Softrock RXTX Software Installation Notes
VE7VV
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1) Disable Windows USB bus power saving.
https://helpdeskgeek.com/how-to/prevent-windows-from-powering-off-usb-device/

2) Download setup instructions from the FiveDash site.
http://fivedash.com/resource/softwareSetup.pdf

Configuring USB Driver, ConFiG SoftRock Tool and High Definition Software Defined Radio
Revised 27-September-2015

The ideal time to install the SoftRock drivers and software on your Windows 7, 8 or 10 PC is now – prior to connecting your SoftRock radio to your computer for the first time. Plugging your radio in first is likely to make the process harder and require troubleshooting that is outside the scope of this guide. If you've just ordered your SoftRock, you can perform these steps prior to your radio's arrival.

3) **Do not plug in the Softrock RXTX USB cable yet.**
Follow the instructions to install the PE0FKO USB driver.
Make sure the certificate is installed first.
Make sure you get the window re. the "libusb-Win32.." driver is "Ready to use",
and click on all the "finish" buttons.
n.b. this means the driver is installed but **does not** mean that Windows has associated it with the Softrock USB device, that will happen later when you plug in the RXTX USB, d**o not plug it in yet.**

Reboot Windows.

4) Follow the instructions to install CFGSR. Do not open that program yet.

5) Skip down to page 14 of the instructions, where it says "**Plug in your SoftRock for the first time". Do that and watch what Windows says.** This is a critical point in the installation.
If Windows finds the wrong driver and associates that with the RXTX, you will have a mess to fix. If Windows gives you the option to find the driver manually, take that option and direct it to the PE0FKO file location. You want Windows to choose the libusb-Win32... driver.

Follow the instructions to confirm that the correct driver is associated.
Check in the Control Panel.
Check in Device Manager.
You should see what is shown in the graphics on page 14 of the instructions.

If you do not see this, you will have to fix it before continuing with anything else.
I believe that Zadig will allow you to do that. https://zadig.akeo.ie/
Unplug all USB devices before using Zadig so as to minimize the chance of messing up some other device.

6) When you see that Windows Device Manager is showing a libusb-win32 section with a Softrock40 entry listed, open CFGSR.

If it fails to open properly with a message that 'it can't find libusb0' then try the fix suggested in https://groups.yahoo.com/neo/groups/softrock40/conversations/messages/80121
namely: "Rename C:\PE0FKO_Driver\PE0FKO-USB-Driver\x86 libusb0_x86.dll to libusb0.dll. Copy this libusb0.dll to C:\Program Files(x86)\CFGSR."

CFGSR, when it opens, should show a red text "USB AVR Si570 connected..." message. If not, it has not detected the RXTX and there is something wrong with the USB driver.

If it detected the RXTX, then **DO NOT ENTER ANYTHING ANYWHERE EXCEPT**:
a) click on the INIT tab, select Ensemble RXTX, check Reboot after init, click on Default init.

b) click on the TEST tab, press the PTT button and confirm that the little red light by P1/PTT goes green, **THEN RELEASE THE PTT BUTTON**.

