Installation instructions for the Windfreak MixNV v1.0. (Please read all the way through once before beginning.)

Drivers:
Please run serial_install.exe before plugging in the synthesizer. For Windows 7 or Vista right click and select "Run as Administrator".

When you plug in the Synthesizer board for the first time, Windows should recognize a new device and finish installing the drivers.

Software:
After drivers are installed and the hardware plugged in there are two options.
1). Double click on MixNV1_x.vi in the source code directory if you have Labview 2011 or later installed. Please contact dgoins@windfreaktech.com for older versions of labview.
2). Install Setup.exe from the installer directory. This installs the Labview runtime engine. It also installs MixNV1_x which you should be able to find under Start/All Programs.

Hardware:
The Windfreak MixNV is designed to work with USB power or external power or both. If using USB power only, make sure your USB port can supply 300mA of current before plugging in this device.
(Most newer PCs are capable of this). The cable is a USB mini. Windfreak Technologies assumes no responsibility for any damage the Synthesizer may cause to customer equipment. If using external power, use an isolated voltage of 5 volts +/- 0.5 volts at 300mA or more. The connector has ground on the outer conductor and positive on the inner conductor. If using only the external power you will need to make sure an LO frequency has been saved to the eeprom. It is this setting that the synthesizer goes to when powered without a USB connection. The factory setting is typically 1GHz with a power setting of 8dBm.

The 10MHz reference can either be internal or external. If running from the internal reference the 10MHz signal is available as an output on the REF SMA connector. When set for external reference the internal 10MHz crystal oscillator is muted and allows the user to apply a more stable reference as an input at the REF SMA connector.

The RF connectors are high performance and therefore need to be treated with care. Avoid torquing or bending the MixNV via the RF connectors and this will keep the center pin solder from cracking. The RF connectors have no mechanical connection to the aluminum case. Of course, try to reduce the possibility of ESD when handling.

Operation:
Plug in at least one MixNV to USB before starting the software.
Wait for a few seconds for the device to register on the USB bus and then start the software. It should start by selecting the right virtual serial communications port, especially if you are only using one MixNV. If using multiple MixNVs it will pick the one on the highest com port. You may click between com ports with multiple MixNVs after the software is started with the I/O dropdown box. You may need to click "refresh" to find the new serial port that is created by plugging in a MixNV. In general the com ports close when there is no activity from the GUI. This also means the MixNVs can be plugged and unplugged while the GUI is running. If other devices are plugged in, even not from Windfreak Technologies, different com ports may be assigned. Go to the com tab to list all WFT devices and see their unique serial numbers. To avoid confusion when using multiple devices it may be a good idea to write the serial number on the case.

The software is mostly intuitive. A couple pointers are: To enter frequency and other values use the keyboard, or knob. Hit enter on the PC keyboard if you typed in the value. Use the knob for fine tuning frequency only. Adjust the sensitivity of the knob with the Knob Step Size drop down box. Adjust RF Power / Mixer Linearity with the slider on the right.

When first plugging in the MixNV and starting the software it should sync with the computer. If not click “Load Settings” to sync with the hardware. When changing com ports between multiple devices you may do the same to sync the software with the hardware. It is also possible to make multiple instances of the executable to drive multiple devices and not change between com ports. In this case, find the executable and rename it slightly so windows will open more than one at a time.

To use FM enter a deviation and rate. You can check the deviation by toggling the Mod Bit button and the frequency will jump back and forth with a frequency separation equal to the deviation. The deviation has practical limits which depend on what carrier frequency you are using. Click the “?” to give the maximum deviation limits. Clicking FM On will make the MixNV jump back and forth between the two frequencies at the rate you entered. When not using FM it is best to set FSK Deviation to zero so there is no frequency offset. If you save to Eeprom under the Extras Tab the MixNV will power up in the state it was save in.

Finally, hover with your mouse over various items in the software to get hints or instructions.

Troubleshooting:
The MixNV comes from the factory programmed in LO Mode with an RF frequency setting of 1GHz and roughly 8dBm of output power at the Rfout port. So just plugging in the USB or power cable should give you this output unless the device has been reprogrammed. If it does, start the Windfreak MixNV software, go to the Com Tab and scan the com ports. If you dont see a WFT device, re-install the drivers and/or try a different USB cable or computer. If you see a WFT MixNV use the I/O dropdown box to select the corresponding com port. Click the Load Settings button to sync the software to the device. If the RF is not right, check the Extras Tab to make sure the reference is set to Internal. If not click internal and check for proper operation.

If you cant get it to work contact David Goins at dgoins@windfreaktech.com.