



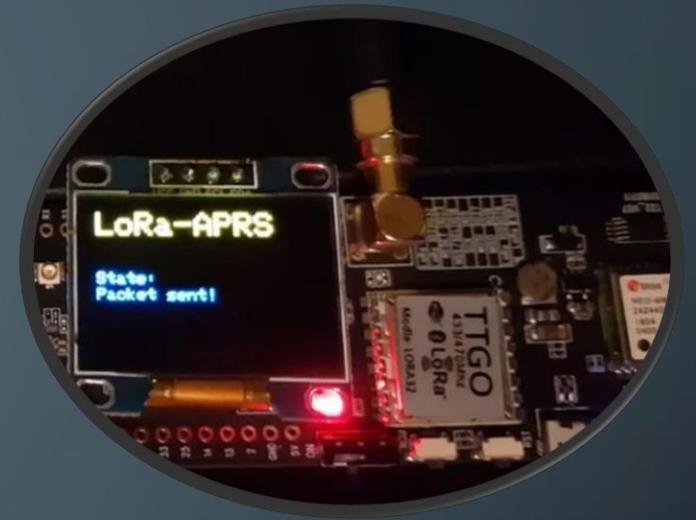
# APRS via LoRa

## WHAT IS LORA APRS? A BRIEF OVERVIEW

BY ANDY TAYLOR – M1NER

# AGENDA

- What is LoRa
- What is LoRa APRS
- Digipeaters, iGates & Stuffixes
- Symbols
- Location items
- SMS, Email messaging & Weather
- LoRa APRS devices



# ABOUT M1NER

## RADIO HISTORY

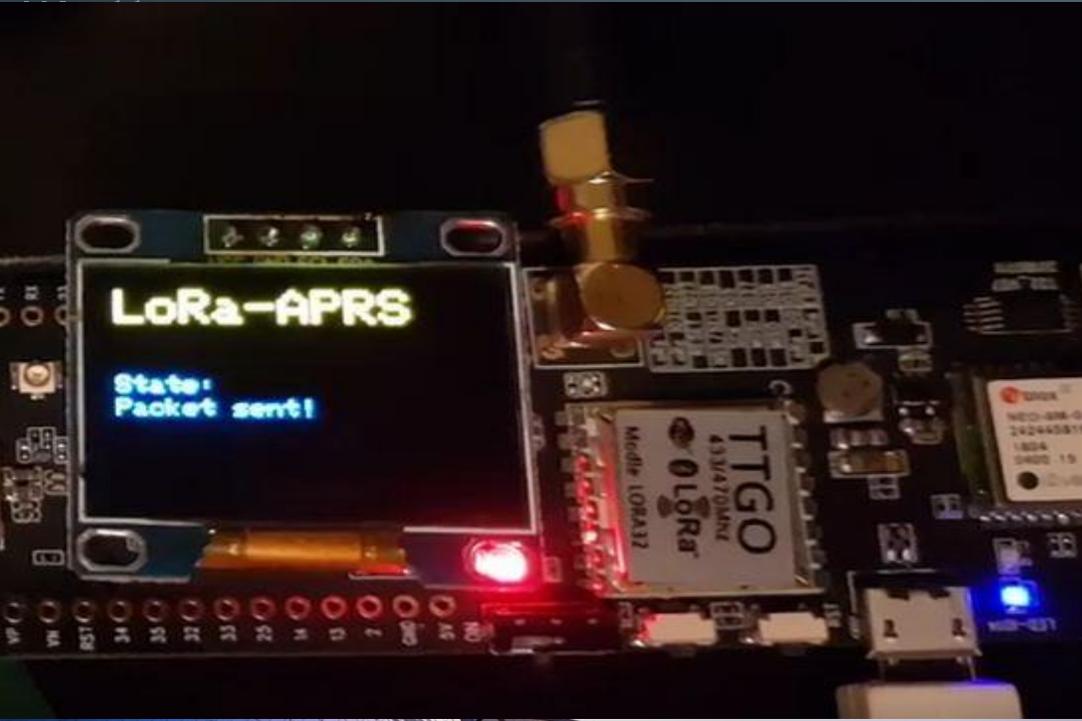
- QTH is in Whittlesey, UK/
- Foundation passed August 2008
- Intermediate passed 2012
- Full passed 2021
- Retro computing enthusiast

## MY RADIO INTERESTES

- Traditional APRS & LoRa APRS
- Digital modes (FT8, FSK, VarAC etc)
- Mobile & portable Operations
- POTA & SOTA

# WHAT IS LORA?

- LoRa (Long Range) is a wireless modulation technology designed for very long-range, low-power communication. It uses Chirp Spread Spectrum (CSS) modulation, which lets receivers decode signals far below the noise floor, giving LoRa its famously long range.
- LoRa hardware can be purchased cheaply.
- Many LoRa based projects are available including Meshcore, Meshtastic and TinyGS



# What is LoRa-APRS?

LoRa-APRS is a modern implementation of APRS that replaces the traditional 1200-baud AX.25 FM modulation with LoRa's long-range, low-power modulation.

