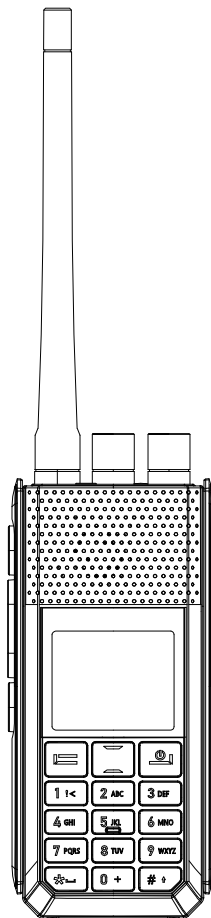


# RETEVIS



Amateur Radio

## Ailunce H1 User's Manual

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**EN(1-23)**

**DE(24-49)**

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## Safety and Overview

We are grateful that you choose Ailunce H1 digital radio.

We believe this easy-to-use transceiver will provide dependable and reliable communicate to personal operating at peak efficiency. The transceivers incorporate the latest in advanced technology. As a result, we feel strongly that you will be pleased with the quality and features of this product!

## Product safety and RF exposure for handheld



Before using this two way radio, please read the manual which contains important operating instructions for safe usage, RF Energy Awareness, control information and operational instructions for compliance with RF Energy Exposure limits inapplicable national and international standards. also read the operational instructions for safe use.

## Features:

- 1.Support to import 500,000 DMR Contacts.
2. Upgraded USB Type-C charging battery, charge the radio on the desktop charger, or just the battery alone.
3. Eye-catching alarm button on top of the radio, easy and quick to request an emergency call in emergencies.
4. Almost all the operations can be done via the radio keyboard.
5. Support to use a side key as the secondary PTT.
6. Support night mode and adjust the brightness.
7. Support different keyboard lock mode.
8. NOAA and NOAA Weather Alarm in America.
9. Analog APRS and digital APRS function.
10. GPS out of range alarming.
11. CTCSS scan, and color code scan, VFO frequency range setting.
12. Mixed channel working mode;
13. ARC4, AES encryption;
14. Work Alone;
15. Man Down;
16. Single Frequency Repeater;
17. User-defined the channel character color and background color.
18. Auto Power off;
19. Mic Gain Setting;

## Specifications

General Specifications	Operating Voltage	7.4V
	Battery Type	Li-ion battery
	Battery capacity	2900mAh
	Operating Temperature	-10°C ~ +45°C (charging 10-40 °C)
	Audio Power Output	16Ω 1W
	Antenna Impedance	50Ω
Receiver	Sensitivity	(12dB SINAD) ≤-121dBm
	Adjacent Channel	≥70dB (25kHz)
	Selectivity	≥60dB (12.5kHz)
	Spurious Emissions	≤-57dB (25kHz) ≤-57dB (12.5kHz)
	Spurious Suppression	≥70dB (25kHz) ≥70dB (12.5kHz)
	Signal-to-Noise Ratio	≥45dB (25kHz) ≥40dB (12.5kHz)
	Audio Distortion	≤5%
Transmitter	TX power	High: ≤5W Middle : 3W Low: 0.5W
	Frequency Stability	±2.5ppm
	Modulation Limits	±5.0kHz@25kHz (25kHz)
		±2.5kHz@12.5kHz (12.5kHz)
	Adjacent Channel Power	≤70dB (25kHz) ≤60dB (12.5kHz)
	Signal-to-Noise Ratio	25kHz: 45dB; 12.5kHz: 40dB
	4FSK digital modulation	12.5kHz (Data) 7K60FXD
		12.5kHz (Data+Voice) 7K60FXE
	Audio Distortion	≤5%
	Bit Error Rate	≤3%
<b>The amateur frequencies of the equipment are TX:420-450&amp; 144-148 MHz&amp;RX:400-520&amp; 136-174MHz</b>		

## Unpacking and Checking Equipment

We are grateful that you choose Ailunce H1. Please check if there is any damage to the package when you receive it. Carefully unpack the transceiver. Recommend that you check the items listed in the following table. If any items are missing or damaged during shipment, please contact your dealer immediately.

### Supplied Items:

Radio Body	Antenna
Li-on Battery	Desktop Charger
Belt Clip	User's Manual
USB Charger Cable	Sling

## Battery Using Information

Battery packs are not charged when they are shipped. Charging them before use.

◆ Initially charging the battery pack after purchase or extended storage (longer than 2 months) will not bring the battery pack to its greatest capacity or its normal charge, which can be done only after repeated charging and discharging two or three times.

◆ Do not use the radio during charging. This will affect the normal charging of the battery pack, causing damage to the radio and accidents.

◆ After the battery pack is fully charged, please take it out of the charger base. Do not charge it again before the battery is completely running out. Or it will destroy the memory effect of the battery.

◆ Although using the right charging ways, the battery does not gain capacity or use time, which means the battery life is near the end, please change to a new battery pack.

◆ Please adopt the original factory battery pack and charger. They are available with your local agent.

◆ If you have questions about non-original factory battery packs and accessories, please do not use them. Or it will cause dangerous accidents. Desktop Charger Charging instructions:

Use the 5V 1A charging adapter to charge the desktop charger.

◆ Plug the lithium battery or radio equipped with the lithium battery into the charger base, and ensure that the battery is in normal contact with the charging base.

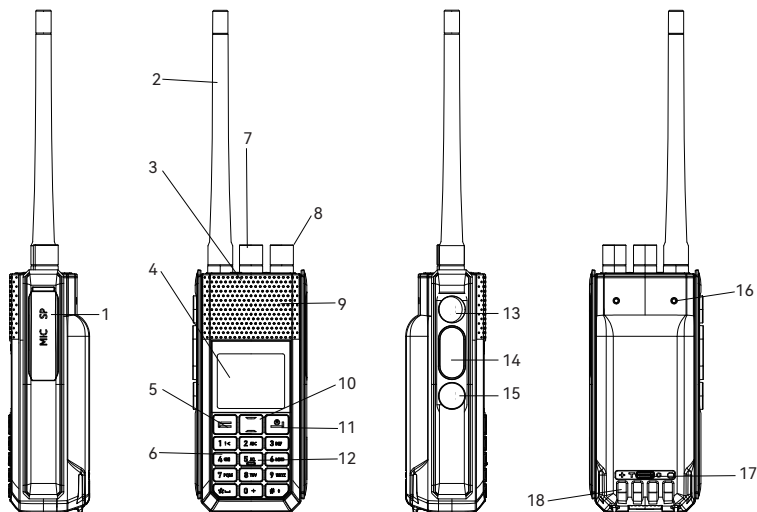
◆ The green light is steady on when the charging base is empty; When the red light is on, charging begins; When full, the green light is steady on.

