



Six Sigma Products Group, Inc. is an authorized reseller of Quantum XL.

Quantum XL Feature Comparison Table

Price for Single License and Features Summary

	Quantum XL	Minitab	Quality Companion	Crystal Ball	SPC XL	DOE Pro	DFSS Master
	\$549	\$1,395	\$995	\$995 w/o Optimization \$1,995 with Optimization	\$249	\$249	\$399
Design of Experiments							
General Statistical Tools							
Companion Tools							
Monte Carlo Simulation							

Design of Experiments

Unique Features	Quantum XL	Minitab	Quality Companion	Crystal Ball	SPC XL	DOE Pro	DFSS Master
Regression Advisor							
Automatic S-hat Modeling							
Mixed Response Modeling							

Regression Type

	Quantum XL	Minitab	Quality Companion	Crystal Ball	SPC XL	DOE Pro	DFSS Master
Ordinary Least Squares							
Weighted Regression							
Binary Logistic Regression		Not as part of DOE					
Nominal Logistic Regression		Not as part of DOE					
Ordinal Logistic Regression		Not as part of DOE					

Independent Variable Types

	Quantum XL	Minitab	Quality Companion	Crystal Ball	SPC XL	DOE Pro	DFSS Master
Optimize Least Squares Models							
Optimize Binary Logistic Models							
Optimize Nominal Logistic Models							
Optimize Mixed (Least Squares, Binary, and Nominal) Models							
Optimize with constraints							

Prediction

	Quantum XL	Minitab	Quality Companion	Crystal Ball	SPC XL	DOE Pro	DFSS Master
Predict Least Squares Models							
Predict Binary Logistic Models							
Predict Nominal Logistic Models							
Predict Mixed (Least Squares, Binary, and Nominal) Models							
Quality Measures (Cp, Cpk, dpm, etc.)							

Charts

	Quantum XL	Minitab	Quality Companion	Crystal Ball	SPC XL	DOE Pro	DFSS Master
Pareto of Regression Coefficients							
Interaction Plot							
Main Effect Plot							
Thumbnail Plot							
Surface and Contour Plot							
Residual Plots							

Design Types

	Quantum XL	Minitab	Quality Companion	Crystal Ball	SPC XL	DOE Pro	DFSS Master
Design Wizard							
2-Level Full/Fractional Factorial							
3-Level Full Factorial							
N-Level (mixed) Factorial							
Central Composite (CCD)							
Box-Behnken							
Plackett-Burman							
Taguchi							
Custom							
D-Optimal							
Mixture							

Design Features

	Quantum XL	Minitab	Quality Companion	Crystal Ball	SPC XL	DOE Pro	DFSS Master
Blocking							
Folding							
Automatic S-hat model							
Table Format							
Stacked Format							
Randomization						Random string only	
Add Center Points							

General Statistics Tools

Data template

	Quantum XL	Minitab	Quality Companion	Crystal Ball	SPC XL	DOE Pro	DFSS Master
One factor							
Two factors							
Specification limits							
X-Axis column							
Random data							
Select multiple analysis on sheet							
Analyze template							

Control Charts

	Quantum XL	Minitab	Quality Companion	Crystal Ball	SPC XL	DOE Pro	DFSS Master
XbarR Chart							
XbarS Chart							
IMR Chart							
p Chart							
c Chart							
np Chart							
u Chart							
Ability to add points to existing charts							
Assign labels to X Axis of control chart							
Custom out-of-control checking							
Custom Control Limits							
On-sheet scrolling controls							
StDev estimate options							
Scroll control charts							
Split limits							
Outliers							

Cpk

	Quantum XL	Minitab	Quality Companion	Crystal Ball	SPC XL	DOE Pro	DFSS Master
Spec limits							
Spec limits linked to cell							
Spec limits are boundaries							
Plot target value							
Ppk curve							
Cpk curve							
Both curves							
Multiple charts							
Overlaid charts							
StDev estimate options							
Cp							
Lower CI bound for Cp							
Upper CI bound for Cp							
Cpl							
Cpu							
Cpk							