- It is rapidly becoming popular because it offers:
- Much longer range (signals received well below noise floor)
- Lower power usage (typical trackers transmit at ~100 mW)
- Low-cost hardware (off-the-shelf LoRa modules)

In Europe, LoRa APRS primarily runs on the 70cm band at 439.9125MHz.

# DIGIPEATERS & IGATES

"Digipeater" is short for "Digital Repeater"; a repeater for packet data rather than voice. Most Digipeaters also act as an iGate

An iGate is an receive only internet gateway to pass LoRa APRS RF data to the APRS-IS network.

Closest LoRa Digipeater to the club QTH is M1NER-10 in Whittlesey (4.3 Miles)

2<sup>nd</sup> closest iGate and Digi is M7VJL-10 near Gunthorpe (4.6 Miles)

"Paths" are in place to make sure packets are not retransmitted over several hops  
Most LoRa APRS packets will be repeated twice.

# M1NER-10 IGATE & DIGIPEATER

- Lilygo TTGO Lora32 (approx. £20) running the CA2RXU firmware
- Passes RF data to the APRS-IS network.
- Runs 24/7 and requires very little power. Has a small battery so can run without power for about 6 hours.



# SUFFIXES (SSID)

SSIDs state APRS application type.

-0 Primary Station

-5 Mobile Phone

-7 Handheld radios

-9 Mobile

For example :

M1NER T-Deck – M1NER-8

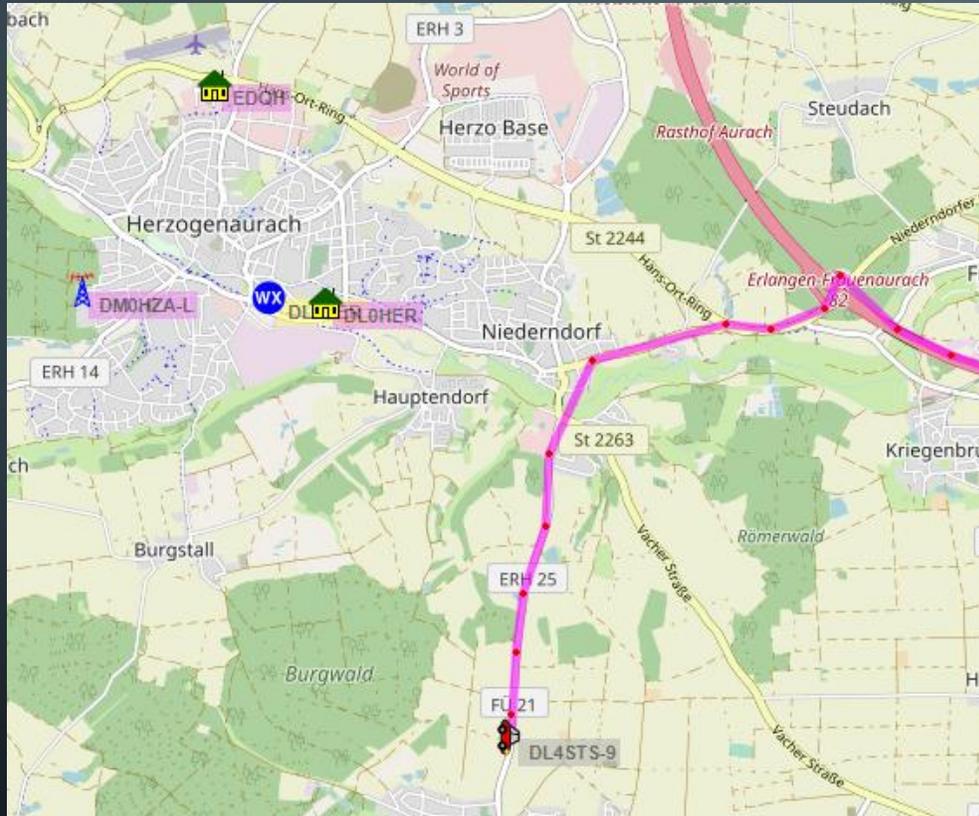
M1NER Car – LilyGo T-Beam – M1NER-2

M1NER iGate – M1NER-10

Full recommended list at [www.aprs.org/aprs11/SSIDs.txt](http://www.aprs.org/aprs11/SSIDs.txt)