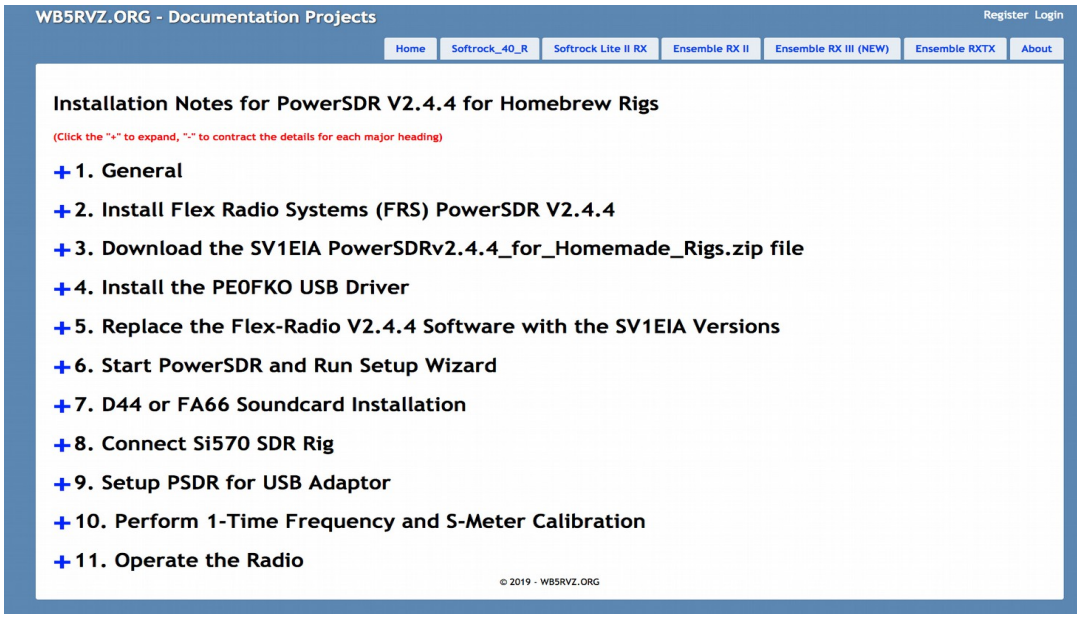
c) click on the TUNE button and confirm that you can set a frequency, enter a freq, say 7.0, in the white box. That same freq. should then appear in the box with the big red letters.

If all the above worked OK, then you can close CFGSR.

You have confirmed that the Softrock USB driver is installed, correctly associated with the SR, and that it can be used to communicate with other software to set the frequency and activate PTT.

Next is to install one of the SDR programs. The instructions from Five Dash describe installing HDSDR. You could do that if you wish to use that program. I prefer PowerSDR because it uses a LO offset that avoids the "hump" in the middle of the band display which also provides for better image suppression on TX and because it does automatic image suppression adjustment on receive.

7) Download the instructions for installing PowerSDR v2.4.4 from
http://www.wb5rvz.org/common/PowerSDR_244_Installation



