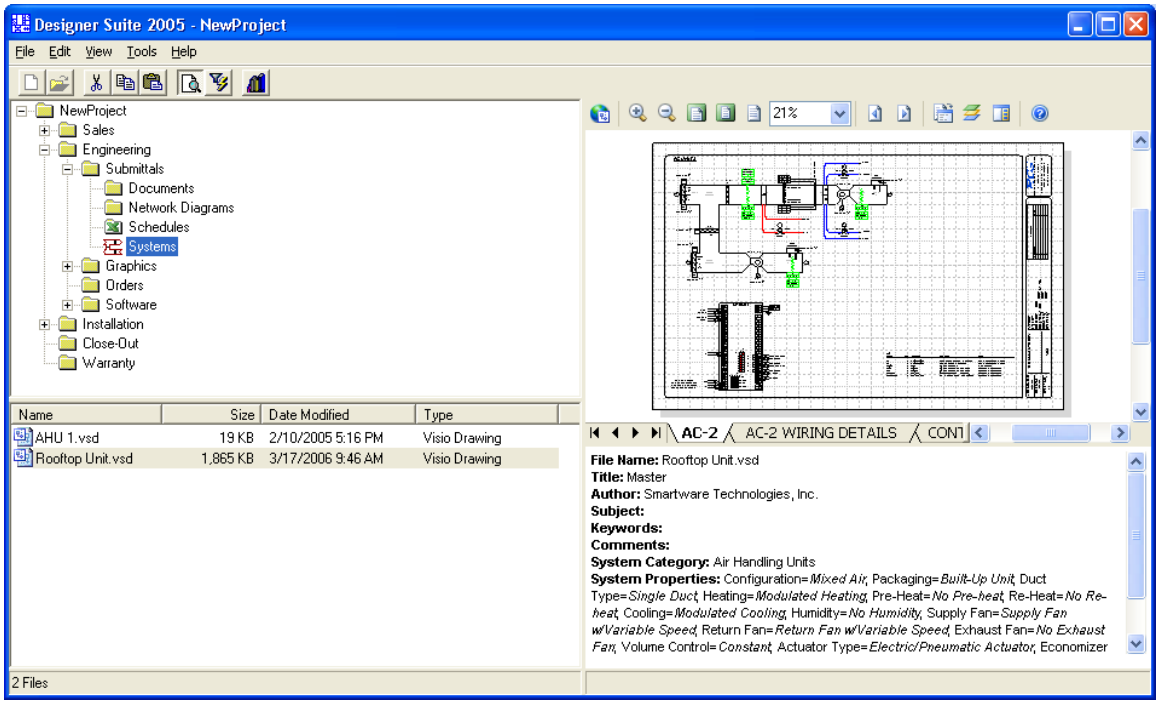
Designer Suite 2005™

User's Guide



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1. Introduction / About This Guide

Designer Suite 2005 is a sophisticated environment for use in all aspects of project development and engineering. With it you can:

- Browse and search over 10,000 parts and view Product Information Cut sheets
- Create and manage folder structures for your projects and their related documents
- Engineer submittal drawings using a broad set of pre-built Visio stencil shapes with advanced properties
- Generate a wide range of material, controller and project reports

About This Guide

This guide is divided into four major parts:

- Part I: *Setup and Configuration*
- Part II: *Designer Suite 2005 Projects*
- Part III: *Designer Suite 2005 Drawing Files*
- Part IV: *Designer Suite 2005 Tools*

Please refer to the table of contents for a complete list of chapters and topics.

Designer Suite 2005 Office Assistant Edition (OAE)

The Office Assistant Edition is the same program and installation file as the full version of Designer Suite 2005. The only difference is that the ability to open and edit Visio drawing files has been disabled. All the installation procedures and other feature descriptions apply equally to both the Office Assistant and Full Editions.

To Learn More about Designer Suite 2005

Many of the topics covered in this Guide are better illustrated through visual examples. To that end, our video training sessions are available for viewing and downloading from our web site. We encourage you to use these videos as part of your training.

Smartware Technologies also offers live 4-day training classes on Designer Suite 2005. Please visit our training site at http://www.bcsco.com/training.aspx for the latest schedule or contact our technical support team.

To Contact Us

Our technical support team is available weekdays from 8 am to 5 pm eastern time at (716) 213-2222. You may also visit our web site at http://www.smartwaretech.com or e-mail us at techsupport@smartwaretech.com.

2. Installing Designer Suite 2005

Before you install Designer Suite 2005, please review the following sections that note a few simple, yet very important prerequisites and configuration issues.

System Requirements

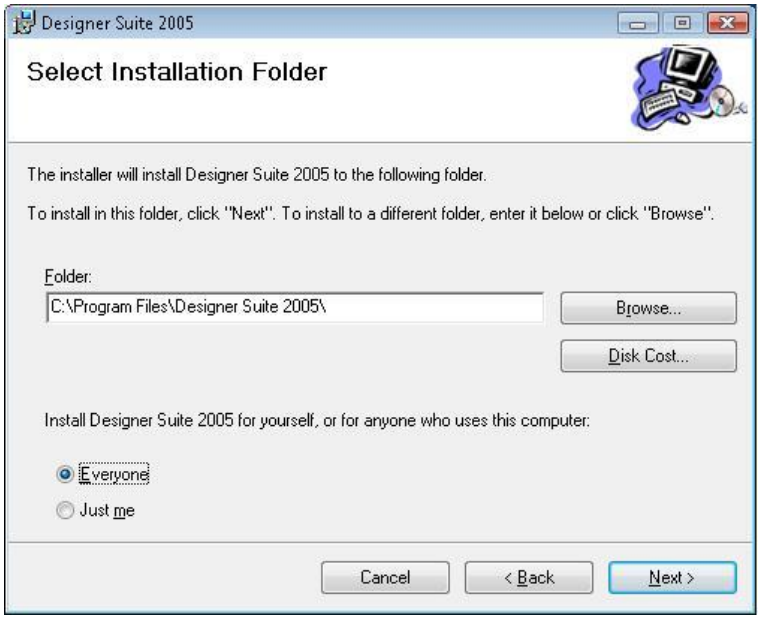
Designer Suite 2005 will run on most any modern Windows-based PC. The following are the minimum and recommended system requirements:

- Windows 2000 or later (Windows XP recommended).
- 1 GHz Processor (2 GHz recommended)
- 512 MB RAM (1 GB recommended)
- Microsoft Visio 2002, Visio 2003 or Visio 2007 (Visio 2003 recommended)
- Microsoft Excel 2002 (XP), Excel 2003 or Excel 2007 (Excel 2003 recommended)

Be sure to install all recommended Windows updates, including the .NET Framework Version 2.0

Special Note when using Windows Vista

When installing Designer Suite 2005 on a machine running Windows Vista, you must install it for “Everyone”, and not “Just me”:



Before You Install Designer Suite 2005

You should install or configure the following components and applications before you install Designer Suite 2005.

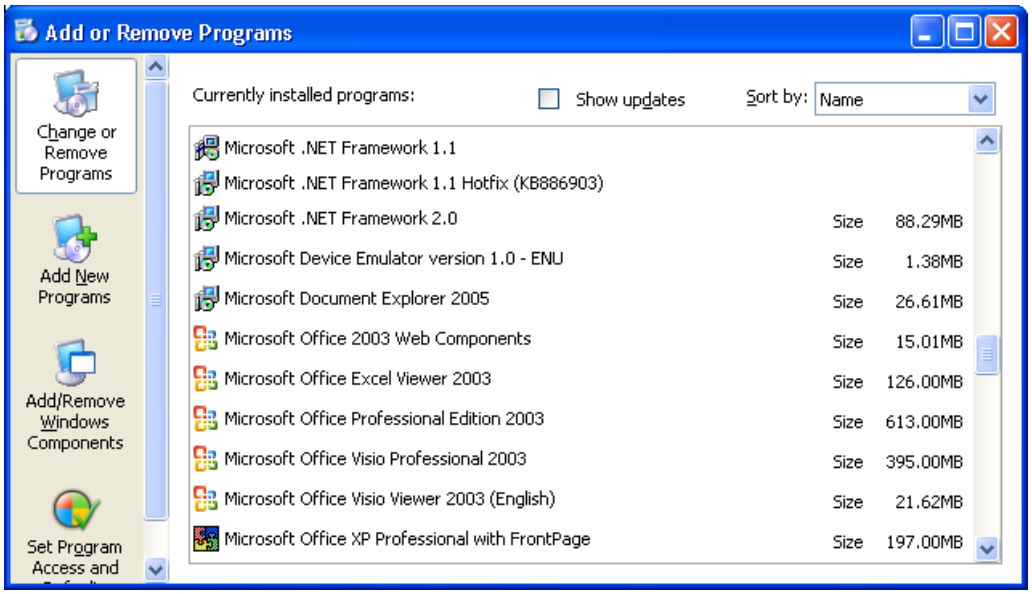
Install Microsoft .NET Framework (Version 2.0)

You should have installed on your machine all available updates and service packs from Microsoft. Specifically, you must have Version 2.0 of the Microsoft .NET Framework installed. The .NET Framework is a run-time environment for modern Windows programs, and generally does not interfere with any other aspect of the operating system.

Each version of the .NET Framework is independent of any others, and installing a newer one does not replace older ones. Previous releases of Designer Suite 2005 required Version 1.1 of the .NET Framework. The current release requires version 2.0. At the time of this writing, Version 2.0 is not yet an automatic update through Windows Update, but an optional one instead. You will likely need to choose it explicitly from the optional update list.

You can also download and install Version 2.0 of the .NET Framework directly from Microsoft. Visit our home page at http://www.smartwaretech.com for a link to the Microsoft download page.

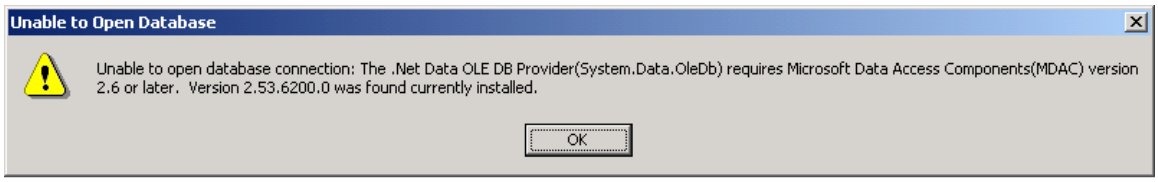
To determine which versions of the .NET Framework are installed, go to ADD OR REMOVE PROGRAMS from the Windows Control Panel.



It is strongly recommended that you DO NOT uninstall older versions of the .NET Framework. There may be other programs installed on the machine that rely on it.

Install Microsoft MDAC Version 2.8 (Windows 2000 Only)

For Windows 2000 Users only, you must ensure that you have the latest version (2.8) of the Microsoft MDAC drivers installed. While most machines do have them, they may not be one of the suggested installations during Windows Update. If you attempt to run certain features of Designer Suite 2005 with an older version of MDAC, you will receive a message such as this:



The latest version of MDAC is 2.8, and it can be downloaded from the Microsoft support web site (http://msdn.microsoft.com) by searching on the keyword "MDAC".

In Windows XP the MDAC drivers are built-in and never need manual updating.

Install Microsoft Visio

Designer Suite 2005 uses Microsoft Visio to view and edit drawing files. You can use Visio 2002, Visio 2003 or Visio 2007. Either edition (Standard or Professional) will work the same.

After installing Visio, you should launch it once to answer any additional startup information it requires. Specifically, you should make sure it is "activated" as required by Microsoft. Inactivated software has a limited number of launches before being disabled.

Reduce the Macro Security Setting in Microsoft Visio

Visio has security features that warn you when documents with macros are being loaded. Since almost all of our documents contain macros, the warnings messages will become bothersome for most users. While we recommend that you lower the security settings from their initial settings of *Medium* (ask before loading macros) to *Low* (allow macros without warning), you must remain aware of the potential dangers of viruses in macros from documents obtained from unreliable sources.

You cannot have the macro security levels set to *High*, as that prevents macros from being run at all.

In Microsoft Visio 2002 or Visio 2003

To change the Macro Security settings in Microsoft Visio 2002 or Visio 2003:

- Start Microsoft Visio.

- On the TOOLS menu select MACROS / SECURITY…

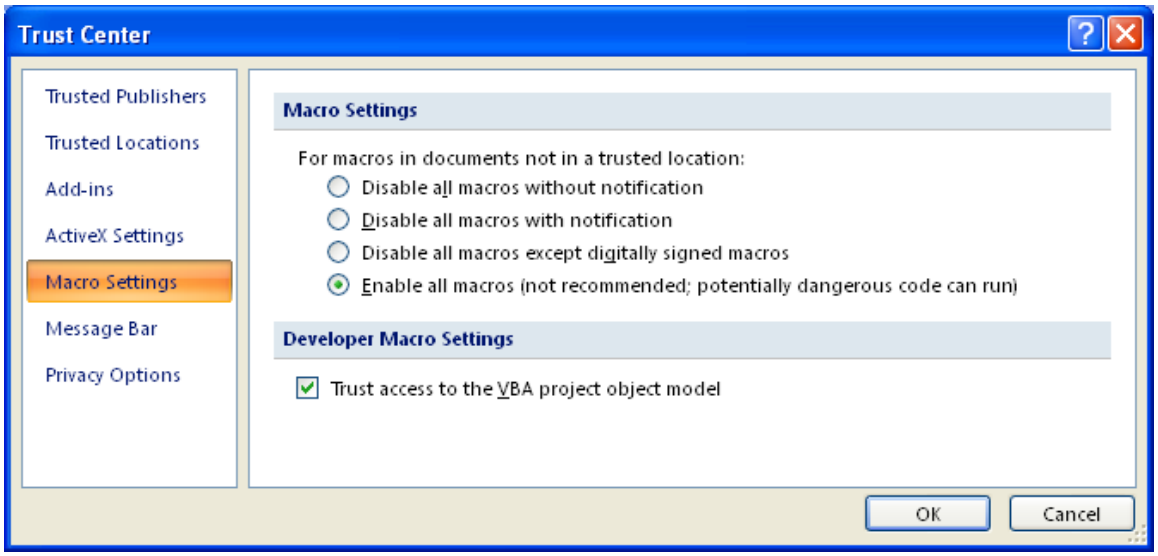
- Select either LOW (recommended) or MEDIUM security.
- In Visio 2003 only, click the tab labeled TRUSTED PUBLISHERS and check the box labeled TRUST ACCESS TO VISUAL BASIC PROJECT.
- Close Microsoft Visio.

In Microsoft Visio 2007

To change the Macro Security settings in Microsoft Visio 2007:

- On the TOOLS menu, select TRUST CENTER…

- Choose the MACROS SETTING tab



- Select the ENABLE ALL MACROS setting
- Check the TRUST ACCESS TO THE VBA PROJECT OBJECT MODEL checkbox
- Close Microsoft Visio

Install Microsoft Excel 2002 (XP) or 2003

Designer Suite 2005 uses Microsoft Excel for a number of important features, such as the Reporting Engine, Valve Schedule and Smart Charts. These features will not function without Excel. You can use either Excel 2002 (a.k.a. Excel XP), Excel 2003 or Excel 2007. Either edition (Standard or Professional) will work.

Reduce the Macro Security Setting in Microsoft Excel

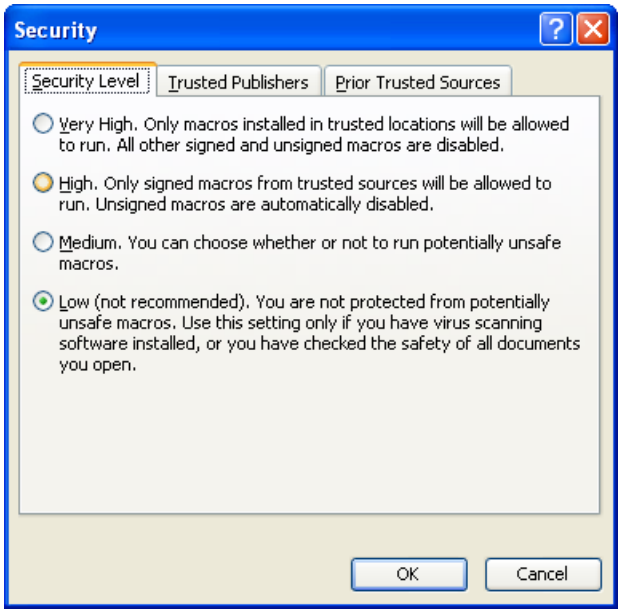
Excel has security features that warn you when documents with macros are being loaded. Since almost all of our documents contain macros, the warnings messages will become bothersome for most users. While we recommend that you lower the security settings from their initial settings of *Medium* (ask before loading macros) to *Low* (allow macros without warning), you must remain aware of the potential dangers of viruses in macros from documents obtained from unreliable sources.

You cannot have the macro security levels set to *High*, as that prevents macros from being run at all.

In Microsoft Excel 2002 or Excel 2003

To change the Macro Security settings in Microsoft Excel 2002 or Excel 2003:

- Start Microsoft Excel
- On the TOOLS menu select MACROS / SECURITY…

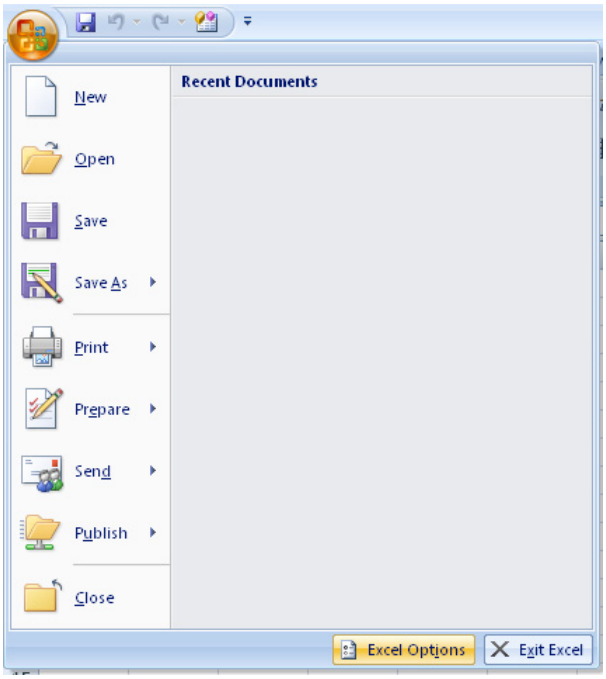


- Select either LOW (recommended) or MEDIUM security.
- In Excel 2002 only, click the tab labeled TRUSTED SOURCES (or TRUSTED PUBLISHERS) and check the box labeled TRUST ACCESS TO VISUAL BASIC PROJECT. This change is required to make full use of the Smart Chart features.
- Close Microsoft Excel

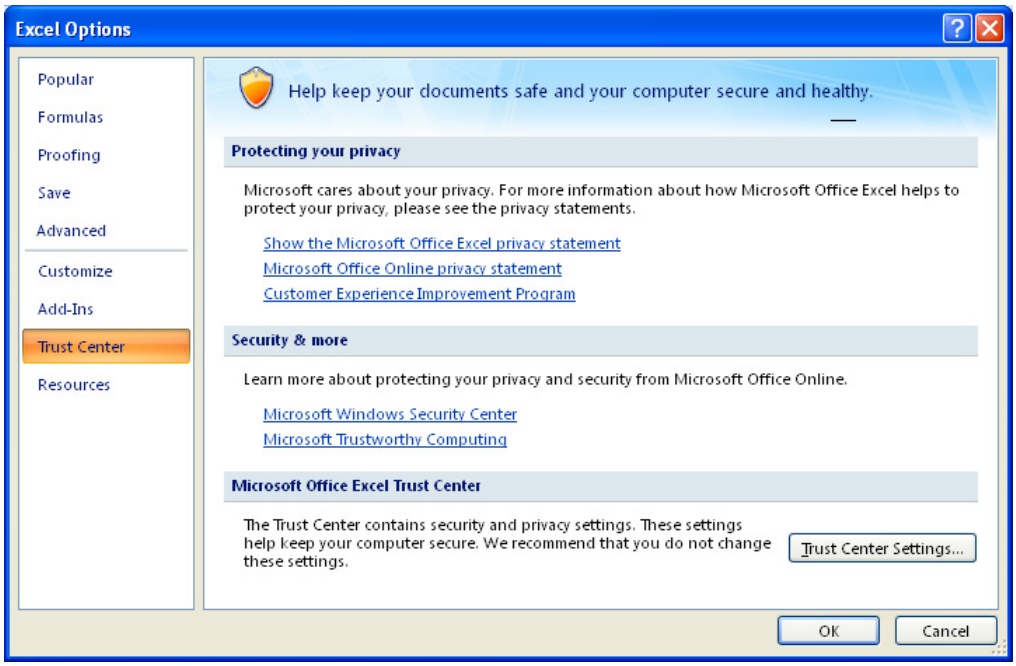
In Microsoft Excel 2007

To change the Macro Security settings in Microsoft Excel 2007:

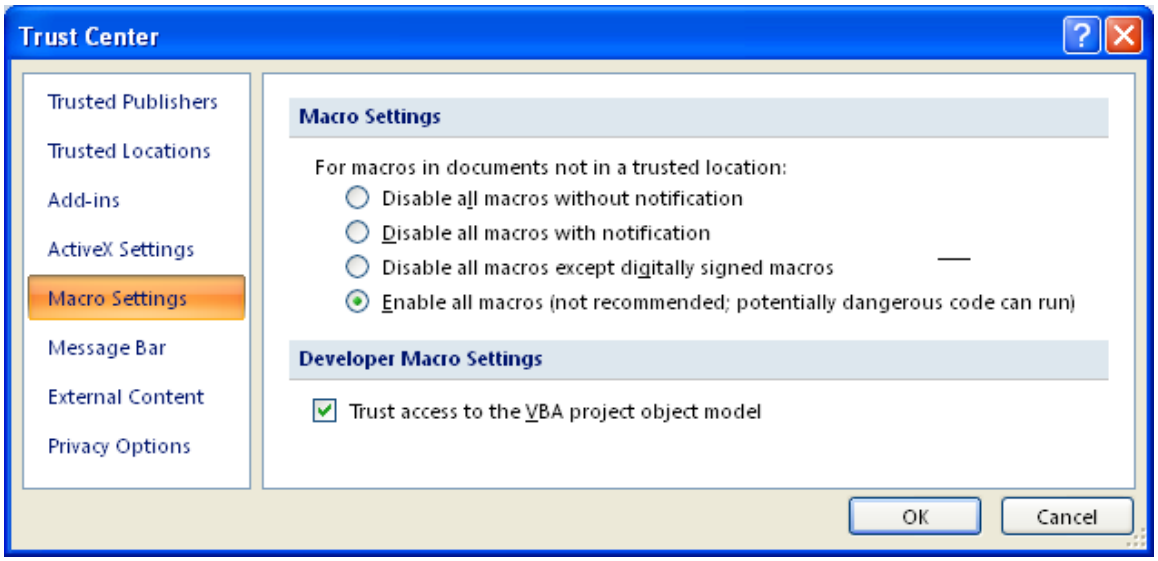
- Open the main menu by clicking the Excel icon in the upper left corner.



- Click on the EXCEL OPTIONS button.



- Choose the MACROS SETTING tab



- Select the ENABLE ALL MACROS setting
- Check the TRUST ACCESS TO THE VBA PROJECT OBJECT MODEL checkbox
- Close Microsoft Excel

Install the Microsoft Visio Viewer 2003 (Optional)

The Designer Suite 2005 Project Explorer uses Microsoft Visio Viewer 2003 to display the drawing files in its Preview Pane. Visio Viewer 2003 is a light-weight version of Visio intended only to display Visio files, much as the Adobe Acrobat Reader displays PDF files. It is a free download from Microsoft, and it can be installed on the same machine as Visio 2002, Visio 2003 or Visio 2007 without conflicts.

You can use Visio Viewer 2003 even if you are using Visio 2002 or Visio 2007 to edit your drawings. Visio Viewer 2003 is still required to view files in the Preview Pane even if you have Visio 2003 installed.

To download Visio Viewer 2003, go to www.microsoft.com and search for "Visio Viewer 2003"

Installing Designer Suite 2005

The latest release of Designer Suite 2005 can be found on our web site at www.smartwaretech.com. Log in to the client area, select SEARCH DOWNLOADS, and choose the DESIGNER SUITE 2005 category. There you will find the latest setup file, along with a number of documents regarding new features and other current topics.

- Download the DESIGNER SUITE 2005 SETUP_V3.X.XX.MSI installation file.
- Run it and follow its instructions.

Automatic Updates

Each time you run Designer Suite 2005 when you are connected to the internet, it automatically checks our server to see if an updated version is available. If one is, you will be prompted to download and install the update.

This feature can be disabled by selecting TOOLS→OPTIONS.

After Installing Designer Suite 2005

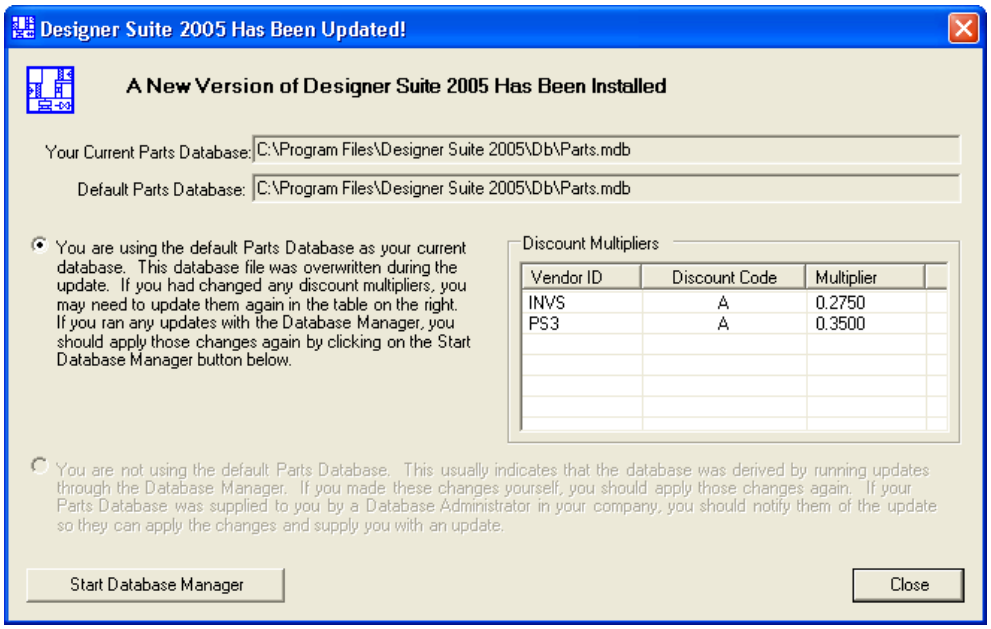
After you install Designer Suite 2005, you will need to license the software and optionally configure some settings.

Activate Your License

When you first run Designer Suite 2005, you will be prompted to register your license. In order to do so, you will need an 8-digit pass code from Smartware Technologies. Refer to the next chapter for complete information on license registration, update and transfer.

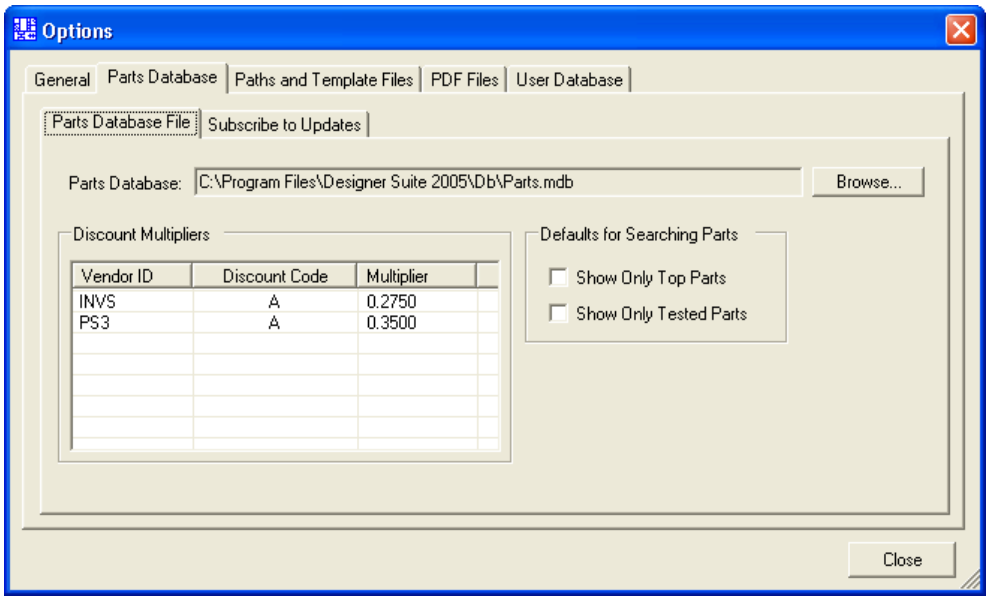
Update the Discount Multipliers in the Parts Database

Designer Suite 2005 calculates net prices for parts based on the Manufacturer's List Price and an appropriate discount multiplier. The first time your run Designer Suite 2005 (and whenever a new version is installed), you will be given the opportunity to change these multipliers to reflect those in use by your organization.



To change these multipliers, simply click in the cell containing the multiplier value and enter a new one.

You can also update these multipliers at any time by selecting TOOLS→OPTIONS and clicking on the PARTS DATABASE tab.



Refer to the later chapter on the *Parts Database* for more information on working with the Parts Database and related information.

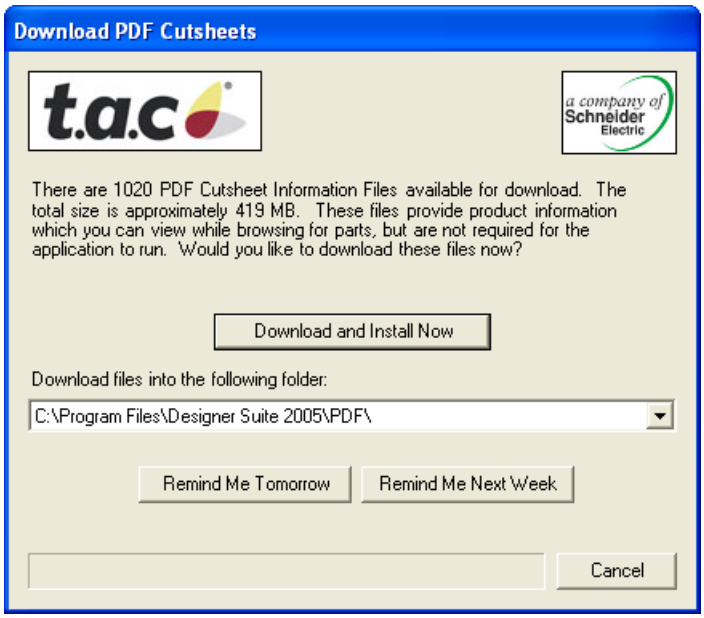
Install the Product Information PDF Cut Sheets

Each part in the Designer Suite 2005 Parts Database references a PDF file containing product information. There are a number of places in Designer Suite 2005 where you can access this PDF file:

- In many older shapes, double-clicking the PDF file name in the part properties dialog box will load the PDF.
- In newer shapes, there is a VIEW PDF button next to the PDF file name field.
- The Valve Schedule, Browse Parts and PDF Reports tools each have a VIEW PDF button
- The PDF Reports tool allows you to aggregate the PDF files for all the parts in you project by printing them, copying them to a file, or compressing them together into a zip file.

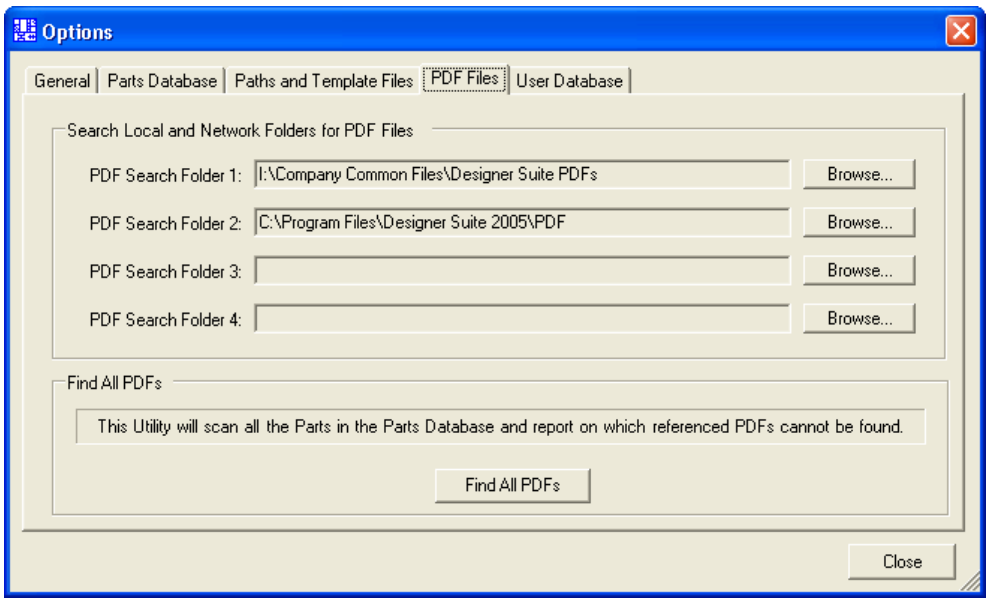
You may or may not have many of the PDF files that are referenced, or you may already store them on a central file server in your office. The complete set of PDFs is over 400 MB.

When Designer Suite 2005 launches (and is connected to the internet), it will search all its PDF paths and determine if there are any missing files. If so, you will be asked if you want to download them, and into which PDF folder.



You must tell Designer Suite 2005 where to look for the PDF files. You can specify up to four paths, which will be searched in order (some older shapes will only search the first path).

- From the TOOLS menu, select OPTIONS and click on the PDF FILES tab.



Tell Designer Suite 2005 if Other Applications are Using Visio (Optional)

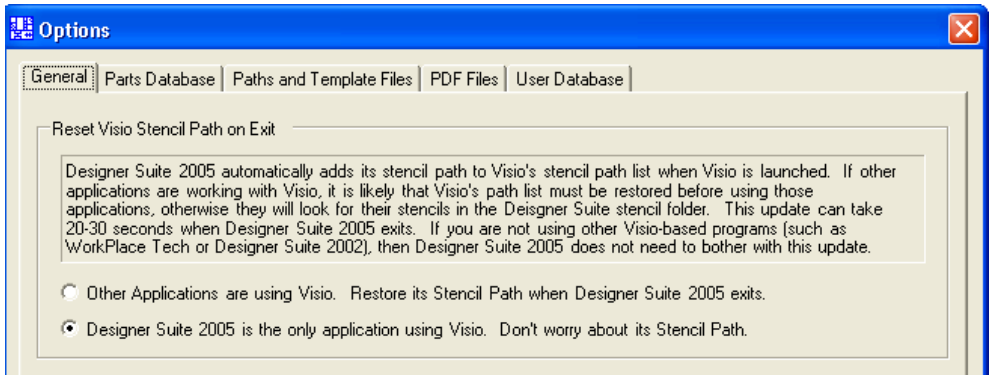
When Designer Suite 2005 loads a drawing file using Visio, it needs to ensure that the drawing can find any stencils that its shapes need. This is accomplished by adding the Designer Suite 2005 stencil path (generally *C:\Program Files\Designer Suite 2005\Stencils*) to the front of Visio's stencil path list.

In Visio 2002 (but not Visio 2003 or Visio 2007), changing the stencil path causes Visio to display a message about "Resetting Cache" for 30 seconds or longer while it scans all the stencils in the paths to build a list of shapes. This will happen when Designer Suite 2005 needs to add its path when opening a drawing file (if the path is not already set), or when it removes its path when shutting down.

If you are not using Visio 2002 with any other applications, you can tell Designer Suite 2005 to ignore these steps and leave its stencil path at the front of the list. This will greatly improve the speed at which Visio starts and exits.

To tell Designer Suite 2005 not to bother removing its stencil path:

- From the TOOLS menu, select OPTIONS



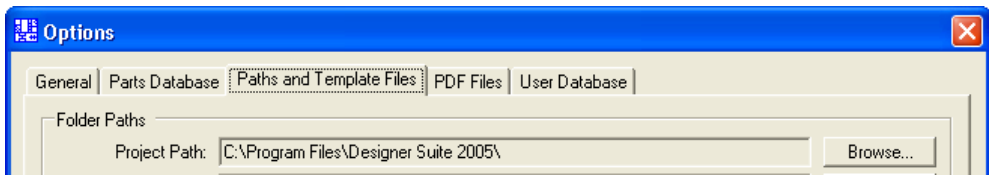
- Check the appropriate radio button to indicate whether you are using Visio with other applications.

Recent updates to WorkPlace Tech 5.x have shown that the number of stencils in their paths has increased to the point that the length of time it takes Visio to update its cache exceeds the time that Designer Suite 2005 can wait for Visio to launch. If you are experiencing such problems, it is recommended that you upgrade to Visio 2003 or Visio 2007.

Point Designer Suite 2005 to Your Project Folder

Each Designer Suite 2005 project is stored in its own folder on your local hard drive or network file server. When you open a project you can, of course, select a folder on any drive. If you store all your projects in a central area, you call tell Designer Suite 2005 where to start looking by default (saving yourself a few mouse clicks).

By default, the PROJECT PATH is the Designer Suite 2005 program path (*C:\Program Files\Designer Suite 2005*). To change this, select OPTIONS from the TOOLS menu and select the PATHS AND TEMPLATE FILES tab.

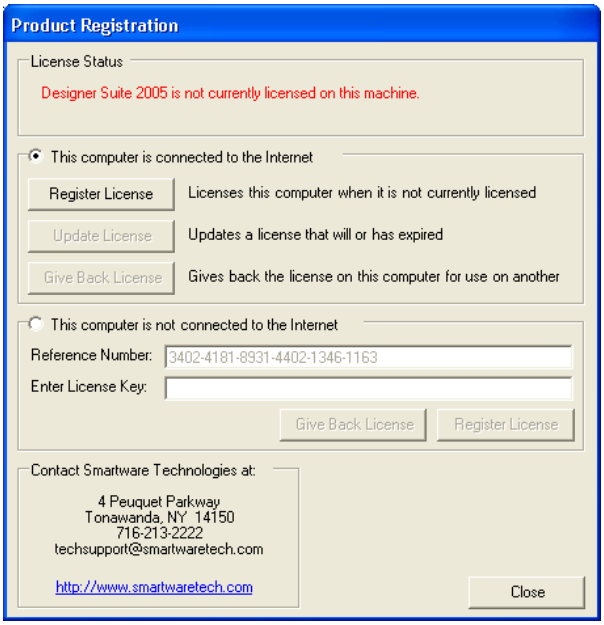


3. License Registration

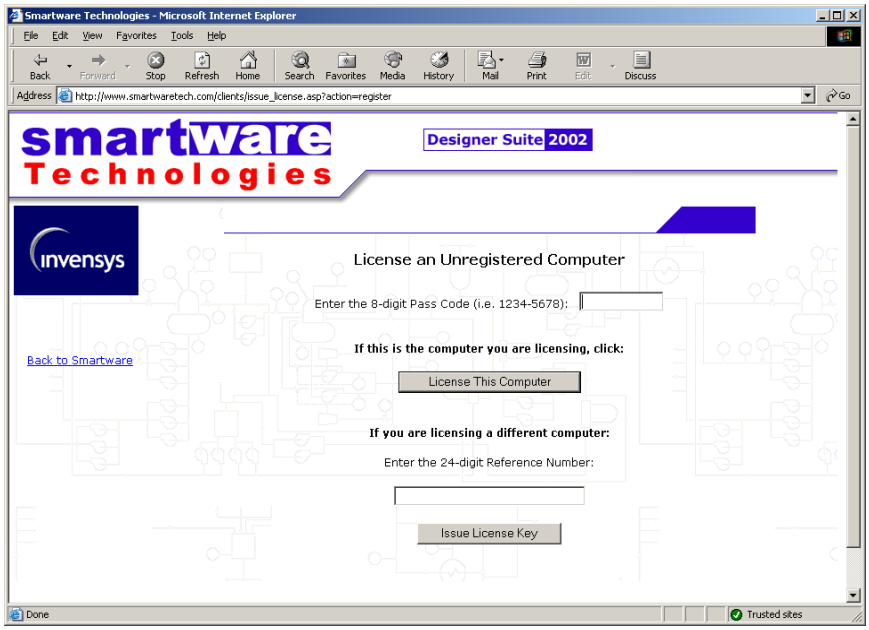
Each copy of Designer Suite 2005 needs to be licensed before it can be used. To activate a license on a machine you will need an 8 digit pass code from our sales and support department.

Licensing a New Computer

From the Designer Suite 2005 FILE Menu, select PRODUCT REGISTRATION. This will bring up the License Registration dialog:



Assuming the machine is connected to the internet, click on the REGISTER LICENSE button. This will automatically open up a browser window and take you directly to our client login page. After you enter your user name and password, you will be taken directly to our LICENSE AN UNREGISTERED COMPUTER page.



Enter the pass code and click LICENSE THIS COMPUTER. The web page will indicate that the license was updated successfully and when it next needs to be updated. When you return to Designer Suite 2005 and close the License Registration dialog, Designer Suite 2005 will start.

A passcode can only be used one time.

Updating a License

You will need to update your license periodically. This allows us to automatically check for system updates and to enable new features. To update an existing license, simply click the UPDATE LICENSE button in the License Registration dialog. You will again be logged in to the web site and the license will automatically be updated. You do not need a passcode to update your license.

You will be reminded when your license will soon need updating. You can still update your license after it expires, but you won't be able to run Designer Suite 2005 until you do.

Moving a License to Another Computer

To move your license from one computer to another (from an office desktop to a home laptop, for instance), you simply give back the license from the desktop by clicking the

GIVE BACK LICENSE button in the License Registration dialog. This will log you in to our web site, deactivate the license on the computer, and return to you a new 8 digit passcode. You can then use this new passcode to license a different computer using the procedures detailed in *Licensing a New Computer*.

Licensing a Computer That is Not Connected to the Internet

While it is much easier to perform the licensing actions when the machine is connected to the internet, it is still possible to do so if it is not. You will, however, still need access to the internet from another machine.

Go to our website and log in. From the main menu, select LICENSE REGISTRATION. There you will find a menu of choices for installing, updating and giving back licenses. Follow the instructions on the bottom section of each page, which require you to enter the 24 digit reference code from the License Registration dialog, and return a longer code to enter back into the machine being licensed.

If you have any problems with the licensing procedures, please contact our technical support department immediately.

4. The Parts Database

The heart of Designer Suite 2005 is its database of parts. This database contains a list of part numbers along with such information as the descriptions, list prices, discount multipliers, and PDF cut sheet names, as well as more detailed part-specific information such as the color of their wires, physical characteristics and point configurations.

Smartware Technologies maintains and regularly updates the Part Database to ensure that pricing is current and that new parts are added in a timely manner. Designer Suite 2005 also makes it possible for you to add your own parts to the database through its Database Manager.

Basics of the Parts Database

Though relatively simple, it is important to note a few specific terms used throughout this section.

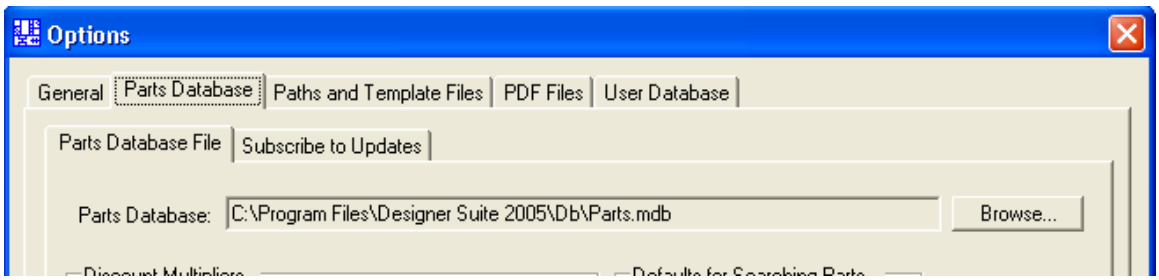
The Default Parts Database

Designer Suite installs with a default version of the Parts Database, named simply *Parts.mdb*. This file is installed in the Designer Suite 2005 *Db* folder (e.g. *C:\Program Files\Designer Suite 2005\Db\Parts.mdb*). A duplicate copy is also stored in the same folder as *Parts_Original.mdb*.

It is important to realize that this file will be overwritten every time Designer Suite 2005 installs an update. When this occurs, any additions and changes you have made to the database (other than your discount multiplier values) will be lost, and will need to be reapplied. The Designer Suite 2005 Database Manager makes this very easy.

The Current Parts Database

Though the *Parts.mdb* file is the default, Designer Suite 2005 actually uses the file designated as the *Current Parts Database* to find parts and prices. You can view or change the selected current Parts Database by selecting TOOLS→OPTIONS and clicking on the PARTS DATABASE tab.



In this example, the current database is the default database (*Parts.mdb*).

Vendor IDs and Discount Multipliers

Each part in the database is referred to uniquely by a *Manufacturer ID* (a 4-12 character alphabetic code) and the *Manufacturer Part Number*. In addition, there is also a *Vendor ID* (a separate, but possibly the same, 4-12 alphabetic code) and a *Discount Multiplier* for each part. To calculate the *Vendor Price* for a part, the *Manufacturer List Price* is multiplier by the *Discount Multiplier*.

You can change the *Discount Multiplier* for a Vendor in the PARTS DATABASE tab of the TOOLS→OPTIONS dialog. Simply click in the cell and change the value.

If you use the default Parts Database as your current database, the changes you make to the discount multipliers will persist, even when Designer Suite is updated.

If you are using a customized version of the Parts Database, you can add an *Import Action* to update the discount multipliers automatically.

Database Maintenance and Update Scenarios

There are a number of ways to ensure that any changes you make to the Parts Database are easily applied to updated versions that are shipped with new releases of Designer Suite 2005, and to distribute these changes to other users in your organization.

There are two major changes that you are likely to make to the Parts Database:

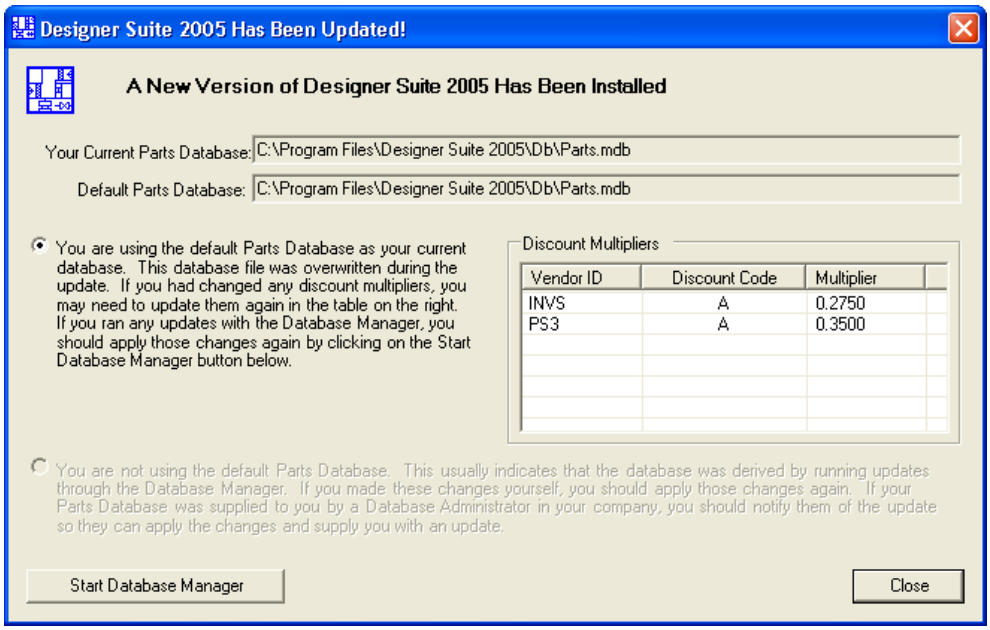
- Changing the Discount Multipliers
- Adding New Parts

Scenario 1: No Changes

If you do not add any parts or change the discount multipliers, you can leave the default configuration where your current database is the default database (*Parts.mdb*). You will automatically receive the latest version of the database every time Designer Suite 2005 downloads and installs an update.

Scenario 2: Change Discount Multipliers Only

If you change only the discount multipliers, you can also leave the current configuration where your current database is the default database (*Parts.mdb*). When Designer Suite 2005 is updated, you will be notified that the database has been updated and given the opportunity to verify and update the multipliers. Designer Suite 2005 should remember your previous updates to these values, even after the database is updated.



Scenario 3: Single User with Added Parts

The Database Manager, described in a later chapter, can be used to add new parts from external spreadsheets. It can also be used to update discount multipliers. Once you are using the Database Manager to update your parts, you will generally want to configure it to apply your changes to a copy of the latest default database. In this way, you can be sure that you get the benefit of the latest changes along with yours.

Refer to the later chapter on the Database Manager for more information.

Scenario 4: Multiple Users with Added Parts

When more than one person is using Designer Suite 2005 in an organization and new parts are going to be added to the database, is it strongly recommended that a single user be designated as the *Database Administrator*, and that he or she be responsible for aggregating all the changes and distributing the updated database to the rest of the users. If multiple people manage disjoint changes, then projects created by one person and shared by another may generate incorrect reports when run on a workstation where a referenced part is not found in the local customized version of the Parts Database.

In this scenario, the Database Administrator will use the Database Manager to create a custom, updated database when necessary. This update can then be placed on a network drive, where the rest of the users can *subscribe* to it. In this way, those users will automatically be notified any time the administrator posts a new version, and the new version automatically downloaded to each person's workstation.

Refer to the later chapter on the *Database Manager* for more information.

5. Customizing Designer Suite 2005

Designer Suite 2005 is intended to be customized to suit the needs of individual organizations. Specifically, the following features can be customized:

- The template Visio file used for new, blank Designer Suite drawings
- The template Visio file used for Table of Contents pages
- The template Visio file used for Valve Legend pages
- The template Excel files used for Valve, Damper and Air Flow schedules
- The Title Block shape (containing the company address and logo) that is generally added to each page in a Designer Suite 2005 Visio drawing file
- The lists of values used by Designer Suite shapes for Software Files, Installing Trades and Software Tags.

These customizations are described in this chapter.

Other Customizations

You can also make sophisticated customizations to other areas of Designer Suite 2005, including:

- Creating customized and completely new reports for use by the *Reporting Engine*
- Adding your own parts to the Parts Database using the *Database Manager*
- Creating new and unique Visio smart shapes (*Smart Clones*) for use in your drawings.

These major features are discussed in their respective chapters later in this guide.

The Template Files

Many of the changes involve copying one of our standard templates, customizing the copy, and then pointing Designer Suite 2005 to your custom version.

