

Getting Started with v8 of Design-Expert® Software

What's in it for You

Stat-Ease welcomes you to version 8 (v8) of Design-Expert software for design of experiments (DOE). Use this Windows®-based program to optimize your product or process. It provides many powerful statistical tools, such as:



- Two-level factorial screening designs: *Identify the vital factors that affect your process or product so you can make breakthrough improvements,*
- General factorial studies: *Discover the best combination of categorical factors, such as source versus type of raw material supply,*
- Response surface methods (RSM): *Find the optimal process settings to achieve peak performance,*
- Mixture design techniques: *Discover the ideal recipe for your product formulation,*
- Combinations of process factors, mixture components, and categorical factors: *Mix your cake (with different ingredients) and bake it too!*

Your Design-Expert program offers rotatable 3D plots to easily view response surfaces from all angles. Use your mouse to set flags and explore the contours on interactive 2D graphs. Our numerical optimization function finds maximum desirability for dozens of responses simultaneously!

To learn more about the benefits these features provide, work through our tutorials. They're included in your installation CD-ROM and also posted at www.statease.com (more on this later). Our detailed tutorials show you specific ways you can use Design-Expert to your advantage. (Please note that the tutorials teach you to use the software rather than DOE itself. If you wish, we can help you further via our hands-on statistics workshops.)

You'll find a wealth of statistical details within the program itself via various Help screens. Don't overlook this information gold-mine that is literally at your fingertips only a few keystrokes away.

For a helpful collection of checklists and 'cheat sheets,' see *The Handbook for Experimenters*. It's [free to all registered users](#). Furthermore, for quick primers on the principles of design and analysis, we recommend you read the following two soft-cover books from Stat-Ease Principals Mark

Anderson and Pat Whitcomb —published by Productivity Press of New York city:

- *DOE Simplified: Practical Tools for Effective Experimentation,*
- *RSM Simplified: Optimizing Processes Using Response Surface Methods for Design of Experiments.*

Anderson and Whitcomb have also written a *Primer on Mixture Design*. It's posted [free for all](#) to read via the "I'm a Formulator" link on the Stat-Ease home page.

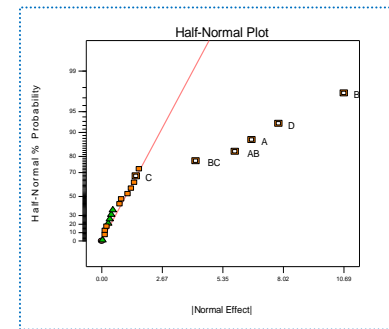
Go to <http://www.statease.com/prodbook.html> for details and ordering information on the books listed above.

What's New

Those of you who've used previous versions of Design-Expert software will be impressed with the many improvements in Version 8. Here are the highlights:

New graphics and improved interface

- Half-normal selection of important effects on all factorial designs*: *Simple and robust method for selecting important effects—formerly available only for two-level designs. For example, the screen shot to the right is from an experiment on 5 woods glued with 5 adhesives, using 2 applicators with 4 clamps pressures. The vital effects become apparent at a glance!*

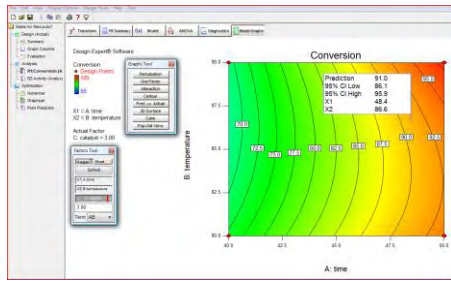


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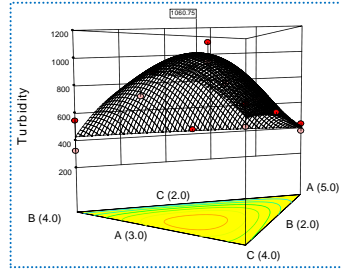
*(Detailed in "Graphical Selection of Effects in General Factorials"—winner of the Shewell Award for best presentation at the 2007 *Fall Technical Conference*, co-sponsored by the American Society for Quality and the American Statistical Association.)

- Smoother color gradations on 2D contours: *More impressive for presentations to management, clients, or colleagues.*



- Rounded contour values: *More presentable defaults requiring less 'fiddling' for reporting purposes.*

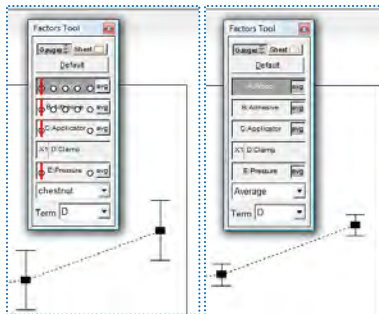
- Plant flags on 3D surfaces: *Previously, you could only put flags on 2D contour plots. To the right we see a flag planted by numerical optimization on turbidity of a detergent formulation via mixture design—a specialized application of response surface methods (RSM).*



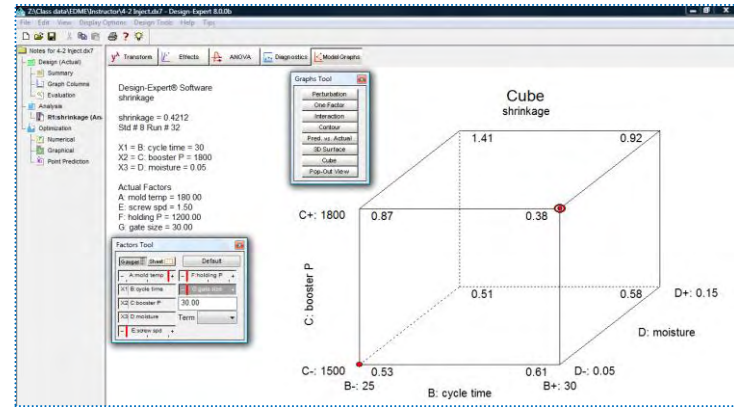
- New and fully configurable mesh option that reflects smooth, lighted colors off your 3D surface: *Dazzle your customers and colleagues while providing highly-informative graphics showing how responses will react to process changes. (Mesh can be turned off if you like.)*

- 3D graphs that you can spin with your mouse: *When you see your cursor turn into a hand (🖱️), simply grab and rotate! Double-click the graph to go back to the starting angle.*