Lower CI bound for Cpk							
Upper CI bound for Cpk							
Pp							
Ppl							
Ppu							
Ppk							
Observed Defects (< LSL)							
Observed Defects (> LSL)							
Observed Defects (Total)							
Short Term Defects (< LSL)							
Short Term Defects (> LSL)							
Short Term Defects (Total)							
Long Term Defects (< LSL)							
Long Term Defects (> LSL)							
Long Term Defects (Total)							
Sample size							
Mean Overall							
Stdev Overall							
Stdev Within							
Min							
Max							
Updatable							

Histogram

	Quantum XL	Minitab	Quality Companion	Crystal Ball	SPC XL	DOE Pro	DFSS Master
Distributions fit: Normal							
Distributions fit: Exponential							
Distributions fit: 2-Parameter Weibull							
Distributions fit: 2-Parameter Exponential							
Distributions fit: 2-Parameter Gamma							
Distributions fit: 2-Parameter Logistic							
Distributions fit: 2-Parameter LogLogistic							
Distributions fit: 2-Parameter LogNormal							

Distributions fit: 3-Parameter Gamma							
Distributions fit: 3-Parameter LogNormal							
Distributions fit: 3-Parameter Weibull							
Overlaid charts							
Spec limits							
Spec limits linked to cell							
Updatable							

Scatter Plot

	Quantum XL	Minitab	Quality Companion	Crystal Ball	SPC XL	DOE Pro	DFSS Master
Overlaid charts							
Selectable X and Y columns							
Linear regression line							
Logarithmic regression line							
Polynomial regression line							
Power regression line							
Exponential regression line							
Extrapolate Model							
Regression analysis							
On-sheet prediction							
Updatable							

Pareto

	Quantum XL	Minitab	Quality Companion	Crystal Ball	SPC XL	DOE Pro	DFSS Master
2D columns							
2D columns with cum. line							
3D columns							
Pareto report							
Maximum number of bars							
'Others' group							
'Custom 'Others' group caption							
Sort bars							
Sort datasets							
Multiple pareto charts							
Grid of pareto charts							
Updatable							

Dot Plot

	Quantum XL	Minitab	Quality Companion	Crystal Ball	SPC XL	DOE Pro	DFSS Master
Multiple datasets							
Two dimensional plot							
Summary stats							
Updatable							

Box Plots

	Quantum XL	Minitab	Quality Companion	Crystal Ball	SPC XL	DOE Pro	DFSS Master
Minimum							
Maximum							
Mean							
Outliers							
Suspected Outliers							
Gap between bars							
Box height: Interquartile range							
Box height: Custom							
Custom Whiskers type							
Updatable							

Distribution Fit

	Quantum XL	Minitab	Quality Companion	Crystal Ball	SPC XL	DOE Pro	DFSS Master
Normal							
Exponential							
2-Parameter Weibull							
2-Parameter Exponential							
2-Parameter Gamma							
2-Parameter Logistic							
2-Parameter LogLogistic							
2-Parameter LogNormal							
3-Parameter Gamma							
3-Parameter LogNormal							
Updatable							

Multi-Vari Charts

	Quantum XL	Minitab	Quality Companion	Crystal Ball	SPC XL	DOE Pro	DFSS Master
Mean	✓	✓					
Median	✓	✓					
Minimum	✓	✓					
Maximum	✓	✓					
Show range line	✓	✓					
Connect means	✓	✓					
Group mean	✓	✓					
Grand mean	✓	✓					
Standard deviation	✓	✓					
Updatable	✓	✓					