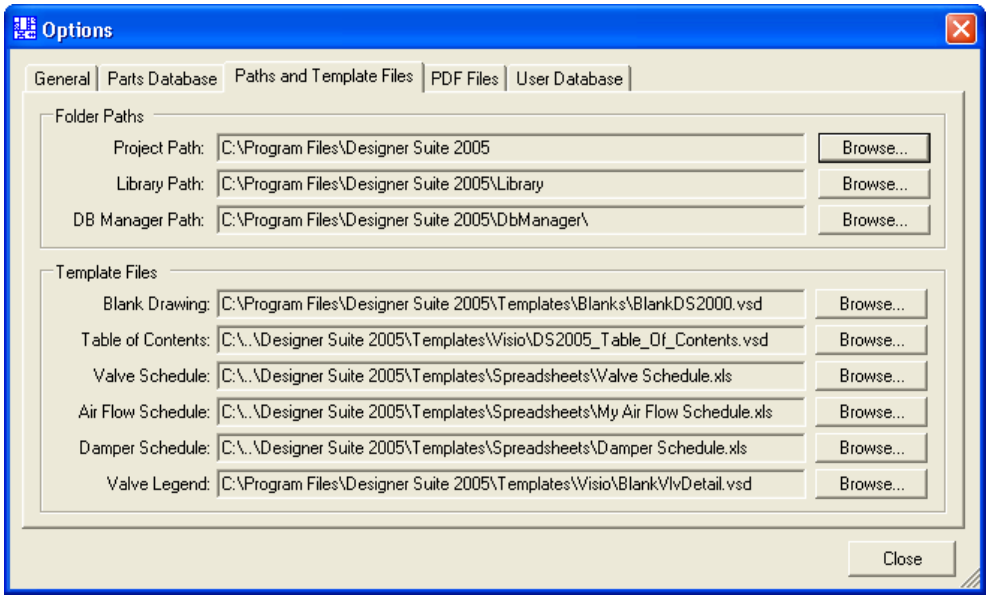
Important Note

While we support the customization of the Designer Suite 2005 template files, please be aware that from time to time it is necessary for us to modify or update these files. This document describes the steps necessary to ensure that your changes aren't overwritten with future updates.

However, there may be cases where updated templates are issued which contain changes and enhancements to the underlying program code which are necessary to fix known problems or implement new features. In these cases your custom templates will not benefit from the updates. At that point it will be suggested that you reapply your changes onto the new version of the template document.

Customizing a Template File

The template files are specified on the PATHS AND TEMPLATE FILES tab of the TOOLS→OPTIONS dialog:



If you want to customize one of the Template Files, do the following:

1. In Windows Explorer, navigate to the directory containing the appropriate template file.
2. Copy the file and save the copy with a different name.
3. Make the appropriate changes to your copy.
4. In the TOOLS→OPTIONS→PATHS AND TEMPLATE FILES tab, browse to your version of the file.

As you can see, all of the template files are stored in various subdirectories of the DESIGNER SUITE 2005\TEMPLATES directory.

Customizing the Blank Drawing File (*BlankDS2000.vsd*)

When you ask Designer Suite 2005 to insert a new blank Visio Drawing file, it begins with a copy of the file listed as BLANK DRAWING in the TEMPLATE FILES preferences. You can create a custom version of this file to include a set of stencils that should always be opened by default, or other standard drawing elements such as a title block.

You must always start your customizations on the default version included with Designer Suite 2005 (BLANKDS2000.VSD), which contains underlying program code necessary for the drawing to communicate with the Project Explorer.

Customizing Valve, Damper and Air Flow Schedules

The template Excel files that are used for the Valve, Damper and Air Flow Schedules are fairly sophisticated in that they allow Designer Suite 2005 to read the part information into the project's database to include the parts in material reports. You should exercise some caution when editing these files. It is recommended that you not insert or remove rows or columns, as Designer Suite 2005 expects to find certain information in specific cells.

If you do want to make more sophisticated changes, refer to the later chapter on *Valve, Damper and Air Flow Schedules*.

Customizing the Title Block Shape

One of the most common customizations is to add your corporate logo to the title block shape included on the PAGE ADD INS stencil. If you do so, you should follow these procedures to prevent your title block from behaving improperly. An understanding of the concepts behind Visio's stencils and groups will be helpful.

1. Create a new blank stencil in Visio by selecting STENCILS (SHAPES in Visio 2003) from Visio's FILE menu, and then select NEW STENCIL.
2. Open the PAGE ADD INS stencil.
3. Right-click on the Title Block shape and select COPY.
4. Select your new stencil, right-click and select PASTE. This will insert a new master into your new stencil.
5. Right-click on the new title block master and select MASTER PROPERTIES (EDIT MASTER→MASTER PROPERTIES in Visio 2003). You can then specify a new name for your custom title block shape, along with other properties. Click OK when you are done.
6. Right-click on the new title block master again and select EDIT MASTER (EDIT MASTER→EDIT MASTER SHAPE in Visio 2003). The title block shape will be shown in a new window surrounded by a green background to indicate that you are editing a master shape. You may need to minimize other windows to make it easier to work with the master.

The title block shape is a group containing a number of other shapes inside of it, such as the large border, the logo and the Job Information block. Only the group shape is selectable.

7. Select the group, which will cause a green dotted line to appear around the entire title block.
8. From Visio's EDIT menu, select OPEN TITLE BLOCK. The title block will appear in another new window, this time with a pale yellow background to indicate that you are editing the contents of a group.

While editing the contents of the group, each of the individual elements are selectable and can be moved, changed or deleted. It is strongly recommended that you restrict your customizations to the logo and address in the upper right corner of the title block.

9. Insert your company's logo and resize and position it accordingly. Change the text object beneath it to include your company address and phone number as desired.
10. Close the yellow-background window showing the group's contents.
11. Close the green-background window showing the master's contents. You will be prompted to save the changes you made to the master.
12. On your new stencil, click on the small document icon with the red asterisk to bring up the stencil's menu and select SAVE. Specify a new file name for your custom stencil. You may feel free to save it into Designer Suite's STENCILS directory (or better yet, a sub-folder of this directory), which will make it easier to find, but you must not save over the existing PAGE ADD INS stencil.

You should make sure to not do the following:

- Do NOT create your custom stencil by copying an existing Designer Suite 2005 stencil. These stencils contain program code that should not be duplicated in multiple stencils. Instead, add your master to a new blank stencil as described above.
- Do NOT add your custom title block to the existing PAGE ADD INS stencil. If you do, you will lose your custom version the next time this stencil is updated.

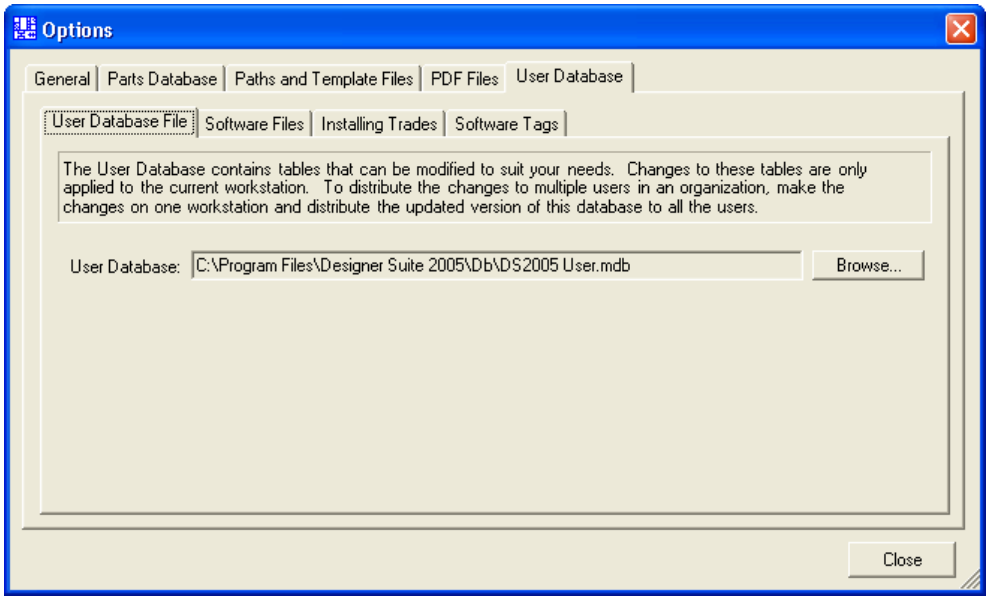
Refer to the later chapter on *Working with Visio Drawing Files and Stencils* for more information on creating custom stencils.

If you are having difficulty creating a custom title block, you can forward the appropriate information and graphics files to us at techsupport@smartwaretech.com and we will be happy to create a custom stencil for you.

Customizing the User Database Tables

There are a few tables of information that are used by Designer Suite 2005 shapes that you can add or modify yourself, specifically the *Software Files*, *Installing Trades* and *Software Tags*.

You can access and change these values by selecting TOOLS→OPTIONS and clicking on the USER DATABASE tab. There are sub-tabs for each table that allow you to make the changes.

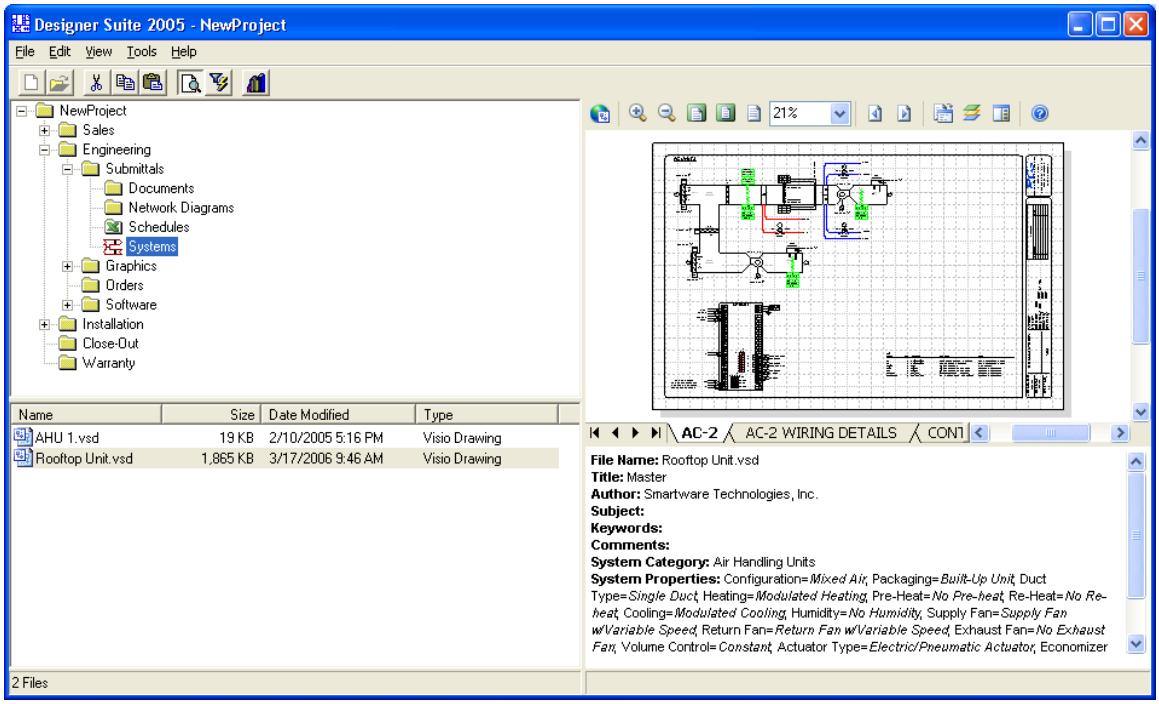


Saving and Distributing Your Changes

It is important to note that this file is overwritten during updated installs. If you plan to customize these tables, you should make a copy of the *DS2005 User.mdb* file and point Designer Suite 2005 to your version. You can also distribute this file to other users in your organization.

6. The Project Explorer

The main screen of Designer Suite 2005 is known as the Project Explorer.



The window is divided into four resizable panes.

The Project Folder Pane

The upper left portion of the window shows the project's folder structure as a tree.

- You can expand and contract the nodes by clicking on the plus/minus signs.
- When you select a folder, the files within it are shown in the File List Pane.
- Different icons can be used to represent different folder types (as shown on the *Schedules* and *Systems* folders) described later in this section.
- If you right-click on a folder, you will receive a menu of standard actions for folders, such as CUT, COPY, PASTE, RENAME and DELETE.

The File List Pane

The lower left portion of the window shows the files in the folder currently selected in the Project Folder Pane.

- If you double-click a file name, the file will be opened with the appropriate program.
- If you right-click on a file name, you will receive a menu of standard actions for files, such as CUT, COPY, PASTE and RENAME.
- When you select a Visio file, it will be shown in the Preview Pane (if the Preview Pane is enabled) .

The Preview Pane

The upper right portion of the window shows a preview of Visio drawing files as they're selected in the File List Pane.

- Only Visio files can be previewed.
- In order for the preview pane to work, you must install the Microsoft Visio Viewer 2003, regardless of which version of Visio itself may or may not be installed. This is a free download from Microsoft. Refer to the earlier chapter on *Installing Designer Suite 2005* for more information.
- Under some circumstances (such as very large files), the preview might not be available, or it may take a very long time to load. You can disable the preview pane by unselecting the check mark in the VIEW→FILE PREVIEW menu or clicking on the File Preview icon in the toolbar.
- When previewing the Visio file, the Visio Viewer provides its own toolbar and a number of nice features. For instance, you can select different pages and drag pages around to see other parts. Refer to Microsoft's documentation on the Visio Viewer for more information.

The File Properties Pane

The lower right portion of the window shows the extended file properties for the file currently selected in the File List Pane.

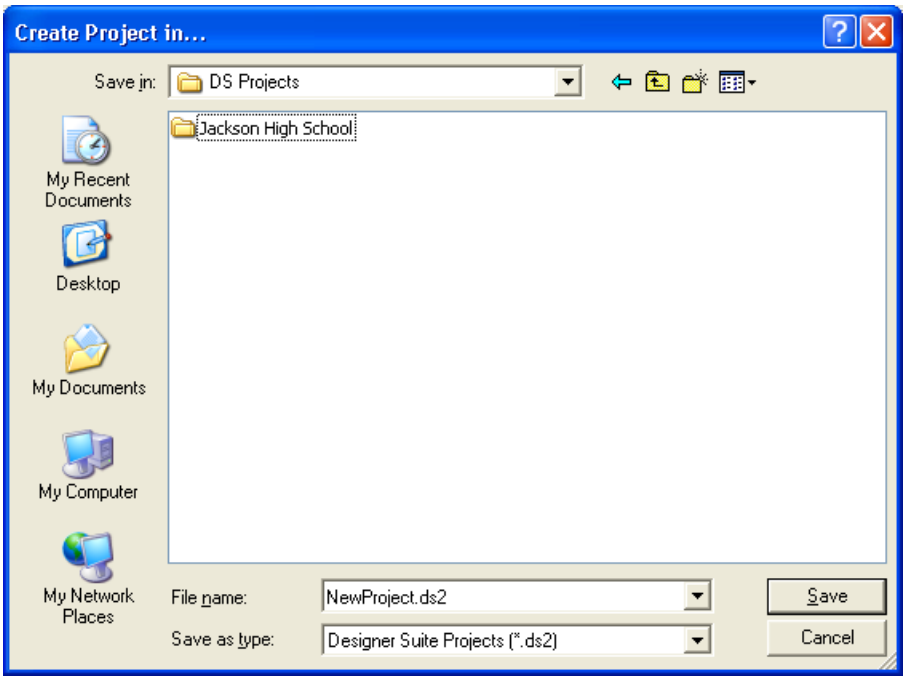
- These properties correspond to the extended properties available on Microsoft Office files (such as Visio, Excel and Word).
- For Visio files, they can contain information to categorize the system contained in the file for storing in and searching the Standard System Library. Refer to the later chapter on *Working with Files and Systems* for more information.

7. Working with Projects

Designer Suite 2005 is used to organize various files into a logical structure for a *Project*. A project stores its files as a folder structure on the computer and gathers information about parts from multiple drawing files into a single database that makes it quick and easy to run reports or use other features, such as printing, that work with multiple files together.

Creating a New Project

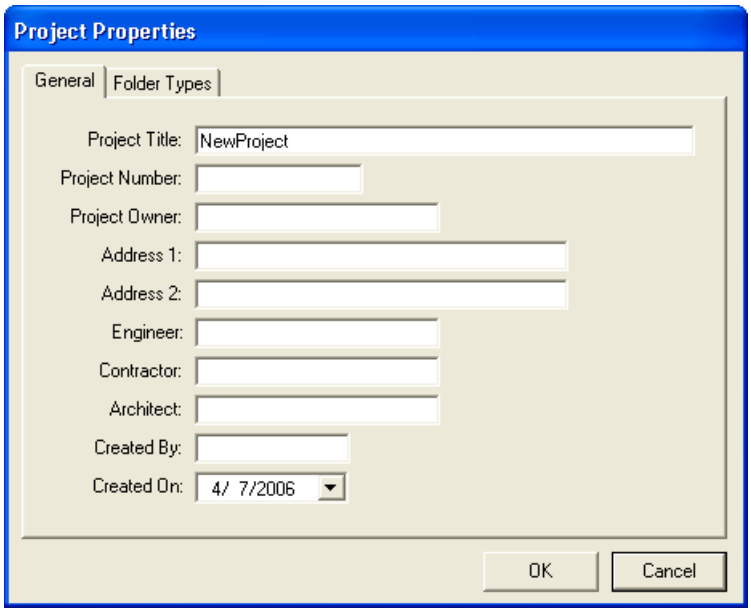
To create a new Project, select NEW PROJECT from the Designer Suite 2005 FILE menu. You will be prompted to create a .DS2 file.



Though you are specifying a folder to save the .DS2 file, Designer Suite 2005 actually creates a sub-folder instead with the same name as the .DS2 file (in this example it would be *C:\DS Projects\NewProject*). The .DS2 file and all other sub-folders are automatically created in this folder.

Project Properties

When you create a new project, you will automatically be prompted to specify the *Project Properties*:



The values specified in the Project Properties can be carried over to the Title Block, Table of Contents, Valve Schedules and other Reports.

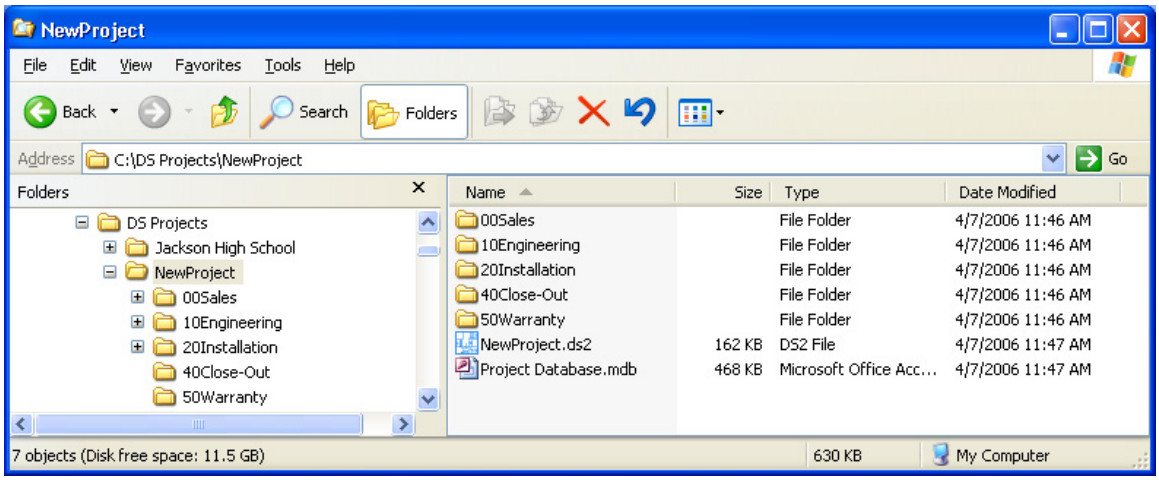
You can modify the Project Properties at any time by selecting VIEW→PROJECT PROPERTIES.

The Project Path

The default location for saving (and opening) projects can be changed by selecting TOOLS→OPTIONS, selecting the PATHS AND TEMPLATE FILES tab and changing the PROJECT PATH value.

The Project Control Files (*.ds2* and *Project Database.mdb*)

The structure of the sub-folders in a project are described in detail in the next chapter, but here is an example of what it looks like in Windows Explorer:



There are generally two system-specific files that must reside in the root of the project folder.

NewProject.ds2 — Named with the same name as the project, the .ds2 file contains the project properties and a few other pieces of related information. The name of the file is not very important. You can double-click a .ds2 file to launch Designer Suite 2005 and automatically open the project.

Project Database.mdb — This database file gathers all the information about the pages, systems, devices and parts in the drawing files and schedules added to or created with the project. It is automatically updated when you save one of those files in Visio or Excel. If existing files are copied into the project, they will be scanned to update this database when one of the system tools, such as the Print Manager or Reporting Engine, are launched.

Copying or Moving a Project

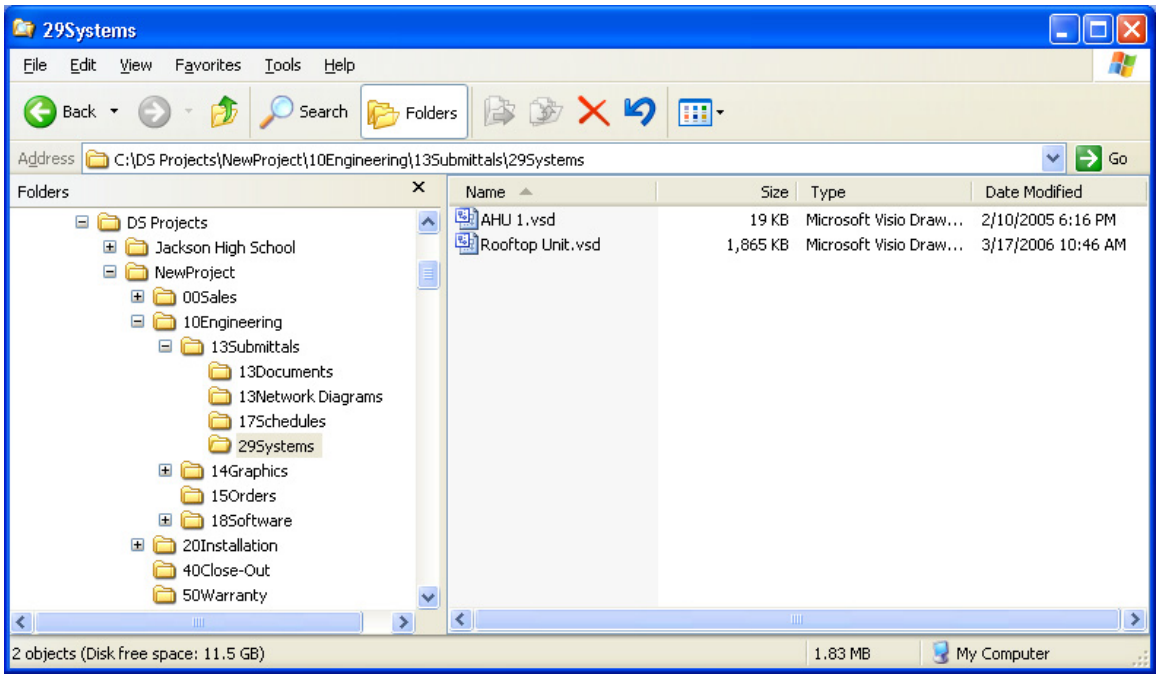
If you want to copy an entire project, you should copy or zip up the entire folder and all its contents. If zipping the folder, be sure to preserve the sub-folder names.

8. Project Folders and Folder Types

A Designer Suite 2005 project structure is essentially a view of a folder structure on a local or network drive. In fact, Designer Suite 2005 does not store this structure in its control files, but instead takes it from the Windows folder structure whenever the project is loaded. This makes it simple to manipulate the folders and files within or outside of Designer Suite with equal ease.

Folder Types

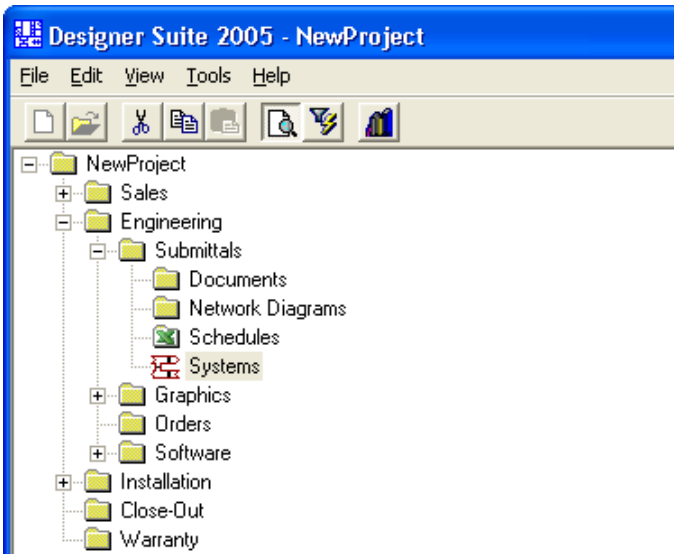
Each folder in a project is actually stored with a two-digit prefix indicating the *Folder Type*. For example, here is a view of the folder structure in Windows Explorer:



The Folder Types serve a number of purposes:

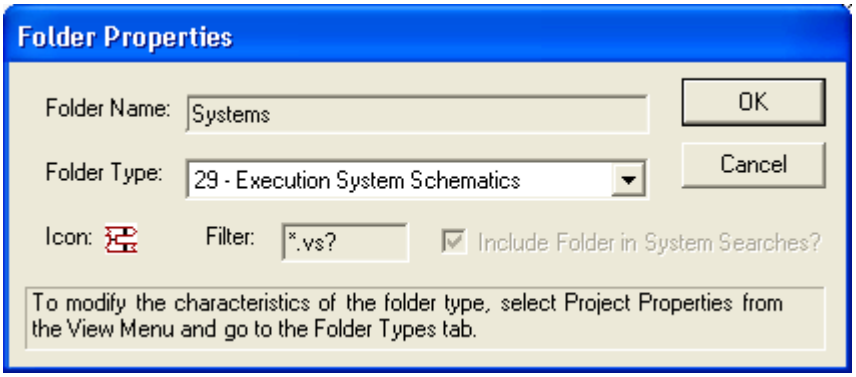
- They force the folders to be viewed in numerical order by type, instead of alphabetically. In the example, notice that the Engineering folder appears after Sales when viewed in the tree in the Project Explorer or in Windows. This allows the structure of the folders to mimic the life cycle of a project.
- Certain folder types are designated as *scannable*, generally those that are meant to contain Visio drawing files (e.g.. *Systems*) and Excel schedule spreadsheets (e.g. *Schedules*). Files saved in scannable folders are automatically scanned for part information when they are saved, and the part list (and other information) saved in the project's *Project Database.mdb* file for easy access by tools such as the Print Manager and Reporting Engine.

- Each folder type can have different icons associated with them for display in the Project Explorer's Project Folder Pane. The scannable folders, such as Systems and Schedules, often have such distinct icons, as shown below

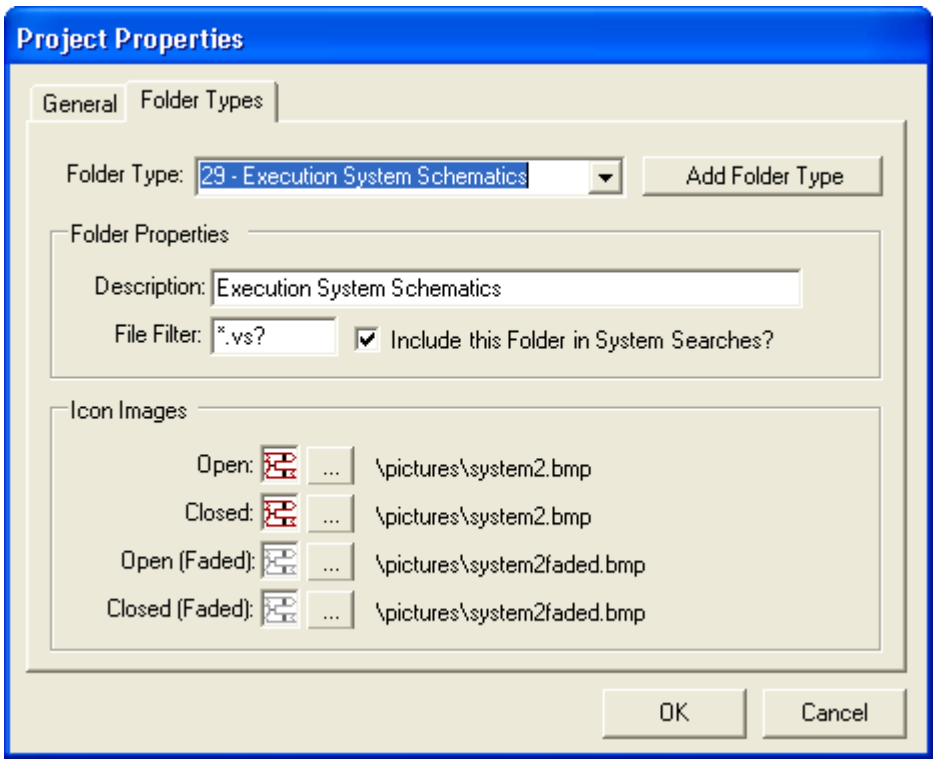


Changing the Type of a Folder

To change the type of a folder, right click on it and select FOLDER PROPERTIES.



Here you can select a different folder type, by number. The icon, file name filter, and indication of whether its scannable is defined by the Folder Type table for the project, which you can access by selecting VIEW→PROJECT PROPERTIES and selecting the FOLDER TYPES tab.



Project Profiles

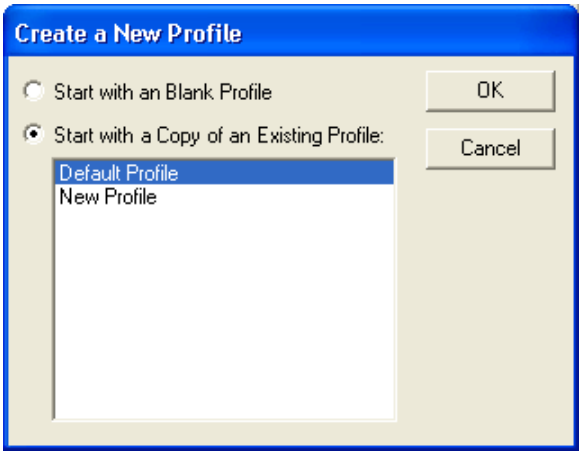
When you create a new project, a default folder structure is created automatically to hold the project's files. This folder structure is referred to as a *Project Profile*.

- You can create your own Profiles to use for new projects using the Profile Editor. Once created, you can select the profile to use for a project when you create it, and you can easily share profiles amongst engineers.
- The profiles are stored in the Designer Suite 2005 Profiles folder (*C:\Program Files\Designer Suite 2005\Profiles*) as .MDB files.

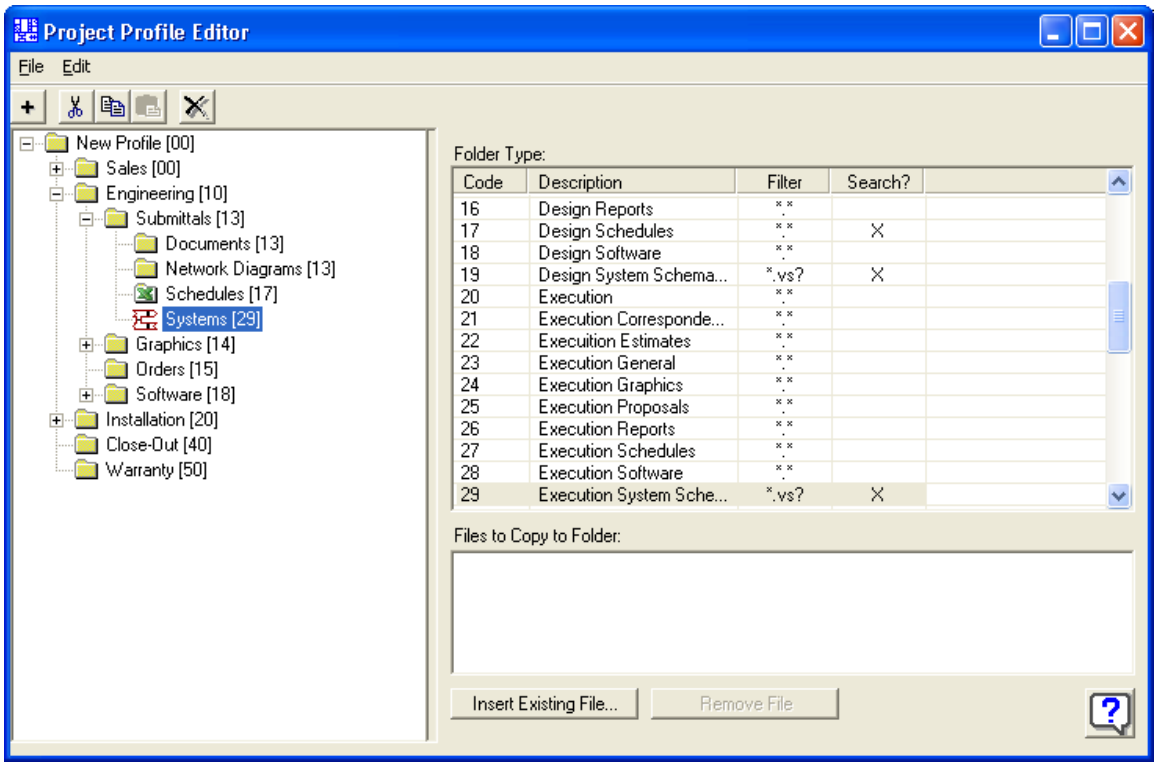
The Profile Editor

To access the Profile Editor, select FILE→PROFILE EDITOR. The Profile Editor has a separate set of windows and menus.

- To create a new profile, select FILE→NEW PROFILE in the Profile Editor. You will be prompted to create a profile from scratch, or by starting with a copy of an existing profile (such as the default profile).



The Profile Editor shows the following:



- The folder structure is shown on the left. The two-digit folder type code is shown in brackets.
- As you select a folder in the tree, its current folder type is selected in the Folder Type list. You can change the folder type by simply selecting a different folder. The folders in the tree will reorder themselves and change their icons accordingly.
- You can reorder the folders in a node by changing their folder types. Folders are automatically sorted by the folder type code.

- You can right-click on a folder to CUT, COPY, PASTE and RENAME it, or to add a sub-folder (these functions are also available on the toolbar).
- To change the properties of the individual folder types (icon, file name filter and whether its scannable), select EDIT→FOLDER TYPES…

Creating a Profile from an Existing Project

If you have an existing project where you've modified and configured the folders in a format you would like to use again, you can translate the existing folder structure into a profile by selecting FILE→IMPORT PROFILE FROM PROJECT. After naming the Profile database file, you will be prompted for the .ds2 file for the project. Its folder types, names and structures will then be copied into the new profile.

Adding Pre-Existing Files to a Profile

A profile can also reference files that should automatically be placed into specific folders when the project is created. For instance, you could put a blank Project Checklist document in the *\Sales\Documents* folder.

- To add a reference to a file to a folder, select the folder in the tree and click on the INSERT EXISTING FILE… button.
- The actual files is not stored in the profile. Instead, the fully qualified file name is stored. When the project is created, this file must exist for the file to be copied into the new project. If you are sharing profiles within an organization, you will probably want to store these files on a network drive that all the users can access in the same way.

9. Working with Files and Systems

The details of a Designer Suite 2005 project are contained in the drawing files. These Visio files are created using Designer Suite 2005's stencils of standard parts, enhanced with part-specific properties that enable Designer Suite 2005 to create detailed reports and utilize other project tools.

A drawing file can represent one or more *systems*. Later chapters will discuss how each part can belong to a system, but very often the drawing file itself represents a system, such as an Air Handling Unit or a VAV box.

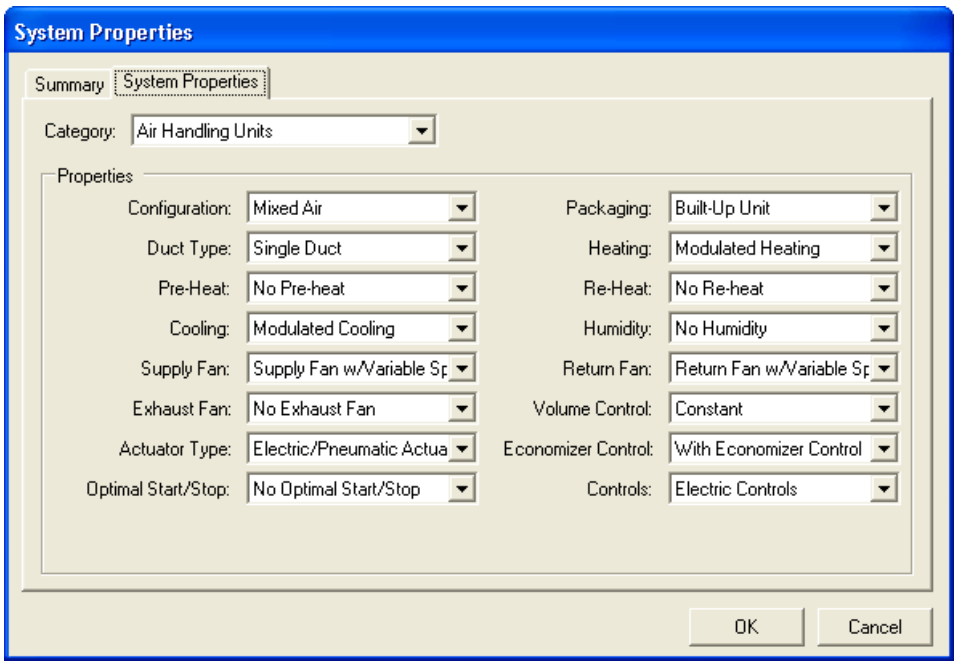
Creating a Drawing File

- To create a new, blank drawing, right click on the appropriate folder and select INSERT NEW FILE→ DS 2005 DRAWING. The blank drawing is created as a copy of the Blank Drawing template, which can be customized (refer to the earlier chapter on *Customizing Designer Suite 2005*)
- To insert a copy of an existing drawing from another project or folder, right click on the appropriate folder and select INSERT EXISTING FILE
- To insert a copy of a file from the Standard System Library, right click on the appropriate folder and select INSERT STANDARD SYSTEM

File Properties for Systems

When a drawing file represents a system, you can specify the details of the system for use by the Standard Library for storing and searching for systems.

- To edit the file properties, right-click on the file, select PROPERTIES, and click on the SYSTEM PROPERTIES tab.



You can select the category for the system, and for each category specify a different set of property values.

The system properties are stored in the Visio file itself as *Extended Properties*. This means that they will remain associated with the file even if you move it between projects from Windows or transfer it electronically by any means, including e-mail.

The system properties are displayed in the lower right pane of the Project Explorer as you select files in the File List Pane.

The Standard System Library

Once you've designed a system as a drawing file, you may want to make it a standard for your organization. Designer Suite 2005 allows you to store these standard systems in a folder you designate and the Standard System Library.

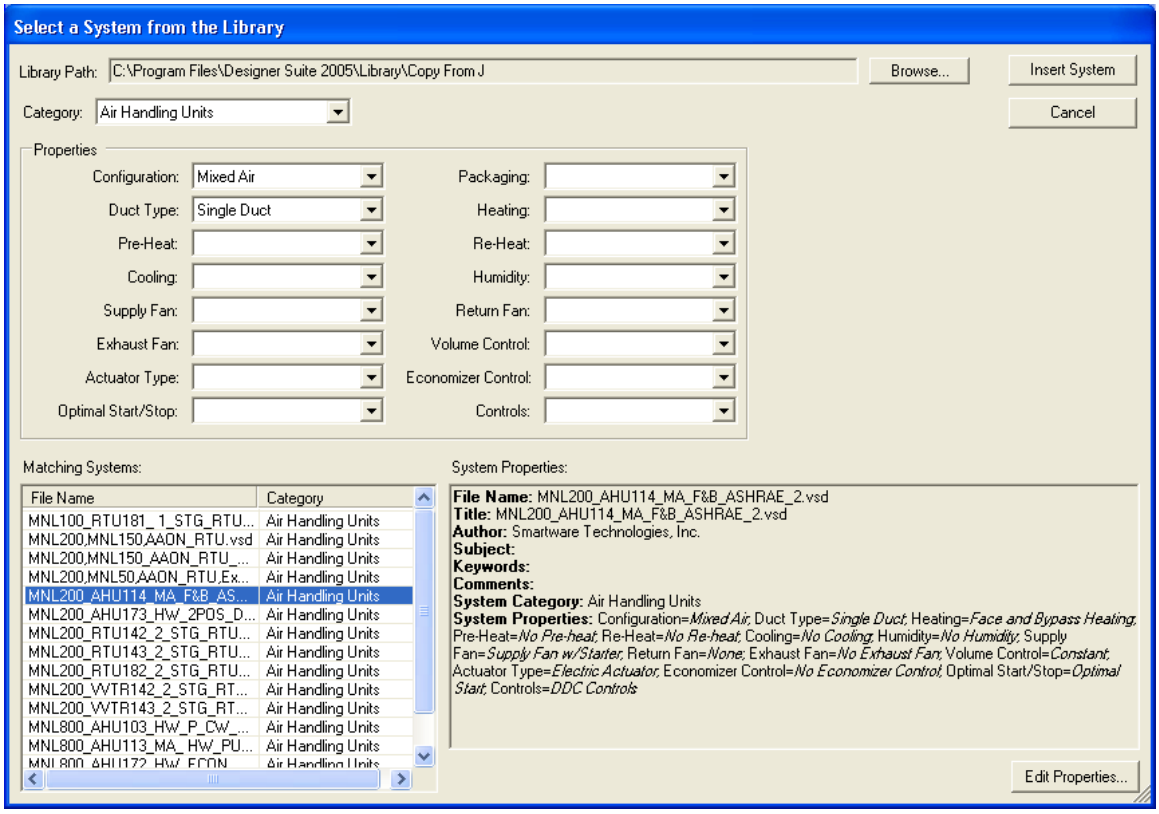
The Standard System Library Path

The default location for the Standard System Library is *C:\Program Files\Designer Suite 2005\Library*. You can change this by selecting TOOLS→OPTIONS and clicking on the PATHS AND TEMPLATES FILES tab. A logical place for the library path is on a shared network drive.

Inserting a Standard System from the Library

You can insert a standard system from the library by right-clicking on a folder in the Project Folder Pane and selecting INSERT STANDARD SYSTEM.

You will have the opportunity to browse the system list by Category and sub-properties.



If you select a system in the list, its properties will be displayed in the bottom right pane. You can edit the values of this system in the library by clicking on the EDIT PROPERTIES… button.

When you locate the system you want, click INSERT SYSTEM to have a copy added to your project.

Copying a System into the Standard Library

You can copy a system file from your project into the library by right-clicking on it and selecting SEND TO→SYSTEM LIBRARY. You can specify its system properties in your project before sending it to the library (right-click on it and select PROPERTIES) or after you've put the copy into the library.

10. Valve, Damper and Air Flow Schedules

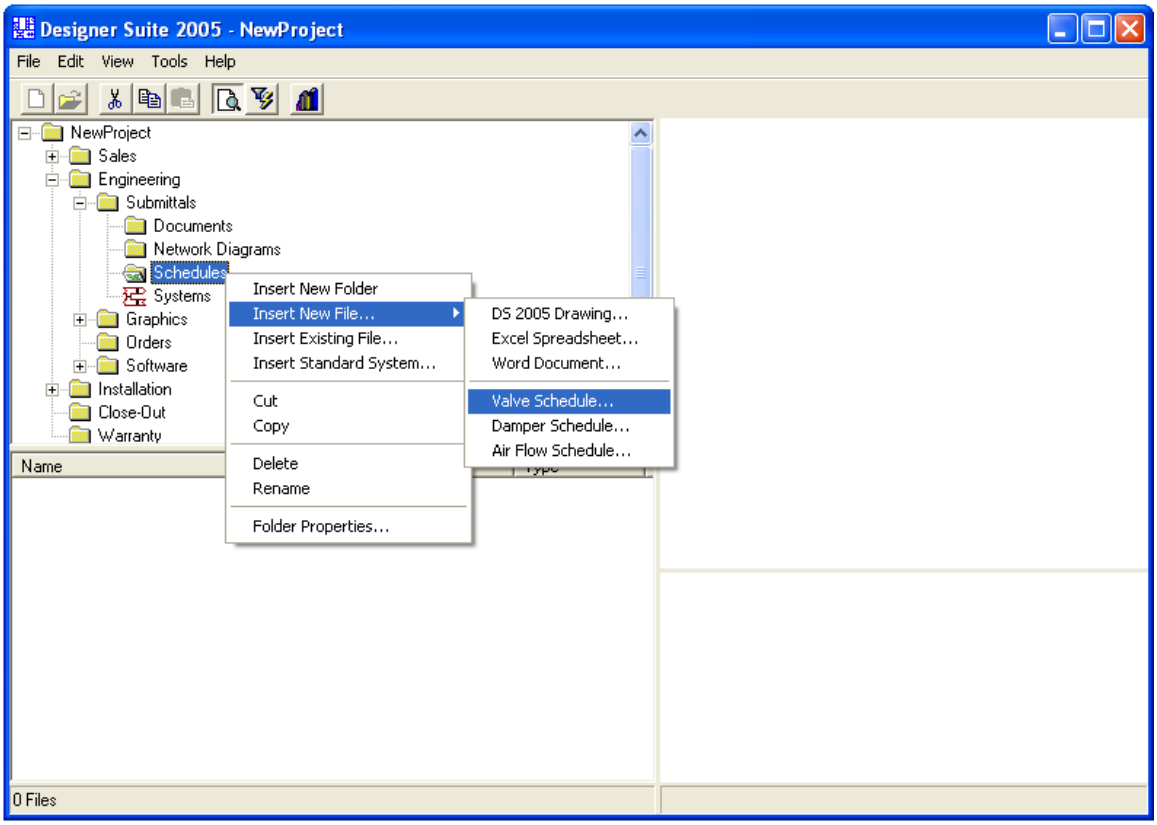
While there are features of Designer Suite 2005 that allow you to show dampers and valves directly on the drawing page, the preferred way of adding these parts to your projects and their Bill of Materials is to use a *Schedule*. A schedule is created and edited using Microsoft Excel, making it easy to enter, format and customize. When creating Valve Schedules, you also have the interactive Valve Sizer and Selector to help you find the body or assembly you're looking for.

Valve Schedules

Valve Schedules are a powerful tool for sizing and creating a list of valves for your project.

Creating a Valve Schedule

To create a new schedule, right click in the Project Folder Pane on the folder in which you want to save the file, such as *Engineering\Submittals\Schedules*, and select INSERT NEW FILE→VALVE SCHEDULE:



You will be prompted for a file name to use for the schedule. Once saved, the file will be listed in the File List Pane.

Opening the Valve Schedule

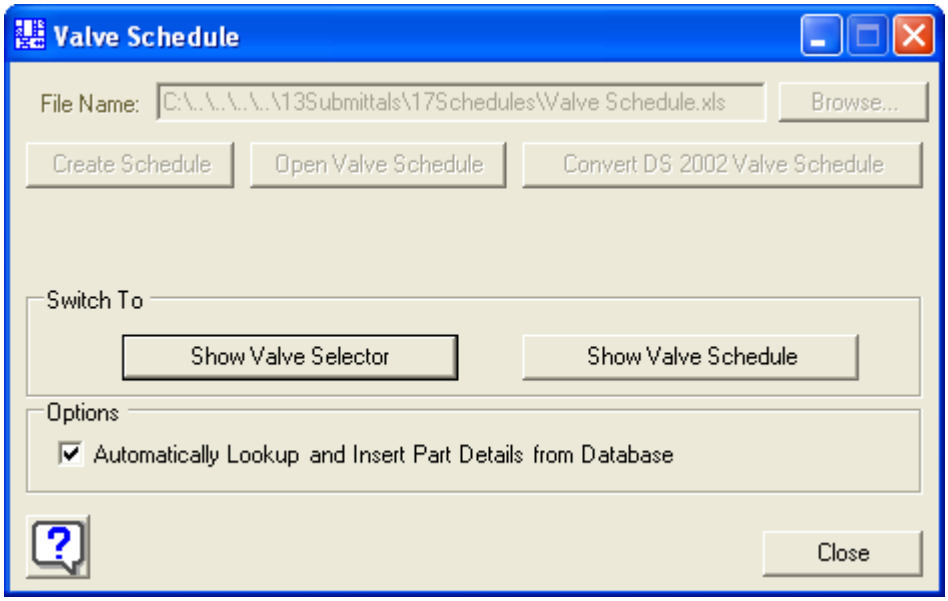
To open a valve schedule, simply double-click it in the File List Pane, or right-click on the file name and select OPEN.

When you open the Valve Schedule, there will be three windows open:

- The Valve Schedule Options Dialog
- The Valve Schedule Workbook (in Microsoft Excel)
- The Valve Sizer and Selector

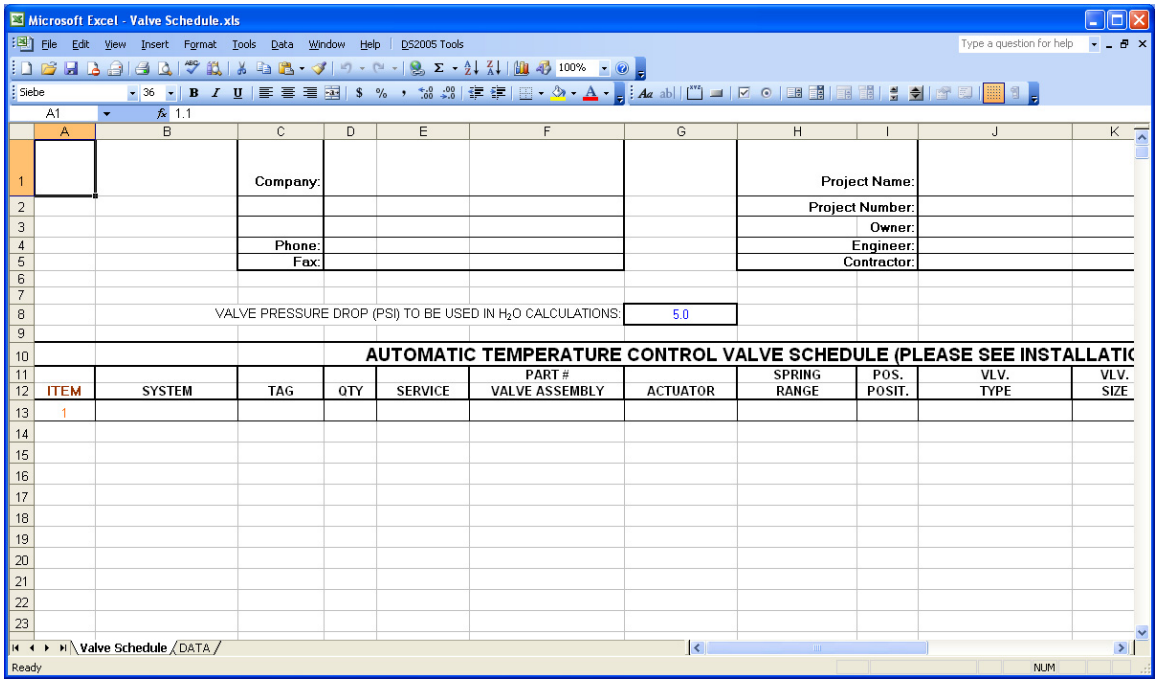
The Valve Schedule Options Dialog

The Valve Schedule Options Dialog controls the interaction between the other windows and the Project Explorer. It also allows you to turn the automatic lookup of parts in the database on and off. You can generally ignore this window.



