Thank you for purchasing the UHF FM transceiver. High strength materials and quality components have been used in the manufacture of this two-way radio. It is designed for industrial use to excel in tough environment. Li-ion battery technology and high/low power switching are included in many features that enhance performance and keep the transceiver compact and easy to operate.

Precautions:

- Study this manual carefully to understand your transceiver well.
- For safety reasons, it is important that the user is aware of and under tends the potential hazards common to using any transceiver.
- Don't operate the transceiver or replace the battery in an explosive environment (dust, gas, fumes etc.).
- Switch the transceiver off when filled gas or parked at a petrol station.
- Don't open or modify the transceiver in any way.
- Refer to a qualified technician for any service or repair.
- Don't expose the transceiver to long period of direct sunlight, extreme hot environment or surface.
- Don't place the transceiver in excessively dusty, humid, wet and/or unstable areas.

MAIN FUNCTIONS AND PEATURES

- Conductible Output Power:3W±0.5
- 16 Semi-duplex Channels
- 16th Channel Scan
- Speech Dial Function
- Monitor Function
- TOT (Time-out Timer)
- Battery Save Function
- Low Battery Alert Function
- QT/DQT
- Busy Channel Lock-out
- Programmed By PC

CONTENTS

STANDARD ACCESSORIES

Carefully unpack the transceiver. We recommend you to confirm the following items before discarding the packing If any item has missed or have been damaged during shipment, please contact the suppliers immediately.

Antenna (1 pc)

Charger (1 pc)

Battery Pack (1 pc)

Belt Clip (1 pc) & Screw(2 pcs)

User's Manual (1 pc)

GUIDE OF BATTERY PACK CHARGING

1.Put the charger's cable to AC power's socket to connect power, the green light remain bright.
2.Put the Li-ion battery pack in charger. The green light will change to red indicating charging.
3.The red light will change to green when the battery is fully charged.
4.To cut the power and take out the battery pack.

WARNING FOR BATTERY PACK

The battery pack are not charged at the factory. Please charge it before using. When charging the battery pack after purchasing or storing the transceiver for more than 2 months, the capacity will not reach its normal capacity. Only after 2-3 charge/discharge cycles, the capacity will return to normal.

CAUTION

- Don't 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.

Note:

- The ambient temperature should be between 41 and 104 F(5 and 40 C) while

charging is in progress. Charging outside this range may not fully charge the battery.

- 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 working time decreases even though it is fully and correct charged. Replace the battery pack.

PREPARATION

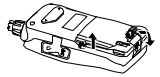
Install/Remove The Battery Pack

The average life of the supplied Li-ion battery pack is 8 hours. Average time are calculated using 5% transmitter time, 5% receiver time, and 90% standby time.

CAUTION

Don't short the battery terminals or dispose of the battery in fire.

Never attempt to remove the casing from the battery pack.



1.Take the top of battery pack against the battery's wafer of aluminum alloy intermediate.
2.Press the battery downwards slightly.
3.Press the transceiver lock upwards tightly with the battery until a "da" sounds.

1.When you want to take out the battery pack, release the transceiver lock downwards.
2.Take out the battery pack slightly.

Install/Remove The Antenna

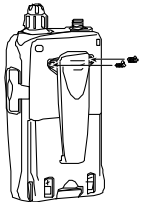
- To install the antenna, screw the antenna into the connector on the top of the transceiver by holding the antenna at its base and turning it clockwise until secure.
- To remove the antenna from the base by counter-clockwise untill pull out the antenna from unit.

Note:

Don't transmitting without antenna, it will damaged transciver. Please turn off the transceiver when you install antenna.

Don't excessively bend the antenna as it ould become damaged and affect the radios performance.

Install/Remove The Belt Clip

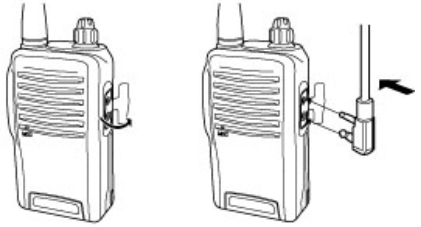


- To install the belt clip, carry the belt clip to aim at the hole who can fix the belt clip by screws.
  Turning screws clokwise until lock tightly by tool.
- To remove the belt clip turning the screws conterclockwise by tool until them release.

