TWO-WAY RADIO

DTMF ENCODING AND DECODING
DISTANT URGENCY ALARM FUNCTION
CTCSS/D.C.S. ■ VOX
PRIORITY SCAN

USER'S MANUAL

Contents

Unpacking and checking of your equipment 01
- *Supplied accessories* 01

Description of functions 02

Getting started 03-04
- *Description of transceiver* 03

Programming assistant functions 05

Basic operations 06

How to operate 07-21
- *CTCSS and DCS* 07
- *DTMF* 07
- *Setting ANI ID CODE (ANI)* 08
- *Digital FM radio* 13
- *Transmit voice prompt* 14
- *Setting batterypack save mode* 14
- *Battery capacity prompt* 15
- *Selecting transmitting power* 15
- *Transmit over timer* 16
- *Setting scan function* 16

Contents

How to scan 16
Setting priority scan function 17
Adding scanning channel 18
Busy channel lockout 18
VOX function (VOX) 18
Setting voice prompt (VOICE) 18
Receiving/Transmitting frequency Programmable 19
Low voltage prompt 19
Wire clone function 19
How to use the intelligent charger 20
Programming guide 20
Trouble shooting 22-23
Technical parameter 24-26
Appendix 1 (CTCSS) 24
Appendix 2 (DCS) 25
Technical specification 27
Optional accessories 28
Annoucement 29

Unpacking and checking of your equipment

Carefully unpack the transceiver. We recommend that you identify the items in the following table before discarding the packing material. If any items are missing or have been damaged during shipment, please notify your dealer.

Supplied accessories


Transceiver


High gain antenna


Li-ion batterypack


Intelligent charger


Belt clip

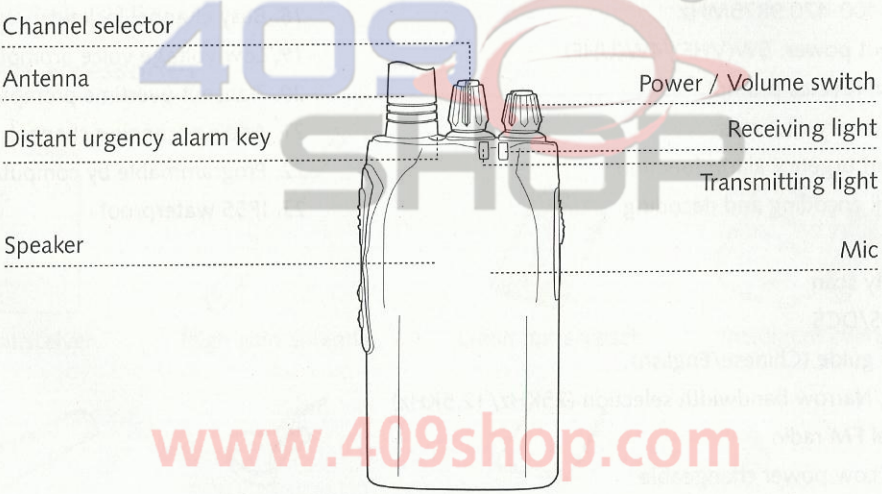

Handstrap


User's manual

Description of functions

1. VHF: 136-174MHz
   UHF: 350-390MHz
   UHF:400-470.9875MHz
2. Output power: 5W(VHF)/4W(UHF)
3. Transmit voice prompt
4. 16 memory channels
5. Distant urgency alarm function
6. DTMF encoding and decoding
7. VOX
8. Priority scan
9. CTCSS/DCS
10. Voice guide (Chinese/English)
11. Wide/Narrow bandwidth selection (25KHz/12.5KHz)
12. Digital FM radio
13. High/Low power changeable
14. High capacity Li-ion batterypack
15. Intelligent charger
16. Wire-clone function
17. Multi scan modes
18. Busy channel lockout
19. Low voltage voice prompt
20. Transmit overtime prompt
21. Adding scanning channel
22. Programmable by computer
23. IP55 waterproof

Description of transceiver



Programming assistant functions

It is able to program below miscellaneous functions on the sidekey PF1/topkey via programming software as needed.

- Turn on/off FM radio
- Turn on/off scan function
- Turn on/off alarm function

Basic operations

Adjusting volume

Turn the Power / Volume switch clockwise to switch the transceiver power ON, and rotate this knob to adjust the volume. While counterclockwise rotating is to turn off the power.