The Valve Schedule Workbook

The Valve Schedule is an Excel Workbook in which you add valve parts, either by hand, or with the help of the Valve Sizer and Selector.

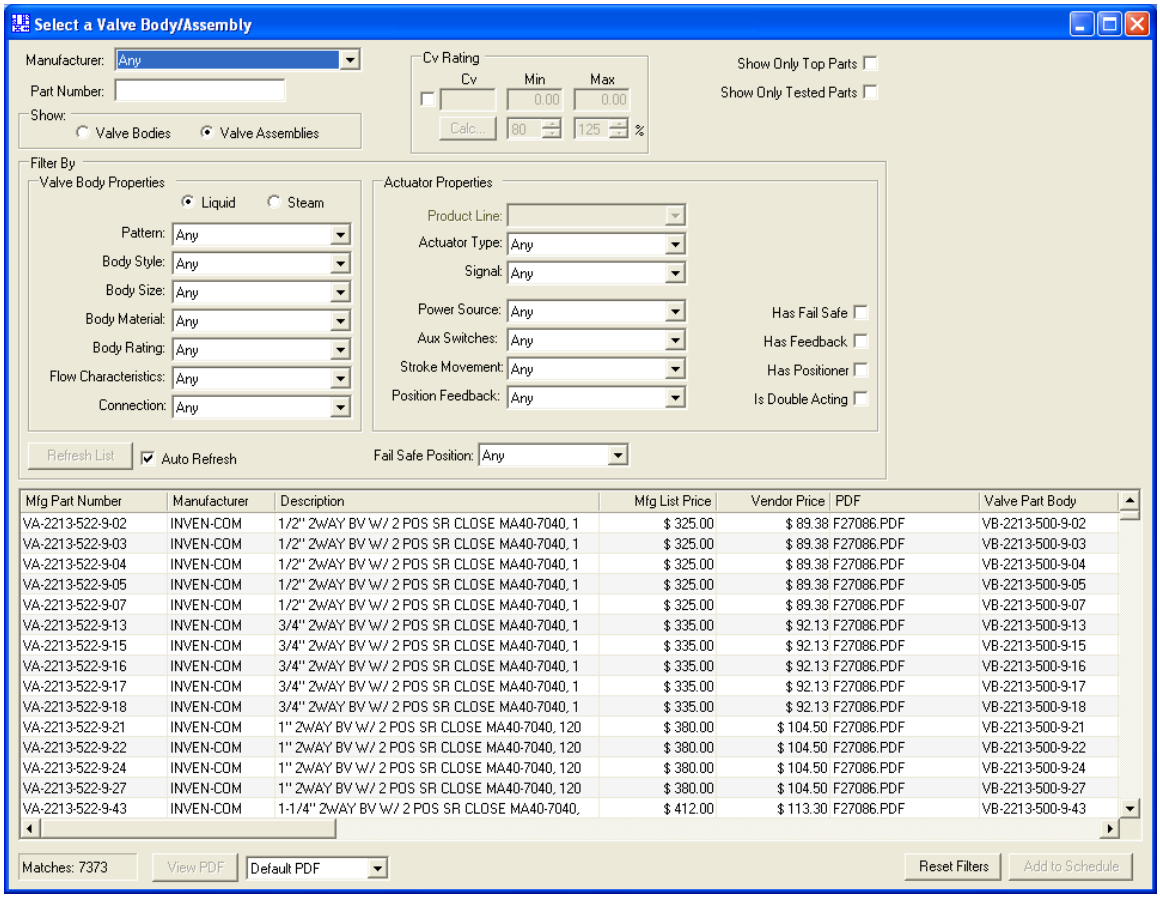


The columns and regions of the Valve Schedule spreadsheet are described in detail later in this chapter.

The Valve Sizer and Selector

The Valve Sizer and Selector is a dialog that shows all the Valve Bodies and Assemblies in the Parts Database. With it you can:

- Browse by Part Number
- Filter by Manufacturer
- Calculate a Cv and filter on a range
- Choose between valve bodies and assemblies
- Filter on all the physical characteristics of the valve body
- Filter on all the characteristics of the actuator (for assemblies)
- View detailed information on the filtered list of parts
- View product information PDF files
- Add a selected part to the Valve Schedule Spreadsheet



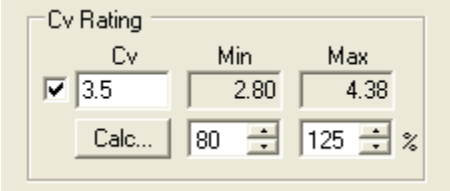
As you select any of the filter values, the list will be reduced to only the parts that match all the selected filters. The count of matching parts is shown in the lower left corner. You can reset the filters at any time by pressing the RESET FILTERS button.

In the part list you can click on any column heading to sort by that column. If you scroll the list to the right, you will see detailed information on each of the parts in the list, including most of the filterable valve body and actuator property values.

When you have found the part you want, select it in the list and click the ADD TO SCHEDULE button. The Part Number and other details will be copied to the next line in the Valve Schedule spreadsheet.

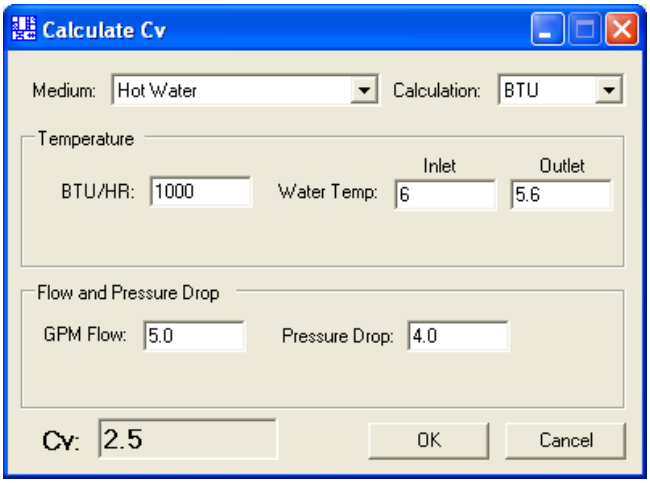
Calculating a Cv Range

To include a Cv range in your filters, check the box in the Cv Rating region:



You can enter a Cv value directly. The range will automatically be computed based on the lower and upper percentages, which can be adjusted.

To calculate the Cv value, click on the CALC… button.



The Valve Schedule Worksheet

There are a few things to note about the Valve Schedule Worksheet.

- There is a DS2005 TOOLS menu added to Excel when the Valve Schedule is open.
- The first dozen or so rows of the worksheet are a header region. You can fill in whatever information you wish in here (or customize the template, as described later in this chapter).
- The Project Properties region of the heading can be automatically populated with the Project Properties set when you created the project by selecting INSERT PROJECT PROPERTIES from the DS2005 TOOLS menu.
- Columns shown with red and blue text, such as the first column (*Item Number*) are calculated automatically as rows are created or removed. Do not change these values by hand.

Adding Valves to the Schedule

To add a valve to the schedule you can:

- Select a valve in the Valve Sizer and Selector window; or
- Enter the part number of the body or assembly in the Part Number column (or copy and paste a value into the cell)

When a part number is entered in the spreadsheet, Designer Suite looks the part number up in the database and automatically fills in other fields, such as the actuator part number, the spring range, and the valve size. It also updates the Item Number column and adds borders around the cells in the row as appropriate.

You can disable the automatic lookup of the detail columns from the Valve Schedule Options dialog (select DS2005→OPTIONS to bring it up).

Removing Valves from the Schedule

To remove a valve from the schedule, DO NOT delete the row in the spreadsheet. This will cause the calculated cells to become invalid. Instead, simply erase the value from the Part Number cell. The rest of the cells will be cleared automatically, and the borders will disappear as necessary.

The Valve Schedule Columns

There are four types of columns in the schedule:

User	Values to be entered manually
Calc	Values that are calculated automatically based on other values in the row. These are shown in red and should not be changed by hand.
Data	Values that are looked up in the database based on the valve part number and then filled into the row automatically. They are shown in blue and generally don't need to be changed by hand (though you can if you want).
List	Values that are selected from a drop-down list that appears when you click in the cell.

The valve columns are:

Column Name	Type	Description
Item	Calc	The item number in the schedule (automatically filled in and updated as you enter parts)
System	User	The system name for the part, as used by the Project Explorer in such features as the Reporting Engine to subcategorize parts. Corresponds to the *System Name* field in most Designer Suite shapes.
Tag	User	The Bill of Material tag for the part, as shown on material reports
Qty	User	The quantity for the part, as shown on material reports.
Service	User	The service for the part (not used by Designer Suite)
Part #	User	The part number for the body or assembly. Entering a value in this cell causes other cells to be filled in automatically. Clearing this cell will clear the other values from the row.
Actuator	Data	The part number of the actuator for the specified assembly.
Spring Range	Data	The spring range of the assembly
Pos. Posit	Data	Indicates if the assembly has a positioner.
Valve Type	Data	The pattern type of the valve (e.g. Two-Way Straight).
Valve Size	Data	The size of the valve body.
Pipe Size	List	The size of the pipe, for use in Cv calculations.
Valve Action	Data	An indication of the valve's fail safe position.
Conn. Type	Data	The connection type of the valve.
Flow GPM	User	Used to calculate the valve Cv
#/HR	User	Used to calculate the Valve Cv
Cv Calc	Calc	The calculated Cv of the valve
Cv Actual	Data	The actual Cv of the valve
Press. Drop	Calc	The calculated pressure drop
Stem Up	Data	The Stem Up Close off value
Stem Down	Data	The Stem Down Close off value
Piping Detail	List	The piping detail diagram for the value (used to create a Valve Legend)

Piping Detail

In the Piping Detail column you can pick from a list of coded piping detail diagrams. Each code corresponds to a configuration from the following list (which you can view on the DATA worksheet tab included in the Valve Schedule workbook)

3C01	3-Way Mix Cool Small N.O.
3C02	3-Way Mix Cool Small N.C.
3C03	3-Way Mix Cool Erie N.O.
3C04	3-Way Mix Cool Erie N.C.
3C05	3-Way Divert Cool Small N.O.
3C06	3-Way Divert Cool Small N.C.
3H01	3-Way Mix Heat Small N.O.
3H02	3-Way Mix Heat Small N.C.
3H03	3-Way Mix Heat Erie N.O.
3H04	3-Way Mix Heat Erie N.C.
3H05	3-Way Divert Heat Small N.O.
3H06	3-Way Divert Heat Small N.C.
3C07	3-Way Divert Cool Erie N.O.
3C08	3-Way Divert Cool Erie N.C.
3C09	3-Way Divert Cool Large N.O.
3C10	3-Way Divert Cool Large N.C.
3C11	3-Way Ball Cool Divert
3H07	3-Way Divert Heat Erie N.O.
3H08	3-Way Divert Heat Erie N.C.
3H09	3-Way Divert Heat Large N.O.
3H10	3-Way Divert Heat Large N.C.
3H11	3-Way Ball Heat Divert
2C01	2-Way Cool CHWS
2C02	2-Way Cool CHWR
2C03	2-Way Erie Cool CHWS
2C04	2-Way Erie Cool CHWR
2H01	2-Way Heat HWS
2H02	2-Way Heat HWR
2H03	2-Way Erie Heat HWS
2H04	2-Way Erie Heat HWR
2C05	2-Way Cool Coil Pump
3C12	3-Way Cool Mix Coil Pump N.O.
3C13	3-Way Cool Mix Coil Pump N.C.
2H05	2-Way Heat Coil Pump
3H12	3-Way Heat Mix Coil Pump N.O.
3H13	3-Way Heat Mix Coil Pump N.C.

This piping code is used when creating a Valve Legend for your project. The diagrams are taken from the *ValveDetails.vss* stencil in Visio. Refer to the later chapter on the Valve Legend tool for more detail.

Air Flow and Damper Schedules

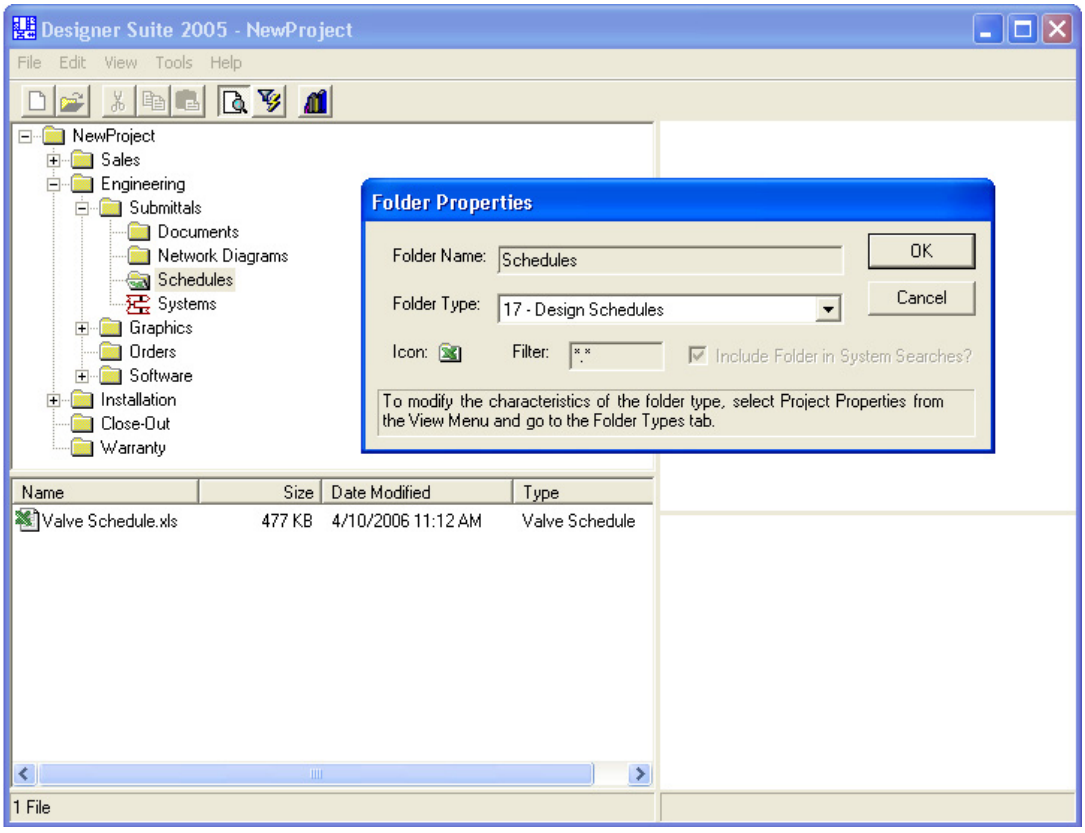
You can create Air Flow and Damper Schedules in the same way as you do Valve Schedules. The main difference is that there are no Air Flow or Damper parts in the Parts Database, so there is no selection dialog or automatic filling-in of fields based on the part numbers.

The Air Flow and Damper parts can, however, be added to the Bill of Materials, if the schedule is saved in a scannable folder as noted below.

Including Schedule Parts in the Bill of Materials

The schedules can often stand by themselves, but there are times when you want the parts to be included in Designer Suite project reports, such as a Total Bill of Materials. To ensure that the parts in the schedule are added to the database of parts accumulated from Visio drawing files, be sure that the schedules are saved in a *scannable* folder. A scannable folder type is one where the INCLUDE FOLDER IN SYSTEM SEARCHES? checkbox is set. Refer to the earlier chapter on *Project Folders and Folder Types* for more details.

Newer Designer Suite 2005 projects contain a folder called *Engineering\Submittals\Schedules*, which has a type code of "17" which is set to be scannable. The folder's icon also shows an Excel logo on it to indicate that it is scannable. You will probably want to save your schedules in this folder, or a folder with the same type.



Customizing the Schedules

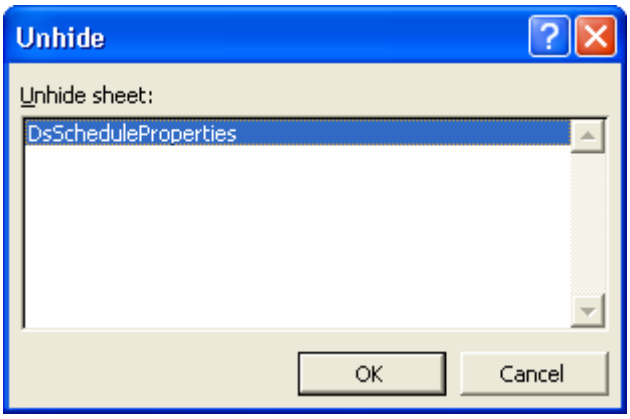
The template Excel files that are used for the Valve, Damper and Air Flow Schedules are fairly sophisticated in that they allow Designer Suite 2005 to read the part information into the project's database to include the parts in material reports. You should exercise some caution when editing these files. It is recommended that you not insert or remove rows or columns, as Designer Suite 2005 expects to find certain information in specific cells.

Refer to the earlier chapter on *Customizing Designer Suite 2005* for information on how to create, point to and distribute custom template files.

If you do want to make more sophisticated changes, you can modify the underlying locations of the data by viewing the *DsScheduleProperties* worksheet, which is normally hidden:

To Expose the DsScheduleProperties Worksheet

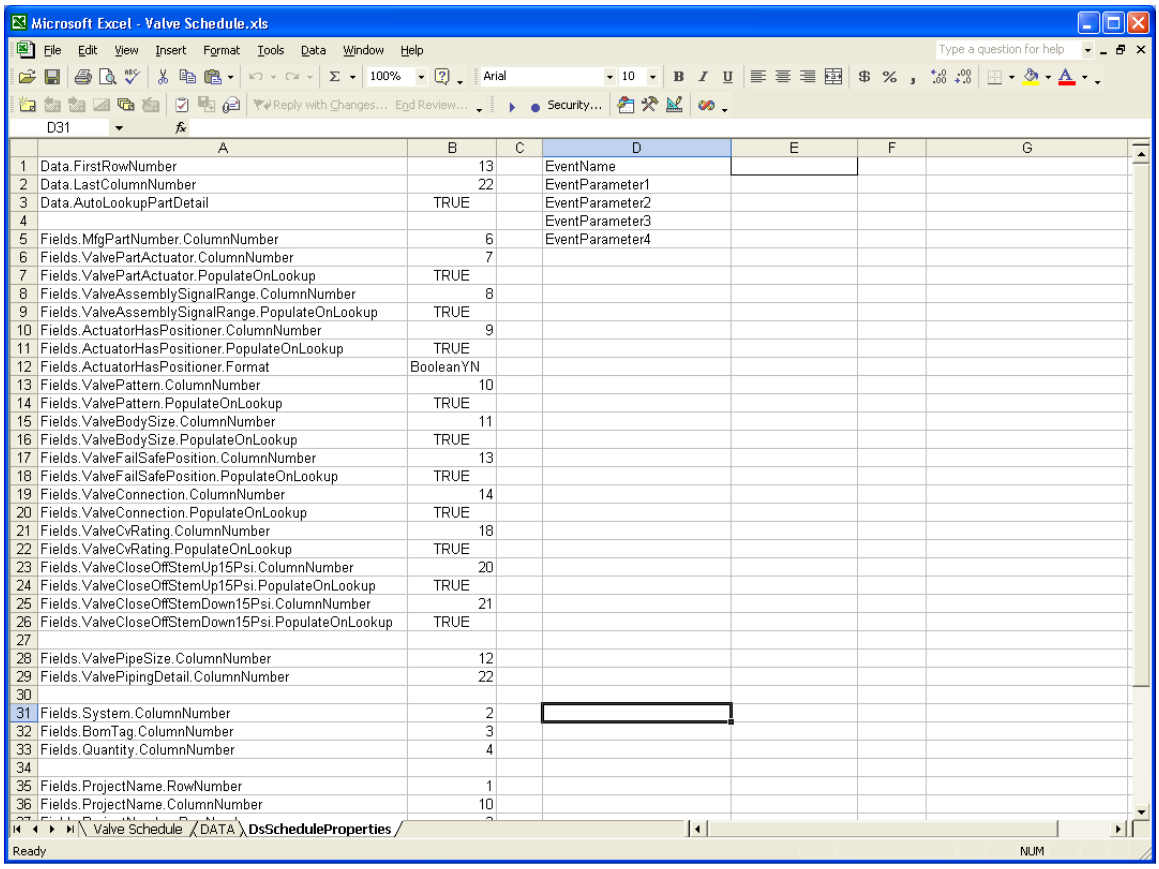
While editing your copy of the schedule template file in Excel, select FORMAT→ SHEET→UNHIDE.



Select the worksheet and click OK.

The *DsScheduleProperties* worksheet contains the properties that tell Designer Suite important information such as:

- Where the first row of parts is (*Data.FirstRowNumber*)
- Where the last relevant column is (*Data.LastColumnNumber*)
- Which columns contain which fields (e.g., *Fields.MfgPartNumber.ColumnNumber*)
- Where the Project Properties should be placed (e.g. *Fields.ProjectName.RowNumber* and *Fields.ProjectName.ColumnNumber*)



	A	B	C	D	E	F	G
1	Data.FirstRowNumber	13		EventName			
2	Data.LastColumnNumber	22		EventParameter1			
3	Data.AutoLookupPartDetail	TRUE		EventParameter2			
4				EventParameter3			
5	Fields.MfgPartNumber.ColumnNumber	6		EventParameter4			
6	Fields.ValvePartActuator.ColumnNumber	7					
7	Fields.ValvePartActuator.PopulateOnLookup	TRUE					
8	Fields.ValveAssemblySignalRange.ColumnNumber	8					
9	Fields.ValveAssemblySignalRange.PopulateOnLookup	TRUE					
10	Fields.ActuatorHasPositioner.ColumnNumber	9					
11	Fields.ActuatorHasPositioner.PopulateOnLookup	TRUE					
12	Fields.ActuatorHasPositioner.Format	BooleanYN					
13	Fields.ValvePattern.ColumnNumber	10					
14	Fields.ValvePattern.PopulateOnLookup	TRUE					
15	Fields.ValveBodySize.ColumnNumber	11					
16	Fields.ValveBodySize.PopulateOnLookup	TRUE					
17	Fields.ValveFailSafePosition.ColumnNumber	13					
18	Fields.ValveFailSafePosition.PopulateOnLookup	TRUE					
19	Fields.ValveConnection.ColumnNumber	14					
20	Fields.ValveConnection.PopulateOnLookup	TRUE					
21	Fields.ValveCvRating.ColumnNumber	18					
22	Fields.ValveCvRating.PopulateOnLookup	TRUE					
23	Fields.ValveCloseOffStemUp15Psi.ColumnNumber	20					
24	Fields.ValveCloseOffStemUp15Psi.PopulateOnLookup	TRUE					
25	Fields.ValveCloseOffStemDown15Psi.ColumnNumber	21					
26	Fields.ValveCloseOffStemDown15Psi.PopulateOnLookup	TRUE					
27							
28	Fields.ValvePipeSize.ColumnNumber	12					
29	Fields.ValvePipingDetail.ColumnNumber	22					
30							
31	Fields.System.ColumnNumber	2					
32	Fields.BomTag.ColumnNumber	3					
33	Fields.Quantity.ColumnNumber	4					
34							
35	Fields.ProjectName.RowNumber	1					
36	Fields.ProjectName.ColumnNumber	10					

If you move the columns and rows around in the schedule, you should ensure that the values specified here are also changed accordingly.

11. Working with Visio Drawing Files and Stencils

For engineers, most of the time spent working with Designer Suite 2005 involves the creation of system drawing files for submittals. These schematic drawings are created and edited using Microsoft Visio, with the help of the Designer Suite 2005 stencils of Smart Shapes.

Creating a Drawing File

- To create a new, blank drawing, right click on the appropriate folder and select INSERT NEW FILE→ DS 2005 DRAWING. The blank drawing is created as a copy of the Blank Drawing template, which can be customized (refer to the earlier chapter on *Customizing Designer Suite 2005*)
- To insert a copy of an existing drawing from another project or folder, right click on the appropriate folder and select INSERT EXISTING FILE
- To insert a copy of a file from the Standard System Library, right click on the appropriate folder and select INSERT STANDARD SYSTEM

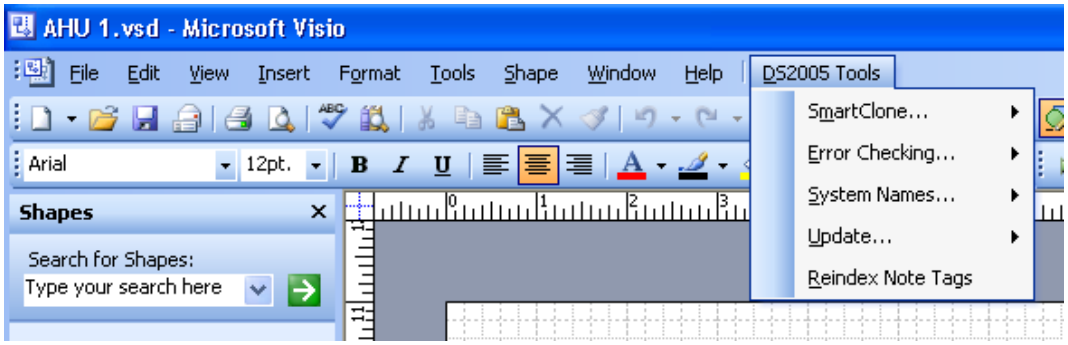
Opening a Drawing File in Visio

To load a drawing file into Visio, simply double-click the file name in the File List Pane of the Project Explorer, or right-click the file name and select OPEN.

You should not try to open a Designer Suite 2005 drawing file directly from Windows. When Designer Suite 2005 opens the file, it does a number of things that help the Project Explorer interact with Visio. If you load the file from outside the Project Explorer, it will not function properly and you will likely receive error messages.

The DS 2005 TOOLS Menu

When a drawing file is opened in Visio, Designer Suite 2005 adds a custom menu called DS2005 TOOLS to the end of the Visio menu bar (after the Visio HELP menu).



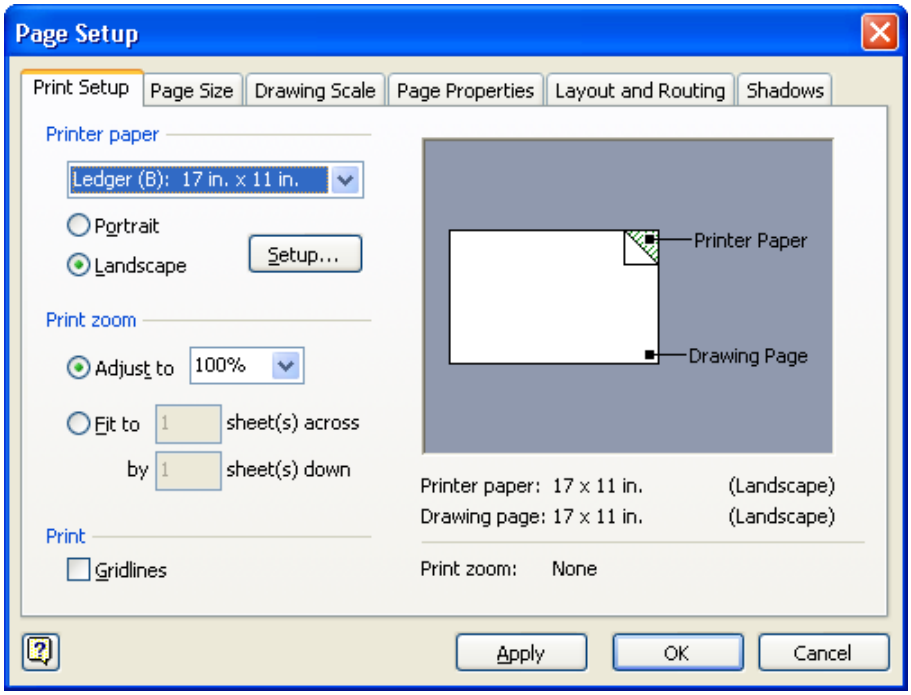
The DS2005 TOOLS menu contains the following sub-menus and commands.

SMARTCLONE	Provides the ability to create your own Smart Shapes and link them to custom parts that you add to the Parts Database. Refer to the later chapter on *Smart Clones*.
ERROR CHECKING	Scans the parts in the drawing and runs a set of error checks, such as finding duplicate Bill of Material Tags and Invalid Point Types. Refer to the section on Error Checking in the later chapter on *Working With Smart Shapes*.
SYSTEM NAMES	Provides utilities for work with the System Name field of most Smart Shapes. Refer to the section on System Names in the later chapter on *Working With Smart Shapes*.

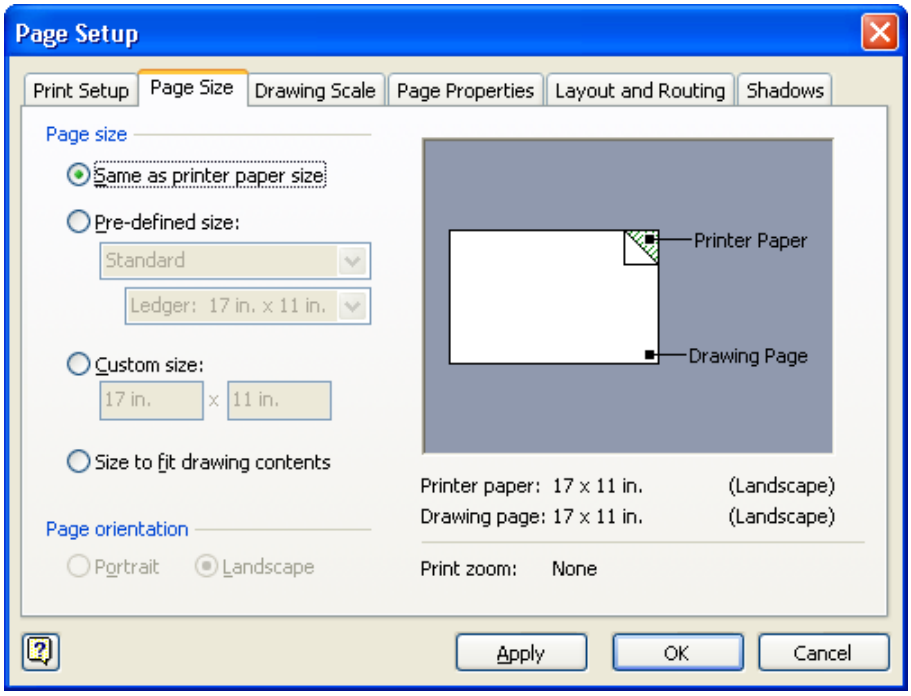
Visio Page Size

The page size when viewed and printed is controlled by Visio. To ensure that your drawings are printed correctly, you should select FILE→PAGE SETUP in Visio and check the following:

- On the PRINT SETUP tab, check the PRINTER PAPER size and the PORTRAIT/ LANDSCAPE settings:



- On the PAGE SIZE tab, it is usually best to select SAME AS PRINTER PAPER SIZE.



Working with Stencils

Designer Suite 2005 comes with over two dozen custom stencils that contain a variety of Smart Shapes representing all type of physical parts and other drawing features, such as Title Blocks and Bills of Material. You can also create your own Smart Shapes (known as Smart Clones; refer to the later chapter).

If you use more than one Visio-based application, or if you are going to create your own Smart Shapes and stencils, please review the following information to ensure that everything works properly in all your applications.

The Visio Stencil Path

Designer Suite 2005 keeps its stencils in the *C:\Program Files\Designer Suite 2005\Stencils* folder. Other applications, such as WorkPlace Tech, store their stencils in one or more of their folders. To keep track of these differences, Visio maintains a list of folders that it searches in when you ask to open a stencil. This is known as its *Stencil Path*.

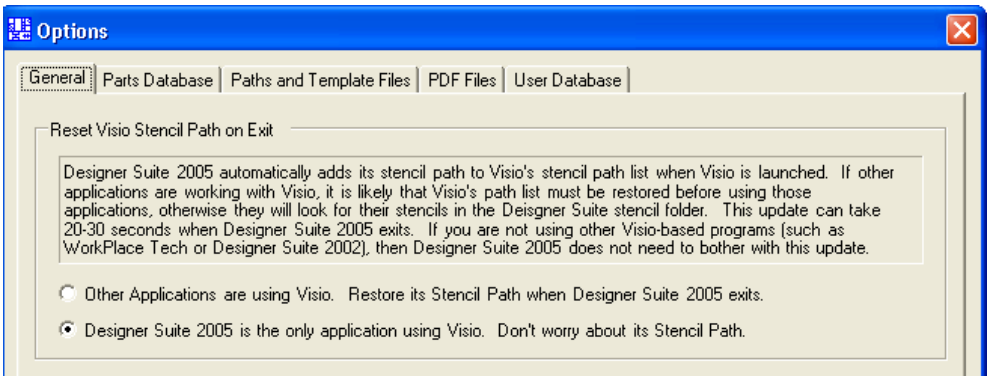
When Designer Suite 2005 loads a drawing file using Visio, it needs to ensure that the drawing can find any stencils that its shapes need. To keep the path as clean as possible for other applications, Designer Suite adds its stencil path to the front of Visio's stencil path list when Designer Suite loads a file, and removes it when Designer Suite shuts down.

In Visio 2002 (but not Visio 2003), changing the stencil path causes Visio to display a message about "Resetting Cache" for 30 seconds or longer while it scans all the stencils in the paths to build a list of shapes. This will happen when Designer Suite 2005 needs to add its path when opening a drawing file (if the path is not already set), or when it removes its path when shutting down.

If you are not using Visio 2002 with any other applications, you can tell Designer Suite 2005 to ignore these steps and leave its stencil path at the front of the list. This will greatly improve the speed at which Visio starts and exits.

To tell Designer Suite 2005 to not bother removing its stencil path:

- From the TOOLS menu, select OPTIONS



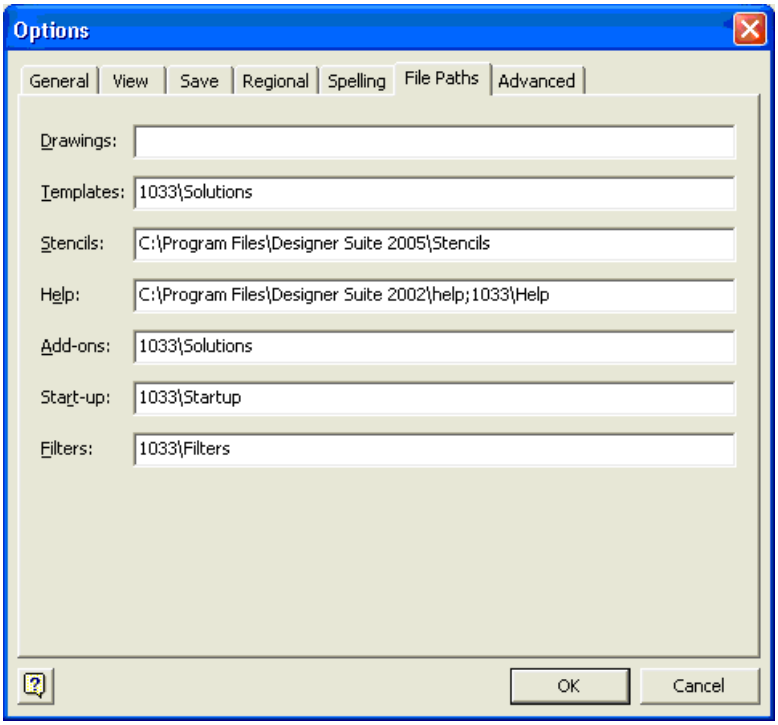
- Check the appropriate radio button to indicate whether you are using Visio with other applications.

Recent updates to WorkPlace Tech 5.x have shown that the number of stencils in their paths has increased to the point that the length of time it takes Visio to update its cache exceeds the time that Designer Suite 2005 can wait for Visio to launch. If you are experiencing such problems, it is recommended that you upgrade to Visio 2003.

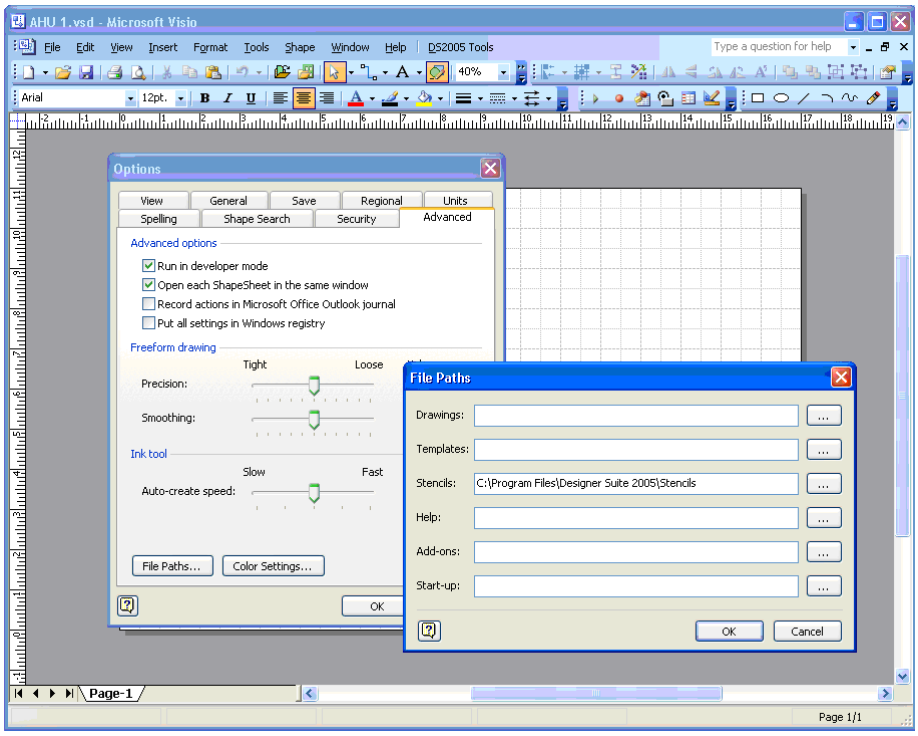
Checking the Visio Stencil Path

If you are experiencing problems, you can confirm the paths that are on the Visio Stencil Path list.

Select TOOLS→OPTIONS from the Visio menu. In Visio 2002, its on the FILE PATHS tab:



In Visio 2003, you need to select the ADVANCED tab and click the FILE PATHS… button



Creating and Using Custom Stencils and Shapes

You can create your own shapes, either from scratch (as Smart Clones) or by modifying an existing shape from a Designer Suite 2005 stencil. If you do, there are several critical rules you must follow:

- Never store your shapes in the Designer Suite stencil files. These files will be overwritten every time Designer Suite is updated.
- Never copy one of our stencil files to use for storing your shapes. Our stencils contain underlying code and names that may conflict with itself if duplicated. Moreover, if this code changes significantly, those custom versions will be out of date and cause further conflicts.
- Always store your shapes in blank stencils created from the Visio FILE→STENCILS→ NEW STENCIL (Visio 2002) or FILE→SHAPES→NEW STENCIL command.
- Never name your stencil files with the same name as one of the Designer Suite standard stencils

Storing Your Custom Stencils

Generally speaking, the more paths there are in the Visio Stencil Path, the worse the performance of Visio (this is more true in Visio 2002 than Visio 2003). To simplify matters and avoid the need to change the stencil path, you should store your custom stencils in a sub-folder of the Designer Suite stencil path, such as:

C:\Program Files\Designer Suite 2005\Stencils\Our Custom Stencils

Visio will automatically search in sub-folders of the paths on its list, so it will find these stencils automatically.

Sharing Custom Stencils

If multiple people are creating stencil shapes, it is likely they'll want to share them. The recommendation is that the master version of these custom stencil files be placed on a file server. Each person should then copy all the custom stencils (and only the custom stencils) into the custom stencil directory on their hard drive, as described above. If someone adds to a stencil, they should make their changes and put the new version on the network for others to re-download. Of course they must coordinate to make sure multiple people don't change the same stencil. It is helpful to designate a single person as the owner of any given stencil to avoid conflicts.

- DO NOT, under any circumstances, copy the Designer Suite 2005 stencils to a network drive and point all users there.

12. Working with Smart Shapes

The Designer Suite 2005 stencils contain hundreds of shapes that you can use on your drawings. These fall into a few different categories:

- *Simple Shapes*, like those included with Visio, that do nothing but appear on the page.
- *Smart Shapes* that correspond to a physical part, that allow you to set a wide range of properties such as Bill of Material Tag and Quantity for use in reports.
- *Advanced Smart Shapes* that correspond to devices, such as controllers, which add the ability to set I/O point information for use in commissioning reports.
- *Page Add In Shapes*, such as Title Block and Bill of Material listing, which interact with Designer Suite and enhance the drawing.

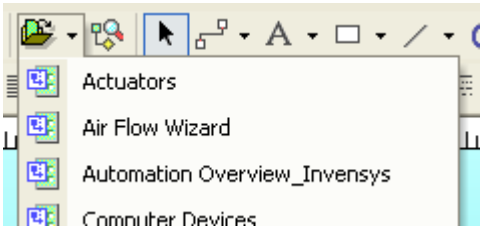
The chapters that follow will review the various shapes in the stencils in turn. This chapter will discuss features and actions that are common to many of the shapes.

Opening a Designer Suite 2005 Stencil

Before you can add a shape, you must open the corresponding Designer Suite 2005 stencil.

To open a stencil in Visio 2002:

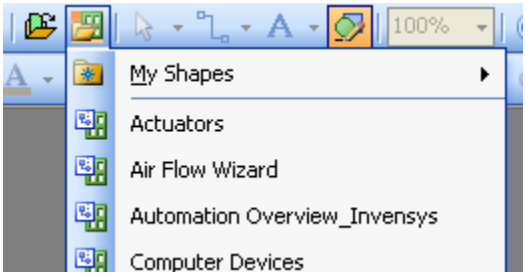
- Select FILE→STENCILS. You should see a list of the stencils in the sub-menu; or
- Select FILE→STENCILS→OPEN STENCIL and browse to the stencil; or
- Click on the OPEN STENCIL icon in the toolbar:



To open a stencil in Visio 2003:

- Select FILE→SHAPES. You should see a list of the stencils in the sub-menu; or
- Select FILE→SHAPES→OPEN STENCIL (at the bottom of the sub-menu) and browse to the stencil; or

- Click on the SHAPES icon in the toolbar:

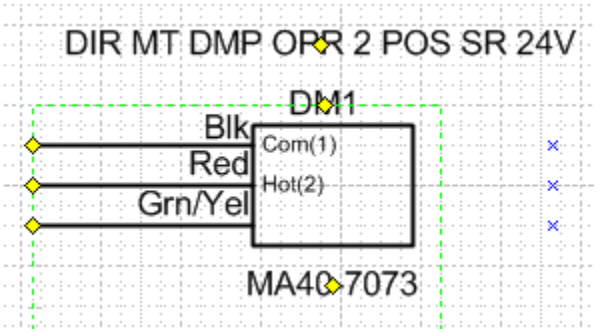


Adding a Shape to the Drawing

To add a shape to the drawing, simply select it in the stencil and drag it onto the drawing page.

The Anatomy of a Smart Shape

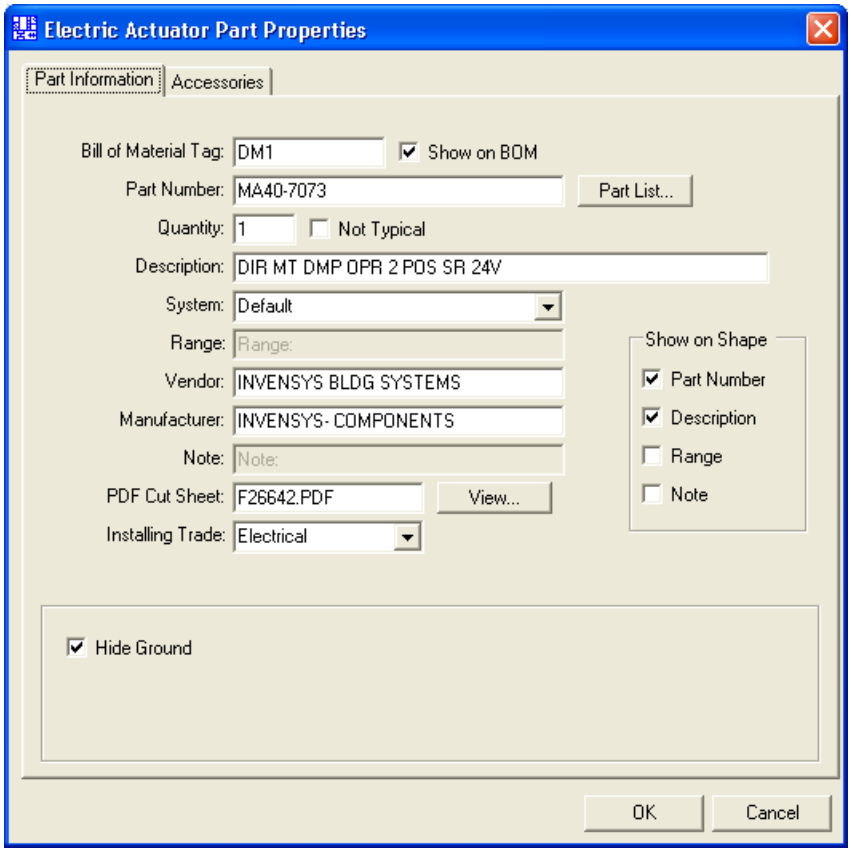
Each Smart Shape will appear different, but they have a number of features in common:



- There are pieces of text representing the *Part Number*, *Description*, *Bill of Material*, *Range* and *Note*. You can turn their visibility on or off from the Shape Properties dialog. You can also move them around by dragging their yellow control handle.
- Some shapes have terminals, with text labels that may vary from part to part, and wire leads that can be extended by dragging their yellow control handles.
- If you right-click on the shape, the first menu item will often be SHAPE PROPERTIES (or something more specific, such as ACTUATOR PROPERTIES). You can also bring up the Shape Properties by double-clicking the shape.

Shape Properties

When you double-click a Smart Shape (or select the SHAPE PROPERTIES menu item), you will see the Shape Properties dialog. This dialog varies from shape to shape, but most have the same basic fields in common.



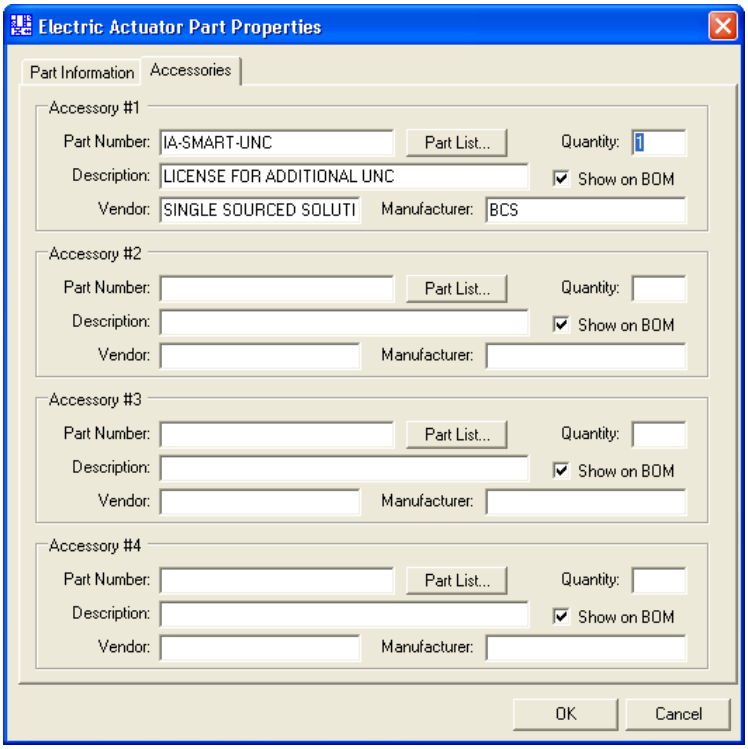
The fields are:

Bill of Material Tag	An 8 character tag for use on material reports.
Show on BOM	Determines whether the part will appear on the material reports.
Part Number	The Manufacturer's Part Number. This is generally selected from a list, either by clicking the PART LIST… button (in newer shapes) or dropping down the list box (in older shapes).
Quantity	The quantity of the part for material reports.
Not Typical	When use in systems that are Typical Of multiple instances, indicates that this part should not have its quantity multiplied by the Typical Of value. See the later chapter on *System Names and the System List* for more information.
Description	The description of the part, automatically loaded from the database when the Part Number is selected.

System	The name of the System for the part. See the later chapter on *System Names and the System List* for more information.
Range	Used for certain parts to display the range (e.g. Signal Range).
Vendor	The vendor name for the part, automatically loaded from the database when the Part Number is selected.
Manufacturer	The manufacturer name for the part, automatically loaded from the database when the Part Number is selected.
Note	An optional note to show on the shape.
PDF Cut Sheet	The name of the PDF Product Information Sheet, automatically loaded from the database when the Part Number is selected. In newer shapes you can click the VIEW… button the view the file. In older shapes you can double-click on the file name.
Installing Trade	An indication of where the part will be installed (Mechanical, Electrical, Panel, etc.). You can sort and sub-sort Bill of Material reports on this value. To add new values to this list, refer to the earlier chapter on *Customizing Designer Suite 2005*.
Show On Shape	Indicates which of the floating text values should be shown on the shape.

Accessories

Many shapes also have a tab that allow you to specify Accessories. These are additional parts to add to the Bill of Material.



Accessories are automatically assigned a Bill of Material tag based on the tag of the main part (e.g. DM1_1, DM1_2, etc.).

13. System Names and the System List

The System Name field in the Smart Shapes allows you to group parts together into a logical system within a drawing (e.g. AHU1, VAV2, etc.). There are a number of features of Designer Suite that make use of these names:

- The Bill of Material shape and reports allow you to sort on the System Name
- The Reporting Engine allows you to select specific systems to include in the reports
- The Site Manager allows you to organize the systems from multiple drawings into a logical tree structure for the project.
- The Typical Of values allow you to automatically multiply the quantities of the parts in a system by a value.