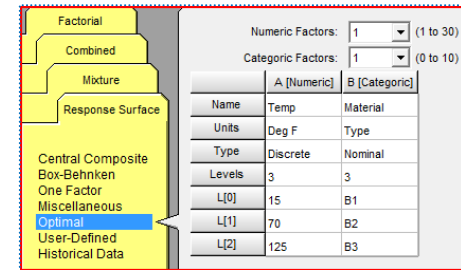
- Push-button averaging on the factors tool: *Provides far easier main effects plotting and makes interactions more meaningful. Previously, the only option to average factors came via a hidden drop-list. The screen shot series at right shows the result of simply pressing the "Avg" for 5 woods glued with 5 adhesives using 2 applicators at 2 pressures. This causes the least significant difference (LSD) bars to shrink, revealing an important difference between two particular clamps.*



- More-interactive cube plots: *Click on design points to see factor levels and response predictions on graph legends, as below.*



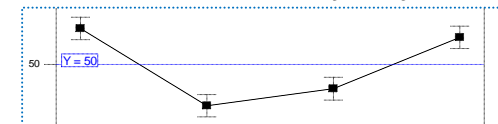
- Direct setting of discrete (fixed) numeric levels in response surface designs: *Limit factor settings to reasonable levels but still produce continuous models. The example to the right shows that 3 battery types must be tested at 3 discrete temperatures.*



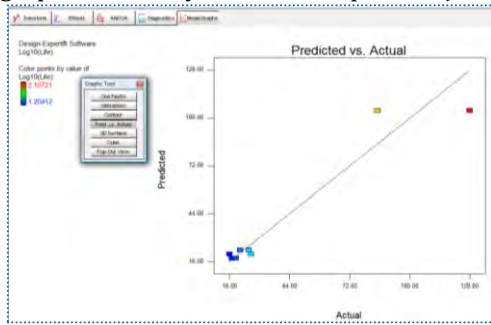
Previously, this would have been possible but very tricky via a work-around. Now it's easy!

- Discrete factor levels adhered to in numeric optimization: *Find the most desirable setting for factors that are not continuous, such as the number of passes through a spray coater.*
- Enter input variables vertically (as shown above): *When entering many levels, this may be more convenient than the horizontal layout.*

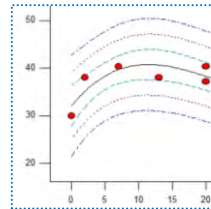
- Reference lines on plots: *Horizontal, vertical, and free style-lines enhance plots. At the right it becomes completely clear that four clamps tested for a wood-adhesive application fall into two distinct groups—acceptable versus not acceptable, based on a cutoff of 50.*



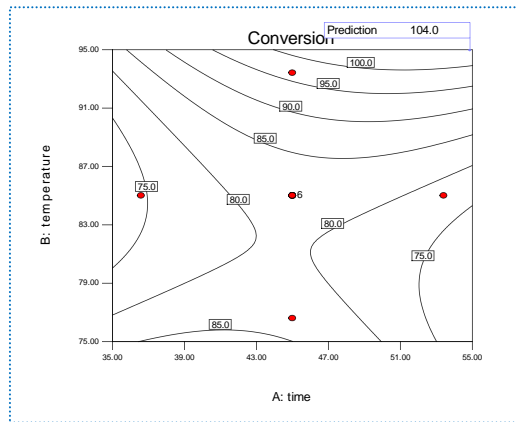
- Predicted vs. Actual graph availability in Model Graphs, not just in Diagnostics: *This is useful when a response has been transformed because in Model Graphs mode, you can change the view back to the more relevant original scale.*



- Confidence, prediction, and tolerance intervals (CI, PI & TI) plotted with configurable colors in one-factor response plots: *Convey prediction uncertainties via bands around the best fit. The screen shot at right shows actual run results represented as red circles. The solid line is the predicted value based on the polynomial model. The bands are the CI (narrowest), PI, and TI (widest).*

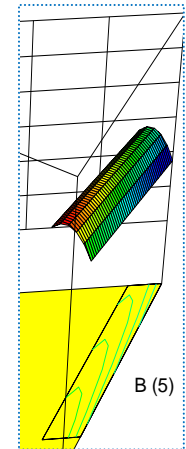


- Color-coded response surface graphs show where standard error increases: *This makes it easier to understand why a predicted response will get you in trouble by extrapolating beyond actual experimentation regions. The example at right shows a flag set beyond the axial points of a central composite design—making the prediction meaningless.*



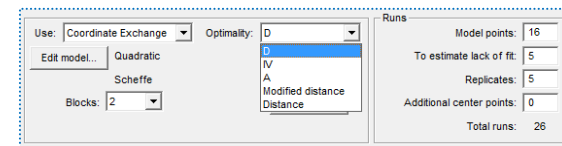
Better mixture design and modeling tools

- Partial quadratic mixture (PQM) analysis: *Model non-linear blending behavior most effectively. The example at right shows an orange drink formulated using artificial flavorings. Primary taste intensity, as measured by a sensory panel, proves to be non-linear in a way that is modeled best using PQM.*
- Design for linear plus squared terms in mixture models: *Reduce the number of blends required for optimally-designed experiments that reveal non-linear blending.*
- Design for special and full quartic mixture models: *Capture extremely non-linear relationships among all components.*
- Blocking expanded to simplex mixture designs: *For example, blend your cakes and bake them in two oven batches.*
- Trace plot options show end points as actual values when building designs using U-pseudo coding: *The upper ("U") bounded approach is advantageous when inverting regions in certain constrained mixture situations. However, due to axis flipping, it's easy to misinterpret trends when viewing a trace plot without this new feature.*
- Increased limit on components for screening and historical* designs. *Design-Expert now handles up to 50 individual ingredients—up from 40 and 24, respectively.*
*(An example is happenstance data collected by assaying retained samples from a period of material production.)



