

INSTALLING WSJT-X AND QLOG FOR FT-8 USING LINUX MINT CINNAMON

by Al Goldsmith, PhD, K6EMW (9/23/26)

Step 1: Ham Radio and associated equipment/software described in these instructions

- Yaesu FT-450D with the latest firmware update as of September 2026 (Version 244)
- Digirig Mobile (RS-232) and the associated cables (Kenwood TS-480 Digirig cable and short USB-A to USB-C cable)
 - The Kenwood TS-480 cable and Digirig Mobile (RS-232) are totally compatible with the FT-450D
 - The FT-450D uses true **RS-232 levels** for CAT control rather than TTL logic, and therefore requires the **RS-232 version** of the Digirig Mobile
- Digirig USB Isolator ESD Protection Ground Loop Isolator, ADUM3160 [not used in this installation; ordered in case of ground loops]
 - The ADUM3160 caps speeds at USB Full Speed 12 Mbps, which is more than enough for the Digirig's audio and serial chipsets.
- HP Pavilion x360 Convertible m3-u103dx 13.3" 2-in-1 Laptop
 - Intel Core i5-7200U Processor 2.50GHz, 8GB DDR4 SDRAM; 128GB M.2 Solid State Drive [A 7th-generation dual core mobile processor released in 2016]
 - Purchased refurbished 3/11/2017

Step 2: Physical Connections

- Connect the FT-450D to the Digirig
 - Connect the DB9 serial connector of Kenwood Digirig cable to the CAT port on the back of the FT-450D. Plug the other end into the Digirig Serial jack.
 - Connect the 6-pin Mini-DIN connector of the Kenwood Digirig cable to the DATA port on the back of the FT-450D. Plug the other end into the Digirig Audio jack.
- Connect the Digirig to the HP Computer
 - Connect the Digirig's USB-C port to a USB port on your HP Pavilion x360 laptop.

Step 3: Configure Linux Mint System Permissions in the HP Pavilion x360

- Linux restricts access to serial hardware by default. You must grant your user account access to the serial interface, and remove standard background services that cause hardware conflicts
- Open the terminal and add user to the dialout group
 - Open your terminal and add your user to the dialout group:
 - `sudo usermod -a -G dialout username` [where my **username** is **k6emw**]
- Keep the terminal open and purge the Braille display service (brltty), which may hijack the USB connection

- `sudo apt purge brltty` [that's an L]

Step 4: Keep the terminal open and identify the device names

- Run `lsusb` to ensure the laptop sees the interface (*Silicon Labs CP210x UART Bridge*)
- Run `dmesg | grep ttyUSB` to find the allocated serial interface name (typically `/dev/ttyUSB0`)

Step 5: Reboot the computer for group membership changes to take effect

Step 6: Configure the Yaesu FT-450D Internal Menu

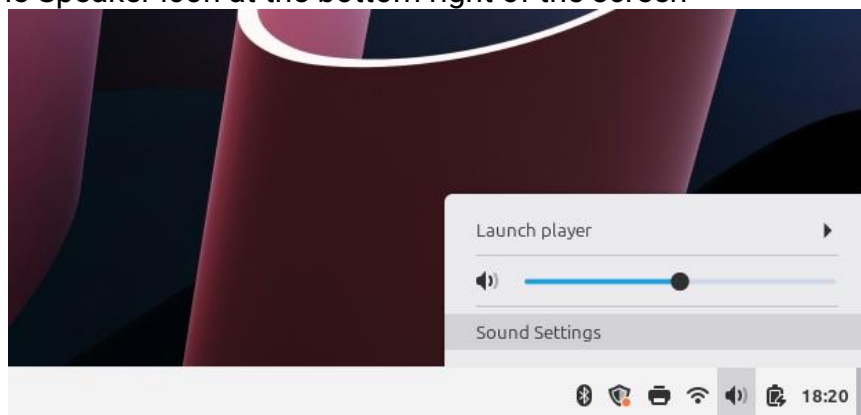
- Hold down the F (Function) button for about 1 second to enter the radio menu
- Turn the DSP Select knob to locate these parameters
- Push down to select the parameter
- Turn the DSP Select knob again to select the value
- Press F again to save the parameter
- The parameters that worked are as follows:
 - RF Power = 25 [watts, reduced power is necessary due to the vastly increased duty cycle in FT-8]
 - MODE = USB-DATA
 - CAT RTS = Enable
 - CAT TOT = 10
 - CATRATE = 38400
 - All other parameters should remain at their default levels