Specifying the System Name

You can type the System Name directly into the list box in the Shape Properties dialog. Once you use a system name, it should automatically appear in the list for the next shape.

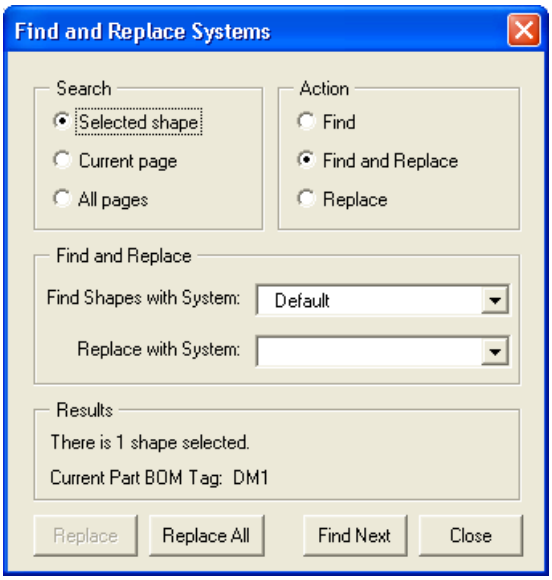
You should avoid using very long System Names (more than 30 characters) or using special characters in the System Names.

The System List

In older versions of Designer Suite, it was necessary to tell Designer Suite to scan the parts to update the System List presented in the Shape Properties dialog. In current versions, this list is updated automatically whenever necessary. The DS2005 TOOLS menu still contains the UPDATE SYSTEM LIST command, thought it should no longer be required.

Finding and Replacing System Names

If you want to change the System Name in more than one shape, select SYSTEM NAMES→ FIND AND REPLACE SYSTEM NAMES from the DS2005 TOOLS menu.



Sub-Systems

Though not common, you can actually further assort the parts in a system by specifying a *Sub-System* name. The format for these System Names are: *System.SubSystem* (e.g. *VAV1.EF1*). When you run a Bill of Material, you can choose to sort the parts by the system or the sub-system.

The parts in a sub-system are still part of the system. For example, parts in systems *VAV1*, *VAV1.EF1* and *VAV1.EF2* will display in three groups when sorted by sub-system, but will all appear under the system *VAV* when sorted only on system.

You cannot create sub-sub-systems.

Typical Of Values

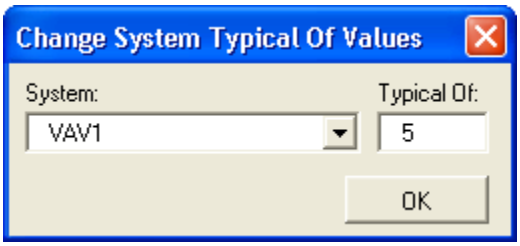
One of the most important uses of System Names is to assign a *Typical Of* value to the system. This will serve to automatically multiply the quantities of the parts in the system by this value.

To prevent a part in a system from having its quantity extended, check its *Not Typical* checkbox in its Part Properties dialog.

Setting the Typical Of Value for a System

You can set the Typical Of value for a System in a number of ways:

- Select SYSTEM NAMES→ CHANGE TYPICAL OF VALUES FOR SYSTEMS from the DS2005 TOOLS menu.



- Drag in a Typical Of shape from the Page Add Ins stencil
- Use the Site Manager (see the later chapter for more information)

Smart Charts

Smart Charts are an advanced feature that allow you to specify unique information for each instance of a controller in a Typical Of scenario. The number of rows in the Smart Chart is tightly linked to the Typical Of value of the system. Refer to the later chapter on *Smart Charts* for more information

Grouping Systems into Areas with the Site Manager

The Site Manager tool allows you to build a logical tree from your systems. For example, the top level nodes of the tree could represent buildings, with the sub nodes representing building wings and rooms. The individual systems in the project can then be located in these areas.

Refer to the later chapter on the *Site Manager* for more information.

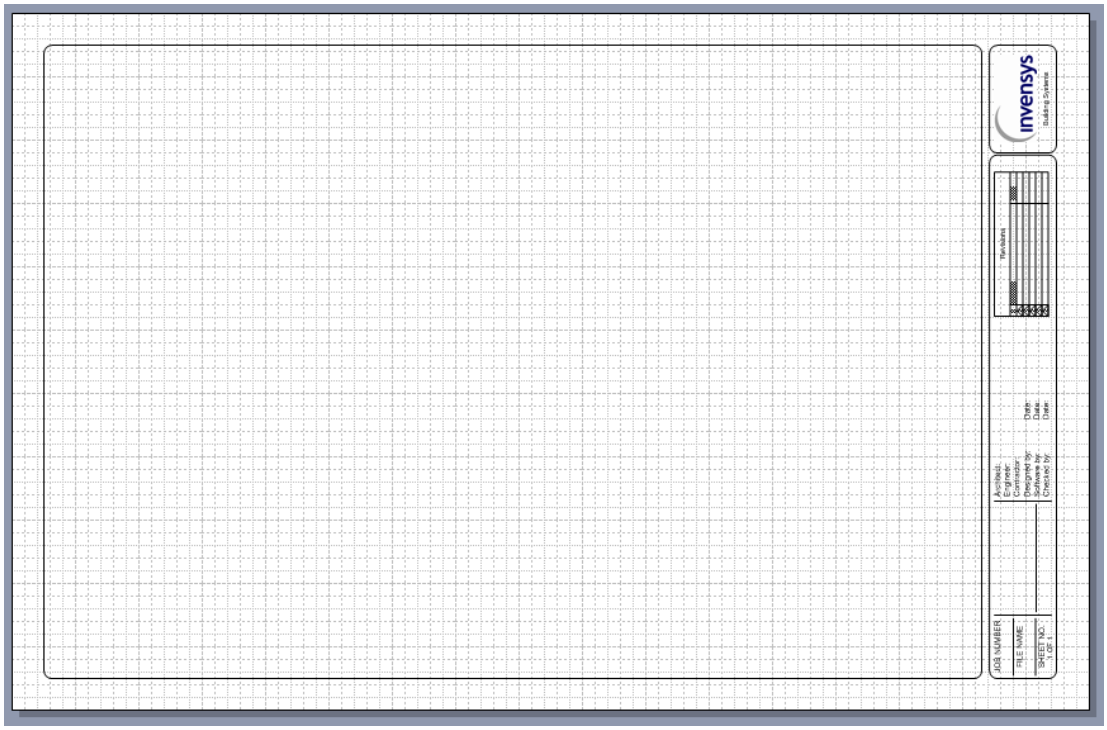
14. Page Add Ins

The Page Add Ins stencil contains a number of shapes that don't represent parts, but instead provide documentation and help Designer Suite 2005 interact with Visio, including

- Title Blocks
- Bill of Material
- Typical Of Value
- Revision Bubbles

Title Blocks

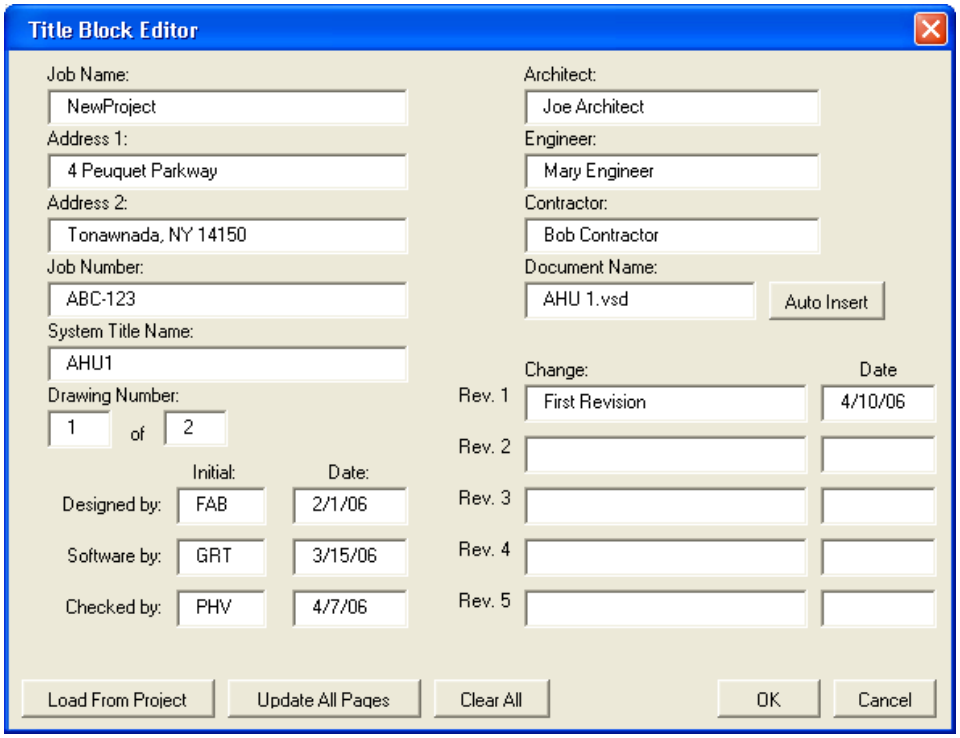
The Title Block shape is generally the first shape you add to a drawing page.



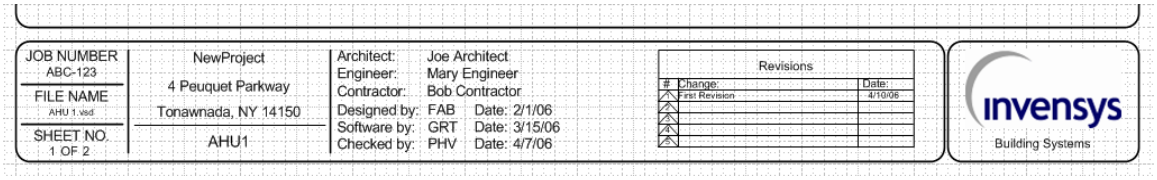
Aside from its appearance, the title block serves an important function in Designer Suite 2005. When working with pages in such tools as the Page Wizard, Print Manager and Table of Contents, only pages with a title block shape are considered and the title block provides the page number.

The Title Block Information

The edge of the title block shape provides a set of information that you can edit by double-clicking the shape or right-clicking and selecting EDIT TITLE BLOCK from the menu.



- The majority of the properties can be imported from the Project Properties by clicking the LOAD FROM PROJECT button. The title block is not automatically updated if the Project Properties change.
- The Page Number and Page Count (e.g., 1 of 2) should both be numbers (i.e., do not include letters, such as 15a) to ensure they are sorted properly by other tools.
- When you click OK, the changes will be applied to the selected title block only.
- To apply the values to each title block on every page in the entire drawing file, click UPDATE ALL PAGES.



Updating Title Blocks in Multiple Drawings

There are other Designer Suite 2005 tools that allow you to update multiple title blocks at once:

- The Page Wizard is used to update, change and renumber the pages and system names in multiple files.
- The Revision Notes tools is used to remove or add a Revision Note and Date to the title blocks on multiple pages.

Refer to the later chapters on these tools for more information.

Bill of Material Shape

It is very common to want to show a list of the material shown on a drawing page directly on the page. The Bill of Material Shape does just that.

AC-1

Device	Qty	Part Number	Description	Vendor
Electrical				
R2	1	FUN-RIB24-01C	ENCLOSED RELAY 10AMP SPDT 24VA	SINGLE SOURCED SOLUTIONS
R1	1	FUN-RIB24-01D	ENCL RELAY 10A DPDT 24VAC	SINGLE SOURCED SOLUTIONS
RES1-7	7	.511K	511 OHM RESISTOR	LOCAL VENDOR

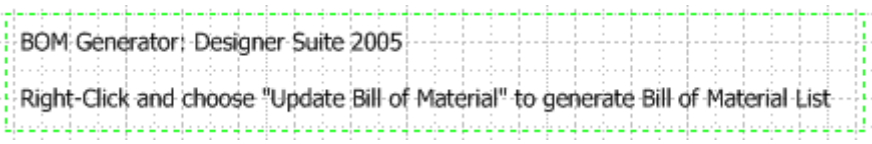
AC-2

Device	Qty	Part Number	Description	Vendor
Electrical				
TS1-3	3	TS-8422	22' AVG. SENSOR 1 K OHM BALCO	INVENSYS BLDG SYSTEMS
TS2A	1	TS-8422	22' AVG. SENSOR 1 K OHM BALCO	INVENSYS BLDG SYSTEMS
Panel				
U01C5002	1	MNB-1000	I/A SERIES BACNET PLANT CNTRL	INVENSYS BLDG SYSTEMS
U01C5002_1	1	MNB-1000-ENC	WALL MNT ENCLOSRE FOR MNB-1000	INVENSYS BLDG SYSTEMS

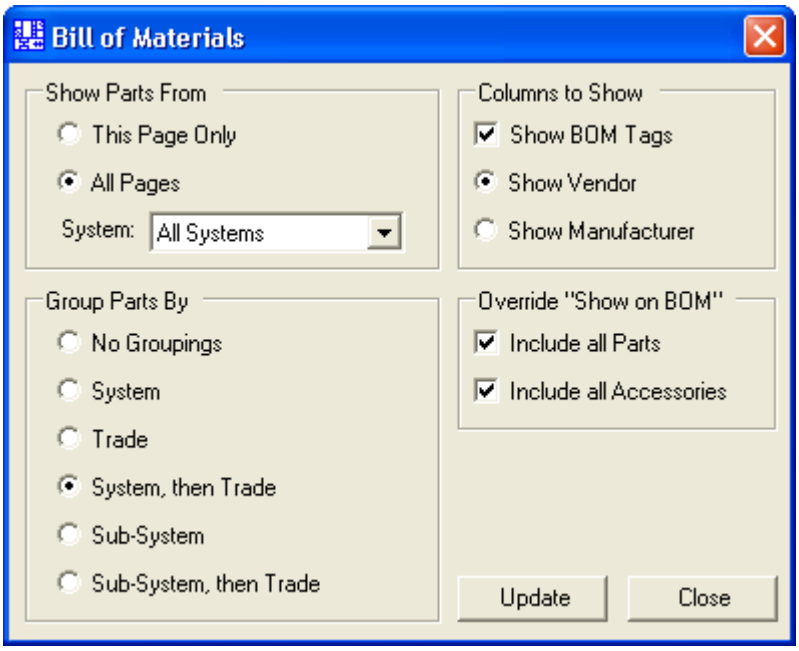
TCP-1

Device	Qty	Part Number	Description	Vendor
Electrical				
IP1-2	2	VER-EP2-100-S	ELECT-PNEU TRANSDUCER PSI	SINGLE SOURCED SOLUTIONS
IP1_1	1	AE-690	AUX EQUIPMENT PANEL 10-3/3 X 8	INVENSYS BLDG SYSTEMS
Panel				
F1	1	K-335	FINAL FILTER W/OIL INDICATION	SINGLE SOURCED SOLUTIONS
TCP1	1	AE-690	AUX EQUIPMENT PANEL 10-3/3 X 8	INVENSYS BLDG SYSTEMS
XTM1-3	3	FUN-TR100VA001	TRANSFORMER, 100 VA 120/24VAC	SINGLE SOURCED SOLUTIONS
XTM4	1	TR50VA005	TRANSFORMER, 50 VA 120/24VAC	SINGLE SOURCED SOLUTIONS

To add a Bill of Material, drag the shape from the Page Add Ins stencil:



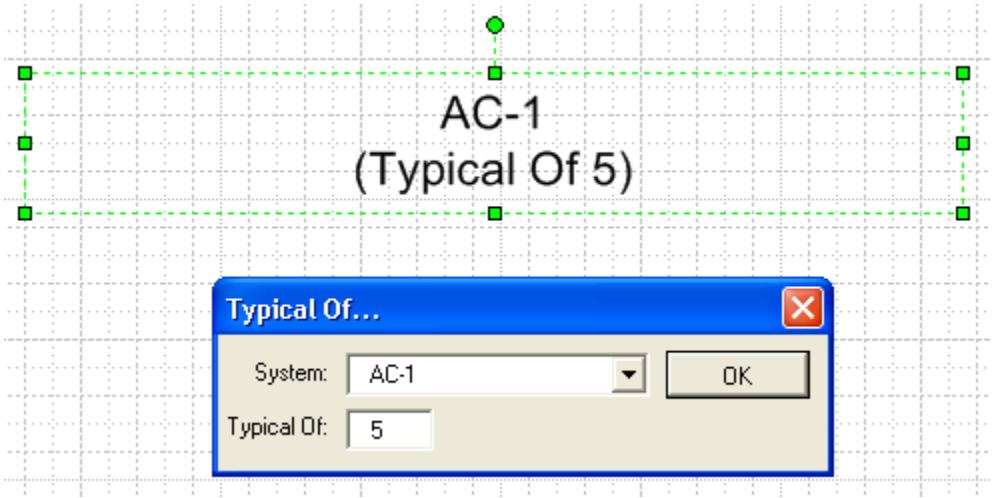
Next, right click on the shape and select UPDATE BILL OF MATERIAL to specify how you want the Bill of Materials to be sorted and which parts to include:



The Bill of Material shape does not automatically update as you add or remove parts from the drawing. You will need to right-click on the shape and run the update again as necessary.

Typical Of Value

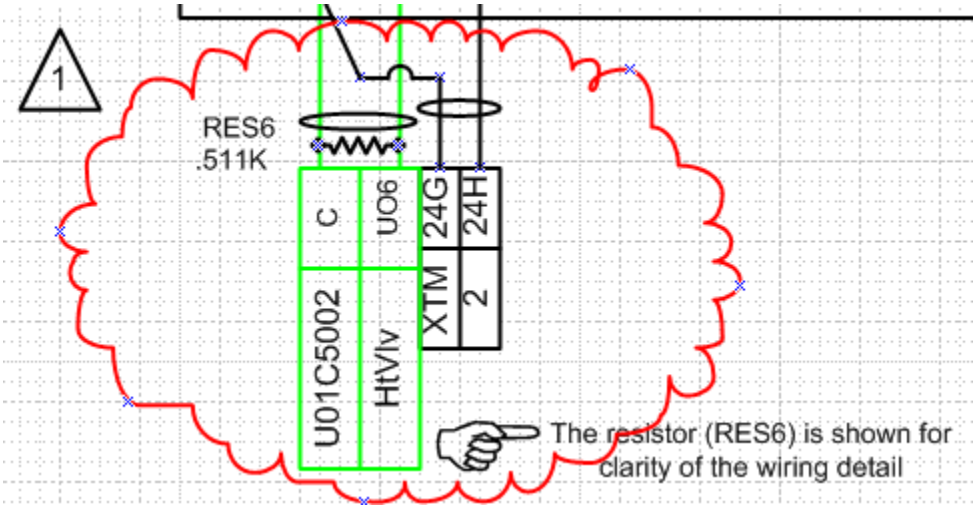
The Typical Of Value of a system was described in the previous chapter. As noted, the Typical Of shape from the Page Add Ins stencil can be used to annotate the Typical Of value as well as set it.



Be aware that this shape does not automatically update if the Typical Of value is change through a different action, such as with the Site Manager or by using the DS 2005 TOOLS→SYSTEM NAMES→CHANGE TYPICAL OF VALUES FOR SYSTEMS menu command. If you do change it elsewhere, you can double-click this shape again and click OK to update the shape's text.

Revision Bubbles

To show the specific changes that were made in a revision, you can encircle them with one of the two Revision Bubble Shapes.



When you use the Revision Notes feature to clear the revision notes from the Title Block, you will also have the option of removing these bubbles automatically.

15. The Smart Shapes

Designer Suite 2005 contains hundred of shapes that can be used on your drawings. They fall into a few different categories:

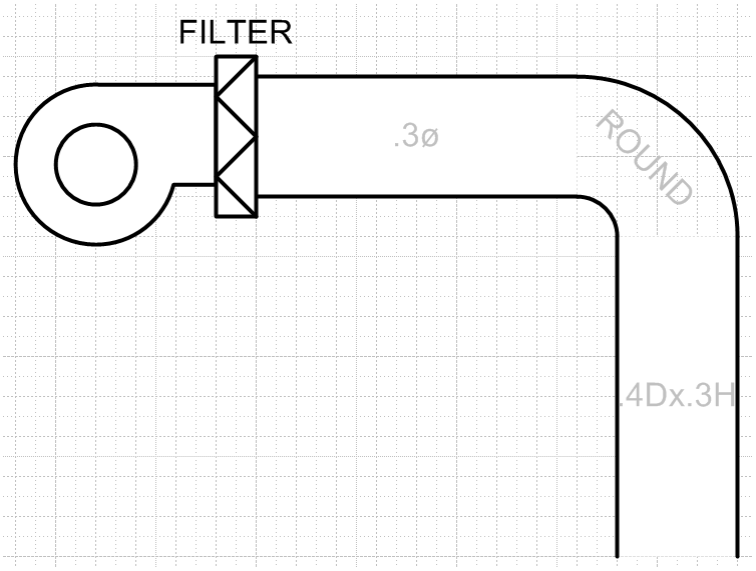
- Generic items, such as duct work and piping, with no specific part numbers
- Generic parts that are not normally found in the Parts Database, such as computer equipment
- Smart shapes that can represent a whole category of database parts, such as relays and transformers
- Smart shapes that represent a specific, individual part, such as the Functional Devices relays

Generic Shapes

There are a number of stencils that contain shapes that don't represent specific parts.

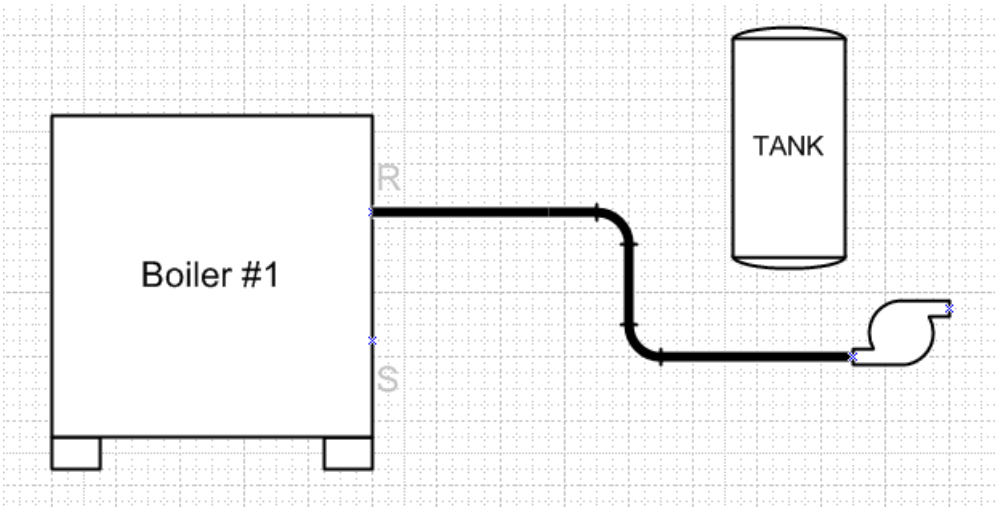
Duct Shapes (Duct.vss)

The Duct stencil contains various pieces of duct work, as well as fans, filters and other similar shapes. Many of these shapes are resizable, and many show the scaled dimensions inside the shape, updated as you resize them.



Water Shapes (Water.vss)

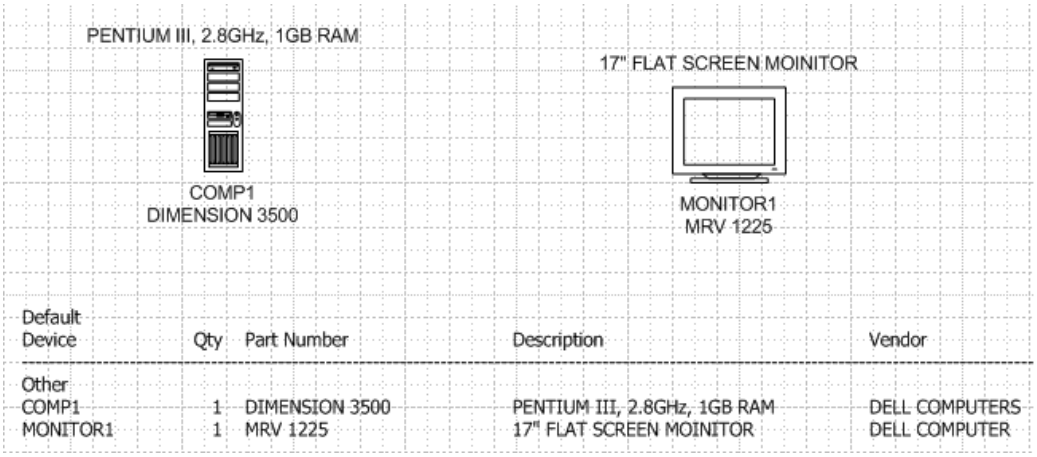
The Water stencil contains shapes for piping, boilers, heat exchangers, cooling towers and other similar features. Many of these shapes are resizable, and are designed to snap to one another's connection points to provide automatic resizing and re-routing as you move them.



In many cases, you can change the color of the shape by right-clicking on them and selecting SET SERVICE/MEDIA COLORS. Other shapes have menu commands that allow you to change their configuration, such as the Boiler which allows you to switch the supply and return connections.

Computer Devices (Computer Devices.vss)

The Computer Devices stencil contains generic Smart Shapes for computer hardware and peripherals. You can set the Part Number, Bill of Material and other properties as you would other shapes, though the default Parts Database does not contain any specific parts.



You can add specific computer parts to the Parts Database using the Database Manager.

Other Generic Shapes

Other stencils that contain less common shapes and components include:

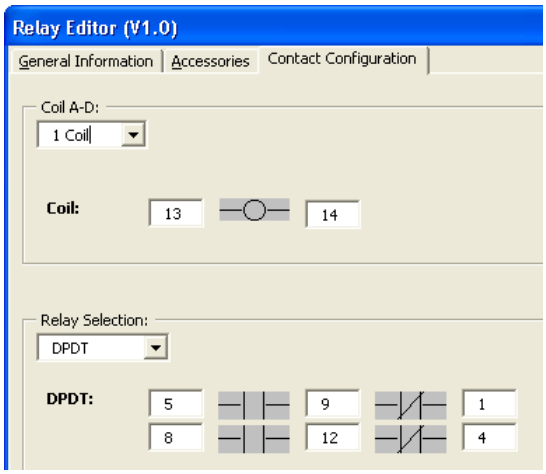
- *Installation Materials*
- *Pieces and Parts*

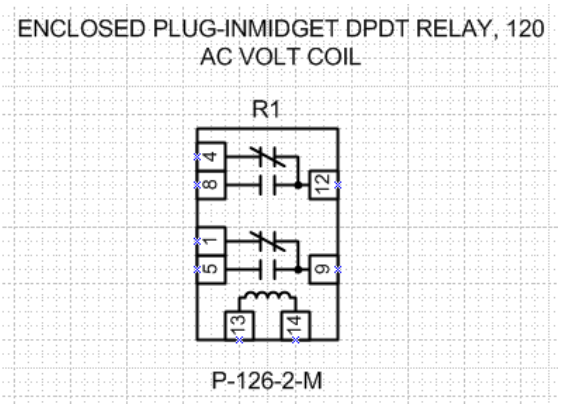
Part Specific Smart Shapes

Many of the Designer Suite 2005 stencils and shapes are designed to represent specific parts from the Parts Database. You can also code your custom parts added with the Database Manager to be available in the part lists viewed with these shapes.

Relays (Relays.vss)

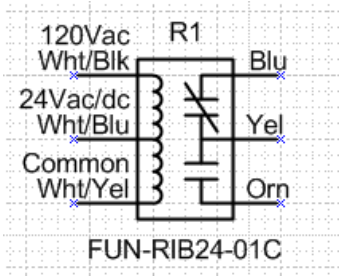
There are two different standard relays, including the more common Point-To-Point Relay shape. This shape can redraw itself in various ways to represent one or two coil, one to four pole, and single or double throw. These properties are pulled from the Parts Database as you select a part, but they can also be set explicitly on the Contact Configuration tab of its Part Properties dialog.





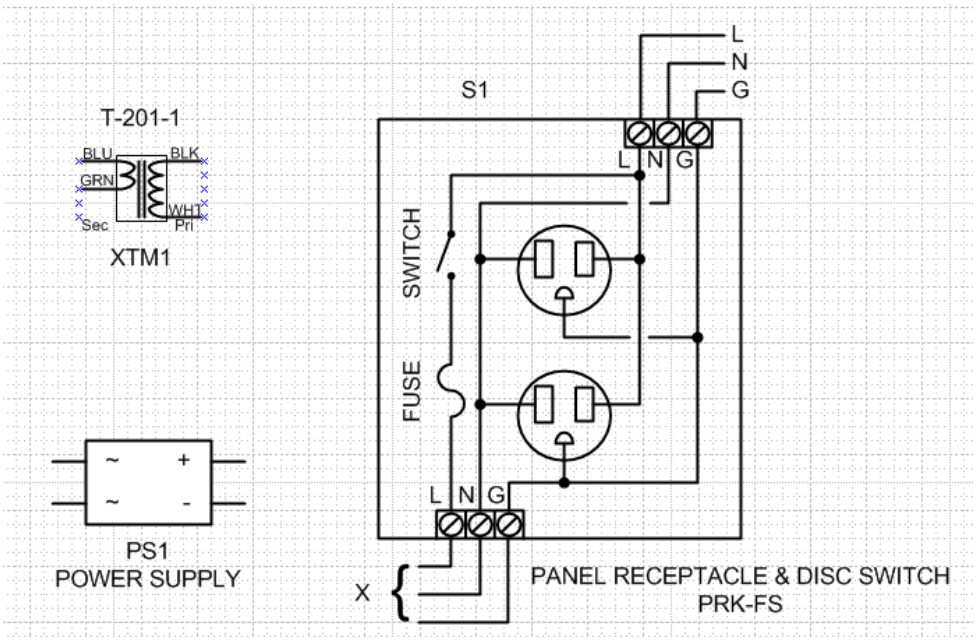
Function Devices Relays (Functional Devices.vss)

There is a separate stencil containing many of the more common Functional Devices relays, with specific wiring information:



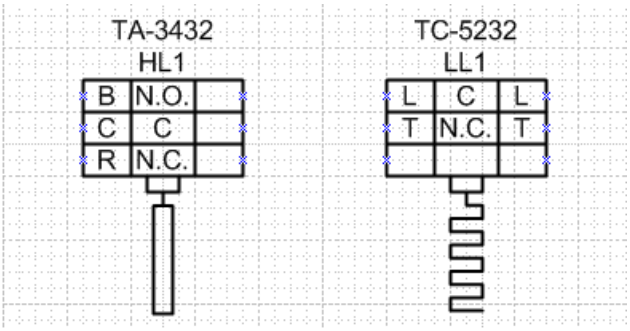
Power Supplies (Power Supplies.vss)

The Power Supplies stencil contains shapes for Transformers (with database driven terminal wire colors), Power Supplies and the specific PRK-FS panel receptacle.



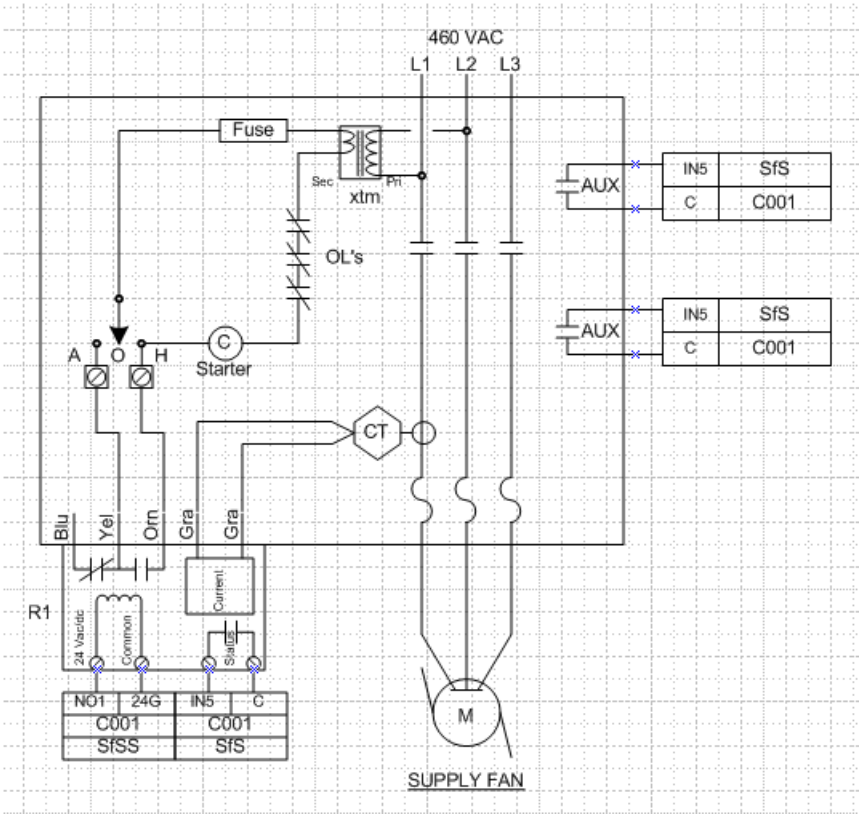
Safety Devices (Safety Devices.vss)

The Safety Devices stencil includes a Low Limit and High Limit Thermostat shape. The terminals are database driven, and custom parts added to the Parts Database can set these values as well.

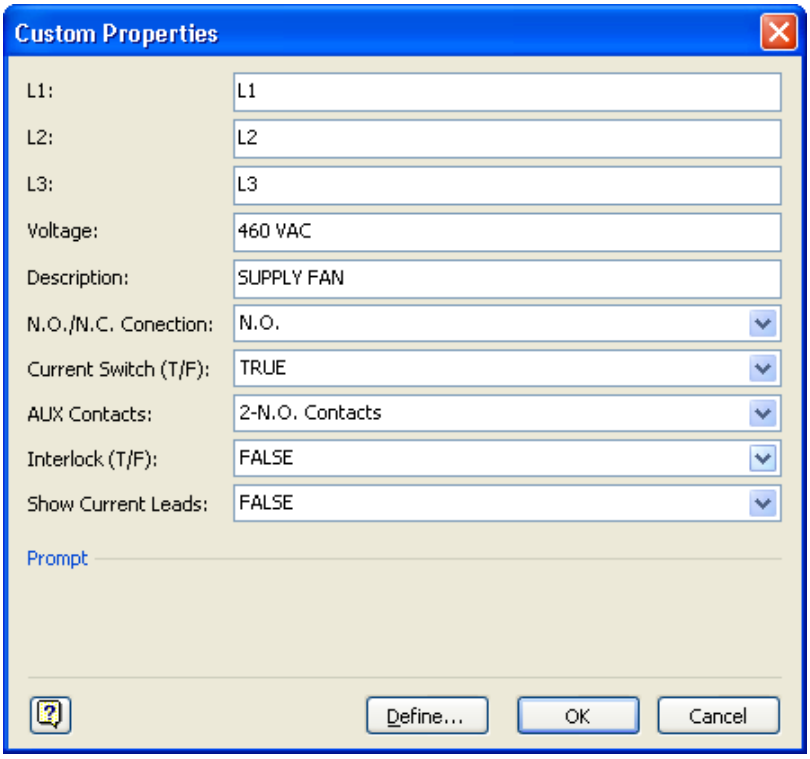


Starters (Starters.vss)

The Starter shapes (e.g. One Phase, Three Phase, etc.) are actually a combination of a number of other Smart Shapes, including I/O Points, relays, transformers and fans.



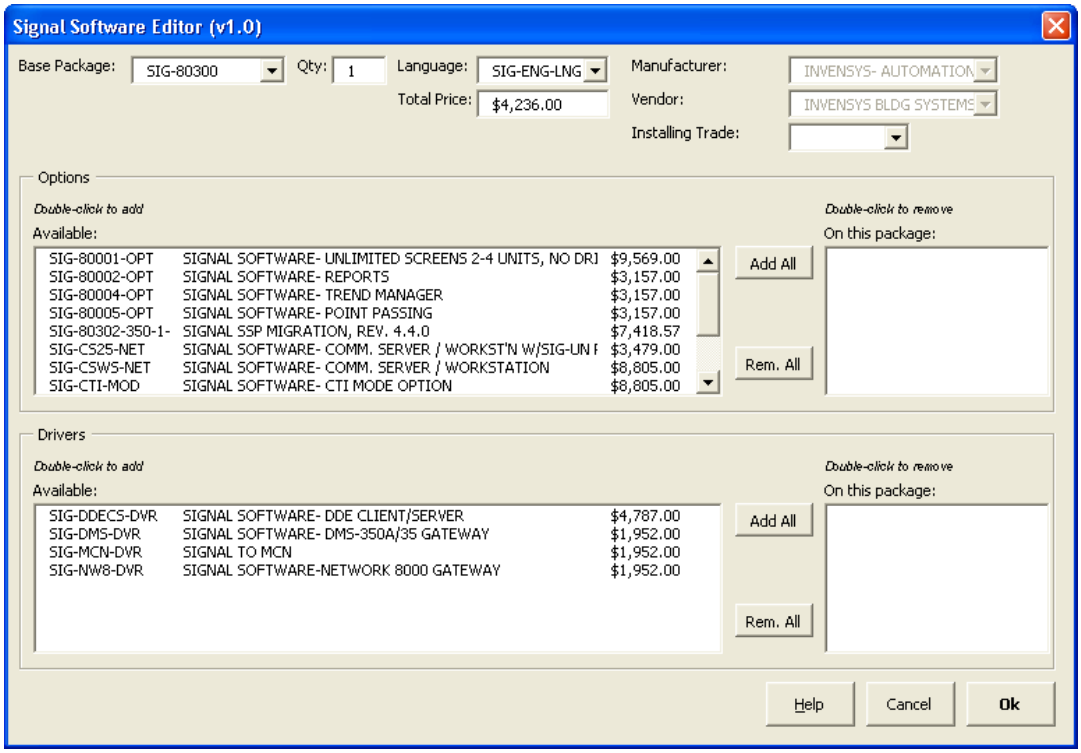
You can set the properties on the individual components, as well as on the starters as a whole. To access the starter properties, right click on the entire starter group shape and select STARTER INFORMATION from the menu.



Software (Software Invensys.vss)

The Software stencil contains shapes with a disk icon that serve as a way to select the base software packages and various options for configuring software applications. These part numbers will then be shown on the Bill of Materials.

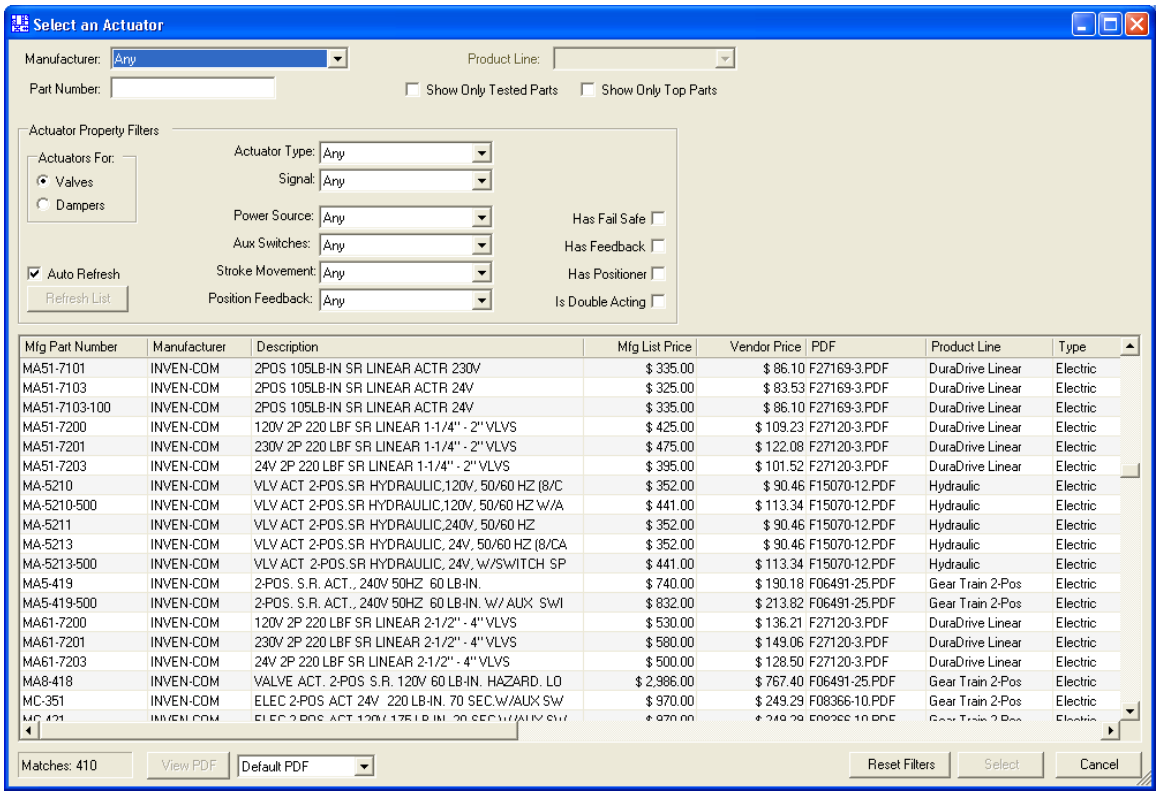
For example, the Signal software choices are:



Actuators (*Actuators.vss*)

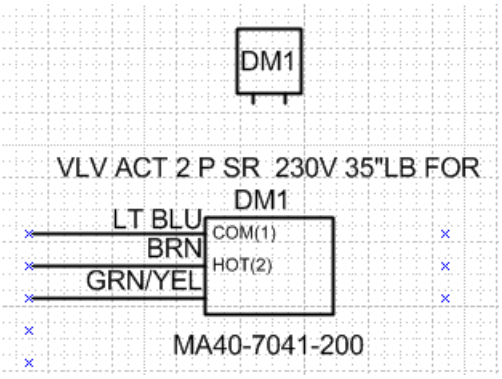
There are hundreds of actuator parts in the Parts Database, and a number of different shapes that can be used to represent the different types. Designer Suite 2005 includes a powerful browse dialog that can be used to search this catalog by many properties, such as Manufacturer, Product Line, Actuator Type, Signal Type and Power Source.

- As you select specific values for these filters, the part list will be reduced to show only those that match.
- The part list contains columns showing these property values for each part in the filtered list.
- You can use this dialog to view the PDF Product Information Sheet for the parts.
- You can also access this Actuator Selector from the Project Explorer by selecting TOOLS→BROWSE PART LISTS→BROWSE ACTUATORS…



Adding an Actuator

The easiest way to add an actuator is to drop the Find an Actuator shape onto your drawing and then double-click it (or right-click it and select SELECT ACTUATOR from its menu). You will be presented with the Actuator Selector, and when you select an actuator the Find an Actuator placeholder shape will be replaced with the appropriate specific actuator shape.



The wiring, terminal colors and terminal label values are stored in the Parts Database, and will be updated to reflect the selected part.

16. Controllers and Devices

One of the most powerful categories of shapes in Designer Suite 2005 are the device shapes. By allowing you to implicitly connect sensors, transmitters and I/O points to the specific Analog and Digital I/O points on a controller, it can create controller checkout sheets, along with a wide range of other reports and error checking.

Device Shapes

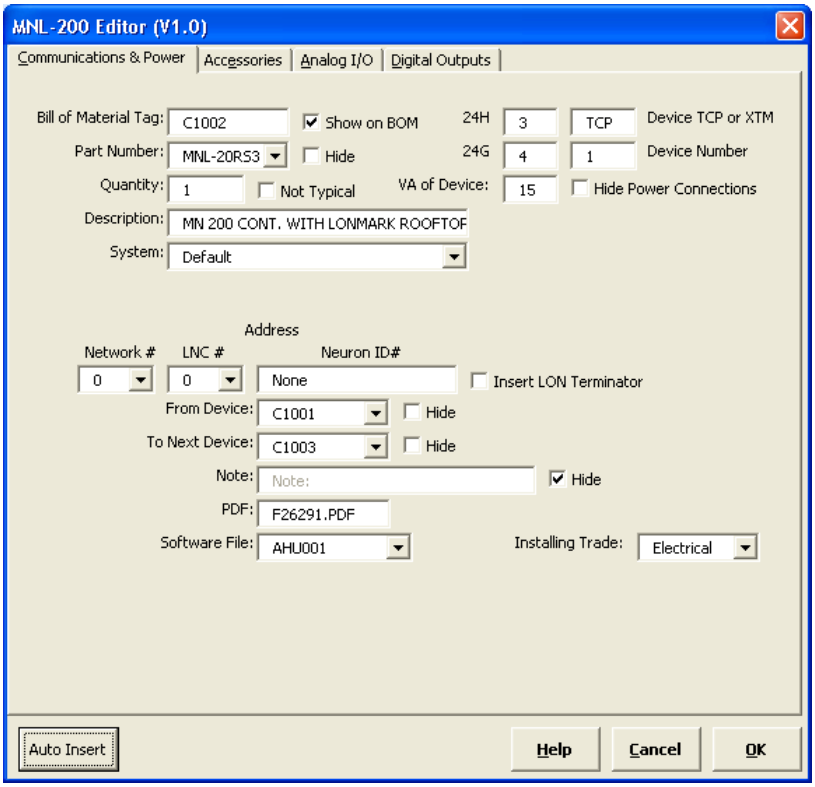
A device is a shape that represents a controller or other sophisticated part that has analog and/or digital I/O points that can be connected to external sensors or similar component. Device shapes available in Designer Suite 2005 include:

- Invensys I/A Lon Series (*IA_Devices*.vss)
- Invensys BACnet Series (*IA_BACnet.vss*)
- Invensys Network 8000 Series (*NW8000 Controllers*.vss)
- Invensys DMS Series (*DMS*.vss)
- Invensys/Tridium Niagara Devices (*Niagara_Devices.vss*)

Device Shape Properties

The Part Properties dialog for a device shape will include a number of additional sets of fields not found in standard parts:

- Address Information, such as *Neuron ID*, *Network Number* and *LNC Number*.
- For LON and Ethernet based devices, fields that indicate the other devices that the controller is connected to (*From Device* and *To Next Device*)
- The name of the *Software File* to use with this controller (for use with the Software Summary and Software Detail reports).
- *Power Connection* values, and a checkbox to indicate if they should be displayed on the shape.
- Separate tabs to specify the detailed I/O information (see the later section in this chapter).



The Device List

There are times when Designer Suite 2005 needs to present a list of all the devices in the drawing, such as when creating an external I/O point that references a controller, or when selecting the From and To Next Device fields for a LON controller. At these times you may need to update the Device List.

- To update the Device List, select UPDATE→UPDATE DEVICE LIST from the DS2005 TOOLS menu.

The device list is specific to an individual drawing file. You cannot reference a controller in one drawing from an I/O point in another. You can, however, have references that span different drawing pages.

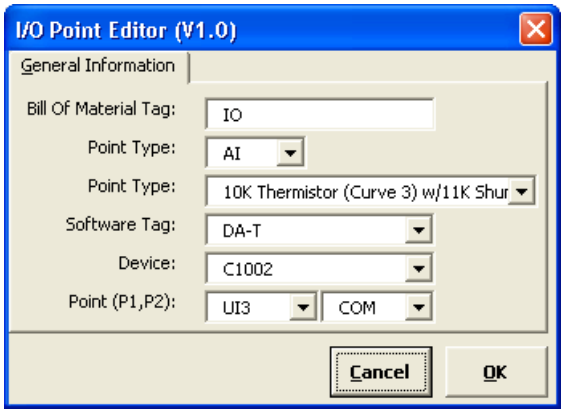
I/O Points

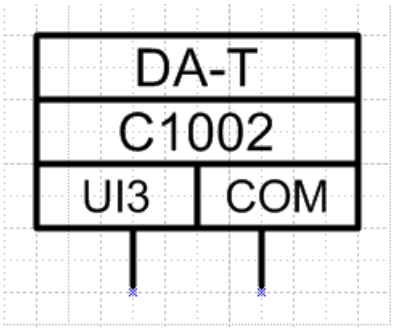
For each I/O point on a controller, you can enter the information for the point in two ways.

- You can enter it directly on the appropriate I/O tab of the controller's part properties dialog.
- You can create an I/O point (or drop a sensor shape) and point to the specific controller and point. You can then go back to the controller and do an *Auto Insert* to find the I/O points and populate the controller's I/O tab automatically).

I/O Point Shape

The I/O Point shape can be found on the Sensors & Transmitters Stencil. When you double-click it, you can select the properties:

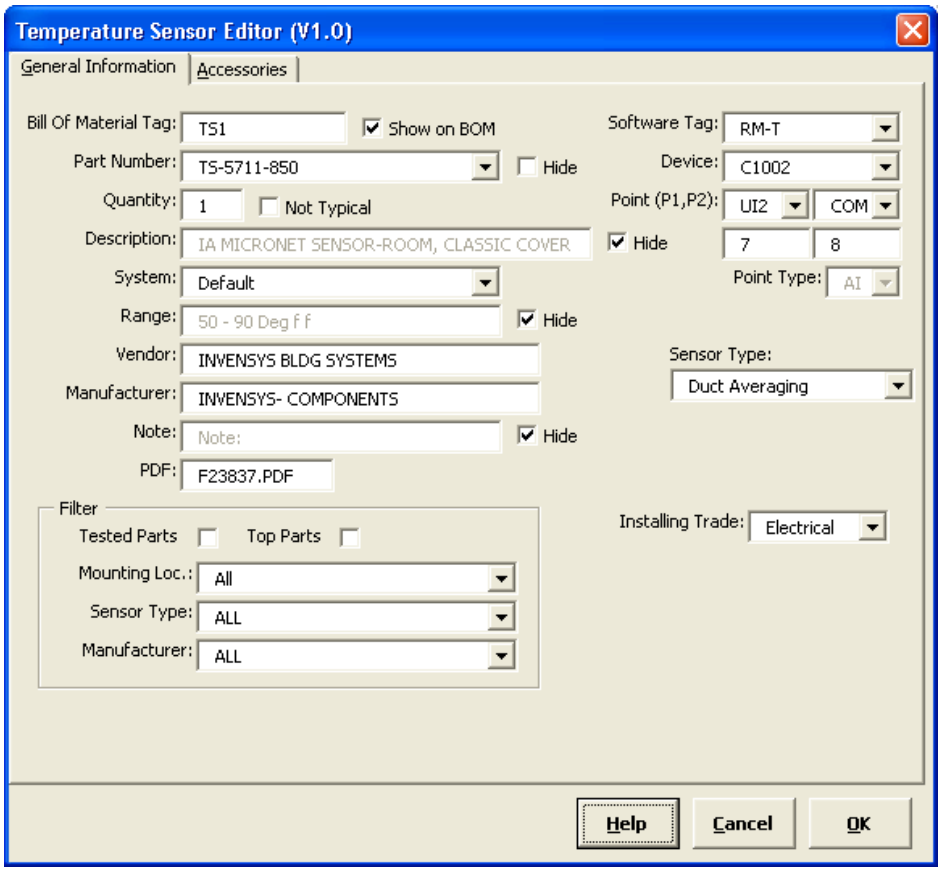




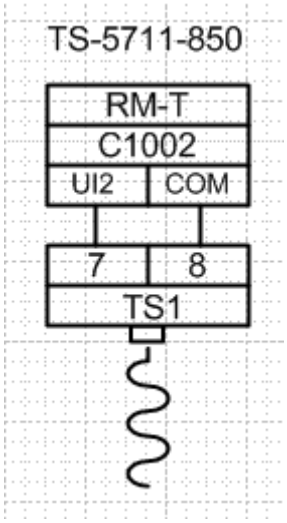
- The *Point Type* (i.e.10K Thermistor or 0-20mA) is used during error checking to verify a valid point type connection.
- The *Software Tag* is carried over to and shown on the controller during an Auto Insert. The list of valid tags is pre-defined by Designer Suite 2005, but can be customized as part of the User Database (refer to the earlier chapter on *Customizing Designer Suite 2005*).
- The *Device* allows you to select from the existing device shapes in the drawing file.
- The *Point* fields allow you to select from the available points of the specified type (AI, DI, AO or DO) on the specified controller.

