C4FM, YSF, and Wires-X

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Digital V/UHF Radio
DMR Mode and Networks

- (TDMA - Time Division Multiple Access)
- DMR-MARC
  - First in USA
  - Uses C-Bridges
- Chicagoland
- Brandmeister
  - Master Server
  - Allows Hotspots
  - Some Talkgroups can do cross-mode to D-Star, NXDN, and YSF
    (Brandmeister TG 31656 = Wires-X America Link room)
    (Brandmeister TG 313136 = Wires-X KCWide room)
What’s in a Name?
C4FM is a Digital Communications Mode

- Fusion Digital is just another mode, like FM
- C4FM stands for Continuous 4-level Frequency Modulation
- Fusion transmits a bandwidth of 12.5 Khz – DN uses 6.25 Khz to send your voice and the other 6.25 to send data (GPS location information) – VW uses all 12.5 Khz to send your voice leaving no room for any data (No GPS location information sent)
  - DN means Digital Narrow
  - VW means Voice Wide
  - AMS means Automatic Mode Selection (includes FM)
What is Special About C4FM?

• **GM** - Digital Group Monitor automatically checks whether users within a communication group are in or out of range, and displays information such as distance and orientation on the screen of the client radio for up to 24 Stations.

• **Position Data** is transmitted together with voice signals so the distance and direction to the other stations can be displayed in real-time while communicating with them. (NOT APRS)

• **Text/Voice Messaging** one-to-one and group/room news bulletins

• **Pictures** with optional MH-85A11U Speaker Microphone with Camera, an operator can quickly and easily transmit images to other C4FM Users.

• **NO CODE PLUG REQUIRED**. Turn on, tune frequency, and select room.
The Wires-X Universe

- Easy connection by searching the ID and selecting on the screen.
- High-quality sound produced by transmitting C4FM digital sound as it is.
- Sending images and messages, and enjoying with the news function.
- Only a C4FM transceiver is needed for the user's station.

Connection is simple also from a C4FM handy type transceiver.
Simple Digital Station Operation

AA4FB Wires-X Repeater
145.25 (+)

W4IE Wires-X Repeater
444.925 (+)

W4AC Wires-X Repeater
147.120 (+) 136.5 Hz
Wires-X Node Station/Gateway
Yaesu Radio as PDN or Access Node

Access Point (Portable Digital Node Mode) Illustration

Press the PTT switch on the transceiver connected to the PC to communicate.

FT5D/FT3D/FT2D

Internet

Press the PTT switch on the transceiver connected to the PC to communicate.

FTM-500D

FTM-400XD

FTM-200D/FTM-100D

C4FM Digital

Communicate by RF to access the Portable Digital Node station from other C4FM digital transceivers.

C4FM Digital

Digital Node Station

Digital Node Station

Digital Node Station

Digital Node Station
Wires-X PDN Direct Mode
Wires-X PDN Access Gateway
What is a Hot Spot?

- A personal, low-power hotspot is a combination of hardware, firmware, and software that enables an amateur radio enthusiast with internet connectivity to link directly to digital voice (DV) systems around the world. Hotspots can link to DMR, P25, and NXDN talkgroups; D-STAR reflectors; YSF rooms.
- Basically, hotspots are your own personal digital voice repeater and gateway.

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Wires-X
Hot Spots Can Do Cross-Mode

MMDVM Duplex Hotspot Module Dual Hat with 0.96 OLED Display V1.47 Support P25 DMR YSF NXDN DMR Slot 1 + Slot 2 for Raspberry pi

Pi-Star is complex services and configuration software for Digital Voice on Amateur radio that runs on Raspberry pi

Supports cross modes* (example: talk with your D-STAR® transceiver on DMR, and with your DMR transceiver on D-STAR® networks). Or NXDN or YSF, etc.
Repeater Node and Room Etiquette

- Repeater or Nodes on Wires-X are a SHARED RESOURCE
- Know Trustee's policy for room changes
- PTT and "1-2" before talking. Count "1-2" Between Exchanges"
- Announce When Entering a Room ("testing", "room change", "demo", etc.)
- Disconnect from a room when you are done
- Return room to original connection if know
- Most repeaters/nodes will time out a room connection if not being used and return room connection to Trustee selected default room
You need a Yaesu radio/device to get a User account / ID

This becomes your node ID on Wires-X

With an HRI-200 you get a room ID as well on Wires-X

Go PDN direct or as access node for your HT/mobile

3 area repeaters

Hotspot

https://www.yaesu.com/jp/en/wires-x/