Ailunce H1

User Manual

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Safety and Overview

This professional-grade handheld radio integrates advanced digital mobile radio (DMR) technology with traditional analog FM capabilities to provide highly flexible communication solutions. Engineered for peak efficiency, rugged reliability, and intuitive field operations, the Ailunce H1 keeps teams seamlessly connected when performance matters most. We are confident that its comprehensive features, crystal-clear digital audio, and robust structural quality will exceed your expectations for communication.

Product safety and RF exposure for handheld

⚠ Before operating this transceiver, please read this user manual carefully and in its entirety. This document contains essential operating instructions for safe device usage, Radio Frequency (RF) energy awareness, control mechanisms, and critical procedures required to maintain compliance with local and international RF energy exposure safety standards.

Features:

1. Supports up to 500,000 DMR contact entries.
2. USB Type-C charging battery — charge the battery directly via Type-C or use the desktop charger.
3. Dedicated emergency alarm button on the top panel for instant emergency activation.
4. Full front-panel programming — most settings can be configured directly from the keypad without CPS.
5. Programmable side key can be assigned as a second PTT (Side PTT).
6. Display night mode with adjustable brightness.
7. Multiple keypad lock modes (full lock / PTT-only unlock / custom).
8. NOAA Weather Radio reception with automatic weather alert (US region).
9. Dual APRS support — analog APRS (1200 bps AFSK) and digital APRS (DMR data).
10. GPS geofence alarm — alerts when the radio moves beyond a user-defined distance from a reference point.
11. CTCSS/DCS tone scan, DMR Color Code scan, and configurable VFO scan range.
12. Mix Mode — allows a single channel to operate in both analog and digital modes simultaneously.
13. ARC4 and AES-256 digital encryption for secure communication.
14. Lone Worker mode — triggers an alarm if the user does not interact with the radio within a preset time interval, for safety monitoring.
15. Man Down detection — automatically triggers an alert when the radio is tilted beyond a set angle or falls, for emergency safety.
16. Single-Frequency Repeater (SFR) — acts as a temporary repeater on a single frequency using DMR dual time slots.
17. Customization channel display — user-defined text color and background color per channel.
18. Auto Power off:automatically powers down the radio after a user-defined idle period.
19. Microphone Gain Adjustment — adjust the microphone sensitivity to match different operating environments.

Specifications

General Specifications	Frequency range *	TX: VHF 144-146 MHz & UHF 430-440 MHz; RX: VHF 136-174 MHz & UHF 400-520 MHz; GPS : GPS L1C/A, SBAS L1C/A , QZSS L1C/A, BDS B1I FM Radio: 76-108Mhz;
	Channel Capacity	4000 Channels
	Channel Spacing	12.5KHz/25Khz
	Operating Voltage	7.4V
	Battery Type	Li-ion battery
	Battery capacity	2900mAh
	Operating Temperature	-10℃ ~ +45℃ (charging 10-40 ℃)
	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: 45dBm; 12.5Khz: 40dBm
	4FSK digital modulation	12.5KHz (Data) 7K60FXD 12.5KHz (Data+Voice) 7K60FXE
	Audio Distortion	≤5%
	Bit Error Rate	≤3%

* The preset frequency range is 144 - 146 MHz and 430 - 440 MHz for TX. When the radio is off, pressing PTT + 6 will switch to 144 - 148 MHz and 420 - 450 MHz. Before altering the frequency range for amateur radio equipment, ensure you are licensed to operate on the frequency bands 144 - 148 MHz and 420 - 450 MHz.

Unpacking and Checking Equipment

When you receive the package, please inspect it for any damage. Carefully unpack the transceiver and verify the items listed in the following table. If any items are missing or damaged during shipping, 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 shipped. Please charge them before use.

◆ After purchasing the battery pack or if it has been stored for an extended period (over 2 months), initially charging it will not restore it to its maximum capacity or normal charge level. This can only be achieved after charging and discharging it two or three times repeatedly.

◆ Avoid using the radio while charging the battery pack, as this may interfere with normal charging, potentially damaging the radio and leading to accidents.

◆ Once the battery pack is fully charged, remove it from the charger base and avoid overcharging it again before the battery is completely depleted. Otherwise, it will damage the battery due to the memory effect.

◆ Even when using the correct charging methods, if the battery does not increase in capacity or usage time, it indicates that the battery life is almost over. Please replace it with a new battery pack.

◆ Please use the original factory - supplied battery pack and charger. They are available from your local agent.

◆ If you have questions about non - original factory battery packs and accessories, please do not use them. Otherwise, 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.

◆ When the charging base is empty, the green light is steadily on; upon initiating charging, the red light turns on; once the charging is complete, the green light remains steady.

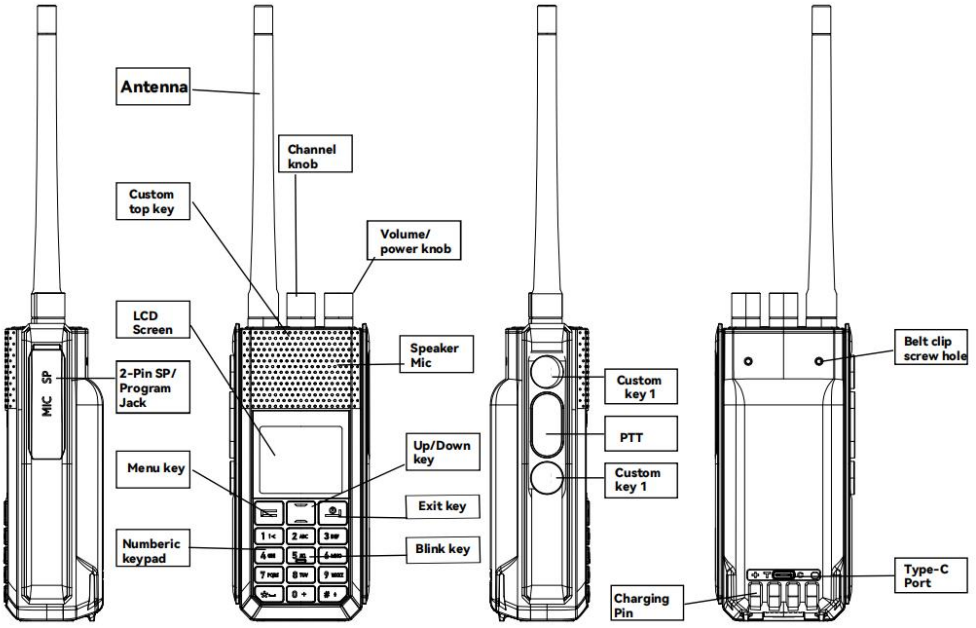
◆ After the lithium battery pack is fully charged, remove it from the charger.

Type -C Battery Charging Instructions:

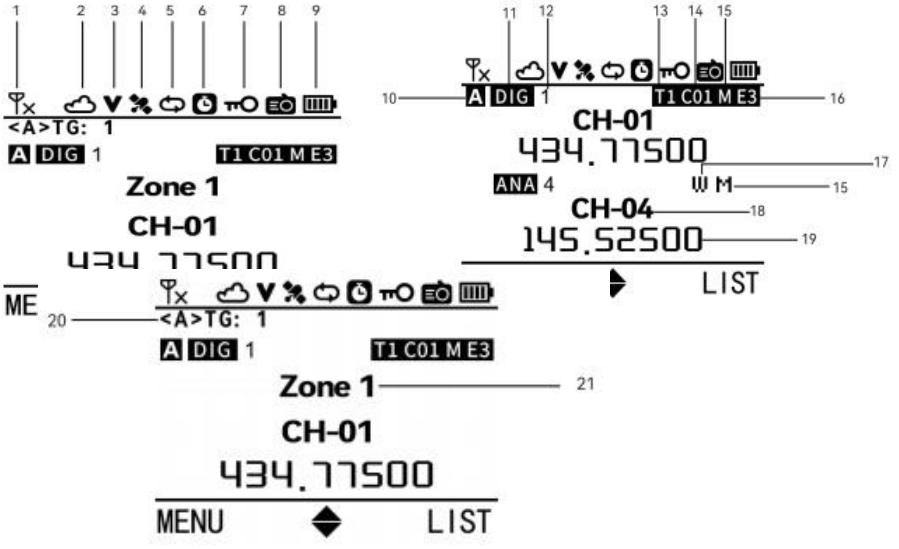
Utilize a 5V 2A charger to directly power the battery, with the LED indicator on the battery's back turning red to signify charging in progress, and switching to green once the battery is fully charged.