Sensors and Transmitter Shapes

Other shapes on the Sensors & Transmitters stencil can act as an I/O point as well. The Part Properties dialog for these shapes will include fields similar to an I/O point, such as the *Software Tag*, *Device* and *Point*.

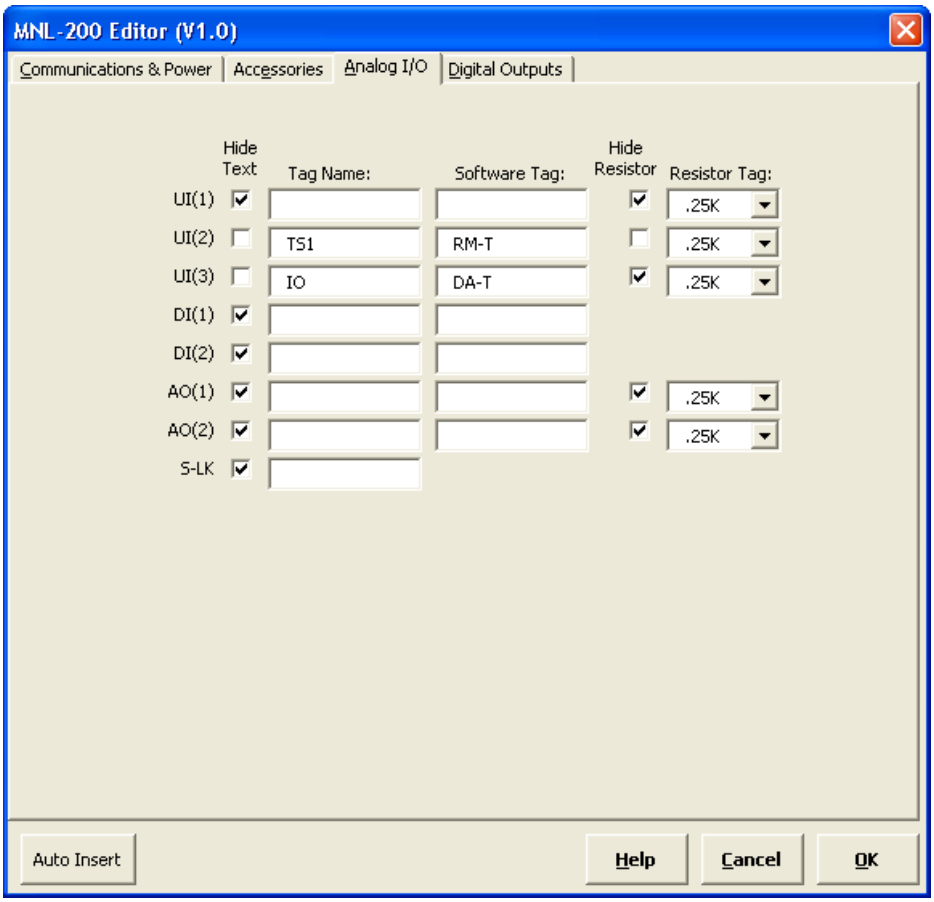


As with the I/O point, the point information appears on the shape, and will be picked up and transferred to the controller during an Auto Insert.



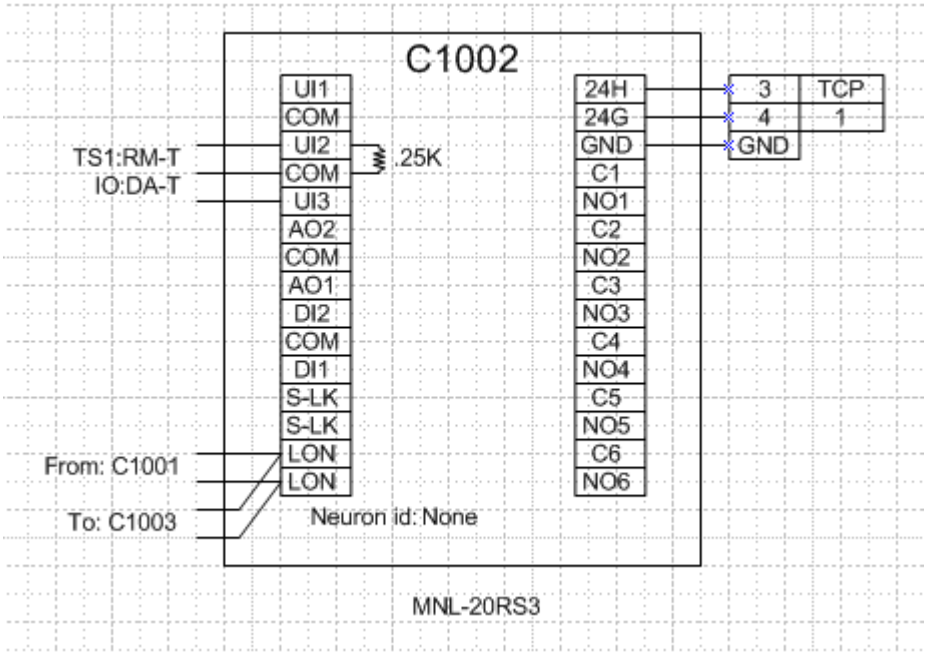
The Controller I/O Tab Page

Each controller has one or more tabs on the Part Properties pages that allow you to specify information about the I/O points.



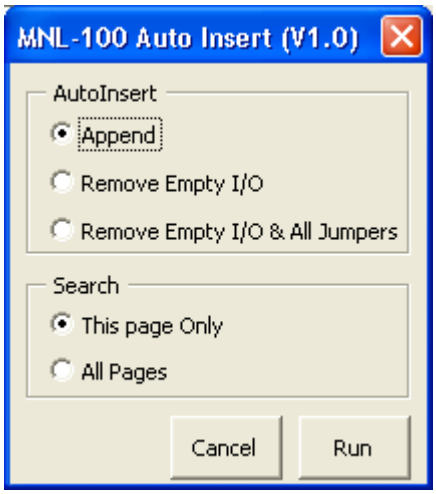
- The *Hide Text* checkbox is generally turned on when the I/O is empty. This prevents the wire leads from showing as well.
- The *Tag Name* is the Bill of Material Tag for the I/O Point or Sensor
- The *Software Tag* is the one specified in the I/O Point or Sensor
- As shown, some controllers can have optional resistors shown on the shape. Other controllers also have various jumpers or connections to ground that can be selected.

The controller will show the I/O information, resistors, jumpers and power connections as you set them.



Auto Insert

If you have created I/O and Sensor shapes and specified the controller device and point information, you can have the information copied into the controller. Simply click the AUTO INSERT button on the bottom of the controller's Part Properties dialog.



Error Checking

There are a number of error checks you can run on your drawing file to check for consistencies, and most involve devices. You can access these error checks from the DS2005 TOOLS→ERROR CHECKING menu.

The error checks are:

- MISSING POINT CONNECTIONS
- INVALID POINT TYPES
- DUPLICATE POINT CONNECTIONS
- DUPLICATE BOM TAGS
- DUPLICATE NETWORK ADDRESSES

If any conflicts are found, they are reported and the shapes involved are colored to indicate the problem.

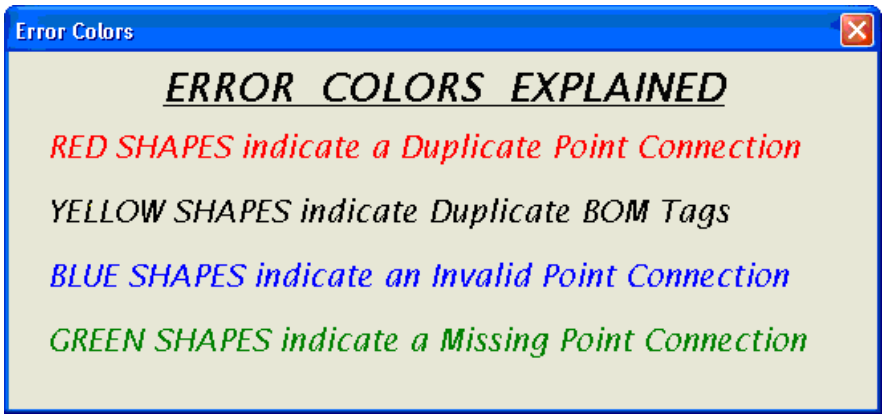
You can run the error checks individually, or you can run them all at once by selecting ERROR CHECKING→CHECK FOR ALL.

Error Colors

The colors used to describe the errors found on the shapes are:

Red	Duplicate Point Connection
Yellow	Duplicate BOM Tags
Blue	Invalid Point Connection
Green	Missing Point Connection

You can view these codes at any time by selecting the ERROR CHECKING→EXPLAIN ERROR CODES menu item.



You can also add a list of the error color descriptions to your drawing from the Page Add Ins stencil.

Clearing the Error Colors

The colored shapes do not automatically revert to black when you resolve the errors. To reset a single shape, right-click on the shape and select RESET ERROR from the menu. To reset multiple shapes, select the ERROR CHECKING→CLEAR ERRORS menu item, which allows you to clear the colors for the shapes on a single page or in the entire file.

Invalid Point Types

The Invalid Point Type check compares the Point Type (e.g. 10K Thermistor) of the I/O point or sensor to the allowable point types for the I/O as defined by the device. With an I/O Point shape, the point type is always defined explicitly so the checks can be made. With the sensor shapes, however, the point type is defined in the Parts Database. Not every part has their I/O type defined (those not flagged as *tested*). In these cases, the unknown point type will cause the error checking to report the sensor as an Invalid Point Type. You can safely ignore these errors.

17. Panel Devices and Automation Overview

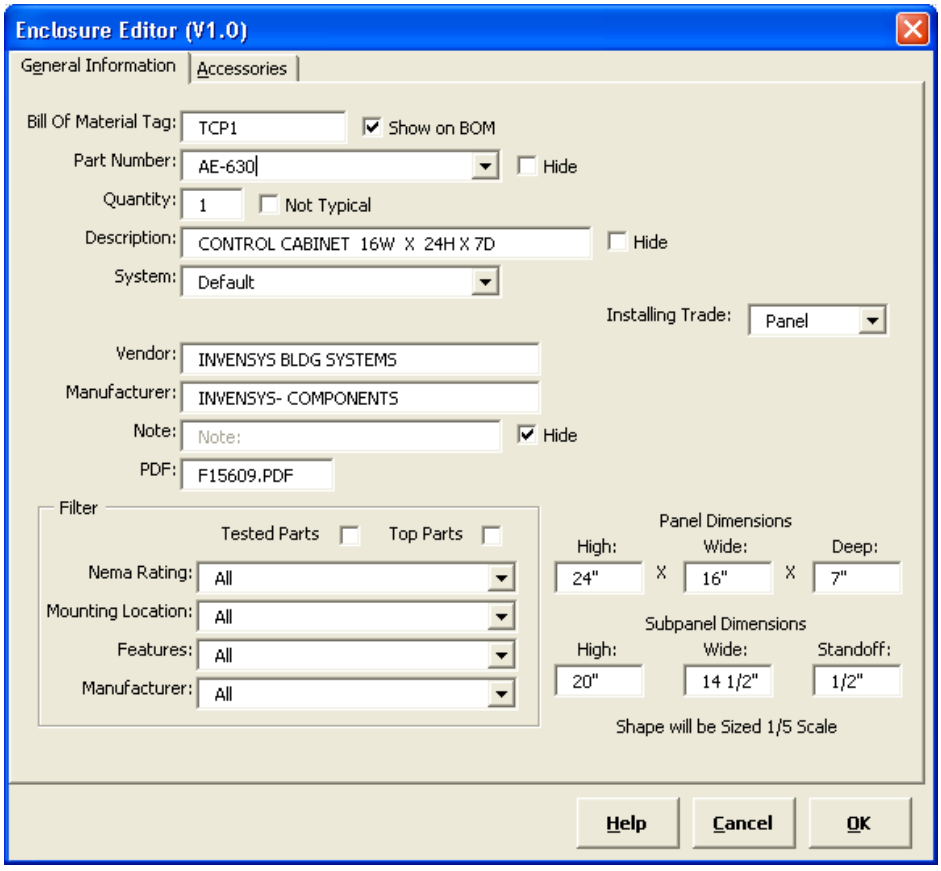
There are times when you will want to create a Panel layout to show how the components should be arranged. Designer Suite 2005 has a separate class of shapes that are drawn to scale that are specifically designed for such diagrams.

Scaling in Panel Layouts

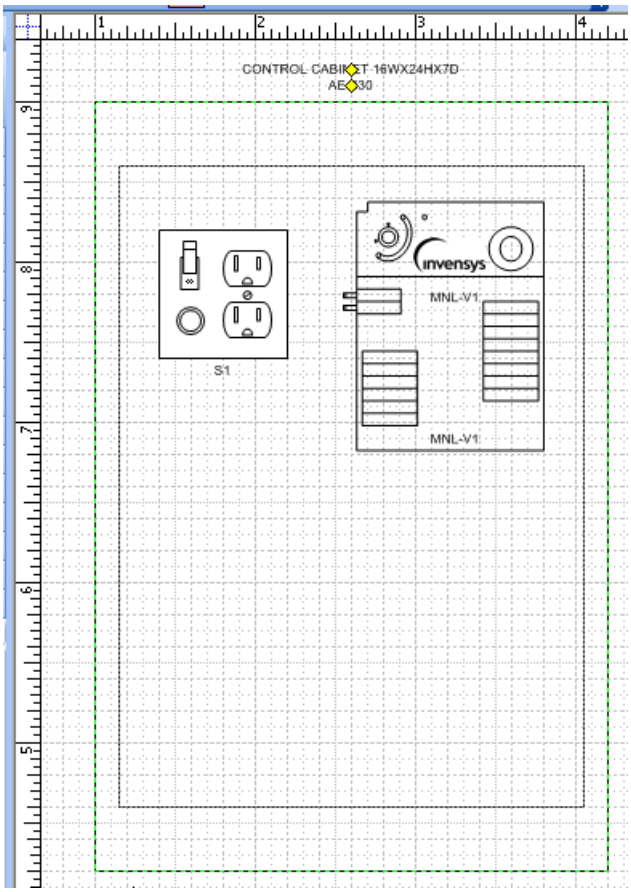
When working with panel devices and enclosures, all the shapes have been created to a 1/5 scale. If you create any custom panel shapes, you should adhere to this convention.

Enclosure Shapes

The Panel Devices stencil (*Panel Devices Invensys.vss*) contains an Enclosure shape that allows you to select an enclosure part from the database and then resizes itself accordingly to the dimensions specified in the database.



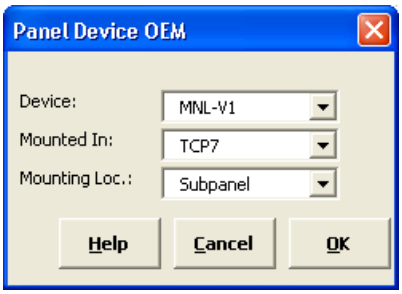
With dimensions of 24" x 16", this enclosure will appear at 1/5 scale as 4.8" x 3.6" on the drawing:



Panel Device Shapes

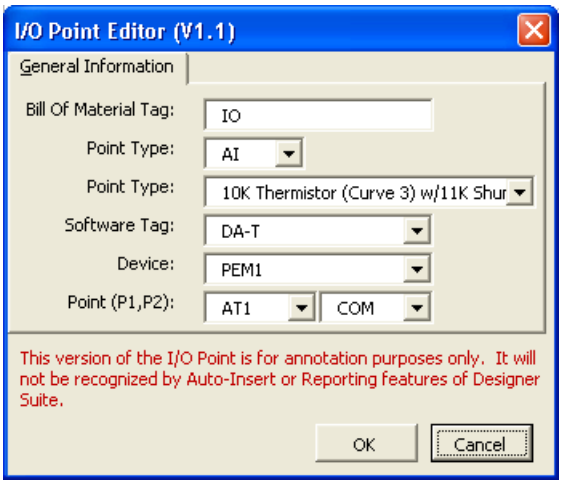
The Panel Devices stencil also contains panel versions of a number of the Invensys controllers. Other stencils also contain scaled panel versions of schematic shapes.

The panel device shapes are not a substitute for the regular shape, and do not show up on the Bill of Materials. If you select their properties dialog, you can link the panel shape to an existing device and specify its location in the panel.



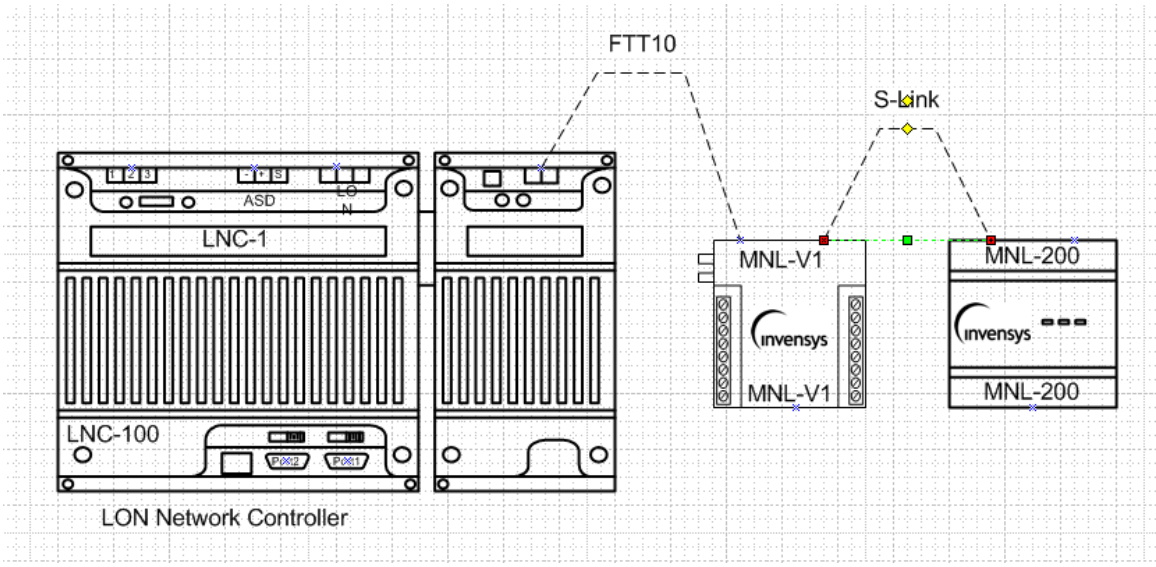
Panel I/O Points (Panel IO Points.vss)

There is also a Panel version of the I/O Point that can be used for annotation. These points look the same, but are not picked up when you do an Auto Insert from a device.



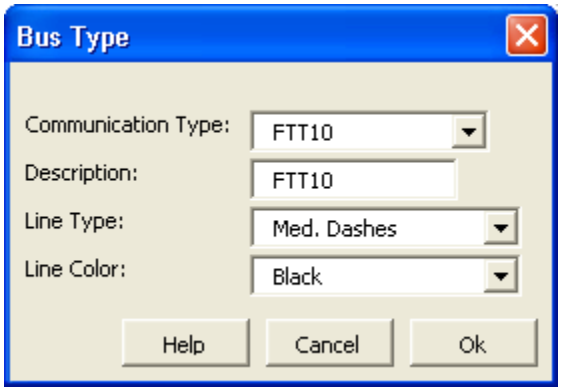
Automation Overview (*Automation Overview Invensys.vss*)

Along with the panel versions, there is a third version of a number of the device shapes that are designed for creating logical automation overview diagrams. These shapes are not drawn to scale.



Power and Bus Connectors

This stencil also contains Power Connector and Bus Connector shapes, which are resizable and snap to the connection points on the device shapes. If you right-click on the connector, you can set their text, line color and line types.

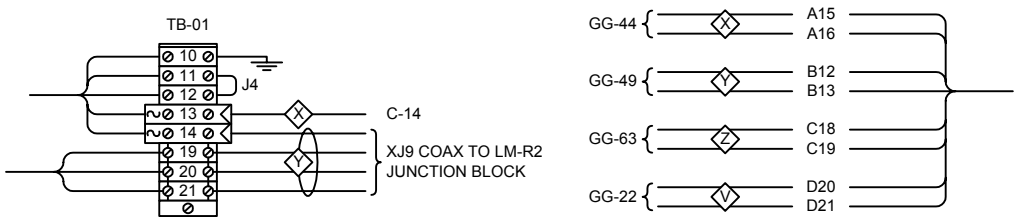


Terminal Blocks

Designer Suite 2005 contains a sophisticated Terminal Block shape that can be used to create all types of wiring diagrams for use in panels. Refer to the next chapter for more information.

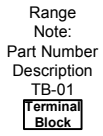
18. Terminal Blocks

The Terminal Blocks stencil provides shapes for drawing detailed wiring diagrams and panel images of terminal blocks populated with various components. Grouped wires, jumpers, grounded terminals, wire tags and various labels allow significant flexibility for creating a wide array of different style terminal diagrams.

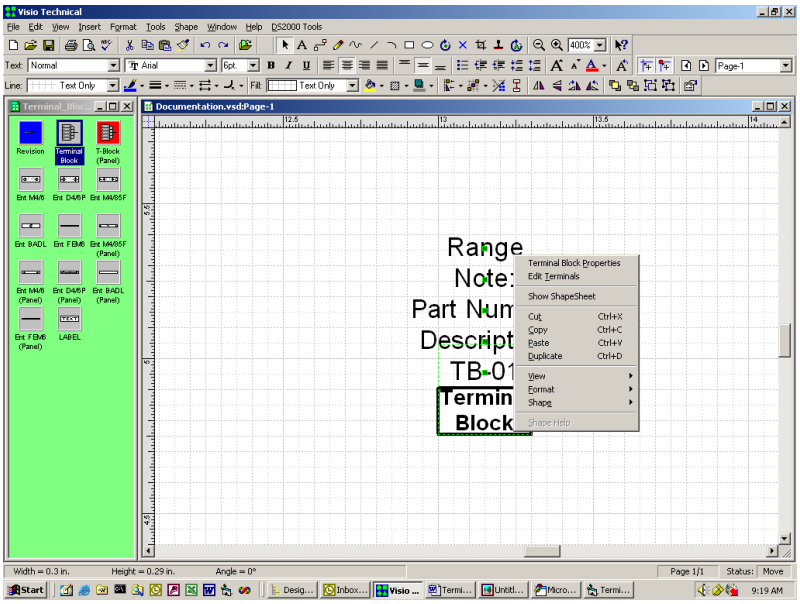


Creating a New Terminal Block Shape

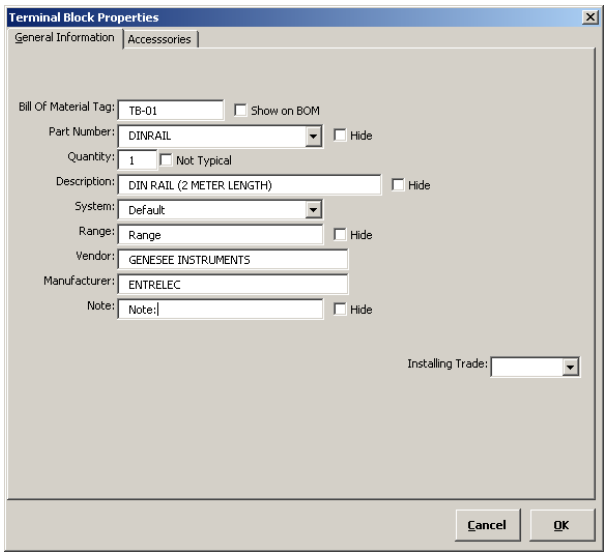
To create a terminal block, open the Terminal Blocks stencil and drop a Terminal Block shape onto your drawing. An empty block is represented by a simple square:



If you right click on the shape, you will notice two menu items: TERMINAL BLOCK PROPERTIES, and EDIT TERMINALS.



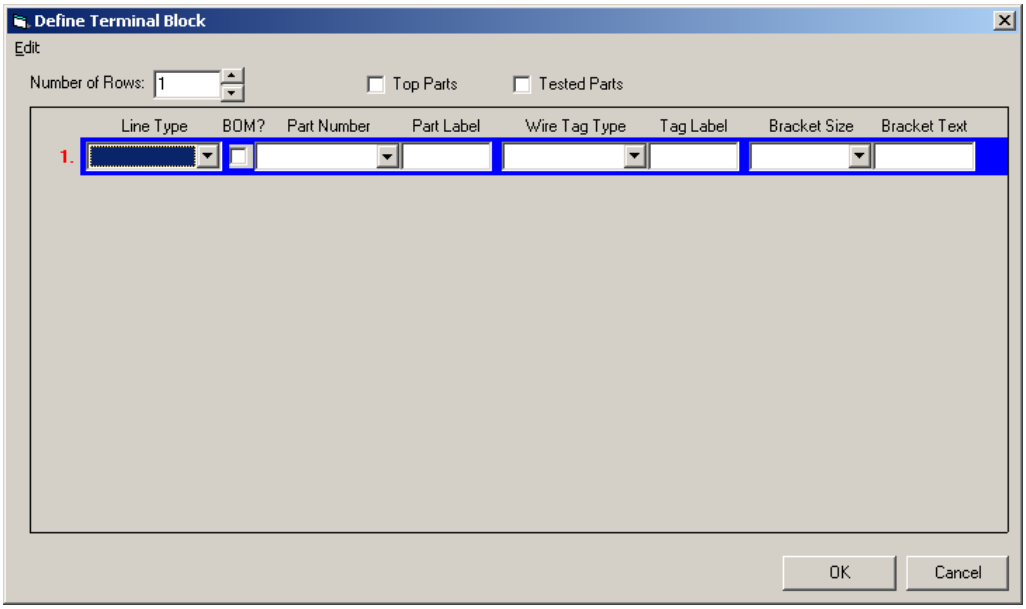
Selecting TERMINAL BLOCK PROPERTIES brings up the standard Properties dialog used by most Designer Suite 2005 shapes. This dialog allows you to specify common fields, such as the Bill of Materials Tag, Part Number, Description, System, and Installing Trade for the terminal block as a whole. More specifically, the Part Number, Vendor and Manufacturer represent the DIN Rail used to hold the terminal block parts.



As usual, you can also specify up to four Accessory parts to be shown on the Bill of Materials. Keep in mind, however, that all the parts placed on the terminal block will automatically be added to the Bill of Materials, and do not need to be added as accessories.

Adding Terminal Parts

Right click on the shape and select EDIT TERMINALS from the menu. This will bring up the Define Terminal Block dialog:

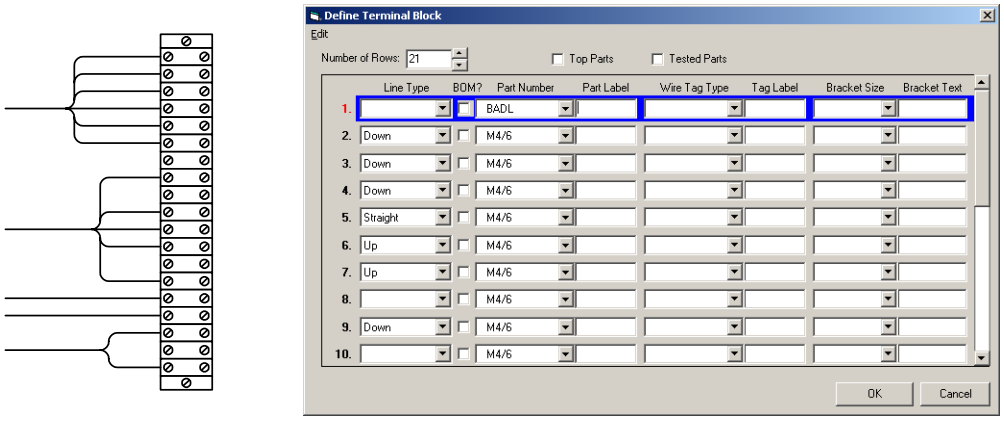


Each position on the block is represented by a row in the spreadsheet. To specify the number of rows, simply type a number into the NUMBER OF ROWS field or click on the up and down arrows next to the field. You can also insert and delete rows using the EDIT menu as described later.

Each row consists of five parts: The *Line Type*, the *Show on BOM* check box, the *Part Number*, the *Wire Tag* and the *Bracket*.

The Line Type

On one side of the block you can add groups of curved lines coming from the parts, representing bundles of wires. For each part, you can specify the line to go straight out, curve down or up to merge with other lines, or to be omitted. Lines are automatically grouped together based on their configuration, and each group can be resized with a control handle at the point that they merge and at the tip of the straight portion.

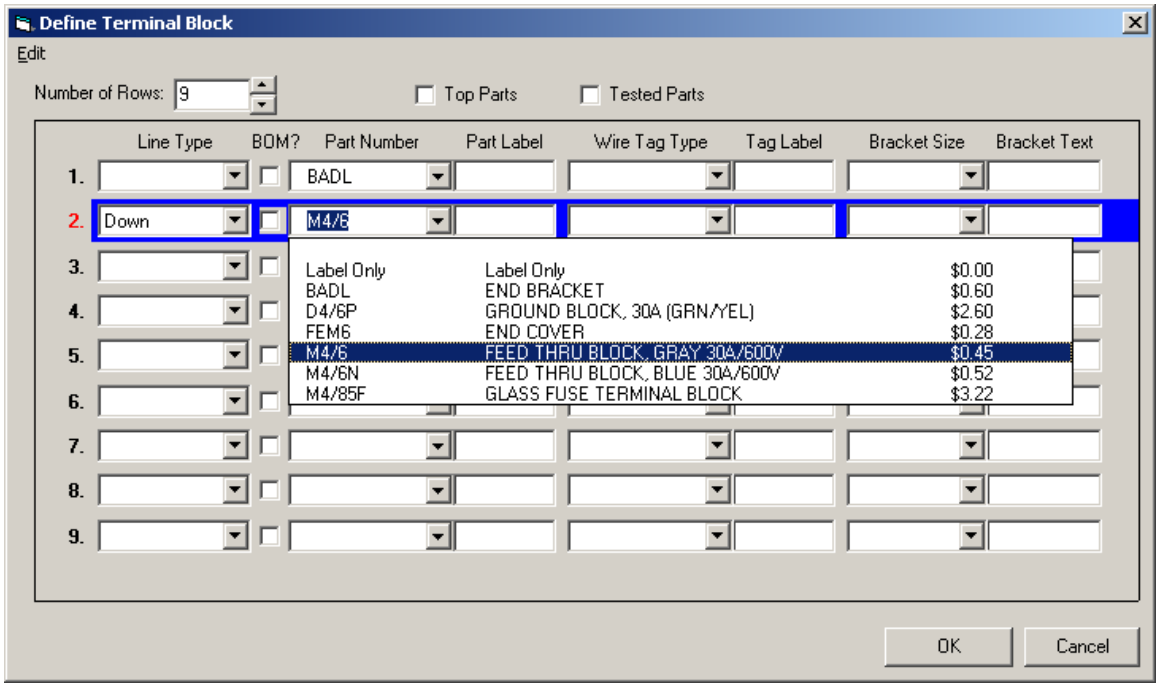


The Show on Bill of Materials Check Box

For each part, you can indicate whether you want it to be added to the Bill of Materials for the drawing. Parts are automatically grouped together by part number as single line items on the Bill of Materials with the appropriate quantities.

The Part Number

When you select the Part Number list box, you will see a list of all the available parts that can be placed on the block. Selecting the TOP PARTS or TESTED PARTS checkboxes will filter this list accordingly.

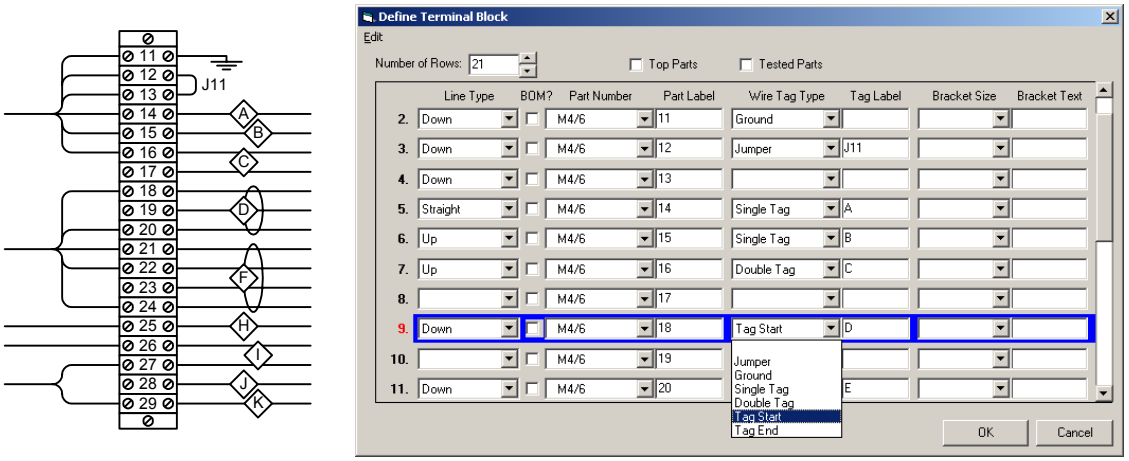


The PART LABEL text field allows you to specify a label of up to three characters to be placed on the part itself.

If you select the first (blank) line, the position will be left blank. If you select the second (Label Only) line, only the text entered in the PART LABEL field will be shown, allowing you to create other types of schematic wiring diagrams, such as the one illustrated in the Overview.

The Wire Tag

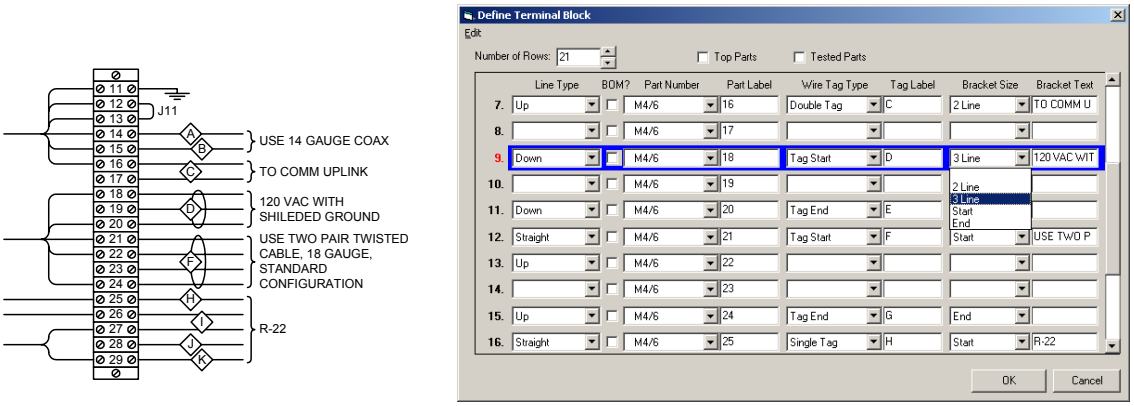
On the other side of each part, you can specify whether you want a ground symbol, a jumper or a tagged wire to be shown:



If you select a Jumper or Double (two-line) Tag, the tag specified in the next row will be ignored. For wire tags spanning three or more parts, select *Tag Start* in the first row and *Tag End* in the last row. The Tag Label text field is used to specify the text shown in the wire tag square or next to the Jumper.

Brackets

At the edge of the tagged wire lines, you can add curved brackets with text as additional annotation:

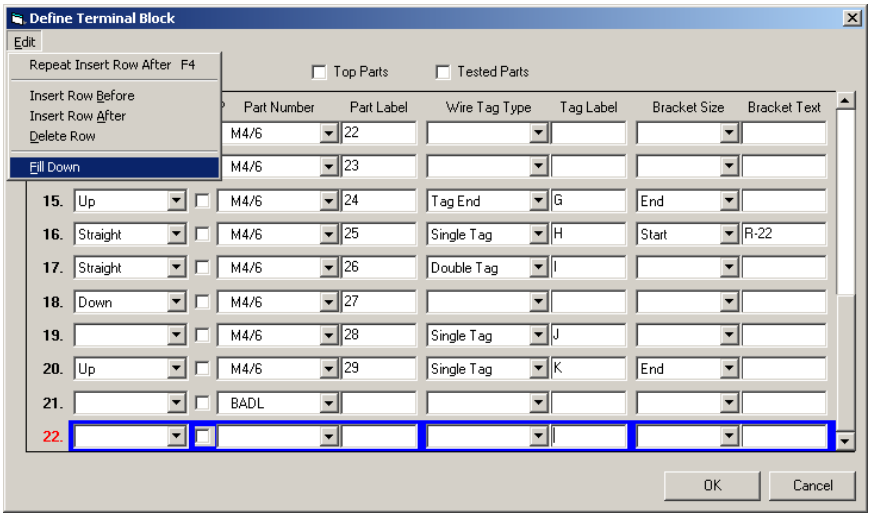


You can specify the number of wires the bracket covers by selecting 2 Line or 3 Line from the BRACKET SIZE list box, or by selecting Start on the first row and End on the last row of the group. The text shown next to the bracket is specified in the BRACKET TEXT field. The number of lines and word-wrapping for the text can be adjusted by moving the control handle on the right edge of each piece of bracket text.

Editing a Terminal Block

The Define Terminal Block dialog works much like a standard spreadsheet. You can use the UP and DOWN arrow keys to navigate through the rows and the TAB and SHIFT+TAB keys to move across the columns. The PAGE UP, PAGE DOWN, HOME and END keys, as well as the scroll bar, also allow you to quickly move to any row.

The current row is always shown highlighted in blue. The EDIT menu on the Define Terminal Block dialog provides selections for inserting a row before or after the current row, and for deleting the current row. After one of these commands, you can repeat the insert or delete by selecting F4.

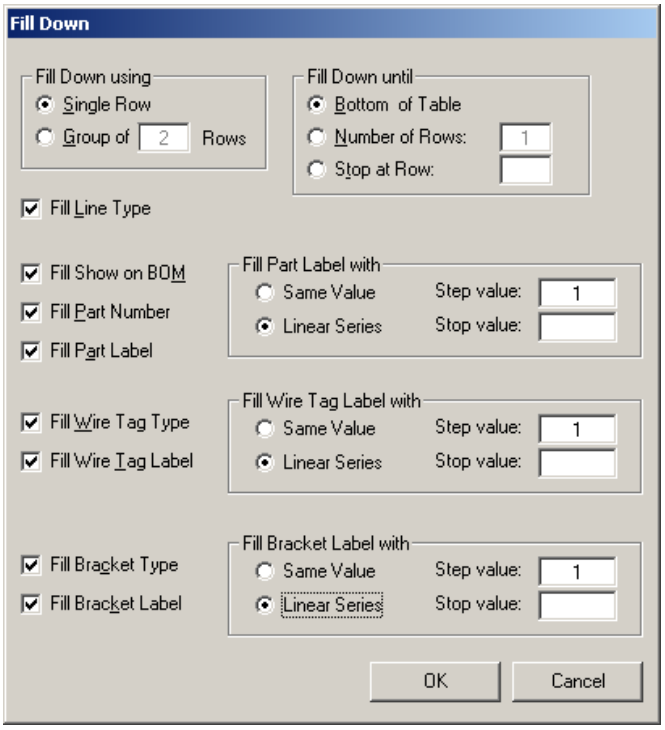


You can also change the size of the block by changing the number of rows in the NUMBER OF ROWS text field. Increasing the number of rows will add blank rows to the end of the block. Reducing the number of rows will delete the rows at the end.

You can change the configuration of the block, with the curved lines on the right and the wire tags and brackets on the left by simply flipping the shape on its vertical axis.

Fill Down

The EDIT menu also contains a selection to show the FILL DOWN dialog, which can be used to quickly lay out terminal blocks with repetitive configurations:



The Fill Down dialog allows you to automatically fill in the specified number of rows *following* the currently selected row using the information *in* the current row. For example, if row 3 is highlighted, using Fill Down will fill in rows 4 and later using the information in row 3.

Fill Down Using

Select *Single Row* to copy the information from the current row into each of the subsequent rows. This is similar to the standard Fill Down in Excel.

Select *Use Group of n Rows* to fill down information in groups of 2 or more rows. The highlighted row will be the last row of the group. For example, if row 7 is highlighted and you select *Use Group of 3 Rows*, rows 5, 6 and 7 will form the group. The group is repeated as it is filled down, so in this example row 5 will be copied into row 8, row 6 into row 9 and row 7 into row 10. If necessary the pattern repeats, with row 5 copied into row 11, row 6 into row 12, row 7 into row 13, and so on.

Fill Down Until

Select *Bottom of Table* to copy the row or group into all the rows that follow the highlighted row. To copy the row or group a specific number of times, fill in the *Number of Rows/Groups* field. To fill until a specific row number, fill in the *Stop at Row* field.

Fill Line Type/Show on BOM/Part Number/Wire Tag Type/Bracket Type

Select the various checkboxes to indicate which of the fields should be copied. If a checkbox is turned off, the value of that field in the rows being copied into will not be changed.

Fill Part Label/Wire Tag Label/Bracket Label

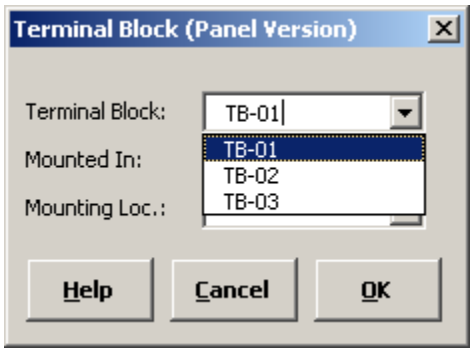
When filling the various text labels, you can choose to fill with the *Same Value*, or to create a *Linear Series* from a numeric type of label. A numeric label can begin with non-numeric characters, but must end with a number. Any leading zeros in the numeric portion will be persevered.

For example, if the Part Label in the highlighted row is "ABC07", filling it down using a Linear Series will create subsequent labels of "ABC08", "ABC09", "ABC10", etc.

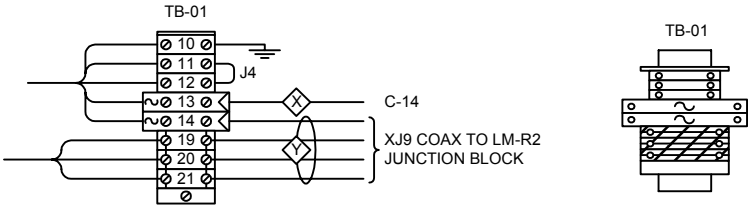
You can also specify the amount to increase each label as *Step Value*, and a value at which to stop with *Stop Value*.

Panel Version

The Terminal Blocks stencil also contains a Panel Version of the terminal block, which is linked to an existing terminal block to automatically generate its size and shape. After dragging the shape onto your drawing, select PANEL DEVICE PROPERTIES:



The Terminal Block list box will contain the Bill of Material tags for all the terminal blocks on each page of the drawing. Select OK and the shape will reconfigure itself to match the specified block:



After they are linked, any changes in the terminal block will automatically be reflected in the panel version. If you change the Bill of Materials tag of the terminal block, however, the link will be broken. It can be restored by again selecting PANEL DEVICE PROPERTIES and selecting the updated tag.

Adding Custom Terminal Parts

Each terminal part in the database is represented by two shapes in the Terminal Blocks stencil, one for the schematic version and the other (drawn to 1/5 scale) for the panel version. Additional parts added to the database can be added to the shape by creating these two graphical representations and following a few additional steps. A second stencil, *Terminal Blocks Extra.vss*, has been provided for these custom shapes.

When you update a terminal block, it first searches for the part shapes in the Terminal Blocks stencil. If the corresponding shape is not found, the Terminal Blocks Extra stencil will be opened and searched. If the part is still not found, a blank spot will be left on the terminal block.

To add a custom part, follow these steps:

1. Copy the shapes for the two versions of an existing part from the Terminal Blocks stencil to the Terminal Blocks Extra stencil.

2. Edit the masters to change the graphical representations accordingly. In the schematic version, remember to account for the position of the part label text. In the panel version, be sure to preserve the 1/5 scale.

3. View the shape sheet for the parts. You will find two User defined cells, *TBShapeType* and *TBShapeID*.

4. The *TBShapeType* field should remain set to “PartTemplate” or “PanelTemplate”, according to which version of the part it represents.

5. The *TBShapeID* field should be changed to an eight character Item Code for the part. Multiple database parts that share a graphical representation (e.g., differ only in color) can use the same item code.

In the parts database, specify the following values when you add the parts (refer to the later chapter on the Database Manager for more information):

Term5 Set to the value "DS2000TB"

Term6 For DIN Rail parts to be displayed in the Terminal Block properties dialog, specify a value of '1'. For terminal block parts to be displayed in the Part Type drop-down list box in the Edit Terminal Block spreadsheet, specify a value of '2'.

Term7 For DIN Rail parts (where *Term6* is '1'), enter the width of the rail in inches. For terminal block parts (where *Term6* is '2'), enter the Item Code as specified in the *User.TBShapeID* field of the corresponding shapes.

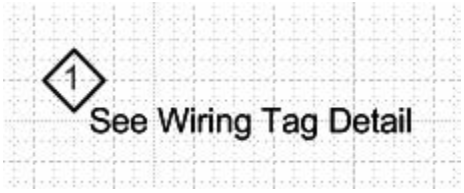
19. Wire Tags

The Wire Tag shape can be used to quickly and easily drop wiring and cabling information onto the drawing for use in the Bill of Material. There are a number of reports available through the Report Engine to then generate reports based on these wire tag shapes.

What is the Wire Tag?

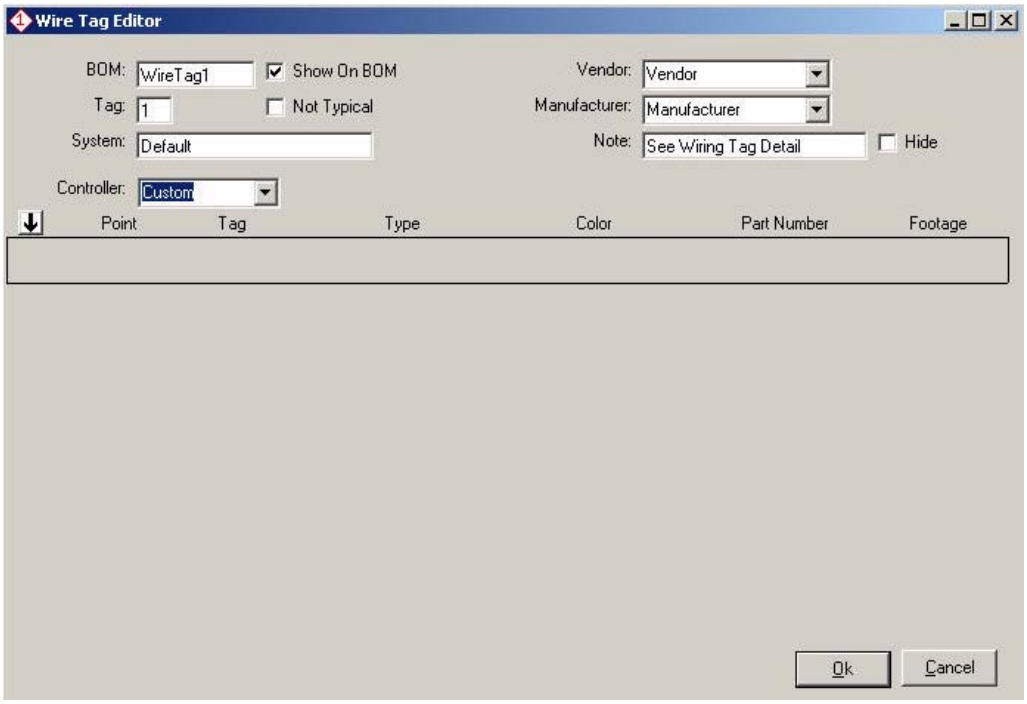
The *Wire Tag* stencil contains a singled shape named Wire Tag. This shape can be dropped onto the drawing, and represents any number of different parts. A Wire Tag can be associated with a Controller on the same drawing, or the you can manually enter the information. The Bill of Material and the Wire Tag reports will see the Wire Tag shape on a drawing and generate the appropriate parts. The Wire Tag shape is not intended to show wiring layouts or diagram's for the installing technician, but rather to ensure that wires and cables are included in back-end reporting for estimation and ordering.

The Wire Tag Shape



The Wire Tag shape is a simple diamond with room for a single digit tag. It also has a note associated with it.

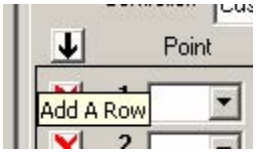
To associate part numbers with the Wire Tag, double-click the shape or right-click it and select SET PROPERTIES. This brings up the Wire Tag Editor form:



The Wire Tag Editor is broken into two sections. The top half of the window has basic Designer Suite shape information, such as *BOM Tag*, *Show On BOM*, *Vendor*, *Manufacturer*, and *Not Typical*. These properties will apply to each part included in the Wire Tag. You can also edit the note shown next to the tag on the drawing.