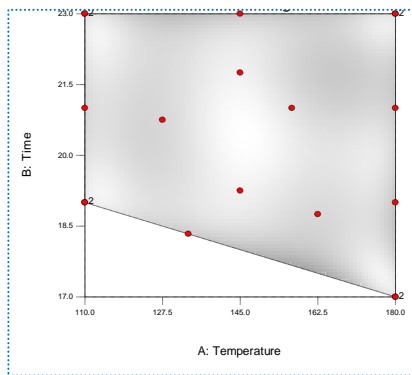
More choices when custom-designing your experiment

- D-, IV-, and A-optimal design selection: *New and expanded criteria when crafting experiments to models of choice within realistic constraints.*

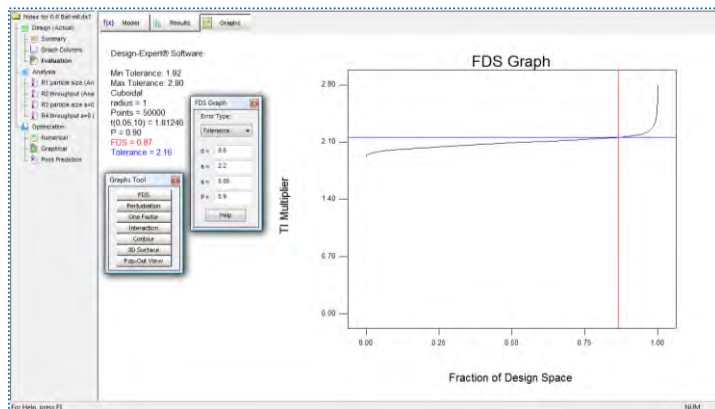


- Constraints calculator: *Simplifies derivation of constraint inequalities.*

At right, food scientists cooking starch must bake it longer at low temperatures. With program Help guidance, the design space's lower left corner can be excluded using a multilinear constraint equation generated from a few user inputs. An optimal design is then fitted to this region.



- Tolerance-interval-based design sizing: *Enhances your fraction of design space (fds) plots to assess whether your planned experiment is large enough, given the underlying variability (noise), to establish tolerances within the acceptable range.*



Additional statistics and more concise reporting of vital results

- Improved curvature testing for factorials with center points: *All design points are now fitted to the polynomial model used for predictions. This provides a more realistic impact of significant non-linear response behavior. Diagnostics can be done for the model adjusted for curvature or, via a view option, unadjusted. Models without a term for curvature (unadjusted) are used for model graph and point predictions.*

- Coefficients summary: *After modeling your response(s), see a concise table of coefficients that's color-coded by relative significance. Below, the second response is modeled only by main effects, two being significant at the $p < 0.1$ level.*

Term	Block 1	Block 2	A	B	C	AB	AC	BC	A ²	B ²	C ²
Summary	01.8032	-1.91975	1.92845	4.94057	6.30299	2.125	11.375	-3.875	-1.89087	2.977	-2.24272
Graph Columns	on		0.3798	0.0514	0.0003	0.1174	-0.8891	0.0257	0.1138	0.0281	0.0089
Activity	00.2003	0.14375	-0.14375	4.20988	0.254816	2.22697					
R1 Conversion (Analyze)				-0.0081	0.3825	-0.0081					
R2 Activity (Analyze)											

- Condensed "Fit Summary" table: *See vital details on model choices before delving into all the particulars. Below you can see why the program recommends one model over others (note the superior R-squared values for quadratic).*

Source	Sequential p-value	Lack of Fit p-value	Adjusted R-Squared	Predicted R-Squared
Linear	0.1640	0.0442	0.1374	-0.4052
2FI	0.0083	0.1442	0.5503	0.3591
Quadratic	0.0017	0.8574	0.8581	0.7891
Cubic	0.8636	0.4836	0.8396	-3.8399

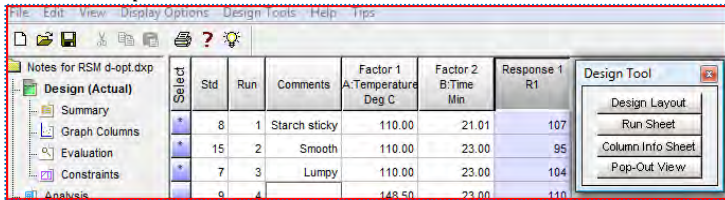
- Tolerance interval (TI) estimates on point prediction: *This is important for verification studies to ensure your process stays within manufacturing specifications. For example, the TI shown below provides assurance that thickness will remain within a required range of 4400 to 4600.*

Factor	Name	Level	Low Level	High Level	Std. Dev.	Coding
A	Spin speed	7296.87	6650.00	7200.00	0.000	Actual
B	Accelerate	16.83	5.00	20.00	0.000	Actual
C	Volume	3.42	3.00	5.00	0.000	Actual
D	Spin time	10.00	6.00	14.00	0.000	Actual
E	Resist	Vendor A	Vendor A	Vendor B	N/A	Actual
F	Exhaust	Cover off	Cover off	Cover on	N/A	Actual

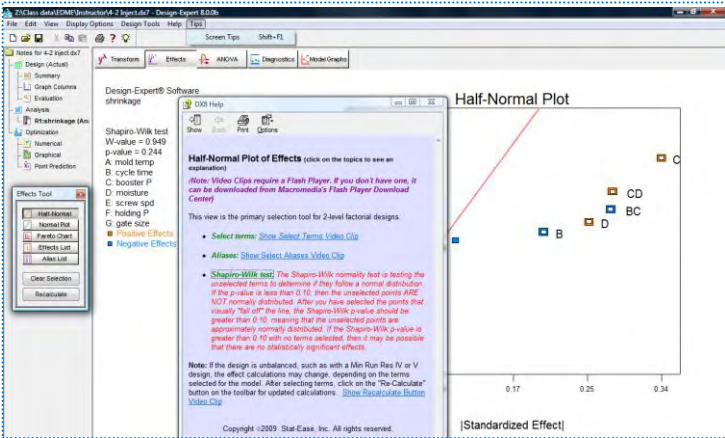
Response	Prediction	SE Mean	90% CI low	90% CI high	SE Pred	90% PI low	90% PI high	90% TI low	90% TI high
Thickness	4500	5.39	4408.57	4511.44	15.57	4496.99	4533.82	4458.52	4543.49

Increased visibility and versatility of tools and features

- Many new, high-visibility tools: *Options previously available via hidden View menu options are now easily seen and capitalized upon. The Design Tool shown 'floating' on the screen shot below is one example.*
- Design layout column widths now adjust automatically by double-clicking column-header boundaries: *Multiple columns adjust simultaneously!*
- Attach row comments by right-clicking on row headers: *A handy way to record important observations, as shown below.*