Note: During the charging process of a radio, it is imperative to refrain from transmitting to prevent potential damage to the device and to avoid any accidental hazards.

Getting Acquainted



Display



Number	Icon	Description	Number	Icon	Description
1		RSSI	12		Current channel number
2		Weather Alarm on	**13**	**T1**	Current channel time slot
3		VOX Enable	**14**	**C01**	Current channel color code
4		GPS Enable	**15**	**LMH**	Currecnt channel power level
5		Scanning	**16**	**E3**	Encryption enable
6		Auto power off time	**17**	**WN**	Analog bandwidth
7		Keypad Lock	**18**	**CH-04**	Current channel name
8		FM Radio on	**19**	**145.52500**	Current channel RX frequency
9		Battery display	**20**	**<A→TG**	The last heard Call ID
10		Standby A/B	**21**	**Zone1**	Zone name(only display in single band)
11		Current channel Type			

Quick-Start & Basic Operations

1. Power On Radio/VOL Control

Power On & Increase Volume: Rotate the (Power/Volume Knob) clockwise.

Decrease Volume & Power Off: Rotate the (Power/Volume Knob) counterclockwise until a click is heard .

2. Transmitting and Receiving

To Transmit (TX): Press and hold the (PTT) button and speak clearly into the microphone.

To Receive (RX): Release the (PTT) button to listen.

Channel/Menu Navigation: Rotate the (Channel Knob) to browse channels, frequencies, or menu options.

3. Shortcut Key Essentials

① VFO / Channel Mode Toggle: Long-press (EXIT) to switch between VFO (Frequency) mode and Channel mode.

② Main/Sub Band Switch (A/B): Short-press (*) to toggle the active control between Band A (Upper) and Band B (Lower).

③ Keypad Lock: Long-press (*) to lock or unlock the keypad.

④ Dual-Watch / Single-Band Toggle: Short-press (#) on the standby screen to toggle between Single -Band and Dual-Band display modes.

⑤ Input Method Switch: When editing text fields, short-press (#) to cycle through input modes: Pinyin, English (Uppercase/Lowercase), and Numbers.

⑥ VFO Mode Switch (Digital/Analog): In VFO mode, long-press (#) to switch the current frequency between Digital (DMR) and Analog modes.

4. Quick Channel Selection

In Channel mode, rotate the (Channel Knob) to browse channels within the current zone. Alternatively, enter a 4-digit channel number directly via the keypad (e.g., press 0-0-1-5 to instantly switch to Channel 15).

5. Setting up a Repeater Channel in VFO Mode (Analog Example)

To program an analog repeater channel while in VFO mode, follow these steps:

① Enter the Receive Frequency: On the standby screen, type the repeater's receive (RX) frequency directly using the keypad.

② Access Channel Settings: Go to Menu →Settings→Channel Info.

③ Select Channel Type: Set the channel type to Analog before configuring other parameters.

④ Configure Frequency Shift (Direction): Go to the shift settings and select either Plus (+) or Minus (-) based on your local repeater's requirements.

⑤ Set the Offset Frequency: Enter the exact offset value directly using the numerical keypad (e.g., 0-6-0-0 -0 for a 600kHz offset on VHF).

⑥ Configure Optional Parameters: Set up additional parameters such as TX Power, CTCSS, or DCS as needed.

⑦ Save: Settings are automatically applied and saved to the current VFO channel.

6. Setting up a Digital Group Calls (Receiving and Responding) in VFO mode

To communicate via a digital group call, all participating radios must be configured with the same Frequency, Color Code, and Time Slot. The target Group ID must also be saved in your digital contact list.

Enter the Receive Frequency: On the standby screen, type the receive (RX) frequency directly using the keypad.

Access Channel Settings: Go to Menu →Settings→Channel Info.

Select Channel Type: Set the channel type to digital before configuring other parameters.

Select TX Contact: select a group call contact from the priority contact.

Select color code and time slot: select the same color code and time slot with the receiver's setting.

Configure Optional Parameters: Set up additional parameters such as TX Power, CTCSS, or DCS as needed.

① Transmitting a Group Call

Ensure your radio is on the correct channel and the target group is assigned to your talk list.

Press and hold the [PTT] button.

The LED indicator will light up Red, signaling transmission.

The LCD screen will display the Group Call Icon alongside the active Talkgroup Name. Speak clearly into the microphone.

② Receiving a Group Call

When a group call is received on your active channel, the LED indicator will light up Green.

Standard Display: The screen will display the incoming Group ID and the Transmitter's DMR ID.

Talker Alias Display: If the TX Talker Alias function is enabled on the transmitting radio, your screen will display their DMR ID and Callsign simultaneously.

Contact Database Display: If you have imported the worldwide DMR contact database into your radio, the screen will display the caller's DMR ID, Name, City, State, Country, Call Type, and the Incoming Call Icon.

③ Digital Private Calls (Receiving and Responding)

A Private Call allows one-on-one communication between two radios. Both devices must share the same Frequency, Color Code, and Time Slot, and each other's DMR IDs must be saved in their respective contact lists.

Setting up a Digital private Calls in VFO mode following the above operation, the difference is to select a specific private contact.

Receiving a Private Call

When an incoming private call is directed to your specific DMR ID, the LED indicator will light up Green.The speaker will unmute, and the screen will display the Private Call Icon along with the Caller's DMR ID (or their Name/Callsign if saved in your address book).To Respond: Press and hold the [PTT] button within the hang-time window to reply directly to that specific user.

Main Menu Settings

1. Contacts (Digital Mode Only)

Manually manage or view your DMR talkgroups and private contacts (p. 11).

New Contact: Create and save a new contact by entering their DMR ID, Name, Call Type, and Callsign (p. 11).

Manual Dial: Directly input a DMR ID for a quick call (p. 11). Short-press (#) to toggle between Group ID and Private ID.

For Private IDs: Access supplementary services such as Call Alert, Radio Check, and Distance Measurement.

For Group IDs: Press (PTT) immediately after entering the ID to initiate a group call.

Set as Tx Contact: Select any contact from your list and choose this option to set them as the default talk target for the current channel.

Talker Alias: When TX with Alias is enabled, your radio's name is transmitted along with your voice. If the receiving radio has RX with Alias enabled, your name will display on their screen during the QSO.

2. Message (Digital Mode Only)

SMS Formats: Select your preferred protocol via Menu→ Message→ Formats

M-SMS: Fully compatible with Motorola digital radios.

DMR-Standard: Fully compatible with Ailunce HD1/HD2 radios.

New Message: Compose a new text message. Use (#) to switch between text entry modes (ABC, abc, 123)

Quick Text: Send pre-configured template messages programmed via the CPS (Computer Programming Software)

3. Call Logs (Digital Mode Only)

In digital mode, the display records the last call, outgoing calls, incoming calls, and missed calls. It allows users to view the associated contacts.

① Last Call: The Last Call List show the last caller ID information. It allows you to send the private call service under this list.

② Outgoing: The Sent List shows the transmitter caller name and the private service.

③ Incoming: Shows all the received calls, and allows allows you to send the private call service under this list.

④ Missed: Shows all the missed calls, and allows deleting the missed contact.

⑤ Contact service for private call:

a. Alert Call： Sends an alert tone to the selected contact. Useful when you need to get someone's attention urgently.

b. Radio Check: Checks if the target radio is active and reachable. It tells you whether the other party can hear you or is online.

c. Measure Distance: Calculates the distance between your radio and the target radio using GPS location data.

d. Radio Enable: Remotely wakes up or activates a dormant radio. You can turn on a radio that's in standby mode from a distance.

e. Radio Disable: Remotely shuts down or disables the target radio. It forces the selected radio to power off or enter a locked state, preventing any further transmission or reception.