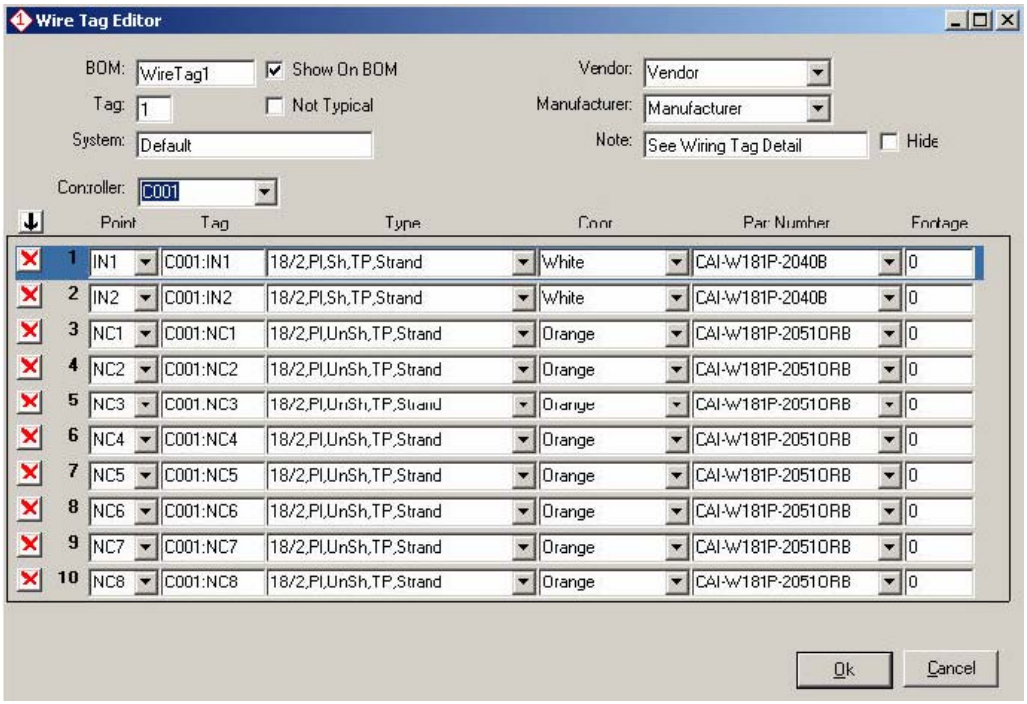
The lower half of the window shows one row for each wire associated with the Wire Tag. Each row has six pieces of information associated with it. This information is shown on the Wire Tag reports, or used in the Bill of Material. If the Wire Tag is associated with a controller, the *Point* drop-down lists all of the points that type of controller has. The *Part Number* drop-down lists all of the Wire parts in the database, and is automatically filtered by the *Type* and *Color* drop-down lists as you change those values. *Footage* is displayed on the Wire Tag reports, and used as the Quantity for the Bill of Material.

Rows may be added manually by clicking the black ADD ARROW button the upper left-hand corner of the section



and deleted manually by clicking the red DELETE ARROW button next to each individual row.

Rows are added automatically when you associates a Wire Tag with a controller. The *Controller* drop-down lists all of the devices found on the same page as the Wire Tag shape. When a controller is chosen from the pull-down, the Wire Tag shape creates one row for each point on the controller that is connected.



The *Point* field is automatically filled in for each row, and the *Tag* is defaulted to *Controller Name:Point Name*, though that can be changed. Many controller types also have default part numbers in the database for their points. These defaults are brought in if they are found.

Wire Tag Reports

There are four Wire Tag reports available in the Reporting Engine. These reports search through the selected drawings and generate a listing of all of the wire tag shapes found on the drawings. Refer to the later chapter on the *Reporting Engine* for more information.

System Tag Report (Wire Tags - Grouped by System.xls)

This report generates one sheet in Excel for each System in the project that contains wires. Each individual wire with all of its information is shown. There is no combining of wires in this report.

Controller Tag Report (Wire Tags - Grouped by Controller.xls)

This report generates one sheet for each Controller in the project that has an associated Wire Tag shape. Every point on the controller is shown, regardless of whether it is connected to anything or has any wiring associated with that point. Any Wire Tag shapes with *Custom* in the Controller field are displayed on a separate sheet named *Custom*. Again, there is no combining of wires in this report.

Total Tag Reports (Wire Tags – Total [with System].xls)

The total reports tally up all of the wiring information for the entire project, adding the footages together whenever the part number is the same. The System version of this report breaks down the report by system, creating an worksheet for each system, while the Total version creates one sheet with all of the wiring totaled together.

Adding Wire Tag Parts to the Parts Database

The Database Manager has advanced action types that can be used to update and add to the wire parts that the Wire Tags use. Refer to the later chapter on the *Database Manager* for more information.

20. Smart Charts

Smart Charts provide a way to add instance specific information to a controller that is part of a typical system, and the means to display, edit and report this information for commissioning reports. Smart Charts allow you to customize the fields that are contained in the chart, and those that are displayed in the drawing, and uses Microsoft Excel extensively to design and generate user-defined reports and data entry templates.

What Is A Smart Chart?

Designer Suite allows you to create systems that occur multiple times in a project by defining the system name and telling Designer Suite that the system is "Typical of 20". This allows you to draw the shapes in the system once, while allowing Designer Suite to properly compute Bill of Material reports and other information. In such systems, everything about each instance of each component should be identical.

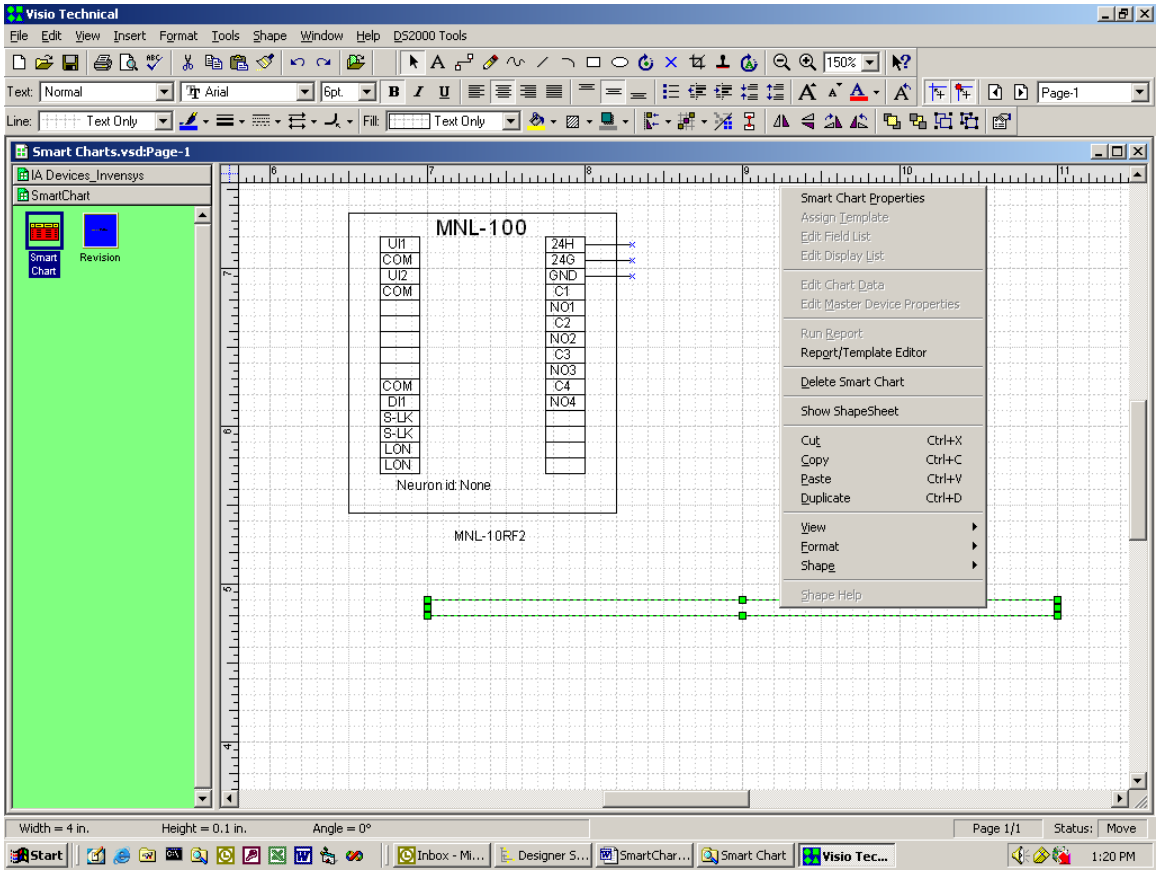
With controller devices, however, it becomes necessary to define certain pieces of information that are distinct for each instance of the controller. For example, it is important that each instance have its own Bill of Material tag, as well as information to indicate which other controller devices they are connected to and from. Network addresses also need to be unique for each device.

Smart Charts resolve this problem by creating a spreadsheet of information that is unique for each instance of the controller. You create a Smart Chart by specifying the "master" controller in the system that the Smart Chart represents, and based on the "Typical Of" value for the system, the Smart Chart creates a row for each instance. You then tell the Smart Chart which fields you want it to contain, and which of those fields you want displayed in the drawing. Next you edit the data in these fields, add custom fields, and create commissioning reports based on this data. Since Designer Suite sees each row as if it were a separate device, all other functionality behaves properly.

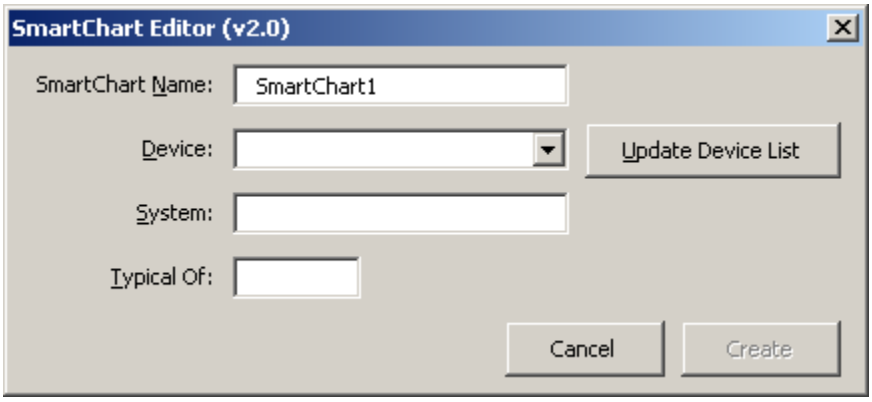
Creating a Smart Chart

In this section we'll walk through the steps used to create a Smart Chart from scratch. We'll select our fields by hand and use the default spreadsheet views for editing and reporting our data. Later you will see that we can create and use our own custom Smart Chart Templates to automate the field selection and provide a much more robust view for data entry and reporting.

You start by creating a system that contains a controller device. In our example, we'll show an MNL-100. You then drag a Smart Chart shape from the SmartChart stencil onto your drawing (it does not have to be near, or even on the same page, as the controller).

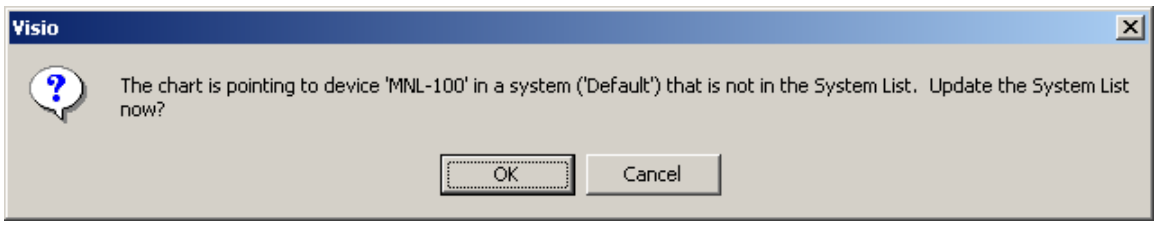


Initially the Smart Chart is represented by an wide, empty rectangle. If you right click on the chart you will see a number of menu items, although most of them are disabled. Before we can do anything else, we must first assign the Smart Chart to the controller. Select SMART CHART PROPERTIES from the menu to bring up the Properties dialog box.



First specify a name for the Smart Chart. This is not a Bill of Materials tag, since the Smart Chart itself is not a part. Next select the "master" device from the drop down list box. If the device is not on the list, click UPDATE DEVICE LIST and the drawing will be rescanned and the device added to the list.

If you haven't yet updated the System List, you will get the following message:



Click OK to have Designer Suite update the System List. Remember, you can update the Device and System lists at any time by selecting UPDATE… from the DS2005 TOOLS menu.

After you've selected the master device, the name of its system and the Typical Of value will be filled in. You can't change the system from here (you must do so in the master device's property window, as explained later), but you can change the Typical Of value for the system by entering a different value. This change will affect the whole system, and is the same as changing the value by selecting SYSTEM NAMES→CHANGE TYPICAL OF VALUES FOR SYSTEMS from the DS2005 TOOLS menu.

Change the Typical Of value to 5 and Click Create. The Smart Chart will appear on the drawing.

BOM Tag	From Device	Network Address	To Device
MNL-100	MNL-100	0:0:0:0:0	MNL-100
MNL-100	MNL-100	0:0:0:0:0	MNL-100
MNL-100	MNL-100	0:0:0:0:0	MNL-100
MNL-100	MNL-100	0:0:0:0:0	MNL-100
MNL-100	MNL-100	0:0:0:0:0	MNL-100

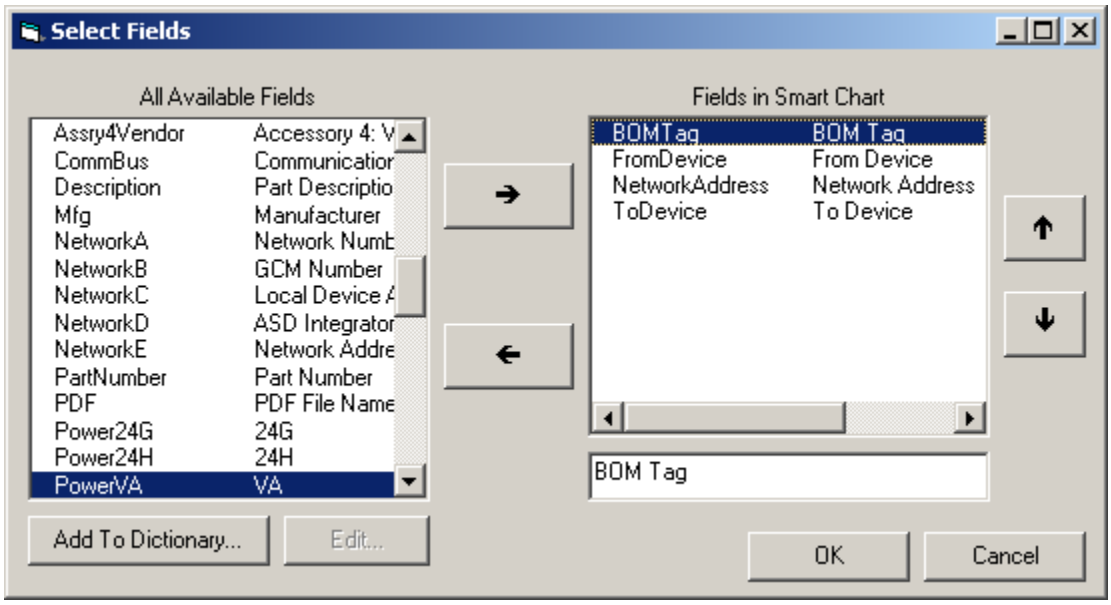
The Anatomy of a Smart Chart

Initially the Smart Chart contains four fields, or columns, all of which are displayed in the drawing. As you will see, you can add many other fields, including your own custom fields, to the chart as well. You can also select which of these fields are displayed in the drawing (the others are still stored in the chart, but displayed only when editing or generating reports), and change the text for the column headings.

You can select the Smart Chart as a whole by clicking on its top edge or on any heading in the header row. If you then move or drag the chart, the data rows will follow automatically. There are also numerous small square control handles in the chart that allow for resizing. Drag the handles on either side of the chart to change the width, and the columns will resize proportionally. Drag the handles on the top or bottom to change the height, and the height of the rows will adjust proportionally as well. Slide the handle between two column headings to change the width of only those columns.

Selecting the Fields in a Smart Chart

Right click on the Smart Chart and select EDIT FIELD LIST to see the list of fields that are contained in the Smart Chart.



The list box on the left shows all the fields in the Designer Suite system, as well as any custom fields you have added (system fields are listed first). Each system field corresponds to a property of the master controller device as specified in its Properties window.

You will notice that each field is represented by a *Field Code*, shown on the left side of the list box, which cannot be changed. The text on the right is it description, which can be modified

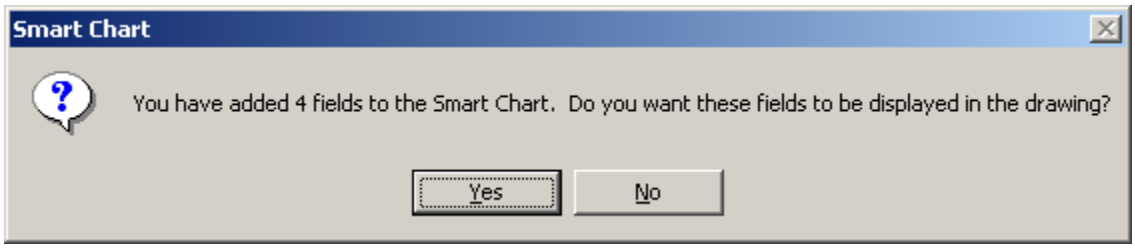
The list box on the right shows all of the fields that are contained in the Smart Chart. When a field is added to the Smart Chart, you will be able to enter distinct values for that field for each row (with some exceptions), and therefore for the controller that the row represents. You will also be able to display that field in any commissioning reports you generate from the chart.

To add fields to the chart, highlight one or more in the left list box (use SHIFT+CLICK and CTRL+CLICK for multiple selects) and click the right arrow. Select fields in the right list box and click the left arrow to remove them from the chart. If you select an individual field in the right list box, you can use the up and down arrows to change its position in the chart.

As you select fields in the right list box, the description is shown in the bottom text box, and is available for editing. Use this to change the default heading for a field.

You can use the ADD TO DICTIONARY… and EDIT… buttons to add custom fields to the user dictionary (and your chart), or to edit the default headings for an existing custom field.

If you select fields to add to the chart and click OK, you will get the following message:



Since the fields displayed in the drawing are only a subset of the fields in the chart, you have the option of automatically choosing them for display. If you don't display them at this point, you can always choose to do so later. For our example, we will choose to add and display four additional fields:

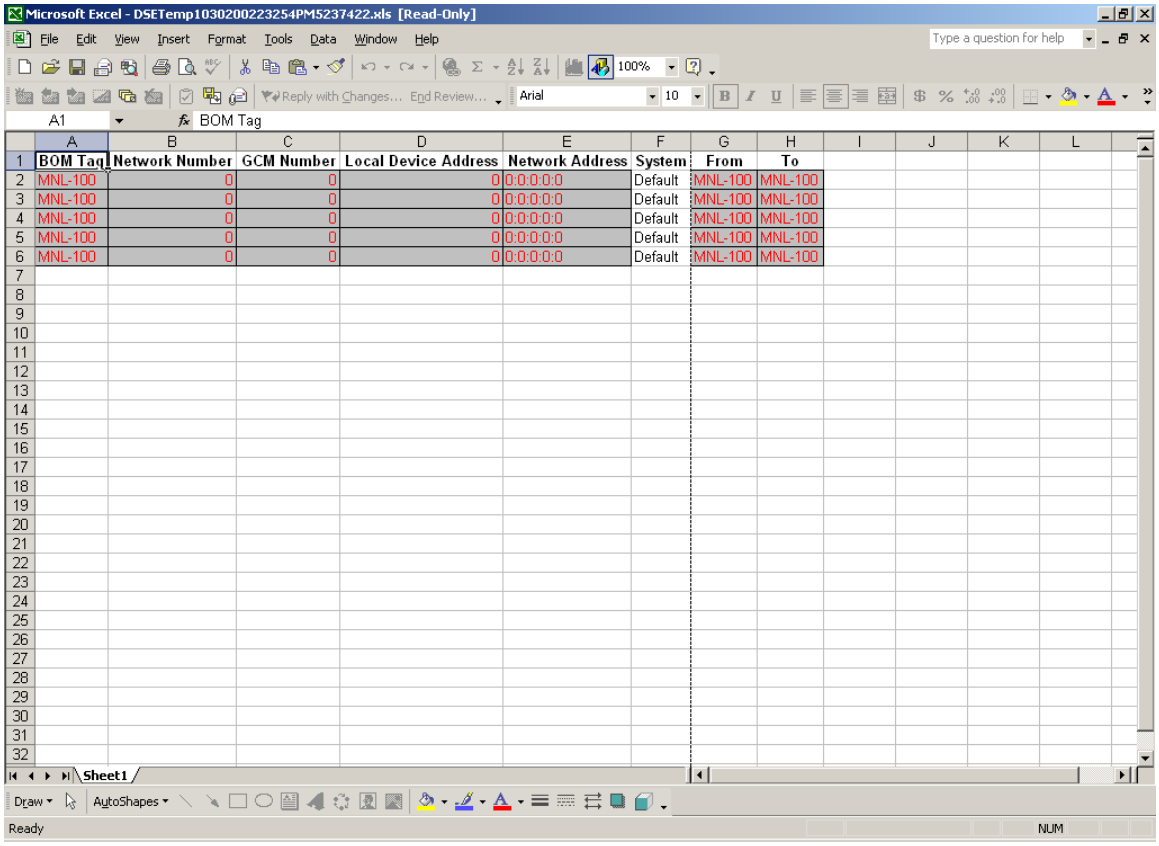
BOM Tag	Network Number	GCM Number	Local Device Address	Network Address	System	From Device	To Device
MNL-100	0	0	0	0:0:0:0:0	Default	MNL-100	MNL-100
MNL-100	0	0	0	0:0:0:0:0	Default	MNL-100	MNL-100
MNL-100	0	0	0	0:0:0:0:0	Default	MNL-100	MNL-100
MNL-100	0	0	0	0:0:0:0:0	Default	MNL-100	MNL-100
MNL-100	0	0	0	0:0:0:0:0	Default	MNL-100	MNL-100

Selecting the Fields to Display in a Smart Chart

Right click on the Smart Chart and select EDIT DISPLAY LIST to see the list of all the Smart Chart fields that are and are not displayed in the drawing. This dialog box is identical to the Select Fields dialog, except that now only the fields in this Smart Chart are shown, with those displayed in the drawing listed in the right list box and the remainder listed in the left list box. Again use the arrows to select which fields are displayed and not displayed, as well as the order in which they appear. Edit the text used for the column headings by selecting the field and editing the heading in the text box.

Editing the Smart Chart Data

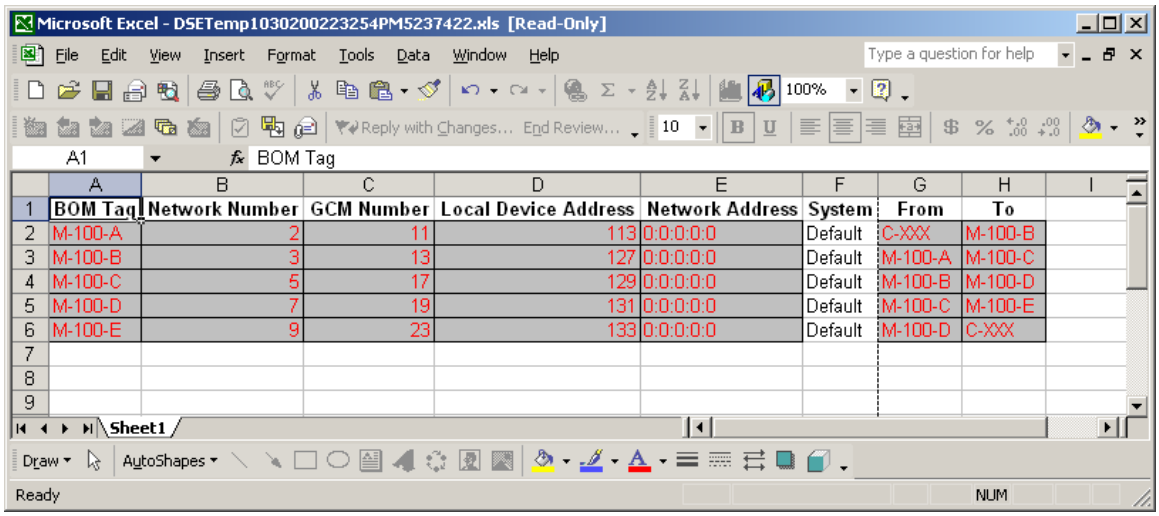
The initial values in each row in the Smart Chart are the same as those in the master device. To change these values, right click the Smart Chart heading and select EDIT CHART DATA from the menu. This will open the Smart Chart for editing in Microsoft Excel.



	A	B	C	D	E	F	G	H
1	BOM Tag	Network Number	GCM Number	Local Device Address	Network Address	System	From	To
2	MNL-100	0	0	0	0:0:0:0:0	Default	MNL-100	MNL-100
3	MNL-100	0	0	0	0:0:0:0:0	Default	MNL-100	MNL-100
4	MNL-100	0	0	0	0:0:0:0:0	Default	MNL-100	MNL-100
5	MNL-100	0	0	0	0:0:0:0:0	Default	MNL-100	MNL-100
6	MNL-100	0	0	0	0:0:0:0:0	Default	MNL-100	MNL-100

The data in the chart is now available for editing using a default standard spreadsheet format. Later you will see that we can apply a Template to the chart to provide a better form for data entry.

The editable fields are shown with red text and a gray background. All other elements of the spreadsheet are locked (i.e., you cannot add rows or adjust columns or formatting). You may also notice that some fields are not editable, such as the System field in the above example. These fields are read-only, and the rows always inherit their values from the master device. Adding them to the Smart Chart, however, makes them available for reporting.



	A	B	C	D	E	F	G	H	I
1	BOM Tag	Network Number	GCM Number	Local Device Address	Network Address	System	From	To	
2	M-100-A	2	11	113	0:0:0:0:0	Default	C-XXX	M-100-B	
3	M-100-B	3	13	127	0:0:0:0:0	Default	M-100-A	M-100-C	
4	M-100-C	5	17	129	0:0:0:0:0	Default	M-100-B	M-100-D	
5	M-100-D	7	19	131	0:0:0:0:0	Default	M-100-C	M-100-E	
6	M-100-E	9	23	133	0:0:0:0:0	Default	M-100-D	C-XXX	
7									
8									
9									

After you have finished editing the data, close Excel either by clicking the Close icon or selecting RETURN TO DESIGNER SUITE from the FILE menu. You will be prompted to save your changes, and the Smart Chart will update itself in the drawing.

BOM Tag	Network Number	GCM Number	Local Device Address	Network Address	System	From	To
M-100-A	2	11	113	2:11:113:0:0	Default	C-XXX	M-100-B
M-100-B	3	13	127	3:13:127:0:0	Default	M-100-A	M-100-C
M-100-C	5	17	129	5:17:129:0:0	Default	M-100-B	M-100-D
M-100-D	7	19	131	7:19:131:0:0	Default	M-100-C	M-100-E
M-100-E	9	23	133	9:23:133:0:0	Default	M-100-D	C-XXX

You may notice in this example that we did not need to edit the Network Address field itself, since this field is calculated (by combining the five separate fields, *NetworkA-NetworkE*),

Generating a Smart Chart Report

To generate a Smart Chart report, right click on the Smart Chart and Select RUN REPORT. You will be asked to select a report Template, which is an Excel file. If you don't have a report Template created already, select *DEFAULT.XLS*.

The default report will look almost the same as the one presented for editing, except that now the whole sheet is editable and you are free to reformat it as you please.

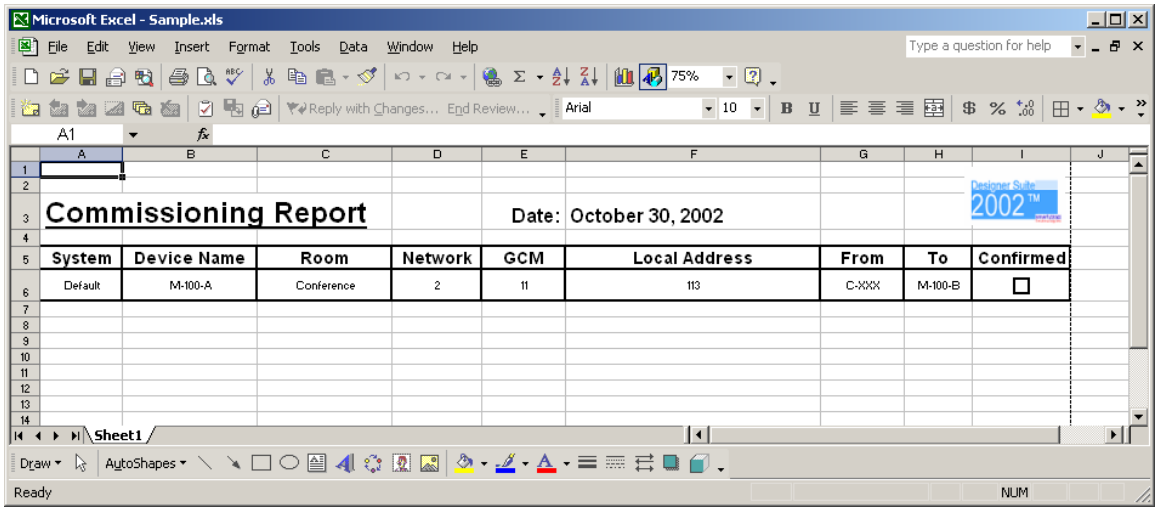
Smart Chart Templates

So far we have created our Smart Chart manually – selecting the fields to include, those to display, and relying on the mostly unformatted default spreadsheets for editing the data and viewing our reports. The real power of the Smart Chart is unleashed when you apply your own custom view of the Smart Chart data in a specially coded Excel worksheet we'll refer to as a Template (not to be confused with an Excel Template).

Creating a Smart Chart Template

As an example, let's create a simple commissioning report to match the fields we've used so far: *Bill of Material Tag*, *Network Address*, and the *To* and *From Devices*. We'll also add custom fields to indicate the room which the device controls.

Start by launching Excel and building the report, formatting the rows, columns and cells any way you'd like. You can even include graphics and formulas in the cells.

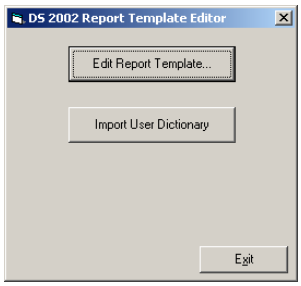


Here we have prepared the basis for our template. We've added heading information, including a formula to show today's date, we've adjusted the font, format, and alignment of the data in the cell, including borders, and we've added columns for our custom Room field and a check box for the engineer to confirm the installation of each instance of the system. We've also included a single line of sample data to see the results of the formatting.

Save the report and close Excel.

Inserting Smart Chart Fields Using the Template Editor

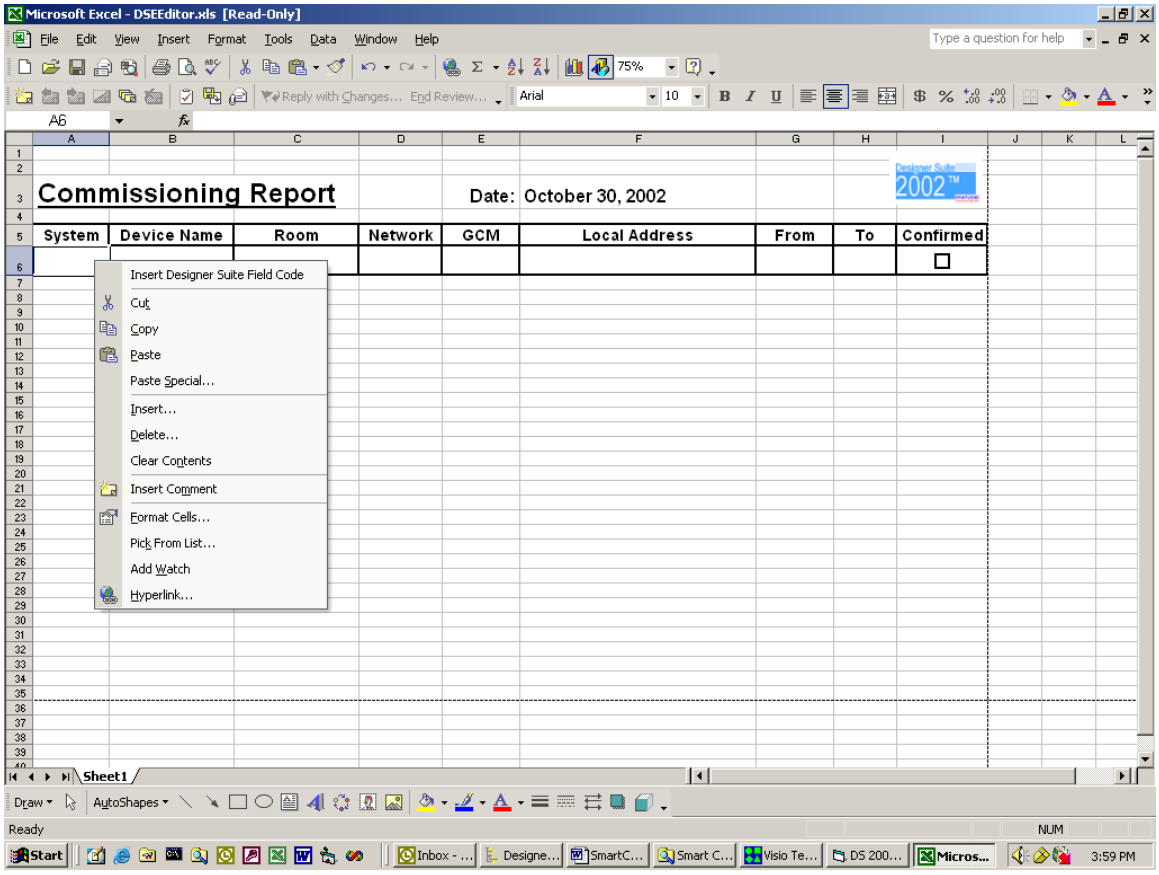
Right click on the Smart Chart and select REPORT/TEMPLATE EDITOR:



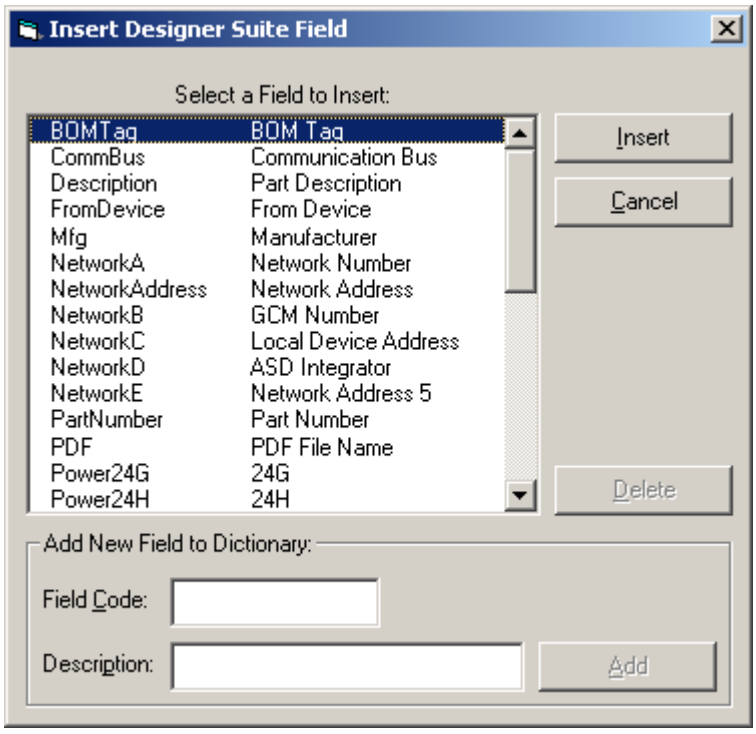
Click on the EDIT REPORT TEMPLATE button and select the Excel file you just created. The file will be reopened in Excel.

We need to remove the sample data in the row and replace them with the field codes from the Smart Chart. Start by deleting the data in the cells (except the checkbox). Do not delete the entire row, as you will lose the formatting associated with the cells.

Now if you right click on a cell, you will notice a new menu item called INSERT DESIGNER SUITE FIELD CODE.

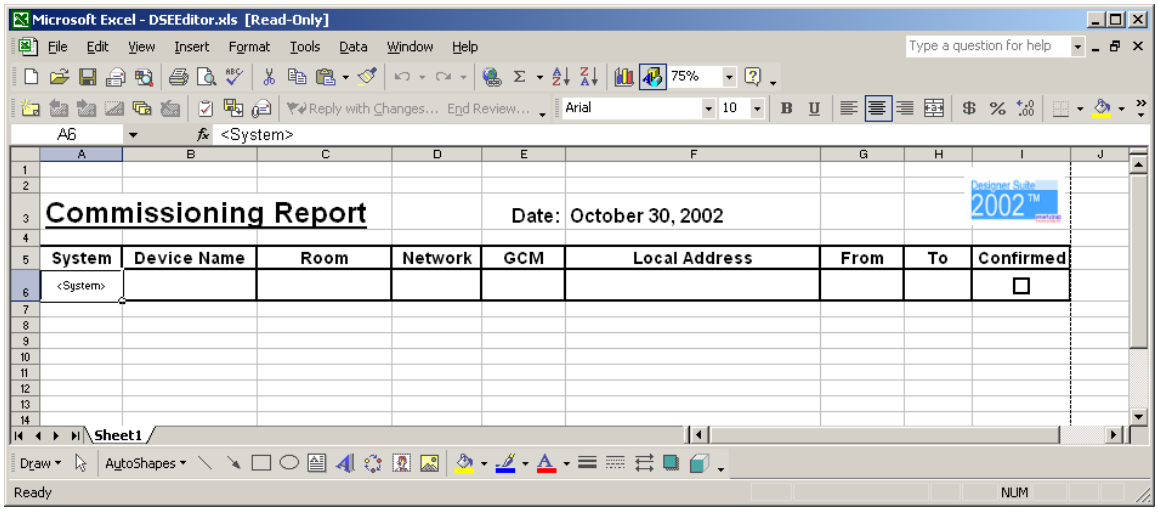


Select the empty box under System, right click, and select this menu item. You will see the Insert Designer Suite Field dialog box.



Here you can select any of the Designer Suite system fields, or one of the custom fields you have created (the fields are listed alphabetically in two groups, with the system fields listed first). To insert a field code into the template, select the field and click INSERT, or simply double-click the field in the list box. If you want to create a custom field and add it to your dictionary, enter the field code and a description in the text boxes on the bottom of the dialog box and click ADD. To delete a custom field, select it and click DELETE.

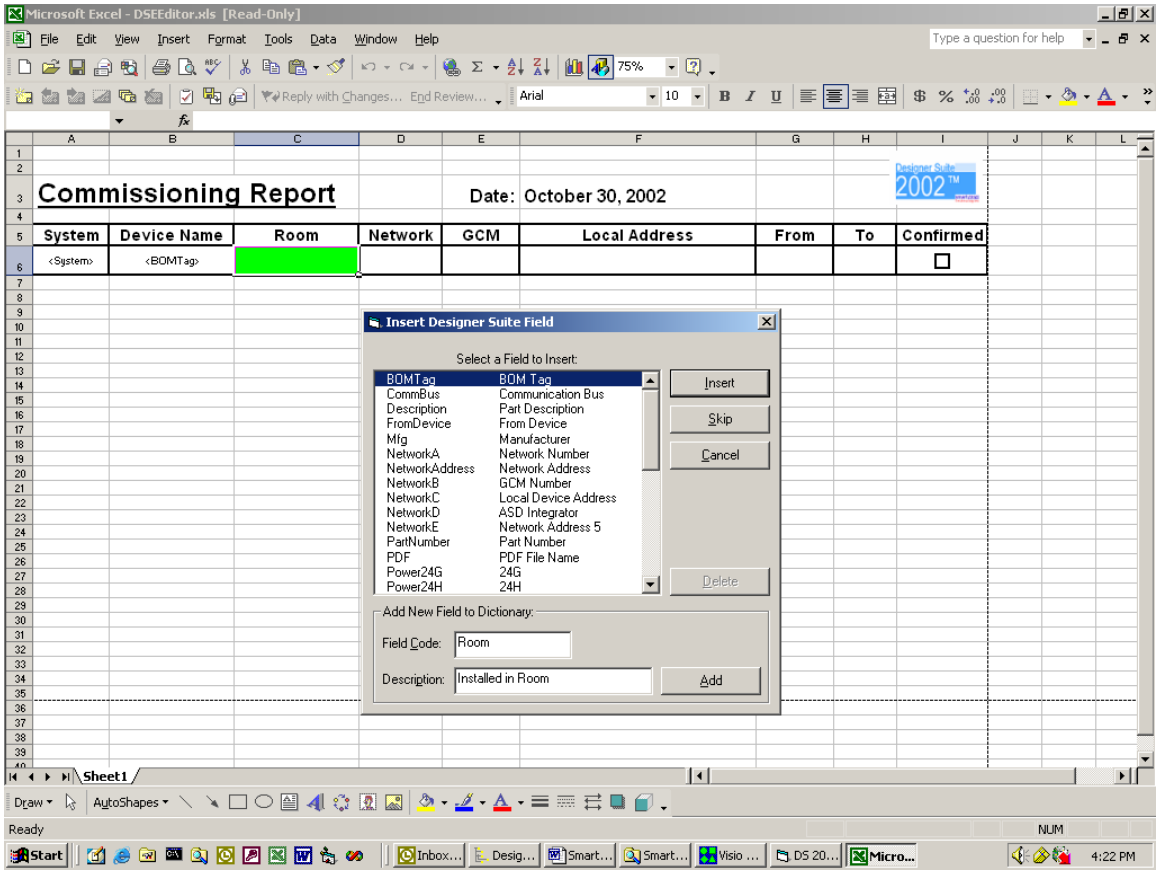
For our example, we'll select the System field and click INSERT.



You will see that the field code "<System>" has been inserted into the cell. The angle brackets denote a field code in our template, and the field code matches those that are

shown in the Smart Chart field list. We could also have bypassed the Insert dialog and typed in the field code by hand.

To speed things up, we can select the entire row of fields at once. Right click on the row number in the spreadsheet and select INSERT DESIGNER SUITE FIELDS from the menu. The editor will now walk us through each empty cell in the row to allow us to choose a field code. We'll select "<BOMTag>" for the Device Name, and create a custom field for Room.



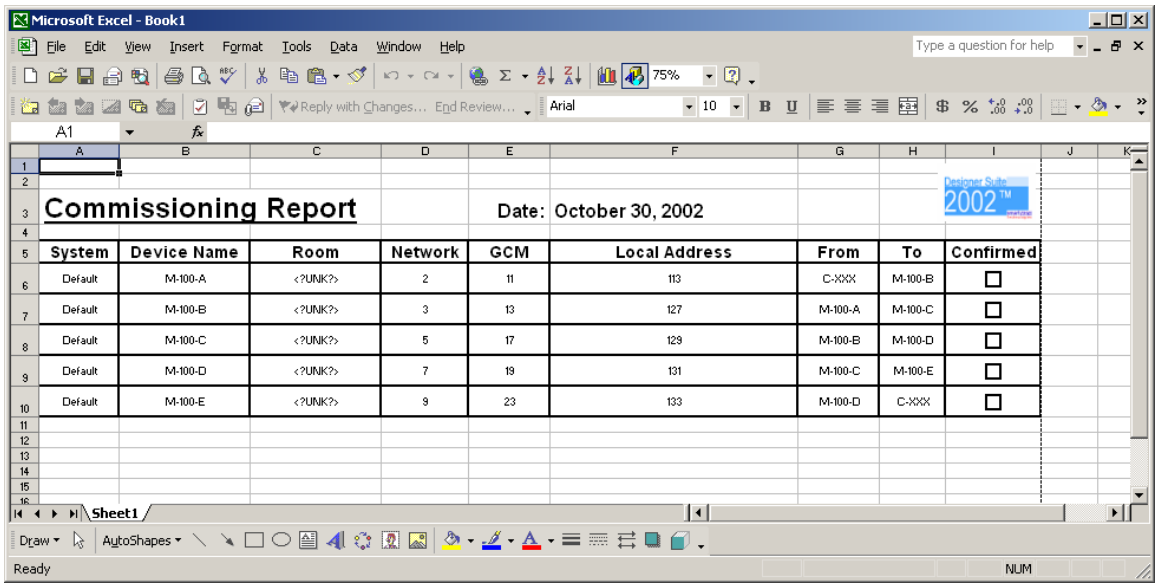
Finally, we'll insert fields for <NetworkA>, <NetworkB>, <NetworkC>, <FromDevice> and <ToDevice>.

While we can enter these field codes by hand, there is an extra reason to use the Insert dialog. Erase the field codes and again right click the row number and select INSERT DESIGNER SUITE FIELDS from the menu. This time as you go through the fields you should notice that the correct field is automatically selected for you in the list box. You need only click the INSERT button for each one. The Template Editor has learned from your column headings what the field should probably be, so the next time you create a similar report with some or all of the same headings, it will remember which field probably belongs in the column.

Save the workbook (you will need to provide a file name, since the sheet we selected was reopened in a different workbook as read-only). You should keep your Smart Chart templates in the *\Reports\Smart Chart* sub-directory of your main Designer Suite directory.

Running a Custom Report

Now that we created a new Template, let's use it to report the data in our sample Smart Chart. Right click on the Smart Chart, select RUN REPORT, and select our new report template.



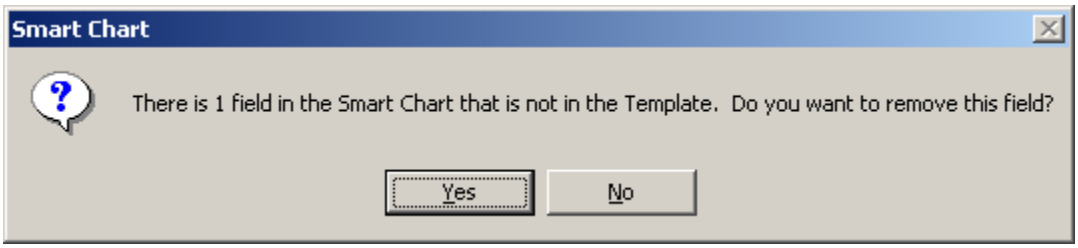
System	Device Name	Room	Network	GCM	Local Address	From	To	Confirmed
Default	M-100-A	<?UNK?>	2	11	113	C-XXX	M-100-B	☐
Default	M-100-B	<?UNK?>	3	13	127	M-100-A	M-100-C	☐
Default	M-100-C	<?UNK?>	5	17	129	M-100-B	M-100-D	☐
Default	M-100-D	<?UNK?>	7	19	131	M-100-C	M-100-E	☐
Default	M-100-E	<?UNK?>	9	23	133	M-100-D	C-XXX	☐

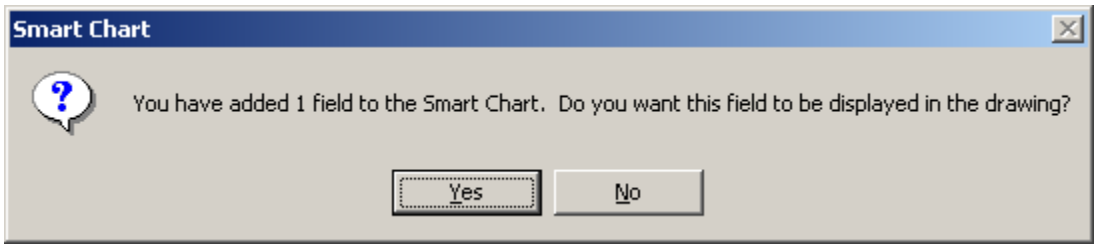
This is a big improvement from the default unformatted version. You will notice, however, that our new Room field displays an error code. That's because the field is not (yet) part of our Smart Chart.

Assigning a Template to a Smart Chart

Once we have created a Template, we can assign it to the Smart Chart by right-clicking the Smart Chart and selecting ASSIGN TEMPLATE from the menu. You will be prompted for the name of the Excel file.

When we assign our new Template to the existing chart, we will get the following messages:



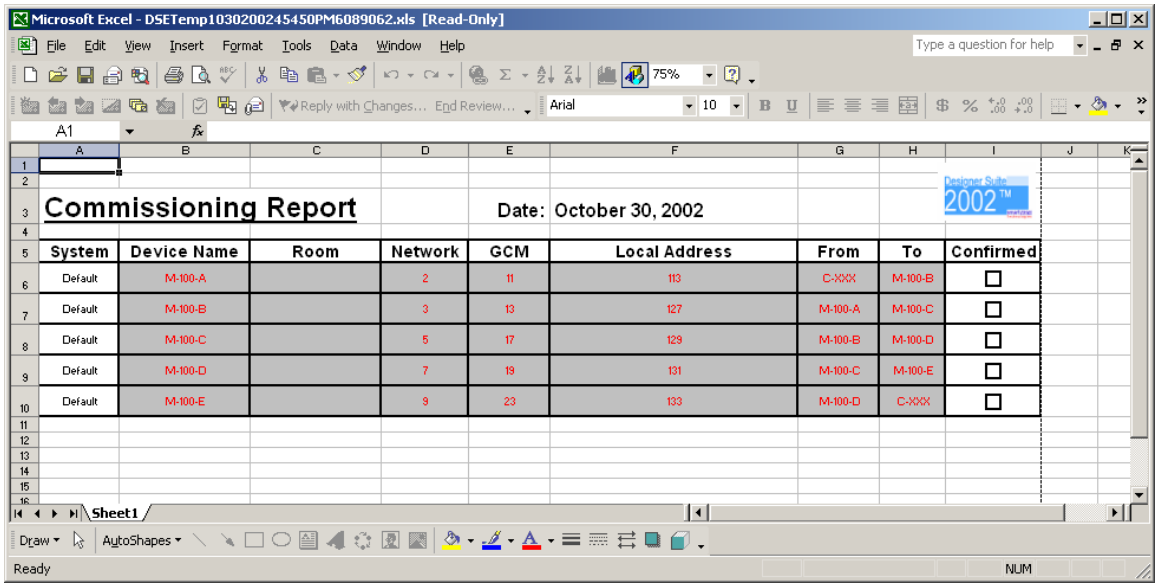


Assigning a Template to a Smart Chart accomplishes three things. First, it tells the Smart Chart which Template to use when we edit the data in the chart. Second, it indicates which Report will be the default when we select RUN REPORT (although we can run any report at any time). Third, and most importantly, it automatically redefines which fields are and are not in the Smart Chart.

The field being removed is the <NetworkAddress>. The field being added is <Room>. For our example we'll change the Smart Chart to match the Template, so we'll Yes to both questions. The Smart Chart in the drawing will now look like this:

System	Device Name	Room	Network	GCM	Local Address	From	To
Default	M-100-A		2	11	113	C-XXX	M-100-B
Default	M-100-B		3	13	127	M-100-A	M-100-C
Default	M-100-C		5	17	129	M-100-B	M-100-D
Default	M-100-D		7	19	131	M-100-C	M-100-E
Default	M-100-E		9	23	133	M-100-D	C-XXX

Now if we select EDIT CHART DATA, we can fill in values for the Room field:



Templates are the easiest way to build a Smart Chart from scratch. Now that we have this Template, we could rebuild the Smart Chart by simply dropping the Smart Chart shape from the stencil (which creates it with the four default fields) and then assigning the Template (which removes the Network Address field and adds in the other five).

