

PicoVNA Interface Wizard for NI AWR Design Environment – User’s Guide



1 Introduction

The PicoVNA 106 Wizard for NI AWR is an application from Pico Technology that allows you to use the PicoVNA 106 6 GHz vector network analyzer with AWR Design Environment (AWRDE).

2 Installing the application

Before installing, check that your system has the following:

1. Microsoft Windows .NET 4.5 or later
2. PicoVNA 2.17 or later
3. AWR Microwave Office 14 or later

To install, follow these steps:

1. Download the installer from Pico Technology. The file will be named PicoVNAWizard_<version number>.exe.
2. Run the installer.
3. Accept any requests made by the installer and allow it to complete.

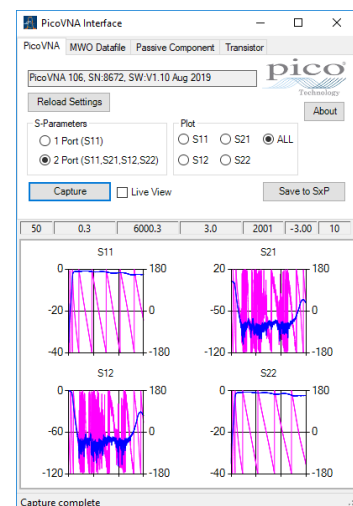
If successful, the installer will add PicoVNA Wizard shortcuts to your desktop and to the Pico Technology folder in your Windows Start menu.

3 Using the application

1. Run PicoVNA 2 to set up your PicoVNA 106. Calibrate the device, set up your required measurement, and save the configuration as a calibration and settings file.
2. Close PicoVNA 2.
3. Open the Windows **Start** menu and run the PicoVNA Interface Wizard. This will start the NI AWRDE if it is not already running.
4. The wizard opens at the **PicoVNA** tab:

Check that the wizard shows the PicoVNA 106 part number and serial number. This means that the program has successfully connected to the device.

5. Click **Load Settings** and navigate to the file that you saved in Step 1.
6. Select a **1-Port** or a **2-Port** measurement. (If the calibration and settings file contains 1-port data, you will only be able to select the **1-Port** option.) The Wizard automatically imports the system impedance (Z_0) from the settings file.
7. Check the boxes for the S-parameters that you wish to see plotted within this tab.
8. Click **Capture**. Once data has been captured, the wizard will show plots of the selected S-parameters. The blue traces are magnitude (in dB, on the left axis) and the magenta traces are phase (in degrees, on the right axis). You can resize the PicoVNA Interface wizard to show larger or smaller plots.
9. Once you have captured acceptable data, you can save the measured data to a file. The wizard saves it in Touchstone (.SnP) format, with DB, MA or RI data format.



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10. Click the **MWO Datafile** tab. This allows you to transfer data (in DB format) to the AWRDE:

The **Project Data Files** list shows all files available in the AWRDE. Once you have captured data, the selected file can be updated in the AWRDE.

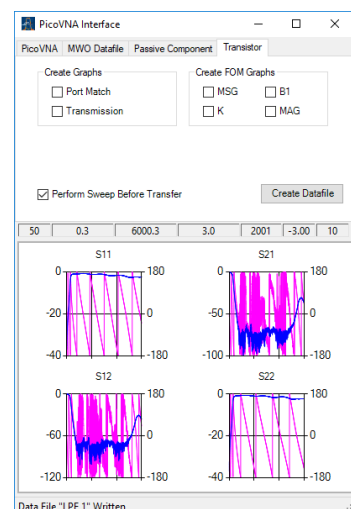
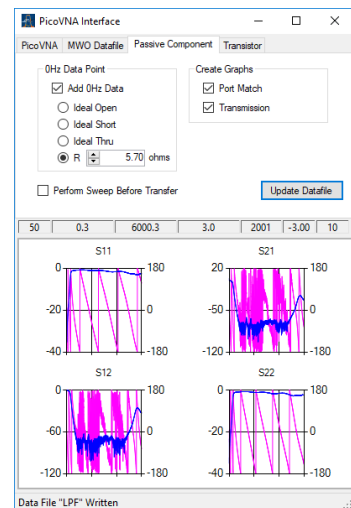
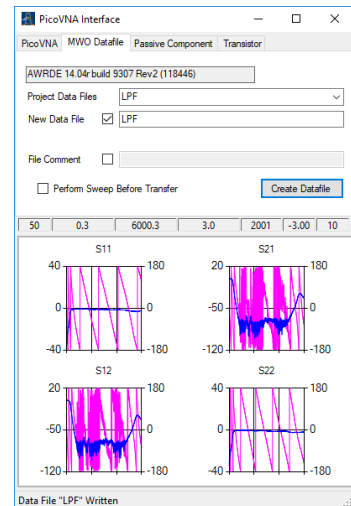
11. If you check the **New Data File** box, the AWRDE will use the filename entered in the new filename box. If the file already exists, the AWRDE will save a new file with a serial number appended to the name.

If you add a **File Comment**, it will appear in the Touchstone header.

12. If your DUT is a passive component, using the **Passive Component** tab will allow you to add a 0 Hz (DC) point to the data file transferred to the AWRDE. This can be useful when characterizing bias chokes for instance, where the DC resistance is important for the simulation of the bias conditions of an amplifier. The available options for the 0 Hz data are Ideal Open/Short/Thru and real resistance. For a 2-port measurement, the wizard assumes a series component and for 1 port a shunt component to ground.

13. If your DUT is an active component, click the **Transistor** tab. This allows you to plot some figures of merit (FOMs) for the component:

- MSG: Maximum Stable Gain. Valid when $K < 1$.
- K: Rollet Stability Factor. For stability, it is necessary but not sufficient that $K > 1$.
- B1: Another stability factor similar to K. Should be > 0 for stability.
- MAG: Maximum Available Gain (shown on plots as GMax). Valid only when $K > 1$.



4 Troubleshooting

If you see **NO VNA!** in the device information box, it is likely that PicoVNA 2 is still running or has not been shut down cleanly. The **Load Settings** button will not respond until this problem has been corrected. Close PicoVNA 2 if it still running, and then restart the wizard. If the message appears again or PicoVNA 2 is not still running, try switching the PicoVNA 106 off and on, and then restarting the wizard.