Step 7: Download WSJTX and QLog [QLog is a QSO logging program]

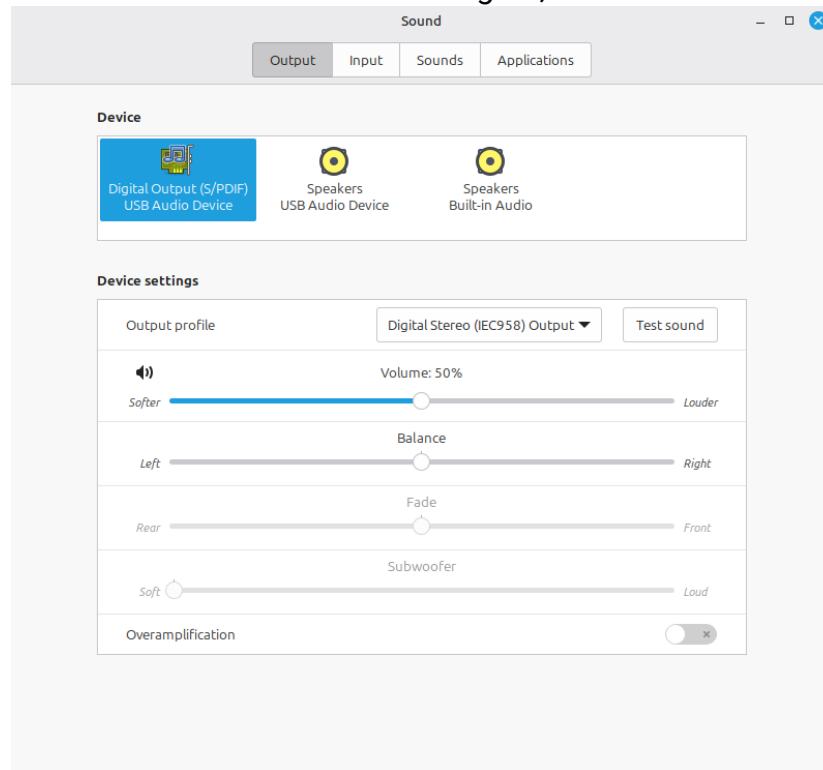
- Open Software Manager and search for WSJTX
- Click on WSJTX and follow the instructions
- Open Software Manager (if not already open) and search for QLog
- Click on QLog and follow the instructions

Step 8: Launch "Sound Settings" and Configure Linux sound settings

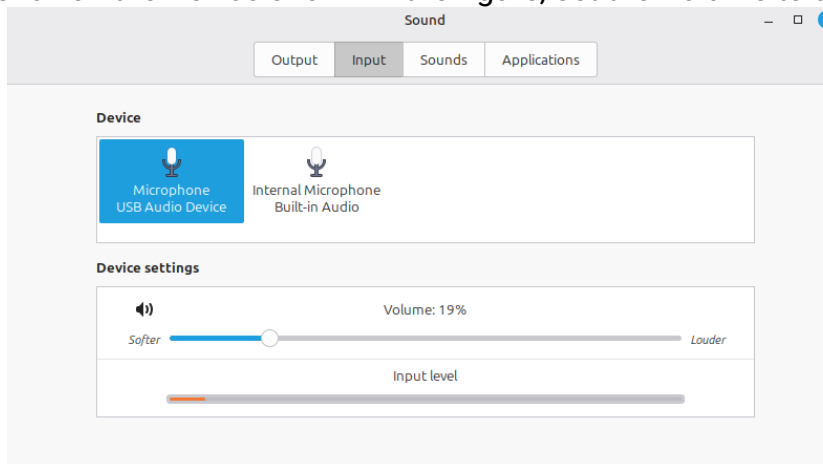
- Click on the Speaker icon at the bottom right of the screen