- Topic Help, Tutorials, and Sample Files now also reside in the main Help menu: *Follow these alternate paths for getting timely program advice.*
- Screen Tips is now a main menu item ("Tips"): *Great visibility and easy access to very useful just-in-time advice, shown below.*



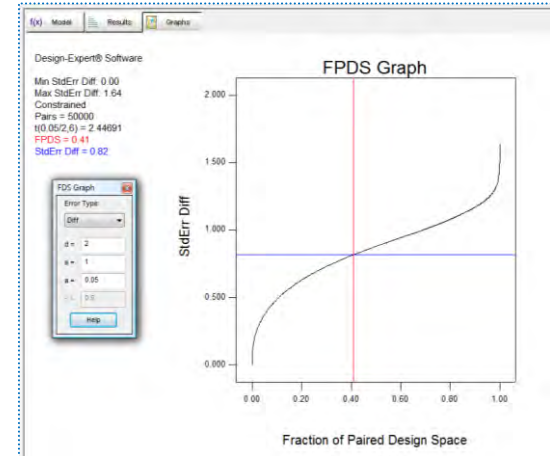
- Response surface method (RSM) models can be fitted with factors in their actual levels: *This enables no-intercept model functionality.*

Enhanced design evaluation

- Several new matrix measures are now provided: *Most notable is the G-efficiency.* (This criterion, expressed on a 0 to 100 percent scale with higher

being better, leads to designs that generate more consistent variance of your predicted response. However, like any other single measure, it may not accurately reflect the overall effectiveness of a particular matrix. That's why Design-Expert provides an array of matrix statistics and graphics for overall design evaluation.)

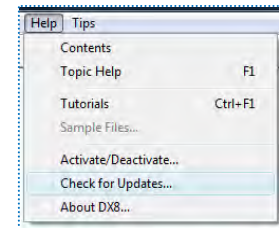
- Fraction of paired design space (FPDS): *This resourceful tool lets you assess the power of RSM or mixture designs to detect specified signals (response differences judged important) in the presence of noise (system-standard deviation). At right, less than half the design space reveals the difference of interest. Ideally, this exceeds 80 percent, so here the experimenter should consider adding more runs to the design.*



- New, powerful tools for multiple response optimization: *Options include standard error models. All else equal, choose system settings in regions predicted to exhibit the highest precision.*

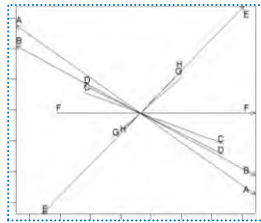
Many things made nicer, easier faster throughout the program

- One-click updates: *Check for free releases with one press (shown at right) and download them directly.*

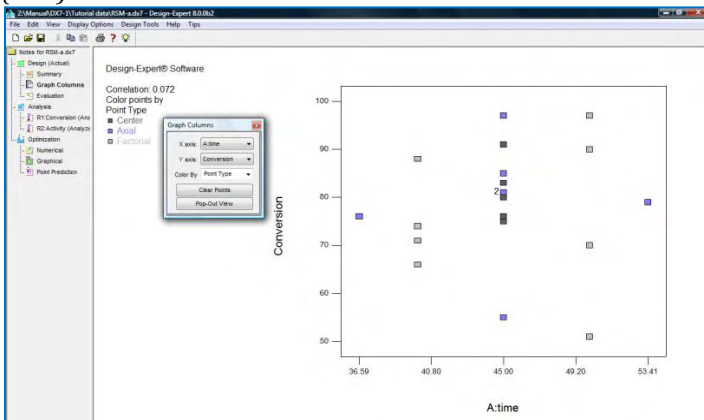
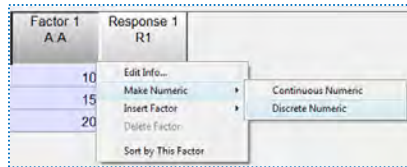


- Better defaults and tick marks: *Nicely rounded values provide presentable graphs straight away.*
- Zoom up graphs with your mouse wheel (a right-click resets to original size): *Quickly zero in on regions of interest.*

- Hold down your left mouse button to drag graphs into various positions (a right-click resets original placement): *It's a fast way to situate the region of interest where you want it in the coordinate space. Components G and H in the mixture trace plot at right are constrained to very tight ranges relative to other ingredients. They are hardly visible without first zooming and then dragging the intersection (the overall centroid of the formulation space) to the middle.*



- Separate preference tabs for X-Y versus surface graphs: *DX8 delivers plotting and graphing simplicity.*
- Reduced graph-updating flicker: *Now it's less distracting when you redraw responses at varying input-variable levels.*
- Categorical factors (established via general factorials, for example) are now convertible to discrete numerics: *This lets you apply response surface methodologies while adhering to processes that run most conveniently only at specific settings.*
- Color-by-point-type added to graph columns: *Very useful addition to scatter-plots, such as this one below for a central composite design (CCD).*



- Upgraded MFC (Microsoft Foundation Class) common controls: *This new application framework provides an improved look and feel.*

- XML utility offers new script feature that lists all possible commands. You can parse files with extensions other than .xml. It also provides new import/export/reset-preference commands: *More power to operate Design-Expert programmatically.*

Getting Started

The first thing to do upon receiving Design-Expert is to **register your copy**. Either complete and submit the online registration form, or complete and return the registration card attached to the license agreement included in this manual. You must register the software to validate your warranty, qualify for free program and statistical support, and become eligible for future updates. If this software is installed on a network, please send us a list of all users so we can keep them informed of the latest developments.

Version 8 of Design-Expert software is shipped on a compact disk (CD) and can also be downloaded via the internet. It runs on 32-bit and 64-bit Microsoft Windows®. The CD includes the following:

- Design-Expert installation files
- Tutorials (and user guides) in Adobe® PDF format
- Adobe Acrobat Reader shareware

Hardware and operating system requirements appear below:

Component	Minimum	Recommended
Processor	Pentium III 800 MHz	≥Pentium IV 1 GHz
Hard Drive	50 MB free space	≥50 MB
RAM	256 MB Windows XP 512 MB VISTA or Windows 7	≥256 MB Windows XP ≥512 MB VISTA or Windows 7
Display	800x600	≥1024x768
OS	Windows XP	≥ XP (Vista or Windows 7)

Single-User Installation

Compact Disc (CD)

Disable all virus-protection software and firewall defenses. Insert the CD-ROM into your drive. The installation should automatically start via the auto run feature. If it doesn't, then

- Open the **My Computer** folder by double clicking the desktop icon.
- Open the **CD-ROM** folder in the same manner.
- Launch the **Install.exe** program by double clicking its icon.