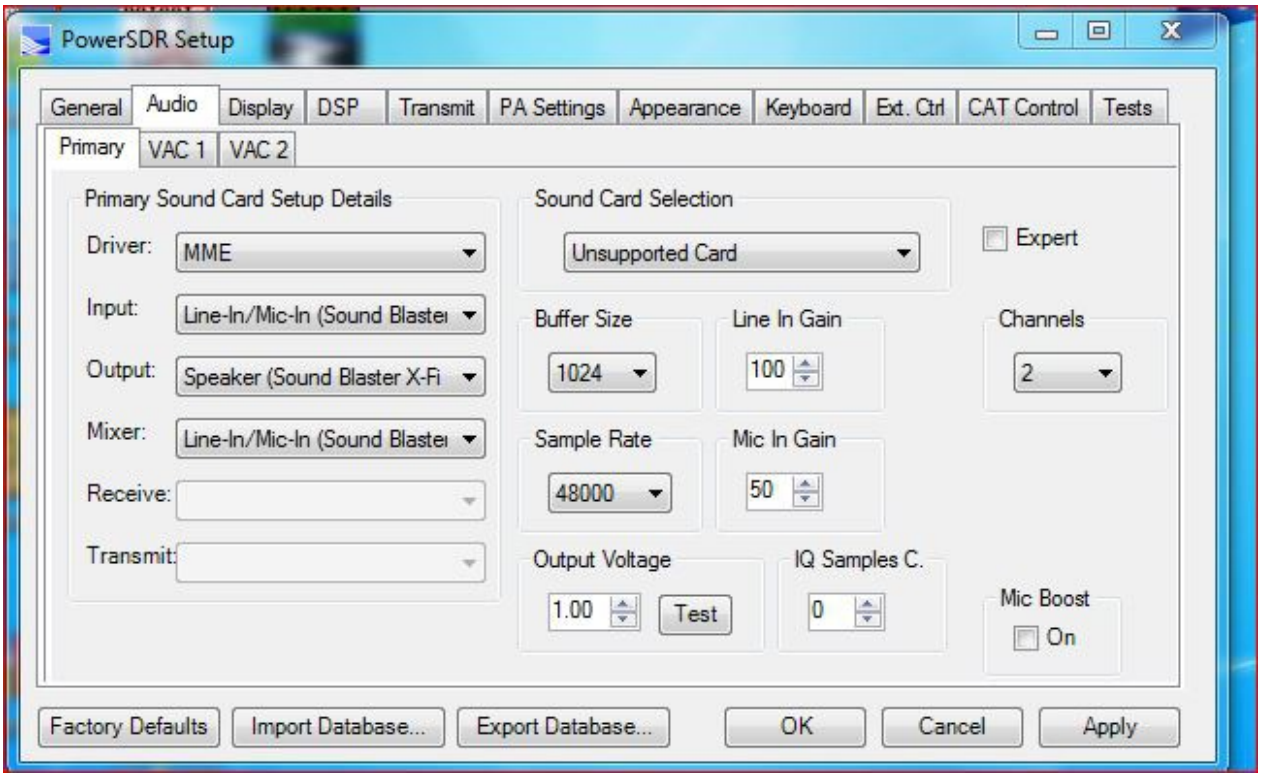
Note that at the time of writing this, in section 2 of these instructions, the download link for the FlexRadio site was broken. The correct link is
https://www.flexradio.com/downloads/powersdr_v2-4-4_installer/?wpdmdl=3203&refresh=5c7496b1e8b0b1551144625
Follow the instructions to install PowerSDR, make sure you follow the part about not letting the installer install un-needed drivers, etc.

Skip section 4, you have already installed the USB driver.

Follow the instructions in section 5 to install the SV1EIA patch files. If the dll mentioned does not already exist in the PowerSDR folder, not to worry, just copy in the new one.
Make sure you copy the .exe and the .dll files into the correct folder.

Connect the RXTX USB cable to the RXTX and the PC.
Start PowerSDR and follow the setup instructions it provides.

Select the line-in and line-out soundcard that you will be using. Here is what my PowerSDR audio setup window looks like.



At this point the RXTX should be functional on RX. Connect the audio cables ("line-in" on the RXTX goes to "line-in" on the soundcard, the 12V power, and an antenna .

Start PowerSDR, select the SDR1000 radio ("use" button) and confirm that you are receiving signals where expected.

Note: the Flex Users Manual for the Flex-1500 provides very useful information about using the PowerSDR console.
https://www.flexradio.com/downloads/flex-1500-owners-manual/?wpdmdl=3168&refresh=5c74a888c33a01551149192

Note: if PowerSDR ever does not work, one thing to check is that the "USB adaptor present" box on the General tab in setup is checked. PowerSDR unchecks it when the program is started w/o the RXTX connected by USB, or if the USB plug is unplugged while PowerSDR is running.

This would be a good point to calibrate the RXTX oscillator, using CFGSR, by tuning in a station that is on a known frequency, noting the dial frequency in PowerSDR, and entering this info in CFGSR to adjust the RXTX oscillator. This will be a rough calibration. A more precise one can be done later.