Selecting channel

Rotate the channel selector to select your desired channel. Clockwise rotating is to increase channel number, while counterclockwise rotating is to reduce channel number and you will hear an announcement of current channel number.

Monitor key

The transceiver will announce the current channel number short when short pressing PF2 to activate the monitor function, and it will activate the squelch function when long pressing PF2 for 2 seconds.

NOTE ⚠

» All functions ONLY can be edited via the matching programming software.

1750Hz Burst Tone

Press side key PTT and PF1 at the same time to transmit 1750Hz burst tone.

CTCSS and DCS

This transceiver has CTCSS (Continuous Tone Controlled Squelch System) and DCS (Digitally Coded Squelch) functions. It means the transceiver can ignore the needless calling from other transceiver even though they operate on the same frequency via using CTCSS or DCS. ONLY the same CTCSS tone or DCS code signals are received, the transceiver squelch can be released.

NOTE ⚠

» CTCSS or DCS can not make the voice concealed or encrypted, but only keeps the transceiver from other needless callings.

DTMF

Optional signal

It is programmable to set the DTMF transmission via the programming software in the Optional signal. Select DTMF is to set the DTMF encoding& decoding ON, while select OFF is to turn off the DTMF function.

NOTE ⚠

» Please set this function in the CHANNEL MESSAGE by the programming software, which can be specially programmed for each channel.

DTMF Transmit

It means the duration of transmitting DTMF, with the range from 50 milliseconds to 500 milliseconds.

DTMF Interval

It means the interval for the digital when transmitting DTMF, with the range from 50 milliseconds to 500 milliseconds.

Setting ANI ID CODE (ANI)

ANI -ID switch

It is about the setting to turn ON/OFF the ANI ID transmission. If you select ANI-ID switch, it means that when you press/release PTT to transmit (according to the transmitting modes you select in the PTT-ID), the transceiver will automatically transmit the ANI ID code. While if you don't select the ANI-ID switch, it means that the ANI ID code will not be transmitted during the transmission.

Call ring

The call ring function is about the ring prompt when the transceiver receives the matching DTMF signaling. The time for the ring prompt is preset in the Ring time. When it is out of the preset ring time, the transceiver will open the speaker to sound out the ring as prompt automatically.

Ring time

It means that the speaker will sound out a clear ring as prompt when the transceiver receives the correct DTMF signaling.

There are totally 10 levels for the ring time, each level is 1 second. OFF means to turn off the ring time setting.

ANI ID code

ANI ID Code can be made up by ten Arabic numerals(0~9) with 3 digit MIN and 6 digits MAX.

PTT-ID

This setting is about the transmitting modes for the ANI ID code when you press PTT to transmit. There are totally 3 modes selectable as followings:

BOT: Press PTT key to transmit the ANI ID code

EOT: Release PTT key to transmit the ANI ID code

BOTH: Both press PTT and release PTT key to transmit ANI ID code

PTT-ID Delay

It is about the delay time for transmitting ANI ID code.

1-30: Preset the ANI transmitting delay time from 1 to 30. Unit: 100 ms

OFF: Transmitting ANI ID code manually

ANI-ID Roger

This series of transceiver is available for the DTMF encoding and decoding function, which means that it can transmit its ANI ID code and also recognize the ANI ID code from the receiving party. Select this function is that there is prompt when the transceiver receives the ANI ID code from the receiving party.

Mute code

The mute mode means the modes for turning on the speaker. There are three selectable modes as followings:

QT: When the transceiver receives the signal which is strong enough to open the squelch and matches with the set CTCSS/DCS, the speaker will be activated automatically. If the transceiver doesn't set the CTCSS/DCS, the speaker will be activated once there comes the strong signal.

QT+DT: When the transceiver receives the signal which meets the QT condition and matches with DTMF signaling, the speaker will be activated automatically.

QT X DT: When the transceiver receives the signal which meets the QT or QT+DT conditions, the speaker will be activated automatically.

NOTE ⚠

Please set this function in the CHANNEL MESSAGE by the programming software, which can be specially programmed for each channel.

DTMF Sidetone

When the transceiver is transmitting DTMF signaling, whether you prefer the speaker to be on and hearing the matching DTMF tone.

ON: Sidetone is on when transmitting ANI ID code.

OFF: No sidetone when transmitting ANI ID code.

All calls, Group calls and Selective calls

This series of transceiver is available for the ANI ID transmission, ANI ID editable and the DTMF decoding functions. It is programmable to use the All calls, Group calls and Selective calls function during the group communications without other equipments.