The Stat-Ease logo appears, followed by the main menu, which offers four choices. Click **Install Design-Expert 8**. Choose **OK** to install the software.

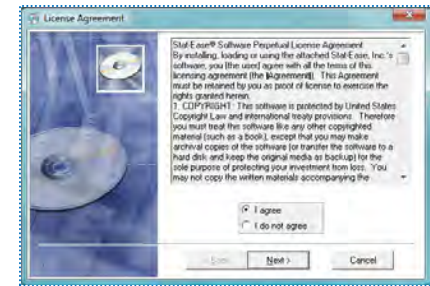
Skip ahead to the **License Agreement** section below.

Internet Download

If you purchased the software via the web and chose the download option, the program transmits in a single file named **dx8single-esd.exe**. Using Windows Explorer, find this file in your chosen download folder and double click it to begin installation. The Stat-Ease program group in the Start menu contains a shortcut named "...Installation Notes..." that should be referred to for instructions specific to downloaded software (versus details below that relate more to content delivered via CD-ROM).

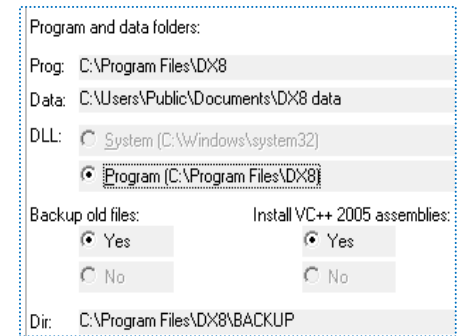
License Agreement

Once launched, the installation program loads and displays the license agreement shown above. Read the agreement. If you accept the terms, click **I Agree** and press **Next** to continue. If the terms are not acceptable to you, choose **Cancel** to abort the installation.



Installation Steps

Should you accept, a **Welcome** dialog box appears offering you the choice of either **Express** or **Custom** installation. The express option uses the recommended default settings for your installation (pictured in screen shot). If you need to change any of these settings, go back and choose the custom installation and a series of dialogs will lead you through those choices.



Next you are asked to provide the **Registration information**. Fill in your name, organization, and serial number. The program is now ready to be installed. Choose **Next** to begin copying it. Then click **Finish** to return to the main menu.

Once installed, you are asked to activate the software. *Note: If you cannot connect to the Internet or call Stat-Ease, then skip the activate step (uncheck it) until you run the program.* Consider registering the software online now or uncheck it and simply fill out and mail the handy postcard registration included with your CD-ROM. To register later via the internet, open the “Read Me” file in the Stat-Ease program group and click the link labeled www.statease.com/dx_register.html.

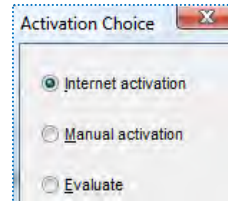
Select **Exit** when finished with the installation program.

Activating the Program

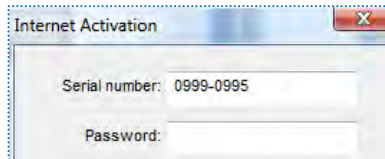
If you did not activate the program during installation, the first time you run the program you will be asked to activate it by one of three choices at right: Internet, Manual, and Evaluate. (Choosing Evaluate allows use up to 45 days, during which you can activate any time via the Help menu.)

Internet Activation is the quickest and easiest way to enable

Design-Expert. Enter the password sent to you with the corresponding product serial number and click OK. A valid code immediately activates your program.

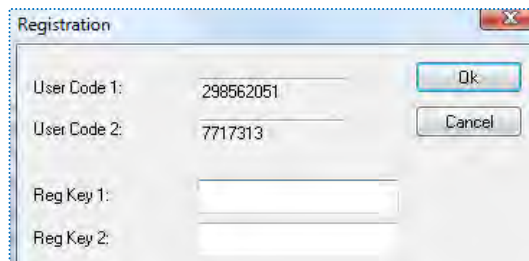


If your computer isn't connected to the internet, you must choose **Manual Activation**. Send Stat-Ease the two User Codes found in the Registration box along with your serial number. We'll send you all necessary Reg Key(s). Contact us by phone, fax, or e-mail at support@statease.com. Because there may be a delay in receiving your registration keys, you can run the program in Evaluate mode up to 45 days until the program is activated.



How to Uninstall the Program

When uninstalling the program, you will be given the opportunity to deactivate it first. This aids reinstallation on another computer by averting the need to contact Stat-Ease for manual reactivation. The uninstall process will ask for a



password to deactivate the software so have it handy before you begin. You'll find it with the serial number on the label affixed to the back of the original packaging.

To uninstall Design-Expert software, use the Add/Remove Programs utility found in your Windows Control Panel. Choose the Install/Uninstall tab, then select the program from the list and click Add/Remove. Follow the instructions to remove the program.

Running the Program

A Stat-Ease program group resides within Programs in your Start menu. There are several shortcuts in this group, including your Design-Expert program, Read Me file, and Manual/Tutorials group (an option described above). Simply click on the Design-Expert icon shown at right to execute the program. If your computer is set at only 16 colors for icons, you'll see a lower-resolution icon that doesn't appear bright and crisp. See the Appendix for information about changing your computer's desktop to display 256 icon colors. You'll also see alternative icons you can use.

