the Message list **<APRS>**.

Press **[F], [MSG]** to enter the New Message input mode **<APRS>**.

[LIST] (5)

Press **[LIST]** to display the Station list **<APRS>**.

Press **[F]**, **[LIST]** to display the DX Cluster list **<APRS>**.

[BCON] (6)

Press **[BCON]** to enter the Beacon Transmit mode (TX Beacon method is Manual) or turn the Beacon function ON or OFF (TX Beacon method is other than Manual) **<APRS>**.

Press **[F]**, **[BCON]** to enter the Quick Beacon mode **<APRS>**.

[REV] (7)

Press **[REV]** to turn the Reverse function ON or OFF.

Press **[REV] (1s)** to turn the Automatic Simplex Checker ON.

Press **[F]**, **[REV]** to enter the Vice Alert function setup mode **<APRS>**.

[TONE] (8)

Press **[TONE]** to turn the Tone function ON.

- Each time you press **[TONE]**, the function cycles through the following: Tone ON >> CTCSS ON >> DCS ON >> Cross Tone ON >> OFF.

Press **[F]**, **[TONE]** to enter the Tone frequency, CTCSS frequency, DCS code, or Cross Tone setup mode.

Press **[F]**, **[TONE] (1s)** to start the Tone frequency ID, CTCSS frequency ID, or DCS code ID scan.

[PF] (9)

Press **[PF]** to activate its programmable function. The default function is "Weather Channel" (TH-D72A)/ "Memory Name <-> Frequency" (TH-D72E).

[MHz] (✕)

Press **[MHz]** to enter the Offset Direction selection mode.

- Each time you press **[MHz]**, the offset direction cycles through the following: plus (+) direction -> minus (-) direction -> -7.6 MHz (TH-D72E only) -> OFF.

Press **[MHz] (1s)** to start the MHz scan.

Press **[F]**, **[MHz]** to enter Offset Direction setup mode.

[DUAL] (0)

Press **[DUAL]** to switch the Single band mode and Dual band mode.

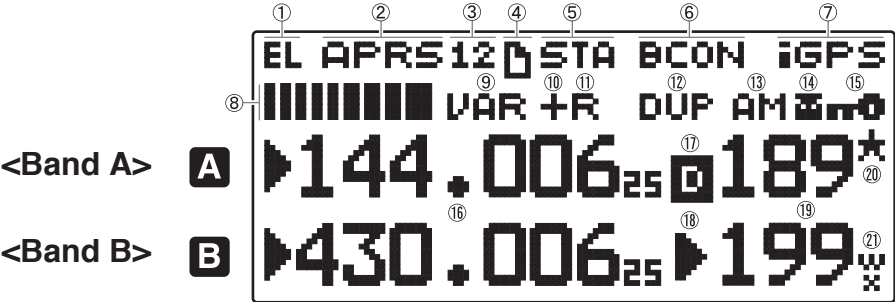
Press **[F]**, **[DUAL]** to turn the Full duplex function ON or OFF.

[ENT] (#)










Press **[ENT]** to enter Frequency or Channel number entry mode.

Press **[F]**, **[ENT]** to enter Frequency step setup mode.

DISPLAY



Indicator		Description
①	EL	Appears while using Economic low output power.
	L	Appears while using Low output power.
	H	Appears while using High output power.
②	APRS	Appears when the Beacon type is set to “APRS”.
	NAVITRA	Appears when the Beacon type is set to “NAVITRA”.
	PACKET	Appears while using Packet mode.
③	12	Appears when the packet transfer rate is set to 1200 bps.
	96	Appears when the packet transfer rate is set to 9600 bps.
④	D	Appears when a message is received.
⑤	STA	Appears while in Stand-by (Packet mode)
⑥	CON	Appears while Connected (Packet mode)
	BCON	Appears when the Beacon function is ON.
⑦	GPS	Appears when the external GPS is ON. Blinks while positioning.
	iGPS	Appears when the internal GPS is ON. Blinks while positioning.
	i xZZ	Appears while the internal GPS save mode is activated.
	iG/S	Appears when the internal GPS and Weather Instrument is ON.
⑧	 	Performs as an S meter when receiving a signal and displays the selected power level while transmitting.

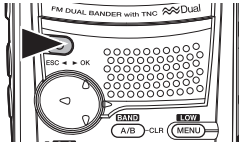
Indicator		Description
⑨		Appears when the Tone function is ON.
	CT	Appears when the CTCSS function is ON.
	DCS	Appears when the DCS function is ON.
	T/C	Appears when the Cross tone setting is "TONE/CTCSS".
	D/C	Appears when the Cross tone setting is "DCS/CTCSS".
	T/D	Appears when the Cross tone setting is "TONE/DCS".
	D/O	Appears when the Cross tone setting is "DCS/Off".
	VA	Appears when Voice Alert is set to "ON".
	VAR	Appears when Voice Alert is set to "RX ONLY".
⑩	-	Appears when the Shift function is set to plus.
	+	Appears when the Shift function is set to minus.
	=	Appears when the Shift function is set to -7.6 MHz.
⑪	R	Appears when the Reverse function is ON.
		Appears when the ASC function is ON. Blinks when the ASC function is performing an OK check.
⑫	DUP	Appears while in Duplex mode.
⑬	AM	Appears while in AM mode.
		Appears while in Narrow FM mode.
⑭		Appears when the VOX function is ON.
⑮		Appears when the Key Lock function is ON.
⑯	144.006₂₅	Displays the operating frequency.
⑰		Appears while using the Internal data band.
⑱		Appears when the selected channel is not registered while in Memory Input mode.
		Appears when the selected channel is registered while in Memory Input mode.
⑲	189	Displays the Memory channel number.
⑳	*	Appears when the Memory Channel Lockout function is ON.
㉑		Appears when Weather Alert is ON. Blinks when receiving a signal. (TH-D72A only)

BASIC OPERATIONS

SWITCHING THE POWER ON/ OFF

Press the [⏻] switch to switch the transceiver ON.

- The power on message momentarily appears on the display.

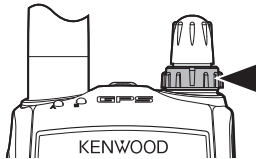


- If the transceiver power on password has been activated {Menu No.100}, you must first enter your password before you can operate the transceiver.

Press the [⏻] switch again to switch the transceiver OFF.

ADJUSTING THE VOLUME

Rotate the **VOL** control of your selected band clockwise to increase the volume and counterclockwise to decrease the volume.

