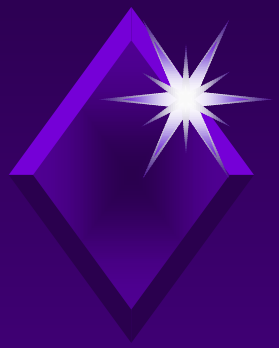
TOP, The Output Processor®

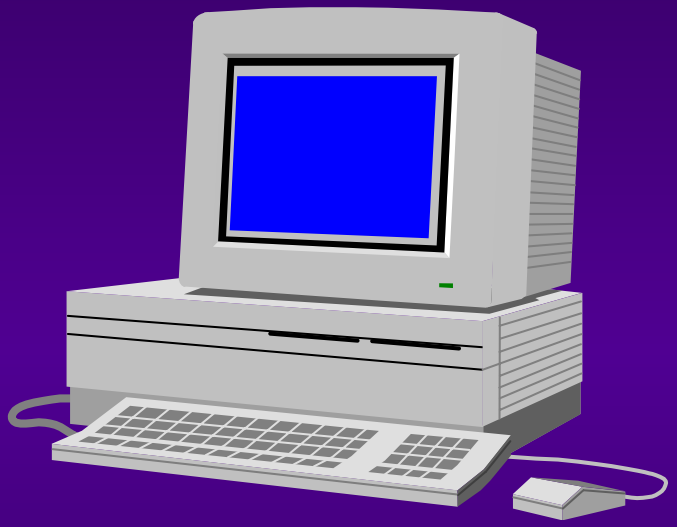
Electrotek Concepts®



What is TOP?

- TOP is an acronym for “The Output Processor”, a software tool which reads data from a variety of measurement instruments and simulation programs and transforms it into simplified power system analyses for inclusion in reports and documents.

System Requirements



- 586 or better IBM compatible PC
- 4 MB RAM or more
- 80387 Math Co-processor
- Windows 95, 98, NT, 2000, or XP
- Windows compatible video card
- Windows compatible printer

Data Viewing

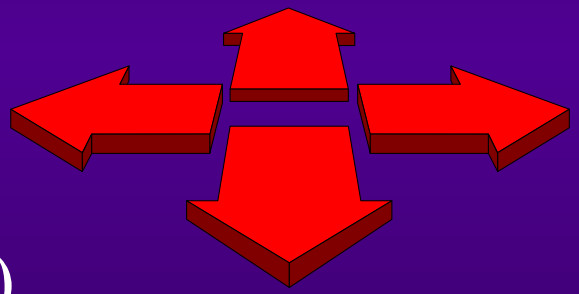
- TOP can read from a variety of data formats:
  - ASCII Text
  - IEEE COMTRADE (C37.111-1991, C37.111-1999
  - PQDIF (IEEE-P1159-3)
  - Dranetz-BMI PASS® (8010 and 8020 PQNode®)
  - Dranetz-BMI 65x series
  - Square D PowerLogic® DADisp
  - Fluke 41
  - Electrotek Concepts SuperHarm®
  - Electrotek Concepts FerroView™
  - PSCAD®

Data Viewing

- Other data formats:
  - EPRI/DCG EMTP for Windows
  - ATP (Alternate Transients Program
  - Cooper Power Systems V-Harm™
  - EPRI HarmFlow for Windows
  - EPRI SDWorkstation
  - EPRI LPDW (CFlash, DFlash, TFlash
  - EPRI Power Quality Diagnostic System

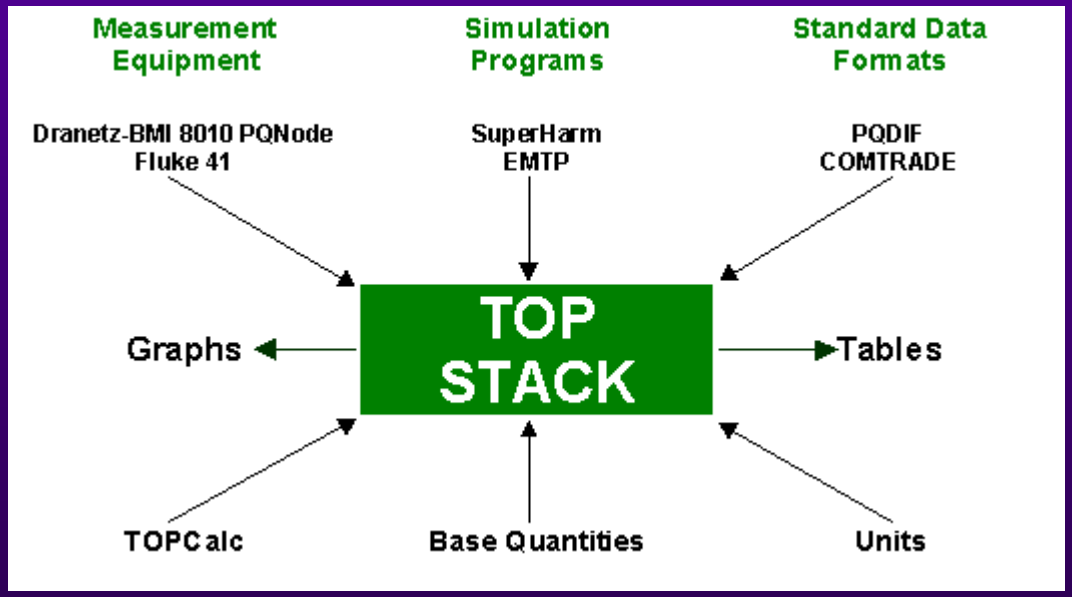
Data Sharing

- The data being visualized in a window can be exported to a variety of other file formats:
  - IEEE PQDIF
  - IEEE COMTRADE (.CFG)
  - Windows Metafile (.WMF)
  - Portable Network Graphic (.PNG)
  - Comma Separated Variable (.CSV)
  - ASCII Tabbed Text (.TXT)



Data Management Capability

- TOP uses a system called the stack to simplify handling data from various sources.



