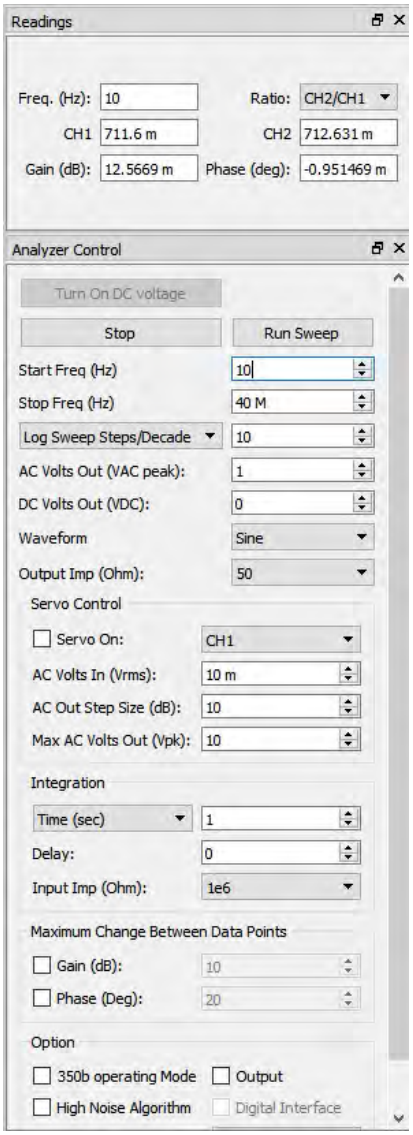
Venable Stability Analysis Software™

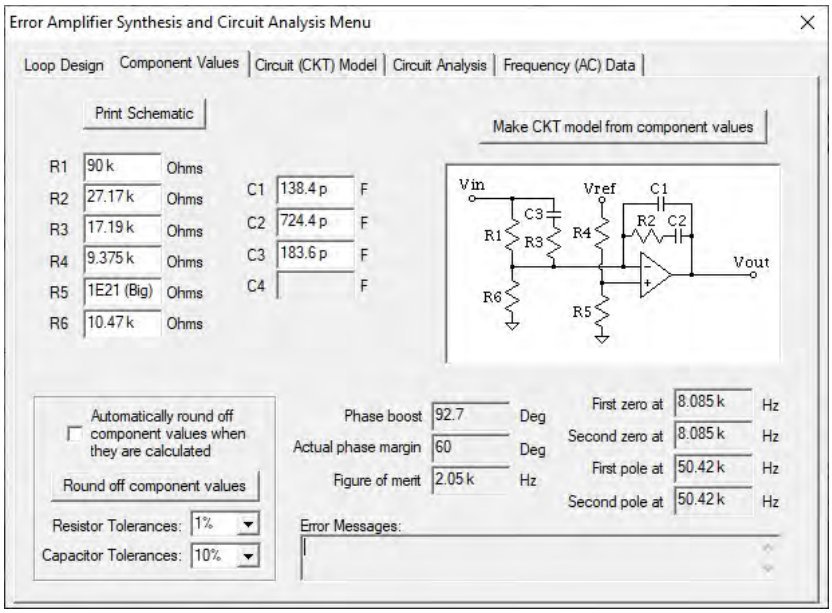


The Venable **Stability Analysis** Software, in combination with Venable Instruments' Frequency Response Analyzers, forms a complete frequency response measurement and modeling system. The Venable Stability Analysis Software operates all Venable Instruments 6300, 8800, 7400, 350c Series and 5140 instruments.

The hardware portion consists of a Frequency Response Analyzer (for making measurements of voltage gain and phase versus frequency) and various accessories for coupling the analyzer to the electrical, mechanical, or thermal system under test. The Software portion runs on any personal computer using Windows 7, 8 or 10. The Software controls the analyzer, collecting and displaying the measured data. Venable's Stability Analysis Software also has powerful design tools that provide a complete solution for analyzing and designing feedback loops (servo loops).

Venable Instruments' Stability Analysis Software includes synthesis and simulation, which is the ability to create and test a feedback circuit, prior to implementing it in the physical world. The methodology for doing this is based on H. Dean Venable's K Factor concept. Using the "Circuit Analysis" tool in Venable's Stability Analysis Software, one can specify the desired gain crossover frequency and phase margin.

Next, the user selects the appropriate compensation topology, Type 1, 2 or 3, inputs error amp information and a few details about the feedback loop and clicks on "compute component values" to generate the feedback circuit schematic. The synthesized feedback circuit can now be simulated using the built in SPICE like function in the Circuit Analysis tool. The simulation yields gain and phase data that can be displayed as a Bode plot. The simulated feedback circuit data can be mathematically combined with the measured modulator data, and the result is the overall loop gain. In this fashion, the user can confirm the desired crossover frequency and phase margin.