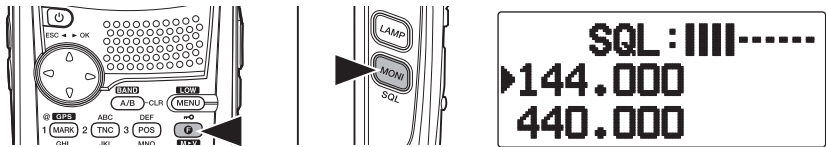


Note: Some functions of this transceiver, such as the beep, have their own volume settings. Adjust those settings to your desired values.

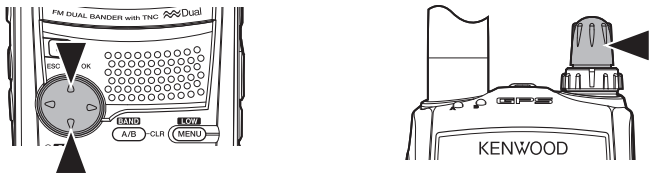
ADJUSTING THE SQUELCH

Squelch is used to mute the speaker when no signals are present. With the squelch level set correctly, you will hear sound only while actually receiving a signal. The higher the squelch level selected, the stronger the signals must be in order to hear them.

- 1 Press **[F]**, **[MONI]**.
 - The squelch level appears on the display.

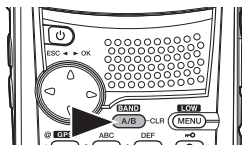


- 2 Press **[▲]/[▼]** or rotate the **Tuning** control of your selected band, when no signals are present, and select the squelch level at which the background noise is just eliminated.



SELECTING AN OPERATION BAND

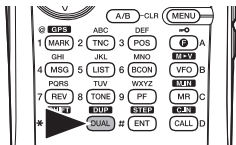
Press **[A/B]** to select operating band A or B.



SELECTING DUAL BAND MODE/ SINGLE BAND MODE

You can switch the transceiver between dual band operation and single band operation.

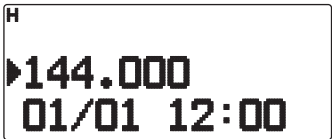
- 1 Select your desired band (A or B).
- 2 Press **[DUAL]**.
 - Each time you press **[DUAL]**, the transceiver switches between Single band mode and Dual band mode.



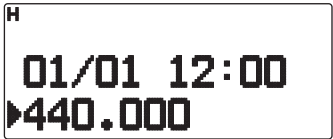
Dual band mode:



Single band mode (band A only):



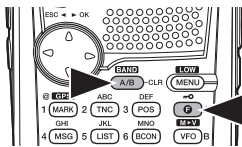
Single band mode (band B only):



SELECTING A FREQUENCY BAND

You can change the default frequency bands for bands A and B.

- 1 Select your desired band (A or B).
- 2 Press **[F]**, **[A/B]**.



- Each time you press **[F]**, **[A/B]**, you cycle to the next frequency band.
- When masking a band, you are restricted to using only the selectable band.
- When receiving 2 signals on the same band, the image interference, sensitivity, etc., performance will decrease.
- Band A: 144 >> 430/440 (MHz).
- Band B: 118 >> 144 >> 300 >> 430/440 (MHz).

Note: The TH-D72E uses the 430 MHz band and the TH-D72A uses the 440 MHz band.

Frequency ranges:

- 118 MHz: 118 ~ 135.995 MHz
- 144 MHz: 144 ~ 173.995 MHz
- 300 MHz: 320 ~ 399.995 MHz
- 430/440 MHz: 430 ~ 523.995 MHz

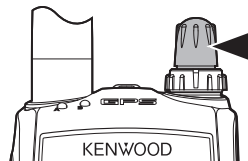
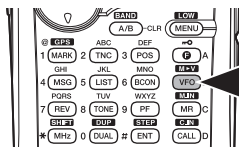
SELECTING AN OPERATING MODE

There are 3 operating modes available to choose from: VFO mode, Memory Channel mode, and Call Channel mode.

VFO Mode

VFO mode allows you to manually change the operating frequency.

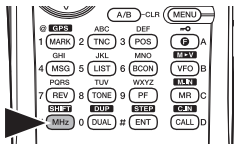
- 1 Press **[VFO]** to enter VFO mode.
- 2 Rotate the **Tuning** control to select your desired operating frequency.



- You can also select a frequency by using the **[▲]/[▼]** keys.
- The default step frequency for the **Tuning** control varies according to the model and operating band:

Model	144 MHz	430/440 MHz
TH-D72A	5 kHz	25 kHz
TH-D72E	12.5 kHz	25 kHz

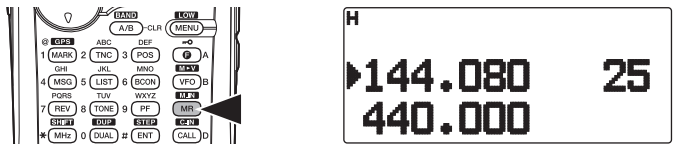
- To adjust the frequency by a larger amount, press **[MHz]** to enter MHz mode, then rotate the **Tuning** control to adjust the frequency in steps of 1 MHz. Press **[MHz]** again to exit MHz mode and adjust the frequency using the normal step frequency.



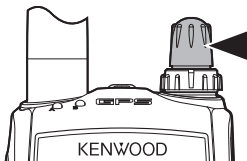
Memory Channel Mode

Memory Channel mode allows you to quickly select a frequently used frequency and related data which you have saved in the transceiver memory.

- 1 Press **[MR]** to enter Memory Channel mode.
 - The Memory channel number appears on the display.



- 2 Rotate the **Tuning** control to select your desired Memory channel.

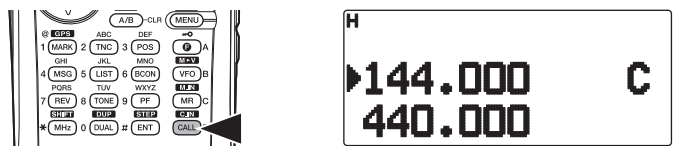


- You can also select a Memory channel by using the the **[▲]/[▼]** keys.

Call Channel Mode

Call Channel mode allows you to quickly select a preset channel to allow immediate calls on that frequency. The Call channel can be conveniently used as an emergency channel within your group.