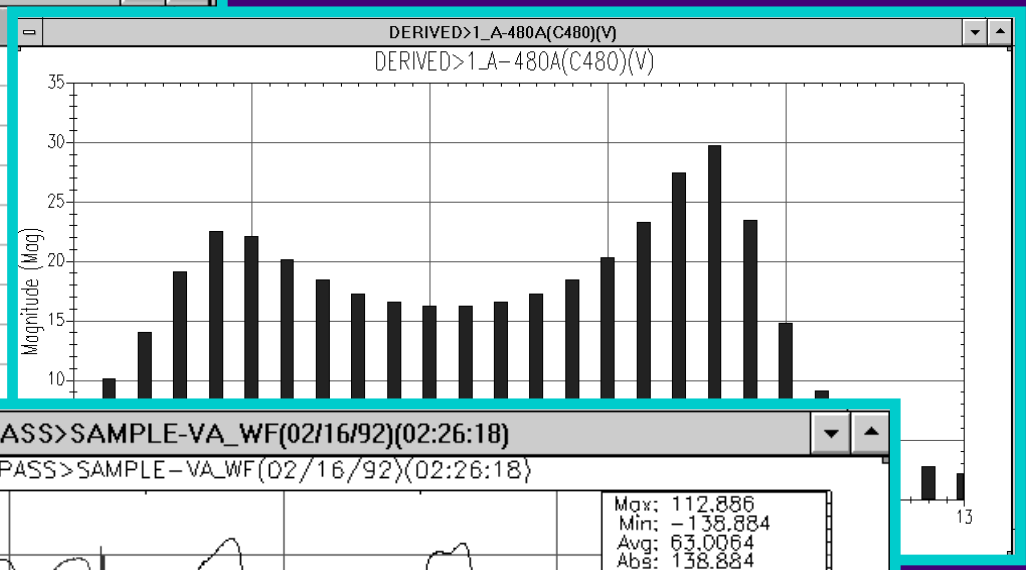
Data Display

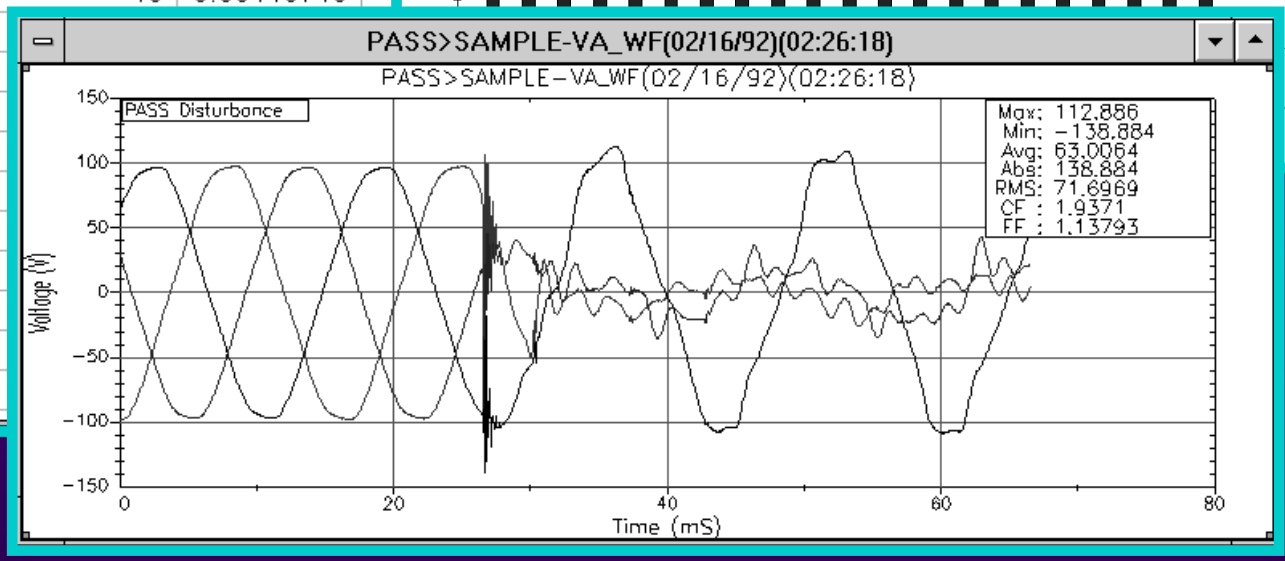
- TOP provides a variety of ways to visualize the data.
  - Waveform and spectrum plots
  - Frequency response plots
  - Summary tables (including IEEE 519 application)
  - Summary bar/volume charts
  - Cumulative probability charts
  - Probability density charts
  - 3-D Magnitude Duration Histograms (downloaded from PQWeb®
  - Background curves for Mag Dur Plots

Output Examples

Frequency Domain Data

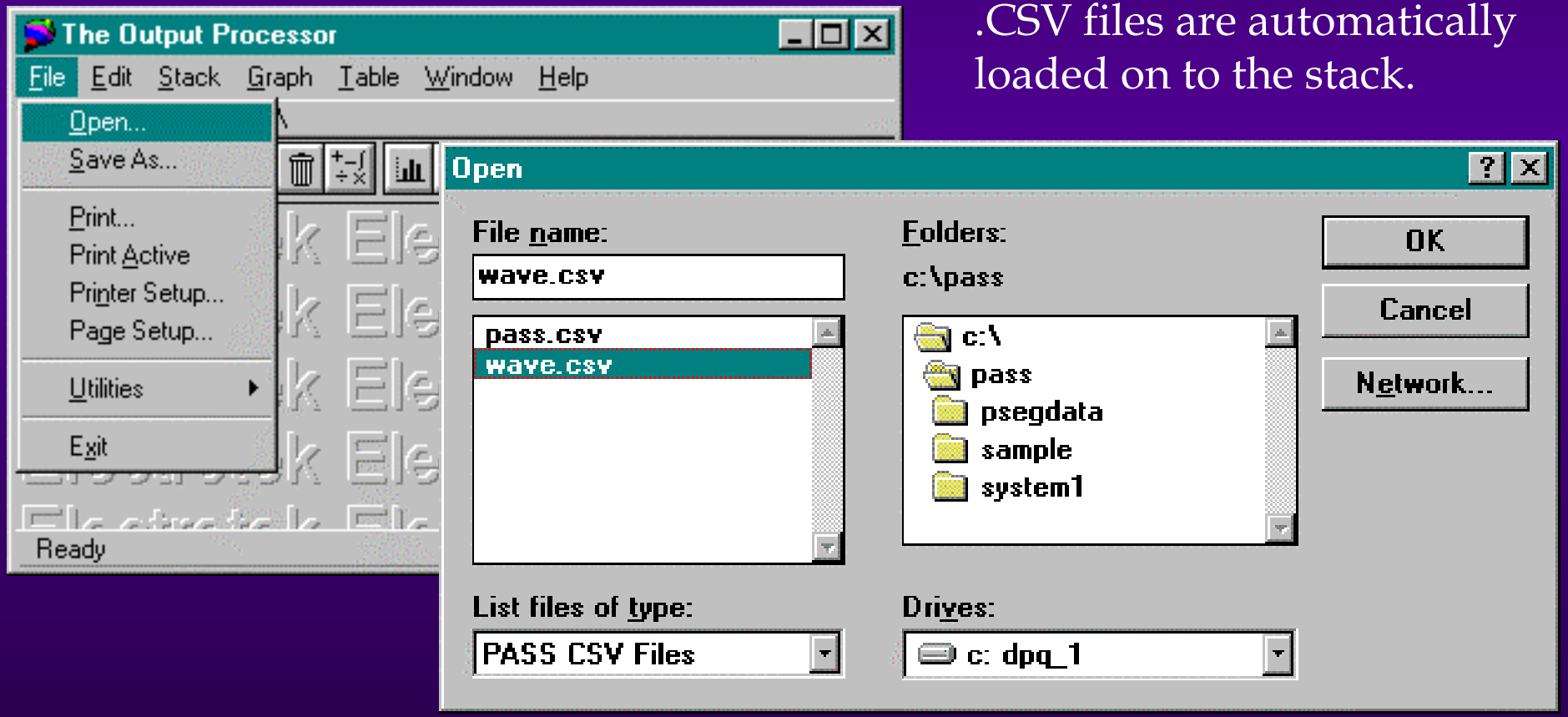
	A	B	C
1	Name	Frequency	Magnitude
2	13bus.A	1	98.1001
3	13bus.A	3	0.027528
4	13bus.A	5	0.005075
5	13bus.A	7	0.00220512
6	13bus.A	9	0.00256462
7	13bus.A	11	0.00042203
8	13bus.A	13	0.000219005
9	13bus.A	15	0.00115745
10	13bus.A		
11	13bus.A		
12	13bus.B		
13	13bus.B		
14	13bus.B		
15	13bus.B		
16	13bus.B		
17	13bus.B		
18	13bus.B		
19	13bus.B		