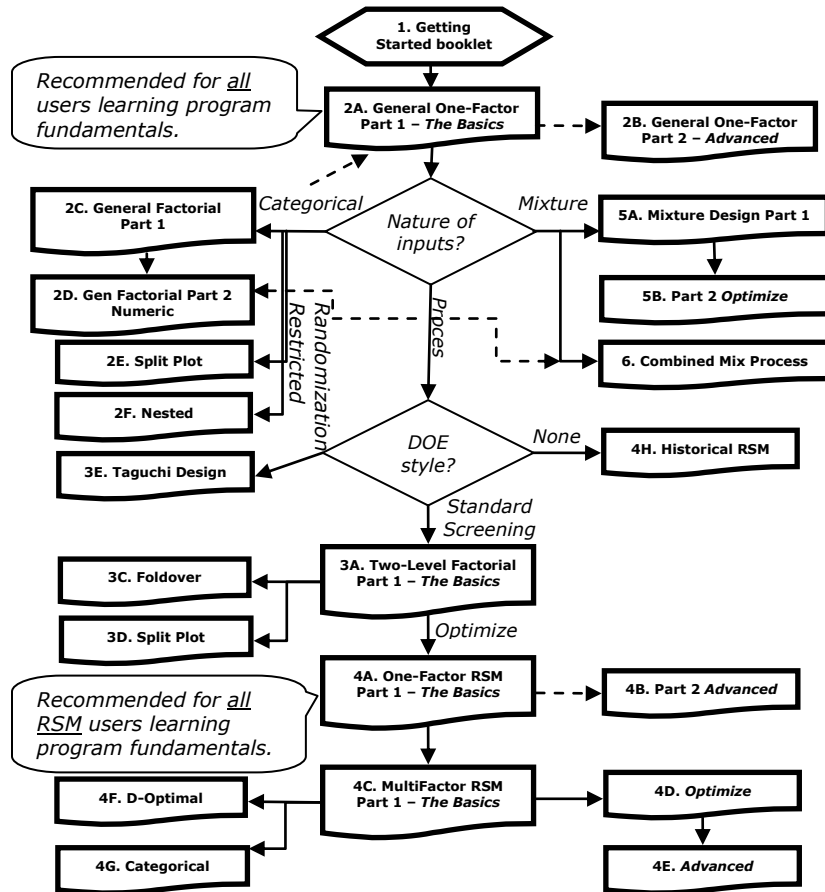


Network Installation—See the Appendix

How to Access Tutorials

Your installation CD-ROM includes tutorials for Adobe Acrobat's portable document format (pdf) that are viewable using their free Reader software. The tutorials are also available via the internet at http://www.statease.com/dx8_man.html.

The flowchart below provides guidance on choosing tutorials. Titles correspond with the pdf file names.



How to Get Support

Before calling for support, be sure to look at:

- ◆ The tutorial "DX8-02A-Gen1Factor-P1." The path you follow from here in the User Guide depends on the type of experiment you wish to design and analyze.
- ◆ The "Program Hints and FAQ" section in our Design-Expert program Help. (Frequently asked questions (FAQ) also reside in our "Read Me" file installed in your Stat-Ease folder).
- ◆ The Stat-Ease web site (listed below) for downloadable program patches (free!) and updated documentation in portable document file (PDF) format that's viewed using the free Adobe Acrobat Reader.
- ◆ Information and online discussions are also available in our Stat-Ease support forum (see below). You may visit anonymously or register to post questions and comments.

To obtain program support from Stat-Ease, you must be a registered software owner or a user on a licensed network. The quickest way to get help is to call us, but e-mail works particularly well because you can attach your data file. Please provide your Design-Expert version number and serial number before stating your question.

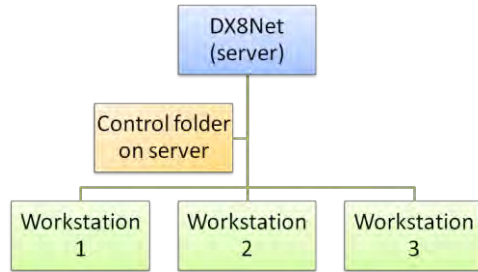
Here's how you can reach us:

Website: www.statease.com
 Forum: <http://forum.statease.com>
 E-mail: support@statease.com
 By mail: Stat-Ease, Inc.
 2021 East Hennepin Ave, Suite 480
 Minneapolis, MN 55413
 Phone: (612) 378-9449
 Fax: (612) 746-2069

We do provide limited free help of a statistical nature. It never hurts to ask! However, we may suggest that you purchase some statistical consulting. Often we can give you valuable help with only a few hours of paid time. For a free cost estimate (and perhaps a free answer to your problem!), give us a call and ask for statistical help, or e-mail: stathelp@statease.com.

Appendix: Network Overview

The network version of Design-Expert 8 has two principle components—a server installation and a workstation installation. Server components are installed from the CD provided with your purchase. It creates and populates the folder containing the executables for the application and creates a control folder for network metering. By default, the application folder is named DX8Net and contains the Control folder.



Workstations are set up by the WrkSetup.exe program that is found in the DX8Net folder on the server. Any number of workstations can access the software, but only the designated number of seats for this license can be used simultaneously.

Standard (default) installation:

1. The program resides in the server in the DX8Net application folder.
2. The control folder is named “Control” and resides in the DX8Net folder.
3. Workstations are set up as follows:
 - a. From the workstation, navigate to the DX8Net folder and run WrkSetup.exe
 - b. Choose Server-based install. This sets up a shortcut to the program on the server and establishes a file association for the .DX8 file type.

With standard installation, the program loads from the server into the workstation memory. Once loaded, the program checks the custdata.ini in the DX8Net folder on the server for the location of the control folder. It then checks the semaphores in the control folder to determine the number of seats in use and compares that to the server license file

(user.ini). If a seat is available, the program launches; otherwise it terminates with a message stating no more seats are available.

Designate a custom control path:

Having the control path in the application folder may not be practical. You may want it in a different location on your server or perhaps on an entirely different server. This is accomplished as follows:

1. Create a new folder and give its contents read/write privileges.
2. Edit the custdata.ini and add the following line to the network section:

```
[Network]
```

```
ControlPath=\\server\controlpath
```

Where “\\server\controlpath” is the new control path.

Install executables on the workstation (client-based install):

If you have a slow network connection, you may want to install the executables on the workstation. In this scenario, the only network activity required is for the program to read the remote custdata.ini and user.ini file, then check the control folder for available seats. All other processing is done locally.

1. Run WrkSetup.exe to install the client.
2. Choose client-based as the installation type.

Executables are installed locally, but there will be no local user.ini. Also, the custdata.ini will contain just the following:

```
[Network]
```

```
NetworkPath=\\server\networkpath
```

Where “\\server\networkpath” is the path to the DX8Net application folder on the server.