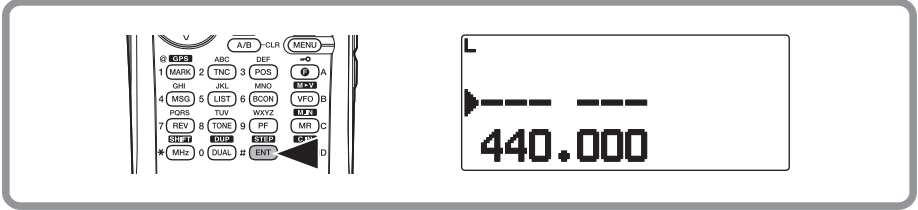
- 1 Select your desired band (A or B).
 - The Call channel has a dedicated frequency for both bands A and B. The default frequency for band A is 144 MHz. The default frequency for band B is 430/440 MHz.
- 2 Press **[CALL]** to enter Call Channel mode.
 - “C” appears on the display.



FREQUENCY DIRECT ENTRY

If the desired operating frequency is far from the current frequency, using the keypad is the quickest way to change the frequency.

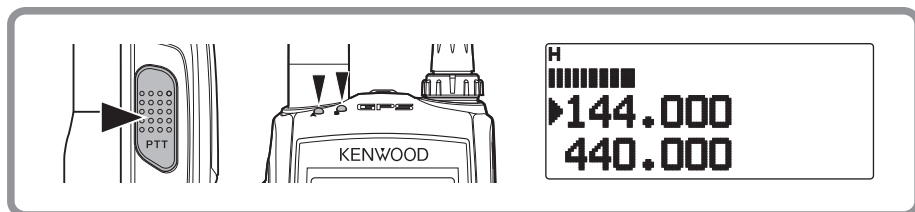
- 1 Press **[A/B]** to select band A or B, then press **[VFO]** or **[CALL]**.
- 2 Press **[ENT]**.
 - The Direct Frequency Entry display appears.



- 3 Press the number keys (**[0]** ~ **[9]**) to enter your desired frequency.
- 4 To set the entered frequency, press **[ENT]** or **[VFO]**.
 - Pressing **[ENT]** before entering all of the digits will set the remaining digits to 0.
 - Pressing **[VFO]** before entering all of the digits will leave the remaining digits at their previous values.
 - Entering all digits for a frequency will automatically set the frequency without pressing **[ENT]** or **[VFO]**.
 - If you need to only change the MHz digit, press **[MHz]**, then enter the new value.

TRANSMITTING

- 1 Select your desired band and frequency/channel.
- 2 Press and hold the microphone **[PTT]** switch and speak into the microphone to transmit.
 - The TX-RX LED lights red for the selected transmit band and the RF power meter appear on the display. The RF power meter shows the relative transmit output power.



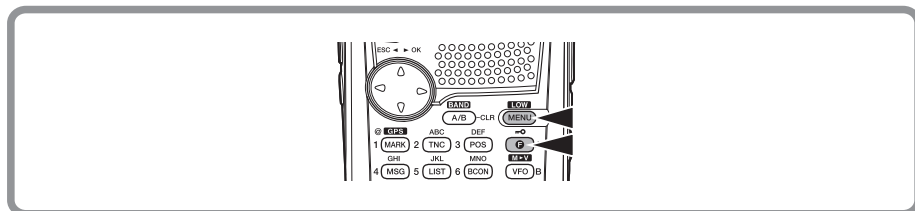
- “H”, “L”, or “EL” appear on the display, depending on the output power you have selected.
 - Speak into the microphone in your normal voice, while keeping the microphone approximately 5 cm (2 inches) from your mouth. Speaking too close to the microphone or too loudly may increase distortion and reduce intelligibility of your signal at the receiving station.
- 3 When you finish speaking, release the **[PTT]** switch.

Note: When the transceiver overheats because of ambient high temperature or continuous transmission, the protective circuit may function to lower the transmit output power.

Selecting an Output Power

Selecting a low transmit power is a wise method to reduce battery consumption, if communication is still reliable. You can program separate transmit power settings for band A and B.

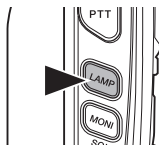
Press **[F]**, **[MENU]** to select high (default), low, or economic low power (lowest).



- “H”, “L”, or “EL” appears to show the current selection.

BACKLIGHT

Press **[LAMP]** to illuminate the display and keys.



- If no other key is pressed, the light turns OFF approximately 5 seconds after releasing **[LAMP]**.
- Press any key (including **[PTT]**) other than **[LAMP]** while the display and keys are lit to restart the 5-second timer.
- Press **[LAMP]** while the display and keys are lit to immediately turn the light OFF.

Press **[F]**, **[LAMP]** to keep the light ON continuously.

- The light remains ON until you press **[F]**, **[LAMP]** again.

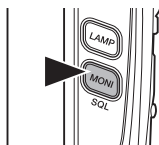
Note: You can set the Display lighting time in Menu No. 101.

MONITOR

When you are receiving while the squelch function is ON, weak signals may become intermittent.

If the CTCSS or DCS function is ON, you may want to disable the squelch function temporarily to monitor the current channel activities.

- 1 Press and hold **[MONI]**.



- The speaker is unmuted and you can monitor the signals.

- 2 Release **[MONI]** to return to normal operation.

SETUP OPERATION

Function Select Mode

Press **[F]** to enter Function Select mode. In this mode you can scroll F-0 through F-# by pressing **[▲]/[▼]**. After accessing the desired function, press **[▶OK]**, then press **[▲]/[▼]** to select the desired parameter.



Pressing **[F]**, **[0] ~ [9]** or **[*]**, **[#]** is a much simpler method. For example, pressing **[F]**, **[8]** switches the Tone function ON or OFF. (Refer to the keypad explanations on pages 10 ~ 11.)

Note: You can verify the battery capacity while in Function Select mode.

Full	Medium	Low	Very Low (recharge)

Menu Mode

Press **[MENU]** to enter Menu mode. In this mode you can access the desired menu item by pressing **[▲]/[▼]** and **[▶OK]** or entering digits directly from the keypad (0 ~9, A, B, C, D, E (*),and F (#) only). For further information, refer to “MENU MODE” {page 23}.



MENU MODE

Many functions on this transceiver are selected or configured through the Menu instead of physical controls. Once you become familiar with the Menu system, you will appreciate the versatility it offers.

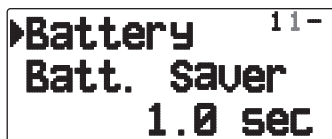
MENU ACCESS

- 1 Press **[MENU]** to access the Menu.
 - The setup category name appears on the display.