- Click on Sound Settings, the Sound 'Output tab' will appear first
 - Click on the Device shown in the figure; set the Volume to about 50%



- Click on the Input Tab
 - Click on the Device shown in the figure; set the Volume to about 19%



Step 9: Open WSJTX and click on File then click on Settings

The screenshot shows the QLog software interface. At the top, there's a menu bar with File, Logbook, Contest, Service, Window, and Help. Below the menu bar is a search bar with 'UA9QFF' entered. To the right of the search bar are buttons for 'All Bands', 'All Modes', 'All Countries', 'All Clubs', and 'No User Filter'. A 'Count: 1' indicator is also present.

The main log table has columns: Time on, Call, RSTs, RSTr, Frequency, Mode, Submode, Comment, and Name. The first entry is for '9/23/2026 ...' with call 'UA9QFF', RSTs '-1', RSTr '-1', Frequency '14.076205', and Mode 'FT8'.

Below the log table is a detailed entry form for 'UA9QFF'. It includes fields for Name, QTH, Gridsquare (MO05), Comment, Date (9/24/2026), Time On (2:31:41 AM), and Duration (00:00:00). There are buttons for 'Save', 'Reset', and 'Web'. To the right of the form is an 'Info' panel for 'Asiatic Russia' showing a distance of 6271.5 miles and a time of 7:31:41 AM +05:00 (GM).

At the bottom, there's a 'Details' tab with various fields for Continent (AS), DOK, QSL Send Status, Paper, Queued, LoTW, Queued, eQSL, Queued, ITU (30), IOTA, QSL Send via, Paper, CQZ (17), POTA, QSL via, State, SOTA, Propagation Mode, County, WWFF, Email, Age, SIG, Web, VUCC, and SIG Info.

On the right side of the interface, there's a 'Clock' showing '2:46:27 AM', a 'WSJTX' panel with 'Callsign' 'VA5KEN' and 'KO4FOW', and an 'Online Map' showing a grid of countries.

- Click on General (under Settings) and fill in the parameters as shown (use capital letters for the call sign and grid)

The screenshot shows the 'Settings' dialog box in WSJTX, with the 'General' tab selected. The 'Station Details' section has 'My Call: K6EMW' and 'My Grid: DM13CR'. There are checkboxes for 'AutoGrid' and 'IARU Region: All'. A dropdown menu for 'Message generation for type 2 compound callsign holders' is set to 'Full call in Tx3'.

The 'Display' section has several checkboxes: 'Start new period decodes at top', 'Blank line between decoding periods', 'Display distance in miles' (checked), 'Tx messages to Rx frequency window' (checked), 'Show DXCC, grid, and worked-before status', 'Show principal prefix instead of country name', 'Highlight DX Call in message', and 'Highlight DX Grid in message'. There are buttons for 'Font...' and 'Decoded Text Font...'.

The 'Behavior' section has several checkboxes: 'Monitor off at startup', 'Enable VHF and submode features', 'Monitor returns to last used frequency', 'Allow Tx frequency changes while transmitting', 'Double-click on call sets Tx enable', 'Single decode', 'Disable Tx after sending 73', 'Decode after EME delay', 'Calling CQ forces Call 1st', 'Alternate F1-F6 bindings', and 'CW ID after 73'. There are also fields for 'Tx watchdog: 6 minutes' and 'Periodic CW ID Interval: 0'.

At the bottom of the dialog box are 'Cancel' and 'OK' buttons.

