

DADiSP / Stats

Statistics Module

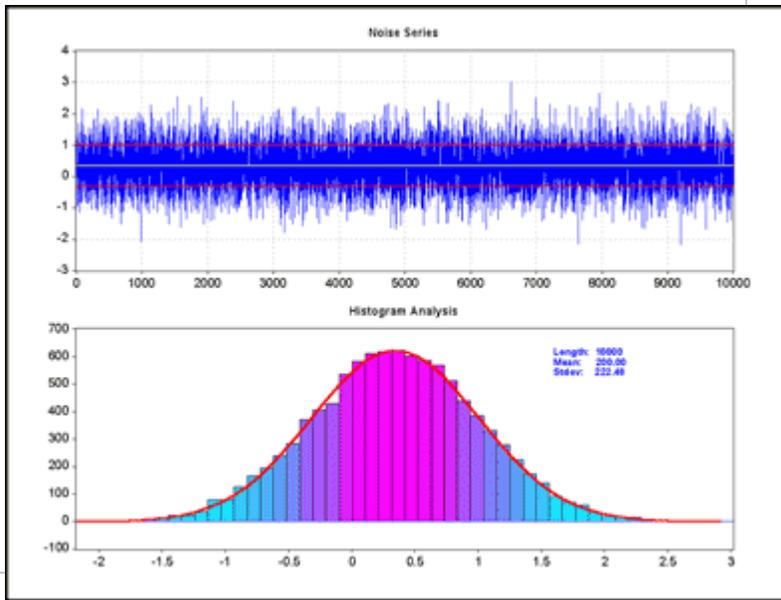


DADiSP/Stats is a menu-based module designed to perform a variety of statistical tests and present statistical information graphically. The DADiSP/Stats module computes statistical measures, calculates probability values based on standard distributions, displays summary reports and graphics, and performs hypothesis tests on sample data.

Each menu option pops up a dialog box that provides you with a description of the menu feature and prompts for the location of your sample data. The results of the statistical test are displayed automatically on the screen.

KEY FEATURES

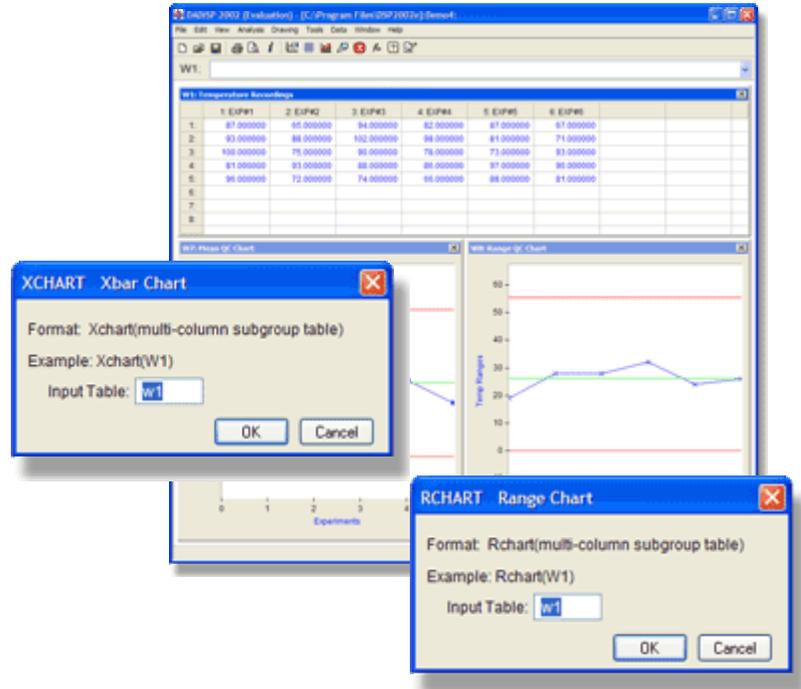
- Simple User Interface
- Descriptive Statistics
- Column and Row Statistics
- One and Two Tailed T Tests
- Chi Square Tests for Multiple Categories
- F Tests
- Two Sample Comparison T Tests for Pooled Variances
- Two Sample Comparison T Tests for Unequal Variances
- One Way ANOVA
- Hypothesis Testing
- Multiple Regression



- Residual Plots
- Scatter Plots
- Histograms
- Box and Error Plots

Statistics Module

DADiSP/Stats is a menu-driven module for DADiSP that computes statistical measures, calculates probability values based on standard distributions, displays summary reports and graphics, and performs hypothesis tests on sample data.