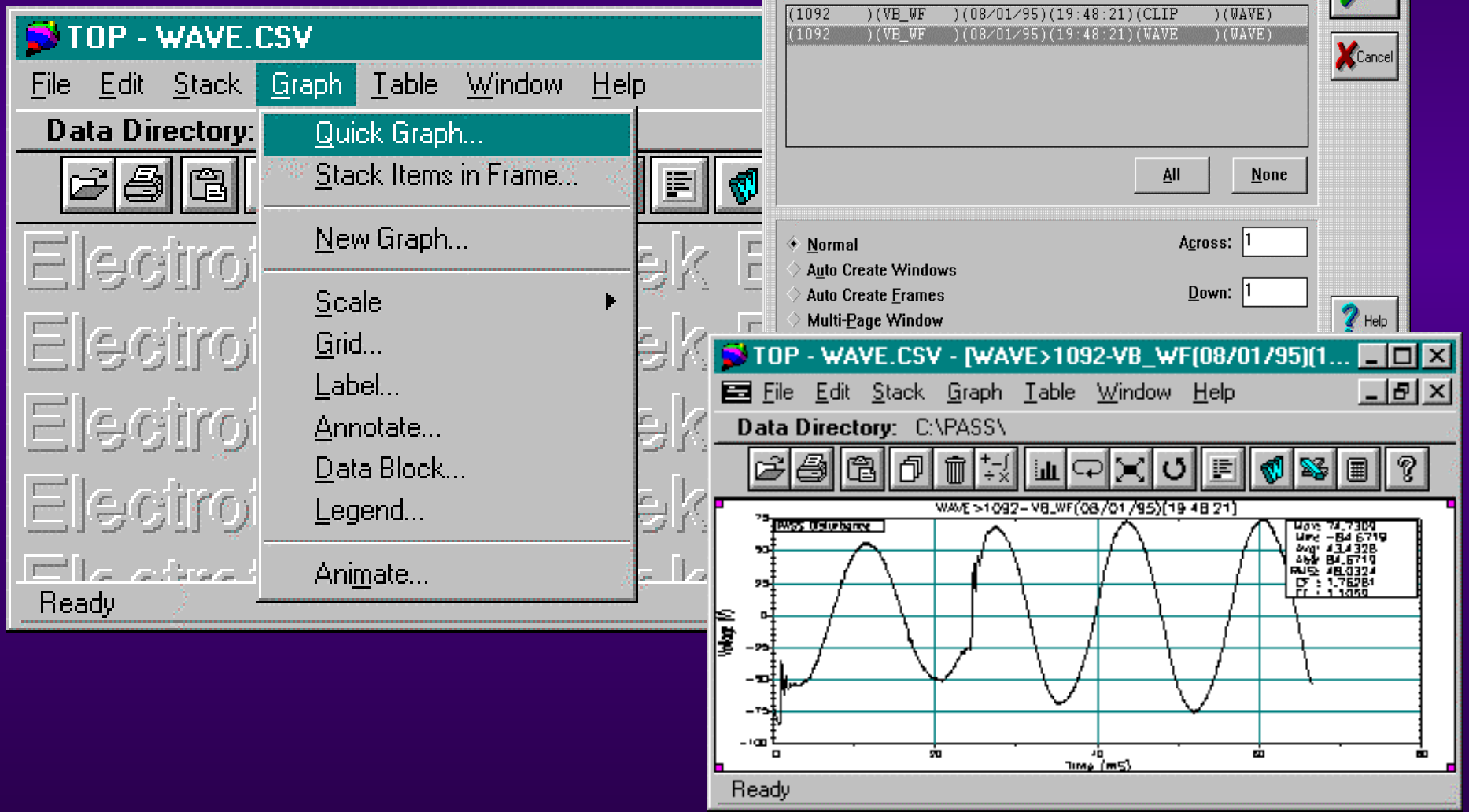
Getting Started - Opening Files

- Opening files in TOP



.CSV files are automatically loaded on to the stack.

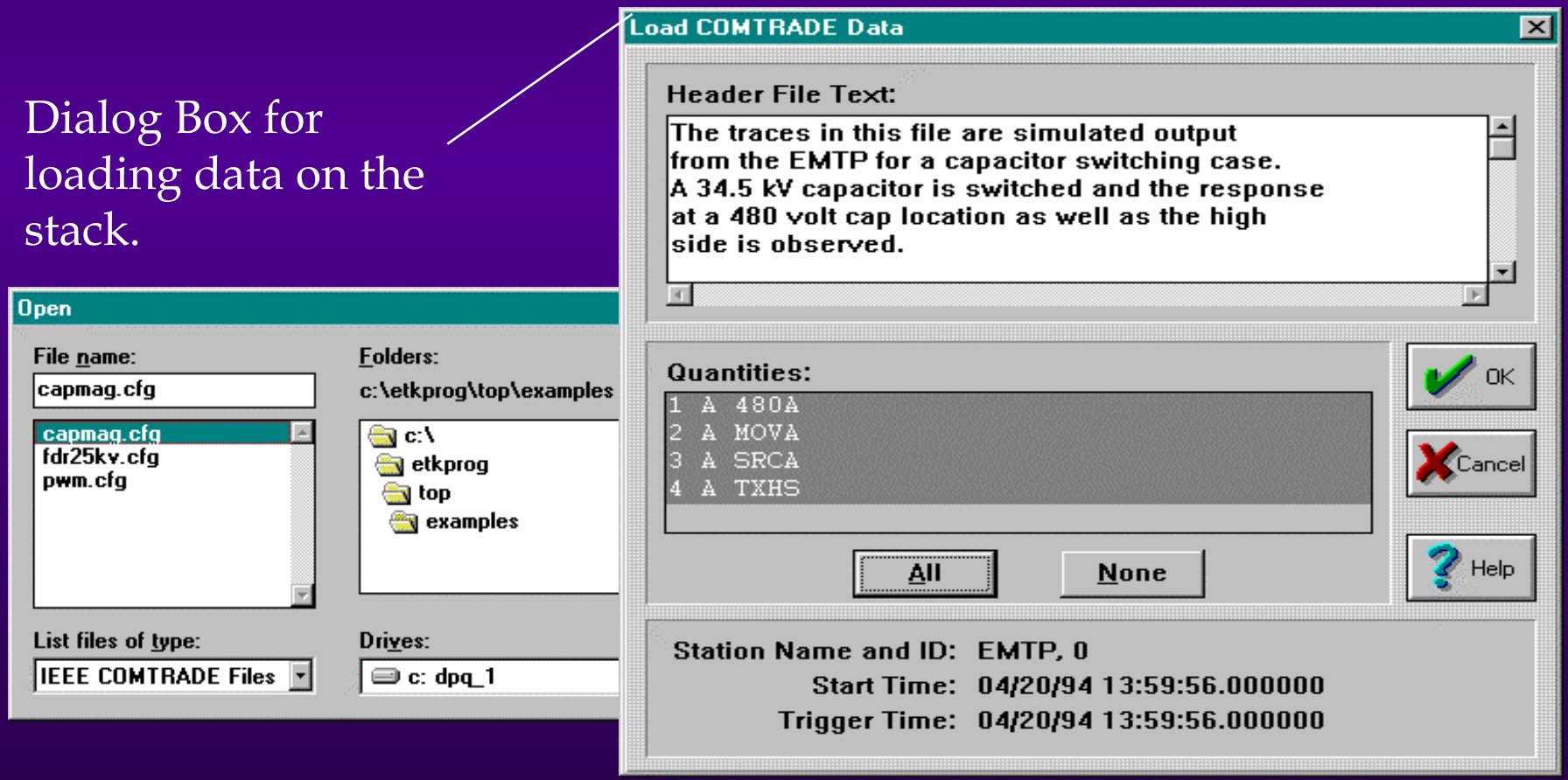
Getting Started - Using Quick Graph



Getting Started - Loading Data

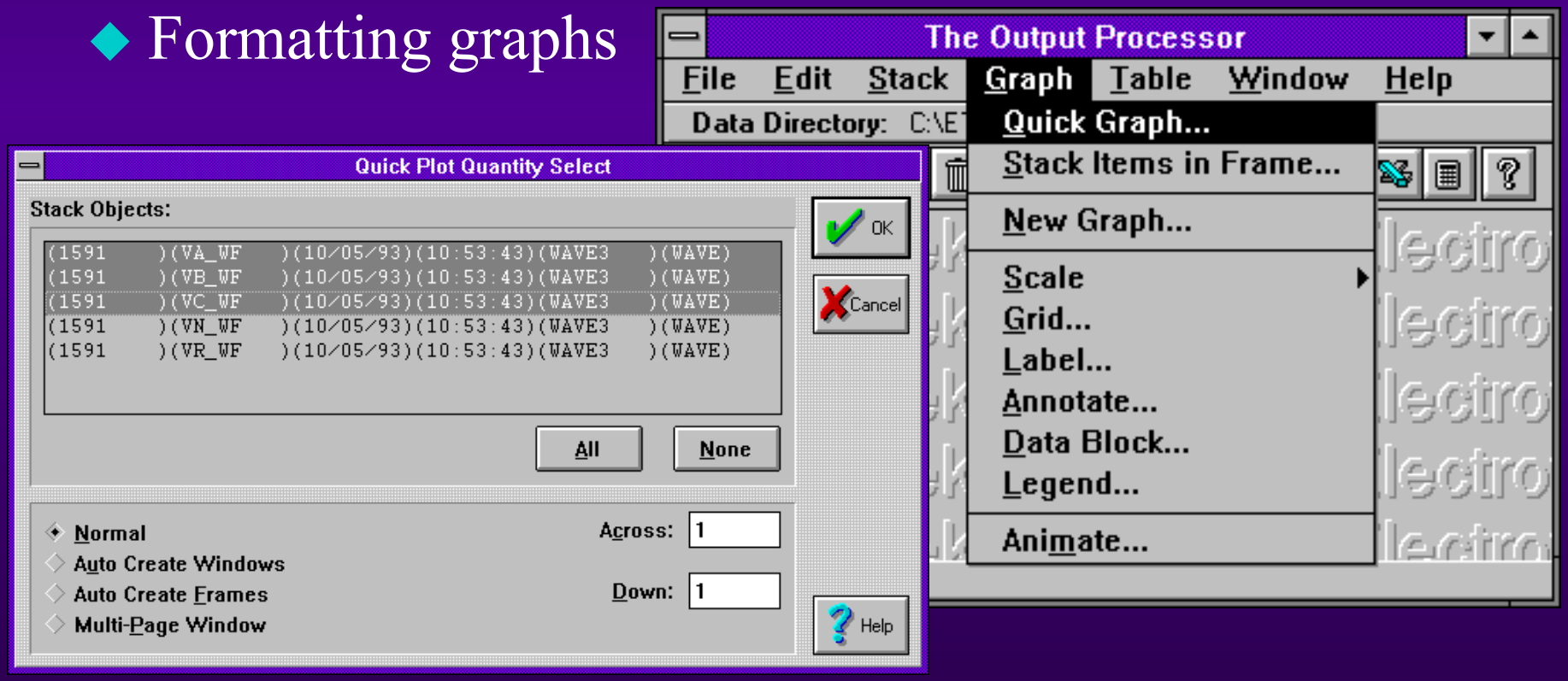
- Opening IEEE COMTRADE files (.CFG)

Dialog Box for loading data on the stack.



