

Handheld two way radio

FCC ID : OGZKR-400

Brand: KLUTCH RADIO

Model : KR-400

Frequency Range: 400-470MHz

Thank You

We are grateful you have chosen **KLUTCH(R)RADIO** two way radio for your land mobile radio applications.

Notices To The User

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

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

This manual is suitable for using the model of KR-400



Contents

Unpacking and Checking Equipment	1-2
Maintenance	3
Features	4
Preparation	5-9
Accessories and Optional	10-11
Instruction Manual	12
Basic Operation	13-16
Auxiliary Functions	17-18
Enclosed Chart	19
Technical Specification	20-21
Troubleshooting Guide	22



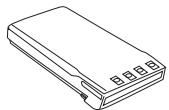
Unpacking and Checking Equipment

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

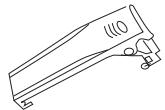
Supplied Accessories

ITEMS	QUANTITY
Antenna	1
Battery charger	1
AC adapter	1
Battery pack	1
Speaker/ microphone jack cover	1
Belt clip	1
Instruction manual	1

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Battery pack(Li-ion)



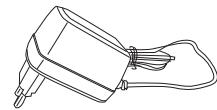
Belt clip



Battery charger



Antenna



AC adapter

Maintenance

Your transceiver is an electronic product of exact design and should be treated with care. The suggestions below will help you to fulfill any warranty obligations and to enjoy this product for many years.

- Do not attempt to open the unit. Non-expert handling of the unit may damage it.
- When using regulated power supply, take notice of power voltage must be between 6V and 8V to avoid damaging the unit.
- Do not store the transceiver under the sunshine or in hot areas. High temperatures can shorten the life of electronic devices, and warp or melt certain plastics.
- Do not store the transceiver in dusty, dirty areas.
- Keep the transceiver dry. Rainwater or damp will corrode electronic circuits.
- If it appears that the transceiver diffuses peculiar smell or smoke, please shut off its power immediately and take off charger or battery in the transceiver, then contact with KLUTCH(R)RADIO agency.
- Do not transmit without antenna.

Feature

- Frequency Range UHF : 400-470MHz
- 16 Memory Channels
- Output Power : 4W
- FM Radio Function
- Distance Alarm & Sound Alarm Function
- Built-in VOX
- 38 Group CTCSS &105 Group DCS
- 1500 mAh Lithium Battery
- Voice Annunciation
- Adjust Power High / Low (by software)
- Adjust squelch level 0-9 (by software)
- Programmable by PC software
- Auto Power Saving
- Time-out Timer (TOT)
- Busy Channel Lockout (BCLO)

Preparation

Charging the Battery Pack

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

Initially charging the battery pack after purchased or extended storage (greater than 2 months) will not bring the battery pack to its normal operating capacity. After repeating the charge/discharge cycle two or three times, the operating capacity will increase to normal.



CAUTION

- ◆ Do not recharge the battery pack if it is already fully charged. Doing so may cause the life of the battery pack to shorten or the battery pack may be damaged.
- ◆ After recharging the battery pack, disconnect it from the charger. Charging the battery pack for more than 5 days may reduce the battery pack life due to overcharging.
- ◆ Always switch OFF the transceiver equipped with a battery pack before charging. Using the transceiver while charging its battery pack will interfere with correct charging.
- ◆ The battery pack life is over when its operating time decreases even though it is fully and correctly charged. Replace the battery pack.



Charging request as the following steps:

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

- 1. Plug the AC adapter into an AC outlet.**
- 2. Plug the DC on the adapter into charger back jack.**
- 3. Slide the battery pack or the transceiver with a battery pack into the charger.**
 - Make sure the metal contacts of the battery pack mate securely with the charger terminals.
 - The indicator lights red and charging begins.
- 4. When charging is completed, the indicator lights green. Remove the battery pack or the transceiver from the charging slot of the charger.**
 - It takes approximately 3 hours to charge the battery pack.
 - When the charger will not be used for a long time, unplug the AC adapter from the AC outlet.