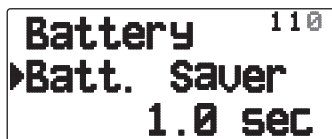
►RADIO SKAY¹⁻⁻
GPS
APRS

- 2 Press **[▲]/[▼]** or rotate the **Tuning** control to select your desired category.
- 3 Press **[▶OK]** to set the category.
 - The Menu name and number appear on the display.



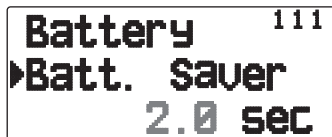
►Battery¹¹⁻
Batt. Saver
1.0 sec

- 4 Press **[▲]/[▼]** or rotate the **Tuning** control to select your desired Menu.
- 5 Press **[▶OK]** to set the Menu.



Battery¹¹⁰
►Batt. Saver
1.0 sec

- 6 Press **[▲]/[▼]** or rotate the **Tuning** control to select your desired value for the Menu.



Battery¹¹¹
►Batt. Saver
2.0 sec

- 7 Press **[▶OK]** to set the selected value.
- 8 Repeat steps 2 to 7 to set up additional Menus.
- 9 Press **[MENU]** to exit Menu mode.

MENU CONFIGURATION

RADIO - Display			
No.	Display	Description	Setting Values
100	Power-on Msg	Power-on message edit	Up to 8 characters
101	Lamp Time	Display lighting time	2 ~ 5 ~ 10 sec
102	Contrast	Display contrast	Level 1 ~ 8 ~ 16

RADIO - Battery			
No.	Display	Description	Setting Values
110	Batt. Saver	Battery saver time	Off/ 0.2/ 0.4/ 0.6/ 1.0 / 2.0/ 3.0/ 4.0/ 5.0 sec
111	APO	Auto power off time	Off/ 15/ 30 / 60 min
112	Battery Type	Battery type select	Lithium / Alkaline

RADIO - Beep			
No.	Display	Description	Setting Values
120	Key Beep	Key Beep sound	RADIO & GPS / RADIO Only/ GPS Only/ Off

RADIO - TX/RX			
No.	Display	Description	Setting Values
130	Prog. VFO	Programmable VFO setup	Varies with the selected frequency band
131	Modulation	Modulation/demodulation mode	AM / FM/ NFM
132	VHF AIP	VHF band AIP	Off / On
133	UHF AIP	UHF band AIP	Off / On
134	VOX	VOX on/off	Off / On
135	VOX Gain	VOX gain level	Gain 1 ~ 4 ~ 9
136	VOX Delay	VOX delay time	250/ 500 / 750/ 1000/ 1500/ 2000/ 3000 ms
137	VOX on Busy	VOX on busy	Off / On
138	Beat Shift	Beat shift	Type 1 ~ 8
139	TX Inhibit	TX inhibit	Off / On
13A	Balance	Band A/B volume balance	5 step
13B ¹	WX Alert	Weather alert	Off / On
13C ¹	Auto WX Scan	Auto weather channel scan time	Off / 15/ 30 / 60 min

RADIO - Memory			
No.	Display	Description	Setting Values
140	Name	Memory channel name input	Up to 8 characters
141	Name <> Freq	Name display select	Name/ Freq
142	Lockout	Memory channel lockout	Off/ On
143	Recall Metho	Memory channel recall method	All Bands/ Current Band
144	Group Name	Memory group name input	Up to 8 characters
145	Group Link	Memory group link registration	Up to 10 digits (0 ~ 9)
146	EchoLink Mem	EchoLink memory setup	Up to 8 characters for EchoLink memory name Up to 8 digits for DTMF code

RADIO - Scan			
No.	Display	Description	Setting Values
150	Scan Resume	Scan resume method	Time/ Carrier/ Seek
151	Time Restart	Time operate restart time	1 ~ 5 ~ 10 (sec)
152	Car. Restart	Carrier operate restart time	1 ~ 2 ~ 10 (sec)

RADIO - Repeater			
No.	Display	Description	Setting Values
160	Offset Freq	Offset frequency	–
161	Auto Offset	Auto repeater offset	Off/ On
162	CALL Key	CALL key function	Call/ 1750Hz
163	1750Hz Hold	1750Hz Hold	Off/ On

RADIO - DTMF			
No.	Display	Description	Setting Values
170	Memory	DTMF memory	Up to 8 characters for DTMF memory name Up to 16 digits for DTMF code
171	Speed	DTMF memory transmission speed	50/ 100/ 150 ms
172	Pause	DTMF pause code time	100/ 250/ 500/ 750/ 1000/ 1500/ 2000 ms
173	Hold	Hold	Off/ On

RADIO - Lock			
No.	Display	Description	Setting Values
180	Keys & Freq	Key lock type	Key Lock/ F.Lock/ Key & F.Lock
181	DTMF Keys	DTMF key lock	Off/ On
182	Mic PF Keys	Mic PF key	Off/ On

RADIO - Auxiliary			
No.	Display	Description	Setting Values
190	PF Key	PF key programmable function value	See explanation
191	Mic PF1	Microphone PF1 key programmable function value	
192	Mic PF2	Microphone PF2 key programmable function value	
193	Mic PF3	Microphone PF3 key programmable function value	
194	Date	Date	See explanation
195	Time	Clock time	
196	Time Zone	Time zone	+ 14:00 ~ UTC ~ - 14:00
197	Packet Band	Internal TNC data band type (PACKET)	A-BAND/ B-BAND/ A:TX B:RX/ A:RX B:TX
198	Cursor Shift	Cursor Shift	Off/ 1/ 1.5/ 2 sec
199	Reset	Reset	VFO Reset/ Partial Reset/ Full Reset
19A	Power-on PWD	Power on password	Off/ On

GPS - Int. GPS			
No.	Display	Description	Setting Values
200	Operating Mode	Internal GPS operating mode	Normal/ GPS Only
201	Batt. Saver	Battery saver time	Off/ 1/ 2/ 4/ 8/ Auto
202	PC Output	GPS data output to PC	Off/ On

GPS - Setup			
No.	Display	Description	Setting Values
210	Datum	Datum	WGS-84/ TOKYO
211	Sentence	Sentence	\$GPCGA/ \$GPGLL/ \$GPRMC/ \$GPVTG/ \$GPZDA/ \$GPGSA/ \$GPGSV
212	SBAS	Satellite base augmentation system	Off/ On

GPS - Track Log			
No.	Display	Description	Setting Values
220	Clear All Data	Clear all data	Yes/ No
221	Wrap When Full	Wrap when memory full	Off/ On