Please program the settings as followings:

1. **Editing the ANI ID code**

   Every set of the communicating transceivers among the groups should be well programmed their codes respectively.

2. **DTMF signaling to be ON**

   Every set of the communicating transceivers among the groups should be well programmed to open the DTMF signaling.

3. ANI-ID switch to be ON

Every set of the communicating transceivers among the groups should be set the ANI-ID switch to be ON.

4. Mute mode to be QT+DT

Every set of the communicating transceivers among the groups should be set the mute mode to be QT+DT.

5. Call ring and ring time setting (if necessary)

NOTE ⚠

» Every set of the communicating transceivers among the groups should be programmed the same channel information and the parameter.

» This series of transceiver is without keyboard and LCD display, it is only programmable to be called for the All calls, Group calls and Selective calls function.

Digital FM radio

Turn on the Radio: Press side key PF1 (The default value of the radio key set is the radio mode.), the receiving light flickers green and it will search the radio station automatically. When it accomplishes the search and starts up the radio listening, the green light stops.

Operate the radio: Press SQL button, it means the transceiver is tuning the radio station (The radio can be tuned to the listenning station automatically) and the receiving light flickers green during the station turning.

Turn off the radio: Press PF1 key to turn off the FM radio function in radio mode.

NOTE

» The transceiver is still in Transmitting/Receiving standby when the radio is on. It goes back to the Transmitting/Receiving mode when receiving the signals, and return back to the radio mode after the signal disappears.

» Pressing PTT key to transmit or changing channls after 5 seconds, the transceiver will automatically return to FM radio mode.

Transmit voice prompt

This function is to choose the options of voice prompt for transcmitting.

OFF: Turn off this function, so no prompt transmits.

BOT: Press PTT and prompt transmits.

EOT: Release PTT and prompt transmits.

BOTH: Both press and release PTT , prompt transmits.

Setting batterypack save mode (SAVE)

The SAVE function is chosen, if there are no receiving signals or any other operations for 10 seconds on the transceiver, the transceiver will activate the SAVE function automatically. In order to reduce the power consumption, this function can make the transceiver cut off the receiver circuit for the moment, then re-open to detect signals for a while. If there are any receiving signals or operations, the transceiver will be activated immediately and exit from the SAVE mode.

Battery capacity prompt

There are 4 situations to estimate the battery capacity, when you re-start the transceiver,

the green light for receiving flashes four times, it means the capacity is very full.

the green light for receiving flashes three times, it means the capacity is full.

the green light for receiving flashes two times, it means the capacity is not full.

the green light for receiving flashes one times, it means the capacity is low.

the red light for receiving flashes four times, it means the capacity is empty and the battery need to be charged or recharged.

Selecting transmitting power

Press PTT and topkey at the same time, to switch the transmitting power between High and Low power.

NOTE ⚠

» If the transmitting light flashes red once, it means the transceiver is working in LOW power.

» If the transmitting light flashes red twice, it means the transceiver is working in HIGH power.

» This function is temporarily for the current power switching operation.

Transmit over timer

This function is to prevent any transmitter from being busy line or transmitting over time. Meanwhile, it protects the transceiver from being damaged because of the overtime transmitting. If the transceiver continually transmits over the set time, the transmitting will be interrupted with the voice prompt. This transceiver can be set in 40 levels with 15 seconds each, between 15 and 600 seconds.

Setting scan function

This function is a mode for receiving all communicating channels without missing. Press PF1 (in scan mode), the transceiver starts scanning one by one according to the scan order. Once the transceiver detects signals, it will switch to the detected channel for receiving.

This transceiver has the adding channel scan function, to enable to be defined into the desired channels.

How to scan

The transceiver stops scanning when detecting the signals on the frequency or memory channel. It will continue or stop scanning according to the three options as below:

TO: After searching the signals, the transceiver continues scanning if there are no operations within 5 seconds. Press PTT, it transmits the channel specified by encoder. After transmitting, the scanning stops too.

CO: The transceiver stops scanning when detecting signal, and continues scanning 3 seconds after the signal disappears. Press PTT, it transmits the channel specified by encoder. After the transmission, it stops scanning.

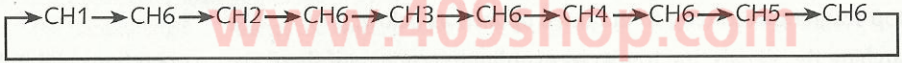
SE: The transceiver stops scanning when detecting signal. Press PTT, it transmits the scanned channel. If there are still no operations in 10 seconds after the transmission, it willl be back to transmit the channel specified by encoder.