◆ After the lithium battery pack is fully charged, take it out of the charger. Type-C Battery Charging instructions:

Use the 5V2A charging adapter to charge the battery directly, the LED light back of the battery will turn red when charging, and change to green when the battery is full.

Note: When the radio is charging, it is forbidden to transmit to avoid damage to the radio and accidental danger.

## Getting Acquainted



1. Headphone Jack

2. Antenna

3. SOS Button

4. Display Screen

5. Menu Button

6. Numeric keypad

7. Channel Knob

8. Volume/Power Knob

9. Speaker

10. Up/Down keys

11. Back Button

12. Blind

13. Customizable Key

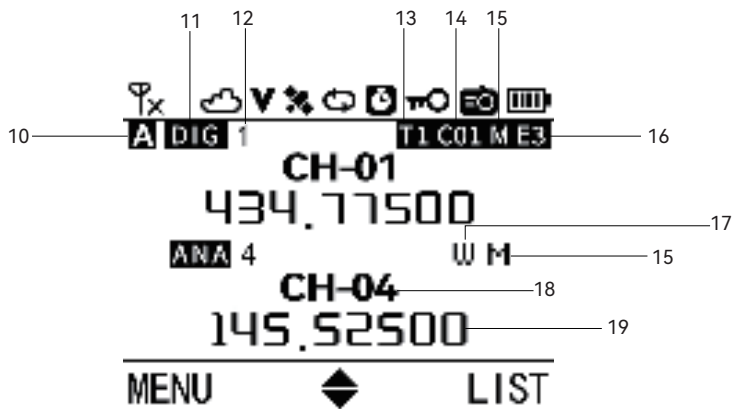
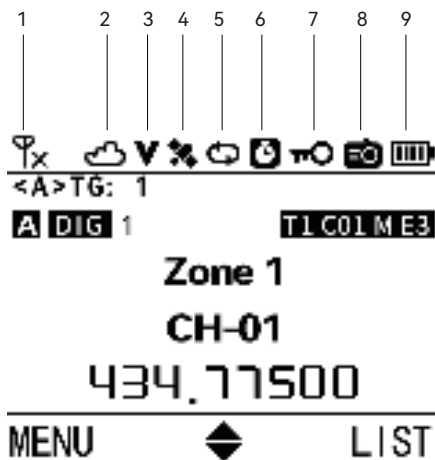
14. PTT Button

15. Second Customizable Key

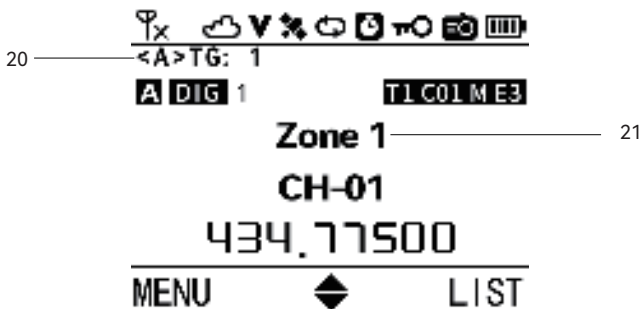
16. Belt Clip

17. Type-C Port

18. Charge Port







- |                  |                                   |
|------------------|-----------------------------------|
| 1、Rssi           | 12、Channel number                 |
| 2、NOAA           | 13、Time Slot                      |
| 3、VOX            | 14、Color Code                     |
| 4、GPS            | 15、Power                          |
| 5、Scan           | 16、Encryption                     |
| 6、Auto Power Off | 17、Analog Band Width              |
| 7、Keypad Lock    | 18、Channel Name                   |
| 8、FM             | 19、Channel Receive Frequency      |
| 9、BAT            | 20、Group ID (Only for Group Call) |
| 10、Standby A/B   | 21、Zone Name                      |
| 11、Channel Type  |                                   |

## Basic Operations

KEYPAD FUNCTIONS	
[MENU]	Confirm button.
[EXIT]	Long press to switch VFO and channel mode. In the standby screen, quickly enter the Contacts Menu. The exit function in menu operation.
[*]	Shortly press to switch Band A and Band B. Long press to lock or unlock the keyboard.
[#]	In the standby screen, shortly press to switch single band or dual band. When editing the input interface: switch the input method, switch between pinyin, English, and numbers. In VFO mode, long press will switch VFO channel analog and digital mode.

## Menu Settings:

NO.	Menu	Definition
1	Contact	In digital mode, displays memory group call list. New contacts: Edit the ID number, Name, Call Type, call sign, and so on, then save it as a new contact. Manual dialing: Directly enter the contact's ID to make a quick call. Short press <b>【#】</b> button to switch between Group ID and Private ID. If you manually dial a Private ID, you can do an Alert Call and Radio Check, Measure Distance, Radio Enable, or Radio Disable. If manually dial a Group ID, after editing the ID, directly press the PTT, it will transmit to this group call. Talker Alias: Allows Alias transmit Set / Alias receive Set.
2	Message	In digital mode, select the message format "M-SMS", "H-SMS", "DMR-Standard". display support inbox, outbox, drafts, quick texts, and new message creation.
3	Call Logs	In digital mode, display record last call, outgoing, incoming, and missed calls. Allow viewing associated contacts.
4	DTMF setting	Display the DTMF Lists in analog mode and create new DTMF channel, Manual dial DTMF number.
5	Scan	Color Scan: Cycles scan through color code in digital mode. CTCSS Scan: Enable CTCSS scan in analog channel. DCS Scan: Enable DCS scan in analog channel. Scan List: Allow editing scan list name, add scan channels, priority channels, choose scan modes (carrier, time, search). Frequency Range Set: set the VFO frequency scan range.
6	Zone	1、List all zones on the device. 2、Allow adding new zones and add new channel to a zone. 3、Total 250 zones added on the device, and every 64 channels per zone. scan modes (carrier, time, search).
7	Settings	Device settings, including channel information, radio settings, and device information. Menu items differ based on whether the current channel is analog or digital.

8	Position	Control GPS Settings, including on/off switch, GPS mode, and viewing GPS information.
9	APRS	Choose analog/digital modem, location settings, reporting mode settings, my location definition, display mode, beacon settings, and APRS list.
10	Digital Monitor	Switch and settings for digital mode monitor function. DigMoni CC- any cc: means receiving signals from other channels with different color codes. - same cc: means only receiving signals from the channel with the same color codes. DigMoni ID- Any ID: means means receiving signals from other channels with different group IDs. - Same ID: means only receiving signals from the channel with the same group ID.
11	Emergency Alarm	Emergency alarm function settings. Alarm on or off. Set emergency lists. detailed operation take reference of the detailed function operation please take reference to the Detailed functional operations.
12	Radio ID	Check radio and create new radio ID. Support to set total 32 radio ID. IDs can be selected for use in digital channel settings.
13	One-Touch Call	Display the one-touch call list in digital mode, supporting up to 5 lists. Allow viewing, editing, and adding new lists.Call types include voice calls and quick texts.
14	Weather ettings	Weather alarm on/off: Turn the WX alarm on/off. When enabled, it monitors the selected channel. Weather Channel List: When standing by, choose a weather channel to monitor weather information. When the WX alarm function and WX channel are turned on, the WX icon will be displayed on the standing-by screen.