4. Scan Configuration and Management

① Color Scanning: In digital mode, scans incoming DMR signals and identifies the Color Code (CC 0–15) in use. This is useful when you need to determine the correct Color Code for an unknown repeater or frequency.

② CTCSS Scan and DCS Scan: When the radio detects an incoming signal on a frequency, it automatically scans through all CTCSS tones or DCS codes to identify the one in use. This allows you to quickly match the correct tone/code for accessing a repeater or communication group.

③ Scan List: A configurable list of channels or frequencies for automatic scanning. You can edit the scan list name, add or remove channels, set priority channels, and select the scan mode.

④ Frequency Range Setting: Sets the frequency range (upper and lower limits) for VFO scanning.

5. Zone Configuration and Management

A Zone is a convenient folder or bank used to group your programmed channels (e.g., by location, department, or team). The radio provides flexible on-device zone management to help you organize large channel lineups.
Maximum Zones: The radio supports up to 250 distinct zones.
Channels Per Zone: Each individual zone can hold a maximum of 64 channels.
Menu Navigation & Operations:
To manage your channel banks, navigate to: Menu → Settings → Channel Information → Zone

① View Zone List: Access this menu to browse a comprehensive list of all currently configured zones stored on the device.

② Add New Zone: Select this option to create a brand-new zone folder directly from the keypad interface.

③ Add Channel to Zone: Open an existing zone profile to manually insert and assign a programmed channel slot into that specific bank.

6. Position Configuration and Management

① Turn on the GPS, and the location icon will flash on the standby screen until the position is activated.

② GPS Mode: it supports two positioning system: GPS and BDS. You can select the suitable position system according to your requirement.

③ GPS info: it will display the current radio position information.

④ Over range alarm: Geofence Alarm — Set a reference point and a maximum distance. The radio triggers an alert when it moves beyond the defined radius from the reference point. Useful for monitoring movement in field operations.

⑤ Capture GPS Position: Directly acquire the GPS position (GPS must be enabled and positioned).

⑥ Alert Range Setting: Turn off the alert or select a distance.

Radio Settings:

Menu #	Feature Label	Operational Settings & Definition
1	Key Beep	Beep On: Sounds an audible tone whenever a keypad button is pressed. Beep Off: Mutes all keypad button interaction tones.
2	Backlight	Adjusts the active duration and timeout constraints for the LCD display backlight.
3	Day/Night Mode	Toggles the screen theme between high-contrast Day Mode (light background) and low-glare Night Mode (dark background).
4	Brightness	Adjusts the active screen brightness levels using the [UP/DOWN] keys or locks it via the CPS software.
5	Keypad Lock	Enables or disables the core system permissions required to lock the front keypad.
6	Key Lock	Auto: Automatically locks the keypad after 15 seconds of user inactivity. Manual: Requires the user to long-press the [*] key to manually lock or unlock the keypad.
7	Lock Mode	Customizes exactly which physical controls are locked out when the lock feature is active. You can target individual keys (TOP, Menu, Exit, SK1, SK2, Channel Knob, PTT) or select All to lock the entire layout.
8	LED	Enables or disables the physical status LED located on top of the radio during Transmission (TX) and Reception (RX).
9	Power-On Password	Enables secure device access. If activated, a security PIN must be input upon booting the radio. To disable this function, you must re-enter the active password to verify authorization.
10	VOX	Configures hands-free, voice-activated transmission parameters: • **VOX Switch**: Toggles hands-free transmitting on or off. • **Gain Level & Delay**: Adjusts microphone sensitivity levels and the TX drop-delay hang time. • **Plug-in EP Auto VOX**: Automatically activates VOX processing the moment an earpiece accessory is connected to the audio jack.
11	Channel Display Mode	Selects how active channel data is formatted on the standby screen: **Channel Number, Frequency, Name (Alias),** or **Frequency + Name**.
12	Hidden Mode	Darkens the screen and turns off indicator LEDs for covert or low-visibility operations.
13	Auto Power-Off	Sets an idle countdown timer duration after which the radio will automatically shut down to prevent battery drainage.
14	Language Selection	Configures the primary system UI display text language to **English** or **Chinese**.
15	Menu Exit Time	Sets the automated timeout duration (in seconds) before the radio exits an idle settings menu and returns to the primary standby screen.
16	PowerOnPicture	Customizes the system boot screen layout to display the factory **Default Picture** or a **DIY Picture** uploaded via the CPS software.

Menu #	Feature Label	Operational Settings & Definition
17	Background	Selects the active UI background accent theme colors, or applies a custom user background image uploaded via the CPS software.
18	Standby Color	Configures the text color utilized on the primary standby home screen interface.
19	CH Color A	Customizes the specific display color for the Band A (Upper) channel readout.
20	CH Color B	Customizes the specific display color for the Band B (Lower) channel readout.
21	Zone Color A	Customizes the text display color for the active Band A Zone name.
22	Zone Color B	Customizes the text display color for the active Band B Zone name.
23	Main Channel	Toggles the primary active transmitting priority lane to **Band A** (Upper) or **Band B** (Lower).
24	Single Mode	**Enabled**: Swaps the display layout to Single-Band Mode for a larger, simplified interface. **Disabled**: Restores standard Dual-Band standby monitoring.
25	Message Alert	Enables or disables an audible notification ringtone upon receiving an incoming SMS text message.
26	Call Ring	Enables or disables an audible alert ringtone upon receiving an incoming voice call.
27	Frequency Step	Selects the frequency step tuning intervals used when navigating in VFO mode: **2.5K, 5K, 6.25K, 10K, 12.5K, 15K, 20K, 25K, 50K,** or **100K**.
28	Squelch Open Level	Configures the initial signal threshold required to break open the analog receiver squelch filter.
29	Squelch Normal Level	Adjusts standard squelch tolerances for general-purpose, noise-free analog operation.
30	Squelch Tight Level	Sets a strict, high-threshold squelch filter to mask weak background noise and distant interference.
31	Power Save	Extends battery life by cyclically pausing background receiver polling routines: • **Save 1:1**: Polls active frequencies for 100ms, then enters low-draw sleep for 100ms. • **Save 2:1**: Polls active frequencies for 200ms, then enters low-draw sleep for 100ms.
32	Burst Tone	Configures single-burst tones (e.g., 1750Hz) used to wake up analog repeaters. In analog standby mode, press and hold the **[PTT]** key while pressing **[SK1]** to broadcast the tone.
33	Mic Gain Level	Adjusts internal microphone sensitivity stages (Low to High). Raising the gain increases outbound transmission audio volume for quiet environments.
34	Fixed Time Mute	Programs a scheduled timer window during which all radio audio output remains muted.
35	Man Down	Activates the safety tilt sensor. If the radio remains horizontal beyond the pre-alarm threshold (configured via CPS), it triggers an emergency distress broadcast sequence.
36	Key Settings	Maps custom Long-Press and Short-Press shortcut function triggers to the