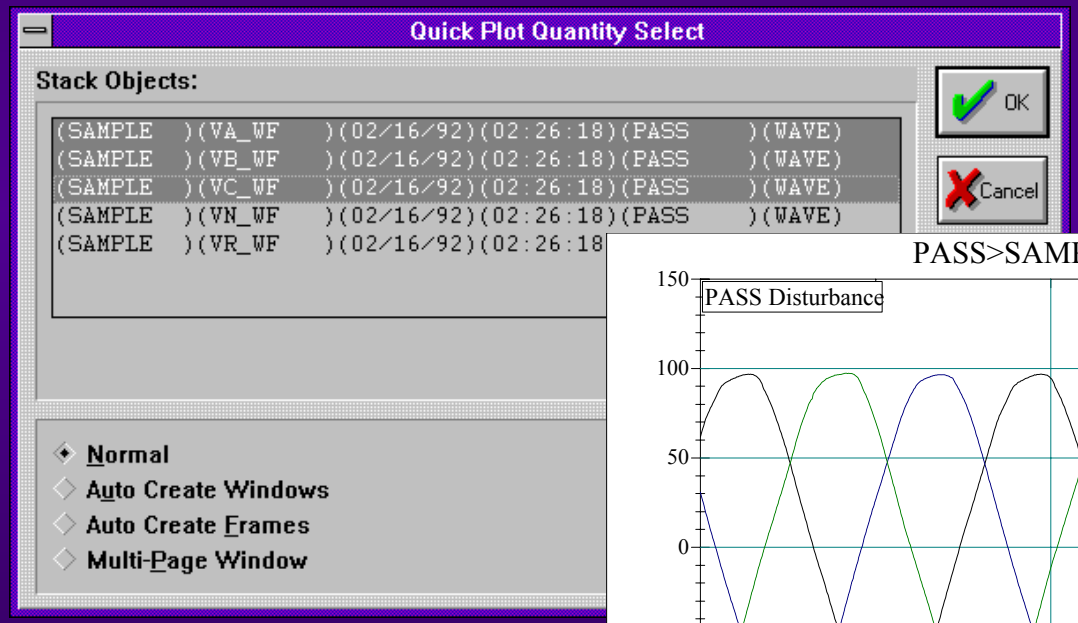
Graphical Manipulations

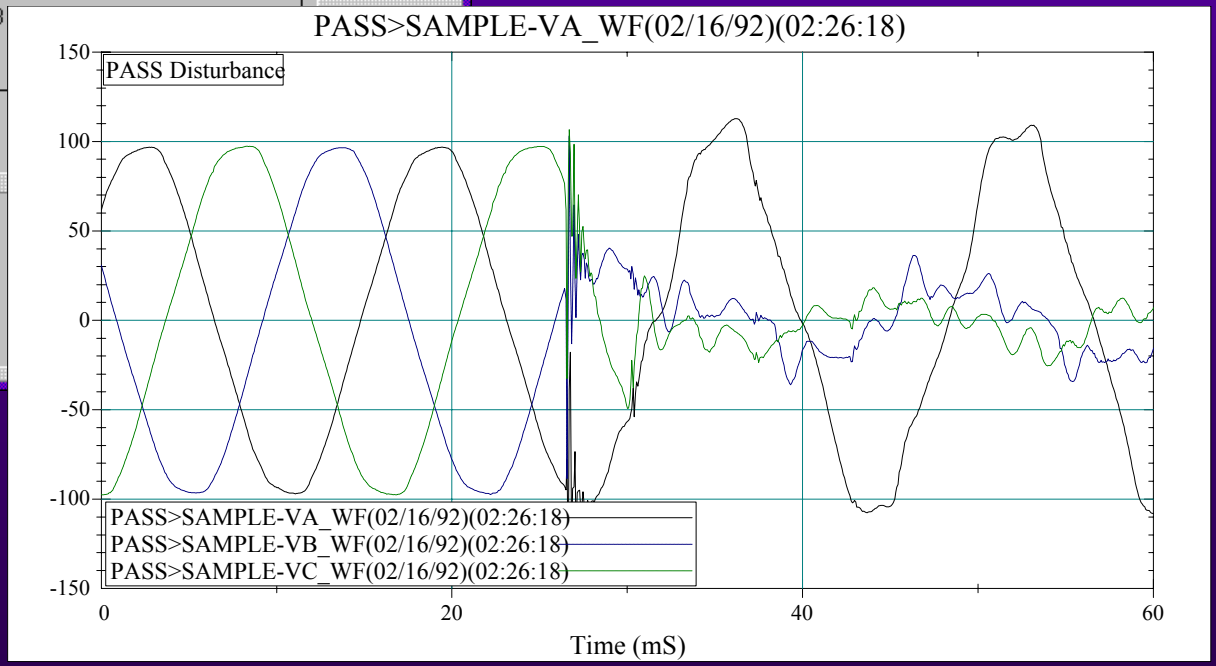
- Working with multiple graphs.
- Using the zoom feature.
- Formatting graphs



Multiple Graphs

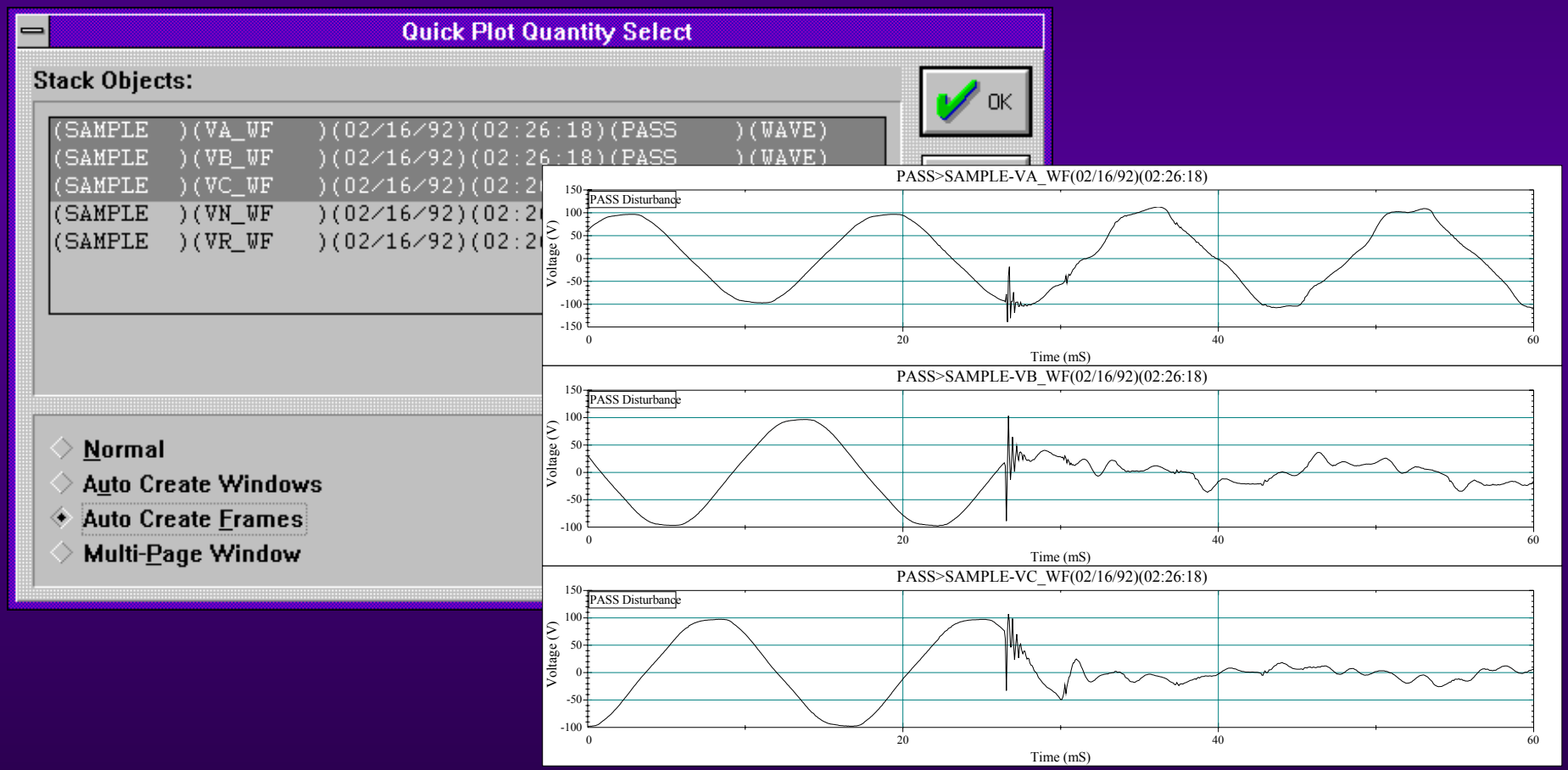
- Plotting multiple graphs in a single frame.