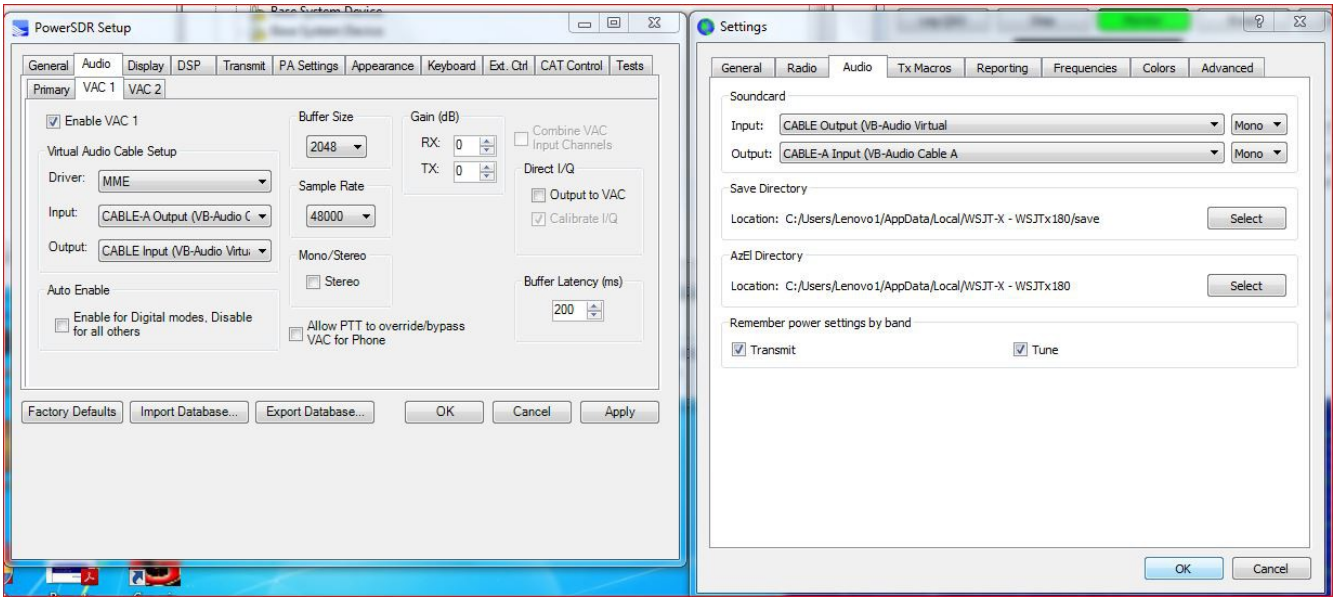
Assuming that RX is working, the next step is to setup for TX.

8) Do a quick check of TX by:
connecting an antenna or dummy load,
setting the Drive slider to 25 (to limit the drive to the RXTX until you know how much is needed for 1W output),
clicking the Tune button.
This should generate a CW signal on the freq. selected in the VFO.

For use with other programs like WSJTx, FLDigi, MultiPSK, etc. you will need to install virtual audio cables and a virtual COM port pair.

9) One option for virtual audio cables (you will need two) is VB-Audio.
https://www.vb-audio.com/Cable/index.htm
Download and install the free cable.
Since you will need a 2nd one, you will have to make a donation to obtain two more.

Add the VAC's to the setup menus in PowerSDR and WSJTx (or other program).
Here is what my setup menus look like.