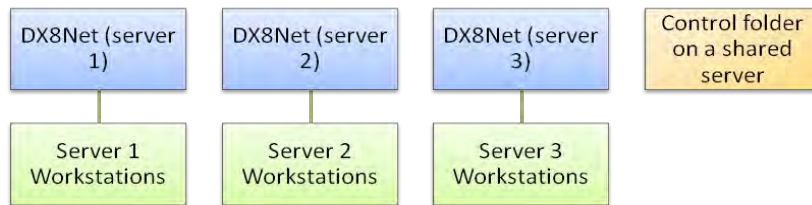
Automate the workstation setup:

The workstation setup program, WrkSetup.exe, can run as a silent install by running it with a “/s” parameter. Although this invokes the standard defaults, you may override them with directives placed in a text file, AUTO_CLIENT.INI.

Network: Multiple Location

If you have multiple locations in your organization, a single server may run slowly. Although the network version was originally designed on the single server model, there are ways to improve performance.

1. Install the program as Client-based. This installs the executables on the workstation. With this configuration, the program only needs to visit the network to check the license file and see if seats are available. One drawback to this approach is the need to update each workstation when a new version (or update) is applied.
2. Install the server program on multiple servers (one for each location). The control folder needs to reside on a server that is accessible from the workstations at all locations. In this scenario, each workstation runs from its own local server while obtaining a license from the common control folder on a shared server.



Network Installation Instructions

Design-Expert software runs on Windows, Novell, and other common networks. Please limit concurrent usage to the number of seats purchased. Also, we ask that you provide Stat-Ease with a list of all likely users so we can keep them informed of the latest developments via our newsletter.

To install the software on a network, you need to have purchased the network installation of Design-Expert. This CD is identified with the words “Network Version” on its label.

Disable all virus-protection software and firewall defenses. Insert your CD-ROM into the drive. The installation should start automatically via the auto run feature. If not:

- Open the **My Computer** folder by double clicking the icon on the desktop.
- Open the **CD-ROM** folder in the same manner.
- Launch **Install.exe** by double clicking on its icon.

The Stat-Ease logo appears, followed by the main menu with four choices. Click **Install Design-Expert 8**. Select **OK** to begin installation.

License Agreement

The installation program first displays the license agreement. Read the agreement. If you accept the terms, click **I Agree** and press **Next** to continue. Otherwise, choose Cancel to abort the installation.

For network installations, Stat-Ease requires that you limit the number of concurrent users to the number of seats you have purchased. We provide built-in metering for that purpose. For information on this, see the section titled **Network Installation Notes** found later in this appendix.

The activation code provided by Stat-Ease automatically sets the built-in metering for the number of seats you have purchased. If you have your own metering software and wish to use that instead, please contact us for a new activation code.

Next select the destination directory on the network drive. This folder should be designated read-only to your users, but they must have full access to the **control** sub-folder.

Proceed with installation by filling out the registration information and optional file backup. The installation program copies the program files to the directory along with a workstation setup program named **WrkSetup.exe**. When it finishes copying the files, the setup sets the attributes of all the files to read-only. If you need the files to be read/write, select all files in Windows Explorer, right click, and choose Properties. Clear the check mark on the Read Only choice and click on Apply.

Another file, **custdata.ini**, contains the registration information you entered for this product (name, company, and serial number). You can edit this file with Notepad (or another suitable editor) if changes are needed. Note that the workstation setup program uses the serial number in this file. If it is invalid, users are asked for the serial number every time they launch the program. *Be sure the serial number is entered correctly!*

Activation

As with the stand-alone version, the network version must be activated by an administrator. Launch the program from a remote workstation (not the server console) and activate it via either the internet or manually as described in the instructions for the stand-alone version.

Workstation Setup

To set up a workstation, log into the network resource from the workstation you are setting up and run **WrkSetup.exe** from the Design-Expert folder. This sets the program group and shortcuts, and installs local dll's (optional). You'll need to run this setup program from all machines accessing the program's network copy.

If the User Guide folder has been installed in the Design-Expert folder under the default name "User Guide," the workstation setup creates a shortcut to it as well.

In addition to choosing Express or Custom settings, you can select either *Server-* or *Client-*based configurations shown at right.



If you choose a server-based configuration, the program always launches from the server.

A client-based configuration copies all program and help files to your local hard drive. Design-Expert then runs from your local drive after checking the server for available licenses. This option may be desirable if you have a sluggish network connection.

Caution: If you execute a client install, you'll need to repeat a client-based configuration install for any upgrades. This doesn't need to be done all at once, though, as the older version will continue to run.

Making the User Guide Available to Network Users

We recommend that all users be given access to a hard-copy manual. Call Stat-Ease to purchase additional copies. However, as an option, you can store the manual in electronic form and view it with Adobe's Acrobat Reader. If you do not already have this software, click Install Adobe Acrobat Reader.

The manual and tutorials reside on the CD in Adobe's portable document format (pdf). They can be installed on your system using the "Install User Guide" button on the Stat-Ease main menu.

To view the manual, double click the User Guide icon in the Stat-Ease group. Adobe Acrobat Reader launches automatically.

- Or -

Click the Adobe Acrobat Reader software icon. Next click File, Open. Select the section you want to view (labeled *.pdf) from the DX8 directory. The rest is self-explanatory.

Users may find it easier to print the contents for reference while operating the Design-Expert program. In all cases, users need Adobe's reader program to view or print tutorials.

Other Considerations

If Design-Expert is installed on a read-only network drive, someone with system administrator authority needs to enter a valid serial number when prompted.

In general, install Design-Expert in a network directory with read and directory list privileges. Each workstation needs its own program item (and program group, if desired).

If this installation is an upgrade from previous versions, please uninstall the older ones once Design-Expert is running properly.

Files

Installed within the Design-Expert version 8 software ("DX8") program folder are:

- **deactivate.exe**, deactivates license during uninstall
- **dx8.exe**, main program (single user only)
- **dx8net.exe**, main program (network installation only)
- **dx8helpfile.chm**, HTML-based help file
- **custdata.ini**, customer data used by Design-Expert
- **read_me.htm**, program update information and tips
- **user.lf**, license file
- **license.txt**, license agreement
- **unwise.exe**, WISE Uninstaller—removes Design-Expert
- **install.log**, installation log file used by unwise.exe.