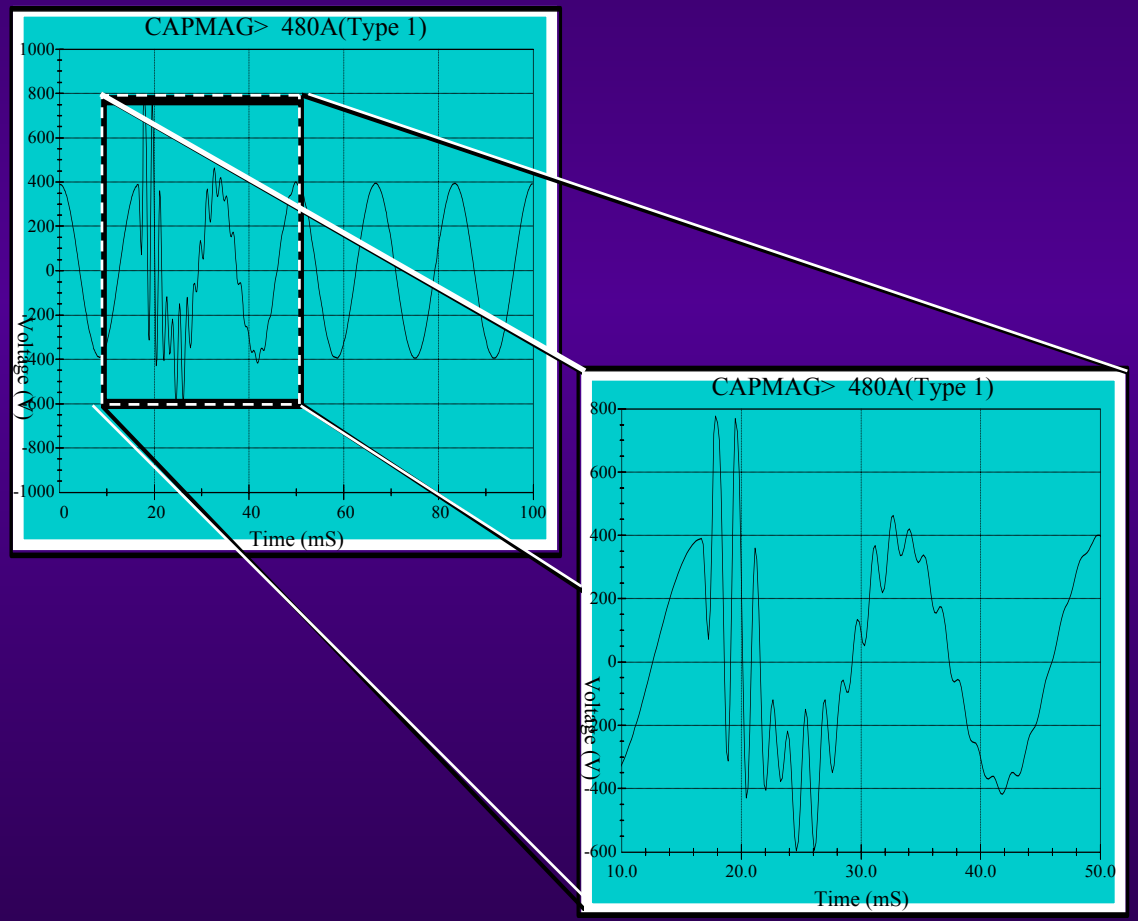
Multiple Graphs, cont.

- Plotting multiple graphs in a single window.



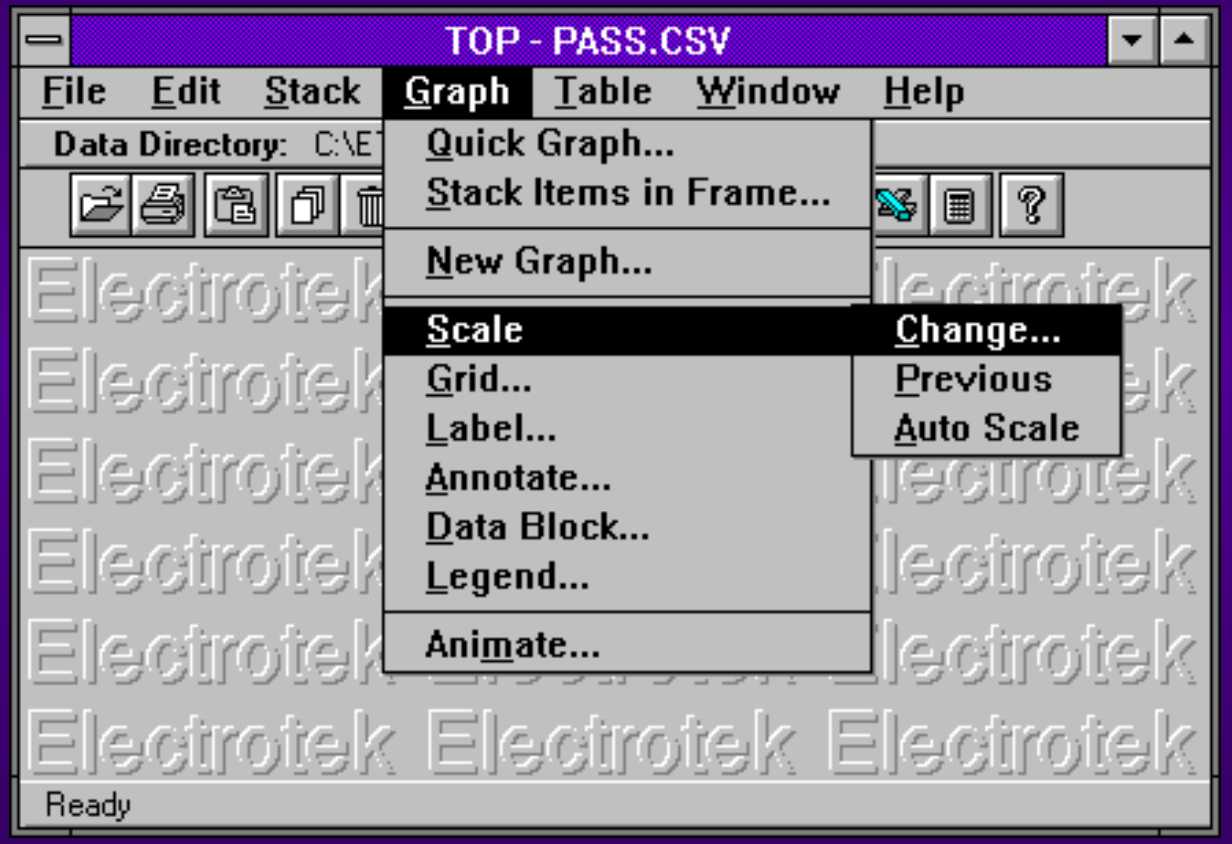
Zooming with the Mouse

- To zoom in on a portion of the graph, click and drag the right mouse button to create a rectangular box around the area of interest and then release the button.