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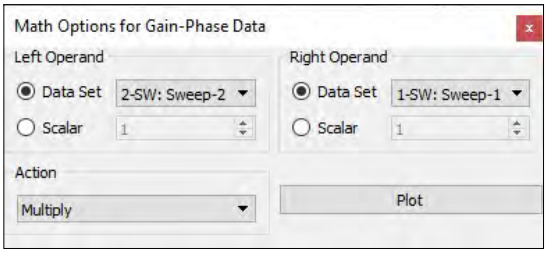
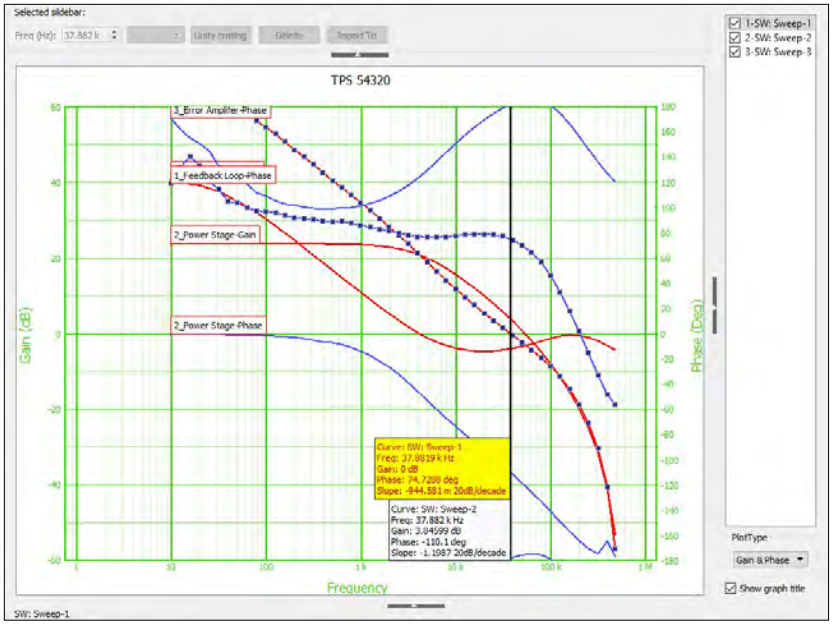


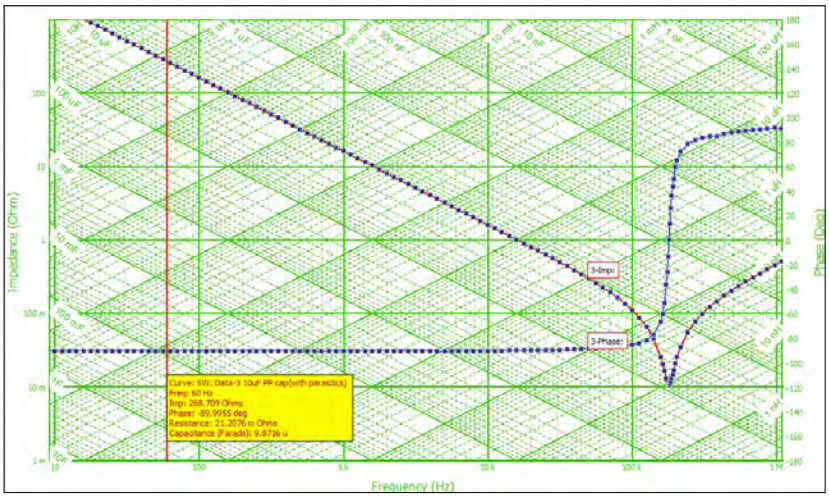
Venable's Stability Analysis Software allows the user to manipulate, display and import/export data. The "File Math" function allows any kind of mathematical function on any one or two transfer functions (measured data sets).



Graph documentation features include Graph Title, Graph Legend, Slide Bar Cursor, and the Data Set Description. The slide bar cursor is an especially useful tool for displaying specific data on a graph.

Measurement and simulation data can be saved, recalled, and printed in the form of graphs on your printer. Graph types supported include:

- voltage vs. frequency (log-log)
- gain and phase vs. frequency (semi log)
- reactance vs. frequency (log-log with lines for constant capacitance and inductance).



Measurement and simulation data import and export methods are supported. One method saves or imports the data in the tab delimited text file format for easy import or export into other applications such as MATLAB® or Microsoft® Excel. The other method saves plots in JPEG format.