Remote HF Radio at K5QR

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Outline

- Who Am I

- Requirements – Shalls and Like to Have

- Block Diagram of Implemented Hardware Design

- Software Implementation

- Sequence

- Options

Who Am I – K5QR

- Ham for 48 years
- DXer, Contester (Little Pistol)
- 80m – 10m
- 8BDXCC, DXCC Honor Roll, 6BWAS, 5BWAZ
- ~10K QSOs/year
- Predominately CW Op (90%+)

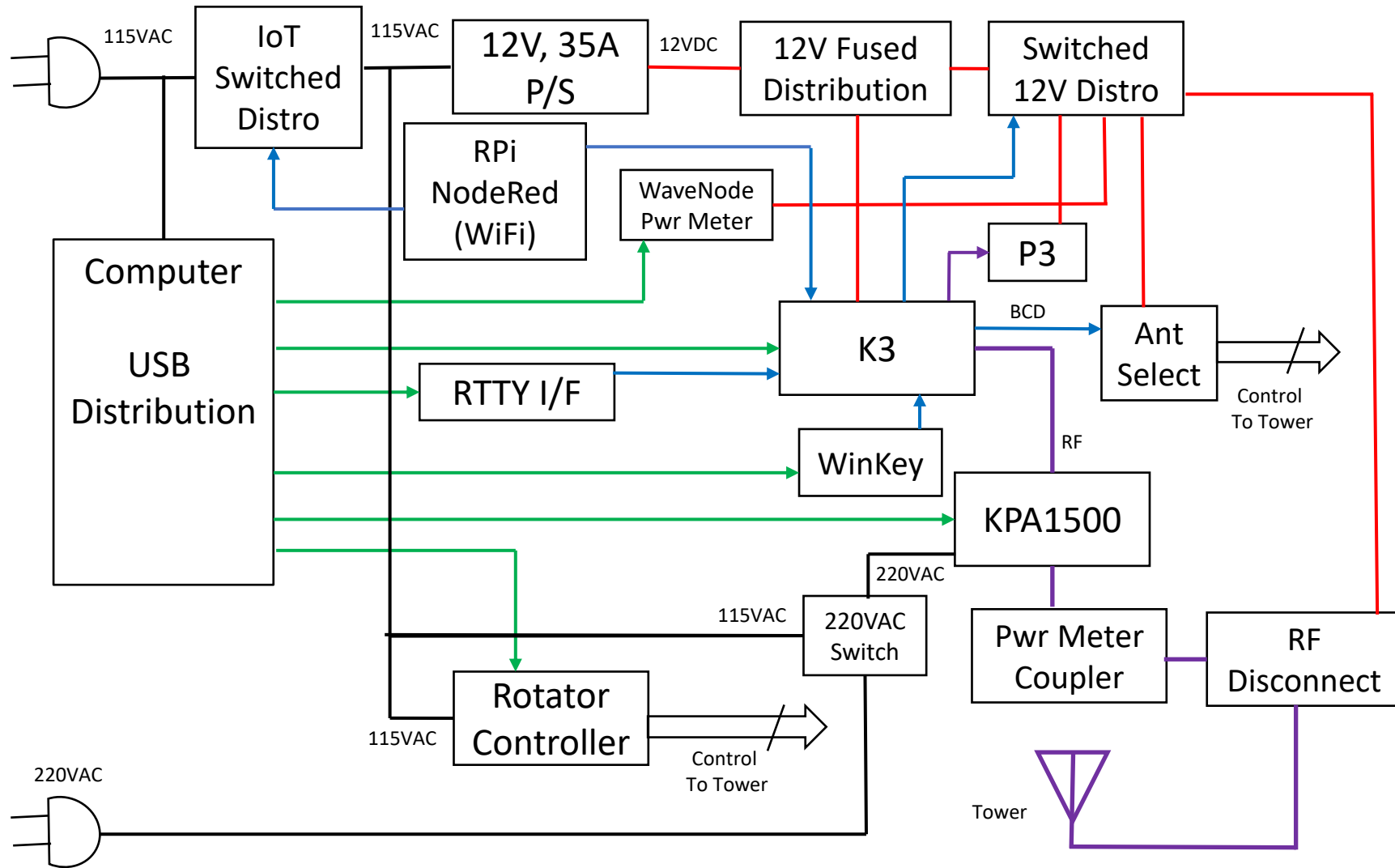# My Requirements - Implemented

- 'Shalls':
  - ✓ Use <u>my</u> existing Elecraft K3/P3/KPA1500 station
  - ✓ Don't have to 'reconfigure' station when I travel
  - ✓ Minimal travel hardware – laptop is OK
  - ✓ Modes: CW, RTTY, other digi
  - ✓ Strong security posture at home network