If at any time you want to change the Template back to the default view, which simply creates a blank spreadsheet with each column, choose the *DEFAULT.XLS* file when you select ASSIGN TEMPLATE from the menu.

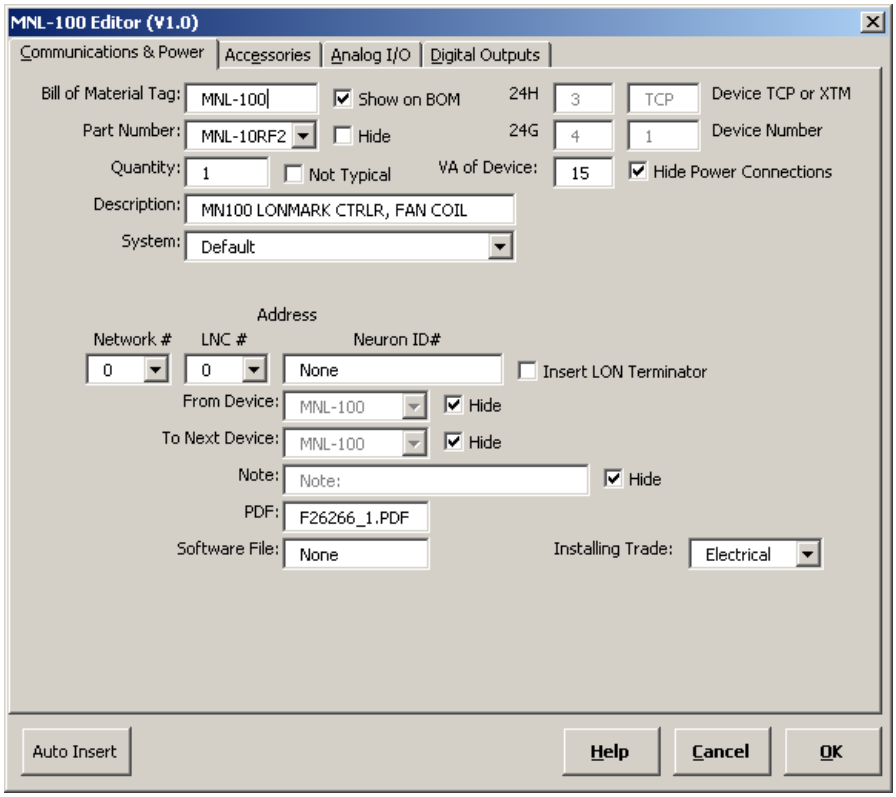
The User Dictionary

As you create custom fields in your Smart Charts, they are automatically added to the User Dictionary database on your computer. This file is *DSUserDictionary.mdb*, and is stored in the DB subdirectory of your Designer Suite system. If at any time you wish to transfer or merge this directory from another computer, copy the database file from the other computer to another location on your machine (don't overwrite your own dictionary file), select REPORT/TEMPLATE EDITOR from your Smart Chart's menu and click the IMPORT USER DICTIONARY button. You will be prompted for the location of the database file from the other machine, and given the option to overwrite your current directory or merge the entries.

Modifying the Master Device and System

As discussed, each row of the Smart Chart actually represents a device in your drawing. When you create the chart, many of the basic properties of the device (i.e., BOM Tag, Part Number, Description, Manufacturer, I/O points) are automatically copied from the device into these rows. Some of the properties can then be changed for each row (i.e., BOM Tag), and some cannot (i.e., Part information, System, Trade and I/O Points).

To change the properties of the Master device, you should right click on the Smart Chart and select EDIT MASTER DEVICE PROPERTIES. This will locate the device in the drawing and bring up its Properties window:



If you make changes to the properties of the master device, only the fields that cannot be modified in the Smart Chart (i.e., Part information, System, Trade and I/O Points) will be copied back into the rows. Any other fields, such as BOM Tag, that are modifiable in the Smart Chart, will not have their custom values overridden. If new rows are added to the chart they will however, inherit their initial values from these new properties.

Consider the following sample Smart Chart:

BOM Tag	Part Number	Installing Trade	GCM Number	From Device	To Device
M-1	MNL-10RF2	Electrical	11	C-X	M-2
M-2	MNL-10RF2	Electrical	12	M-1	M-3
M-3	MNL-10RF2	Electrical	13	M-2	M-4
M-4	MNL-10RF2	Electrical	14	M-3	M-5
M-5	MNL-10RF2	Electrical	15	M-4	C-X

If we edit the properties of the master device, changing the Part Number, Installing Trade, and BOM Tag, the chart will update to the following:

BOM Tag	Part Number	Installing Trade	GCM Number	From Device	To Device
M-1	MNL-10RS1	Panel	11	C-X	M-2
M-2	MNL-10RS1	Panel	12	M-1	M-3
M-3	MNL-10RS1	Panel	13	M-2	M-4
M-4	MNL-10RS1	Panel	14	M-3	M-5
M-5	MNL-10RS1	Panel	15	M-4	C-X

Although the read-only properties have been changed, the modifiable fields have not. Now if rows are added to the chart, the new rows will inherit all the current properties of the master:

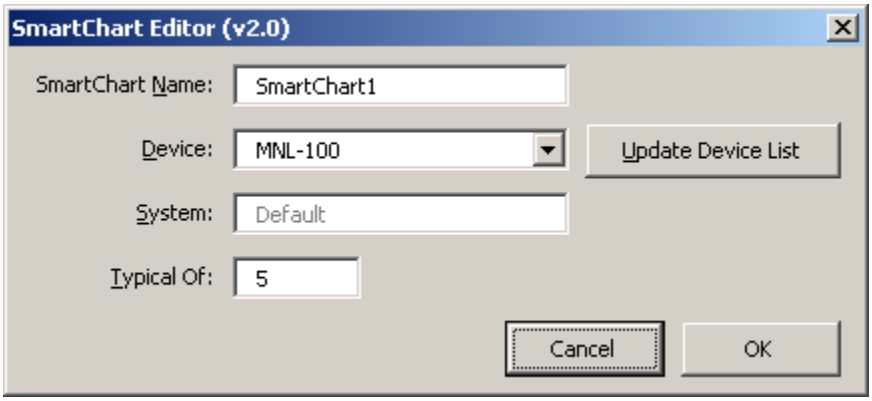
BOM Tag	Part Number	Installing Trade	GCM Number	From Device	To Device
M-1	MNL-10RS1	Panel	11	C-X	M-2
M-2	MNL-10RS1	Panel	12	M-1	M-3
M-3	MNL-10RS1	Panel	13	M-2	M-4
M-4	MNL-10RS1	Panel	14	M-3	M-5
M-5	MNL-10RS1	Panel	15	M-4	C-X
MNL-100	MNL-10RS1	Panel	0	MNL-100	MNL-100
MNL-100	MNL-10RS1	Panel	0	MNL-100	MNL-100
MNL-100	MNL-10RS1	Panel	0	MNL-100	MNL-100

You should avoid editing the master device's properties from its own menu, as the changes will not be automatically made in the Smart Chart. If you do change the master device's properties this way, you should then select the EDIT MASTER DEVICE PROPERTIES from the Smart Chart and click OK to have the Smart Chart read the changes.

Changing the Number of Rows in the Smart Chart

The number of rows in the Smart Chart should reflect the Typical Of value for the system of the master device. Therefore, the Smart Chart will generally synchronize itself to this value.

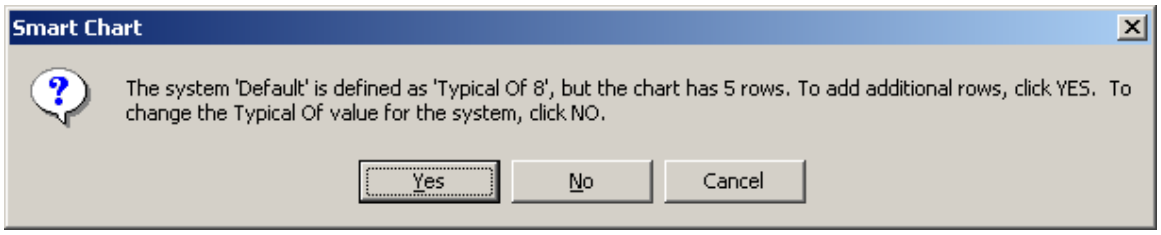
You can change the Typical Of value for the system in several places. If you are using a Smart Chart, the most convenient way is to select SMART CHART PROPERTIES from the Smart Chart's menu.



Changing the Typical Of value here affects the whole system. Therefore you will be prompted to add or delete rows from the Smart Chart.

If you change the Typical Of value for the system somewhere else, by selecting SYSTEM NAMES→CHANGE TYPICAL OF VALUE FOR SYSTEMS from the DS2005 TOOLS menu or in another Smart Chart in the same system, the Smart Chart will not update automatically. To resynchronize the chart, simply select SMART CHART PROPERTIES from its menu. The

Smart Chart will detect the change and prompt you to make the appropriate change, such as:



Remember that if you decrease the size of a system and agree to delete the rows from the Smart Chart, the data in those rows will be permanently lost.

21. Smart Clones

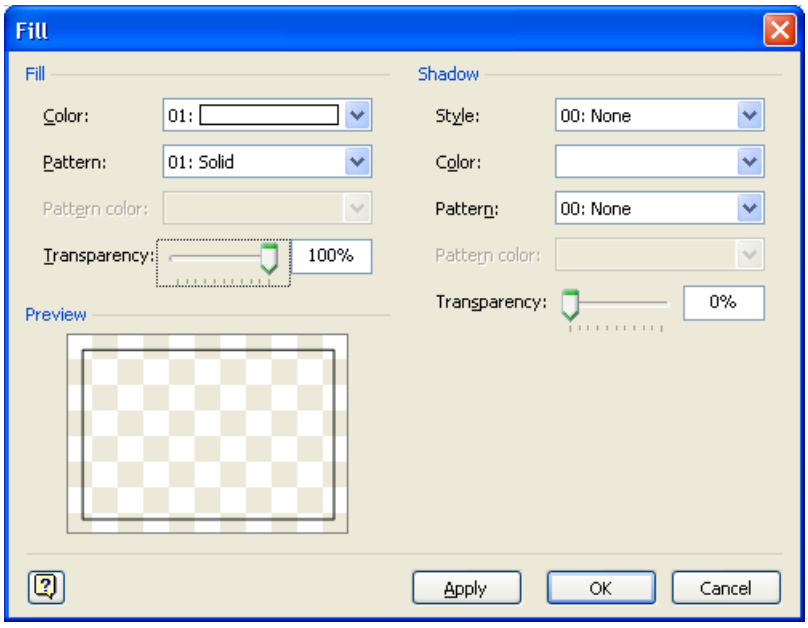
One of the features that make Designer Suite 2005 so powerful is the ability to create your own shapes in Visio and enable them to interact with Designer Suite in the same was as any other Smart Shape. These custom shapes are known as Smart Clones.

For a complete demonstration of Smart Clones, download or view the *Designer Suite 2005 – Part IV – Smart Clones* video presentation available on our website.

Creating a Smart Clone

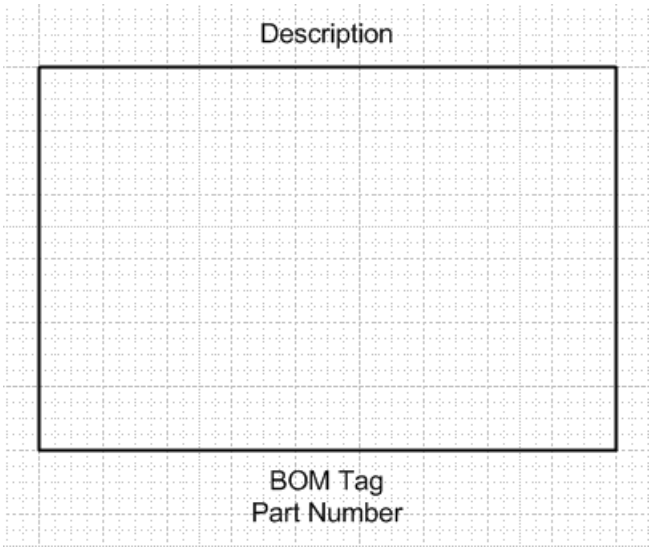
The first step in creating a Smart Clone is to draw the shape. You can use any of the Visio drawing features, which are too numerous to discuss here, but the first step is often creating a transparent rectangle.

- If its not displayed already, select the Drawing Toolbar to be displayed in Visio.
- Click on the rectangle shape and draw a rectangle
- Right-click on the shape and select FORMAT→FILL. Change the Transparency value to 100%.



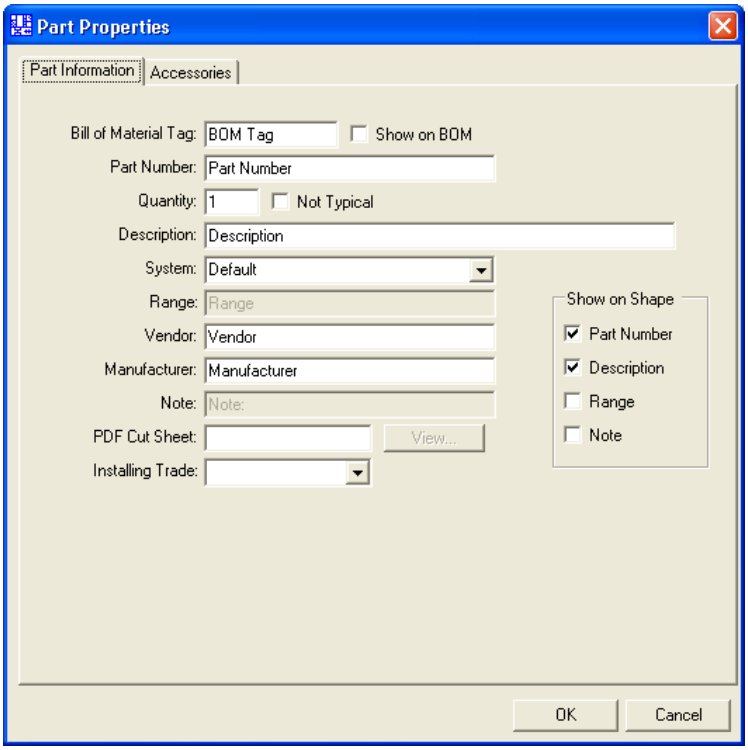
To convert the rectangle into a Smart Clone, select SMART CLONE→SMART CLONE DESIGNER from the DS2005 TOOLS menu.

The Smart Clone Properties window will appear, but for the moment simply close it to view how the shape has changed:



You will notice that the standard floating labels have been added to the shape, including BOM Tag, Part Number and Description.

Double-click the shape, or right-click and select SET PROPERTIES from the menu, and a standard Part Properties dialog will be shown.



If this Smart Clone represents a single part not found in the Parts Database, you can set the values for Part Number, Description, Vendor and Manufacturer directly in the Part Properties. The shape will then be ready to store in a stencil and reuse (see the later section on *Storing Smart Clones in a Custom Stencil*).

Drawing Smart Clone Shapes

There are a few items and suggestions to note about drawing your Smart Clones shapes:

- When creating the shapes, try to adhere to the "100/200" rule. This refers to the suggestion that, when drawing the shapes, make sure that the Visio zoom magnification level is set to 100% or 200%. This is how all Designer Suite shapes were created, and in cases where terminal leads need to align between shapes, it will be much easier to do so if you do the same.
- When you create a Smart Clone, the shape is automatically wrapped up in a Visio Group Shape. The most important effect of this is that when you want to alter the geometry, you will need to "Open" the group by selecting it and choosing the EDIT→OPEN SMART CLONE menu item in Visio. If you ungroup the shape, you will lose all the properties that make the shape a Smart Clone. You may want to refer to the Visio documentation for more information about grouping.

Storing Smart Clones in Stencils

Once you have created a Smart Clone shape, you can turn it into a master shape by storing it in a custom stencil. Simply create the new stencil and drag the shape from the drawing into the stencil.

The earlier chapter on *Working with Visio Drawing Files and Stencils* outlines a number of important issues regarding creating your own stencils and where to store them. Please read that section before creating your own Smart Clones and custom stencils. Most importantly:

- Never store your shapes in the Designer Suite stencil files. These files will be overwritten every time Designer Suite is updated.
- Never copy one of our stencil files to use for storing your shapes. Our stencils contain underlying code and names that may conflict with itself if duplicated. Moreover, if this code changes significantly, those custom versions will be out of date and cause further conflicts.
- Always store your shapes in blank stencils created from the Visio FILE→STENCILS→ NEW STENCIL (Visio 2002) or FILE→SHAPES→NEW STENCIL (Visio 2003) command.
- Never name your stencil files with the same name as one of the Designer Suite standard stencils

Smart Clone Part Properties

Beyond the standard properties that are displayed to the user when they drop an instance of the Smart Clone on the drawing, the Smart Clone Designer allows you to add additional functionality, such as:

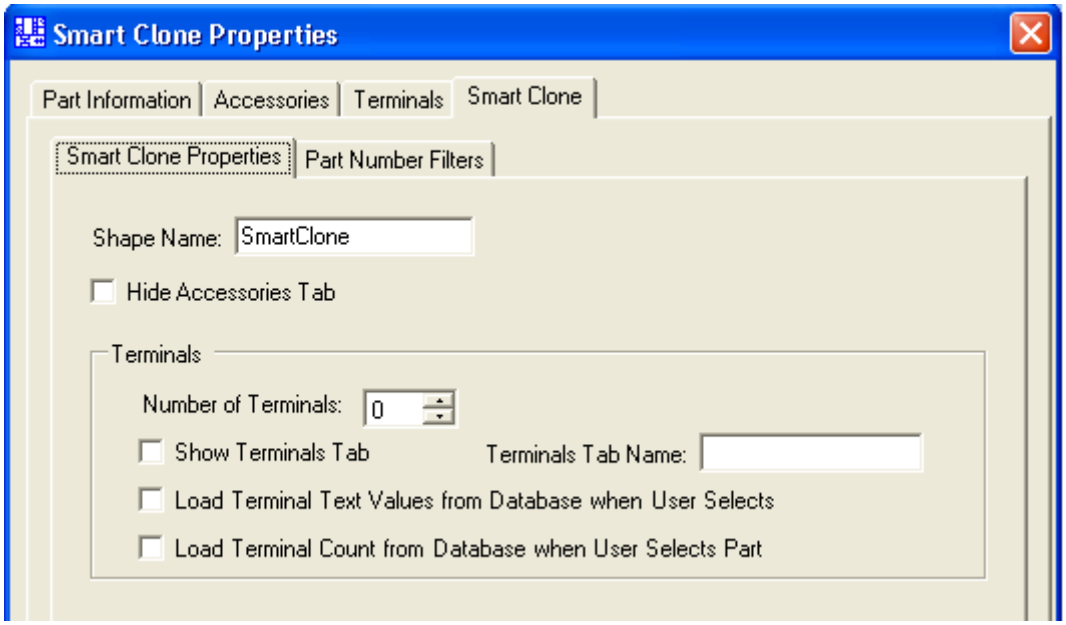
- Showing or Hiding the *Accessories* Tab
- Adding Terminal values on an separate entry tab
- Specifying which part number in the database apply to the shape

Editing the Smart Clone Properties

To view and edit all the Smart Clone Properties, select the Smart Clone and again select SMART CLONES→SMART CLONE DESIGNER from the DS2005 TOOLS menu (the same command used to create the Smart Clone). Click the SMART CLONE PROPERTIES button.

The Part Properties dialog will be shown again, though this time there will be two additional tabs: *Terminals* and *Smart Clone*. You can still set the default values on the *Part Information* and *Accessory* tabs.

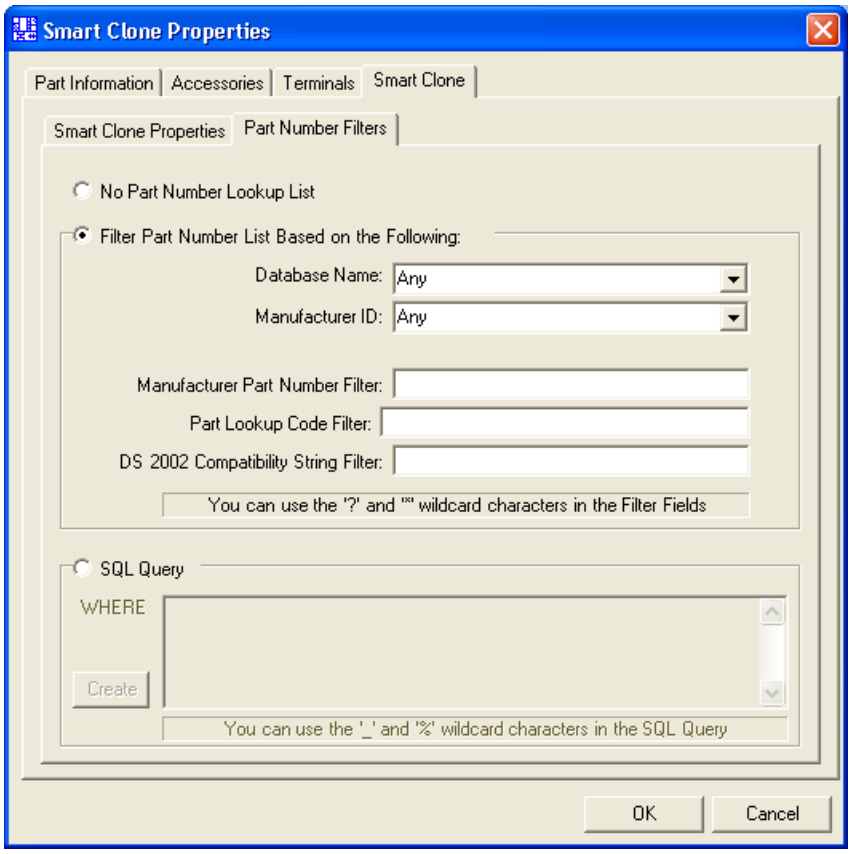
The *Smart Clone* tab contains two sub-tabs. The first is *Smart Clone Properties*:



On this page you can hide the *Accessories* tab from the user, and can set a different internal shape name for your Smart Clone shape. You can also set the properties of the *Terminal* tab. Refer to the later section on Smart Clone Terminals.

Part Number Filters

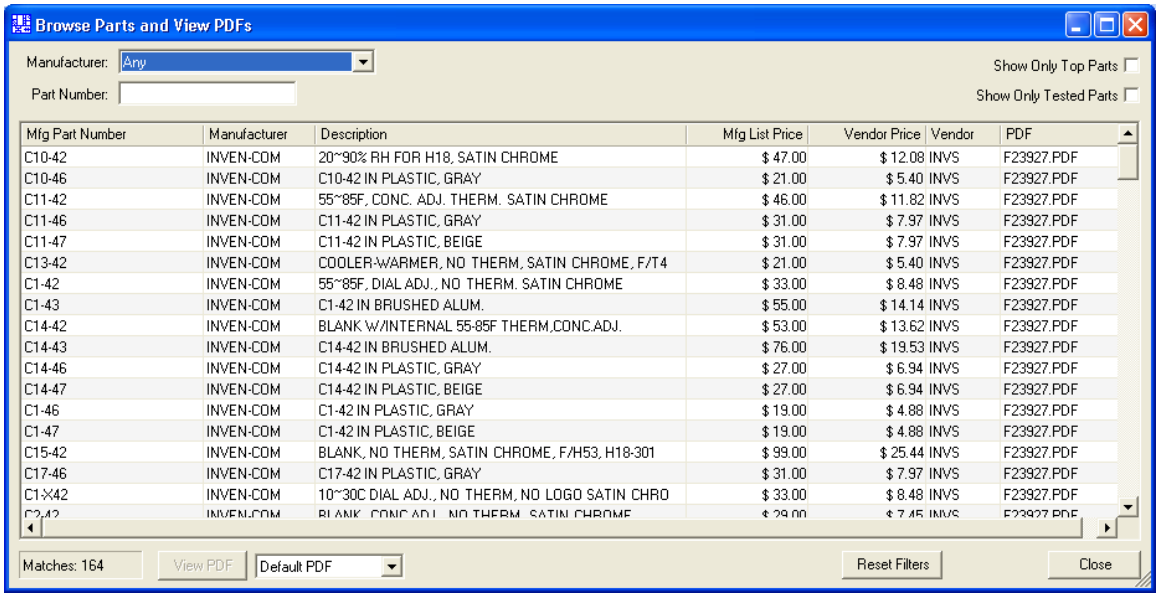
The second sub-tab allows you to specify exactly which parts will be displayed as choices when the user clicks the PART LIST… button in the Part Properties dialog for your shape.



- If your shape represents a single part, fill in the Part Information tab and leave the NO PART NUMBER LOOKUP LIST radio button selected. The PART LIST button will be hidden from the user.
- To filter on fields from the Parts Database, set one or more of the filter values, such as *Manufacturer ID* or *Manufacturer Part Number* Filter.
- For the specifiable filter values, you can use the ? (match any single character) and * (match zero or more of any character) wildcard symbols.
- If you specify more than one filter, only parts that match all the filters will be included in the part list.
- The *Part Lookup Code* is a custom field you can import with your own parts using the Database Manager. Its sole purpose is to allow you to create codes that you can use in this filter dialog.
- The *DS 2002 Compatibility String* is a coded value used in older Designer Suite Smart Shapes, and is generally added to custom parts added through the Database Manager to make them available in those older shapes.

- To create even more sophisticated filter queries, set the values in filter fields, select the SQL Query radio button, and click the CREATE button. The corresponding SQL query will be displayed and can then be edited.

While you're editing the filters, you can switch back and forth to the Part Information page and click the PART LIST button to test your filters. For example, enter "C*" into the Manufacturer Part Number filter and go back and click PART LIST. The list will be reduced from the 14,000 parts to less than 200 that begin with 'C'.

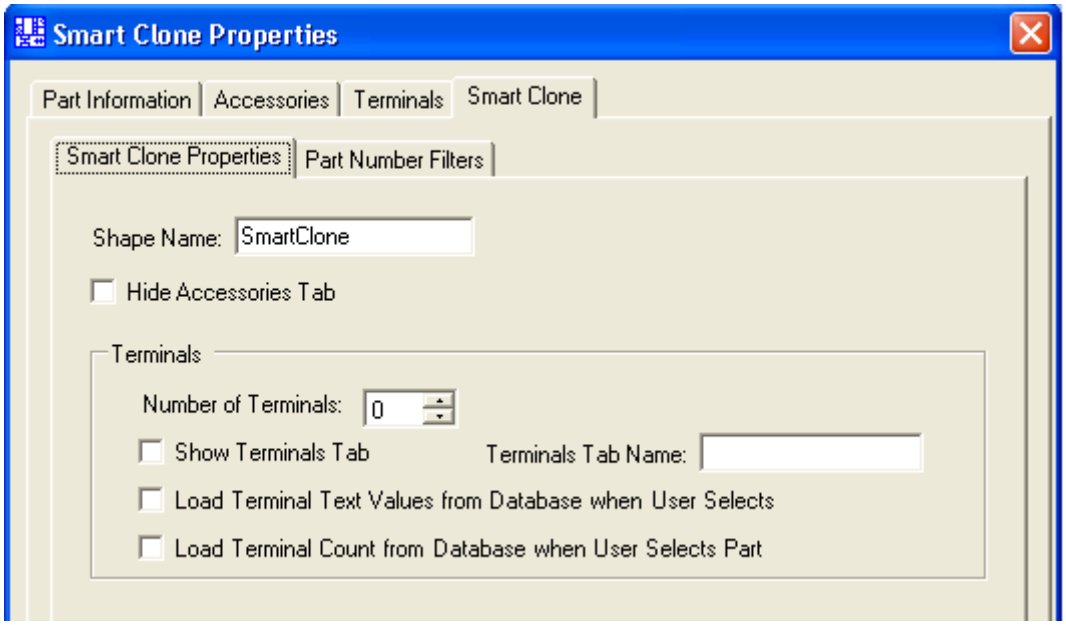


Smart Clone Terminals

Designer Suite Smart Shapes can refer to a set of custom properties referred to as *Terminals* (since they are most often used to store the terminal labels or color names used in advanced shapes such as actuators). These values correspond to values in the Parts Database, and are often loaded from the Parts Database when a part is selected. You can actually use these values for any purpose.

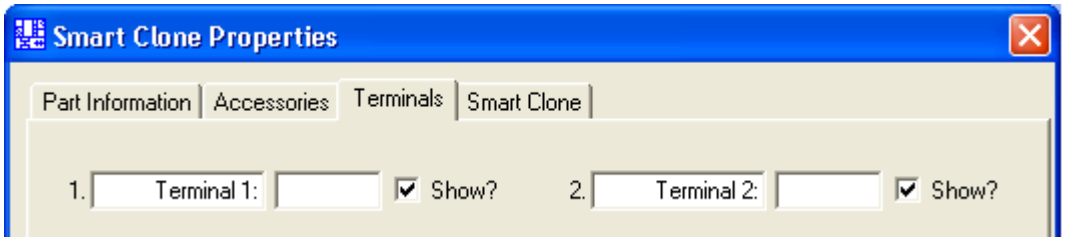
Configuring the Terminals Tab

Select the Smart Clone and select SMART CLONES→SMART CLONE DESIGNER from the DS2005 TOOLS menu. Click the SMART CLONE PROPERTIES button to bring up the Smart Clone Properties dialog. The *Smart Clone Properties* sub-tab contains a group of controls to configure the Terminals.



- To show the Terminal tab to the user, check the SHOW TERMINAL TAB checkbox.
- Specify the NUMBER OF TERMINALS to use.
- To rename the tab from its default name of "Terminals", specify a different TERMINALS TAB NAME.
- To tell the Smart Clone to load the Terminal values from the Parts Database when the user selects a Part Number, check the corresponding check box.

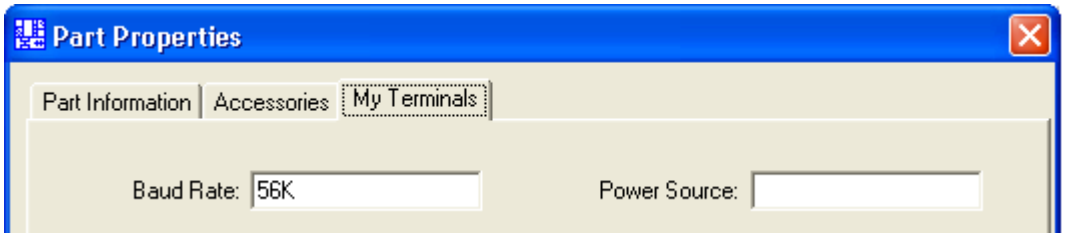
As an example, set the NUMBER OF TERMINALS to 2, check the SHOW TERMINALS TAB checkbox and set the TERMINALS TAB NAME to "My Terminals". Next, click on the TERMINALS tab.



- Check the SHOW? checkbox for each terminal to enable the caption editing.
- To change the caption that will be shown when the user views the Terminal page, change the default "*Terminal N*" text.
- To specify a default value, enter it in the value box.

To continue the example, change the caption for Terminal 1 to "Baud Rate" and the caption for Terminal 2 to "Power Source". Then specify a default value in Terminal 1 for "56K".

Close the Smart Clone Properties dialog to return to Visio. Then double-click the shape to view the Part Properties.



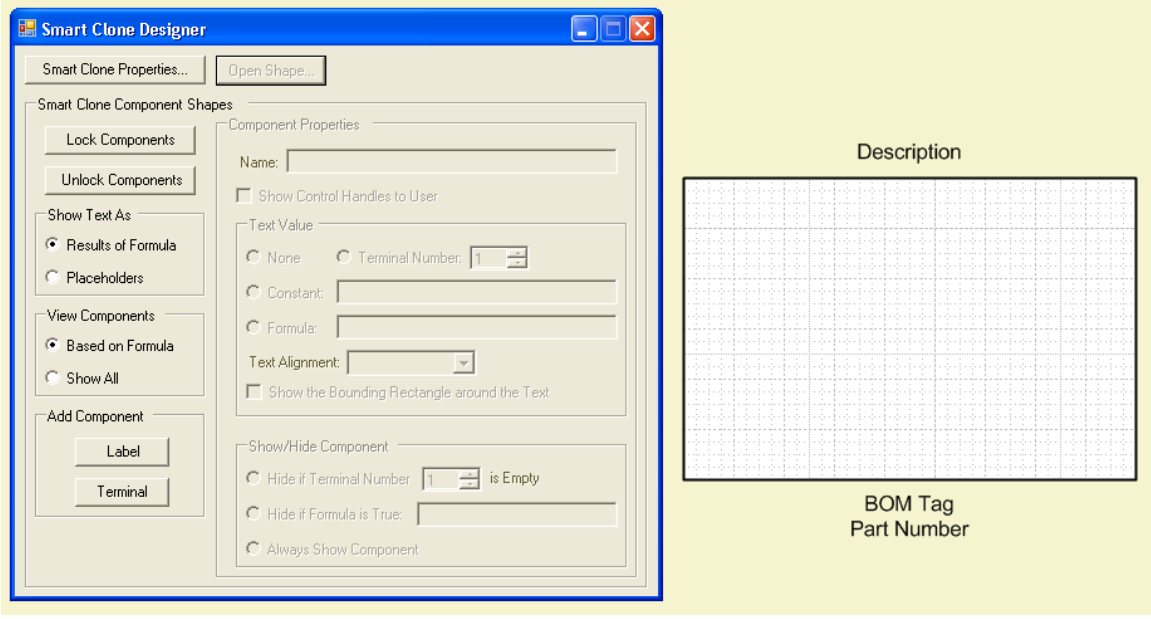
Showing Terminal Values in the Shape

You can use the Terminal values, either loaded from the database or entered by the user, as text on your shape. Refer to the next section on the Smart Clone Designer.

Using the Smart Clone Designer

Although you can edit your Smart Clone shapes in Visio without any interaction from Designer Suite, it is useful to edit it by using the Smart Clone Designer.

- Select the Smart Clone and select SMARTCLONE→SMART CLONE DESIGNER from the DS2005 TOOLS menu.
- Click on the OPEN SHAPE button. The Smart Clone shape's group will be open for editing. The shape will appear alone with a yellow background. The Smart Clone Designer window will remain on top.

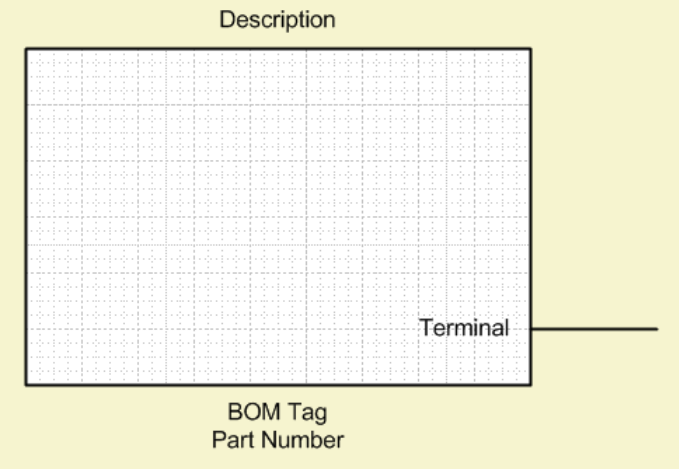


You can now begin adding sub-shapes, such as other rectangles, circles or text within the group. When you're done, close the Smart Clone Designer or the Visio group editing window.

Label and Terminal Components

A component is a sub-shape that is controlled by Designer Suite. It allows you to create text and terminal labels that add features similar to the Designer Suite Smart Shapes.

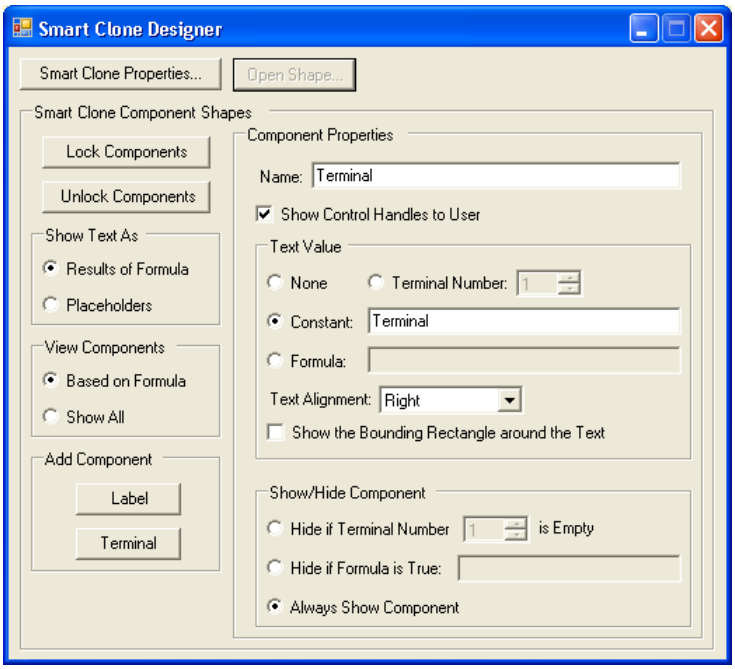
Click on the TERMINAL button in the ADD COMPONENT group. A sub-shape with the text "Terminal" and a line extending out will appear in the center of the shape. Drag it to the edge so the left side of the line is aligned with the right side of the shape.



A LABEL component is similar, but has only text and no line.

Component Properties

The components can be configured in a number of ways. To change the properties of a component, click on it in the group editing window. The COMPONENT PROPERTIES region of the Smart Clone Properties window will be enabled.



- You can explicitly name the component for internal use in Visio Shape Sheets by specifying the NAME.
- The *Terminal* component allows the user to resize the line by grabbing the yellow control handle at the end. The *Label* component allows the user to move the label in the same way (as with built-in labels such as the Part Number and BOM Tag). To prevent the user from making these changes, uncheck the SHOW CONTROL HANDLE TO USER checkbox.

Component Text Values

There are a number of ways to control the text value portion of the component.

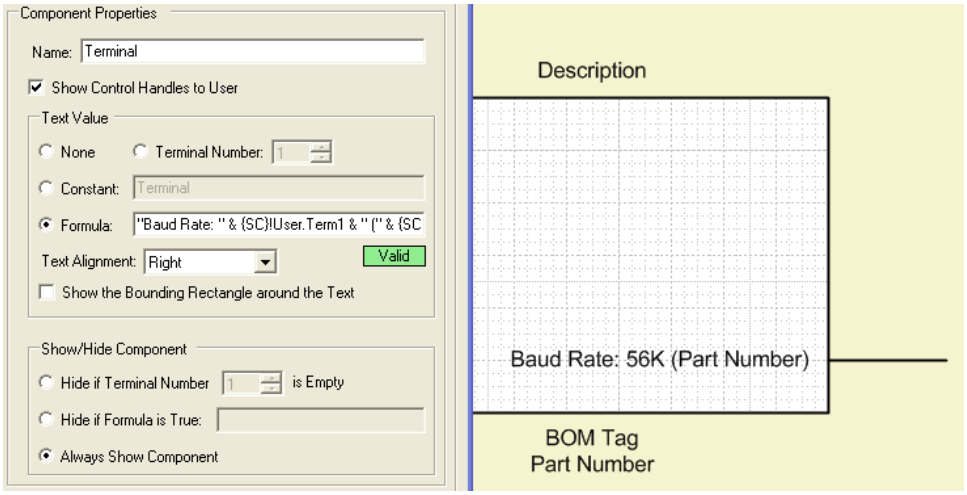
- To use a fixed text value, select CONSTANT and enter the value.
- To tie the text to one of the Terminal values (loaded from the Parts Database or edited by the user), select TERMINAL NUMBER and choose the number of the terminal value.
- To change the alignment of the text relative to its position, set the TEXT ALIGNMENT value. For *Label* components where the text is not constant, the alignment determines the direction in which the text expands. For *Terminal* components, the alignment controls how the text is aligned with the line.
- To show a rectangle around the text, select the SHOW BOUNDING RECTANGLE AROUND THE TEXT checkbox.

To specify a more complex text formula, select the FORMULA radio button and enter the formula expression. These correspond to the formulas used in Visio's Shape Sheets, and include the following:

- References to any Shape Sheet cell, such as *Width*
- References to Smart Shape properties, such as *{SC}!Prop.P12*, which is the Part Number.
- References to the Terminal values, such as *{SC}!User.Term1*
- Text constants prepended or appended to other values with the & operator.

For example, the following formula shows the value of Terminal 1 along with the Part Number and a prefix:

```
"Baud Rate: " & {SC}!User.Term1 & " (" & {SC}!Prop.P12 & ")"
```



- The use of the "{SC}" notation is shorthand for a Visio reference to the Smart Clone shape itself.
- The green Valid light will indicate if the formula is valid as you type it.

When designing the shape, it may be helpful to temporarily override the calculated text value, especially if the terminal value or formula results in an empty string (and therefore no visible text). In this case, select the PLACEHOLDERS radio button under SHOW TEXT AS. For normal operation, select RESULTS FOR FORMULA.

Selectively Showing and Hiding a Component

The SHOW/HIDE COMPONENT fields in the Component Properties allow you to control when the component is shown or when it is completely hidden. Choices include:

- Always shown
- Hidden if the value of a terminal field is empty
- Hidden if the value of a custom formula is true. The previous section describes how to compose valid formulas. In this case, the formula should evaluate to a boolean or numeric value.

For example, to program a component to hide if the shape is resized smaller than two inches, select the HIDE IF FORMULA IS TRUE radio button and enter the following formula:

```
{SC}!Width < 2
```

While designing the shape, it may be helpful to temporarily override the Show/Hide value, especially if the default is for the component to be hidden. In this case, select the SHOW ALL radio button under VIEW COMPONENTS. For normal operation, select BASED ON FORMULA.

Flipping a Terminal Component

To use a Terminal component shape on the opposite side of the Smart Clone shape, flip it horizontally from the Visio Action toolbar or select SHAPE→ROTATE OR FLIP→FLIP HORIZONTAL.

Changing the Component Font

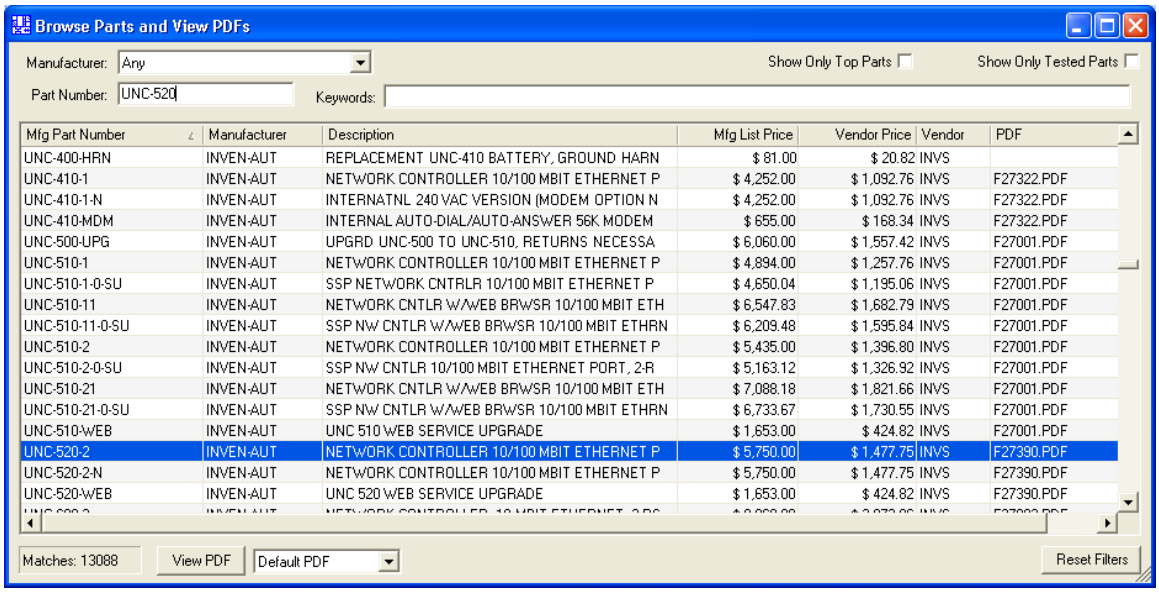
To change the font (and other text properties), right click on the component and select FORMAT→TEXT.

22. Browsing the Parts Database

One of the most useful features of Designer Suite is the ability to browse the Parts Database to find parts, look up pricing and view PDF Product Information sheets.

Browsing All Parts

To browse all the parts in the Parts Database, select TOOLS→BROWSE PARTS LISTS→BROWSE ALL PARTS.



- You can sort by any column by clicking on the column name.
- You can filter the part list by selecting a MANUFACTURER.
- You can scroll the list to find a part by typing part or all of the PART NUMBER into the corresponding field.
- You can filter the list to only those marked as TOP PARTS or TESTED PARTS by selecting the corresponding check box.
- You can filter the list to only those that contain a list of keywords in the PART NUMBER or DESCRIPTION fields. Enter one or more keywords, separated by spaces, into the KEYWORDS field. The part list will be filtered as you type. The keywords you specify can appear within other words as well. If you specify multiple keywords, only parts that contain all of them will be shown.
- To reset the filter values, click the RESET FILTERS button.
- To view the PDF Product Information Sheet for a part, select it and click VIEW PDF.

Browsing Specific Part Types

You can also browse specific part types, using the selection dialogs specific to those parts. Those dialogs were described in earlier chapters

The advantage here is that you do not need to create a shape or Valve schedule to access these selectors.

- BROWSE VALVES
- BROWSE ACTUATORS
- BROWSE SENSORS & TRANSMITTERS

23. The Site Manager

Designer Suite 2005 allows you to name the systems within your drawing, making it possible to do things such as filter reports and assign Typical Of values to sets of parts, independent of how the parts and pages are organized within the drawing files. The Site Manager enhances this feature by allowing you to create a tree structure that represents the logical layout of the projects, and to further assign the systems to nodes of the tree.

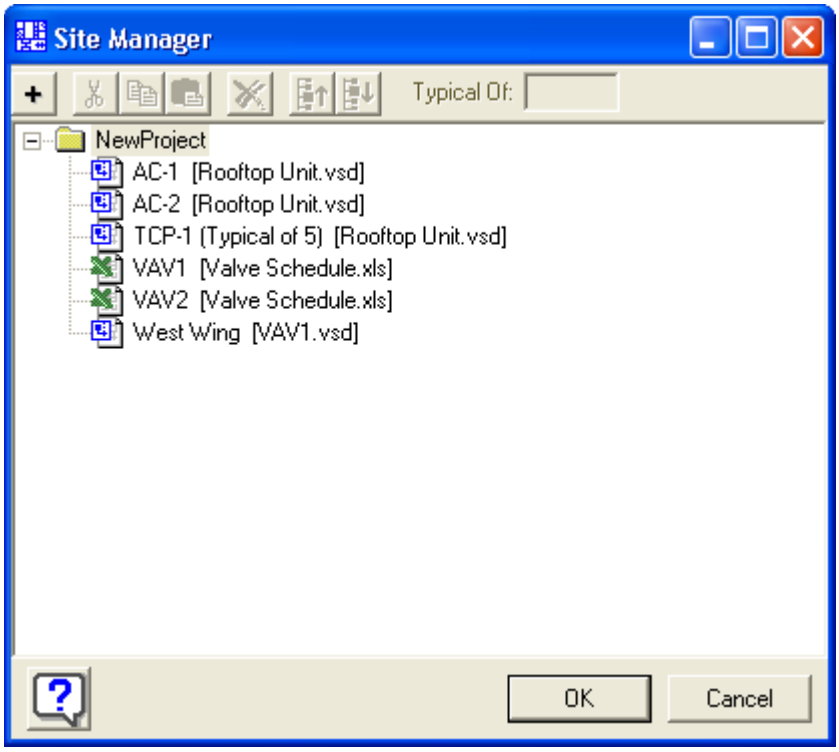
For more information on Systems and System Names, refer to the earlier chapter on *Systems Names and the System List*.

- The purpose of creating the Site Tree is to allow you to select nodes in the tree as a way to group systems. This feature is used in the Report Engine and the PDF Reports tools, discussed in later chapters.

Creating a Site Tree

The Site Tree is a tree-type structure of the areas (rooms, wings, buildings, etc.) that make up your project. This logical representation is independent of the folder structure used to store your files in your project.

To create a Site Tree for your project, select TOOLS→SITE MANAGER from the Designer Suite 2005 Project Explorer.



The initial structure is a single node (named for the project), with all the systems within it. For each system you will see:

- An *icon* indicating if the system is from a Visio drawing file or a Schedule in Excel.
- The *Name* of the system, as specified in the Part Properties of a shape or the System column in a schedule.
- The *Typical Of* value for the system, if more than one.
- The *File Name* where the system is located

Only systems in files located in scannable folders will be shown. For more information on scannable folders, refer to the earlier chapter on *Project Folders and Folder Types*.

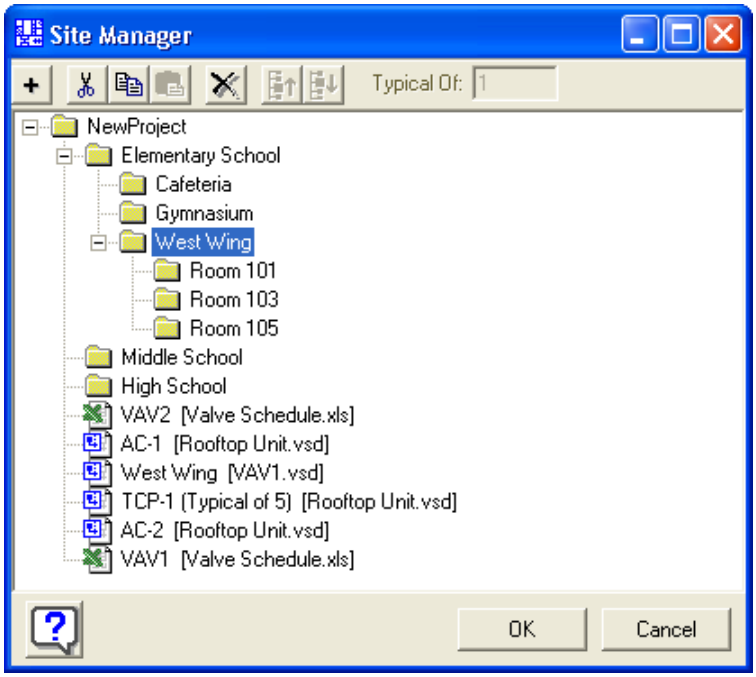
If the same system name appears in multiple drawing files, they are considered separate, and each can have its own Typical Of value and can be stored in a different area of the Site Tree.

Building the Site Tree

The Site Manager is designed to allow you to build a tree of areas and store the systems, much as you create a folder structure in Windows and store files within each folder. The commands for building the tree are available from the toolbar, or by right-clicking an area node or file and accessing its pop-up menu.

