

# Packet Radio

Hardware and Software in 2019

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# Packet in use

Error free message and mail, file and data transfers, keyboard to keyboard (texting), tracking and telemetry (APRS), satellites. Range can also be increased by the use of digipeating or networking e.g. NETROM

300 baud on HF using SSB (AFSK/FSK). In the 90's, a few HF Bulletin Board Systems (BBS) utilized 1200 baud PSK

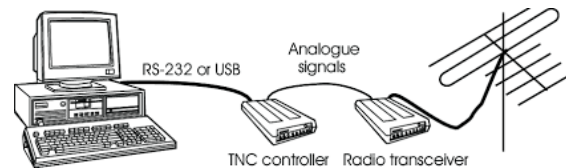
1200 baud on VHF/UHF using FM (AFSK)

9600 baud on UHF using G3RUH compatible modems (FSK)

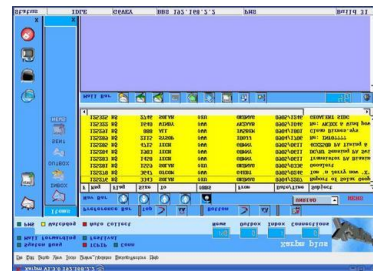
Higher speeds are in use in the States, 19200 baud and more using specialized modems and radio or even higher still, using mesh networks (2.4GHz & 5GHz) using Linksys and Ubiquiti devices and custom firmware.

# Equipment

- Handhelds, mobile and base radios
- Terminal Node Controllers (TNC) – hardware interface between radio and PC. USB or RS-232 connection for the PC and cable to suit between TNC and radio



- Software and audio modems – To receive, the microphone or line in port can be used on the PC. To transmit, you use the speaker or line output. For PTT, VOX can be used if the radio has the feature, or an interface if not. There are also commercial interfaces available. An external audio interface usually outperforms the PC's internal type.



# Equipment - more

Smartphones can also be used to receive and transmit



The Raspberry Pi and TNC. Multiple TNCs can be stacked on the header

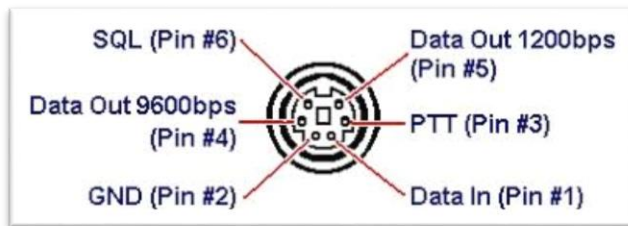


Kenwood TM-710, Kenwood TH-D74A & TH-D72A have internal APRS/TNC for receive and transmit. TS-2000 has internal TNC



# Connections that matter

- 300 and 1200 baud AFSK connections can be wired via a microphone socket (handheld or mobile) or an accessory/data port on a radio.
- 9600 baud has to be wired correctly to either the 9600 connection on some radio accessory/data ports or the correct discriminator point on the radio's circuitry. Discriminator information available from
- <https://www.discriminator.nl/index-en.html>

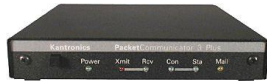


# Hardware

- Tnc's and links

Kantronics - <https://kantronics.com/> (TNC)

Single port



Dual port



Mobile Tracker



Timewave - <https://timewave.com/> (previously AEA) (TNC)



(Software modem)



MFJ - <http://www.mfjenterprises.com/Product.php?productid=MFJ-1270X>

(TNC)



# Hardware - more

Mini APRS Transceiver - [https://www.wimo.com/picoaprs-mini-aprs-transceiver\\_e.html](https://www.wimo.com/picoaprs-mini-aprs-transceiver_e.html)



Microsat APRS Voyager - APRS Tracker/TNC with 7watt transceiver – [http://microsat.com.pl/product\\_info.php?products\\_id=166&osCsid=4de6f92a1eecb5634c832a98d98e2636](http://microsat.com.pl/product_info.php?products_id=166&osCsid=4de6f92a1eecb5634c832a98d98e2636)