Industry Standard Measurements

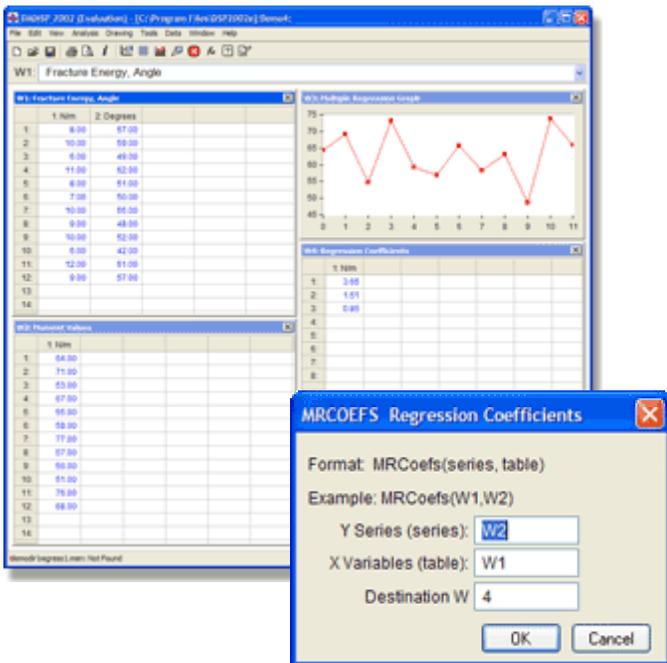
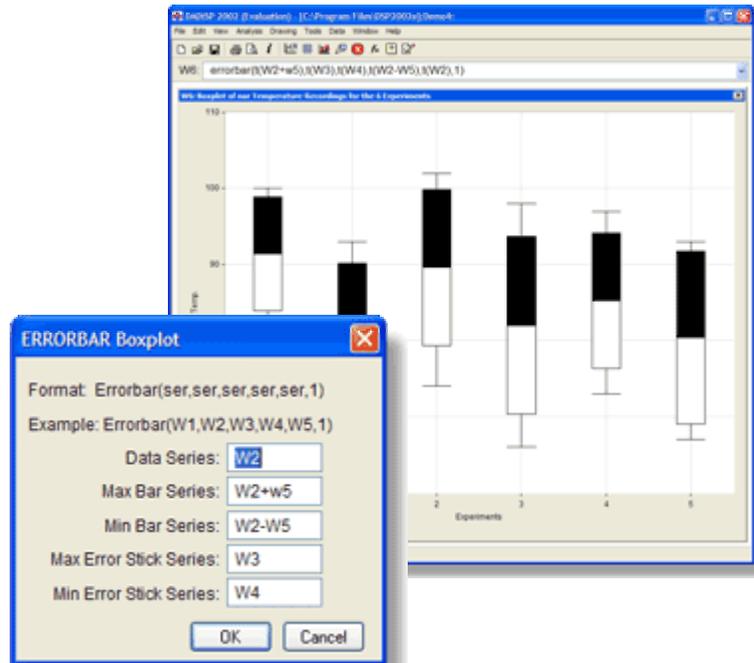
DADiSP/Stats uses DADiSP's familiar graphical Worksheet and pull-down menus. All of the DADiSP analysis and graphics features are available to operate on original input data and on the results of statistical operations. The statistics module offers an additional dimension to DADiSP, providing scientists and engineers with accepted industry statistical measurements to analyze quantitative data.

Descriptive Statistics

Sample size, mean, median, variance, standard deviation, standard error, maximum, minimum, and range values are immediately available at the click of a button. Any computation can be used as a stand alone value for further computation or presented as a group in a summary report. Statistical computations can be performed on single datasets or tables with row or column orientation.

Graphical Statistical Analysis

Mean, median, variance, error bar and box plots provide quick visual summaries of common statistical properties. Xbar, Range and combined Xbar / Range plots are appropriate for quality control and process management applications. Histograms, scatter plots and residual plots further complement the statistical visualization features of DADiSP/Stats.

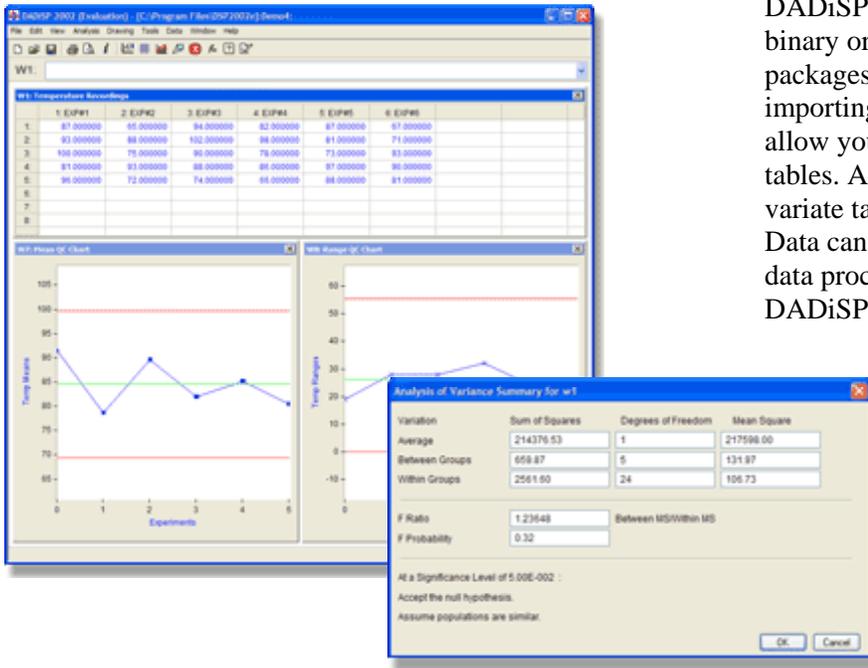


Regression Analysis

Linear and Polynomial fitting offer straightforward statistical modeling capabilities. Sophisticated multiple regression techniques model data with a linear combination of almost any user defined terms. Regression statistics, residual and comparison plots aid in the interpretation of regression results. Chi square goodness of fit statistics provide standard acceptance probabilities and significance levels for regression coefficients.