Setting priority scan function

If you want to monitor the other frequency and check the certain preferred frequency at the same time, you can set priority scan functon.

E.G.: Scan six common channels CH1, CH2, CH3, CH4, CH5, CH6 and set CH6 as the priority scanned channel.

Scanning sequence as following chart:



If the transceiver detects signal on Priority Channel, it will call out its frequency.

Select the priority channel via programming software.

Adding scanning function

NOTE ⚠

» Only the added scanning channel can be listed to scan.
» Editing method: Strictly via programming software.

Busy Channel lockout

The function is to prevent the interference from other communicating channels. If the channel is in busy line and pressing PTT, the transceiver will not transmit signal but sound the alarm prompt.

VOX function (VOX)

This transceiver will switch to the transmitting mode when detecting the voice signal.
The transmitting operation will somewhat be delayed, and the voice signal information may be not transmitted at the first beginning, since there needs some time for the VOX circuit to detect the voice signal.
There are 10 levels for the VOX of this transceiver. The higher level VOX is set, the less sensitive the transmitting is.

Setting voice guide (VOICE)

This transceiver has Chinese and English selectable for the voice guide.

Receiving/Transmitting frequency programmable

The receiving/transmitting frequencies can be programmable accordingly within the original frequency range.

Low voltage prompt

When the batterypack is on low voltage, the transceiver will sound voice programmable to remind of being charged timely.

Wire clone function

Using wire clone	a. Installing batterypacks on source radio and target radio and connect them via wireclone cable. b. And then power target radio on c. Power on the source radio and hold on the MONI key at the same time. d. Red LED on the source radio flashes, while the green LED on the target radio flashes, it shows the wire cloning is completely starts up.	Transmitting red LED flashing means transmitting data when wire cloning. Transmitting red LED distinguishes after completing wireclone, and the transceiver returns to standby. Transmitting red LED lasting flashing means the wireclone is failed and the transceiver returns to standby mode.
	Target radio	Receiving green LED flashing means receiving data when wire cloning. Receiving green LED extinguishes after completing wireclone, and the transceiver returns to standby.

How to use the intelligent charger

1. Insert the AC plug into the electric fence outlet (AC: 90-240W), the indicator flashes, it means the charger enters charging standby.
2. Insert the battery into the charger, the RED LED lasts flashing, it means charging is on the progress. While GREEN LED lasts flashing, it means the charging completes.

NOTE ⚠

» When inserting the exhausted batterypack into the charger, it will pre-charge the batterypack in trickling. Meanwhile the RED LED flashes, and the process will last 10-20 minutes. And then the charging is normal. RED LED will last flashing till the charging is full. And GREEN LED will flash.

» Trickling charging the exhausted batterypack can protect the lithium batterypack better.

Programming guide (via USB programming cable)

a. Download, unzip and install the USB driver according to different operating system.

b. Restart your computer, and it shows the driver is installed successfully.

c. Download and unzip the matching programming software.

d. Connect the transceiver with your computer via the USB programming cable.

e. Power on the transceiver and open the software.

f. Read from the radio to check the connection.

g. Setting on the software accordingly.

h. Write to the radio.

NOTE ⚠

» If you get the message "failed connection" when you try to read from the radio, please check the first five steps and the communication ports accordingly.

» Please note that once the first three steps are done well, the com port will be selected automatically when you open the software. However, according to the different computer settings, the com port may be needed to re-set, Please determine the port assignment from the device manager of the computer and select the correct communication port, which is available for the connection.

» If the connection is still not OK, please try another cable or another transceiver on another computer to double check.

Trouble shooting

Please check your transceiver carefully according to the below chart before making sure that the transceiver is faulty. If the problems continuously exsit, please reset your transciver to correct your wrong operation sometimes.

Problem	Solution
Cannot power on, no power supply	1. The battery may exhausted, please charge or recharge. 2. The battery is installed wrongly, please remove the battery and reinstall.
Batterypack can't work too long	1. The battery life is over, please change battery. 2. Not charging completely, please make sure the batterypack is fully charged before removing.
Receiving light continually flashes, but no sound from speaker	1. Make sure the volume is maximum. 2. Make sure if the CTCSS/DCS is the same with the other members, please recheck and reset.