## Radio Settings:

NO.	Menu	Definition
1	Key Beep	On or Off
2	Backlight	Screen backlight setting, Enable or Timed (timer settings via CPS)
3	Day/Night Mode	Day Mode or Night Mode
4	Brightness	Adjust brightness using the up and down keys, or set via CPS.
5	Keypad Lock	On or Off
6	Key Lock	Manual or Auto; When auto is selected and keyboard lock is enabled, the keyboard will automatically lock after 15 seconds of inactivity.
7	Lock Mode	Choose to lock "TOP,Menu,Exit,SK1,SK2,Channel Knob,PTT"key. If select "TOP"on, it will lock the TOP key, you can select to lock all the keys.
8	LED	Choose to enable or disable the LED when TX or RX.
9	Power-On Password	If enabled, a password will be required when powering on the radio. When disabling the Power on password function, repeat the password.

10	VOX	1.Turn on or off the voice-activated transmission function, is a switch that begins transmitting when you start talking, making it hands-free. 2.Gain Level and VOX Time Settings. 3.Plug in EP auto VOX: On/Off. When plug in the earpiece to enable or disable the VOX function.
11	Channel Display Mode	Choose the standby channel display modes: Channel, Frequency, Name, Frequency +Name.
12	Hidden Mode	The radio will all mute after turning on hidden mode.
13	Auto Power-Off	Set a time for auto power off the radio.
14	Language Selection	Chinese or English
15	Menu Exit Time	Set a time to exit the current operation menu.
16	Power On Picture	Default Picture or DIY Picture (Customer's Picture Uploaded via CPS)
17	Background	Select different colors or DIY Picture (Customer's Picture Uploaded via CPS)
18	Standby Color	Set the text color of the standby interface.
19	CH Color A	Set color for the band A channel display.
20	CH Color B	Set color for the band B channel display.
21	Zone Color A	Set color for the band A zone display
22	Zone Color B	Set color for the band B zone display.
23	Main Channel	Band A: The upper channel will be set to the Band A. Band B: The lower channel will be set to the Band B.
24	Single Mode	Enabled for Single Band Mode, Disabled for Dual Band Mode.
25	Message Alert	Choose to display a ringtone when receiving a message.
26	Call Ring	Choose to display a call tone when receiving a call.
27	Frequency Step	Select different frequency step values for use in VFO mode. 2.5K,5K,6.25K,10K,12.5K,15K,20K,25K,50K,100K;
28	Squelch Open Level	Select different squelch levels.
29	Squelch Normal Level	Select different squelch levels.
30	Squelch Tight Level	Select different squelch levels.
31	Power Save	Turn on the function to extend the battery life. Save 1:1, work 100ms, dormant 100ms. Save 2:1, work 200ms, dormant 100ms.

32	Burst Tone	In analog mode, on the standby screen, pressing and holding the PTT key while pressing SK1 sends the selected single burst tone for repeater activation.
33	Mic Gain Level	Select MIC gain from low to high. By adjusting the microphone gain, you can increase or decrease the sensitivity of the intercom mic, which is the transmission sensitivity.
34	Fixed Time Mute	Select a time to mute the radio.
35	Man Down	The radio will detect whether the user is in a falling state and sound a emergency tone. Entry, exit, and pre-alarm times set via CPS under Emergency Alarm->Man Down menu.
36	Key Settings	Customizes long and short press actions for TOP, UP, DOWN, SK1, SK2 keys. See detailed functional operation section for available options.
37	CTCSS tail	Multiple tail sound elimination methods.
38	Non-Signaling tail	tail sound elimination methods when there is no Signaling setting.
39	Channel Switch Type	Switch over zone: Allow switching channels in different zones. Switch within zone: Limit channel switching to the selected zone.
40	Time Zone	Time Zone Selection
41	Time Display	Select display the time or not on the standby interface.
42	Data Mode Set	Time settings: You can manually adjust the time by pressing the #key and switching between year, month, data, and time. Use the up/down key to adjust the number. You can also directly enter the number keys to adjust the time. GPS Calibrate: Calibrate the time according to the GPS. Date format: 3 options. Time format: 12H or 24H
43	Channel Mode Lock	When enabled, channel mode and VFO mode cannot be switched on the standby screen.
44	Roger Beep	If turn on the roger beep. When the PTT button is released, the radio will beep to confirm to other users that you've finished your transmission and that they can start talking.
45	Radio Mute	It will mute when the radio front panel is down.
46	Talk Permit tone	Talk Permit tone on or off.
47	Sound Mode	Outdoor or Indoor: Sound Levels Vary
48	Missed Call tone	It will sound a tone when gets a missed call.
49	Font	Select different font sizes.
50	Last Call Disp	Select to display the last heard or not.
51	Voice	Choose to play the voice broadcast.
52	Call In light	Choose to light the RX screen when receiving a signal.

## Analog Channel Information:

1	New Channel	Save the current channel (or VFO) information to the specified channel number. If a channel already exists at the specified number, a prompt will ask if you wish to overwrite it.
2	Delete Channel	Delete a channel from the channel lists.
3	Channel Type	Select the type of the current main channel: Digital, Analog, Dig Mix Analog, Ana Mix Digital.
		If choose Dig Mix Analog, it will transmit on digital mode and receive on analog mode.
		If choose Ana Mix Digital, it will transmit on analog mode and receive on digital mode.
4	Channel Name	Supports a maximum of 16 characters to edit the channel name. (VFO channel dose not support)
5	RX & TX Frequency	Set the current VFO or MR channel to receive and transmit frequency.
6	TX Power	Select the transmit power levels: low, middle, and high.
7	Band Width	Wide, Narrow;
8	TOT	For transmission timeout settings.
9	R-CDC	Receive CTCSS/DCS tone selecting.
10	T-CDC	Transmit CTCSS/DCS tone selecting.
11	C-CDC	Set the same CTCSS/DCS tone for receive and transmit.
12	Tx Admit	Always Allow, Channel free, CT/DT Incorrect and RX only optional.
13	Optional Signaling	DTMF is optional
14	PTT-ID	Options for transmitting the PTT-ID are BOT (the beginning of the transmission) , EOT (the end of the transmit), or both of the transmit begin and end.
15	RX Signaling System	Only "None" or a specific DTMF system can be selected when optional signaling is chosen.
16	DTMF ID	Only "None" or a specific ID can be entered when optional signaling is selected.
17	RX Sql Mode	Carrier: turn on the speaker after receiving the carrier. Option Signal: determine whether to turn on the squelch by judging it is code squelch or selective call match. CT/DT and Opt: determine whether to turn on the speaker by judging it is CTCSS/DCS and optional signal match. CT/DT or Opt: determine whether to turn on the speaker by judging whether it is CTCSS/DCS or an optional signal match.
18	Carrier Squelch	Always, Normal, Tight.
19	Talk Around	only works under the repeater channel, if turn on Talk Around, the radio will switch to a simplex mode channel.
20	Reverse	Reverse the transmit and receive frequency under a repeater channel.