Data Management

DADiSP can access data from external binary or ASCII files, from other software packages, or directly from the keyboard. The importing and data management features allow you to read single or multi-column tables. A dataset may be stored as a multi-variate table or as a set of individual series. Data can be read into DADiSP for a one-time data processing session or stored the data in DADiSP permanently.



Anova

DADiSP/Stats includes powerful Analysis of Variance routines. Variation, sum of squares, degrees of freedom and mean squared statistics are computed for average, between and within sample groups. F ratio, F probability and significance levels for hypothesis testing are automatically displayed.

Probability Generation

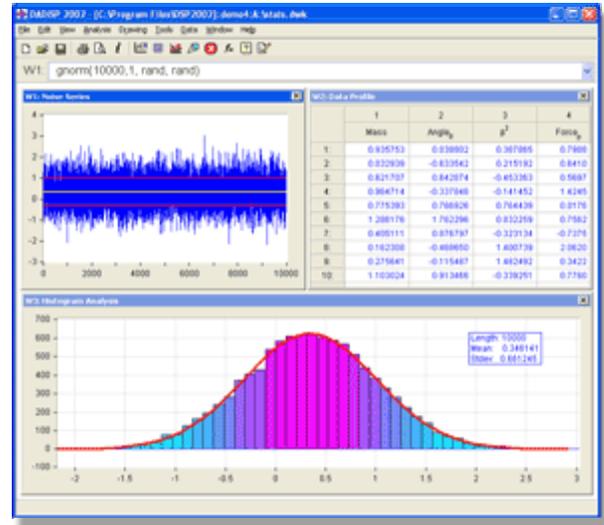
Chi squared, Normal, T Test and F probability density functions are easily generated to provide common standards for several statistical measurements. Lookup functionality is optimized to produce fast and accurate results.

Data Compression

T test sample comparison for pooled and unequal variances compute significance levels for variance testing. One and Two Tailed T tests calculate statistical measurements for mean testing. F Ratio test, cross-correlation, R and R² correlation coefficients provide additional tools for statistical data comparison.

Integrated Results

Each menu option in the statistics menus pops up a dialog box that provides a description of the menu feature and prompts the location of the sample data. The results of each statistical test are displayed automatically on the screen. Each menu option generates a presentation quality screen report or graph that contains the statistical results and text summaries. Each report or graph can be incorporated into a document or sent directly to the printer.



Verification and Automation

The underlying statistical macros and menus can be viewed to verify the statistical algorithms or adapt the individual routines to particular applications. DADiSP/Stats was developed using DADiSP's custom menu and macro extension language. The menu and macro files are simple ASCII text files. The statistical functions are fully documented, including formulas and source references. While DADiSP/Stats is completely menu-driven, any of the new statistics features can be accessed from the command line or from one of DADiSP's automated session scripts.

Stats Functions

DADiSP/Stats includes several functions that encompass a wide variety statistical processing and analysis.

Graphical Statistics Functions

boxplot	Box plot of minimum, maximum, minimum error and maximum error
comboplot	Combined plot of sample mean, median and variance
errorplot	Error bar plot
hist	N bin histogram
meanplot	Plot of sample means
medianplot	Plot of sample medians
polygraph	Polynomial fit plot
rchart	Statistical quality control range chart
varplot	Plot of sample variances
xchart	Statistical quality control mean chart
xrchart	Combined statistical quality control mean and range chart
xyplot	Scatter plot

Regression Functions

mrcoefs	Compute multiple regression coefficients
mrgraph	Plot multiple regression results
mulregsum	Multiple regression computation and summary
polyfit	Linear and polynomial regression

ANOVA Functions

anova	Analysis of Variance summary
correlatesum	cross correlation summary

Descriptive Statistics Functions

max	Sample maximum
min	Sample minimum
mean	Sample average value
median	Sample median value
sersize	Sample size
stderr	Sample standard error
stdev	Sample standard deviation
var	Sample variance

Probability and Hypothesis Test Functions

chmultsum	Chi square goodness of fit for 2xN matrix
chitestsum	Chi square goodness of fit for 2x2 matrix
comp2sum	Two series pooled variance T test
compnoeqsum	Two series separate variance T test
ftestsum	F Ratio test
ttestsum	One tailed T test vs mean
ttest2sum	Two tailed T test vs mean

Probability Density Functions

chisum	Chi square probability
fprobsum	F probability
normsum	Normal (Gaussian) probability
tprobsum	T probability