GPS - Log Setup			
No.	Display	Description	Setting Values
230	Record Method	Record method	Time/ Distance/ Beacon
231	Interval	Interval time	2 ~ 1800 sec
232	Distance	Distance	0.01 ~ 9.99 (mi/ km/ nm)

GPS - Target Pt.			
No.	Display	Description	Setting Values
240	✕1	Number select	1 ~ 5
241	Name	Name entry	Up to 8 characters
242	N (S)	Latitude entry	–
243	E (W)	Longitude entry	–

APRS - Basic Set			
No.	Display	Description	Setting Values
300	My Callsign	Call sign entry	Up to 9 characters
301	Beacon Type	Beacon type	APRS/ NAVITRA
302	APRS Lock	APRS lock	Off/ On/ On & PTT

APRS - Int. TNC			
No.	Display	Description	Setting Values
310	Data Band	Internal data band type	A-Band/ B-Band/ TX:A RX:B/ RX:A TX:B
311	Data Speed	Data communications speed	1200/ 9600 bps

APRS - Int. TNC2			
No.	Display	Description	Setting Values
320	DCD Sense	DCD sense type	D or RxD Band/ Both Bands/ Ignore DCD
321	TX Delay	TX delay time	100/ 150/ 200/ 300/ 400/ 500/ 750/ 1000 ms

APRS - COM Port			
No.	Display	Description	Setting Values
330	Baud Rate	COM port Baud rate speed	2400/ 4800/ 9600 bps
331	Input	COM port input type	Off/ GPS/ Weather (PeetBros) / Weather (Davis)
332	Output	COM port output	Off/ Waypoint

APRS - Waypoint			
No.	Display	Description	Setting Values
340	Format	Way point format	NMEA/ MAGELLAN/ KENWOOD
341	Length	Way point name length	6-Char ~ 9-Char
342	Output	Way point output type	All/ Local/ Filtered

APRS - PC Port			
No.	Display	Description	Setting Values
350	Output	COM port output	Off/ On

APRS - MyPosition			
No.	Display	Description	Setting Values
360	✕1	Number select	1 ~ 5
361	Name	Name entry	Up to 8 characters
362	N (S)	Latitude entry	–
363	E (W)	Longitude entry	–

APRS - BeaconInfo			
No.	Display	Description	Setting Values
370	Speed	Speed information	Off/ On
371	Altitude	Altitude information	Off/ On
372	Pos. Ambiguity	Position ambiguity mode	Off/ 1-Digit ~ 4-Digit

APRS - Comment			
No.	Display	Description	Setting Values
380	Position Comment	Position Comment	Off Duty/ Enroute/ In Service/ Returning/ Committed/ Special/ PRIORITY/ CUSTOM 0 ~ CUSTOM 6/ EMERGENCY!

APRS - StatusText			
No.	Display	Description	Setting Values
390	✕1	Number select	1 ~ 5
391	TX Rate	Status text TX rate	Off/ 1/1 ~ 1/8
392	Text	Text	Up to 48 characters

APRS - QSY			
No.	Display	Description	Setting Values
3A0	QSY in Status	QSY in Status	Off/ On
3A1	Tone/Narrow	Tone/ Narrow	Off/ On
3A2	Shift/Offset	Shift/ Offset	Off/ On

APRS - Pkt.Filter			
No.	Display	Description	Setting Values
3B0	Position Limit	Position limit	Off/ 10 ~ 2500 (mile/ km)
3B1	Filter Type	Filter Type	See explanation

APRS - Icon			
No.	Display	Description	Setting Values
3C0	KENWOOD	Icon	See explanation
3C1	Symbol	Symbol	
3C2	Table	Table	

APRS - TX Beacon			
No.	Display	Description	Setting Values
3D0	Method	Method	Manual/ PTT/ Auto/ SmartBeaconing
3D1	Initial Interval	Initial interval time	0.2/ 0.5/ 1/ 3/ 5/ 10/ 20/ 30 min

APRS - Algorithm			
No.	Display	Description	Setting Values
3E0	Decay Algorithm	Decay algorithm	Off/ On
3E1	Prop.Pathing	Proportional pathing	Off/ On

APRS - SmartBcon1			
No.	Display	Description	Setting Values
3F0	Low/High Speed	Low speed/ High speed setting	Low speed: 2 ~ 5 ~ 30 Higt speed: 2 ~ 70 ~90
3F1	Slow Rate	Low speed transmission interval time	2 ~ 30 min
3F2	Fast Rate	High speed transmission interval time	10 ~ 120 ~ 180 sec

APRS - SmartBcon2			
No.	Display	Description	Setting Values
3G0	Turn Angle	Driving direction change, minimum value setting	5 ~ 28 ~ 90 deg
3G1	Turn Slope	Driving direction change, additional value setting	1 ~ 26 ~ 255 (10deg/speed)
3G2	Turn Time	Minimum time delay between each beacon transmission	5 ~ 30 ~ 180 sec

APRS - PacketPath			
No.	Display	Description	Setting Values
3H0	Type	Packet path type	New-N/ Relay/ Region/ Others
3H1	Wide1-1 / Relay / Abbreviation	Wide1-1 / Relay / Abbreviation	Off/ On
3H2	Total Hops	Total Hops	1 ~ 2 ~7

APRS - Network			
No.	Display	Description	Setting Values
3I0	APRS	APRS (APK003)	check
3I1	Altnet	Altnet	Up to 8 characters

APRS - WX Station			
No.	Display	Description	Setting Values
3J0	TX	Weather TX	Off/ On
3J1	TX Interval	Weather TX interval time	5/ 10/ 30 min

APRS - Digipeat			
No.	Display	Description	Setting Values
3K0	Digipeat	Digipeat function	Off/ On

APRS - Uicheck			
No.	Display	Description	Setting Values
3L0	Time	UI check time	0 ~ 28 ~ 250 sec

APRS - Uidigipeat			
No.	Display	Description	Setting Values
3M0	Uidigi	Uidigi	Off/ On
3M1	Aliases	Aliases	Up to 9 characters x 4

APRS - Uiflood			
No.	Display	Description	Setting Values
3N0	Uiflood	Uiflood	Off/ On
3N1	Alias	Alias	Up to 5 characters
3N2	Substitution	Substitution	ID/ NOID/ FIRST

APRS - Uitrace			
No.	Display	Description	Setting Values
3O0	Uitrace	Uitrace	Off/ On
3O1	Alias	Alias	Up to 5 characters

APRS - Phrases			
No.	Display	Description	Setting Values
3P0	User Phrase	User phrases	Up to 32 characters x 8 phrases