Menu #	Feature Label	Operational Settings & Definition
		physical **TOP, UP, DOWN, SK1,** and **SK2** buttons.
37	CTCSS tail	Selects the mechanical method used to eliminate squelch tail noise bursts at the end of analog transmissions using CTCSS signaling.
38	Non-Signaling tail	Sets the tail noise elimination filters applied during basic carrier squelch transmissions (no sub-audible signaling set).
39	Channel Switch Type	**Switch Over Zones**: Allows the channel knob to seamlessly cross zone boundaries and scroll through all saved system channels. **Switch Within Zone**: Restricts channel knob cycling strictly to channels contained within the currently selected zone.
40	Time Zone	Configures the local GMT offset time zone parameter required for accurate time calculations.
41	Time Display	Toggles whether the system clock display is visible on the primary home screen standby interface.
42	Data Mode Set	Manually sets or automatically syncs chronological metadata: • **Time Manual Entry**: Press the **[#]** key to cycle between Year, Month, Date, and Time fields; adjust values via the **[UP/DOWN]** keys or numeric pad. • **GPS Calibrate**: Automatically syncs the system clock using satellite time data. • **Formatting**: Customizes Date and Time formatting constraints (12H vs. 24H views).
43	Channel Mode Lock	When enabled, the **[EXIT]** shortcut key is locked out, preventing accidental switching between VFO and Channel memory modes on the standby screen.
44	Roger Beep	Transmits an audible cue tone to listening stations the moment you release the **[PTT]** button, indicating your transmission has ended.
45	Radio Mute	When enabled, placing the radio face-down on a flat surface automatically silences the internal speaker.
46	Talk Permit tone	Toggles an audible alert tone on or off that sounds after pressing **[PTT]**, letting you know the channel is clear and the digital repeater slot is successfully reserved for your speech.
47	Sound Mode	Adjusts global audio equalization presets: Select **Outdoor** for high-penetration volume boost or **Indoor** for balanced, low-distortion fidelity.
48	Missed Call tone	Emits an intermittent audio alert tone if a direct incoming Private Call was received but went unanswered.
49	Font	Customizes system display text dimensions across menus and standby interfaces.
50	Last Call Disp	Toggles whether caller telemetry regarding the last received transmission remains visible on the display screen.
51	Voice	Enables or disables automated vocal feedback announcements when navigating menus or switching channels.
52	Call In light	Configures the display screen to automatically light up and activate its backlight the moment an active incoming signal is received.

Custom Key Settings (Programmable Buttons)

The radio features five fully programmable keys: the [Top Orange Button], the [UP] key, the [DOWN] key, [Side Key 1 (SK1)], and [Side Key 2 (SK2)]. Each button can be assigned two independent shortcut actions—one triggered by a Short-Press and another by a Long-Press.

To customize these shortcuts, navigate to: Menu → Settings → Radio Settings → Key Settings (Menu 36)

Function Label	Description & Function
None	Disables any shortcut action for the selected keypress.
Channel Up	Adjusts the active channel number higher.
Channel Down	Adjusts the active channel number lower.
O-T-Call1-5	Instantly initiates a voice call or transmits a Quick Text to a pre-assigned contact slot.
Reverse	Swaps the receive (RX) and transmit (TX) frequencies on a repeater channel for direct monitoring.
SFR	Activates or deactivates the localized single-frequency repeater mode.
Hidden Mode	Darkens the screen and turns off indicator LEDs for covert or low-visibility operations.
Channel Type SW	Rapidly cycles the current channel through available types: **Digital, Analog, D+A (Digital Mix),** or **A+D (Analog Mix)**.
FM Radio	Toggles the commercial FM broadcast radio receiver on or off.
Send APRS	Forces an immediate manual transmission of your current APRS position packet.
Home Screen	Instantly exits any submenu and returns the display to the main standby screen.
Lone Worker	Activates the Lone Worker safety feature, requiring periodic user check-ins to prevent an automated distress alarm.
Man Down	Activates the integrated tilt sensor to trigger an automated distress sequence if the radio remains horizontal for too long.
Radio Mute	Instantly silences all incoming speaker audio and system alert tones.
Power Level	Switches the transmitter output power level (e.g., between High, Medium, and Low) to conserve battery life.
Monitor	Bypasses the receiver squelch filter on analog channels to listen for weak, distant, or un-coded signals.
Keypad Lock	Toggles the physical keypad lock on or off to prevent accidental button presses.
Emg Off	Terminates an active emergency alarm state and returns the device to normal standby mode.
Emg On	Instantly triggers the pre-configured emergency distress alarm or emergency call sequence.
Squelch On/Off	Toggles the main analog squelch circuit completely open or closed.
Zone Up	Steps upward to the next programmed bank or channel zone.
Zone down	Steps downward to the previous programmed bank or channel zone.
Scram/Encrypt	Activates voice inversion **Scrambling** when on an analog channel, or digital **Encryption** when on a digital channel.
Day/Night Mode	Toggles the LCD screen display interface between high-brightness Day Mode and low-glare Night Mode.

Scan	Starts or stops scanning through your active channel scan list or VFO frequency range.
Vox	Enables or disables voice-activated transmission (hands-free talking) for the current channel.
Talk Around	Bypasses the repeater shift parameters to transmit directly on the repeater's output (downlink) frequency for point-to-point communication.

Channel Information Menu Reference

To configure specific settings for individual channels or the current VFO layout, navigate to:
Menu → Settings→ Channel Information
Review the table below for analog channel detailed descriptions of available configuration options:

Menu #	Feature Label	Operational Settings & Definition
1	New Channel	Saves the current VFO or channel configurations to a designated memory slot. If the selected channel number is already occupied, a prompt will ask: "channel existing, replace?"
2	Delete Channel	Permantly deletes the selected channel slot data from your saved channel memory list.
3	Channel Type	Selects the operational format for the active channel: • **Digital**: Digital-only DMR operations. • **Analog**: Standard analog FM operations. • **Dig Mix Analog (D+A)**: Transmits in **Digital mode**, but automatically monitors and unmutes for **either incoming Digital or Analog signals**. • **Ana Mix Digital (A+D)**: Transmits in **Analog mode**, but automatically monitors and unmutes for **either incoming Analog or Digital signals**.
4	Channel Name	Allows you to customize the channel display alias using a maximum of 20 **characters (with scrolling text)**. *(Note: This feature is unavailable in VFO mode and the scrolling text only available from firmware versionV1.01.07.53).*
5	RX & TX Frequency	Displays and sets the exact receive (RX) and transmit (TX) radio frequencies for the current VFO or memory channel.
7	TX Power	Select the transmission power levels: low, medium, and high.
8	Band Width	Sets the channel spacing parameters for analog operation: **Wide** (25 kHz) or **Narrow** (12.5 kHz).
9	TOT	Configures the transmission time-out threshold. It automatically cuts off the transmitter if the PTT button is held continuously beyond the set time, preventing channel jamming.
10	R-CDC	Configures sub-audible privacy signaling filters for **Receive (RX)** tracking: Choose between **CTCSS** tones or **DCS** codes.
11	T-CDC	Configures sub-audible privacy signaling tones or codes for **Transmit (TX)** encryption.

12	C-CDC	Instantly syncs and applies the exact same **CTCSS** tone or **DCS** code to both the transmit and receive circuits simultaneously.
13	Tx Admit	Defines the transmission rules and channel etiquette parameters: • **Always Allow**: Transmits instantly when PTT is pressed, regardless of channel activity. • **Channel Free**: Transmits only if the current frequency is completely quiet. • **CT/DT Incorrect**: Blocks transmission if a matching sub-audible tone from another user is actively detected. • **RX Only**: Disables transmitting capabilities entirely, turning the channel into a listen-only feed.
14	Optional Signaling	Activates advanced selective signaling protocols. Select **DTMF** to enable dual-tone calling features on the channel.
15	PTT-ID	Determines when your unique DTMF identification code is broadcasted over the air: • **Off**: Disables PTT ID. • **BOT**: Sends your ID at the *Beginning of Transmission*. • **EOT**: Sends your ID at the *End of Transmission*. • **Both**: Sends your ID at both the beginning and the end.
16	RX Signaling System	Links the channel to a pre-configured DTMF decoding setup. Select **None** or choose a specific programmed DTMF system profile.
17	DTMF ID	Links your unique local DTMF identifier string to the channel profile. Select **None** or input your specific system ID number.
18	RX Sql Mode	Controls the threshold rules for unmuting your radio speaker: • **Carrier**: Unmutes the speaker as long as an active RF signal is detected. • **Option Signal**: Unmutes strictly when a matching selective signaling code (like DTMF) is decoded. • **CT/DT and Opt**: Requires **both** matching CTCSS/DCS tones AND matching selective signaling codes to unmute. • **CT/DT or Opt**: Unmutes if **either** matching CTCSS/DCS tones OR matching selective signaling codes are detected.
19	Carrier Squelch	Fine-tunes the basic receiver squelch filter sensitivity: **Always (Open), Normal,** or **Tight**.
20	Talk Around	Bypasses repeater infrastructure. When enabled on a repeater channel, the radio shifts to a simplex mode where it transmits directly on the repeater's output (downlink) frequency.
21	Reverse	Instantly swaps the programmed Transmit (TX) and Receive (RX) frequencies on a repeater channel, enabling you to listen to target stations directly.
22	Alarm System	Assigns an Emergency Alert system list profile to the channel. *Note: A valid list must be linked here for the shortcut Emergency button to fire correctly.*
23	Compander	**On/Off**: Activates audio companding circuits on analog channels to reduce background static and sharpen weak voice traffic.
24	Scrambler	Enables voice inversion scrambling for basic privacy on analog frequencies. Select **Off** or pick an inversion frequency step.
25	Scan List	Assigns a pre-programmed channel scan sequence bank to this slot. A valid list must