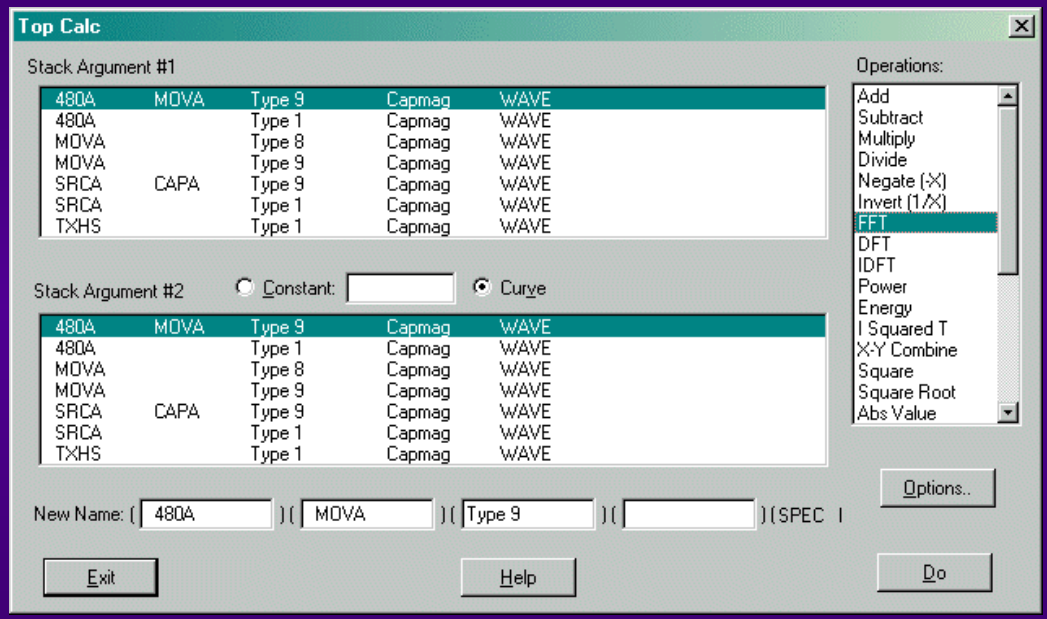
Formatting graphs in TOP

- Data labels
- Axis scaling
- Creating legends
- and more!



TOPCalc™ Functions

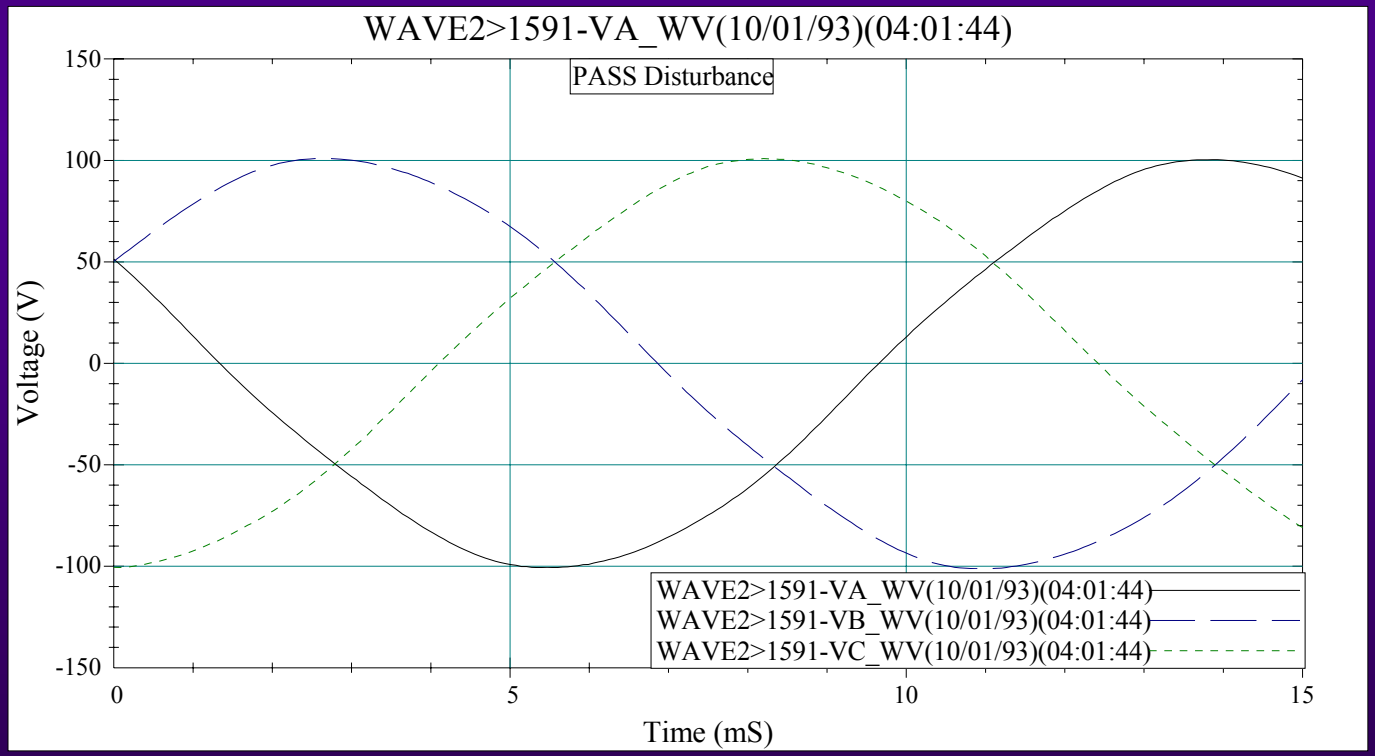
- Add, Subtract
- Multiply, Divide
- FFT, IDFT
- Power, energy and I^2t
- Integration, square, square root
- X-Y combine
- Filter, time shift
- V, I, & power dB ratio
- Cumulative probability
- Probability distribution
- Waveform sampling



TOPCalc Example

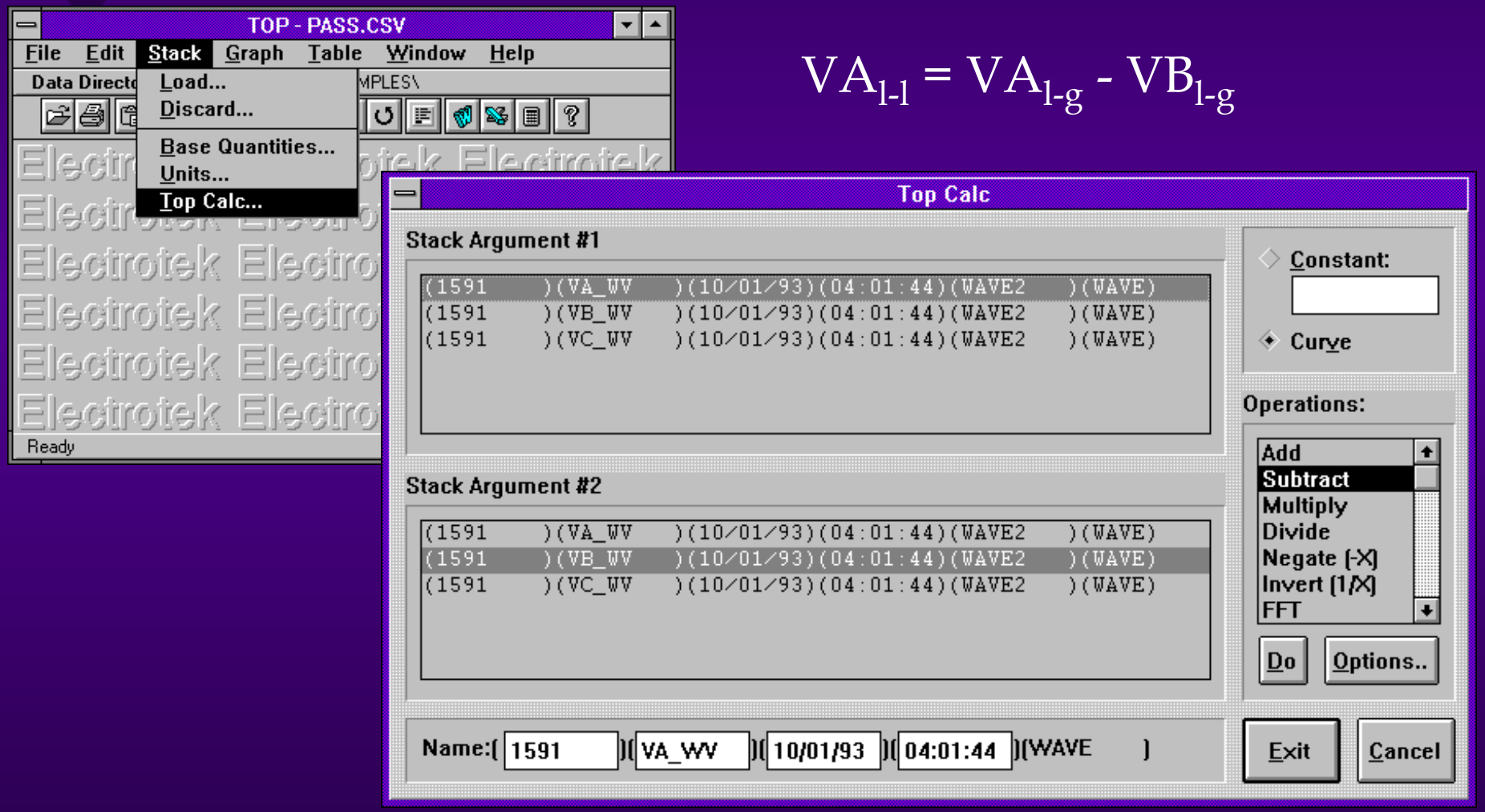
- Calculation of line-line voltage, $VA_{l\text{-}l}$, from phase $A_{l\text{-}g}$ voltage and phase $B_{l\text{-}g}$ voltage waveforms.

