

1. Introduction

APRS (Automatic Packet Reporting System) messaging solves the problems of poor voice clarity, missing location info, and failed infrastructure during disasters or remote outdoor operations. It gives you reliable, text-based, location-tagged communication over amateur radio without relying on cell networks.

Emergency Communication (EmComm): during natural disasters it sends precise text updates, supply requests, and station-health reports over the radio when networks are down.

Search and Rescue (SAR): field teams send exact coordinates and situation updates back to base camp via text.

Field Operations & Mobile Tracking: for moving vehicles or hikers with no phone service, it supports quick text bulletins and individual station messages.

The latest Ailunce HA2 firmware upgrades the APRS Message feature. To use it, update the radio firmware to version V1.00.06.004.

Firmware download: <https://www.ailunce.com/Supports/HA2/Software>

If you want to send messages via the Bluetooth app on Android/iOS phones, also update the radio's Bluetooth firmware to version V1.2.16.

OTA / Android OTA: https://www.ailunce.com/Assets/file/Retevis_OTA_1.0.0.zip

IOS OTA: To join the beta of "RETEVIS IOS BT OTA", install TestFlight on your iPhone/iPad/Mac, then open the link. Update guide:

Bluetooth Update guide: [How to Update RETEVIS Ailunce HA2 Firmware with Phone: Bluetooth OTA Update Guide](#)

Basic settings must be completed before use—messages cannot be sent without these configurations.

2. Basic Parameter Configuration

1. Frequency and Basic Parameter Settings

- Set the Band A/B VFO or channel frequency to your local standard APRS frequency.
- Disable the CTCSS sub-tone and DCS digital mute on the channel (sub-tones block APRS data packets, so you cannot receive/decode them).
- Lower the squelch threshold enough that weak APRS signals can still be demodulated and received.

2. Set Your Call Sign + SSID

Find APRS → Mycallsign and SSID in the menu. For a handheld radio, enter XXXXXX-7 (the -7 SSID marks a handheld).

Note: without a call sign and SSID you cannot send or receive APRS messages.

3. APRS TX Frequency

You can set the APRS TX frequency in the APRS menu; the receive frequency is the standby frequency.

4. Set the Forwarding (Digipeater) Path

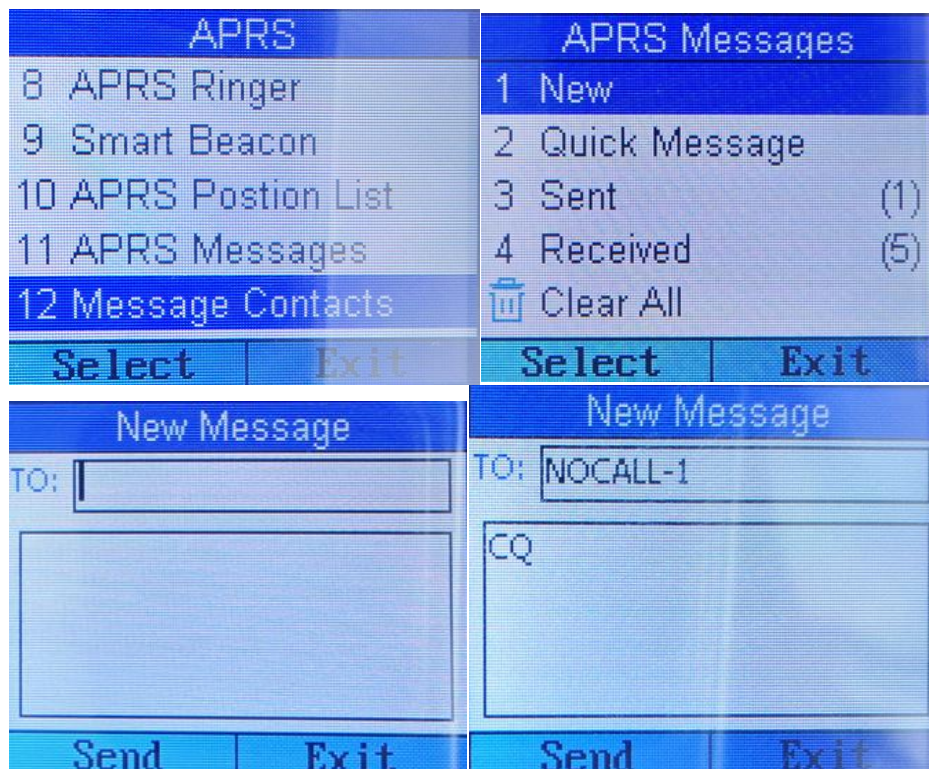
The APRS digipeater path is normally WIDE1-1,WIDE2-1 (standard for moving stations in North America). In Europe use WIDE1-1,WIDE2-2, or follow your local norm. This lets digipeaters along the route forward your packet so distant stations can receive it.

3. Sending APRS Messages: Step-by-Step (Two Methods)

Method 1: Enter the Recipient Call Sign + SSID and Send a Point-to-Point APRS Message

1. Open the APRS menu and choose [New Message].

2. Enter the recipient's full call sign (including SSID, e.g. BA1AAA-7). You can pre-create contacts in the [Message Contacts] menu and select one with the channel knob.
3. Turn the channel knob to pick a saved contact; use the [MENU] key to move the cursor to the message box (max 67 characters per message).
4. Press the Menu key to transmit the packet.
5. When the recipient receives it, the radio beeps and the message shows "ack" in their inbox—this is the automatic acknowledgment of a point-to-point APRS message.
6. If the sender gets no ACK, the outbox shows the message as "sent" and retransmits it every 20 seconds when idle.
7. After 3 failed retries (no ACK), the outbox shows "Sent (no ack)" and stops retrying—usually meaning the recipient is offline.
8. If an ACK arrives during retransmission, the status changes from "Sent" to "Delivered", confirming success; the message is then removed from the retry queue (retries do not add extra outbox entries).
9. If the radio is powered off during retries, the remaining attempts are saved and resume after restart (not restarted from zero). E.g. after 2 retries before shutdown, only the 1 remaining retry runs after restart.



Message Sent		Message Received	
To: BH6PJL-7		From: BI6KSS-1	
Status: Delivered		Status: Ack	
i need help		need help	
Select	Exit	Select	Exit

Receiving Messages

With APRS enabled and the TX frequency matching your standby frequency, you will receive APRS messages. A window pops up to read the content; you can reply with a new or quick message.

Method 2: Reply to a Beacon

When you receive an APRS beacon, you can send a new or quick message directly. Messages sent by replying to a beacon are saved in the received list.

APRS Beacon		Beacon Action	
Time:07/16/2026 14:01		1 Reply New Message	
ID:BH6PJL-7		2 Reply Quick Message	
Dst:0km		3 Remove Beacon	
Course:177°			
Lat:34° 47.880'N			
Lon:113° 39.559'E			
Select	Exit	Menu	Exit

APRS messaging upgrades a radio from voice-only to an off-grid collaboration tool with messaging and status reporting—especially valuable outdoors and in emergencies.

4. Bluetooth KISS TNC and APRSDroid (Android) Setup Guide



Connecting the HA2 via Bluetooth KISS as a wireless modem (TNC) allows you to send and receive APRS beacons and messages, view real-time maps and other people's locations on your phone, without relying on your phone's cellular network or the internet.

Ailunce HA2 Device Setup

- Set the Band A/B VFO or channel frequency to the local standard APRS frequency.
- Disable the CTCSS sub-tone and DCS digital mute (they block APRS packets).
- Lower the squelch threshold so weak APRS signals can be received.

Enable Bluetooth KISS TNC Mode

- Turn on Bluetooth: menu BT Power > On.
- Select the TNC mode: menu BT Mode > KISS TNC SPP.
- The Ailunce HA2 enters Bluetooth pairing mode.

Phone Bluetooth Pairing (Android)

- On your Android phone, turn on Bluetooth and make it discoverable.
- Search for and pair the device named "Ailunce HA2 (BT)".
- After pairing, no further action is needed—just keep the Bluetooth connection active.



APRSdroid App Detailed Configuration

Open APSDroid, tap **【More】** (top-right) → **【Settings / Preferences】** , and configure each item as below.

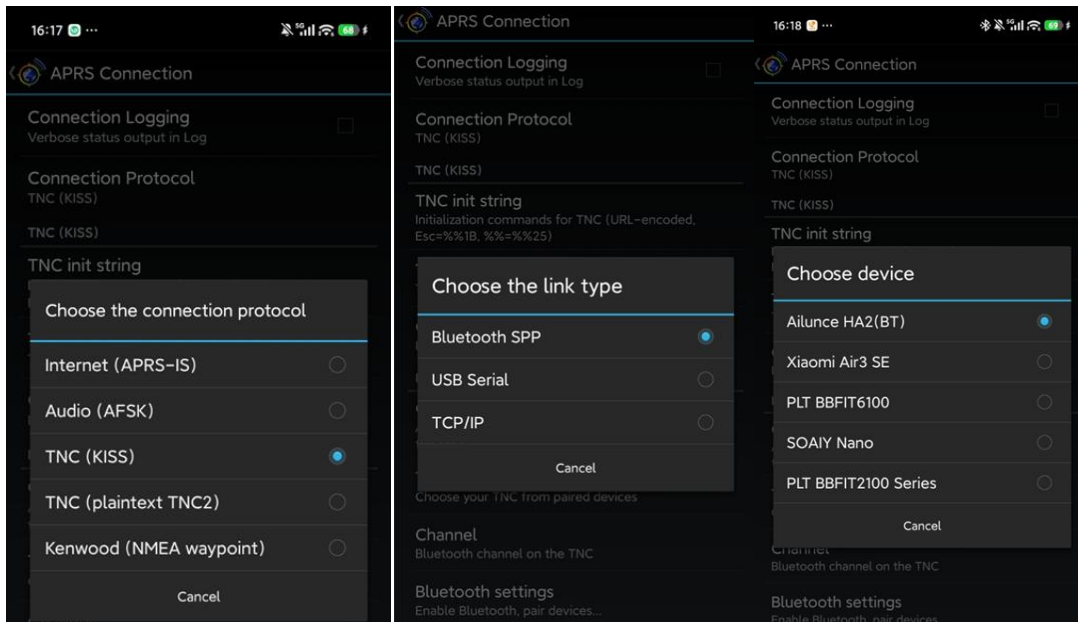
Basic User Information

- Call Sign: your amateur radio call sign (required).
- SSID: -7 for a handheld/mobile radio.
- APRS Icon: pick hiker, vehicle, fixed station, or bicycle as needed.
- Beacon interval: 5–10 min on foot, 3–5 min in a vehicle. Do not beacon too often—it clogs the shared channel.
- Beacon comment: optional free text about status/trip/duty.

Core Connection Settings

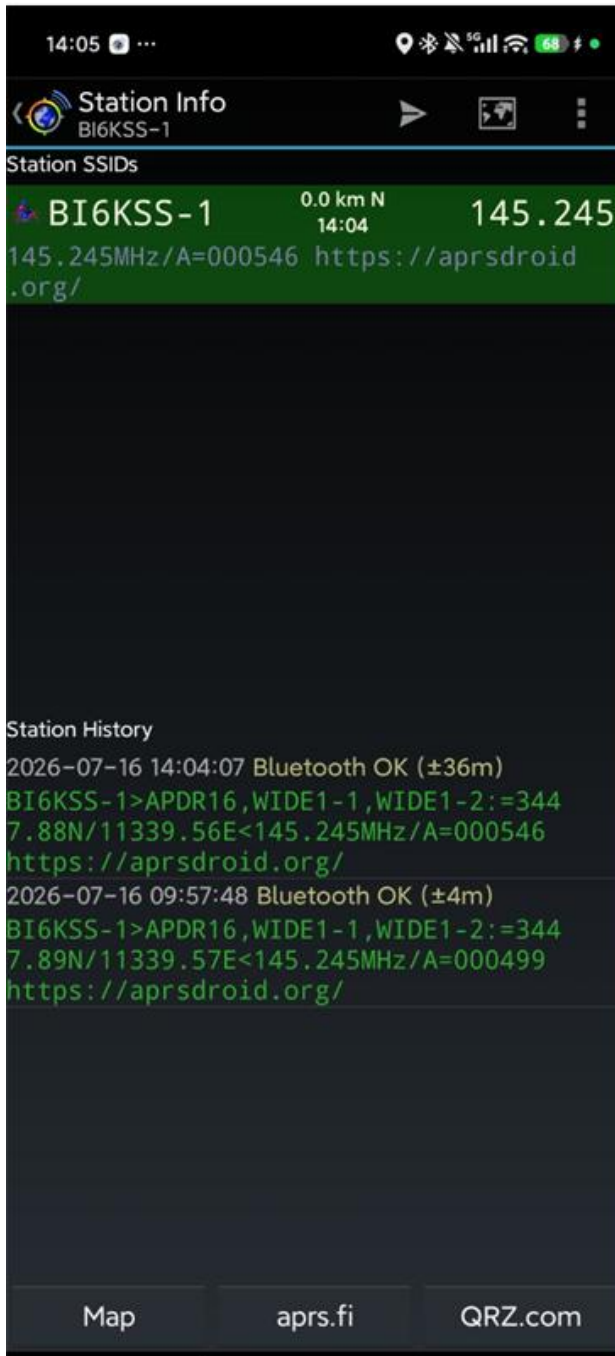
- Connection Protocol: TNC (KISS).
- Connection Type: Bluetooth SPP (serial).
- TNC Bluetooth Device: pick the paired "Ailunce HA2" from the list.
- TNC Initialization Command: leave blank.
- Initialization Delay: 300 ms default (fine for most Bluetooth TNCs).

- Digipeater path: WIDE1-1,WIDE2-1 (North America); in Europe, WIDE1-1, WIDE2-2, or your local norm.



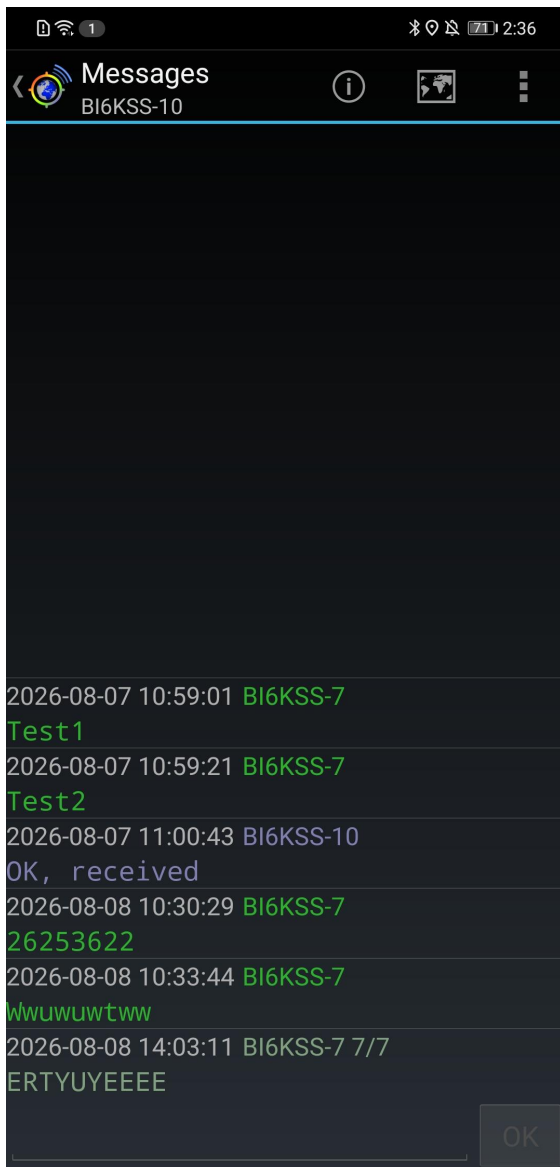
Connection and Functionality Tests

- Back on the main screen, tap 【Start Tracking】. "Bluetooth OK" means pairing succeeded.
- TX test: tap 【send position】 to beacon. If the HA2 TX light lights and nearby stations receive it, it works.
- RX test: when nearby stations send beacons/messages, the app decodes and shows them and the map refreshes—two-way comms work.



Steps to Send an APRS Message

- Tap the triangle icon (top) to open Messages.
- Choose "Send Message", enter the recipient's full call sign (with SSID) and type your text. Each APRS message is limited to 67 characters (Chinese, English, numbers, symbols allowed).
- On success, the message turns green.



5. Bluetooth KISS TNC and APRS.fi (iOS) Setup Guide

This guide explains using a BLE KISS TNC with the aprs.fi mobile app for APRS map positioning and text messaging. Use cases: outdoor ham monitoring, hiking/vehicle mobile APRS positioning, and local RF APRS networking (it works even without a cellular network).

Ailunce HA2 Device Setup

- Set the Band A/B VFO or channel frequency to the local standard APRS frequency.
- Disable the CTCSS sub-tone and DCS digital mute (they block APRS packets).
- Lower the squelch threshold so weak APRS signals can be received.

Enable Bluetooth BLE KISS TNC Mode

- Turn on Bluetooth: menu BT Power > On.
- Select the TNC mode: menu BT Mode > KISS TNC BLE.
- The Ailunce HA2 enters Bluetooth pairing mode.

Phone Bluetooth Pairing (iOS)

- On your iOS phone, turn on Bluetooth and make it discoverable.
- Search for and pair the "Ailunce HA2" device.
- After pairing, no further action is needed—just keep the Bluetooth connection active.

aprs.fi Software Settings

- Menu: Beacon setting.
- Station: Callsign: your legal amateur radio call sign.
- SSID: -7 (recommended for handheld).
- Station symbol: hiking / vehicle / fixed as needed.
- Packet path: wide1-1, wide2-1 by default (North America); in Europe, wide1-1, wide2-2, or change as needed.

TNC Connection Mode Switching

- Menu: More → TNC & DSP mode.
- Select a TNC: under BLE TNCs discovered, pick the paired Ailunce HA2.



Connection and Functionality Tests

- The TNC status shows "Connected".
- Downlink test (RF → radio → app): nearby stations send messages/beacons/ACKs and the app decodes them; the map refreshes, and the message list records them—full two-way comms.

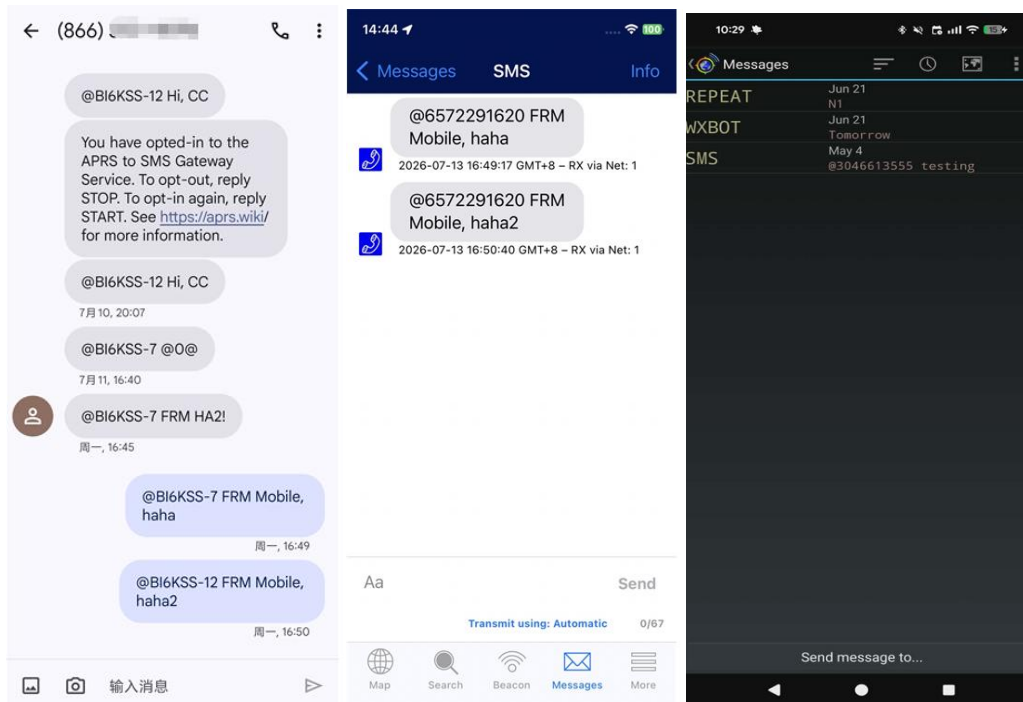
Steps to Send an APRS Message

- On the aprs.fi main screen, open the Messages entry from the bottom/side menu.
- Tap "Create Message"; in Destination Callsign enter the recipient's full call sign (SSID optional, e.g. XXXX-7).
- Type the message (max 67 characters; Chinese, English, numbers, symbols allowed).
- Select TNC as the send channel.
- Tap "Send". After delivery the status under the message shows "delivered".
- On a valid message, the TNC automatically sends an APRS ACK packet to confirm receipt, closing the loop.

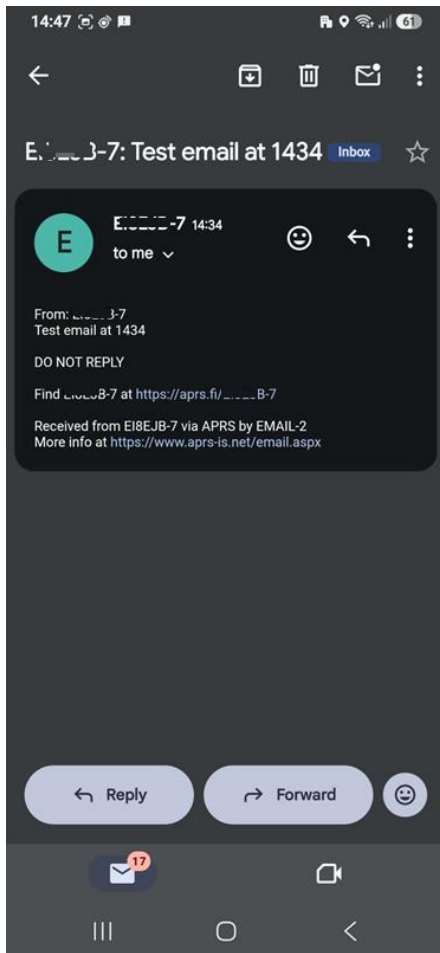
About "Sending to a Phone or Email"

To reach a normal cell phone: use the SMSGTE APRS gateway. Address the message to the call sign SMSGTE (no SSID) and start the text with @ + phone number + space, then your message—e.g. To: SMSGTE, Message: @14155550123 Heading home, ETA 30 min. SMSGTE forwards it as an SMS and the person can reply the same way. This needs a two-

way I-Gate that hears your station, and SMSGTE needs internet/cellular on its side—but you can be off-grid, sending over RF with the HA2.



To reach an email address: APRS-to-email is handled by APRS email gateways / APRS-IS servers (and can relay through Winlink). Like SMS, the gateway needs internet access; you still start from a normal APRS message to the gateway's call sign.



Bottom line: your phone can send/receive APRS messages through the HA2 with no cell service, but "texting a phone number" or "sending an email" always relies on an internet-connected gateway.