Hypothesis tests

	Quantum XL	Minitab	Quality Companion	Crystal Ball	SPC XL	DOE Pro	DFSS Master
Advisor Wizard	✓	✓					
Auto Test	✓						
One sample t-Test	✓	✓			✓		
Two samples t-test	✓	✓			✓		
Paired t-test	✓	✓			✓		
One-way ANOVA	✓	✓			✓		
Two-way ANOVA (Crossed)	✓	✓					
Two-way ANOVA (Nested)	✓	✓					
F-test	✓	✓			✓		
Levene's test	✓	✓					
Bartlett's test	✓	✓					
1-Sample Sign	✓	✓					
1-Sample Wilcoxon	✓	✓					
Friedman	✓	✓					
Mood's Median	✓	✓					
Kruskal-Wallis	✓	✓					
Mann-Whitney	✓	✓					
One proportion test	✓	✓					
Two proportions test	✓	✓			✓		
Contingency Table	✓	✓			✓		
Multiple response regression		✓			✓		
Correlation matrix		✓			✓		
Power test for one sample t-	✓	✓					

Test							
Power test for one sample t-test							
Power test for two samples t-test							
Power test for paired t-test							
Power test for one-way ANOVA							
Power test for variance							
Power test for one proportion test							
Power test for two proportions test							
Confidence Intervals							
Custom alpha level							
Custom confidence level							
Show box plot							
Show dot plot							
Updatable							

Measurement System Analysis

	Quantum XL	Minitab	Quality Companion	Crystal Ball	SPC XL	DOE Pro	DFSS Master
ANOVA							
XbarR							
Nested ANOVA							
Attribute: Crosstabulation							
Attribute: Analytic method							
Gage Performance Curve							
Gage Linearity							
Bias							
Stats Advisor							
Updatable							

Decision Trees

	Quantum XL	Minitab	Quality Companion	Crystal Ball	SPC XL	DOE Pro	DFSS Master

DSM

	Quantum XL	Minitab	Quality Companion	Crystal Ball	SPC XL	DOE Pro	DFSS Master
Create matrix							
Edit matrix							
DSM Navigator							
Sequence							
ALAP and AEAP							

Component swapping

	Quantum XL	Minitab	Quality Companion	Crystal Ball	SPC XL	DOE Pro	DFSS Master

Stack Columns

	Quantum XL	Minitab	Quality Companion	Crystal Ball	SPC XL	DOE Pro	DFSS Master

Unstack columns

	Quantum XL	Minitab	Quality Companion	Crystal Ball	SPC XL	DOE Pro	DFSS Master

Random Numbers

	Quantum XL	Minitab	Quality Companion	Crystal Ball	SPC XL	DOE Pro	DFSS Master
Normal							
Exponential							
Uniform							
Triangular							
Log-Normal							
Weibull							
Gamma							
Logistic							
Log-Logistic							
Uniform Discrete							
Poisson							
Binomial							
Binary							
Table format							

Group By format							
Generator per column							
Chi-Square							
F							
t							
Geometric							
Hypergeometric							
Integer							
Beta							
Cauchy							
Laplace							
Largest Extreme Value							
Smallest Extreme Value							

Other features

	Quantum XL	Minitab	Quality Companion	Crystal Ball	SPC XL	DOE Pro	DFSS Master
Excel data source							
'Group by' data source							
SQL data source							
SmartSelect							
CNX Template and diagram							
Discrete distribution calculator							
Continuous distribution calculator							
Main Effects Plot							
Run Chart							
Cumulative Sum Chart (CUSUM)							
Product Capability Report							
Xbar +/- 3s Chart							

Companion Tools

QFD

	Quantum XL	Minitab	Quality Companion	Crystal Ball	SPC XL	DOE Pro	DFSS Master
QFD Wizard							
Create PCM matrix							
Edit PCM matrix							

Sort PCM							
Pareto PCM							
Create House of Quality							
Edit HOQ							
Sort HOQ							
Sort HOQ							
Pareto HOQ							

Pugh matrix

	Quantum XL	Minitab	Quality Companion	Crystal Ball	SPC XL	DOE Pro	DFSS Master
Create							
Edit							
Sort							
Create chart							