21	Alarm System	Delete a channel from the channel lists.
22	Compander	On or Off
23	Scrambler	Choose to turn off or select a scrambler frequency.
24	Scan List	Select a scan list. To activate scanning on a channel, a scan list must be selected.
25	Lone Worker	On or Off

## Digital Channel Information (Only options different from analog channels are listed) :

1	TX Contact	Select a contact from the Priority contact or local contacts.
2	TX Admit	Transmit permission settings: Always Allow, channel free, cc free, RX Only.
3	Radio ID	Optional None: In this case, the device's main ID value is used. Or select from the Radio ID list: The local RadioID for digital calls will be replaced with the selected value.
4	Color Code	0-15
5	Time Slot	Slot 1 or Slot 2.
6	Encrypt	Turn on the encryption function.
7	Encrypt Type	Basic, AES, ARC4. Encryption keys need to be selected and set in the CPS.
8	RX Group List	Select None or RX Group list for current channel.
9	Lone Worker	On or Off.
10	APRS Receiver	On or Off.
11	DMR Mode	Simplex, Repeater, Double-slot
12	Ranging	It will range the distance between two private call radios that are in communication range.
13	SFR	It will act as a single-frequency repeater and will transmit and receive from different time slots.

## Version information

Under the Settings->Device Information, the device's main ID, alias, version, and other information are displayed.

## Detailed functional operations

### 1、Shortcut Key Settings

The TOP, UP, DOWN, SK1 ,SK2 keys on the device can be configured for long-press and short-press actions to select various functions.

In the Settings->Radio Settings->Key Settings, you can choose from:

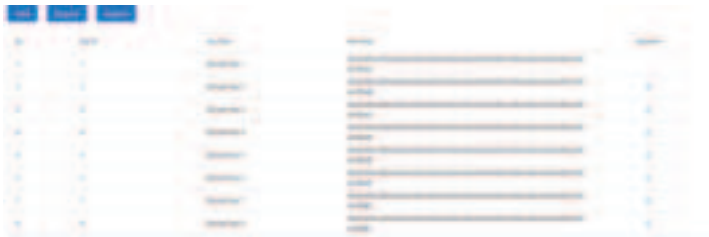
"Home Screen", "Lone Worker", "Man Down", "Radio Silent", "Power Level", "Monitor", "Keypad lock", "Emergency Off", "Emergency On", "Squelch On/Off", "Zone UP", "Zone Down", "Scrm/Encrypt", "Day/Night Mode", "Scan", "VOX", "Talk Around", "NONE", "Channel Up", "Channel Down", "O-T-Call 1", "O-T-Call 2", "O-T-Call 3", "O-T-Call 4", "O-T-Call5", "Reverse", "SFR", "Covert Mode", "Channel Type Switch", "Second PTT".

## 2、Encryption

CPS supports a maximum of 32 encryption key lists;

On the radio, you can view the encryption type of the current channel in Channel Settings-Encryption-Encryption Type: Basic, AES, ARC4 encryption type;

The key value needs to be set in CPS, In the CPS-DMR Services-Encrypt Here can set the ARC4 and AES encryption value, each key can be up to 64 characters long.



If choose Basic encryption, in the CPS-Channel Information-Channel Edit-Digital Section. Check “Encrypt” Choose the encrypt type, and encrypt key here.



the basic encrypt key cant greater than 65535.

### 3、SFR

If enable SFR, the radio will act as a temporary single-frequency repeater and will transmit and receive from different time slots.

- ① Turn on SFR in one digital channel. Menu 25 in channel setting.
- ② Select [ Double Slot] mode. Menu 20 in channel setting.
- ③ The current radio is be used as a temporary repeater.
- ④ Two other radios can communicate under the different time slots.

Note: Both radios engaged in the conversation need to have dual-slot mode enabled simultaneously.



#### 4、Scan

In the Settings->Channel Information->Scan List, select a scan list.

In the Settings->Radio Settings->Key Settings, choose a shortcut function for a specific key as Scan.

On the Home Screen, press the shortcut key to turn the scan function on or off:

If you are currently in channel mode, initiating a scan will scan through the channels.

If you are in VFO mode, initiating a scan will scan through the frequencies.

For digital channels that require color code scanning, select Scan->Color Scan to start, and press the PTT button to end the scan.

For analog channels that require CTCSS scanning, select Scan->CTCSS Scan to start (the channel must have a CTCSS set), and press the PTT button to end the scan.

For analog channels that require DCS scanning, select Scan->DCS Scan to start (the channel must have a DCS set), and press the PTT button to end the scan.

The transmit channel settings for scan lists need to be configured using CPS.

Frequency Range Setting: Set the start and end frequencies for scanning in the frequency range settings. When performing a VFO scan, it will scan according to the set frequency range.

#### 5、FM radio

32 FM Radio channels can be stored through computer program software;

① Enable or disable the FM function in the radio setting menu 35.

② If turn on the FM radio, the current channel will switch to FM radio channel.

③ long-press the 【EXIT】 key, to switch between VFO mode and channel mode, press the 【Up/Down】 keys or rotate the knob to switch frequency or channels.

④ In VFO mode, the "UP" and "DOWN" keys switch by 1 MHz, and the knob adjusts by 100 kHz.

#### 6、Emergency Alarm

Set up the alarm list in the Emergency Alarm menu.

Alarm Type Select: Menu->Emergency Alarm->Emergency List-> Select the desired alarm system->Emergency Type: Options include Siren, Regular, Silent, and Silent with Voice.

① Siren: Only the current radio rings alarm.

② Regular: Ring alarms based on the selected emergency modes.

③ Silent: The radio does not ring alarm but alarms based on the selected mode; During the emergency alarm, the radio is prohibited from being received until the alarm function is deactivated.

④ Silent with Voice: The radio does not ring alarms but alarms based on the selected mode, and the radio can receive during the alarm.

#### Emergency Mode Types:

Menu->Emergency Alarm->Emergency List->Select the desired alarm system->Emergency Mode: Options include Emergency Alarm, Emergency Call, and Emergency Alarm.