		be selected here for the **Scan** button function to initiate.
26	Lone Worker	Activates the automated personal safety countdown timer on the channel, ensuring an emergency distress signal is broadcasted over the air if you become unresponsive.

Digital Channel Information Settings

To configure specific digital operational parameters for DMR (Digital Mobile Radio) channels, navigate to Menu → Settings → Channel Information.The parameters below apply strictly to digital operation and define how your radio manages networks, user groups, time slots, encryption:

Menu #	Feature Label	Operational Settings & Definition
9	TX Contact	Assigns the default transmission target for the current channel. Select a Group ID or Private ID from your priority or local contacts list. Pressing **[PTT]** transmits directly to this recipient.
10	TX Admit	Defines transmit permission parameters and channel etiquette rules: • **Always Allow**: Transmits instantly when PTT is pressed, regardless of channel activity. • **Channel Free**: Transmits only if the current frequency is completely clear. • **CC Free**: Transmits if the frequency is clear or if another group is using a different Color Code. It blocks transmission only if your exact Color Code is busy. • **RX Only**: Disables transmitting entirely, turning the slot into a listen-only feed.
11	Radio ID	Configures the local DMR identification • **None**: Defaults to using the radio's primary global system DMR ID. • **ID Selection**: Replaces your primary ID with a secondary specific Radio ID chosen from your preset list (ideal for managing multiple user profiles).
12	Color Code	Sets the digital squelch filter value (**0–15**). This allows multiple user groups to share the exact same physical frequency without hearing or interfering with each other's audio.
13	Time Slot	Selects the active digital transmission lane (**Slot 1** or **Slot 2**). This uses TDMA technology to split a single 12.5 kHz physical channel into two independent talk paths.
14	Encrypt	**On/Off**: Enables or disables secure digital voice and data encryption for the current channel.
15	Encrypt Type	Selects the cryptographic standard for voice privacy: **Basic, AES,** or **ARC4**. *(Note: Custom cryptographic keys and index parameters must be pre-configured using the CPS software).*
16	RX Group List	Links a pre-programmed Digital Receive Group List to the channel, allowing the radio to monitor and unmute for multiple talkgroups simultaneously. Select **None** to hear only your assigned TX Contact.
17	Lone Worker	**On/Off**: Activates an automated personal safety watch timer on the channel, which triggers a distress emergency alert over the air if the user becomes unresponsive.
18	APRS Receiver	**On/Off**: Enables or disables the receiver's ability to capture, decode, and save incoming digital APRS telemetry and positioning packets from surrounding stations.

19	DMR Mode	Defines the digital network architecture and operational topology for the channel: • **Simplex**: Direct point-to-point talking on a single frequency. • **Repeater**: Standard split-frequency operation using external infrastructure. • **Double-Slot**: Manages and transmits dual-slot direct-mode protocols without repeater assistance.
23	Ranging	**On/Off**: Activates tactical distance tracking. It automatically queries and displays the exact relative distance and heading between two private call radios operating within line-of-sight.
24	SFR	**On/Off**: Converts your handheld into a localized **Single Frequency Repeater**. The device receives a DMR packet on one time slot and simultaneously retransmits it on the same frequency using the opposite time slot.

Advanced & Detailed Functional Operations

1．Digital Monitor

Opens the receive filter to monitor DMR signals beyond the current channel's Color Code and Talkgroup restrictions. In normal operation, the radio only receives signals matching the current channel's CC and TG. Digital Monitor lets you hear all activity on the frequency.

Switch the digital monitor function before you want to monitor color code and other IDs.

① DigMoni CC:

Any CC — receive signals regardless of Color Code;

Same CC — receive only signals with the current channel's Color Code.

② DigMoni ID:

- Any ID — receive all Talkgroup IDs;

Same ID — receive only the current Talkgroup.

2．DMR Voice & Data Encryption Settings

To secure your communications from unauthorized listening, the radio supports multiple digital encryption standards. The radio can store up to 32 unique encryption keys, which must be pre-configured using the CPS (Computer Programming Software).

① Checking Encryption Status on the Radio

To view the encryption configuration of your active channel directly on the device, navigate to:Menu → Channel Settings → Encryption → Encryption Type

The radio supports three distinct encryption types:

Basic: A simple, low-overhead crystallographic method for basic privacy.

ARC4: An industry-standard 40-bit or 128-bit digital encryption algorithm.

AES: High-security Advanced Encryption Standard (up to 256-bit) for maximum data protection.

② Configuring High-Security Keys (AES & ARC4) via CPS

Connect your radio to the PC and launch the CPS.

Navigate to: DMR Services → Encrypt.

Select your encryption type (AES or ARC4) and enter your custom key values.

Key Constraint: Each individual key value can have a maximum length of 64 characters (hexadecimal).

③ Configuring Basic Encryption via CPS

If you choose to use Basic encryption instead of AES/ARC4, configure it within the channel settings:

In the CPS, navigate to: Channel Information → Channel Edit → Digital Section.

Locate the Encrypt section and check the box to enable it.

Select Basic as your encryption type.

Assign your desired Basic key ID.

Key Constraint: The numerical value for a Basic encryption key must be an integer and cannot exceed 65535 (16-bit maximum value).

3．Single Frequency Repeater (SFR) Mode

Single-Frequency Repeater (SFR) —The H1 can act as a temporary DMR repeater on a single frequency, forwarding traffic between two radios on different time slots (TS1 and TS2).

Setup:

① Enable SFR on a digital channel (Menu 25 in Channel Settings).

② Set the channel to Dual Slot mode (Menu 20 in Channel Settings).

③ The H1 now operates as a repeater — two other DMR radios can communicate through it using different time slots.

Note: All other member radios communicating through this SFR node must also have Dual-Slot or Double-Slot capability enabled.

4．Configuring and Operating the Scan Function

① Assigning and Activating Scan Lists

a. Select a Scan List: Navigate to Menu → Settings → Channel Information→ Scan List and choose your preferred pre-programmed scan list.

b. Assign a Scan Shortcut Key: Go to Menu→ Settings→ Radio Settings→Key Settings.

c. Select a programmable key and assign its function to Scan.

d. Toggle Scan On/Off: Return to the home screen and press your assigned shortcut key to start or stop scanning.

e. In Channel Mode: Activating the scan will cycle through the channels designated in your active scan list.

f. In VFO Mode: Activating the scan will sweep through frequencies based on your predefined VFO range.

② Advanced Signaling and Code Scanning

a. Color Code Scan (Digital DMR): To identify an unknown color code on a digital channel, navigate to Scan→ Color Scan to begin. Once the code is detected and displayed, press the [PTT] button to end the scan and save the value.

b. CTCSS Scan (Analog): To decode analog sub-audible tones, go to Scan→ CTCSS Scan.

c. Note: The current channel must have a placeholder CTCSS tone assigned beforehand for the scan to initiate. Press the [PTT] button to terminate the scan once found.

d. DCS Scan (Analog): To decode digital privacy codes on an analog channel, go to Scan→DCS Scan. Note: The current channel must have a placeholder DCS code assigned beforehand for the scan to initiate. Press the [PTT] button to terminate the scan once found.