$VA_{l\text{-}g} = 100V$
$VB_{l\text{-}g} = 100V$
$VC_{l\text{-}g} = 100V$



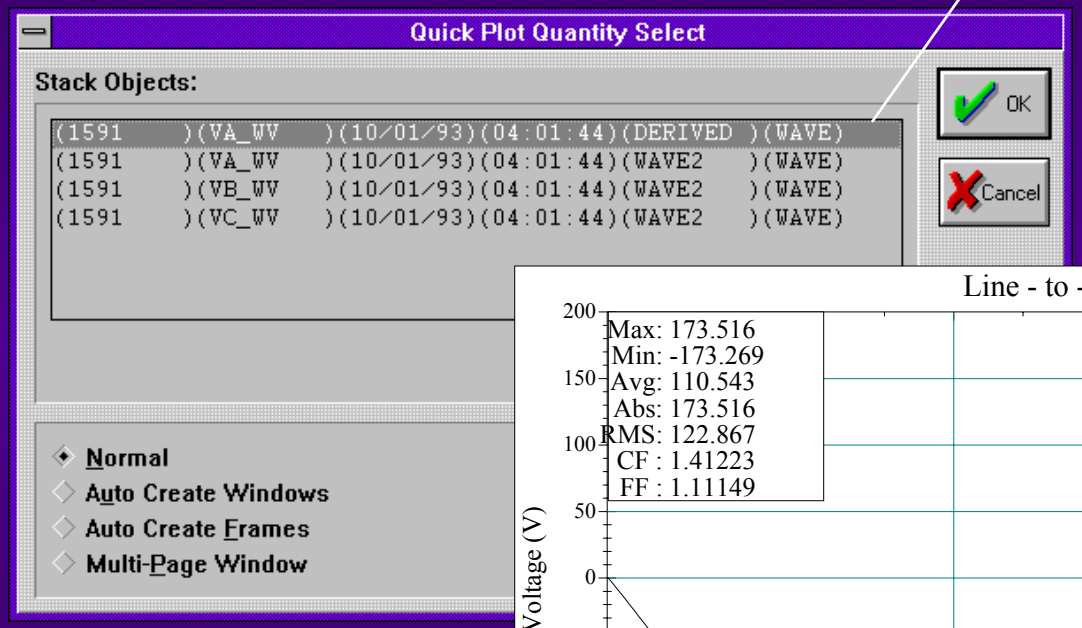
TOPCalc Example, cont.

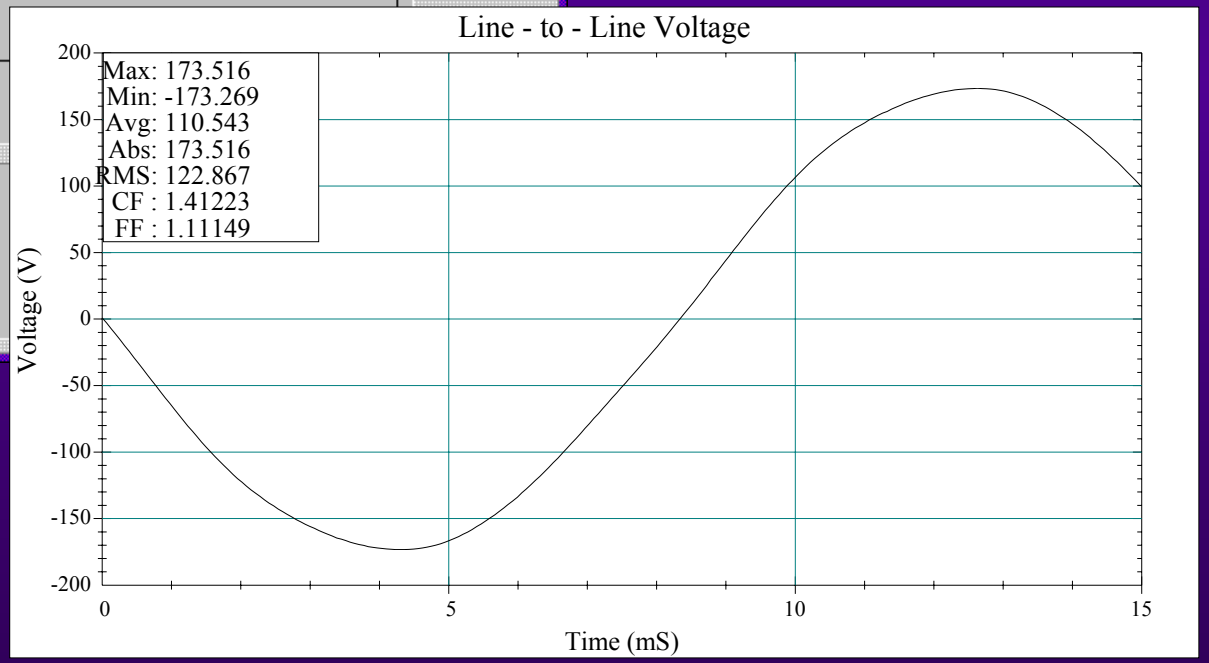
$$VA_{l\text{-}l} = VA_{l\text{-}g} - VB_{l\text{-}g}$$



TOPCalc Example, cont.

TOPCalc creates result of operation as another quantity specified with a DERIVED tag name.