① Emergency Alarm: Only the current radio rings the alarm.

② Emergency Call: The radio does not ring alarm but directly initiates an alert call;

③ Emg Alarm w/Call: The radio rings an alarm and then initiates a call;

In the channel setting, select an emergency list and then set a customization button as the emergency function key. By default, it is set to the TOP key. Press the preset key to activate the alarm function when necessary.

#### 7、One Key Call

You can set a one-key call or text message under digital mode.

Edit one-key call information. One-key call list → Edit one-key call → ① Choose the one-key call destination contact. ② Choose the call type: Voice call, send a quick call to the destination

contact. Quick Text, send a quick message text to the destination contact, the quick text can be edited in the CPS.

## 8、Weather Alarm

This radio supports the weather alarm function. If you turn on the weather alarm and choose one of the NOAA channels below, it will monitor the NOAA signal until you press [Exit] back to the standby interface.

Caution: This function is available only in America.

### NOAA Channel List:

Channel No.	Frequency (MHz)
NOAA-1	162.550MHz
NOAA-2	162.400MHz
NOAA-3	162.475MHz
NOAA-4	162.425MHz
NOAA-5	162.450MHz
NOAA-6	162.500MHz
NOAA-7	162.525MHz
NOAA-8	161.650MHz
NOAA-9	161.750MHz
NOAA-10	161.775MHz
NOAA-11	162.000MHz
NOAA-12	163.275MHz

## 9、Channel Save

Regardless of whether the current standby mode is in channel mode or VFO mode, you can save a channel by navigating to the Menu->Settings->Channel Information->New Channel: Enter the channel number and alias, then press confirm to save.

If the channel number already exists, it will be prompted to overwrite the existing channel.

## 10、Import 500.000 DMR contacts operation

Supports to upload 500.000 DMR contacts into the radio. Download the digital contacts from Ailunce website <https://www.ailunce.com/ResourceCenter/>

In the program CPS, find 【Local Address Contacts】 ,import the DMR contacts into the CPS, and then Write Contacts into the radio.



## 11、 Mix Reception

Menu->Settings->Channel Information->Channel Type, and select Dig Mix Analog or Ana Mix Digital to enable mix reception.

The channel type will be displayed as "D+A" or "A+D" on the Home Screen.

If choose Dig Mix Analog, it will transmit on digital mode and receive on analog mode.

If choose Ana Mix Digital, it will transmit on analog mode and receive on digital mode.

## 12、 Position

The radio supports GPS position and distance measurement.

1.GPS Switch: Turn on the GPS if you want to get the GPS position and distance measurement.

2.Support two kinds of GPS mode: GPS and BDS.

3.Startup Test: if turn on the startup test, it will first check the GPS information when power on the radio.

4.GPS Info: it will display the current radio latitude, longitude, speed after activate the GPS.

5.Over Range Alarm: The over-distance alarm is to calibrate a reference point. The radio will alarm when the latest position exceeds the distance of the reference point.

① Capture GPS Position: Directly acquire GPS Position (GPS must be enabled and positioned).

② Alert Range Setting: Off alert or select Distance.

The radio supports distance measurement to obtain the other radio's location information under the digital mode, please follow the below operations:

Manual distance measurement:

1.Select a private contact from the contacts list, and make sure you two can talk with each other under the current digital channel.

2.Service: measure distance. if obtained his GPS position, it will give you a measure distance successfully, and display the distance.

Operating Procedures:

If you want to obtain the other party's location information, please follow below operations:

1.Manual distance measurement

On a digital channel, access the contact list, select an private contact, and then navigate to Supplementary Services-->Range Measurement, This will initiate a request for the other party's location information. Upon receiving a reply, the distance and latitude/longitude relative to your device will be displayed.

## 2. Automatic distance measurement

- ① On a digital channel, go to Settings->Channel Information->TX Contact, and select a private contact who they can communicate with each other.
- ② Within the Channel Information menu, find ranging and turn it on, then return to the standby interface, the device will automatically inquire about the contact's location every 10 seconds.

Notes: If the other party's radio does not have position information, your device will receive latitude/longitude as 0, and the distance will be displayed as--.--; if you receive valid latitude/longitude information from the other party but your device is not positioned, the distance will also be displayed as--.--, correct latitude/longitude information and distance will only be displayed when both the other party's and your device's latitude/longitude information are valid.

## 13、APRS

APRS Modem	Off	Disable APRS function
	Analog APRS	Enable analog mode APRS function.
	Digital APRS	Enable digital mode APRS function.
Ana APRS Set	PTT Report	if choose "PTT report" ON, it will send an APRS signal when the PTT button is released.
	My Callsign	Set the callsign and SSID when using APRS. The default callsign is NOCALL with a serial number of 1.
	Comment TXT	Additional information after the position data to be shown on the <a href="https://aprs.fi">https://aprs.fi</a> website.
	DIGI PATH	Set the WIDE format signal path. The default path is WIDE-1;
	My Symbol	Choose an APRS symbol to identify the device.
	Tx Frequency	Choose the selected CH frequency or APRS standard frequency.
Dig APRS Set	PTT Report	if choose "PTT report" ON, it will send an APRS signal when the PTT button is released.
	Report Channel	Allow user to select a channel to transmit the DMR APRS.
	Error Verify	Disable checksum to receive messages with correct data but incorrect checksums. It is enabled by default.
My Position	GPS	When selecting the GPS data source, all the received APRS information and distance measurements are according to this data.
	Manual	Latitude and longitude can be manually edited, typically used for fixed locations. All received APRS positioning data and fixed-position data are used for distance calculation.
APRS Units	Distance	Km / mile, for displaying distance when receiving APRS.
	Speed	km/h, knot, mph, for displaying speed when receiving APRS.
	Altitude	m, ft, for displaying altitude when receiving APRS.
APRS TX Delay	100ms~1000ms	Set the delay after releasing the PTT before sending APRS.

Beacon TX	Auto	Transmit APRS automatically at a set interval.
	Manual	Transmit by releasing the PTT button.
	Smart	Automatically adjust the transmission interval based on speed, set in CPS.
Beacon Interval	30s,1min,...60min	Set the period for automatic transmission intervals.
APRS Ringer	APRS Voice Alert On or Off.	
Smart Beacon	APRS beacon is sent automatically. These types need to set in the CPS.	
Ana APRS List	A list of all received analog APRS messages. Select one to view details.	
Dig APRS List	A list of all received digital APRS messages. Select one to view details.	
Note: It needs to use an MMDVM hotspot to come true digital mode APRS. and connect an APRS TNC or APRS repeater near your position when to come true analog APRS.		



## 14、DTMF Function

### 1.Sending and Receiving DTMF

#### 1)DTMF Transmission

In Menu-->Book-->Book List-->DTMF1, edit ID and name.