- Click on Radio (under Settings) and fill in the parameters as shown

Settings

General **Radio** Audio Tx Macros Reporting Frequencies Colors Advanced

Rig: Yaesu FT-450D Poll Interval: 1 s

CAT Control

Serial Port: /dev/ttyUSB0

Serial Port Parameters

Baud Rate: 38400

Data Bits

☐ Default ☐ Seven ☒ Eight

Stop Bits

☐ Default ☒ One ☐ Two

Handshake

☐ Default ☒ None ☐ XON/XOFF ☐ Hardware

Force Control Lines

DTR: RTS:

PTT Method

☐ VOX ☐ DTR ☐ CAT ☒ RTS

Port: /dev/ttyUSB0

Transmit Audio Source

☒ Rear/Data ☐ Front/Mic

Mode

☐ None ☐ USB ☒ Data/Pkt

Split Operation

☐ None ☐ Rig ☒ Fake It

Test CAT Test PTT

Hamlib Version

In use: Hamlib 4.5.5 Apr 05 11:43:08Z 2023 SHA=6eecd3

Cancel OK

- Click on Radio (under Settings) and fill in the parameters as shown

Settings

General Radio **Audio** Tx Macros Reporting Frequencies Colors Advanced

Soundcard

Input: alsa_input.usb-C-Media_Electronics_Inc._USB_Audio_Device-00.mono-fallback Mono

Output: alsa_output.usb-C-Media_Electronics_Inc._USB_Audio_Device-00.iec958-stereo Left

Save Directory

Location: /home/k6emw/.local/share/WSJT-X/save Select

AzEl Directory

Location: /home/k6emw/.local/share/WSJT-X Select

Remember power settings by band

☐ Transmit ☐ Tune

Cancel OK

- This enables QLog; click on Reporting (under Settings) and fill in the parameters as shown

The screenshot shows the 'Settings' dialog box with the 'Reporting' tab selected. The 'Logging' section has the following options:

- ☒ Prompt me to log QSO
- ☐ Log automatically (contesting only)
- ☐ Convert mode to RTTY
- ☐ dB reports to comments
- ☐ Clear DX call and grid after logging

The 'Op Call' field is empty.

The 'Network Services' section has the following options:

- ☐ Enable PSK Reporter Spotting
- ☐ Use TCP/IP connection

The 'UDP Server' section has the following settings:

- UDP Server: 127.0.0.1
- UDP Server port number: 2237
- ☒ Accept UDP requests
- ☒ Notify on accepted UDP request
- ☒ Accepted UDP request restores window

The 'Secondary UDP Server (deprecated)' section has the following settings:

- ☐ Enable logged contact ADIF broadcast
- Server name or IP address: 127.0.0.1
- Server port number: 2333

Buttons at the bottom: Cancel, OK.

Step 10: Open QLog

The screenshot shows the QLog application interface. The top menu bar includes File, Logbook, Contest, Service, Window, and Help. The top toolbar includes buttons for UA9QFF, All Bands, All Modes, All Countries, All Clubs, No User Filter, and Count: 1.

The main display area shows a log entry for UA9QFF on 9/23/2026 at 14.076205 MHz in FT8 mode. The entry details include:

- Call: UA9QFF
- RSTs: -1
- RSTr: -1
- Mode: FT8
- Band/Freq: 14.07400 MHz
- Submode: 20m
- Comment: MO05
- Gridsquare: MO05
- Info: Asiatic Russia, 6271.5 miles, 0.7° (LP: 180.7°), 7:31:41 AM +05:00 (GM), Worked

The bottom section shows the 'Details' tab with various fields for logging details, including Continent (AS), ITU (30), CQZ (17), State, County, Age, VUCC, DOK, IOTA, POTA, SOTA, WWFF, SIG, and SIG Info. The 'QSL Send Status' and 'QSL Send via' fields are also present.

The bottom status bar shows the member name 'Ham Shack' and the call sign 'k6emw dm13cr SFI 121 A 4 K 1'.

- Click on File, then click on Settings; under Tab 'Station', add Ham Shack (if not already entered)

Profiles

Ham Shack

Profile Name

Station Callsign

Operator Name

Operator Callsign

Country

County

ITU CQZ Gridsquare

QTH VUCC

SOTA WWFF

POTA SIG

IOTA SIG Info

DOK

Add Delete

- Staying in Settings, click on Tab 'Sync & QSL', click on QRZ.com. Add the API Key for QRZ.com (this requires a subscription and setup, not shown here). Other options may apply.