APRS - Auto-Reply			
No.	Display	Description	Setting Values
3Q0	Reply	Auto message reply	Off/ On
3Q1	Reply To	Reply to	–

APRS - Reply MSG			
No.	Display	Description	Setting Values
3R0	Text	Auto message reply text	Up to 50 characters

APRS - Group Fitr			
No.	Display	Description	Setting Values
3S0	Message	Message group	Up to 9 characters x 6 codes
3S1	Bulletin (BLN)	Bulletin (BLN) group	Up to 4 characters x 6 groups

APRS - Sound			
No.	Display	Description	Setting Values
3N0	RX Beep	RX Beep	All/ All New/ Mine/ Message Only/ Off
3N1	TX Beep (Beacon)	TX Beep (Beacon)	Off/ On
3N2	Special Call	Special call	Up to 9 characters

APRS - Display			
No.	Display	Description	Setting Values
3U0	Display Area	Display Area	Entire Disp/ Entire Always/ One Line
3U1	Interrupt Time	Interrupt Time	3/ 5/ 10 sec/ Infinite
3U2	Cursor Control	Cursor Contol	Followed/ Fixed

APRS - Unit 1			
No.	Display	Description	Setting Values
3V0	Speed, Distance	Speed/ Distance	mi/h, mile/ km/h, km/ knots, nm
3V1	Altitude, Rain	Altitude/ Rain	feet, inch/ m, mm
3V2	Temperature	Temperature	°F/ °C

APRS - Unit 2			
No.	Display	Description	Setting Values
3W0	Position	Position format	dd° mm. mm' / dd° mm' ss. s"
3W1	Grid format	Grid format	Maidenhead Grid/ SAR Grid (CONV)/ SAR Grid (CELL)

APRS - NAVITRA GP			
No.	Display	Description	Setting Values
3X0	Group Mode	Group mode	Off/ On
3X1	Group Code	Group code	3 characters

APRS - NAVITRA MS			
No.	Display	Description	Setting Values
3X0	Message	Message text	Up to 20 characters x 5 messages

SKY - SkyCommand			
No.	Display	Description	Setting Values
500	CMD Callsign	Commander call sign	Up to 9 characters
501	TRP Callsign	Transporter call sign	Up to 9 characters
502	Tone Freq.	Tone frequency	Frequency
503	Sky Command	SKY command	Off/ Commnder/ Transporter

¹ Available only for the TM-D72A.

Note: Default settings are subject to change.

CHARACTER ENTRY

Certain menus require you to enter characters, such as the power on message and memory names. When character entry is required, a cursor will appear on the display.

- 1 Press **[▶OK]**.
 - The cursor will blink.



- 2 Press **[▲]/[▼]** or rotate the **Tuning** control to select your desired character.
- 3 Press **[▶OK]** to set the selected character.
 - The cursor will move to the next digit.

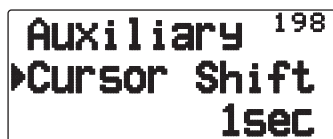


- You can move the cursor to the left or right by pressing **[ESC ◀]** or **[▶OK]**.
 - You can delete the selected character by pressing **[A/B (CLR)]**.
 - Press and hold **[LAMP]** and then press **[▲]/[▼]** or rotate the **Tuning** control to select your desired letter type.
- 4 Repeat steps 2 and 3 to enter the remaining characters.
 - Press **[MENU]** to exit Menu mode.

Auto Cursor Shift

Auto Cursor Shift will automatically shift the cursor to the next character after a character has been entered. This function lets you set up the time delay after character entry for the automatic cursor shift. If this function is set to OFF, you must manually shift the cursor by pressing **[▶OK]**.

- 1 Enter Menu mode and access Menu 198.



- 2 Set the desired shift time to Off (manual shift), 1, 1.5, or 2 sec.

■ Keypad Character Entry

The keypad can also be used to enter characters. Refer to the table below for characters corresponding to keypad.

Key	Character Display (with each press of the key)				Key	Character Display (with each press of the key)				
1	1				7	P	Q	R	S	7
2	A	B	C	2	8	T	U	V	8	
3	D	E	F	3	9	W	X	Y	Z	9
4	G	H	I	4	0	space		0	0	
5	J	K	L	5	*	Not used				
6	M	N	O	6	#	-	/	@		

For a memory name, status text, and message:

Key	Character Display (with each press of the key)									
1	@	/	.	-	_	:	1	,	+	
2	a	b	c	2	A	B	C			
3	d	e	f	3	D	E	F			
4	g	h	i	4	G	H	I			
5	j	k	l	5	J	K	L			
6	m	n	o	6	M	N	O			
7	p	q	r	s	7	P	Q	R	S	
8	t	u	v	8	T	U	V			
9	w	y	z	z	9	W	X	Y	Z	
0	Spece	0	0							
*	Not used									
#	?	!	'	.	,	-	/	&	#	
	()	<	>	;	:	"	@		

OPTIONS

The following options are available for use with this transceiver:

- | | | | |
|------------|---------------------|-----------|------------------------|
| • PB-45L | Li-ion battery pack | • KHS-21 | Headset |
| • BT-15 | Battery case | • KHS-29F | Headset |
| • KSC-32 | Rapid charger | • EMC-7 | Clip microphone |
| • SMC-32 | Speaker microphone | • HS-9(G) | Earphone |
| • SMC-33 | Speaker microphone | • PG-3J | Cigarette lighter cord |
| • SMC-34 | Speaker microphone | • PG-2W | DC cable |
| • HMC-3(G) | Headset | • PS-60 | DC Power Supply |

Note: Optional accessories for use with this transceiver may change, post-production. (New options may become available and/or current options may be discontinued.) Please refer to the options catalog(s) for applicable transceivers.

MEMORY CONTROL PROGRAM MCP-4A

The following functions can be set only by using the MCP-4A software:

- SQC active condition
- Input/output level (DATA terminal)
- 10 MHz mode selection
- Power on password value

Using the MCP-4A software, you can:

- View memory channel groups
- Name memory groups
- Save/load settings
- Read exported TravelPlus for Repeaters™ files issued from the ARRL™ (There are some version restrictions; refer to the help text of the MCP-4A.)
- Print/export memory and various settings in html

(TravelPlus for Repeaters is a trademark of ARRL.)

To download the MCP-4A software, go to:

http://www.kenwood.com/i/products/info/amateur/software_download.html

Note: This URL may change without notice.