Installing / Removing the Battery Pack

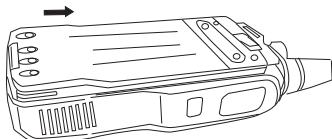
Match the battery pack with the corresponding guides on the back of the transceiver. Slide the battery pack along the back of the transceiver until the release latch on the base of the transceiver locks.

To remove the battery pack, Push down the release latch while pulling the battery pack away from the transceiver.



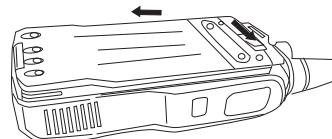
CAUTION

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



INSTALLING

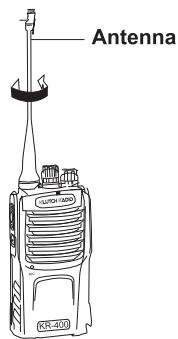
Align the battery pack with the back of the transceiver, then press the battery pack and transceiver firmly together until the release latch on the base of the transceiver locks.



REMOVING

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

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Installing the Antenna

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

Note:

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

Installing and Removing the Belt Clip

If necessary, install the belt clip with the screw sets for easy carry. Disassemble the screw sets to remove the belt clip.

Note:

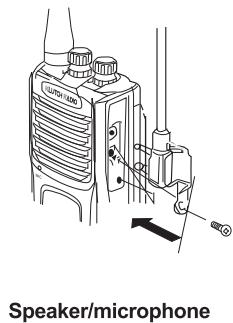
- ◆ If the belt clip is not installed, its mounting location may get hot during continuous transmission or when left sitting in a hot environment.
- ◆ You must remove the belt clip before removing the battery pack.
- ◆ Do not use glue which is designed to prevent screw loosening when installing the belt clip, as it may cause damage to the transceiver. Acrylic ester, which is contained in these glues, may crack the transceiver's back panel.

Installing the Optional Speaker/Microphone

Insert the speaker/ microphone plugs into the speaker/ microphone jacks.

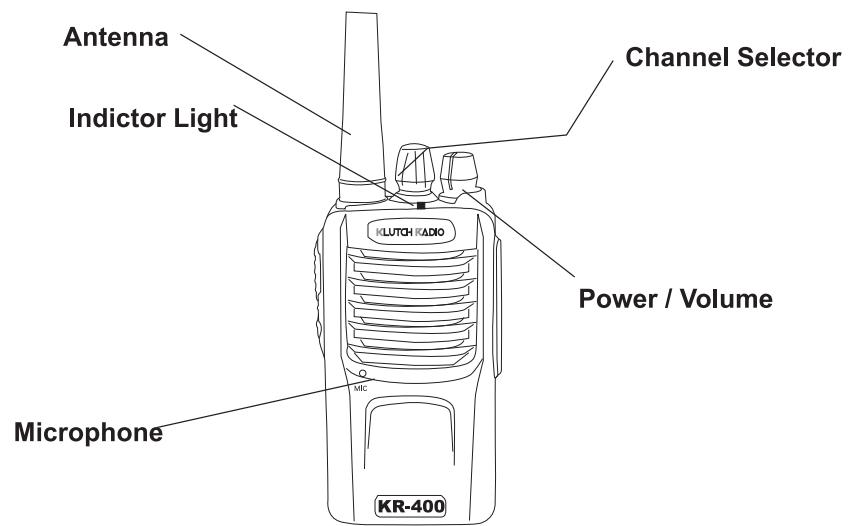
Note:

- ◆ The transceiver is not fully water resistant while using the speaker/ microphone.
- ◆ To keep the transceiver water resistant, you must cover the speaker/ microphone jacks with the supplied cover.