The own ID can be edited and modified in the CPS and also can be set in the channel information-->DTMF ID.

When pressing PTT, the DTMF ID and contact ID will be encoded.

Users also can send DTMF by manually dialing others' ID.

#### 2)DTMF Reception

① Go to Menu--channel information--optional signaling--select one DTMF system.

② Select the receive squelch mode, when decoded the same DTMF ID, it will display C-XXX, XXX means the transmitter DTMF ID, and C acts as a private call. if displays A-XXX, means DTMF received from a group call.

### 2.Sending and Receiving PTT ID

① In the analog channel, go to Menu-->Settings-->Channel Information-->Optional Signaling, and select DTMF (Dual Tone Multi-Frequency).

② First to select the PTT-ID before transmit PTT ID:

Off (don't transmit PTT ID).

BOT (sending the PTT ID to begin the transmission),

EOT (sending the PTT ID end of the transmission),  
and Both (sending the PTT ID begin and end of the transmission)

③ Set the receive signal system when sending a PTT ID, go to menu-->Channel Information--RX Signal Sys, choose one of the DTMF systems.

④ When sending PTT-ID, the received PTT-ID will also be displayed on the screen.

## 15、Digital Monitor

Digital Monitor Switch:

1.Off: turn off the digital monitor function.

2.Single slot: monitor the current time slot.

DigMoniCc

1.Any Cc: Monitor any color code.

2. Same Cc: Monitor the same color code.

DigMoni ID

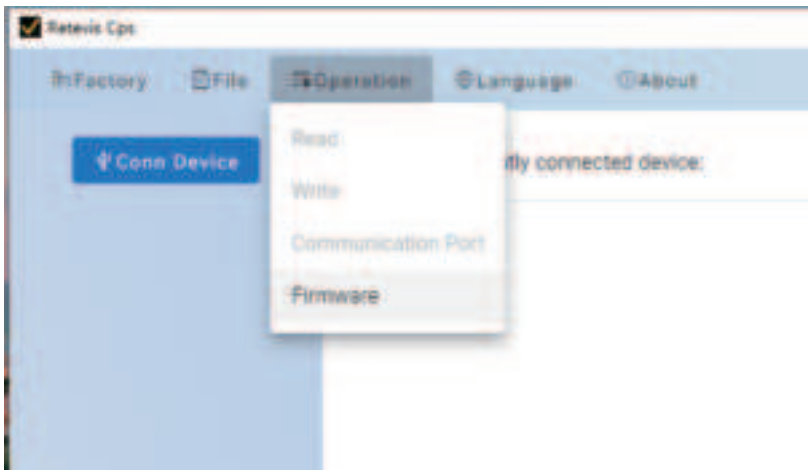
1.Any Id: Monitor any TG.

2.Same Id: Monitor the same TG.

## 16、Update firmware upgrade operation

1. Put the device into DFU mode by pressing and holding the PTT and top orange button while powering on. The indicator light will flash red, indicating the upgrade mode.

2. Open CPS software, select Operation - Firmware.



Choose the serial port and device model, select the firmware file to be upgraded, and click the Download button to start the upgrade. Wait for it to complete.



## 17、Factory Reset

Press and hold the PTT button, the button below PTT, and the Menu button while powering on. The screen will display "Data Initial" to confirm the reset.

## Troubleshooting

No power	<ul style="list-style-type: none"> <li>Battery power may have run out, please update battery or recharge it.</li> <li>Battery may not be properly installed, please take it off and re-install.</li> </ul>
Battery lasts a short time after charge	<ul style="list-style-type: none"> <li>The battery life is over, please replace new battery.</li> </ul>
Can not talk to other members of your group.	<ul style="list-style-type: none"> <li>Verify transmitting is with ineffective operating range.</li> <li>Verify channel, frequency and code settings are correct.</li> </ul>
Hearing other conversation on a channel (not group members*)	<ul style="list-style-type: none"> <li>Please change code settings, including all two way radio settings of your group.</li> </ul>
Radio keep beeping	<ul style="list-style-type: none"> <li>Radio channel is empty. Please turn to other channels or programming channel first.</li> </ul>
Can't power on the radio after update firmware.	<ul style="list-style-type: none"> <li>This problem should be update a wrong firmware, please update the correct firmware again.</li> </ul>

## CAUTION

User instructions should accompany the device when transferred to other users.

Unauthorized modification and adjustment

Changes or modifications not expressly approved by the party responsible for compliance may void the user's authority granted by the local government radio management departments to operate this radio and should not be made. To comply with the corresponding requirements, transmitter adjustments should be made only by or under the supervision of a person certified as technically qualified to perform transmitter maintenance and repairs in the private land mobile and fixed services as certified by an organization representative of the user of those services. Replacement of any transmitter component (crystal, semiconductor, etc.) not authorized by the local government radio management departments equipment authorization for this radio could violate the rules.

Radio License

Governments keep the radios in classification. Two-way radios are only operated on authorized radio frequencies that are regulated by the local radio management departments (such as FCC, ISSED, OFCOM, ANFR, BFTK, Bundesnetzagentur, and so on.). The detailed classification and the use of your two-way radios, please contact the local government radio management departments. Use of this radio outside the country where it was intended to be distributed is subject to government regulations and may be prohibited.

## FCC

**This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.**

Note: This equipment has been tested and found to comply with the limits for a Class B digital device. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate 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 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 into an outlet on a circuit different from that to which the receiver is connected.

—Consult the dealer or an experienced radio/TV technician for help.

WARNING: MODIFICATION OF THIS DEVICE TO RECEIVE CELLULAR RADIOTELEPHONE SERVICE SIGNALS IS PROHIBITED UNDER FCC RULES AND FEDERAL LAW.

## CE Requirement

(Simple EU declaration of conformity) Shenzhen Retevis Technology Co., Ltd. declares that the radio equipment type is in compliance with the essential requirements and other relevant provisions of RED Directive 2014/53/EU and the ROHS Directive 2011/65/EU and the WEEE Directive 2012/19/EU; the full text of the EU declaration of conformity is available at the following internet address:

[www.retevis.com](http://www.retevis.com).

Restriction on putting into service



This product may be used in following countries and regions, including: Belgium (BE), Bulgaria (BG), Czech Republic (CZ), Denmark (DK), Germany (DE), Estonia (EE), Ireland (IE), Greece (EL), Spain (ES), France (FR), Croatia (HR), Italy (IT), Cyprus (CY), Latvia (LV), Lithuania (LT), Luxembourg (LU), Hungary (HU), Malta (MT), Netherlands (NL), Austria (AT), Poland (PL), Portugal (PT), Romania (RO), Slovenia (SI), Slovakia (SK), Finland (FI), Sweden (SE) and United Kingdom (UK). For the intended country of use, please refer to the package.