FMEA

	Quantum XL	Minitab	Quality Companion	Crystal Ball	SPC XL	DOE Pro	DFSS Master
Create matrix							
Current process controls							
Recommended actions							
Action results							
Add/Remove group							
Add/Remove failure mode							
Add/Remove failure cause							
Top 20 pareto							
Custom pareto							
Show/Hide columns							

Monte Carlo

Model Building

	Quantum XL	Minitab	Quality Companion	Crystal Ball	SPC XL	DOE Pro	DFSS Master
IPO Sheets							
Import from DOE Pro							
Any cell can be input/output							
Merge and Visual Merge							

Speed

	Quantum XL	Minitab	Quality Companion	Crystal Ball	SPC XL	DOE Pro	DFSS Master
Monte Carlo Simulations ¹	Rocket Mode			Extreme Speed			
Benchmark ²	1.09 Seconds (Quantum XL is up to 9X faster than Crystal Ball)			9.73 Seconds			

¹ Both Quantum XL and Crystal Ball use external calculation engines to speed up simulations in Excel. Quantum XL's is called "Rocket Mode" while Crystal Ball's is called "Extreme Speed".

² Test platform: Vista, Excel 2007 SP2, 1GB RAM, CPU Intel 3.00GHz

Tested Model: Crystal Ball Examples Guide > 'Cell Phone'

Number of simulations run: 1,000,000

Monte Carlo Statistics

	Quantum XL	Minitab	Quality Companion	Crystal Ball	SPC XL	DOE Pro	DFSS Master
Normal Distribution Stats							
Count out of spec							
Percentile Stats							
Export EVA Raw Data							

Monte Carlo Features

	Quantum XL	Minitab	Quality Companion	Crystal Ball	SPC XL	DOE Pro	DFSS Master
N=10K to 1 Million Simulations							
Tolerance Allocation Table							
Sensitivity Analysis							
Latitude Plot							
Option for Embedded Histograms							
Percent Contribution							
Descriptive Sampling Support							
Native Mode Monte Carlo							
Input/Output Manager							

Optimization

	Quantum XL	Minitab	Quality Companion	Crystal Ball	SPC XL	DOE Pro	DFSS Master
Optimize single output				Additional \$1,000			
Reduce dpm across multiple outputs				Additional \$1,000			
Optimize on Cp, Cpk Median, ...				Additional \$1,000			
Optimize with constraints				Additional \$1,000			
Advanced Optimization Technology				Additional \$1,000			

Supported Distributions

	Quantum XL	Minitab	Quality Companion	Crystal Ball	SPC XL	DOE Pro	DFSS Master
Normal							
Exponential							
Uniform Continuous							
Triangular							
Log-Normal							
Logistic							
Log-Logistic							
Weibull (3 Parameter)							
Uniform Discrete							
Poisson							
Binary							
Binomial							
Empirical Distribution							
Custom Continuous Distribution							
Custom Discrete Distribution							

Sampling Matrices

	Quantum XL	Minitab	Quality Companion	Crystal Ball	SPC XL	DOE Pro	DFSS Master
Latin Hypercube Sampling (LHS)							
Descriptive Sampling							

Compatibility

	Quantum XL	Minitab	Quality Companion	Crystal Ball	SPC XL	DOE Pro	DFSS Master
Windows 32 bit (Vista, 7, 8)							
Windows 64 bit (Vista, 7,8)							
Excel 2013 32 bit		NA					
Excel 2013 64 bit		NA					
Excel 2010 32 bit		NA					
Excel 2010 64 bit		NA					
Excel 2007 32 bit		NA					
Excel 2007 64 bit		NA					
Excel 2003 Compatibility		NA					
Excel XP (2002) Compatibility		NA					
Excel 2000 Compatibility		NA					
Digitally Signed Macros		NA					

Note:

- * Minitab version v16 used for comparison
- * Quality Companion v3 used for comparison
- * Quantum XL 2013 used for comparison