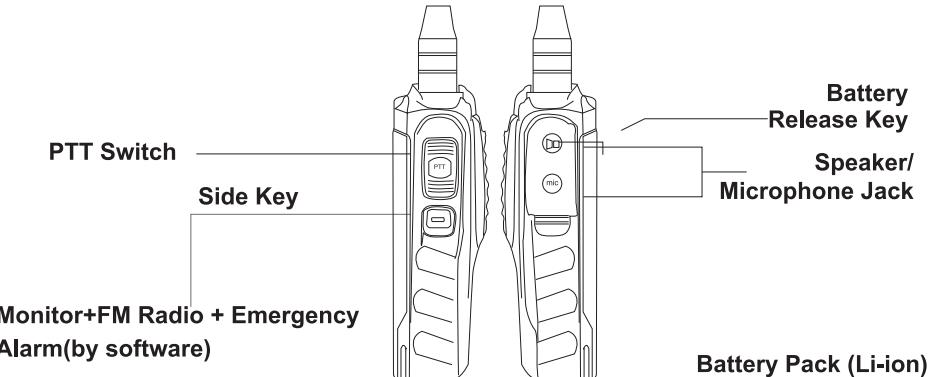


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Accessories and Optional



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Instruction Manual

Channel Selector

Rotate to change the operating channel.

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

Indicator Light

For the indicator light status please refer to page 14.

Power Switch/ Volume Control

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

PTT Switch

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

Speaker / Microphone Jack

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

Sidekey

Press to activate its programmable function(via software).

Basic Operation

Connected Antenna

Insert the base of the attached antenna into SMA connector and coincided with each other by clockwise rotate antenna, make sure the antenna has set down. Take out the antenna from the base by counter clockwise rotation until pull out it from SMA connector.

Turn ON and Turn OFF the Power

If you want to turn on the power, rotate PWR/VOL knob by clockwise until beep sound is heard. (Due to have automatic squelch function, the speaker will not send out any sound before receiving call.) You can adjust your desired volume by turning the button. If you turn off the power, turn PWR/VOL knob in counter clockwise rotation until beep sound is heard .

Adjusting Volume

After turning on the power, (Due to have automatic squelch function, the speaker will not send out any sound before receiving call.) You can hold down [MONI] key, and then turn PWR/VOL knob to increase the volume in clockwise rotation and decrease the volume in counter clockwise rotation.

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Transmitting

Firstly, press sidekey a moment to make sure that the channel isn't in busying status and press [PTT] key then speak to the transceiver in ordinary tone.

Transmitting indicator lighting during press [PTT] key.

If you are too close to the microphone or your voice is too loud, it's not clear in receiving.

Release [PTT] key so as to listen a response from your partner.

FM Radio Functions:

Press side-key and turn on the radio, enter FM radio status, press side-key scan radio frequency.

In FM radio status, if the current channel has signal, please press PTT button to transmit and the FM radio is stop. If the channel has no signal and press PTT button is invalid after 15 sec.

Light Status

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

Side-Key Function

According to your need, you can set side-key as the following assistant function Via VR-100F Programming software.

A. Close : When the user choose the key function "off" by software, write the date to radio . Press the side-key is invalid.

B. Instantaneous Monitor:

When the users choose key function "Monmome" by software , then write the date to radio. Turn off CTCSS / DCS by software before press the side key , when you heard noise is normal please keep press side-key by force, release and exit.

C. Switch the High/Low Power:

When the users choose "H/L Power" by software, then write the date to radio. Press the side-key, when the radio ring, "Di, Di" will enter the high-power model, or ring "Di" enter the low power model.

D. Emergency Alarm : (Operating follow function before define side-key by software)

1. Press side-key then release; enter the alarm mode, the radio ring alarm sound . Then hold down the side-key or , exit alarm mode.

2. Pressing long side-key, the current Channel transmit warning signal and show red instructions. The other radio received a warning signal and ring alarm sound. Release the side-key, exit alarm.

3. Rotate the channel to 11 channels, press PTT button and side-key then turn on the radio. It can switch the alarm status.

E. Continuous Monitor:

Defining side-keys functions to be instantaneous monitor: Press side-key then press PTT button, release them you will enter continuous monitor, press side-key again will exit monitor model.