$VA_{l\text{-}l} = 173V$

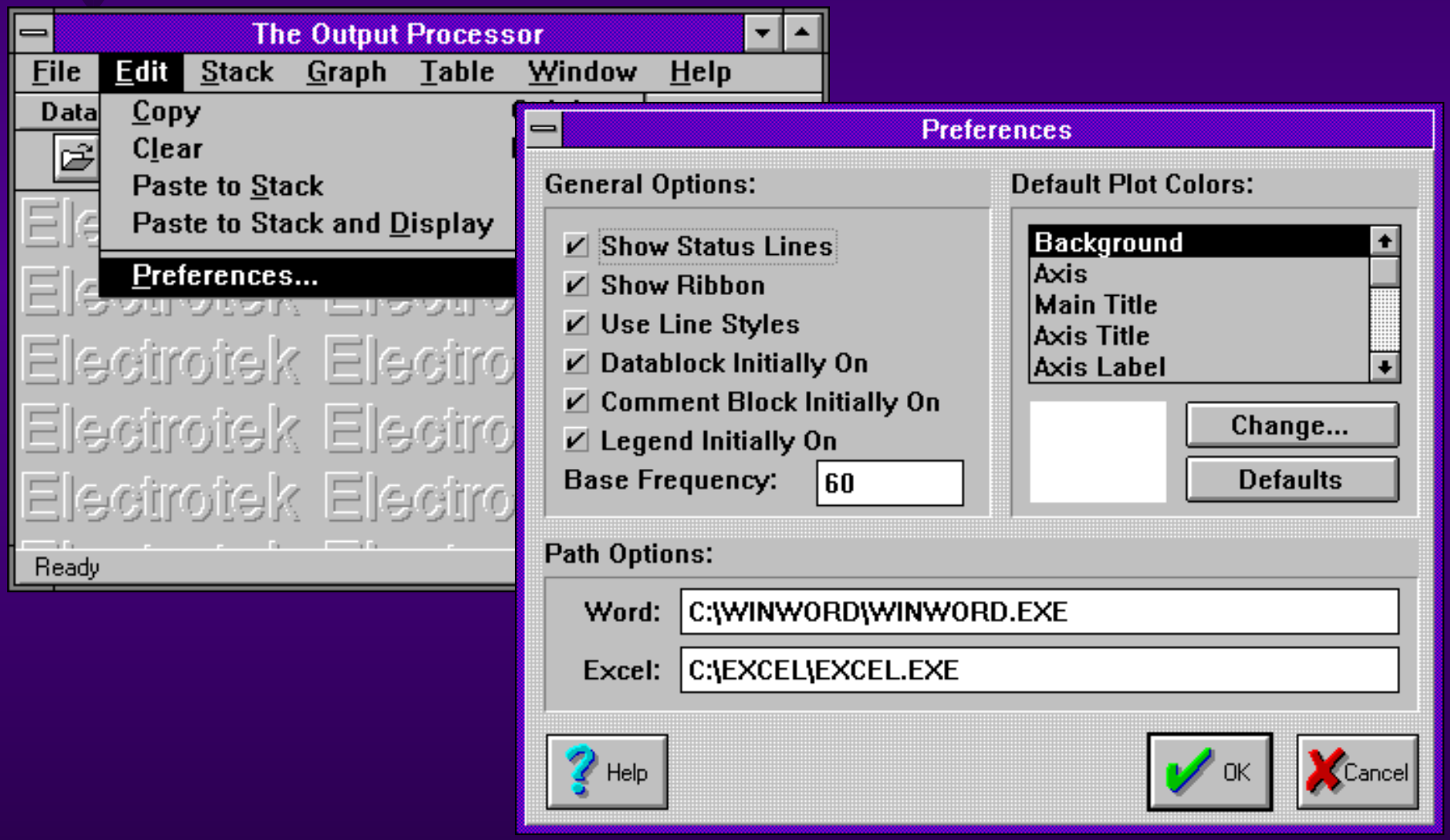
$VB_{l\text{-}l} = 173V$

$VC_{l\text{-}l} = 173V$

Data Formatting

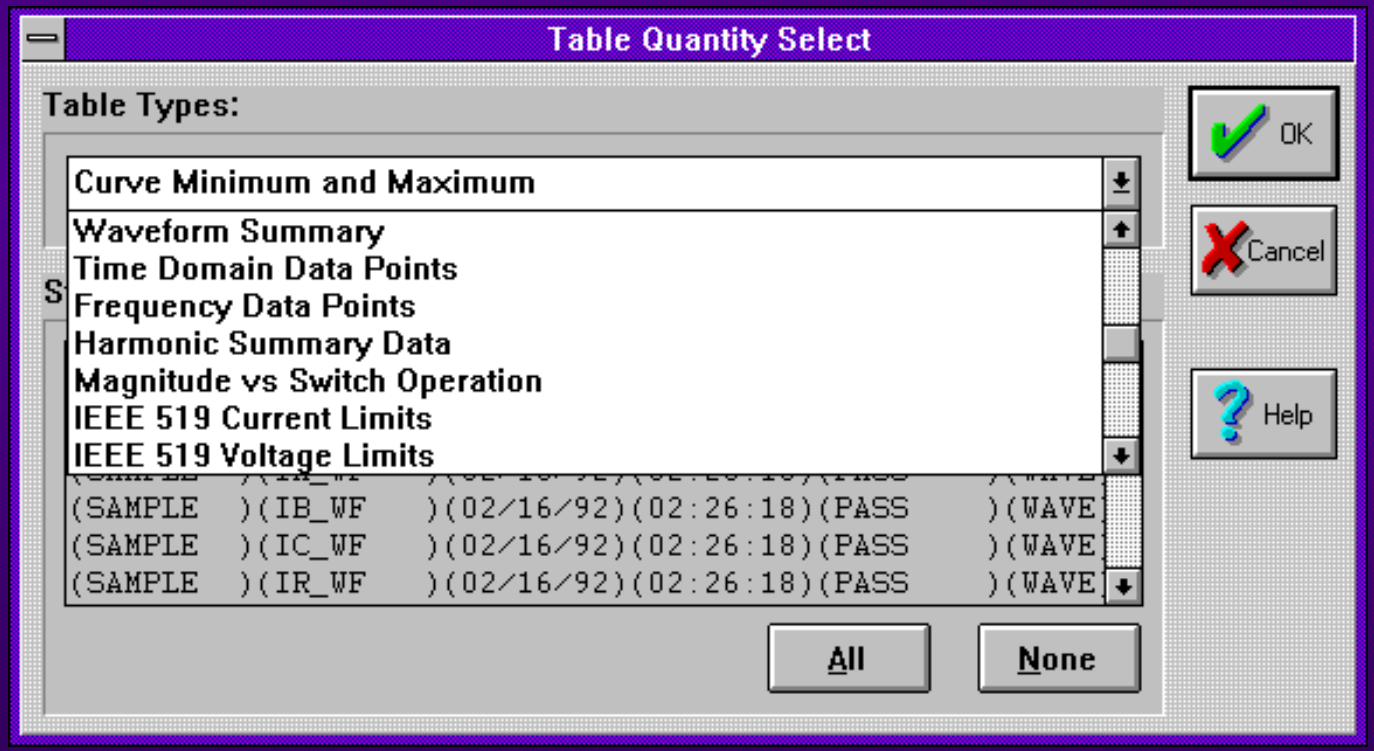
- Preferences can be changed to customize your output:
  - Base quantities (per unitizing)
  - Units (axis labels and multipliers)
  - Data, comment, and annotation blocks
  - Display colors
  - Cumulative probability charts
  - Axis scaling, grid lines, labels

Changing Preferences



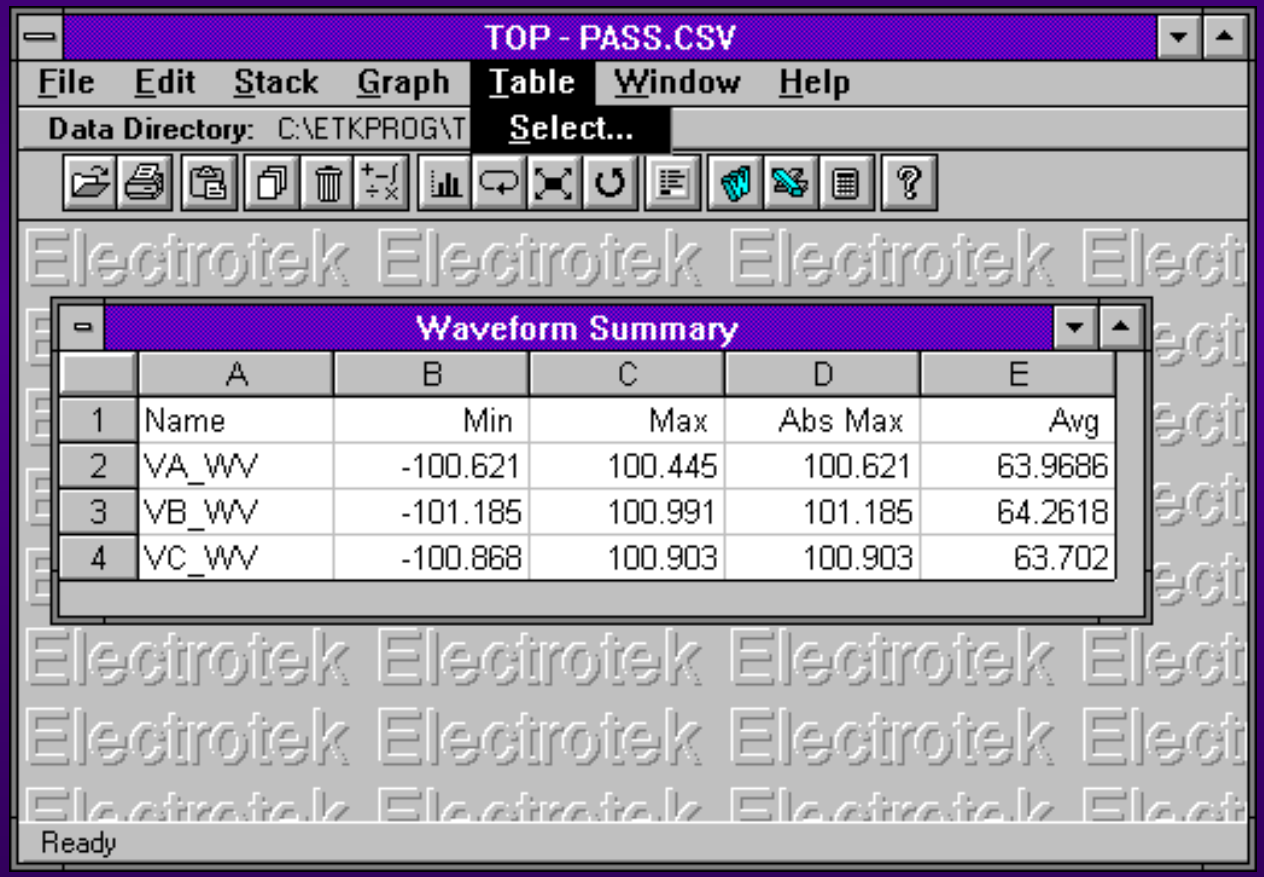
Creating Tables

- TOP can simply provide a table for the following parameters.



Creating Tables, cont.

- Table can be utilized with any spreadsheet for further analysis.



Availability

- TOP is available for free download from Electrotek Concepts at www.pqsoft.com/top
- Support is available from Electrotek via e-mail and a "Frequently Asked Questions" page at www.pqsoft.com/top.