5．FM radio Broadcast

The radio features a built-in FM broadcast receiver that can store up to 32 preset FM radio channels via the CPS (Computer Programming Software).

How to Access and Navigate FM Radio:

① Enable/Disable FM Radio: Navigate to Menu Settings → Radio Settings →FM to turn the FM radio function on or off.

② Automatic Mode Switch: Once enabled, the radio will automatically switch from your current operating channel to the FM broadcast screen.

③ Toggle VFO / Memory Channel Mode: Long-press the [EXIT] key to switch between FM VFO (Frequency Tuning) mode and FM Channel (Memory Preset) mode.

Tuning Frequencies and Channels:

① In Channel Mode: Press the [UP/DOWN] keys or rotate the [Channel Knob] to cycle through your 32 saved FM preset stations.

② In VFO Mode: Press the [UP/DOWN] keys to step through frequencies in large 1 MHz increments.

③ Rotate the [Channel Knob] to fine-tune frequencies in precise 100 kHz increments.

6．Emergency Alarm System

The emergency function allows you to send out immediate distress alerts or trigger local sirens in critical situations.

1. Setting Up the Emergency System

To configure an emergency system, navigate to: Menu → Emergency Alarm → Emergency List, select your desired alarm system number, and configure the two core parameters below: Emergency Type and Emergency Mode.

A. Selecting the Emergency Type (How your radio behaves locally)

· Siren: Only your local radio sounds a loud alarm siren; no signal is transmitted over the air.

· Regular: The radio sounds a local alarm tone while simultaneously transmitting an over-the-air alert according to your selected Emergency Mode.

· Silent: The radio remains completely silent and dark, but secretly transmits the alert over the air. Note: While in this mode, the radio cannot receive any incoming audio signals until the emergency function is manually deactivated.

· Silent with Voice: The radio remains visually and audibly silent while transmitting the alert, but it can still receive and unmute incoming audio signals normally during the emergency state.

B. Selecting the Emergency Mode (How the alert behaves over the air)

· Emergency Alarm: The radio only transmits a data burst alert to the target group or dispatcher.

· Emergency Call: The radio bypasses the data alert and immediately initiates a high-priority voice call to your designated emergency contact.

· Emergency Alarm with Call: The radio first transmits the data burst alert, and then immediately opens the channel for a high-priority voice call.

2. Activating the Emergency Alarm

Link to a Channel: Go to your Channel Settings and assign your configured emergency system list to the desired channel.

Assign a Key: Go to Key Settings and assign a programmable button to the Emergency function. (By default, this is assigned to the [Top Orange Button]).

Trigger the Alarm: In an emergency, press and hold your assigned shortcut key to instantly activate the distress alarm sequence.

7．Configuring One-Key Call & Quick Text (One-Touch Access)

In digital mode, you can assign a programmable shortcut key to instantly initiate a high-priority voice call or dispatch a text message to a specific contact without navigating through the menus.

How to Configure a One-Key Action:

Navigate to: **Menu → One-Key Call List → Edit One-Key Call**, then configure the following settings:

① Select the Destination Contact: Choose the target DMR contact (Private ID or Group ID) you want to link to this shortcut.

② Select the Call Type: Choose how the shortcut behaves when pressed:

③ Voice Call: Instantly initiates a quick voice call to your selected destination contact when the assigned key is pressed.

④ Quick Text: Instantly transmits a pre-configured text message to your destination contact.

Note: The template messages used for the Quick Text function must be pre-written and programmed into the radio using the CPS (Computer Programming Software).

8．NOAA Weather Alarm Function

The radio features a built-in NOAA (National Oceanic and Atmospheric Administration) weather alert receiver to keep you informed of hazardous weather conditions.

How it Works:When the weather alarm is activated, the radio continuously monitors your chosen NOAA broadcast channel in the background. It stays in a dedicated standby state until you press the [EXIT] key to return to the primary radio interface.

Operating Instructions:

① Navigate to: Menu→ Settings → Radio Settings → Weather Alarm.

② Enable the alarm feature and select your local area's specific NOAA Channel from the provided list.

③ The radio will now actively listen for emergency weather broadcast tones.

⚠ CAUTION: The NOAA weather alert service and this function are only available and operational within North America (United States and Canada).

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．Saving a Channel (Memory Programming)

You can quickly save your current operating frequencies and configurations into a permanent channel slot from either VFO mode or Channel mode.

Step-by-Step Instructions:

① Configure your desired frequency and signaling settings on the standby screen.

② Navigate to: Menu → Settings → Channel Information → New Channel.

③ Assign a Channel Number: Enter the desired channel slot number using the keypad.

④ Name the Channel: Input a custom channel alias (name) using the text entry mode.

⑤ Save: Press the [Confirm] key to save the channel to your radio's memory.

Overwriting an Existing Slot:

If you select a channel number that is already in use, the screen will display a prompt asking: " channel existing, replace ?"

Select **Yes** to replace the old data with your new settings.

Select **No** to return to the input screen and choose a vacant channel number.

10．Importing Large-Scale DMR Contacts Database

The radio supports storing a massive global digital contacts database of up to 500,000 DMR contacts. This allows your radio to display comprehensive caller ID information during live receptions.

Step-by-Step Import Procedure:

① Download the Database: Visit the official Ailunce Resource Center at https://www.ailunce.com/ResourceCenter/. Filter and generate the digital contact list according to your desired country, formatting preferences, and radio model, then click Download.

② Load into CPS: Launch your CPS (Computer Programming Software) on your PC and navigate to the Local Address Contacts section.

③ Import the File: Click import within that menu to load your downloaded DMR contact spreadsheet into the software database.

④ Write to Radio: Connect your radio to the PC using the programming cable, and click Write (or upload) to transfer the contact list data from the CPS directly into the radio's memory.

11．Mixed-Mode Reception (Mix Reception)

The Mixed-Mode Reception feature allows a single channel to seamlessly monitor and receive both digital (DMR) and analog traffic without manual switching.

How to Enable Mixed Reception:

Navigate to: Menu → Settings → Channel Information → Channel Type.

Select either Dig Mix Analog or Ana Mix Digital depending on your default transmission preference.

Menu Option	Screen Display	Transmission Mode (TX)	Reception Mode (RX)
Dig Mix Analog	D + A	Transmits strictly in **Digital mode**.	Automatically detects and unmutes for **either incoming Digital or Analog signals**
Ana Mix Digital	A + D	Transmits strictly in **Analog mode**	Automatically detects and unmutes for **either incoming Analog or Digital signals**.

12．GPS Positioning & Distance Measurement (Ranging)

The radio features an integrated satellite positioning system that provides real-time geographic data and allows tactical distance measurements between users in digital mode.

1. GPS Configuration and System Settings

Navigate to Menu → Settings → Radio Settings → GPS to configure your tracking preferences:

① **GPS Switch**: Turn this option on to enable satellite positioning. The GPS icon on the home screen will flash until a stable connection is established.

② **GPS Mode Support**: Select your preferred satellite constellation network. The radio supports standard GPS or BDS (BeiDou) tracking.

③ **Startup Test**: When enabled, the radio automatically runs a self-diagnostic check on the GPS module immediately upon powering on.

④ **GPS Info**: Access this screen to view your active real-time geographic telemetry, including Latitude, Longitude, Altitude, and current Speed.

2. Over-Range Alarm (Geofencing Alert)

This feature tracks your movement relative to a fixed geographic point and triggers an audible alert if you travel outside a designated boundary.

① **Capture Reference Position**: Navigate to the calibration menu to save your current physical location as the static reference center point. (GPS must have a stable satellite lock first).

② **Set Alert Range**: Select your desired boundary radius threshold, or select Off to deactivate the perimeter alarm.

3. Tactical Distance Measurement (DMR Ranging)

In digital mode, you can query the real-time distance and direction of another user. Note: Both radios must have their GPS functions enabled and have a valid satellite lock for this feature to work.