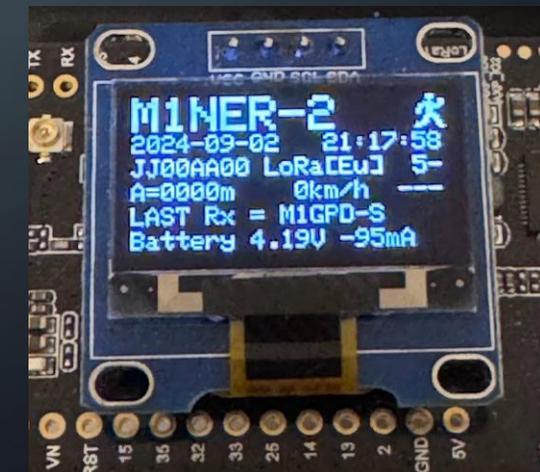


# APRS LOCATION



DL4ST5 driving just outside of Nürnberg, Germany

- GPS enabled devices can beacon their live location. Your location can be obscured to mask your true location for privacy.
- This is probably one of the most common usage for LoRa APRS
- Realtime updates can be seen on websites like aprs.fi
- Other local RF devices will pick up your location packet and display them on its screen.



# WHAT'S NEARBY?

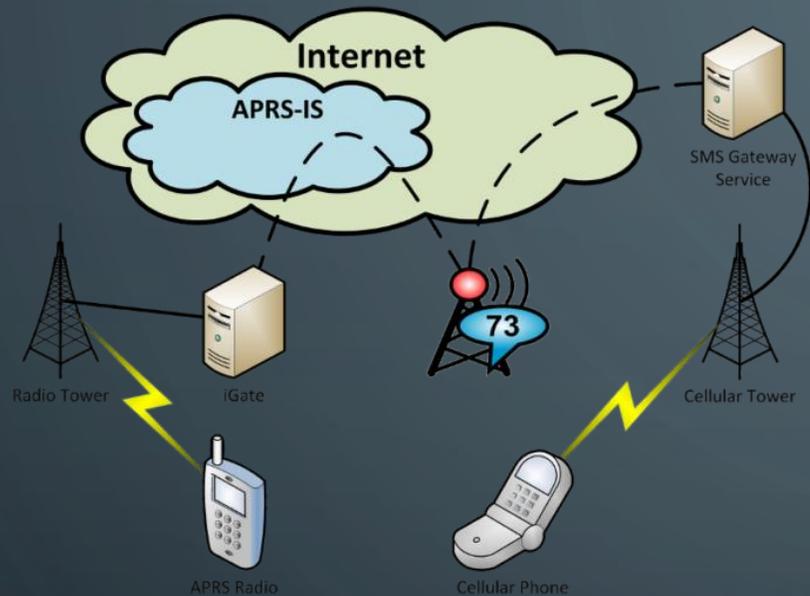
APRS station **M1NER-8** 🚗 - [show graphs](#)

**Last status:** *undefined*  
**Location:** 52°33.34' N 0°06.88' W - locator [IO92WN63FJ](#) - [show map](#)  
0.7 miles East bearing 104° from [Whittlesey, Cambridgeshire, England, United Kingdom](#) [?]  
4.5 miles South bearing 183° from [Thorney, City of Peterborough, England, United Kingdom](#)  
72.0 miles North bearing 359° from [City of London, Greater London, England, United Kingdom](#)  
72.3 miles North bearing 0° from [London, Greater London, England, United Kingdom](#)  
**Last position:** 2026-02-24 18:11:37 GMT (2h16m ago)  
2026-02-24 18:11:37 GMT local time at Whittlesey, United Kingdom [?]  
**Altitude:** 45 ft  
**Speed:** 2 MPH  
**Last telemetry:** 2026-02-24 18:10:01 GMT (2h17m ago) - [show telemetry](#)  
Voltage: 4.940 VDC  
**Device:** Ricardo, CA2RXU: ESP32 LoRa Tracker (tracker)  
**Last path:** M1NER-8>APLRT1 via WIDE1-1,qAR,M1NER-10 **Good path!**  
**Positions stored:** 736  
**Packet rate:** 43 seconds between packets on average during 2119 seconds.  
**Other SSIDs:** [M1NER-10](#) 📶 [M1NER-1](#) 🌟 [M1NER-13](#) 🚶 [M1NER-2](#) 🚗 [M1NER](#) 🏠 [M1NER-7](#) 🚶 [M1NER-D](#) 📶 [M1NER-5](#) 🚶 [M1NER-B](#) 📶 [M1NER-11](#) 🚶 [M1NER-9](#) 🚗 [M1NER-14](#) 📶 [M1NER-6](#) 📶 [M1NER-R](#) +