Yaesu SC-17 - [http://www.yaesu.com/jp/manuals/ol/scu-17\\_om\\_eng\\_jpn\\_eak21x700.pdf](http://www.yaesu.com/jp/manuals/ol/scu-17_om_eng_jpn_eak21x700.pdf)



# Hardware – more still

Microsat WX3in1 Plus 2.0 – APRS Advanced Digipeater/I-Gate –  
[http://microsat.com.pl/product\\_info.php?products\\_id=100](http://microsat.com.pl/product_info.php?products_id=100)



Some modern radios have builtin sound interfaces





# Hardware – (TNCs')

SCS - <https://www.scs-ptc.com/en/Modems.html>



Coastal Chip Works - <http://www.coastalchip.com/>



TNC-Pi (1200 baud) - <http://www.coastalchip.com/>



TNC-Pi 9K6 - <http://www.coastalchip.com/>

(1200/9600 baud) -



# Software Modems

Tigertronics - <http://www.tigertronics.com/>

Signalink



BayPac (BayComm)

West Mountain Radio - <http://www.westmountainradio.com/rigblaster.php>



Byonics Tiny Trak3 (standalone APRS with radio) -



<https://www.byonics.com/tinytrak3>

# Software – for TNC's

Any terminal software, e.g. Hyperterminal, PUTTY, any of the old telephone terminal programmes (Telix) if they will run.

Outpost - <https://outpostpm.org/index.php?content=docs#user>

Winlink Express - <https://www.winlink.org/WinlinkExpress>

UiView for APRS - <http://www.ui-view.net/>

APRSIS32 for APRS - <http://aprsisce.wikidot.com/>

Linux software - <https://radio.linux.org.au/?sectpat=packet>

UISS for some satellites, ISS packet and APRS - <http://users.belgacom.net/hamradio/uiss.htm>

# Software – for sound cards and audio interfaces

Outpost - <https://outpostpm.org/index.php?content=docs#user>

UZ7HO SoundModem - <http://uz7.ho.ua/packetradio.htm>

DireWolf (all OS's) - <https://github.com/wb2osz/direwolf>

EasyTerm - <http://uz7.ho.ua/packetradio.htm>

HamScope - <https://www.qsl.net/hamscope/>

Paxon (you need to translate page) - <http://www.paxon.de/>

WinLink Express – <https://www.winlink.org/WinlinkExpress>

UiView for APRS - <http://www.ui-view.net/>

UISS for some satellites, ISS packet and APRS - <http://users.belgacom.net/hamradio/uiss.htm>

MixW4 - <http://www.mixw.net/>

# Linux software - (including Raspberry Pi)

Various - <https://radio.linux.org.au/?sectpat=packet>

Xastir (APRS) - [http://www.xastir.org/index.php/Main\\_Page](http://www.xastir.org/index.php/Main_Page)

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## Packet Engine - AGWPE

Very powerful and used in many varied software. Some AGWPE versions free.

<https://www.sv2agw.com/downloads/>

# Useful links

TAPR - <https://www.tapr.org/>

AMSAT-UK. Work the ISS using packet –

<https://amsat-uk.org/beginners/how-to-work-the-iss-on-aprs-packet-radio>

ISS Packet Operation by K9JKM –

[http://www.ariss.org/uploads/1/9/6/8/19681527/k9jkm\\_2012\\_symposium\\_ver2.pdf](http://www.ariss.org/uploads/1/9/6/8/19681527/k9jkm_2012_symposium_ver2.pdf)

Sound Card Packet – What you can do with it

<https://www.soundcardpacket.org/8uses.aspx>

WinLink software and various features –

<https://www.winlink.org/ClientSoftware>

Ham Mesh Networks

<http://www.broadband-hamnet.org/applications-for-the-mesh.html>

<http://www.broadband-hamnet.org/>

**Disclaimer:** Links and information on various units are not endorsed. They are provided for convenience and educational /informative purposes.