VOICE OPERATED TRANSMISSION (VOX)

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

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

1. Connect the headset to the transceiver .
The VOX function does not activate when a headset is not connected to the accessory terminal of the transceiver.
2. With the transceiver power OFF, Rotate the Channel selector between 1 to 5,press the sidekey and [PTT]key while turning the transceiver power ON.the VOX function is opened.
3. Rotate the Channel selector 1~5 to increase the VOX Gain level.
The VOX Gain can be adjusted from levels 1 to 5 and OFF.
The transceiver announces the VOX Gain level as you adjust it. If OFF is selected, a beep sounds.
4. Turn the transceiver power OFF and the ON again to activate VOX.

Note:

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

Auxiliary Functions

Time-out Timer

The purpose of the Time-out Timer is to prevent any single person from using a channel an extended period of time. If you continuously transmit for 10 minutes, the transceiver will stop transmitting and a tone will sound.

To stop the tone, release the PTT switch. You can press the PTT switch again to resume transmitting.

Battery Save

The Battery Save function decreases the amount of power used when a signal is not being received and no operations are being performed (no keys are being pressed, and no switches are being turned).

While the channel is not busy and no operation is performed for 10 seconds, Battery Save turns ON.

When a signal is received or an operation is performed, Battery Save turns OFF.

Low Battery Warning

Low Battery Warning alerts you when the battery needs to be recharged.

While transmitting, if the battery power goes below a predetermined value, the light will blink red. When a tone sounds, the transceiver stops transmitting. Replace or recharge the battery pack.



CTCSS / DCS Function

Some channels may have pre-programmed CTCSS/DCS tones. A CTCSS/DCS tone is a subaudible tone which allows you to ignore (not hear) calls from other parties who are using the same channel.

When you receive a signal that has a tone different from the one set up in your transceiver, you will not hear the signal. Likewise, signals that you transmit will only be heard by parties whose CTCSS/DCS tone matches the tone set up in your transceiver.

How to Scan?

When the radio can be scanned Via Programming software setting, rotate the channel 1 to 16 channels, the radio will auto-detect the status of 1 to 15 channels which defined to be scan channels. (Programming software can define scan or Can not scan for each channel), When it scanned signals, the radio will automatic stop in the channel in order to call.

- a.The radio will stay in the signal channel, when the signal disappeared by 15 seconds, you can continued to scan next channel.
- b.The radio are unable to scan when the channel scanning less than 2 ones.
- c.In 16 channels, press PTT button and side-key to turn on the radio ,if the scan status is unclosed then the scan status become close, if the scan status is close ,then the scan status become open.Scan invalid when the radio is working in the status of FM radio.

Note: Although using channels set up with CTCSS/DCS tones relieves you from listening to unwanted calls,it does not mean your calls will be private.

Enclosed Chart

50 CTCSS frequency code (Hz)

67.0	85.4	107.2	136.5	165.5	186.2	210.7	254.1
69.3	88.5	110.9	141.3	167.9	189.9	218.1	
71.9	91.5	114.8	146.2	171.3	192.8	225.7	
74.4	94.8	118.8	151.4	173.8	196.6	229.1	
77.0	97.4	123.0	156.7	177.3	199.5	233.6	
79.7	100.0	127.3	159.8	179.9	203.5	241.8	
82.5	103.5	131.8	162.2	183.5	206.5	250.3	

104+1 DCS code

023	065	132	205	255	331	413	465	612	723
025	071	134	212	261	332	423	466	624	731
026	072	143	223	263	343	431	503	627	732
031	073	145	225	265	346	432	506	631	734
032	074	152	226	266	351	445	516	632	743
036	114	155	243	271	356	446	523	645	754
043	115	156	244	274	364	452	526	654	
047	116	162	245	306	365	454	532	662	
051	122	165	246	311	371	455	546	664	
053	125	172	251	315	411	462	565	703	
054	131	174	252	325	412	464	606	712	

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Technical Specification

General

Frequency Range	400-470 MHz
Working Temperature	-20°C ~ +50°C
Operating Voltage	DC 7.4V
Channel Number	16
Dimension	107mm × 56mm × 35 mm(excluded antenna)
Weight	265g (Including battery and antenna)
Antenna impedance	50 Ω