Stations near current position of **M1NER-8** - [show more](#)

callsign	distance	last heard - GMT	callsign	distance	last heard - GMT
<a href="#">M1NER-13</a> 🚶	7.3 yards 180°	2026-02-24 07:38:32	<a href="#">M1NER</a> 🏠	9.6 yards 152°	2026-02-22 21:24:19
<a href="#">M1NER-7</a> 🚶	29.5 yards 171°	2026-02-22 20:54:12	<a href="#">M1NER-2</a> 🚗	435.9 yards 237°	2026-02-23 18:12:05
<a href="#">M1NER-10</a> 📶	0.4 miles 100°	2026-02-24 20:23:36	<a href="#">M1NER-1</a> 🌟	0.4 miles 106°	2026-02-24 20:12:58
<a href="#">G6TEG-9</a> 🚗	0.7 miles 294°	2026-02-24 13:01:09	<a href="#">GB3WZ</a> 📶	0.7 miles 314°	2026-02-24 20:27:28
<a href="#">M9YNT-B</a> 📶	5.3 miles 266°	2026-02-24 20:18:56	<a href="#">M9YNT-B</a> 📶	5.3 miles 266°	2026-02-24 20:19:06
<a href="#">M9YNT-N</a> 📶	5.3 miles 266°	2026-02-24 20:13:36	<a href="#">M0GXF-10</a> 📶	6.4 miles 276°	2026-02-20 21:35:45
<a href="#">M7VJL-3</a> 🚗	6.5 miles 308°	2026-02-23 12:31:34	<a href="#">M5AEI-5</a> 🚗	6.5 miles 303°	2026-02-19 13:24:47
<a href="#">M5AEI-10</a> 📶	6.6 miles 303°	2026-02-23 21:16:14	<a href="#">M5AEI-8</a> 🚗	6.6 miles 303°	2026-02-23 21:15:43
<a href="#">M5AEI</a> 📶	6.6 miles 303°	2026-02-19 15:45:51	<a href="#">GOLAT-B</a> 📶	6.7 miles 269°	2026-02-23 18:04:50
<a href="#">GOLAT-B</a> 📶	6.7 miles 269°	2026-02-23 18:05:00	<a href="#">GOLAT-D</a> 📶	6.7 miles 269°	2026-02-23 18:03:50

# SENDING SMS MESSAGES & EMAIL



The APRS/SMS Gateway, SMSGTE, is a service that allows amateur radio operators to exchange text message between their APRS radios or clients and SMS (cellular text messages).

Useful to send a SMS when a mobile phone signal is not available, but a LoRa APRS digipeater or iGate is available

Sending a APRS message to SMSGET in this format will send the message

@447708999999 Message to SMS

To send an email via APRS, send a message to EMAIL-2 in this format

[me@my.com](#) Message to send via email





## #APRSTHURSDAY

- #APRSTHURSDAY is a weekly global APRS messaging net that takes place every Thursday.
- To join the net, you send a message to a specific APRS station ANSRVR  
**cq hotg [space] your message text**
- You will receive messages from all over the globe. 255 unique stations on 12<sup>th</sup> February

# WEATHER FORECAST VIA APRS

There are 1000's of weather stations sending live weather data into the APRS-IS network

You can end a message to WXBOT with the message 'today' to get a simple local weather forecast via a APRS message. Sending a weather station ID will get data from that station, for example EW1930 in Friday Bridge, UK.





## LORA APRS DEVICES

- LoRa APRS devices are more homebrew than normal APRS
- A basic tracker and iGate/Digipeater can be built very cheaply
- LoRa APRS Trackers
  - Lilygo T-Deck
  - Lilygo T-Beam
  - Lora32
- Homebrew devices using Arduino, ESP32 etc with LoRa and GPS modules