This radio equipment contains frequency bands that are subject to licensing procedures before it is allowed to be operated. Please make sure you have a valid radio license or radio operator permit before use.

### Disposal

The crossed-out wheeled-bin symbol on your product, literature, or packaging reminds you that all electrical and electronic products, batteries, or accumulators must be taken to designated collection locations at the end of their working life. Do not dispose of these products as unsorted municipal waste. Dispose of them according to the laws and rules in your area.



### RF Safety

This two-way radio uses electromagnetic energy in the radio frequency (RF) spectrum to provide communications between two or more users over a distance. RF energy, which when used improperly, can cause biological damage. Please refer to the following websites for more information on what RF energy exposure is and how to control your exposure to assure compliance with established RF exposure limits: <http://www.who.int/en/>  
Transmit no more than the rated duty factor 50% of the time. Transmitting necessary information or less, is important because the radio generates measurable RF energy exposure only when transmitting in terms of measuring for standards compliance. For users who wish to further reduce their exposure, some effective measures to reduce RF exposure include:

- Reduce the amount of time spent using your wireless device.
- Use a speakerphone, earpiece, headset, or other hands-free accessory to reduce proximity to the head (and thus head exposure).

While wired earpieces may conduct some energy to the head and wireless earpieces also emit a small amount of RF energy, both wired and wireless earpieces remove the greatest source of RF energy (handheld device) from proximity to the head and thus can greatly reduce total exposure to the head.

- Increase the distance between wireless devices and your body.
- This radio is designed for and classified as “Occupational/Controlled Use Only”.

Occupational/Controlled environments are defined as locations where there is exposure that may be incurred by people who are aware of the potential of exposure, for example, as a result of employment or occupation. It means a radio must be used only by individuals aware of the hazards, and the ways to minimize such hazards; Not intended for use in a General population/uncontrolled environment.

- Hand-held Mode

To control your exposure and ensure compliance with the controlled environment exposure limits, always adhere to the following procedure:

-To receive calls, release the PTT button.

-To transmit (talk), press the Push-to-Talk (PTT) button in front of the face.



-Hold the radio in a vertical position with the microphone (and other parts of the radio including the antenna) at least one inch (2.5 centimeters) away from the nose or lips.

### **Electromagnetic Interference/Compatibility**

Nearly every electronic device is susceptible to electromagnetic interference (EMI) if inadequately shielded, designed, or otherwise configured for electromagnetic compatibility. During transmissions, your 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, such as hospitals or healthcare facilities.

- Persons with pacemakers, implantable cardioverter defibrillators (ICDs) or other active implantable medical devices should
- Consult with their physicians regarding the potential risk of interference from radio frequency transmitters, such as portable radios (poorly shielded medical devices may be more susceptible to interference).
- Turn the radio OFF immediately if there is any reason to suspect that interference is taking place.
- Do not carry the radio in a chest pocket or near the implantation site, and carry or use the radio on the opposite side of the body from the implantable device to minimize the potential for interference. Hearing Aids: Some digital wireless radios may interfere with some hearing aids. In the event of such interference, you may want to consult your hearing aid manufacturer to discuss alternatives.
- Other Medical Devices: If you use any other personal medical device, consult the manufacturer of your device to determine if it is adequately shielded from RF energy. Your physician may be able to assist you in obtaining this information.

Turn off your radio in the following conditions:

- Turn off your radio prior to entering any area with a potentially hazardous or explosive atmosphere. Only radio types that are especially qualified should be used in such areas as "Intrinsically Safe".

Note: the areas with potentially explosive atmosphere referred to above include blasting caps, blasting areas, inflammable gas, dust

particles, metallic powders, grain powders, fueling areas such as below decks on boats, fuel or chemical transfer or storage facilities, areas where the air contains chemicals or particles (such as grain, dust or metal powders) and any other area where you would normally be advised to turn off your vehicle engine. Areas with potentially explosive atmospheres are often – but not always posted.

### **Use of Communication Devices While Driving**

- Always check the laws and regulations on the use of radios in the areas where you drive.

Use of Communication Devices, for example, mobile radio, may not be allowed.

- Give full attention to driving and to the road.
- Use hands-free operation, if available.
- Pull off the road and park before making or answering a call, if driving conditions or regulations so require.
- Do not place a portable radio in the area over an airbag or in the airbag deployment area. The radio may be propelled with great force and cause serious injury to occupants of the vehicle when the airbag inflates.

### **Protect your hearing**

- Use the lowest volume necessary to do your job. Turn up the volume only if you are in noisy surroundings.
- Limit the amount of time you use headsets or earpieces at high volume.
- When using the radio without a headset or earpiece, do not place the radio's speaker directly against your ear.
- Use carefully with the earphone maybe possible excessive sound pressure from earphones and headphones can cause hearing loss. CAUTION: Exposure to loud noises from any source for extended periods of time may temporarily or permanently affect your hearing. The louder the radio's volume, the less time is required before your hearing could be affected. Hearing damage from loud noise is sometimes undetectable at first and can have a cumulative effect.



### **Batteries Safety**

- WARNING: KEEP NEW OR OLD USED BATTERIES OUT OF REACH OF CHILDREN.
- In the event of a battery leaking, do not allow the liquid to come into contact with the skin or eyes. If contact has been made, wash the affected area with copious amounts of water and seek medical advice immediately.
- If a radio or a battery has been submerged in water, please dry and clean it before use. Do not dry the radio or battery with an appliance or heat source, such as a hair dryer or microwave oven. If the radio has been submersed in a corrosive substance (e.g. saltwater), rinse the radio and battery in fresh water, then dry them.
- Since batteries are sensitive to high temperatures when storing them, keep them in a cool and dry place. The recommended temperature should be between +10 °C and +25 °C and never exceed +30 °C. Batteries should therefore not be stored next to radiators or boilers nor indirect sunlight. Extremes of humidity (below 35% and above 95% relative humidity for sustained periods should be avoided since they are detrimental to both batteries and packing. Although the storage life of batteries at room temperature is good, storage is improved at lower temperatures provided special precautions are taken. Also, accelerated warming is harmful.

Leaving a battery in an extremely high temperature surrounding environment that can result in an explosion or the leakage of flammable liquid or gas;

A battery subjected to extremely low air pressure may result in an explosion or the leakage of flammable liquid or gas.

- The plug of the adapter is considered a disconnect device. The socket-outlet shall be installed near the equipment and shall be easily accessible.