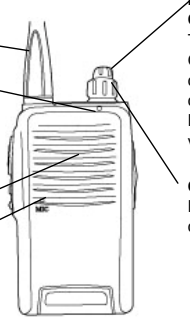
Install The Optional Speaker/Microphone

1.Take out the jack cover from transceiver (See pic.1).

2.Insert the speaker/microphone plugs into the Speaker/Microphone jacks (See pic.2).



OVERVIEW



Antenna

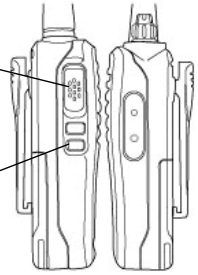
LED
Indicator Red light whil transmitting a signal.
Green light while receiving a signal.
Flashes red light when the battery voltage is low.

Speaker

Microphone

Power Switch/Volume Control:
Turn clockwise to turn ON the transceiver. Turn counterclockwise until a click sounds to turn OFF. Rotate it to adjust the volume level.

Channel Selector :
Rotate to select channels 1-16.



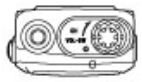
PTT (Push-To-Talk) Switch:
Press it, then speak into the microphone to call a station. Release to receive.

Monitor Key :
You will hear background noise when hold on monitor key to turn the squelch OFF.

SPK/MIC Jacks

Battery Pack

BASIC OPERATION



Switch on the transceiver by turning the Power Switch/ Volume Control clockwise.

- A beep sounds.

Adjust the volume by pressing and holding the Monitor key, then rotate the Power Switch/ Volume Control.

Rotate the Channel Selector to select your desired channel.
When you receive an appropriate signal, you will hear audio from the speaker.

To make a call, press and hold the PTT key, then speak into the microphone with your normal speaking voice.
Hold the microphone approximately 1.5 inches (3 to 4 cm) from your lips.Release the PTT key to receive.

Note:
When the battery pack voltage becomes too low, transmission will stop and the LED
will blink red. See "Low Battery Warning" on page 9.

AUXILIARY FUNCTIONS

All the functions below can be programmed by software. Some functions have been switched off before leaving the factory and need to be programmed in software.

- **Speech Dial Function**
  When you turn ON the power and switch the channels, the transceiver ill speech the current channel number automatically. It will make your using

conveniently.

- **Monitor Function**

The squelch circuit on the transceiver mutes the speaker automatically, when no signals are present. So you will not hear background noise. Press and hold the Monitor key to deactivate the squelch by manual. This is useful when you want to adjust the volume level, or when you need to receive a weak signal.

The LED indicator lights green while the Monitor key is pressed.

Note:

It is default setup from factory, user can select other items of monitor operation by pc programming.

OFF: Turn off the monitor function.

Monitor Lock: Momentarily press to hear background noise. Press the key again to return to normal operation.

Monitor Momentary: Press and hold to deactivate QT/DQT signal. Release the key to return to normal operation.

SQ-off Momentary: Hond on the key to hear backgroud noise, release it to return to normal operation.

- **Time-out Timer**

The purpose of the time-out timer is to prevent any person using a channel for a long time.

If the time that you continuously transmit excessds the set-up time, the transceiver will stop transmitting and a tone "beep" will sounds. To stop the tone, release the PTT key. You can press the PTT key again to resume transmitting.

Note:

you can set up the time level:off, 30s, 60s, 90s,..... 300S. The unit is second.

- **Battery Save Function**

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).

hile 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 alarms you when the battery needs to be recharged. While transmitting, if the battery power goes below a predetermined value, the LED will blink red. When a tone "beep" sounds, the transceiver stops transmitting. Replace or recharge the battery pack.

Note:

After 10 seconds you hear two sounds of "beep". The transceiver will repeat two sounds of "beep" until you charge the battery.

- **QT/DQT**

Some channels may have pre-programmed QT/DQT tones. A QT/DQT 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 which set up in your transceiver, you will not hear the signal. Likewise, signals that you transmit will only be heard by parties whose QT/DQT tone matches the tone set up in your transceiver.

Note:

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

- **16th channel Scan**

  The scan function is useful when you want to find other people on similar frequencies or to monitor communication within your group. Select channel 16 and the scan will begin. If an active channel is found, the scan will stop and lock on to that channel. You can now transmit

- **Busy Channel Lock-out**

  The transceiver can be programmed with busy channel lock-out. When setting, this function will disable the PTT key from transmitting if there is any activity on the same frequency with a different QT/DQT tone. This prevents interference in community repeater systems.