Settings

Station Equipment Callbook Clubs Sync & QSL Chat Bands Modes Network GUI Danger Zone

ClubLoq eQSL HRDLQ LoTW QRZ.com Waveloq Startup ADI Others

Default API Key

Callsign-specific API Keys

Callsign	API Key

Add Delete

- Staying in Settings, click on Tab 'Network'. Add the 'Raw UDP forward (127.0.0.1), if not already present

Settings

Station Equipment Callbook Clubs Sync & OSL Chat Bands Modes Network GUI Danger Zone

Wsjtx

Raw UDP Forward 127.0.0.1

Port 2237

Color CQ Spots ☐

Join Multicast ☐

FLDigi

ADIF UDP Port 9876

Notifications

LogID {ea758c4a-32dc-4bfb-9aad-5784b2b6348c}

DX Spots ex. 192.168.1.1:1234 192.168.2.1:1234

Spot Alerts ex. 192.168.1.1:1234 192.168.2.1:1234

QSO Changes ex. 192.168.1.1:1234 192.168.2.1:1234

Wsjtx CQ Spots ex. 192.168.1.1:1234 192.168.2.1:1234

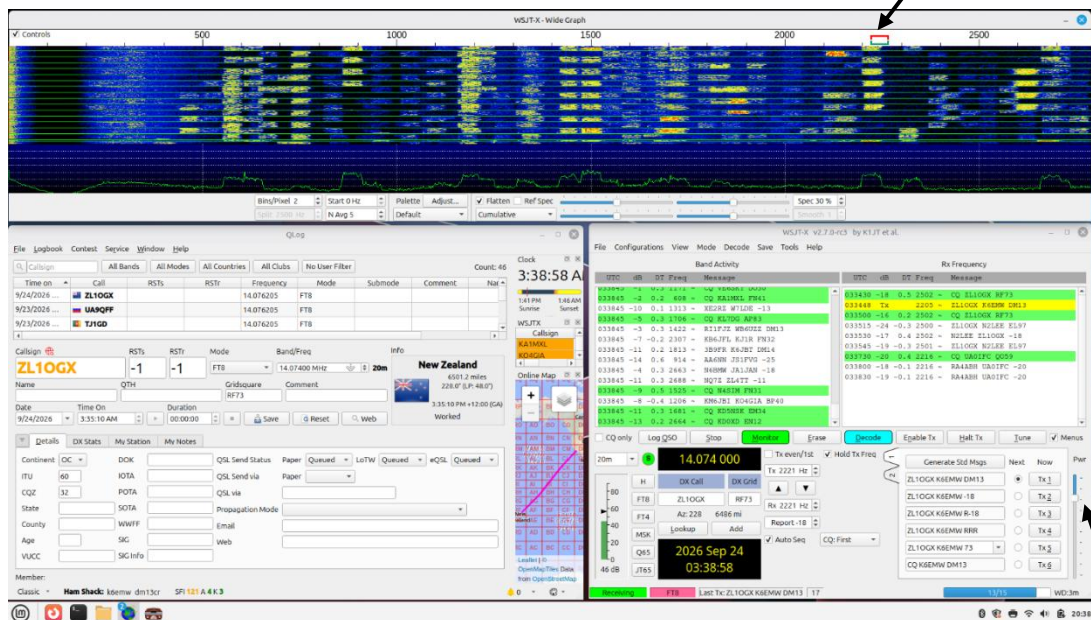
Rig Status ex. 192.168.1.1:1234 192.168.2.1:1234

Step 11: Final Operation Notes

- Press the 'Tune' button in WSJTX and increase the 'PWR' slide, starting at zero. Set 'PWR' just before the FT-450D output ALC reading goes beyond zero (readings beyond zero can lead to band-spill & distortion)
- Double-click on an incoming CQ to make contact
- Hit 'Log QSQ' in WSJTX to transfer the CQ to QLog
- In QLog, click on the 'Service' tab and then click on 'Upload to QRZ.com' to transfer the QSO('s) to the QRZ website (QRZ is a paid subscription)

Step 12: Picture of the working System

Red is transmit frequency, green is receive frequency. Click either to move; Ctrl-Click to equalize the frequencies



Power Slide