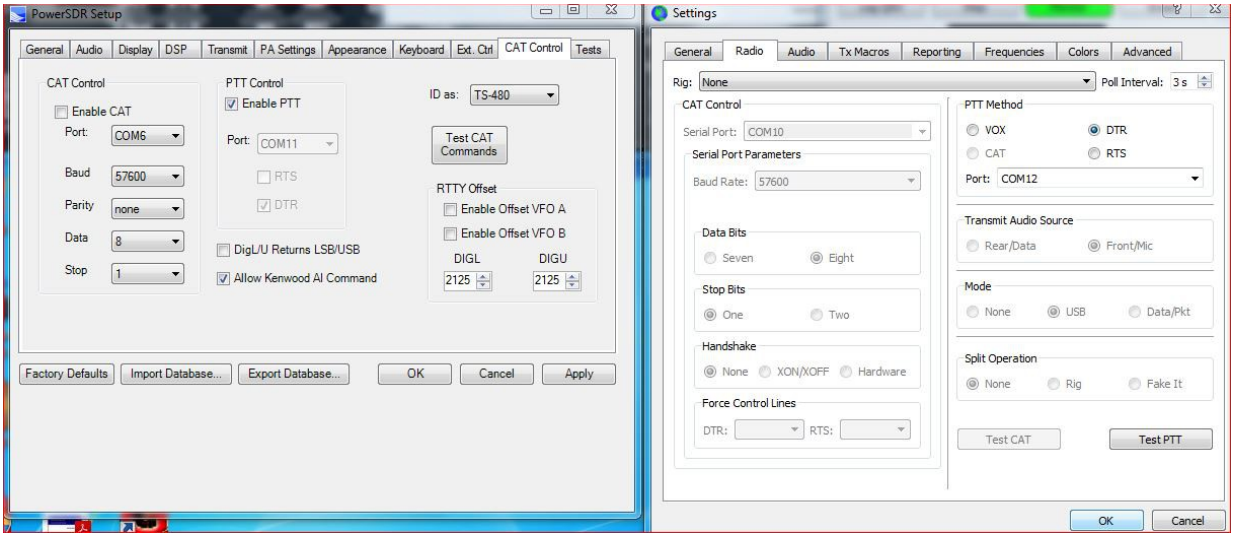


10) Go to Windows Control Panel, Sound, and go through ALL of the soundcards, including the VAC's that will be used for the RXTX, both the playback and the recording ones. Set all of them to the highest sampling rate and bit depth that you expect to use. In my case that is 2 ch 16 bit 96000. Also, disable “listen to this device” for all of them until you wish to enable one. Also, disable any “enhancements” that may be available. Set all of them to the maximum gain level.

After doing this, WSJTx should work on receive. You could confirm this now.

11) Next we need to install a virtual COM port pair. Download from
https://sourceforge.net/projects/com0com/
Unzip this zip file. There will be two install .exe files, one for 32 bit, one for 64 bit PC's.
Run the appropriate one for your PC. It will create a new folder in Programs(x86) and start the setupg.exe. The options are not clear. What you want to do is create a port pair with names like COM11 and COM12 (any two numbers not already in use). I was able to rename the odd names that were offered, clicked 'apply' then 'add ports'. (I think, I did not make notes at the time.)
Confirm that they appear by looking in Device Manager in the Ports (COM & LPT) section.
You might need to reboot Windows and to do that again to make sure the pairs persist.
Com0com worked for my Windows 7 64 bit and a friend's Window 8.1 64 bit PC's.

Once you have the virtual port pair, enter the names in PowerSDR and WSJTx.
This is what my setup windows look like. I am using the DTR pin on the COM port, not CAT control. (For this you do not need to enter anything in the CAT section.) The “Enable PTT” box must be unchecked to change/select a COM port, then check it.



At this point you should be able to transmit using WSJTx.

12) Calibrate the oscillator. There are many ways to do this. Here is one.

a) Use CFGSR to set the RXTX LO freq to some convenient place and then listen for it on another receiver that has a good freq accuracy. If the other RX is in the same room you should be able to hear the LO with just a piece of wire for an antenna - move that wire close to the RXTX board if necessary. Once you can tune in the LO, enter the frequencies into the CFGSR

Calibration tab. Hopefully it is obvious how to save the data and reset the LO. You may have to do this a couple times to get the LO setting to correspond to the other RX. It will still be off a few hundred Hz probably, but will be close enough for the next step.

b) Transmit with the RXTX, observe the frequency on a high accuracy RX and correct the calibration with CFGSR.
If you are using a 10 MHz transverter to produce a signal on 630m, set the LO to 10.47420 with CFGSR, use WSJTx to set the offset to 1500 Hz and transmit WSPR. You should now be transmitting on 475.700. Look at the frequency reported by one of the Kiwisdr's. These usually are very accurate. Now use the set freq and the actual freq (from the Kiwisdr) to adjust the calibration using CFGSR. You can get the accuracy to w/i 1 Hz.