Trouble shooting

Problem	Solution
In standby, the transcevier transmits automatically without pressing PTT key.	Check if the VOX function is on and its level setting is too low.
Some functions cannot be memorized	Check if the transceiver work in channel mode. Some functions only can be memorized via programming software in channel mode.
Receiving signals from other groups while communicating	Please change the CTCSS/DCS frequencies for all group members.

Appendix 1

CTCSS

1	67.0	11	94.8	21	131.8	31	171.3	41	203.5
2	69.3	12	97.4	22	136.5	32	173.8	42	206.5
3	71.9	13	100.0	23	141.3	33	177.3	43	210.7
4	74.4	14	103.5	24	146.2	34	179.9	44	218.1
5	77.0	15	107.2	25	151.4	35	183.5	45	225.7
6	79.7	16	110.9	26	156.7	36	186.2	46	229.1
7	82.5	17	114.8	27	159.8	37	189.9	47	233.6
8	85.4	18	118.8	28	162.2	38	192.8	48	241.8
9	88.5	19	123.0	29	165.5	39	196.6	49	250.3
10	91.5	20	127.3	30	167.9	40	199.5	50	254.1

Appendix 2

DCS

1	D023N	16	D074N	31	D165N	46	D261N	61	D356N
2	D025N	17	D114N	32	D172N	47	D263N	62	D364N
3	D026N	18	D115N	33	D174N	48	D265N	63	D365N
4	D031N	19	D116N	34	D205N	49	D266N	64	D371N
5	D032N	20	D122N	35	D212N	50	D271N	65	D411N
6	D036N	21	D125N	36	D223N	51	D274N	66	D412N
7	D043N	22	D131N	37	D225N	52	D306N	67	D413N
8	D047N	23	D132N	38	D226N	53	D311N	68	D423N
9	D051N	24	D134N	39	D243N	54	D315N	69	D431N
10	D053N	25	D143N	40	D244N	55	D325N	70	D432N
11	D054N	26	D145N	41	D245N	56	D331N	71	D445N
12	D065N	27	D152N	42	D246N	57	D332N	72	D446N
13	D071N	28	D155N	43	D251N	58	D343N	73	D452N
14	D072N	29	D156N	44	D252N	59	D346N	74	D454N
15	D073N	30	D162N	45	D255N	60	D351N	75	D455N

DCS

76	D462N	82	D516N	88	D606N	94	D645N	100	D723N
77	D464N	83	D523N	89	D612N	95	D654N	101	D731N
78	D465N	84	D526N	90	D624N	96	D662N	102	D732N
79	D466N	85	D532N	91	D627N	97	D664N	103	D734N
80	D503N	86	D546N	92	D631N	98	D703N	104	D743N
81	D506N	87	D565N	93	D632N	99	D712N	105	D754N

Technical specification

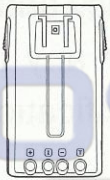
Frequency range	VHF: 136-174MHz
	UHF: 350-390MHz
	UHF: 400-470.9875MHz
Memory channels	16 channels
Voltage	7.4V DC
Working temperature	-30℃ to 60℃
Channels	Co-channel or Dis-channel simplex
Power output	VHF: 5W / UHF:4W
Mode	F3E(FM)
Maximum deviation	⩽ ±5KHz
Adjacent channel power	< -60dB
Stability	±5 ppm
Sensitivity	< 0.2 μV
Audio output power	⩾ 500mW
Weight	228g
Waterproof	IP55
Size	61 X 121X 38 (mm)

NOTE ⚠

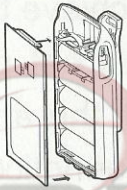
» Specifications are subjected to be revised without prior notice.

Optional Accessories

Six-way charger

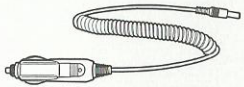


1700mAh Li-ion batterypack



"AA" batterypack

Eliminator

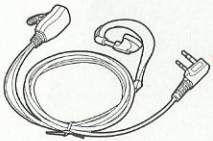


Car charger

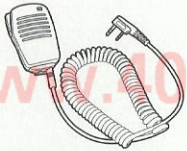
Programming software

USB programming cable

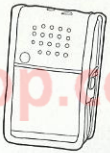
Wireclone cable



Headset



Speaker/Mic



Leather case

(SL16) (BNC)
Antenna adapter

Announcement

We endeavor to achieve the accuracy and completeness of this manual, but is still not perfect for any possible omission or printing errors. All the above specifications are subject to be revised without prior notice.

English Version:39833-P-1107-V3