Installed within either the Windows/WinNT system32 folder or the Design-Expert program folder, depending on user's choice, are:

- **mfc*.dll**, Microsoft Foundation Class 8.0 library (4 files).
- **Microsoft.VC80.MFC.manifest**, for mfc*.dll files.
- **msvc*.dll**, MS Visual Studio 2005 C++ library (3 files).
- **Microsoft.VC80.CRT.manifest**, for msvc*.dll files.
- **keylib32.dll**, license key library.

Intel Math Kernel Library (MKL):

- **libguide40.dll**, Library index.
- **mkl_*.dll**, 11 files.

Other files (network only):

- **vcredist_x86.exe**, installs MS VS 2005 C++ files.

- **WrkSetup.exe**, Workstation setup utility.

Network Installation Notes

Design-Expert software runs on Windows, Novell, and other common networks. By default, the program uses built-in metering to limit concurrent uses to the number of available seats. If you prefer to use your own license control system, please contact us for proper authorization.

Central (Server-Based) versus Distributed (Client-Based)

Our standard network installation copies program files to a shared folder on a central server. Included in this folder is a workstation setup program, **WrkSetup.exe**, which creates local shortcuts, a data directory, and (optionally) installs the **dlls** to your local machine. In this case, the network acts as a file server for Design-Expert. When users run the program from workstations, **.EXE** loads into the local machine's memory across the network.

Built-in metering, which limits the number of concurrent users to the number of seats you purchase, uses a control folder to manage the license. Users must be given full access to this folder. When Design-Expert launches, it checks for available seats. If one exists, the program runs—otherwise the message “User Limit Exceeded! Maximum license(s) (#) in use.” appears and access is denied. (“#” refers to the total number of licenses being used).

Server-based installs may be too slow for users on low-speed network connections. Alternatively, you can install individual copies on each workstation, regulated by a central metering system. Distributed network installs launch from a local drive only after checking with the server for available seats. Built-in metering supports this model. You can choose it when you run the workstation setup.

Operation

When the Design-Expert network version launches, a semaphore file writes to the **control** folder. As other copies launch, each creates its own semaphore as long as the number of licenses is not exceeded. If all licenses are in use when a user launches Design-Expert, a message displays and access is denied.

For metering to work properly, users must have read/write access to the **control** folder. Furthermore, the correct license file **user.ini** must be located in the control folder, and files **machnm1.exe** and **keylib32.dll** must

be located either in the program or the system32 folder. If any of these are missing or incorrect, an error message displays and the program will not run.

Control Path

By default, the control path is a folder named “control” that resides within the Design-Expert application folder. If you prefer a different location, you may specify it in network section file **custdata.ini** with the following entry:

```
[Network]
ControlPath=<path>
```

where <path> is the path (either absolute or relative from the program folder) that includes the folder name. For example:

```
ControlPath=\\SERV6\APPL\DX8_Control
```

Whichever control folder you choose, it must exist before launching Design-Expert or the program terminates, stating that no more licenses are available.

License File

If you do not specify a control path, the active license file **user.ini** will be located in the DX8Net application folder. If you specify a control path, including “.\Control”, the active license file will be located in that path.

Network Type

There are three recognized network types, “server,” “client,” and “any.” With “server” type, only a server-based install is available via the workstation setup because the client-based option is disabled. The “client” type allows only the client-based configuration. The “any” choice allows workstations to be set up in “server” or “client” configuration. By default, the network type sets to “Any” if you are using the Stat-Ease built-in metering or to “Server” if you are using your own metering. This option resides in file **custdata.ini** within the network section.

```
[Network]
NetworkType=<type>
```

where <type> is “Server”, “Distributed”, or “Any”. For example:

```
NetworkType=Any
```

“Any” is the default value if **NetworkType** is not found in the network section of file **custdata.ini**.

Network Path

If you choose to install the program on the workstation drive, a local **custdata.ini** file is created containing the following lines:

```
[Network]
NetworkPath=<path>
```

where <path> is the path (either absolute or relative from the program folder) to the application on the server. For example:

```
NetworkPath=\\SERV6\APPL\DX8Net
```

All other information normally found in file **custdata.ini** is in the copy residing in the application folder on the server.

File Overwrite

On networks with restrictive combinations of share and security privileges, users may not be able to save over existing files unless the following directive is added to file **custdata.ini**:

```
[Network]
DeleteBeforeSave=1
```

This is the default setting for network installations—not for single user installations. If you are using a standalone copy of Design-Expert and writing to a network drive, you may need to add the above directive to your **custdata.ini** file. Simply change the value from “1” to “0” if you wish to disable this feature.

Diagnostic Aids

To identify problems while accessing Design-Expert from workstations, view these two registry entries: **ShowPaths** and **TestControl**. These are **DWORD** values that you can create in the **HKEY_CURRENT_USER** hive of the workstation registry under **Software\Stat-Ease\Design-Expert 8\Test**.

ShowPaths is a **DWORD** value that when set to 1 displays upon startup the paths the program is expecting. For example:

```
Program: \\server\DX8Net\
License: \\server\DX8Net\user.ini
Custom: \\server\DX8Net\CUSTDATA.INI
Network:
Control: \\server\DX8Net\control
Help: \\server\DX8Net\Dx8Helpfile.chm
```

TestControl is a **DWORD** value that when set to 1 attempts to write a dummy file to the control folder. A message tells you if it is successful or

not. A failure indicates you, the user, do not have the necessary write access to the folder.

You can disable either of these diagnostics by setting them to 0.

Automating the Client Install

The client install (**WrkSetup.exe**) can be customized to specify new default settings for client type, dll location, local program folder, local data directory, HTML help zone, program group, and network path. You can also perform a silent install (no user interaction or screen display). If you would like documentation on this, please email support@statease.com.

Credits

The following Stat-Ease staff members deserve credit for producing our Design-Expert software:

- Neal Vaughn (project leader),
- Programmers: Hank Anderson, Brian Smith, Zach Kohl,
- Support: Tryg Helseth.

The brains behind the statistical aspects of the software are:

- Pat Whitcomb (founding principal),
- Gary Oehlert (advisor),
- Wayne Adams, Shari Kraber (help writers),
- Sree Seetharam (quality assurance).

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- Heidi Hansel Wolfe, Brian Hansel (graphic designer).

Credit for editorial work for the Getting Started Guide and tutorials go to:

- Mark Anderson,
- Rich Burnham (technical writer).

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- Renee Keller, Karen Dulski, Elicia Bechard.

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