Method A: Manual Distance Measurement

Use this method to manually ping a colleague's location on-demand.

① On a digital channel, open your Contacts List and highlight a Private Contact.

② Press Menu → Supplementary Services → Range Measurement.

③ Your radio will transmit a location request packet. Once received and computed, your screen will display the target's precise distance, bearing, and coordinates relative to your position.

Method B: Automatic Distance Measurement (Auto-Ranging)

Use this method to continuously track a specific colleague's relative distance in real-time.

① Navigate to Menu → Settings → Channel Information → TX Contact and assign your target Private Contact as the default recipient.

② In the same Channel Information menu, locate the Ranging parameter and turn it On.

③ Return to the main standby screen. Your radio will automatically ping the designated contact every 10 seconds and constantly refresh their relative distance on your display.

CRITICAL OPERATING NOTES:

If the target radio cannot establish a satellite lock, it will return coordinate data values of 0, and your screen will display the distance as --.--.

If the target radio sends back valid coordinates, but your local radio loses its satellite lock, the distance will still display as --.--.

A accurate distance reading will only calculate and display when BOTH radios have established valid, active GPS satellite locks simultaneously.

13．APRS (Automatic Packet Reporting System) Configurations

The APRS feature allows your radio to transmit real-time GPS coordinates, callsigns, and tactical data to global tracking networks like aprs.fi.

Digital Mode Requirement: Digital APRS tracking requires the use of an MMDVM hotspot or an active DMR network gateway.

Analog Mode Requirement: Analog APRS tracking requires a connection to a local APRS digipeater or an APRS TNC (Terminal Node Controller) gateway nearby.

1. Core System Settings

Navigate to Menu → Settings → Radio Settings → APRS to manage primary configurations:

Parameter Label	Options / Range	Description & Function
APRS Modem	Off / Analog / Digital	Disables the feature, or selects between Analog (AFSK) and Digital (DMR) APRS data modulations.
My Position	GPS / Manual	**GPS**: Uses real-time satellite data for tracking. **Manual**: Allows manual entry of fixed Latitude/Longitude coordinates (ideal for base station operations).
APRS Units	Metric / Imperial	Customizes text readouts on screen: • Distance: Kilometers (km) or Miles (mi) • Speed: km/h, Knots, or mph • Altitude: Meters (m) or Feet (ft)
APRS Ringer	On / Off	Enables or disables an audible alert tone when an incoming APRS beacon is decoded.
Ana APRS List	View Saved Data	Displays a comprehensive log of all received and decoded Analog APRS beacons. Select any entry to view detailed tracking telemetry.
Dig APRS List	View Saved Data	Displays a comprehensive log of all received and decoded Digital DMR APRS messages. Select any entry to view detailed tracking telemetry.

2. Beacon Transmission Controls

Configure how and when your radio broadcasts its geographic position:

Parameter Label	Options / Range	Description & Function
Beacon TX	Auto / Manual / Smart	**Auto**: Transmits data packets based on a fixed timer. **Manual**: Transmits position data over the air on-demand. **Smart**: Activates *Smart Beaconing*, which dynamically scales packet intervals based on your movement speed (configured via CPS).
Beacon Interval	30s to 60min	Sets the fixed timing duration for automatic position tracking transmissions when **Beacon TX** is set to **Auto**.
APRS TX Delay	100ms to 1000ms	Introduces a slight pause after pressing or releasing the PTT button before the modem starts sending the APRS data payload.

3. Mode-Specific Parameters (Analog vs. Digital Setup)

A. Analog APRS Parameter Specifications (Ana APRS Set)

① PTT Report: When toggled ON, the radio automatically injects an Analog APRS packet the moment you release the [PTT] button after talking.

② My Callsign: Enter your official amateur radio callsign followed by an SSID suffix identifier (e.g., NOCALL-7 for handhelds). The default placeholder value is NOCALL-1.

③ Comment TXT: Type a custom short text message (e.g., status updates or equipment info) to display alongside your marker on mapping platforms like aprs.fi.

④ DIGI PATH: Sets your packet routing packet relay path. The universal wide-area default path is WIDE1-1.

⑤ My Symbol: Select a graphical icon (e.g., a walking person, bicycle, or house) to represent your station on live APRS maps.

⑥ Tx Frequency: Choose whether the modem transmits on your currently selected channel frequency or dedicated national APRS standard frequencies (e.g., 144.390 MHz in North America).

B. Digital APRS Parameter Specifications (Dig APRS Set)

① PTT Report: When toggled ON, the radio automatically transmits a digital DMR APRS data block over the air immediately upon releasing the [PTT] button.

② Report Channel: Selects the specific programmed digital channel or data talkgroup designated to route your outbound DMR APRS telemetry packet.

③ Error Verify: When enabled (Default), it allows the software to decode incoming digital packets containing minor parity mismatches but valid data headers, ensuring you don't miss packets in poor signal areas.

14 . DTMF (Dual-Tone Multi-Frequency) Function

DTMF signaling uses audible multi-frequency tones to initiate selective calling, identify transmitters, and control automated remote systems on analog channels.

1. Transmitting and Receiving DTMF Calls

A. DTMF Transmission (Outgoing Calls)

① Programming Preset Contact IDs: Navigate to Menu → Book → Book List → DTMF1 to edit and save target radio IDs along with their custom contact names.

② Configuring Your Local DTMF ID: Your personal device ID can be pre-configured using the CPS (Computer Programming Software) or changed directly on the device under Channel Information → DTMF ID.

③ Automatic Encoding: When you press the [PTT] button, the radio automatically encodes and transmits your local DTMF ID and the target contact's ID over the air.

④ Manual Dialing: Alternatively, you can send on-demand DTMF signals on the standby screen by typing the recipient's target ID directly using the numerical keypad.

B. DTMF Reception (Incoming Calls)

① **Assign a Signaling System**: Navigate to Menu → Channel Information → Optional Signaling and select your designated DTMF system.

② **Select Squelch Settings**: Choose your preferred receive squelch mode. When the radio successfully decodes a matching incoming DTMF ID, it will alert you and output one of the following codes on the display:

③ C-XXX (Private Call): Indicates a secure, one-on-one Private Call directed specifically to you. [XXX represents the transmitter's unique DTMF ID].

④ A-XXX (Group Call): Indicates an incoming selective Group Call or broadcast intended for multiple users. [XXX represents the transmitter's unique DTMF ID].

2. Configuring and Operating PTT ID

The PTT ID feature automatically transmits your unique DTMF identification code whenever you talk, allowing receiving radios to instantly identify who is speaking.

① Enable DTMF Signaling: On your chosen analog channel, navigate to Menu → Settings → Channel Information → Optional Signaling and select DTMF.

② Select Transmission Timing (PTT ID Options): Go to the PTT-ID settings menu and select when your ID tone burst should be transmitted:

a. Off: Disables the feature; no PTT ID will be sent.

b. BOT (Beginning of Transmission): Transmits your DTMF ID immediately when you press the [PTT] button.

c. EOT (End of Transmission): Transmits your DTMF ID the moment you release the [PTT] button.

d. Both: Transmits your DTMF ID twice—once when you press [PTT] and again when you release it.

3.Configure the Receive Decoder: To ensure your radio can successfully decode and track incoming PTT IDs from other users while sending your own, navigate to Menu → Channel Information → RX Signal Sys and assign it to the corresponding active DTMF system.

4.Caller ID Display: When configured correctly, the incoming PTT ID of the transmitting radio will automatically flash onto your LCD screen during active receptions.

