

**Operation instructions for the Windfreak AmpNV v1.0. (Please read all the way through once before beginning.)**

**Hardware:**

The Windfreak AmpNV is designed to work with an external power source between 15 and 28V with a power rating of 7 watts or higher. The connector has ground on the outer conductor and positive on the inner conductor. The barrel size is 2.5mm X 5.5mm.

You must operate the AmpNV output into a proper load, especially at higher powers. There is no output protection on the AmpNV. Operation without a 50 ohm load may damage the amplifier. Please make sure if your load is not a broadband load (such as an antenna) that you operate within the frequencies specified by the load.

The AmpNV will run fine at room temperature in an open space. If operating over room temperature please insure proper airflow with a fan over both the AmpNV and the supplied wall adapter. Please insure that both the AmpNV and the wall adapter are never too hot to touch. Increase airflow if necessary. There is currently no temperature protection on the AmpNV, although you can read its temperature through the “Read Tab” on the GUI.

The RF connectors are high performance and therefore need to be treated with care. Avoid over torquing or bending the SMA connectors as this can cause the center pin to PCB solder joint to crack. There is no mechanical connection to the aluminum housing, only to the PCB inside.

**Manual Control:**

There are two buttons and two LEDs on the AmpNV. When not at maximum gain, minimum gain, or the “power down state”, pressing the UP button will increase the gain, and pressing the DOWN button will decrease the gain. The LEDs will show various brightness based on the gain settings. When at higher gains the LED closest to the UP button will be brighter. When at lower gains, the LED closest to the DOWN button will be brighter. If both LEDs are off then the AmpNV is in its “power down state”. This state unbiases the main PA and saves power.

When at maximum gain, minimum gain or the “power down state” the AmpNV will act in the following way: Maximum Gain – Pushing the DOWN button decreases gain and pushing the UP button activates the “power down state”.

Minimum Gain – Pushing the DOWN button activates the “power down state” and pushing the UP button increases gain.

Power Down State – The gain will roll over. -- Pushing the DOWN button goes to maximum gain and pushing the UP button goes to minimum gain.

**PC Control:**

**Installation:**

Please run serial\_install.exe before plugging in the amplifier. For Windows 7 or Vista right click and select “Run as Administrator”. See document in the drivers folder for Windows 8.

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

After drivers are installed and the hardware is plugged in there are 4 options.

- 1). Double click on AmpNV\_1\_0x.vi in the source code directory if you have Labview 2012 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 and VISA. It

- also installs the AmpNV GUI which you should be able to find under Start/All Programs.
- 3). If you already have the labview runtime engine, VISA, and the drivers installed you can use the executable by itself as a standalone program. (Not for most users.)
  - 4). Use terminal.exe which is a 3<sup>rd</sup> party program. Connect to the proper COM port (1-7 only). Type “?” in the white send box in the transmit section to begin. If the COM port assigned is greater than 7, you can assign something smaller through Windows Control Panel.

### **WFT Software:**

Plug in at least one Amplifier 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. The *Device Under Control* box in the top of the GUI shows the serial number of the device under control. If you plug in multiple devices click “Scan USB” to go back and forth between controlling the different devices. If you make manual adjustments with the buttons on the AmpNV click *download settings* to resync the GUI. Please leave all hardware plugged in until the software is closed out. This will avoid USB issues. In the case that you do a lot of USB communication to a device that is not plugged in, it may require a computer restart to clear out the USB buffer.

Gain Tab: Adjust the slider on the left to adjust the overall gain of the variable attenuator inside the AmpNV. Maximum AmpNV gain depends on frequency but is as high as 35dB at the lower frequencies. Resolution is 1/2dB steps. The *PA ON/OFF* button toggles the “power down state” of the AmpNV. The on board LEDs should reflect the state of the device as previously described in the Manual Control section.

Extras Tab: Use *Program EEPROM* to program the power up state of the AmpNV. Set the gain and set PA On/Off then click *Program EEPROM*. Whenever your AmpNV is powered down, it will always power up in these settings. *Watch for Pushbutton Action* polls the AmpNV continuously if you change its settings with the pushbuttons. If you use this feature do not unplug the AmpNV USB connection until you disable it.

Read Settings: Use to help with writing your own software or seeing temperature and voltage rails of the device.

### **Troubleshooting:**

Verify the AmpNV has power by using the pushbuttons on the device to change the gain.

If the software GUI cannot find the device, please make sure you have installed the drivers. Go into Windows Device Manager under Ports (COM & LPT) and verify that “USB Serial (Communication Class, Abstract Control Model)” is there (worded exactly so) with an assigned COM Port #. If not re-install drivers. For Windows 8.x please follow instructions located in the driver folder. If the COM port is assigned but the GUI still cant find the device, make sure you have installed from the CD – otherwise VISA may not be installed.

It is a good idea to try different USB ports, USB cables and possibly even a different computer in rare cases. Verify a WinXP machine has service pack 2. Make sure any PC has the latest updates from Microsoft.

If you cant get it to work contact David Goins at [dgoins@windfreaktech.com](mailto:dgoins@windfreaktech.com).