## Specifications

Allgemein Spezifikationen	Betriebsspannung	7.4V
	Akku-Typ	Li-Ionen-Akku
	Kapazität der Batterie	2900mAh
	Betriebstemperatur	-10°C ~ + 45°C (Aufladung 10-40 °C)
	Audio-Leistungsausgang	16Ω 1W
	Antennenimpedanz	50Ω
Receiver	Empfindlichkeit	(12dB SINAD) ≤-121dBm
	Benachbarter Kanal	≥70dB (25kHz)
	Selektivität	≥60dB (12.5kHz)
	Störende Emissionen	≤-57dB (25kHz) ≤-57dB (12.5kHz)
	Unterdrückung von Störsignalen	≥70dB (25kHz) ≥70dB (12.5kHz)
	Signal-Rausch-Verhältnis	≥45dB (25kHz) ≥40dB (12.5kHz)
	Audio-Verzerrung	≤5%
Transmitter	Sendeleistung	Hoch: ≤ 5W Mittel: 3W Niedrig: 0.5W
	Frequenzstabilität	±2,5ppm
	Modulationsgrenzwerte	±5.0kHz@25kHz (25kHz)
		±2.5kHz@12.5kHz (12.5kHz)
	Leistung des Nachbarkanals	≤70dB (25kHz) ≤60dB (12.5kHz)
	Signal-Rausch-Verhältnis	25kHz: 45dBm; 12,5kHz: 40dBm
	Digitale 4FSK-Modulation	12.5kHz (Daten) 7K60FXD
		12.5kHz (Daten+Sprache) 7K60FXE
	Audio-Verzerrung	≤5%
	Bit Fehler Rate	≤3%
Die Amateurfrequenzen der Geräte sind TX:420-450& 144-148 MHz&RX:400-520& 136-174MHz		

## Auspacken und Überprüfen der Ausrüstung

Bitte überprüfen Sie bei Erhalt Pakets, ob es beschädigt ist. Packen Sie den Transceiver vorsichtig aus. Wir empfehlen Ihnen, in der folgenden Tabelle aufgeführten Teile zu überprüfen. Sollten Teile fehlen oder beim Versand beschädigt worden sein, wenden Sie sich bitte umgehend an Ihren Händler

### Mitgelieferte Artikel:

Radio Körper	Antenne
Li-on Akku	Desktop-Ladegerät
Gürtelklammer	Benutzerhandbuch
USB-Ladekabel	Sling

### Informationen zur Batterieverwendung

Die Akkus sind bei der Auslieferung nicht geladen. Laden Sie sie vor der Verwendung auf.

◆ Das erste Aufladen des Akkus nach dem Kauf oder nach längerer Lagerung (länger als 2 Monate) bringt den Akku nicht auf seine größte Kapazität oder seine normale Ladung, was erst nach zwei- oder dreimaligem wiederholtem Auf- und Entladen möglich ist. Verwenden Sie das Funkgerät nicht während des Ladevorgangs. Dies beeinträchtigt den normalen Ladevorgang des Akkus und kann zu Schäden am Funkgerät und Unfällen führen.

◆ Nachdem der Akku vollständig aufgeladen ist, nehmen Sie ihn bitte aus der Ladestation. Laden Sie ihn nicht wieder auf, bevor der Akku vollständig entladen ist. Sonst wird der Memory-Effekt des Akkus zerstört.

◆ Auch bei Verwendung der richtigen Ladeverfahren gewinnt der Akku nicht an Kapazität oder Nutzungsdauer, was bedeutet, dass sich die Lebensdauer des Akkus dem Ende zuneigt; bitte wechseln Sie den Akku aus.

◆ Bitte verwenden Sie den originalen Werksakku und das Ladegerät. Sie sind bei Ihrem örtlichen Vertreter erhältlich.

◆ Wenn Sie Fragen zu nicht originalen Werksakkus und Zubehör haben, verwenden Sie diese bitte nicht. Andernfalls kann es zu gefährlichen Unfällen kommen. Tischladegerät Ladeanleitung:

Verwenden Sie den 5V 1A Ladeadapter, um das Tischladegerät aufzuladen.

◆ Stecken Sie die Lithiumbatterie oder das Funkgerät mit Lithiumbatterie in die Ladestation und vergewissern Sie sich, dass die Batterie in normalem Kontakt mit der Ladestation steht.

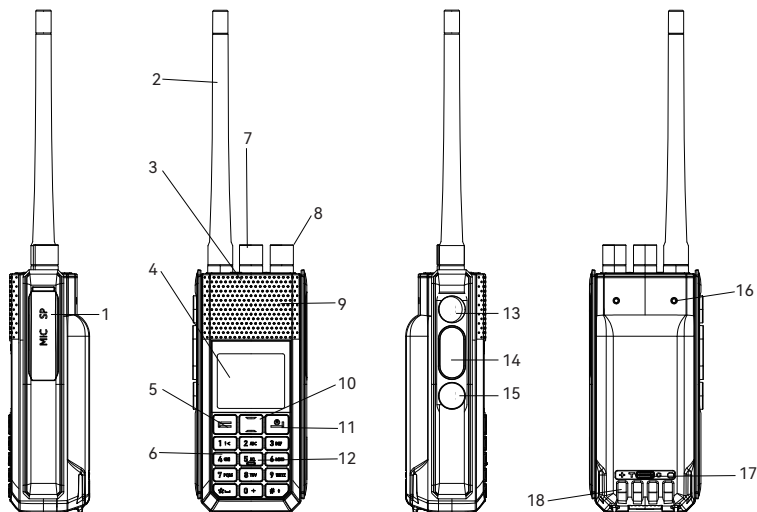
Das grüne Licht leuchtet konstant, wenn die Ladestation leer ist; wenn das rote Licht leuchtet, beginnt der Ladevorgang; wenn sie voll ist, leuchtet das grüne Licht konstant.

◆ Nachdem der Lithium-Akku vollständig geladen ist, nehmen Sie ihn aus dem Ladegerät. Anweisungen zum Aufladen des Typ-C-Akkus:

Verwenden Sie den 5V2A-Ladeadapter, um den Akku direkt aufzuladen. Die LED-Leuchte auf der Rückseite des Akkus leuchtet beim Aufladen rot und wechselt zu grün, wenn der Akku voll ist.

Hinweis: Wenn das Funkgerät geladen wird, ist das Senden verboten, um Schäden am Funkgerät und Unfallgefahren zu vermeiden.

## Kennenlernen



1. Kopfhörerbuchse

2. Antenne

3. SOS-Tasten

4. Display

5. Menü-Schaltfläche

6. Numerisches Tastenfeld

7. Channel Knopf

8. Volume/Einschaltknopf

9. Lautsprecher

10. Auf-/Ab-Tasten

11. Back-Schaltfläche

12. Blind

13. Customizable Schlüssel

14. PTT-Taste

15. Customizable Schlüssel

16. Gürtelclip

17. Type-C-Anschluss

18. Charge Anschluss