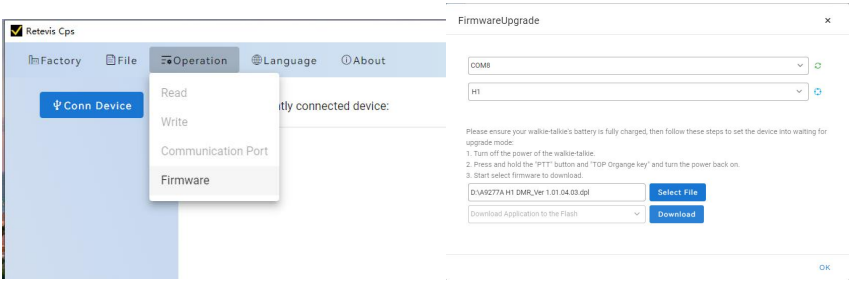
15．Firmware Upgrade Procedure (DFU Mode)

① Turn off the radio

② Press and hold both the (PTT) button and the (Top Orange Button) simultaneously while turning the power knob on.

③ The LED indicator will flash Red, confirming the device has successfully entered DFU mode .

④ Connect the radio to your PC using the programming cable, open the CPS Software, navigate to Operation→ Firmware, select your valid .dpl upgrade file, and click Download.



16．**Factory Reset**

① Turn off the radio .

② Press and hold the (PTT) button, the (Side Key 1 (button beneath PTT)), and the (Menu Key) at the same time.

③ Turn the radio on while holding these three buttons.

④ The screen will display "Data Initial" to signify that all settings, VFO parameters, and channels are being restored to factory defaults.

CTCSS/DCS List									
CTCSS									
NO.	Frequency	NO.	Frequency	NO.	Frequency	NO.	Frequency	NO.	Frequency
1	67	2	69.3	3	71.9	4	74.4	5	77
6	79.7	7	82.5	8	85.4	9	88.5	10	91.5
11	94.8	12	97.4	13	100	14	103.5	15	107.2
16	110.9	17	114.8	18	118.8	19	123	20	127.3
21	131.8	22	136.5	23	141.3	24	146.2	25	151.4
26	156.7	27	159.8	28	162.2	29	165.5	30	167.9
31	171.3	32	173.8	33	177.3	34	179.9	35	183.5
36	186.2	37	189.9	38	192.8	39	196.6	40	199.5
41	203.5	42	206.5	43	210.7	44	218.1	45	225.7
46	229.1	47	233.6	48	241.8	49	250.3	50	254.1
DCS									
NO.	Code	NO.	Code	NO.	Code	NO.	Code	NO.	Code
1	D023N	2	D025N	3	D026N	4	D031N	5	D032N
6	D036N	7	D043N	8	D047N	9	D051N	10	D053N
11	D054N	12	D065N	13	D071N	14	D072N	15	D073N
16	D074N	17	D114N	18	D115N	19	D116N	20	D122N
21	D125N	22	D131N	23	D132N	24	D134N	25	D143N
26	D145N	27	D152N	28	D155N	29	D156N	30	D162N
31	D165N	32	D172N	33	D174N	34	D205N	35	D212N
36	D223N	37	D225N	38	D226N	39	D243N	40	D244N
41	D245N	42	D246N	43	D251N	44	D252N	45	D255N
46	D261N	47	D263N	48	D265N	49	D266N	50	D271N
51	D274N	52	D306N	53	D311N	54	D315N	55	D325N
56	D331N	57	D332N	58	D343N	59	D346N	60	D351N
61	D356N	62	D364N	63	D365N	64	D371N	65	D411N
66	D412N	67	D413N	68	D423N	69	D431N	70	D432N
71	D445N	72	D446N	73	D452N	74	D454N	75	D455N
76	D462N	77	D464N	78	D465N	79	D466N	80	D503N
81	D506N	82	D516N	83	D523N	84	D526N	85	D532N
86	D546N	87	D565N	88	D606N	89	D612N	90	D624N
91	D627N	92	D631N	93	D632N	94	D645N	95	D654N
96	D662N	97	D664N	98	D703N	99	D712N	100	D723N
101	D731N	102	D732N	103	D734N	104	D743N	105	D754N
106	D023I	107	D025I	108	D026I	109	D031I	110	D032I
111	D036I	112	D043I	113	D047I	114	D051I	115	D053I
116	D054I	117	D065I	118	D071I	119	D072I	120	D073I

CTCSS/DCS List									
CTCSS									
NO.	Frequency	NO.	Frequency	NO.	Frequency	NO.	Frequency	NO.	Frequency
121	D074I	122	D114I	123	D115I	124	D116I	125	D122I
126	D125I	127	D131I	128	D132I	129	D134I	130	D143I
131	D145I	132	D152I	133	D155I	134	D156I	135	D162I
136	D165I	137	D172I	138	D174I	139	D205I	140	D212I
141	D223I	142	D225I	143	D226I	144	D243I	145	D244I
146	D245I	147	D246I	148	D251I	149	D252I	150	D255I
151	D261I	152	D263I	153	D265I	154	D266I	155	D271I
156	D274I	157	D306I	158	D311I	159	D315I	160	D325I
161	D331I	162	D332I	163	D343I	164	D346I	165	D351I
166	D356I	167	D364I	168	D365I	169	D371I	170	D411I
171	D412I	172	D413I	173	D423I	174	D431I	175	D432I
176	D445I	177	D446I	178	D452I	179	D454I	180	D455I
181	D462I	182	D464I	183	D465I	184	D466I	185	D503I
186	D506I	187	D516I	188	D523I	189	D526I	190	D532I
191	D546I	192	D565I	193	D606I	194	D612I	195	D624I
196	D627I	197	D631I	198	D632I	199	D645I	200	D654I
201	D662I	202	D664I	203	D703I	204	D712I	205	D723I
206	D731I	207	D732I	208	D734I	209	D743I	210	D754I

Troubleshooting Guide

If your radio experiences operational issues, please consult the table below for common symptoms and their recommended solutions before contacting customer support.

Symptom	Potential Cause	Recommended Solution
No power / Radio will not turn on	• The battery may be completely depleted. • The battery may not be seated properly.	• Recharge the battery or replace it with a fully charged pack. • Remove the battery pack and re-install it securely until it locks into place.
Short battery life after a full charge	• The battery has reached the end of its operational lifespan.	• Replace the old battery pack with a brand-new, genuine replacement battery.
Cannot communicate with group members	• The radio is outside the effective communication range. • Channel configurations do not match.	• Move closer to your team members to eliminate range or terrain obstructions. • Verify that your Channel, Frequency, and Privacy Code (CTCSS/DCS/Color Code/Time Slot) settings are identical to your group's radios.
Hearing unwanted conversations on your channel	• Another team in your vicinity is sharing the same frequency or privacy settings.	• Change the sub-audible privacy code (CTCSS/DCS) or Color Code settings on all radios across your entire group.
Radio keeps emitting continuous beeps	• The currently selected channel is empty or unprogrammed.	• Rotate the channel knob to an active channel, or connect the radio to your PC to program the selected channel slot via the CPS.
Radio fails to power on after a firmware update	• The incorrect firmware version or file type was applied to the device.	• Force the radio into DFU update mode (Hold **[PTT]** + **[Top Orange Button]** while powering on) and re-flash the correct, official firmware file.

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 regulatory authorities (such as FCC, ISED, OFCOM, ANFR, BFTK, ComReg, Bundesnetzagentur, and so on.). For 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 compliance information

This device complies with part 15 of the FCC Rules. Operation is subject to the condition that this device does not cause harmful interference. (Licensed radios are applicable)

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (Other devices are applicable)

(1) This device may not cause harmful interference.

(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.

Unauthorized modification and adjustment

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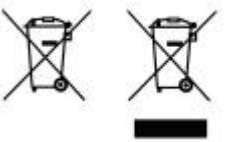
transmitter adjustments should be made only by or under the supervision of a person certified as technically qualified to perform transmitter maintenance and repairs in the private land mobile and fixed services as certified by an organization representative of the user of those services. Replacement 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.

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

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 air bag 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 ℃ and +25 ℃ and never exceed +30℃. Batteries should therefore not be stored next to radiators or boilers nor in direct 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.

Authorized Accessories List

• Contact Retevis for assistance regarding repairs and service.

• For a list of Retevis-approved accessories for your radio model, visit the website: http://www.Retevis.com