- 'Like to Haves':
  - ✓ Send CW with paddles
  - ✓ Tuning knob at the client site
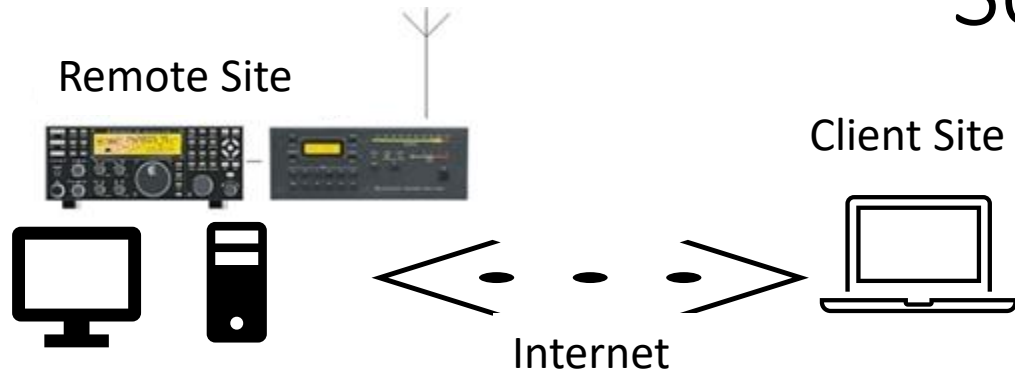 - – Turn on station computer remotely
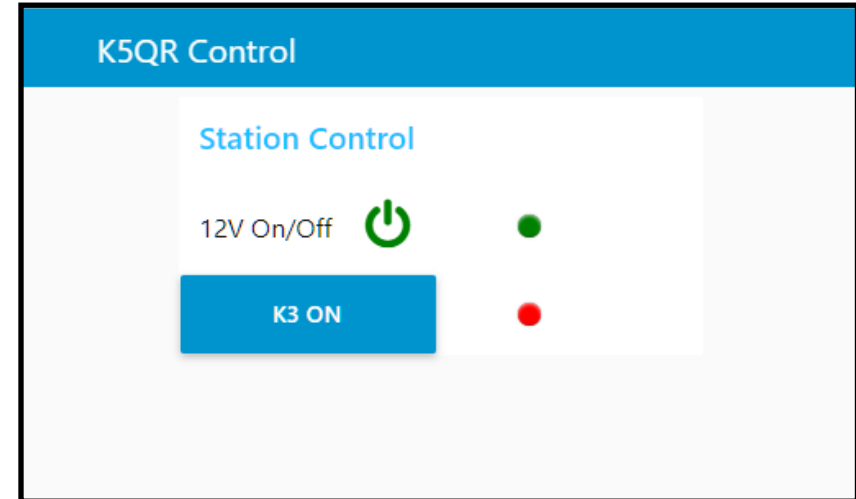 - – SSB

Simplified Block Diagram of Hardware

Antennas:
- SkyHawk Tri-bander (20/15/10)
- Rotatable Dipole 40/30
- Inverted V 80m
- Fan Dipole 17/12

Software

Remote Site

Client Site

Internet

Raspberry Pi Running Node Red
User Interface (UI)

- Remote Site (Radio) Computer
  - TightVNC (TeamViewer, AnyDesk, etc.)
  - Radio Control (Win4K3Suite)
  - Audio Channel (RemAud, Skype, etc.)
  - Rotator control (PstRotator, etc.)
  - Other (N1MM+, WSJT-X, MMTTY, etc.)
  - Static IP or Dynamic DNS

- Client Site (Roaming) Computer
  - TightVNC (or preferred)
  - Audio Channel

- Minimal flow runs on RPi Zero W
- Connect to Node Red UI on RPi
  - Through Remote Site Computer
  - Using mobile device (phone, iPad)
  - Secure VPN (Tailscale, etc.)

Sequence

1. Start Up:
   - Turn on power (12V PS and 220VAC) and radio via Raspberry Pi and Node Red
   - 'Remote' into computer at station (TightVNC, etc.)
   - Start radio control and audio channel software
   - Start other SW as needed

2. Make QSOs!

3. Shutdown:
   - Turn off radio via radio control software
   - Shut down all software (radio control, audio channel, etc.)
   - Close remote connection (TightVNC, etc.)
   - Turn off power via Raspberry Pi and Node Red

Options

- Send CW with Paddles:
  - WinKeyer at remote site and 'special' WinKeyer at client (local sidetone switching) – additional travel weight & bulk
  - SW: WKRemote server at remote and WKRemote running on client computer
- Tuning knob at client:
  - Hacked PC mouse with new encoder in a box – additional travel weight & bulk
- Other Approaches to (non-FlexRadio) Remote
  - RemoteRig: https://www.remoterig.com/wp/
  - RCForb (your radio or someone else's): https://www.remotehams.com/
  - Subscription service RemoteTx: https://www.remotetx.net/
  - MFJ RigPi
  - Radio 'buy' the minute:
    - BeLoud.US
    - RemoteHamRadio

Questions?