Using the MCP-4A Software

- 1 Follow the directions of the installer to install the software.
- 2 Set up the PC COM port and baud rate.
- 3 The transceiver data is read from the MCP-4A software.
- 4 Select your desired settings, then write the data to the transceiver.

GENERAL INFORMATION

This product has been factory aligned and tested to specification before shipment. Attempting service or alignment without factory authorization can void the product warranty.

SERVICE

When returning this product to your dealer or service center for repair, pack it in its original box and packing material. Include a full description of the problem(s) experienced. Include your telephone number along with your name and address in case the service technician needs to contact you; if available, also include your fax number and e-mail address. Don't return accessory items unless you feel they are directly related to the service problem.

You may return this product for service to the authorized **Kenwood** dealer from whom you purchased it, or any authorized **Kenwood** service center. Please do not send subassemblies or printed circuit boards; send the complete product. A copy of the service report will be returned with the product.

SERVICE NOTE

If you desire to correspond on a technical or operational problem, please make your note legible, short, complete, and to the point. Help us help you by providing the following:

- Model and serial number of equipment
- Question or problem you are having
- Other equipment in your station pertaining to the problem



CAUTION

Do not pack the equipment in crushed newspapers for shipment! Extensive damage may result during rough handling or shipping.

Note:

- ◆ Record the date of purchase, serial number and dealer from whom this product was purchased.
 - ◆ For your own information, retain a written record of any maintenance performed on this product.
 - ◆ When claiming warranty service, please include a photocopy of the bill of sale or other proof-of-purchase showing the date of sale.
-

CLEANING

To clean the case of this product, use a neutral detergent (no strong chemicals) and a damp cloth.

TROUBLESHOOTING

The problems described in this table are commonly encountered operational malfunctions and are usually not caused by circuit failure.

Problem	Probable Cause	Corrective Action
Nothing appears on the display when the transceiver is switched ON, or the display is blinking ON and OFF.	<ol style="list-style-type: none"> 1 The battery pack is discharged. 2 The DC cable or connection is bad. 3 The power supply fuse is open (blown). 	<ol style="list-style-type: none"> 1 Recharge the battery pack or replace the battery. 2 Replace the cable. 3 Investigate the cause for the open fuse and replace the fuse.
Most keys and the Tuning control do not function.	<ol style="list-style-type: none"> 1 One of the Lock functions is ON. 2 The transceiver is in Channel Display mode. 	<ol style="list-style-type: none"> 1 Unlock all of the Lock functions. 2 With the transceiver power OFF, press [PTT] + [A/B] + Power ON to exit Channel Display mode.
You cannot select the exact desired frequency using the Tuning control.	Programmable VFO frequency range is too narrow.	Expand the frequency range in Menu No. 130 (Prog.VFO).
Memory channels cannot be selected by turning the Tuning control or by pressing [▲/▼] .	No data has been stored in any Memory channel.	Store data in some Memory channels.
The receiving sound volume is weak even if the signal is strong.	The receiving station may be operating in narrow band FM bandwidth.	Access Menu No. 131 (Modulation) to select "NFM".
Turning the VOL control does not allow you to hear audio.	The selective call function (CTCSS or DCS) is ON.	Turn OFF the selective call function.

Problem	Probable Cause	Corrective Action
You cannot transmit by pressing the PTT switch.	<ol style="list-style-type: none"> 1 You selected a frequency outside the allowable range. 2 You selected a transmit offset that places the transmit frequency outside the limit. 3 TX inhibit is ON. 4 The battery pack voltage is too low to transmit. 	<ol style="list-style-type: none"> 1 Select a frequency within the allowable transmit frequency range. 2 Select a proper offset direction or offset frequency. 3 Access Menu No. 139 (TX inhibit) and select "Off". 4 Charge or replace the battery pack.
Repeater cannot be accessed.	<ol style="list-style-type: none"> 1 Wrong tone frequency is selected. 2 Wrong offset frequency is selected. 3 Wrong shift direction is selected. 	<ol style="list-style-type: none"> 1 Select a proper repeater access tone. 2 Access Menu No. 160 (Offset Freq) and select an appropriate offset frequency. 3 Try other shift directions.
DTMF tone cannot be transmitted.	DTMF Lock is ON.	Access Menu No. 181 (DTMF Keys) and select "Off".
Repeater does not accept your DTMF tones.	DTMF tone transmission duration is too short.	Access Menu No. 171 (Speed) and select "150 ms".
You cannot transmit by pressing [PTT] .	<ol style="list-style-type: none"> 1 You selected a frequency outside the allowable range. 2 You selected a transmit offset that places the transmit frequency outside the limit. 3 TX inhibit is ON. 4 The battery pack voltage is too low to transmit. 	<ol style="list-style-type: none"> 1 Select a frequency within the allowable transmit frequency range. 2 Select a proper offset direction or offset frequency. 3 Access Menu No. 139 (TX inhibit) and select "Off". 4 Change or replace the battery pack.
Transceiver transmits without pressing [PTT] .	VOX function is ON.	Access Menu No. 131 (VOX) and select "Off".

Problem	Probable Cause	Corrective Action
The transceiver switches OFF for no apparent reason.	The Automatic Power OFF (APO) function is ON.	Access Menu No. 111 (APO) and select your desired time length or "OFF".
The Scan function does not resume scanning after the transceiver detects a signal.	You have selected "Seek" for Menu No. 150 (Scan Resume).	Select either "Time" (Time-Operated) or "Carrier" (Carrier-Operated) for Menu No. 150 (Scan Resume).
Packet operation results in no connects with other stations.	<ol style="list-style-type: none"> 1 The squelch is open. 2 You did not select the same transfer rate as the target station. 	<ol style="list-style-type: none"> 1 Select the correct squelch level so that the squelch is opened only when signals are present. 2 Use HBAUD command to select the appropriate transfer rate.
You cannot transmit any APRS data.	<ol style="list-style-type: none"> 1 Beacon is OFF. 2 The squelch is open. 3 The data band is inactive. 4 The built-in TNC is OFF. 5 You selected Packet mode. 	<ol style="list-style-type: none"> 1 Press [BCON] to switch Beacon ON. 2 Select the correct squelch level so that the squelch is opened only when signals are present. 3 If you have blanked the data band, press [A/B] or [DUAL] to active it. 4 Press [TNC] to switch ON the TNC. 5 Press [TNC] twice so that only "APRS" appears.
When using a GPS receiver, you cannot correctly transmit position data.	The GPS receiver did not yet start correct measurement.	Before starting correct measurement, the GPS receiver generates a low-pitch tone every 10 seconds. When starting correct measurement, it generates a high-pitch tone. (If not using the internal GPS receiver, press [F] , [MARK] and select "OFF").
You cannot receive any APRS data.	You did not correctly program a group code.	Access Menu 3S0 and program "APK001".