Transmitter

Output Power High / Low	4W/1W
Frequency Stability	± 2.5ppm
Max Frequency Deviation	≤ 5KHz
Audio Distortion	≤ 5%
Modulation Character	+3dB~3dB
Adjacent Channel Power	≥ 65dB
Modulation	16K φ F3E
Occupied Bandwidth	≤ 16KHz

Receiver

RF Sensitivity	$\leq 0.2\mu\text{V}$
Audio Distortion	$\leq 5\%$
Audio Response	$+2\text{dB}\sim-10\text{dB}$
Adjacent Channel Selectivity	$\geq 55\text{dB}$
Intermodulation Rejection	$\geq 55\text{dB}$
Spurious Response	$\geq 55\text{dB}$
Blocking	$\geq 85\text{dB}$

* Above technical specification is for reference only.



Troubleshooting Guide

PROBLEM	SOLUTION
No Power	<ul style="list-style-type: none">The battery pack may be dead. Recharge or replace the battery pack.The battery pack may not be installed correctly. Remove the battery pack and install it again.
Battery power dies shortly after charging	<ul style="list-style-type: none">The battery pack life is finished. Replace the battery pack with a new one.
Cannot talk to or hear other members in your group	<ul style="list-style-type: none">Make sure you are using the same frequency and CTCSS/DCS tone as the other members in your group.Other group members may be too far away. Make sure you are within range of the other transceivers.
Other voices (besides group members) are present on the channel	<ul style="list-style-type: none">Change the CTCSS/DCS tone. Be sure to change the tone on all transceivers in your group.

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SAFETY TRAINING INFORMATION



Your Klutch Radio LLC radio generates RF electromagnetic energy during transmit mode. This radio is designed for and classified as "Occupational Use Only", meaning it must be used only during the course of employment by individuals aware of the hazards, and the ways to minimize such hazards. This radio is NOT intended for use by the "General Population" in an uncontrolled environment.

This radio has been tested and complies with the FCC RF exposure limits for "Occupational Use Only". In addition, your Klutch Radio LLC radio complies with the following Standards and Guidelines with regard to RF energy and electromagnetic energy levels and evaluation of such levels for exposure to humans:

- FCC OET Bulletin 65 Edition 97-01 Supplement C, Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields.
- American National Standards Institute (C95.1-1992), IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz.
- American National Standards Institute (C95.3-1992), IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields- RF and Microwave.
- The following accessories are authorized for use with this product. Use of accessories other than those (listed in the instruction) specified may result in RF exposure levels exceed the FCC requirements for wireless RF exposure.



To ensure that your exposure to RF electromagnetic energy is within the FCC allowable limits for occupational use, always adhere to the following guidelines:

- **DO NOT** operate the radio without a proper antenna attached, as this may damage the radio and may also cause you to exceed FCC RF exposure limits. A proper antenna is the antenna supplied with this radio by the manufacturer or antenna specifically authorized by the manufacturer for use with this radio.
- **DO NOT** transmit for more than 50% of total radio use time ("50% duty cycle"). Transmitting more than 50% of the time can cause FCC RF exposure compliance requirements to be exceeded. The radio is transmitting when the "TX indicator" lights red. You can cause the radio to transmit by pressing the "PTT" switch.
- **ALWAYS** keep the antenna at least 2.5 cm (1 inch) away from the body when transmitting and only use the HYT belt-clip which is listed in instructions when attaching the radio to your belt, etc., to ensure FCC RF exposure compliance requirements are not exceeded. To provide the recipients of your transmission the best sound quality, hold the antenna at least 5 cm (2 inches) from your mouth, and slightly off to one side.

The information listed above provides the user with the information needed to make him or her aware of RF exposure, and what to do to assure that this radio operates with the FCC RF exposure limits of this radio.

Electromagnetic Interference/Compatibility

During transmissions, your Klutch Radio LLC radio generates RF energy that can possibly cause interference with other devices or systems. To avoid such interference, turn off the radio in areas where signs are posted to do so. **DO NOT** operate the transmitter in areas that are sensitive to electromagnetic radiation such as hospitals, aircraft, and blasting sites.

Occupational/Controlled Use

The radio transmitter is used in situations in which persons are exposed as consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure.