

G7JJF APRS Client

User Manual | Version 1.2.0

Tocall: APZGJJ | Android 8.0 and later | Amateur Radio APRS Software

G7JJF APRS Client is a comprehensive Automatic Packet Reporting System (APRS) application for Android, developed by a licenced amateur radio operator for fellow radio amateurs. It brings together six connection interfaces -- APRS-IS plus five RF interfaces -- a live canvas slippy map with repeater detail on tap, geo-fence alerts, offline tile pre-download, a telemetry dashboard, smart GPS beaconing with symbol picker and altitude reporting, 30-day weather history, WhatsApp-style messaging with inline notification reply and email gateway, TX and RX iGate, Android Auto integration with live station map, and a full suite of amateur radio tools including ISS pass predictor, DX cluster, propagation indices, QSO log with ADIF export, and GPX track log.

The app is freeware, contains no advertising, and requires no account or registration. All APRS-IS passcode calculation is handled automatically from your callsign.

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1. What is APRS?

APRS -- Automatic Packet Reporting System -- was created by Bob Bruninga WB4APR in the early 1990s as a real-time tactical digital communications system for amateur radio. Unlike traditional packet radio which focuses on store-and-forward message delivery, APRS is a broadcast protocol: every station can hear every other station simultaneously, and information is shared with the entire local network at once.

At its core, APRS uses AX.25 packet radio on 144.800 MHz in the United Kingdom and Europe, or 144.390 MHz in North America, running at 1200 baud using Bell 202 AFSK audio tones. Stations broadcast their GPS position, weather data, messages, status text, telemetry, and objects. Digipeaters repeat packets over a wider area, and iGates bridge between RF and the worldwide APRS-IS internet backbone.

The APRS-IS (Internet Service) network mirrors all RF traffic globally, so a station heard on RF in Nottinghamshire is visible on aprs.fi within seconds to anyone anywhere in the world. This combination of local RF awareness and global internet visibility is what makes APRS uniquely useful for emergency communications, SOTA/POTA activations, vehicle tracking, and general amateur radio situational awareness.

2. Quick Start

These steps will have you receiving live APRS packets within two to three minutes. You do not need a radio or TNC to get started -- the APRS-IS internet gateway provides a live feed of all stations in your area.

- Install G7JJF APRS Client from the Google Play Store, or sideload the APK from www.g7jjf.com.
- Tap the menu button (three horizontal lines, top left) and select **Settings**.
- Enter your **Callsign** without the SSID suffix, and set your **SSID** (0 to 15). Leave the Passcode field blank -- the app calculates your APRS-IS passcode automatically. Enter -1 if you only want to receive, with no transmitting to APRS-IS.
- Set your **QTH Latitude and Longitude**. These are used as the filter centre and as the fallback beacon position when GPS is unavailable.
- Set the **Filter Range** to 50--200 km depending on your area. Leave the APRS-IS server at the default (euro.aprs2.net) unless you have a specific reason to change it.
- Tap **Save**. Return to the main screen.
- Tap the **menu button** and select **APRS Connections**, then tap the **APRS-IS** entry to toggle it on. The status bar will show **IS Connected** then **IS + N pkts** as packets arrive.
- The map will begin populating with station markers within a few seconds.

You need an amateur radio licence to transmit on APRS RF frequencies. APRS-IS receive-only operation requires no licence. Enter -1 as the passcode for receive-only APRS-IS access.

3. Navigation and Layout

The app uses a single-screen layout with all content stacked in the same area. There is no bottom tab bar or side drawer -- everything is accessed via the menu button in the top left corner, which keeps the maximum screen area available for the map and packet list.

3.1 The Menu

Tapping the three-line button in the top left corner opens a scrollable dialog listing every screen and tool in the app, grouped into sections. When you have unread APRS messages the menu button shows a red dot. The menu is organised as follows:

- **Map** -- main map screen
- **Station Log** -- list of all heard stations (unread count badge)
- **Packets** -- raw packet stream (new packet count badge)
- **Messages** -- APRS messaging (unread count shown in brackets)
- **Bulletins** -- APRS bulletins and announcements
- **Settings** -- all configuration
- **Debug** -- raw comms monitor and debug log
- **APRS Connections** -- toggle IS and all RF interfaces on/off
- **Tools** -- Watchlist, WX stations, Grid Square, ISS passes, Propagation, DX Cluster, Repeaters, etc.
- **Logging** -- QSO Log, Track Log, Objects, Group Broadcast

3.2 Status Bar

The status bar across the top of the screen shows your combined connection state, packet rate, and callsign. A coloured dot to the left of the status text indicates quality. The status text adapts to show all active connections simultaneously:

	Meaning
IS + 42 pkts · 1.2/min	Connected to APRS-IS, 42 packets received this session
IS + AGW · 42 pkts	APRS-IS and AGW interface both active
RF: KISS+BT	RF only -- KISS TCP and Bluetooth TNC active, no IS
Connecting...	Attempting to connect to APRS-IS
Disconnected	No active connections

The **Connect / Disconnect button has been removed from the status bar**. To connect or disconnect APRS-IS or any RF interface, use the **APRS Connections** section in the menu, where each interface shows its current state with a green ON or dim OFF indicator.

4. Connections

G7JJF APRS Client supports six connection types simultaneously. All active connections receive packets, which are merged into a single unified stream on the map and in the packet list. When you transmit a beacon it goes to all active connections at once. When you reply to a message, the reply is routed back to the interface that station was last heard on -- not all interfaces.

4.1 APRS-IS Internet Gateway

APRS-IS is the worldwide internet backbone connecting all APRS iGates into a single network. Connecting to it gives immediate access to all APRS traffic in your filter area without any radio hardware. The connection is managed via the **APRS Connections** menu. The status bar shows the connection state and live packet rate.

	Description
Server	APRS-IS tier-2 server. Default: euro.aprs2.net for UK/Europe. noam.aprs2.net for North America.
Port	Default 14580 (filtered). Use 14580 for filter, 10152 for full feed.
Filter	r/lat/lon/km range filter. Set in Settings > Filter.
Passcode	Calculated automatically from callsign. Leave blank. Enter -1 for receive-only.

4.2 KISS TNC (TCP/IP)

Connects to a KISS-mode TNC or software TNC (such as Direwolf) over a TCP socket on your local network or VPN. The TNC handles the RF modem layer; the app decodes all received AX.25 frames and transmits via the TNC. Host and port are saved per profile and pre-filled from the previous connection.

4.3 Bluetooth TNC

Connects to a Bluetooth SPP (Serial Port Profile) TNC such as the Mobilinkd TNC3 or similar. The app pairs with the device via standard Android Bluetooth. KISS mode is configurable (on by default). The Bluetooth MAC address is saved per profile.

4.4 BLE TNC

Connects to Bluetooth Low Energy TNCs such as the Mobilinkd TNC4. Uses the standard BLE UART service. Builds proper AX.25 frames internally rather than relying on the TNC to do so.

4.5 AGW (AGWPE)

Connects to an AGWPE-compatible server such as Direwolf, UZ7HO SoundModem, or the original AGWPE. Enter the host IP/hostname and TCP port (default 8000), and select the radio port number. Debug output from AGW is routed directly to the comms monitor without going through the ViewModel, which prevents data loss when the UI is not bound. Host and port are saved to SharedPreferences immediately on connect, not just to DataStore, so they are always available for pre-filling the dialog.

4.6 Audio DSP TNC

Uses the phone microphone and speaker to act as a 1200 baud Bell 202 AFSK software TNC. See Section 10 for full details.

4.7 APRS Connections Menu

All six interfaces are managed from the **APRS Connections** section in the menu. Each entry shows a green **ON** or dim **OFF** indicator. Tapping a connected interface disconnects it. Tapping a disconnected interface opens the connect dialog (or for APRS-IS, connects directly with the current saved settings). The status bar always reflects the combined state of all active interfaces.

5. Map and HUD

The Map screen is the main view of the application. It shows a canvas-based slippy map with APRS station markers drawn in real time as packets are received. Markers fade slightly with age, giving an immediate visual sense of which stations are currently active. Tapping any marker opens the full Station Detail sheet directly.

5.1 HUD Toolbar

A horizontally scrollable toolbar sits below the map with quick-access controls. Toggle buttons (Cluster, Labels, Trails, RPT, RNG) highlight with an accent background when active. The TX button sends an immediate beacon to all active interfaces.

	Function
TX	Send immediate position beacon to all active connections
Cluster	Toggle marker clustering at low zoom levels
Labels	Toggle callsign labels on map markers
Trails	Toggle movement trails for mobile stations
RPT	Fetch and overlay nearby repeaters from RepeaterBook (opens browser if API unavailable)
RNG	Draw range rings around your QTH
Map/Sat/Dark	Switch between map tile layers
Night	Toggle night mode -- dims screen to 15%, switches to dark theme

5.2 Station Detail

Tapping any station marker opens a full detail sheet showing: callsign and SSID, packet type icon, comment, distance and bearing from your QTH, Maidenhead grid square, heard-on interface badge (showing whether the station was last heard on IS, KISS, BT, BLE, AGW, or Audio DSP), speed and course for mobile stations, weather data summary, Copy All, Share, QSO Log, ISS Passes, Sunrise/Sunset, and Telemetry buttons.

5.3 Comms Monitor (Debug tab)

The Comms Monitor (accessible via Menu > Debug, then the Comms tab) shows the raw APRS stream colour-coded by source and direction:

	Meaning
Red	TX to APRS-IS (>> prefix)
Orange	[KISS TX] [BT TX] [BLE TX] [AGW TX] [AUDIO TX]
Cyan	[KISS RX] [BT RX] [BLE RX] [AGW RX] [AUDIO RX]
Yellow/Accent	[iGATE ...] packets being gated
Green	[GPS] and [QTH] beacon transmissions
Dim white	Received from APRS-IS (no prefix)

- The **Clear** button clears both the display and the backing log -- the stream will not reappear.
- The **Save** button (yellow disc icon) shares the current log as a text file.
- The legend row shows all colour codes. Status-only packets are excluded from the station log.

6. Messages and Email Gateway

6.1 APRS Messaging

APRS supports addressed text messages between stations with a confirmation (ACK) and retry mechanism. G7JJF APRS Client presents messages in a familiar conversation thread interface. The unread count is shown next to Messages in the menu.

- **Traffic tab** -- every APRS message packet received, regardless of addressee. Read-only.
- **My Messages tab** -- messages addressed to you and messages you have sent. Full conversation threads.
- **Compose** -- tap the pencil icon to start a new conversation. Enter the destination callsign.
- **Reply** -- tap Reply in any conversation. The reply is routed back via the same interface the station was last heard on (IS, KISS, BT, BLE, AGW, or Audio).
- **ACK** -- the app sends an ACK for every received message automatically, and retries your own messages up to five times with exponential backoff.

6.2 Email Gateway

The Email Gateway forwards incoming APRS messages addressed to you to an email address via SMTP. This lets you receive APRS messages even when you are not watching the app.

Configuration

	Description
SMTP Host	Your mail server hostname or IP. e.g. mail.g7jjf.com
Port	465 for SSL, 587 for STARTTLS, 25 for plain relay
Username	SMTP login username (usually your email address)
Password	SMTP password. For Gmail, generate an App Password in your Google account.
From address	Sender address for outgoing emails. Leave blank to use username.
To address	Destination email address for forwarded messages.
Use SSL	On for port 465 (direct SSL). Off for port 587 (STARTTLS) or 25.
Require auth	Off for relay-only VPS servers that trust your IP without login.
Subject prefix	Added to email subject. Default: APRS. Produces subjects like [APRS] Message from G7XYZ.
Include position	Adds sender coordinates and Google Maps link to the email body.
Forward all	Off = only messages addressed to you. On = all traffic messages.

SMTP Implementation

The email gateway uses a raw SMTP implementation that writes directly to the socket output stream, bypassing javax.mail entirely. This avoids SSL certificate trust issues that affect javax.mail on Android, particularly with self-signed or Let's Encrypt certificates on VPS servers. All certificate verification is handled with a trust-all SSL context. The SMTP conversation is logged in the app's Debug log for diagnosis.

For Gmail: enable 2-Step Verification in your Google account, then generate an App Password (Google Account > Security > App Passwords). Use the 16-character app password instead of your Google password. Gmail no longer accepts normal passwords for SMTP since May 2022.

For a self-hosted VPS (Postfix/Exim): use port 465 with SSL=on, or port 587 with SSL=off. If your server uses a self-signed certificate the app will still connect. If the server is configured as a local relay that trusts your IP, turn off Require Auth.

7. Beacons and Smart Beacons

A beacon is an APRS position packet transmitted on a regular schedule, broadcasting your callsign, symbol, position, and comment to the APRS network.

7.1 Beacon Settings

	Description
Beacon Interval	Seconds between beacons. 0 = disabled. 300 = every 5 minutes.
GPS Mode	On = transmit live GPS position. Off = transmit fixed QTH coordinates.
Symbol	APRS symbol. Tap Pick for a visual grid of 29 common symbols.
Comment	Text appended to each beacon. Max 43 characters.
Include Altitude	Appends /A=XXXXXX altitude field in feet. Disable for fixed stations.
RF Path	Digipeater path. WIDE1-1,WIDE2-1 is standard for most UK stations.
Beacon on Connect	Send a beacon immediately when APRS-IS connects.

7.2 Smart Beacons

Smart Beacons adapts the beacon rate to your speed and direction of travel. When stationary it beacons at the slow rate (typically every 300--1800 seconds). When moving fast it increases to the fast rate. Significant direction changes (corners) trigger an immediate beacon regardless of the time since the last one.

When Smart Beacons is enabled and GPS is not available (indoors, before first fix), the app falls back to the QTH coordinates. The fallback correctly updates the last-beacon timestamp so the slow rate is enforced and the beacon does not fire every 10 seconds.

The beacon tick runs every 10 seconds when Smart Beacons is on, but only transmits when the Smart Beacons criteria are met. This is normal behaviour -- the app is checking GPS frequently, not beacons frequently.

8. RX iGate and TX iGate

8.1 RX iGate

When the RX iGate is enabled, every packet received from any of the five RF interfaces is forwarded to APRS-IS. This allows RF-only stations to appear on aprs.fi worldwide. Packets already containing TCPIP, NOGATE, or RFONLY in their path are not gated. Enable in Settings > RX iGate.

8.2 TX iGate

The TX iGate downloads messages from APRS-IS and transmits them on RF so they can reach stations with no internet connection. A heard-window filter (default 30 minutes) ensures only messages for stations recently heard on RF are gated, reducing unnecessary RF congestion. Enable in Settings > TX iGate.

9. Station Profiles

Station Profiles save your entire operating configuration as a named preset. Switching profiles reconfigures the app completely -- callsign, SSID, server, filter, beaconing, TNC connections, theme, display units, iGate settings, and more.

	Settings included
Identity	Callsign, SSID, APRS-IS passcode
APRS-IS	Server address and port, auto-connect, filter range and centre
Beaconing	Interval, symbol, comment, path, GPS mode, altitude, smart beaconing parameters
TNC connections	KISS host/port, Bluetooth MAC, BLE MAC, AGW host/port/radio port, KISS mode
Display	Theme, distance unit (km/miles), temperature unit (C/F), night mode preference
iGate	RX iGate enable, TX iGate enable, callsign, message, heard window
Messaging	Audio alert on message, auto-beacon on message
Filters	Station type filter, extra filter string

TNC connections are saved in profiles but the app does not automatically reconnect TNCs when a profile is applied. You must reconnect manually after switching profiles. APRS-IS reconnects automatically if the server or filter changed.

Profile null-safety: if you apply a profile saved before certain settings existed in the app, all missing fields default safely rather than crashing.

10. Audio DSP TNC (Bell 202)

The Audio DSP TNC turns your Android phone into a fully functional 1200 baud AX.25 packet TNC using Bell 202 AFSK modulation -- the same standard used by every VHF APRS station on the air. No external hardware is required beyond a suitable audio cable connecting your radio to the phone.

10.1 How Bell 202 AFSK Works

Bell 202 AFSK represents binary data using two audio tones: 1200 Hz for mark (binary 1) and 2200 Hz for space (binary 0). The data is encoded using NRZI (Non-Return-to-Zero Inverted), where a tone transition represents a 0 bit and no transition represents a 1 bit. The bitstream is wrapped in AX.25 HDLC frames with bit stuffing -- a 0 is inserted after every five consecutive 1 bits to prevent false flag detection.

10.2 Connecting the Radio

- Use a 3.5mm TRRS cable to connect your radio's speaker/headphone output to the phone mic input.
- Set radio audio level so the input waveform is not clipping -- use the receive level indicator.
- For transmit, connect the phone headphone output to the radio mic input. The app generates the audio tones automatically when transmitting a packet.
- PTT (Push To Talk) is handled manually or via a VOX circuit on the radio.

10.3 Loopback Test

The Audio DSP TNC includes a loopback test that transmits a test packet via audio and receives it back through the same audio path. If the loopback succeeds you will see your own callsign appear in the packet stream.

11. Android Auto

Android Auto projects a simplified, distraction-optimised version of the app onto your car head unit display. The interface is designed for large, easy-to-tap controls and minimal interaction while driving. The station map refreshes every 30 seconds so station positions stay current as you drive.

	Content
Main	Connection status with IS + RF, station count, unread messages. Buttons: Connect/Disconnect, Stations. Messages in action strip.
Station Map	APRS stations as POI markers on the head unit built-in map. Nearest 20 stations shown. Marker label = first 3 characters of callsign. DistanceSpan shows distance to each station. Refreshes every 30 seconds.
Station Detail	Callsign, comment, distance, bearing, weather summary.
Messages	Thread list with peer callsigns.
Conversation	Message bubbles for a single thread. Reply button.
Compose / Reply	Text input via head unit keyboard or voice. Type and press Enter or tap Send.

11.1 Requirements

- Android Auto version 6 or later on the phone.
- Car head unit with Android Auto support, or the Desktop Head Unit emulator (DHU) for development testing.
- For the station map: **POI category** app with Car App Library API level 2. No special Google review required for POI category.
- For the map to appear on a sideloaded/debug build: enable Unknown Sources in Android Auto developer settings (tap the version string 10 times in AA settings to unlock developer mode).

11.2 Desktop Head Unit (DHU) Testing

To test Android Auto on your PC without a car:

```
1. Edit C:\Users\\\.android\headunit.ini and add:
[general]
enable_nav=true
```

- Run: `adb forward tcp:5277 tcp:5277`
- On the phone: Settings > Connected Devices > Android Auto > three dots > Start head unit server
- On the PC: run `desktop-head-unit.exe` from the Android SDK extras/google/auto folder
- On the phone: tap the Android Auto notification to confirm the connection

11.3 Phone App Must Be Open

Android Auto loads the app's CarAppService as a background service. Because starting a foreground service from a background context is blocked on Android 14+, the car screens do not trigger an APRS-IS connection automatically. Open the G7JJF APRS app on the phone first, then connect to APRS-IS, and the car screens will show live data. The main car screen polls every 2 seconds while waiting for the phone app to be opened.

11.4 Play Store Submission

For the app to appear in the Android Auto launcher on a real head unit without developer mode, it must be published to the Google Play Store. The POI category does not require a separate navigation permission review -- standard Play Store review is sufficient.

12. Home Screen Widget

The home screen widget provides at-a-glance APRS status without opening the app. It updates automatically when the connection state changes, a beacon is sent, a message is received, or a new station is heard.

- Long-press an empty area of the home screen, tap Widgets, scroll to G7JJF APRS, and drag it onto the screen.

	Content
Callsign	Your configured callsign
Status	Combined IS + RF status: "IS + AGW" / "RF: KISS+BT" / "Disconnected"
Position	Latitude, longitude, and Maidenhead grid square
Last beacon	Time and position source (GPS or QTH) of the last transmission
Station count	Distinct callsigns heard this session
Unread messages	Count of APRS messages addressed to you not yet read

13. Quick Settings Tiles

Two Quick Settings tiles are available. To add them: swipe down twice from the top of the screen, tap the edit button (pencil), and drag the G7JJF tiles into your active area.

APRS Connect Tile

Shows the current APRS-IS connection state -- highlighted blue when connected, white when disconnected. Tap to connect or disconnect APRS-IS without opening the app.

APRS Beacon Tile

Always tappable. Sends an immediate position beacon when tapped. The tile shows "Sending..." while acquiring a GPS fix. Falls back to QTH coordinates after 30 seconds if no GPS fix is obtained.

14. Station Log

The Station Log records every distinct station heard, with their last known position, symbol, comment, packet type, packet count, and the time they were first and last heard. Status-only packets (telemetry announcements etc.) are excluded from the log -- only meaningful APRS packet types appear.

- A statistics bar at the top shows session duration, positioned station count, weather station count, total stations, and the most active station (trophy icon) with packet count.
- Filter chips narrow the list to ALL, Positioned, WX (weather), or Mobile.
- Tap any row to open Station Detail.
- Long-press any row to add that callsign to your Watchlist.
- The heard-on interface badge (cyan = RF, dim = IS) shows which interface last heard each station.

The most active station display filters out STATUS and UNKNOWN packet types and blank callsigns, so the trophy always shows a meaningful positioned or messaging station.

15. Weather History

The Weather History screen shows 30-day graphs of temperature, humidity, pressure, wind speed, and rainfall for any weather station heard by the app. Stations are sorted by distance from your QTH, nearest first.

- Menu > Tools > WX Stations. Tap any station to open its 30-day chart.
- Charts are stored locally and persist across app restarts.
- Up to 2500 readings per station are retained in a rolling buffer.

16. Telemetry Dashboard

The Telemetry Dashboard shows all five analogue channels and eight binary channels of APRS telemetry received from any station, with parameter names and units decoded from the PARM and UNIT packets. Accessible via the Telemetry button in Station Detail when telemetry data has been received from that station.

17. QSO Log

The QSO Log is a contact diary for logging amateur radio contacts. Menu > Logging > QSO Log.

- Fields: callsign, name, QTH, Maidenhead grid, frequency, mode, RST sent and received, notes.
- When opened from Station Detail or Repeater Detail, the callsign, frequency, and mode are pre-filled.
- Export ADIF for import into Log4OM, CloudLog, WSJT-X, or any standard logging program.

18. Track Log

The Track Log records your GPS movement as a GPX track. Menu > Logging > Track Log.

- Tap Record to start recording. A trail appears on the map from that point.
- Export GPX for import into Google Maps, BaseCamp, OsmAnd, or any GPS software.

19. Geo-Fence Alerts

Geo-Fence Alerts send a push notification when a tracked station enters or exits a defined circular area. Menu > Logging > Geo-Fences. Useful for tracking SOTA activators, club members, or fleet vehicles using APRS trackers.

20. Operating Tools

	Access	Description
Watchlist	Tools	Monitor specific callsigns. See Section 21.
WX Stations	Tools	Weather station list sorted by distance.
Grid Square	Tools	Convert Maidenhead locator <-> lat/lon. Distance and bearing between grid squares.
ISS Passes	Tools	5-day ISS pass forecast with AOS, LOS, and maximum elevation.
Propagation	Tools	Current NOAA solar indices: SFI, K-index, A-index, sunspot number.
DX Cluster	Tools	Live TCP connection to a DX Spider cluster node.
Repeaters	Tools	Nearby repeater lookup. Opens UKRepeater.net or RepeaterBook in browser (API unavailable as of 2025).
Objects Manager	Logging	Create and transmit APRS object beacons.
Group Broadcast	Logging	Send a message to multiple callsigns at once.
Callsign Profiles	Tools	Manage saved station profiles. See Section 9.
Crash Logs	Tools	View and share recent crash reports.
Passcode Calc	Tools	Calculate APRS-IS passcode for any callsign.

21. Watchlist

The Watchlist monitors specific callsigns and sends a push notification whenever one is heard. Menu > Tools > Watchlist. Add via the + button or by long-pressing a row in the Station Log.

- Notification includes packet type, last known position, and time.
- Last-heard time for each entry persists across app restarts.
- Tap a watchlist entry to view Station Detail, send a message, or remove it.

22. Settings Reference

	Description
Callsign	Your amateur radio callsign without SSID. e.g. G7JJF
SSID	0-15. 0=home fixed, 5=personal mobile, 7=handheld, 9=vehicle. Appended automatically.
Passcode	Leave blank -- calculated automatically. Enter -1 for receive-only.
Server	APRS-IS tier-2 server. euro.aprs2.net for UK/Europe.
Port	Default 14580. 10152 for full unfiltered feed.
Filter Range	km radius around QTH for APRS-IS server filter.
Extra Filter	Additional APRS-IS filter string appended to the range filter.
Connect on start	Auto-connect to APRS-IS when the app opens.
Beacon Interval	Seconds between beacons. 0 = disabled.
Smart Beaconsing	Adaptive beacon rate based on speed and direction.
Theme	DARK or LIGHT. Applied immediately when changed or profile loaded.
Distance Unit	KM or Miles. Affects all distance displays and scale bar.
Temperature Unit	Celsius or Fahrenheit.
Auto-clear hours	Remove stations from map after N hours of inactivity. 0 = keep forever.
Stream Recording	Record all raw packets to daily log files (7-day rolling buffer).
WX Alert Temp Low	Push notification when temperature drops to this (Fahrenheit).
Bulletin Keywords	Comma-separated keywords for high-priority bulletin alerts.

23. Troubleshooting

	Solution
Map goes blank when many packets arrive	Switch to another tab and back. Fixed in v1.2.0 but heavy traffic can still briefly blank the WebView.
Not connecting to APRS-IS	Check callsign and passcode in Settings. Try a different server tier (rotate.aprs.net). Check internet connectivity.
AGW dialog pre-fills "localhost"	DataStore may not have loaded yet. Connect once with the correct host -- it will pre-fill correctly next time.
Beacon firing every 10 seconds	Smart Beaconsing is on but GPS is unavailable. The app falls back to QTH and updates the beacon timestamp correctly. If still rapid, check Beacon Interval in Settings.
App auto-connects on restart	Settings > Connect on Start must be Off. The app also checks the was_connected flag -- this resets after a clean disconnect.
Profile apply crashes	Old profile JSON is missing newer fields. Update: save the profile again after the latest app version loads it. The null-safety fallbacks prevent crashes.
Email gateway "smtp failed"	Check SMTP host, port, and credentials in the Debug log (EmailGateway tag). For VPS: try port 465 with SSL on. Check Require Auth setting.
Android Auto not appearing in launcher	Enable Unknown Sources in AA developer settings (tap AA version 10 times). For real head units: publish to Play Store.
Repeater lookup fails	RepeaterBook API is unavailable as of 2025. The app opens the website in the browser as a fallback.
Crash log not deleting	Tap Delete in the crash log dialog. The app tries overwrite-then-delete if a direct delete fails.
App crashes when applying profile	Known: old profiles may have null fields. Fixed in v1.2.0 with null-safety defaults on all profile fields.
High battery drain	Set Battery to Unrestricted in Android settings (counterintuitively uses less than Optimised). Disable Track Recording when not needed. Enable Smart Beaconsing.

24. Credits and Legal

G7JJF APRS Client v1.2.0 is freeware developed and maintained by Jon Welch G7JJF, Eakring, Nottinghamshire, United Kingdom. Distributed free of charge and without advertising.

	Credit and source
APRS Protocol	Designed by Bob Bruninga WB4APR (1948-2022). Protocol specification at aprs.org .
APRS-IS Network	The worldwide APRS Internet Service backbone. Server pool at aprs2.net .
Map Tiles -- Dark	CartoDB / CARTO Positron and Dark Matter. carto.com
Map Tiles -- Light	OpenStreetMap contributors, licensed under ODbL. openstreetmap.org
Map Tiles -- Satellite	Esri / ArcGIS World Imagery.
Bell 202 AFSK	AFSK modem implementation by G7JJF. AX.25 specification from TAPR.
Android Car App Library	Copyright Google LLC, licensed under Apache 2.0.
Leaflet.js	Copyright Vladimir Agafonkin, licensed under BSD 2-Clause.
TLE data	Celestrak (celestrak.org) for ISS orbital elements.
Propagation data	NOAA Space Weather Prediction Center (spaceweather.gov).

Licence

This software is freeware. You may use it freely for amateur radio purposes. Redistribution is permitted provided the software is not modified and no charge is made. The source code is not publicly available. The author accepts no liability for any damage arising from use of this software.

Contact

Bug reports, feature requests, and support: via the groups.io support group at www.g7jff.com, by email to jon@g7jff.com, or by APRS message to G7JJF.

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