Problem	Probable Cause	Corrective Action
“MCP ERR” appears on the display. (MCP-4A communications error)	1 Loose cable connection.	1 Ensure that the connection between the TH-D72 and the PC is correct.
	2 Your PC may be trying to process too much at once.	2 Shut down other software that you may be running.
	3 There are other reasons as to why communications was not possible.	3 Turn the TH-D72 power source OFF and ON, one time.

Concerning the received frequency display, an unmodulated signal may be received. This is according to the set intrinsic frequency form.

	<A band>		<B band>	
VxU reception	(144 MHz + 45.05 MHz) x 2	–	(430 MHz - 49.95 MHz)	= 45.05 MHz, 49.95 MHz
	(144 MHz + 45.05 MHz) x 4	–	(430 MHz - 49.95 MHz) x 2	= 45.05 MHz, 49.95 MHz
UxV reception	(430 MHz - 45.05 MHz)	–	(144 MHz + 49.95 MHz) x 2	= 45.05 MHz, 49.95 MHz
	(430 MHz - 45.05 MHz) x 2	–	(144 MHz + 49.95 MHz) x 4	= 45.05 MHz, 49.95 MHz

SPECIFICATIONS

Specifications are subject to change without notice, due to advancements in technology.

General			VHF Band	UHF Band
Guaranteed range (TX-RX)	TH-D72A		144 ~ 148 MHz	438 ~ 450 MHz
	TH-D72E		144 ~ 146 MHz	430 ~ 440 MHz
Frequency range	Band A	RX	136 ~ 174 MHz	
			410 ~ 470 MHz	
	Band B		118 ~174 MHz	
			320 ~ 524 MHz	
Mode			F1D/ F2D/ F3E	
Antenna impedance			50 Ω	
Operating temperature range			−10°C ~ +50°C (+14°F ~ +122°F)	
Rated voltage	External power supply (DC IN)		12.0 ~ 16.0 V (13.8 V)	
	Battery terminals		4.5 ~ 10.8 V (6.0 V)	
Ground method			Negative	
Frequency stability			Within ±5 ppm (−10°C ~ +50°C)	
Current	Receive with no signals ¹		Approx. 90 mA	
	Battery Saver ON ²		Average 25 mA	
	TNC ON		Approx. 115 mA	
	Transmit with H, 13.8 V (DC IN)		Approx. 1.6 A	Approx. 1.7 A
	Transmit with H, 9.6 V (battery terminals)		Approx. 1.6 A	Approx. 1.7 A
	Transmit with H, 6.0 V (battery terminals)		Approx. 1.3 A	Approx. 1.4 A
	Transmit with L, 6.0 V (battery terminals)		Approx. 500 mA	
	Transmit with EL, 6.0 V (battery terminals)		Approx. 500 mA	
Dimensions (W x H x D) ³			58 x 121.3 x 33.2 mm (2.28" x 4.78" x 1.31")	
Weight ⁴			Approx. ??? g (?? oz)	

¹ With one band blanked (TNC OFF): Approx. 45 mA.

² With one band blanked (TNC OFF): Approx. 25 mA.

³ Projections not included.

⁴ Antenna and belt hook included.

Transmitter		VHF Band	UHF Band
RF power output	H, 13.8 V	Approx. 5 W	
	H, 9.6 V	Approx. 5 W	
	H, 6.0 V	Approx. 2.5 W	Approx. 2.2 W
	L, 6.0 V	Approx. 0.5 W	
	EL, 6.0 V	Approx. 50 mW	
Modulation		Reactance	
Maximum frequency deviation		Within ± 5 kHz	
Spurious radiation		Less than -60 dB	
Modulation distortion (300 Hz ~ 3 kHz)		Less than 3%	
Microphone impedance		2 k Ω	

Receiver		VHF Band	UHF Band
Circuitry		Double super heterodyne	
1st IF	Band A	49.95 MHz	
	Band B	45.05 MHz	
2nd IF	Band A	450 kHz	
	Band B	455 kHz	
Sensitivity (144, 430/440 MHz band)		Less than $0.16 \mu\text{V}$ (-16 dB μ)	
Squelch sensitivity (144, 430/440 MHz band)		Less than $0.1 \mu\text{V}$ (-20 dB μ)	
Selectivity	-6 dB	More than 11 kHz	
	-40 dB	Less than 30 kHz	
Audio output (10% distortion)	9.6 V (battery terminals)	More than 450 mW	
	6.0 V (battery terminals)	More than 300 mW	

Sensitivity (approx.) <excluding 144, 430/440 MHz band>

Frequency range	Band A	Band B	
	FM: 12 dB SINAD	FM: 12 dB SINAD	AM: 10 dB S/N
118 ~ 135.995 MHz	—	$0.32 \mu\text{V}$ (-10 dB μ)	$0.40 \mu\text{V}$ (-8 dB μ)
136 ~ 173.995 MHz	$0.40 \mu\text{V}$ (-8 dB μ)	$0.40 \mu\text{V}$ (-8 dB μ)	$0.50 \mu\text{V}$ (-6 dB μ)
320 ~ 339.995 MHz	$0.56 \mu\text{V}$ (-5 dB μ)	$0.56 \mu\text{V}$ (-5 dB μ)	$0.56 \mu\text{V}$ (-5 dB μ)
400 ~ 499.995 MHz	$0.28 \mu\text{V}$ (-11 dB μ)	$0.28 \mu\text{V}$ (-11 dB μ)	$0.36 \mu\text{V}$ (-9 dB μ)
500 ~ 523.995 MHz	$0.56 \mu\text{V}$ (-5 dB μ)	$0.56 \mu\text{V}$ (-5 dB μ)	$0.71 \mu\text{V}$ (-3 dB μ)

KENWOOD

Bu ürün 26891sayılı Resmi Gazete’de yayımlanan Elektrikli ve Elektronik Eşyalarda Bazı Zararlı Maddelerin Kullanımının Sınırlandırılmasına Dair Yönetmeliğe uygun olarak üretilmiştir.

This product complies with Directive, Number 26891 regarding "REGULATION ON THE RESTRICTION OF THE USE OF CERTAIN HAZARDOUS SUBSTANCES IN ELECTRICAL AND ELECTRONIC EQUIPMENT".