TROUBLESHOOTING GUIDE

Problem	solution
No power.	● 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.	● The battery pack life is over. Please replace the battery pack with a new one.
Can not talk to or hear other members in you group.	● Make sure you are using the same frequency and QT/DQT as the other members in you group. ● Other group members may be too far away. Make sure you are within range of the other transceivers.
Other voices (besides group members) are present on the channel.	● Change the QT/DQT.Be sure to change the tone on all transceivers within your group.
The transceiver continuously rings.	● The channel of transceiver is empty. Please proramming it by software. ● The frequencies you write in are going beyond the frequency range of local transceiver.

STANDARD TECHNICAL SPECIFICATION

General	
Frequency Range	450-470MHz
Channels	16 channels
Channel Spacing	25 KHz
Working Voltage	7.2DC±20%
Operating Temperature Range	-25℃-+60℃
Dimension(W×H×D)	58×115×31mm(not include antenna)
Weight(approx.)	180g(include battery)

Receiver	
Sensitivity(12db SINAD)	≤0.2uv
Modulation Receiver Bandwidth	≥|±7KHz
Adjacent Channels Selectivity	60dB
Intermediation	≥60dB
Spurious Response	≥60dB
Squelch Response	≥60dB
Frequency Stability	±5ppm
Audio Output Distortion	500mW

Transmitter	
Conductible Output Power	3W±0.5
Modulation Mode	F3E
Spurious Radiation	≤7.5uW
Adjacent Channel Power	60dB
Maximum Frequency Deviation	≤5KHz
Audio Output Distortion	≤5%
Frequency Stability	±5ppm

QT FREQUENCIES TABLE (Hz)

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

DQT CODES TABLE

D023 N/I	D074 N/I	D165 N/I	D261 N/I	D356 N/I	D462 N/I	D627 N I
D025 N/I	D114 N/I	D172 N/I	D263 N/I	D364 N/I	D464 N/I	D631 N I
D026 N/I	D115 N/I	D174 N/I	D265 N/I	D365 N/I	D465 N/I	D632 N I
D031 N/I	D116 N/I	D205 N/I	D266 N/I	D371 N/I	D466 N/I	D645 N I
D032 N/I	D122 N/I	D212 N/I	D271 N/I	D411 N/I	D503 N/I	D654 N I
D036 N/I	D125 N/I	D223 N/I	D274 N/I	D412 N/I	D506 N/I	D662 N I
D043 N/I	D131 N/I	D225 N/I	D306 N/I	D413 N/I	D516 N/I	D664 N I
D047 N/I	D132 N/I	D226 N/I	D311 N/I	D423 N/I	D523 N/I	D703 N I
D051 N/I	D134 N/I	D243 N/I	D315 N/I	D431 N/I	D526 N/I	D712 N I
D053 N/I	D143 N/I	D244 N/I	D325 N/I	D432 N/I	D532 N/I	D723 N I
D054 N/I	D145 N/I	D245 N/I	D331 N/I	D445 N/I	D546 N/I	D731 N I
D065 N/I	D152 N/I	D246 N/I	D332 N/I	D446 N/I	D565 N/I	D732 N I
D071 N/I	D155 N/I	D251 N/I	D343 N/I	D452 N/I	D606 N/I	D734 N I
D072 N/I	D156 N/I	D252 N/I	D346 N/I	D454 N/I	D612 N/I	D743 N I
D073 N/I	D162 N/I	D255 N/I	D351 N/I	D455 N/I	D624 N/I	D754 N I

Warning:

Changes or modifications to this unit not expressly approved by the party responsible for compliance will void the user's authority to operate the equipment. Any change to the equipment will void FCC grant.

Safety Training Information

This 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, this 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 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 exceeding the FCC requirements for wireless RF exposure.

To ensure that your expose 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 damaged 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** use the accessories listed in this instruction when transmitting for body-worn operation to ensure FCC RF exposure compliance requirements are not exceed. When transmitting with a portable radio, hold the radio in a vertical position with its microphone 2.5 to 5 cm (1 to 2 inches) away from your mouth. Keep the antenna at least 2.5 cm (1 inch) from your head.

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.