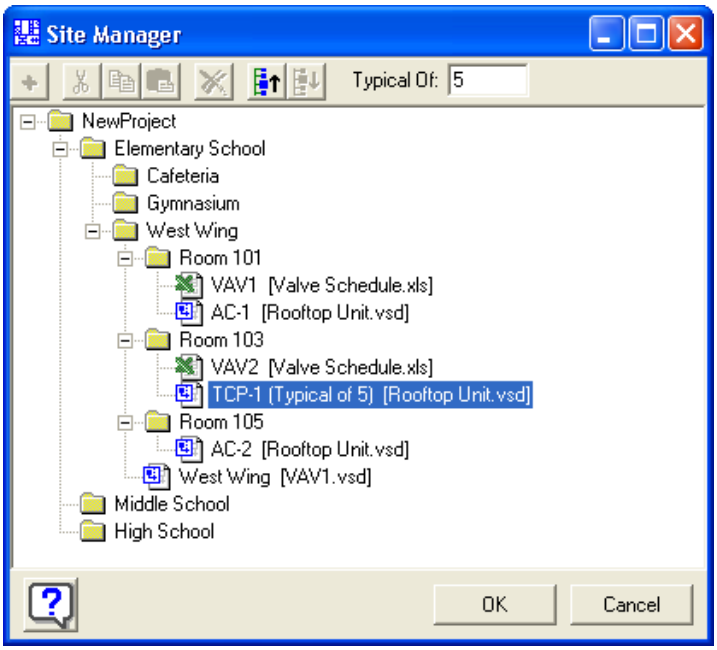
- To add a sub-area, select the area folder and click the ADD NEW AREA (plus sign) icon in the toolbar, or right-click and select ADD NODE.
- To move or duplicate an area or area sub-tree, use the CUT, COPY AND PASTE commands. You can also move a folder by dragging and dropping it onto another.
- To rename an area or area sub-tree, use the RENAME command, or click on the selected node.
- To delete an area or are sub-tree, use DELETE command.

The completed site tree should represent the structure of your project.



Moving Systems into Areas

Once the Site Tree is created, you will want to move each of the systems into their appropriate area. To do so, simply drag each system name and drop them into the proper folders.



- You can change the *Typical Of* value for a system by selecting it and changing its value in the toolbar.
- You cannot rename or delete a system from the Site Tree.
- If you use *Sub-Systems*, the sub-systems will be shown as nodes underneath the systems, with a smaller Visio icon. You cannot move sub-systems from beneath their system.

24. The Page Wizard

The Page Wizard is a tool for managing the information on all the Title Blocks in your drawing files. It eliminates a large amount of manual work when there are global changes to the project information in the Title Blocks, such as project names and page numbers.

For more information on Title Blocks, refer to the earlier chapter on *Page Add Ins*.

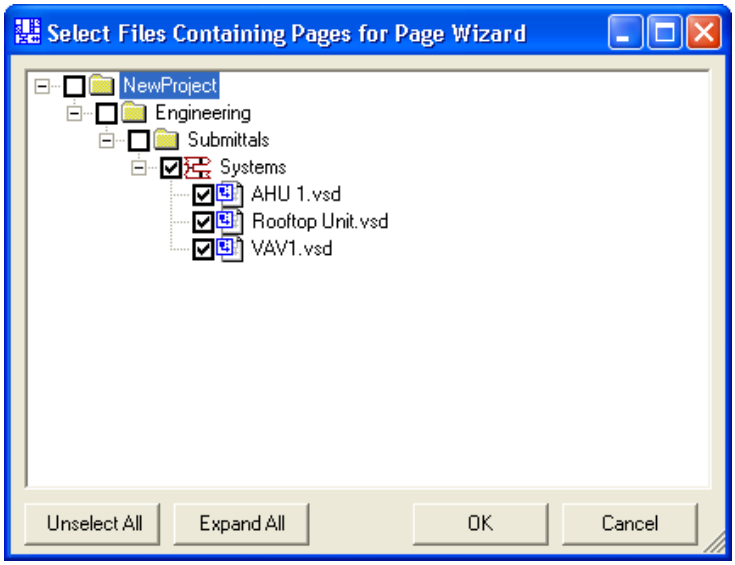
To update the Revision Notes section of multiple Title Blocks, use the Revision Notes tool described in a later chapter.

Running the Page Wizard

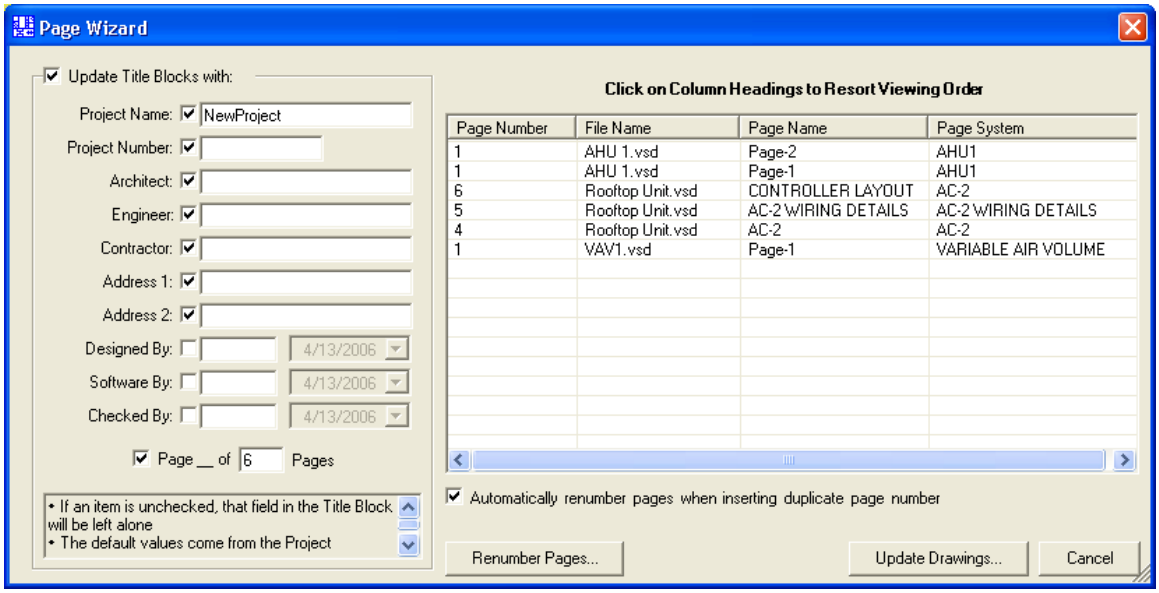
To start the Page Wizard, select TOOLS→PAGE WIZARD from the Designer Suite 2005 Project Explorer.

- If there are any unscanned files (those added to the project but not edited from within the project), they will be scanned.

You will then be asked which files contain the title blocks you want to work with. Only folders containing drawing files within scannable folders will be shown. Check any folder node to automatically select the folders and files beneath it.



The Page Wizard screen has two main regions:



The right side shows a list of all the pages in the selected drawing files.

- Only pages with a Title Block shape are included. All other pages are ignored.
- You can resort the list by clicking on any column heading.
- The *Page Name* field refers to the name of the page's tab in Visio.
- The *Page System* refers to the System Name field in the title block. It is unrelated to the System Names assigned to parts in the drawing.
- You can changed the Page Name and Page System names by clicking in a cell and entering a new value.

The left side of the Page Wizard window is used to change the other Project Information fields in the Title Block, as described later in this chapter.

Renumbering the Pages

The Page Numbers are used by the Print Manager to print the pages out in the proper order, regardless of the order in which they appear in the Visio file or even which file they are stored in.

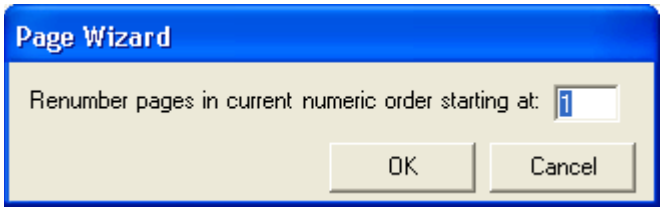
- To change a page number, click in the cell and change the value.

If you leave the AUTOMATICALLY RENUMBER PAGES WHEN INSERTING DUPLICATE PAGE NUMBER checkbox selected, entering the number of a page that already exists will cause the Page Wizard to renumber the existing page with the same number and automatically increment any other numbered pages to keep them in order.

For example, changing the Page Number of the first page in the list to 4 causes the three pages currently numbered 4, 5 and 6 to be renumbered to 5, 6 and 7.

Page Number	File Name	Page Name	Page System
4	AHU 1.vsd	Page-2	AHU1
1	AHU 1.vsd	Page-1	AHU1
7	Rooftop Unit.vsd	CONTROLLER LAYOUT	AC-2
6	Rooftop Unit.vsd	AC-2 WIRING DETAILS	AC-2 WIRING DETAILS
5	Rooftop Unit.vsd	AC-2	AC-2
1	VAV1.vsd	Page-1	VARIABLE AIR VOLUME

If there are holes in the page range, say from removing a page, you can renumber all the pages to remove the holes by clicking the RENUMBER PAGES button. You will be asked to specify the starting page number.



The pages will be renumbered based on their current *Page Number* order (regardless of how the pages are sorted in the list). If there are multiple pages with the same number, they will be numbered consecutively (but arbitrarily).

Page Number	File Name	Page Name	Page System
3	AHU 1.vsd	Page-2	AHU1
2	AHU 1.vsd	Page-1	AHU1
6	Rooftop Unit.vsd	CONTROLLER LAYOUT	AC-2
5	Rooftop Unit.vsd	AC-2 WIRING DETAILS	AC-2 WIRING DETAILS
4	Rooftop Unit.vsd	AC-2	AC-2
1	VAV1.vsd	Page-1	VARIABLE AIR VOLUME

Updating Project Information Fields

The right side of the Page Wizard contains entry fields for the rest of the Project Information values in the Title Block, defaulted to the current Project Properties values. You can force a new value for one or more fields to be inserted into all the Title Block.

- Check the UPDATE TITLE BLOCKS WITH checkbox to enable the fields.
- Check the box next to the fields you wish to update
- Enter the new value in the text box field.

If the box next to a field is left unchecked, that field is ignored during the update and the value for that field in each Title Block is left at its current value.

To clear the value for a field in every title block, check the box next to the field and leave the entry field blank.

- When you prepare to print the documents, you will likely want to update the Page Count (e.g. Page 1 of 6) field for each page.

Updating the Drawing Files

When you are done making changes, click the UPDATE DRAWINGS… button. The Page Wizard will then load each Visio file that has changes, make the changes and resave it.

25. The Print Manager

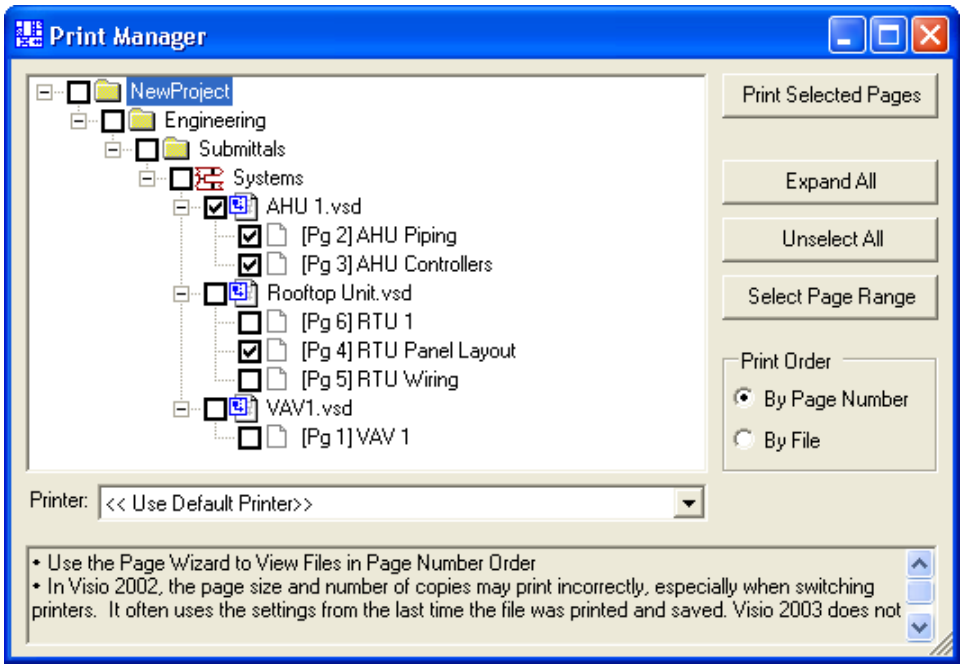
The Print Manager is the easiest way to print the submittal drawing pages from multiple files. It allows you to select pages by file or by page number, and can output the pages in the correct Page Number order, regardless of their order within the Visio file, or whether sequential pages appear in different drawing files.

To start the Print Manager, select TOOLS→PRINT MANAGER from the Designer Suite 2005 Project Explorer.

Note: *There are known issues in Visio 2002 that can cause the page size and number of copies to be wrong when printing through the Print Manager. Visio 2003 seems to resolve these problems*

Using the Print Manager

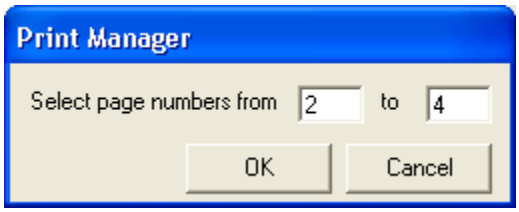
The Print Manager shows all the drawing pages in the project, structured by the Project's folder structure. The files are shown within their folder, and the pages are shown within their files.



- Only files in scannable folders will be shown, and only folders with files will be shown.
- You can select a single page, an entire drawing file or an entire folder. Selecting a node automatically selects all the nodes below.

- The Page Numbers shown indicate the page number from the page's Title Block.

You can select a range of Page Numbers by clicking the SELECT PAGE RANGE button.



Printing the Pages

To print the selected pages, click the PRINT SELECTED PAGES button. The pages will be printed to the selected printer.

The Print Order

The default PRINT ORDER is BY PAGE NUMBER. This causes the pages to be printed individually, in order of their Title Block page number.

To ignore the Page Numbers and print the selected files and pages in the order shown in the tree, select the BY FILE radio button.

Printing to a PDF File

If you are using software that allows you to print to a PDF Printer Driver (such as *Adobe Acrobat* or *CutePDF*), you can select that printer driver from the printer list. As each print command is issued to Visio behind the scenes by the Print Manager, you will be prompted for the file name to use to save the PDF file.

One side effect of the default BY PAGE NUMBER option for PRINT ORDER is that the Print Manager prints each page individually, even if multiple pages in the same file appear in order. This will cause the PDF Printer driver to store each page in a separate PDF file, and to prompt you each time. To counteract this effect, use the BY FILE option instead and select entire files. The Print Manager will then issue a single print command for each file.

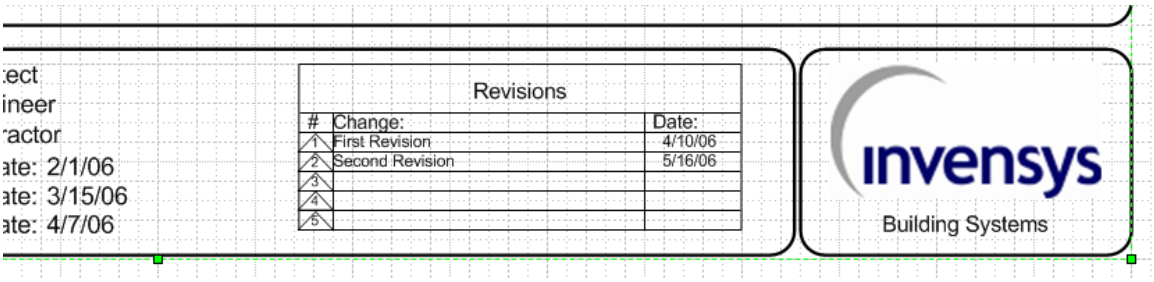
- A separate PDF file will be created for each drawing file. There is no way to merge the output of multiple drawing files into a single PDF file.
- The pages will appear in the order in which they are shown in the tree, which corresponds to the order in which they appear in the Visio file. If this order is not the one that you want, you can reorder them within Visio.
- If you select less than all the pages in a drawing file, the Print Manager will need to revert to the BY PAGE NUMBER process and print the pages individually.

26. Revision Notes

The Revision Notes tool can be used to update the values in the Revision Notes section of the Title Block shapes on multiple pages in multiple drawing files.

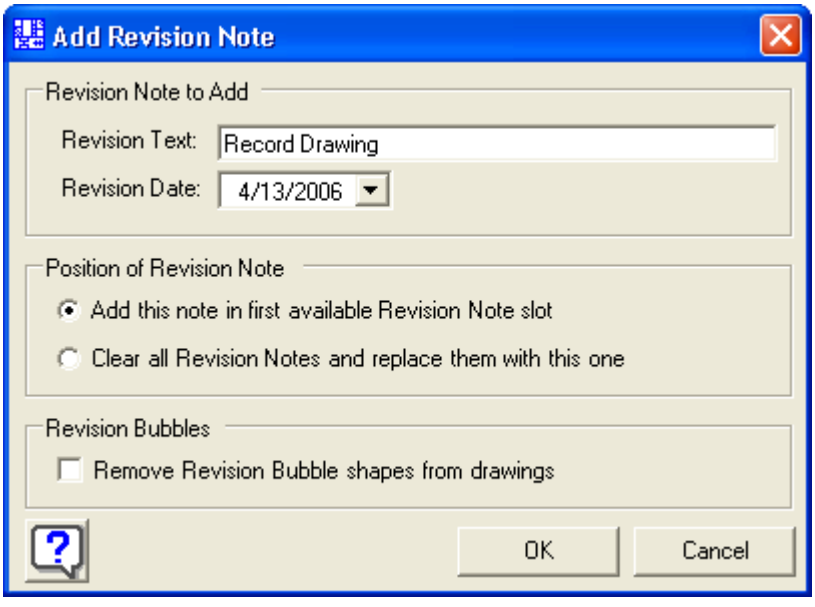
The Revision Notes Section of the Title Block

The Title Block shape has room for up to five revision notes with a date. You can edit them on an individual title block by double-clicking the title block or right-clicking the title block and selecting EDIT TITLE BLOCK.



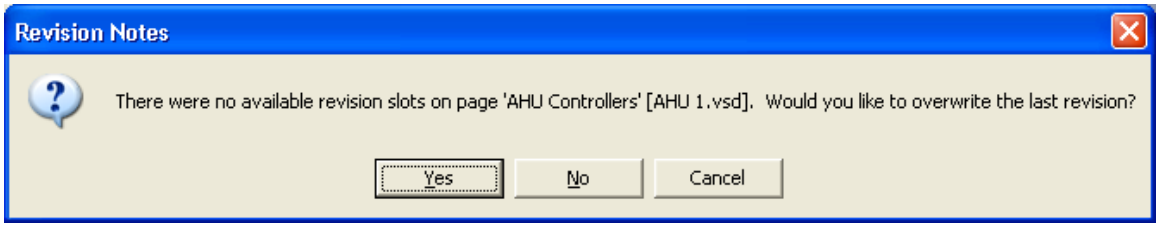
The Revision Notes Tool

To update multiple Title Blocks with the same revision note, select TOOLS→REVISION NOTES from the Designer Suite 2005 Project Explorer. After selecting the files you want to work with, the Add Revision Note dialog will be shown.



- To add a note to each title block, enter the note and date.

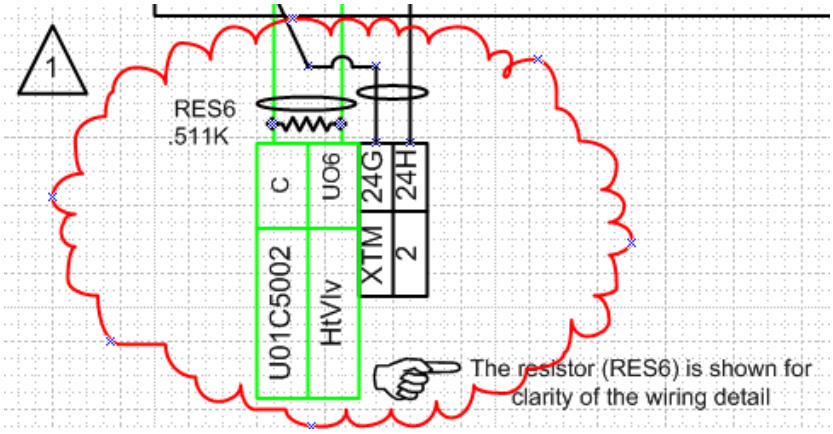
By default, the note will be added in the first available slot in each title block. If there are already five notes in a title block, you will be given the option to replace the last revision with the new one:



You can also choose to erase all the revisions in each title block and add the new note as the first and only one. This is useful when doing As Built drawings and you want to remove the revisions added during the earlier phases and mark everything as "Record Drawings".

Removing Revision Bubbles

One other option you have that is useful when creating Record Drawings for As Builts is to remove the Revision Bubble shapes that may have been added during earlier phases.



27. Table of Contents

The Table of Contents tool will create and update a Table of Contents page for your project. The Table of Contents will automatically include page and system names from the title blocks of your drawings, and can also include additional page references, such as tables, schedules and indexes. You can also customize the format of the Table of Contents in a number of ways.

Creating a Table of Contents

When you first select the TOOLS→ TABLE OF CONTENTS menu command in the Project Explorer, you will be shown a list of the drawing files in your system folders. Select the files or folders containing the pages you wish to include in the table.

- Only pages containing a Title Block will be recognized.

The first time you select this feature in a project, you will be also be prompted for the location where you want to save the Table of Contents. The Table of Contents is a Visio drawing file, but it generally does not contain a title block. Therefore, you should save it in a non-system folder, such as *Engineering/Submittals/Schedules*.

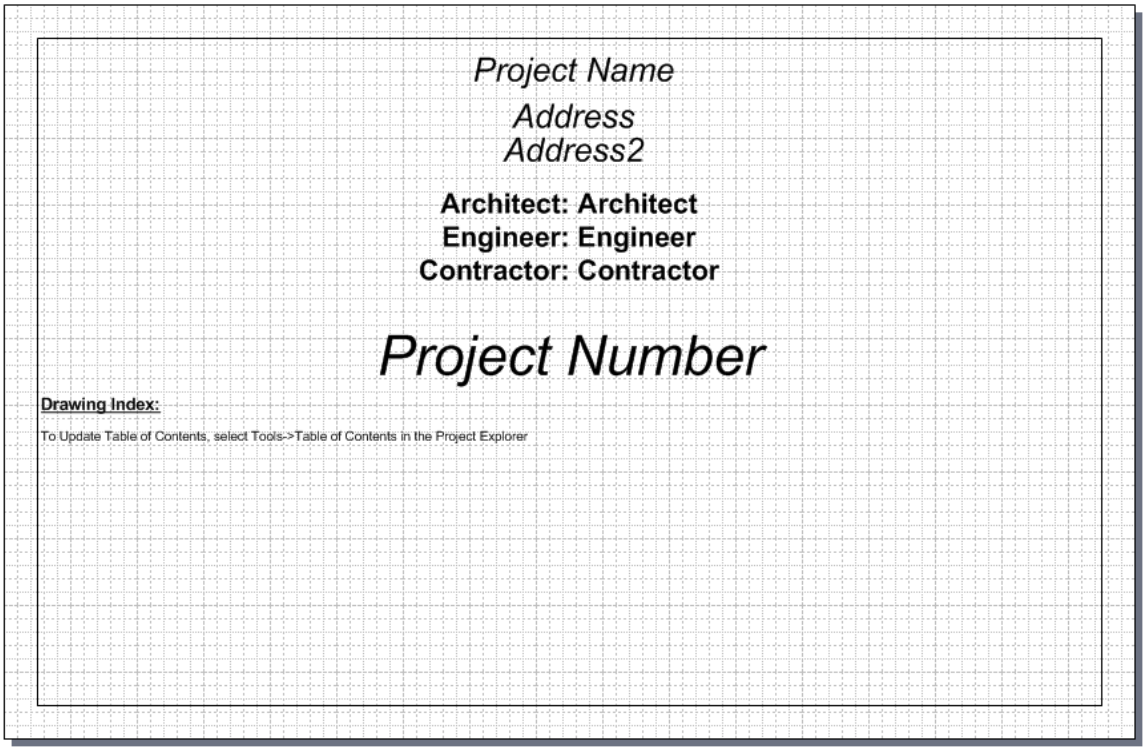
After the first time, the Project Explorer will remember the location of the Table of Contents and automatically open it in Visio when you select this feature.

Two windows will be open when you work with the Table of Contents tool:

- An instance of Visio showing the generated drawing file
- The Table of Contents Wizard window in the Project Explorer.

The Table of Contents Drawing File

The Table of Contents is created as a Visio drawing page.



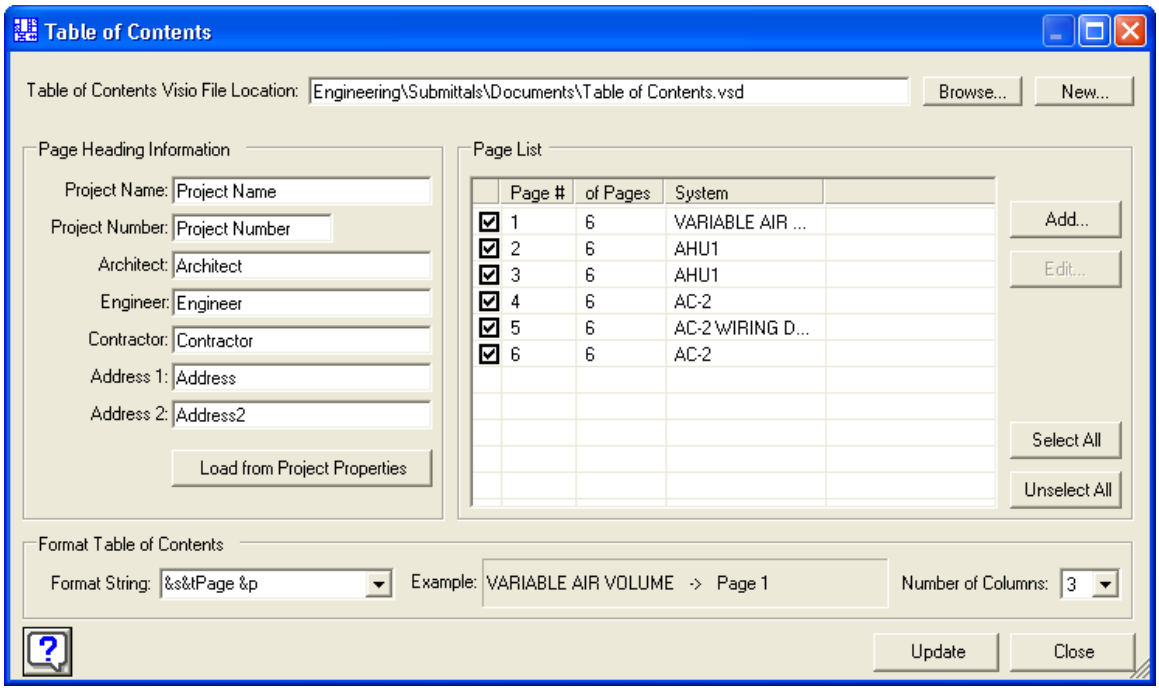
The page consists or a set of Project Properties fields, such as *Project Name*, *Address* and *Architect*, and the actual Table of Contents. Before you update it the first time, the Table of Contents appears as a note.

Even though the Table of Contents drawing file is opened in Visio, you generally update the information on this page using the Table of Contents dialog window. When you click UPDATE on that form, the changes will immediately be made to the Visio Table of Contents file for you to see.

You can customize the template file used when created a new Table of Contents. Refer to the section later in this chapter.

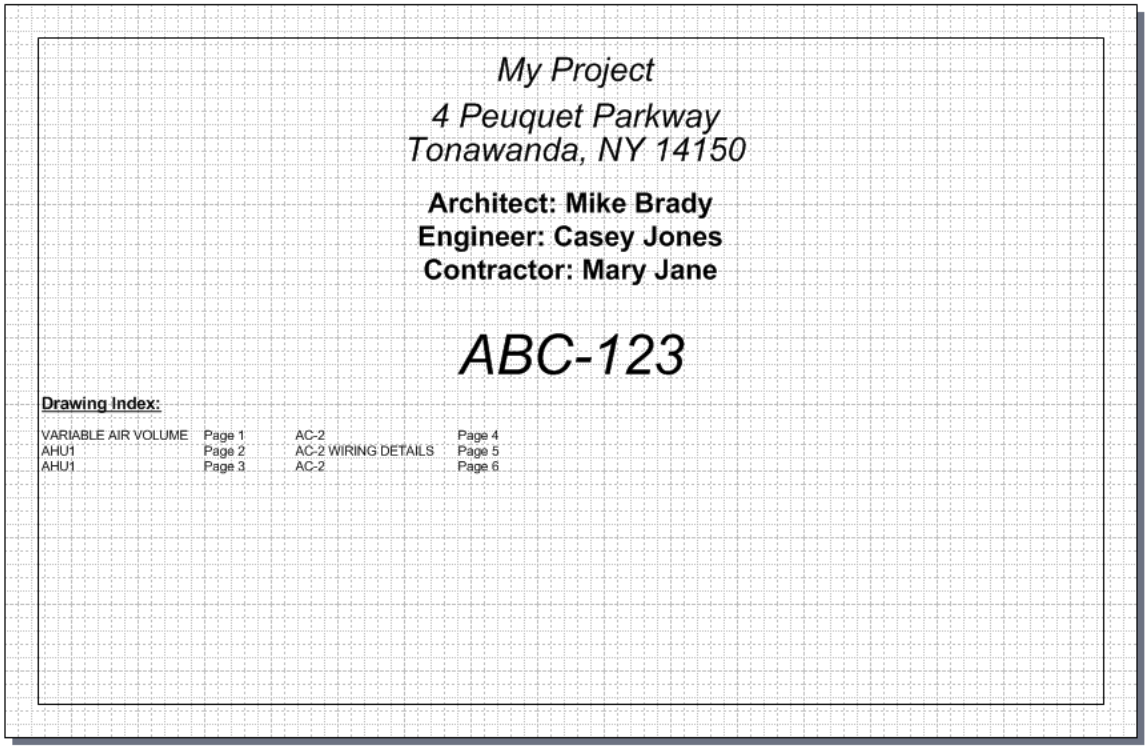
The Table of Contents Wizard Form

You can make most of the changes to the items listed in the Table of Contents in the Table of Contents Wizard form opened in the Project Explorer.



- You can fill in or modify the PAGE HEADING INFORMATION, such as Project Name, Number and Address. These fields are generally copied from the Project Properties, but you can modify them here to change how they appear on the Table of Contents page. To change which heading fields appear on the Table of Contents page, refer to the section on *Modifying the Table of Contents Template*.
- You can select which pages are shown on the Table of Contents by checking or unchecking the box next to each page.
- Select a FORMAT STRING to specify how the items in the TOC are displayed. Refer to the section on *Custom Format Strings* for more information.
- Select the NUMBER OF COLUMNS to use when displaying items in the table.
- To modify the page numbers or page system names, use the Page Wizard.

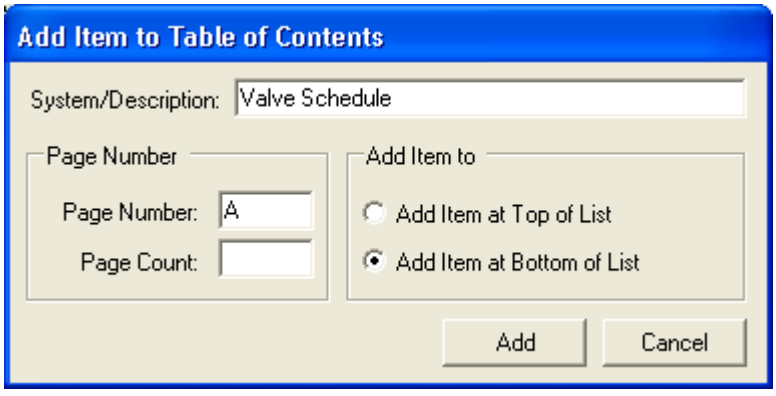
When you are done, click UPDATE to regenerate the Table of Contents in the Visio drawing file.



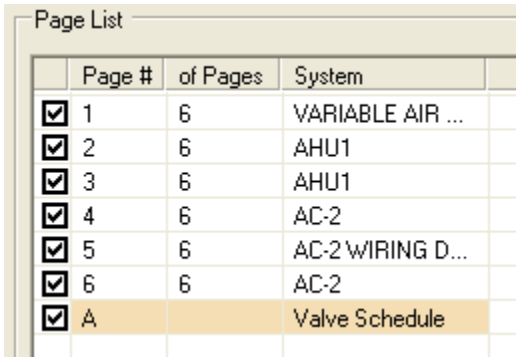
You can continue to change the settings and click UPDATE again to see other variations. When you are done, click CLOSE to close the form and Visio.

Adding Additional Items to the Table of Contents

Additional items can be added before or after the pages in the page list by clicking on the ADD button next to the page list.



The items will appear with a different background color.



- These items can be modified and moved by clicking the EDIT button, or moved by simply dragging them above or below each other.
- You cannot move custom items in between the actual numbered pages.
- To delete an item, click the EDIT button and then click DELETE on the Edit Form.

Custom Format Strings

The FORMAT STRING list box allows you to choose how items are displayed in the table. Similar to custom headers and footers in Excel, they contain special codes to indicate the placement of the page number, page count, system name and tab characters.

&p	Page Number
&P	Page Count
&s	System Name
&t	Tab (move to next sub-column)

All other characters are displayed as is for each item. For example, if the format string were:

Page &p of &P&t&s

The items in the TOC would be formatted similar to:

Page 1 of 20	AHU-1
Page 2 of 20	RTU-1

You can choose one of the predefined format strings or type in your own.

- If an item does not have a Page Number specified, any tab-delimited section containing the "&p" code will be shown as blank for that item. With the above example, a custom item with no page number or a drawing page with no page number in the title block would be displayed without anything in the first sub-column. This is by design.

- The TOC will automatically adjust the tab stops appropriately to accommodate the number of sub-columns. Spacing between full columns is larger that that between sub-columns.

Changing the Font Used in the Table of Contents

For the actual Table of Contents, you can change the font used in the table. When the table is updated, the font and size are automatically taken into account when setting the tab stops used to separate the columns of items as well as the sub-columns separated by tabs (&t) within the items themselves.

To change the font of the Table of Contents:

- In the Visio drawing file, right-click on the Table of Contents shape and select FORMAT→TEXT.
- Specify a different font and/or font size.
- In the Table of Contents Wizard form, click UPDATE to redraw the table.

Modifying the Table of Contents Template

When you first create a Table of Contents, a copy of the Table of Contents Template file is saved in your project in the folder you specify. You can create a customized version of this template to be used for all new Tables of Contents which can include your company logo and your preferences with regard to the location and fonts used for page heading information and the Table of Contents itself.

To create a custom Table of Contents Template.

- In Windows Explorer, locate the default Table of Contents Template in the *C:\Program Files\Designer Suite 2005\Templates\Visio* folder. The name of the file is *DS2005_Table_Of_Contents.vsd*.
- Make a copy of that file in the same folder and rename it to something such as *Acme Table of Contents.vsd*.
- Open your version in Visio by double-clicking it. Make any changes you wish and save it.
- In the Project Explorer, select OPTIONS from the TOOLS menu and go to the PATHS AND TEMPLATE FILES tab.
- In the space for TABLE OF CONTENTS, browse to and select your customized template file.

When editing your template file in Visio, you can move or reformat the Page Heading fields using normal Visio features, as well as some custom features:

- To change their font, use the controls in the toolbar or right-click them and selecting the FORMAT→TEXT menu item.
- To further customize the Page Heading fields, double-click them or right-click and select MODIFY TABLE OF CONTENTS FIELD. You will then be able to select which Page Heading field the shape displays. You can also specify a Prefix string to be used in the display. For example, you may want the word "Engineer:" to appear before the actual Engineer's name, but you don't necessarily want the phrase "Project Name:" to appear before the name of the project.
- To create a new Page Heading field, simply copy and paste an existing one and then double-click it to map it to the appropriate field.

28. Valve Legends

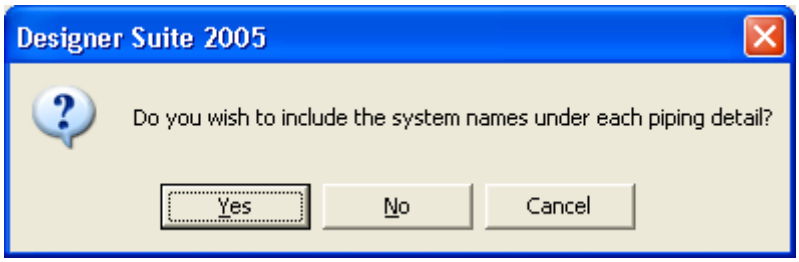
When you create a valve schedule, you can specify for each valve the configuration of the piping. The Valve Legend tool is used to gather together the list of all the different piping details used in these schedules and generate a legend sheet that shows a picture of each one.

For more information on Valve Schedules and the piping detail codes, refer to the earlier chapter on *Valve, Damper and Air Flow Schedules*.

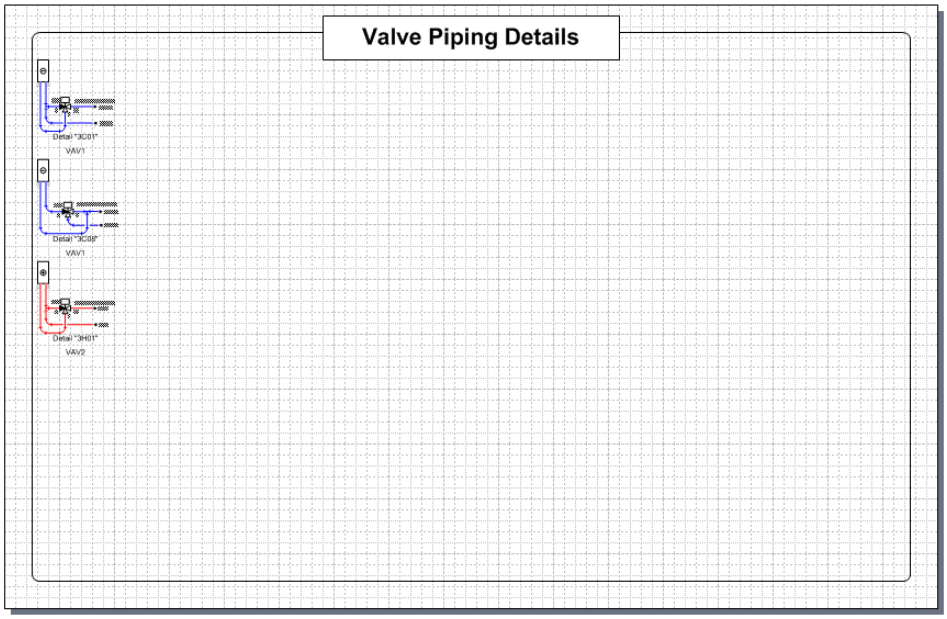
Creating a Valve Legend

To create a Valve Legend, select TOOLS→VALVE LEGEND from the Designer Suite 2005 Project Explorer.

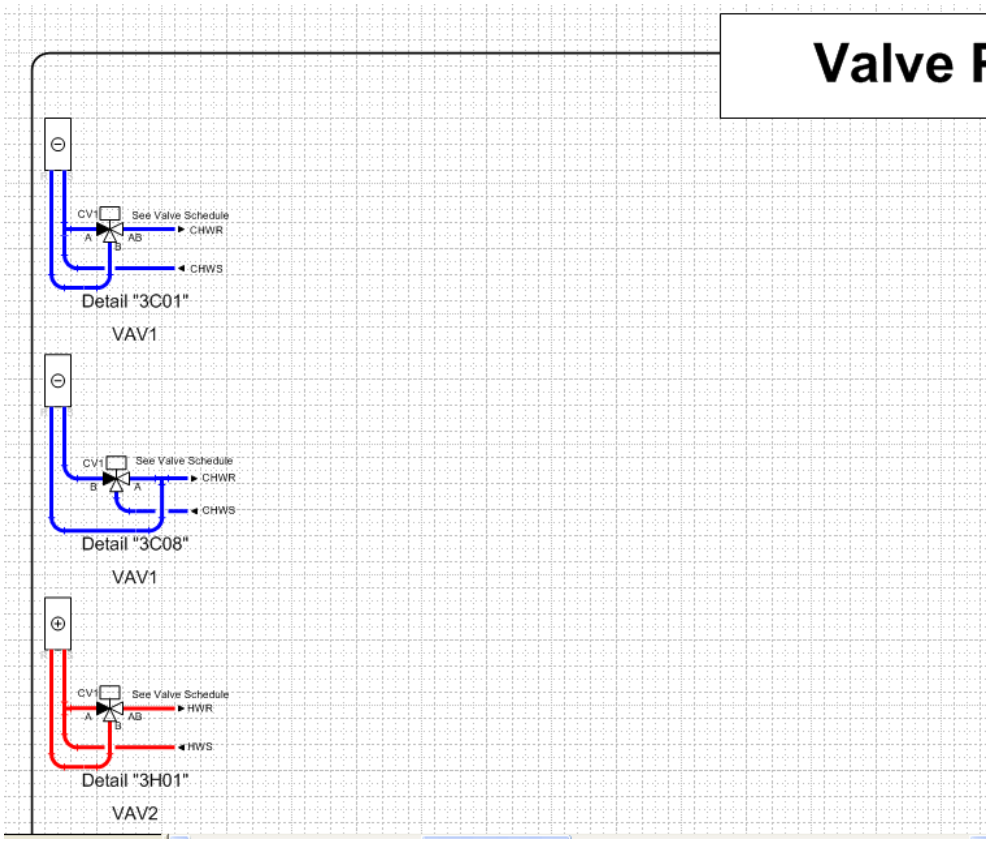
- You will first be prompted with a list of the Valve Schedules in your project. Select one or more to include in the legend.
- Next you will be prompted for the name of the file to use when creating the legend. The Valve Legend will be saved as a Visio Drawing file.
- Finally, you will be asked whether you want to include the System Names under each piping detail in the legend.



The Valve Legend page will then be generated and opened in Visio.



Each detail will appear only once, no matter how many times it is referenced in the Valve Schedules. If you requested, the System Names will appear beneath the detail diagrams.



Customizing the Valve Legend Template

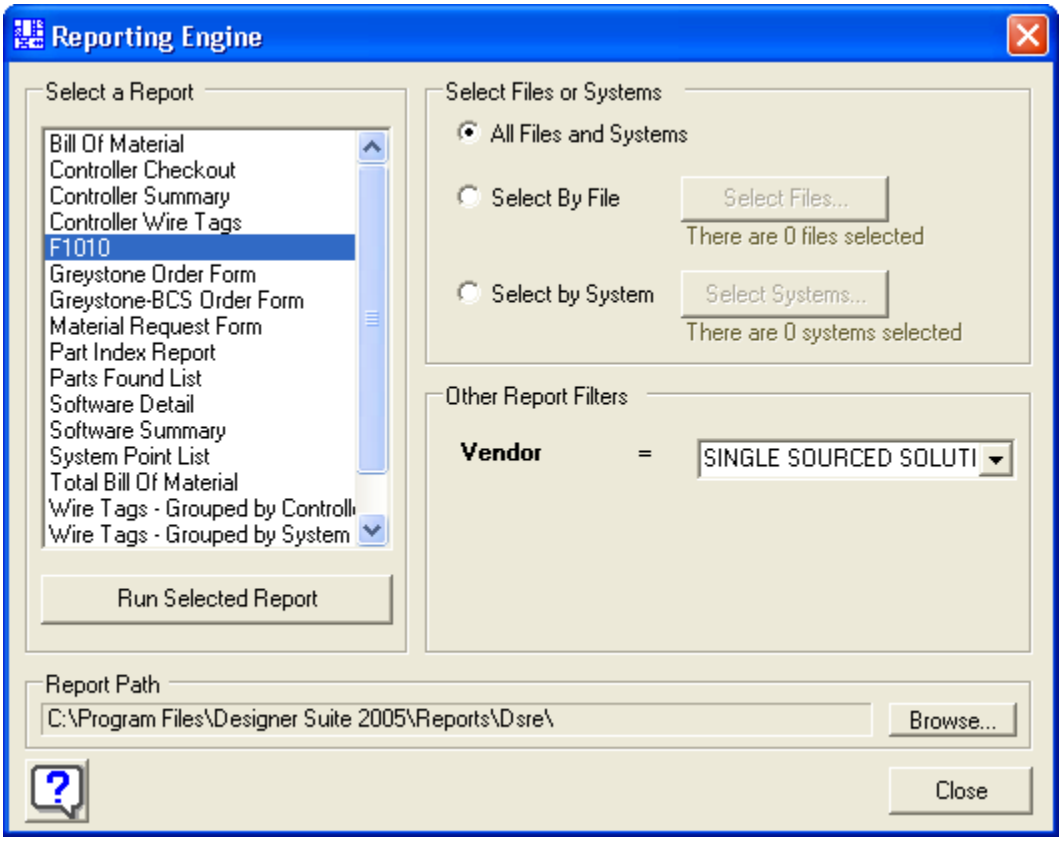
You can create your own version of the template file used to create a Valve Legend. Refer to the earlier chapter on *Customizing Designer Suite 2005* for more information.

29. The Reporting Engine

There are generally two reasons for creating a drawing file or schedule in Designer Suite 2005 – printing them for a submittal and gathering the data to create reports. The Reporting Engine is used to create a wide range of fully customizable reports using the data collected from the drawings and schedules in your project. Since it uses Excel for both creating the report templates and generating the reports, it is very easy to manipulate the reports it creates and to create your own reports with sophisticated features.

Running a Report

To start the Report Engine, select TOOLS→REPORTING ENGINE from the Designer Suite 2005 Project Explorer



- To run a report, select it in from the list and click the RUN SELECTED REPORT button. The report will be generated and opened up in Microsoft Excel.
- Some reports allow you to filter by specified fields, such as the Material Request forms, which present a list of Vendors.

- You can run your reports against the parts from all files in the projects, or select a set of files or systems. To select by files or systems, select the appropriate radio button and then click the SELECT FILES… or SELECT SYSTEMS… button to view the file or system tree.
- The Reporting Engine will remember your choice of SELECT FILES or SYSTEMS for the project the next time your start the Reporting Engine.

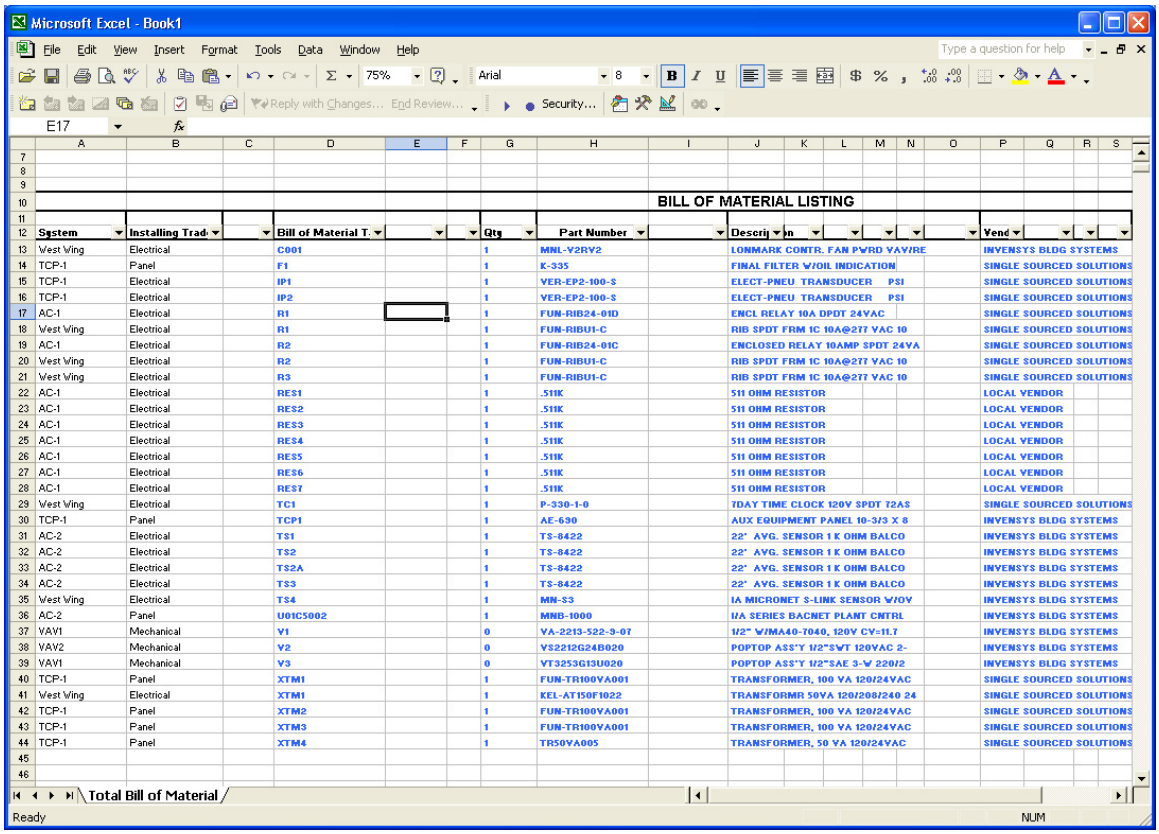
Types of Reports

The reports included with Designer Suite 2005 can be broken up into a few distinct categories.

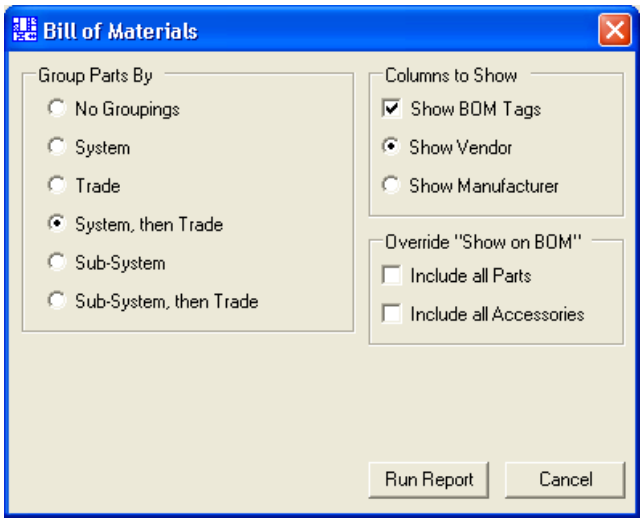
Material Reports

The most common reports are used to generate a list of the parts in a project. These reports can be formatted as a Bill of Material or as a Vendor's order form.

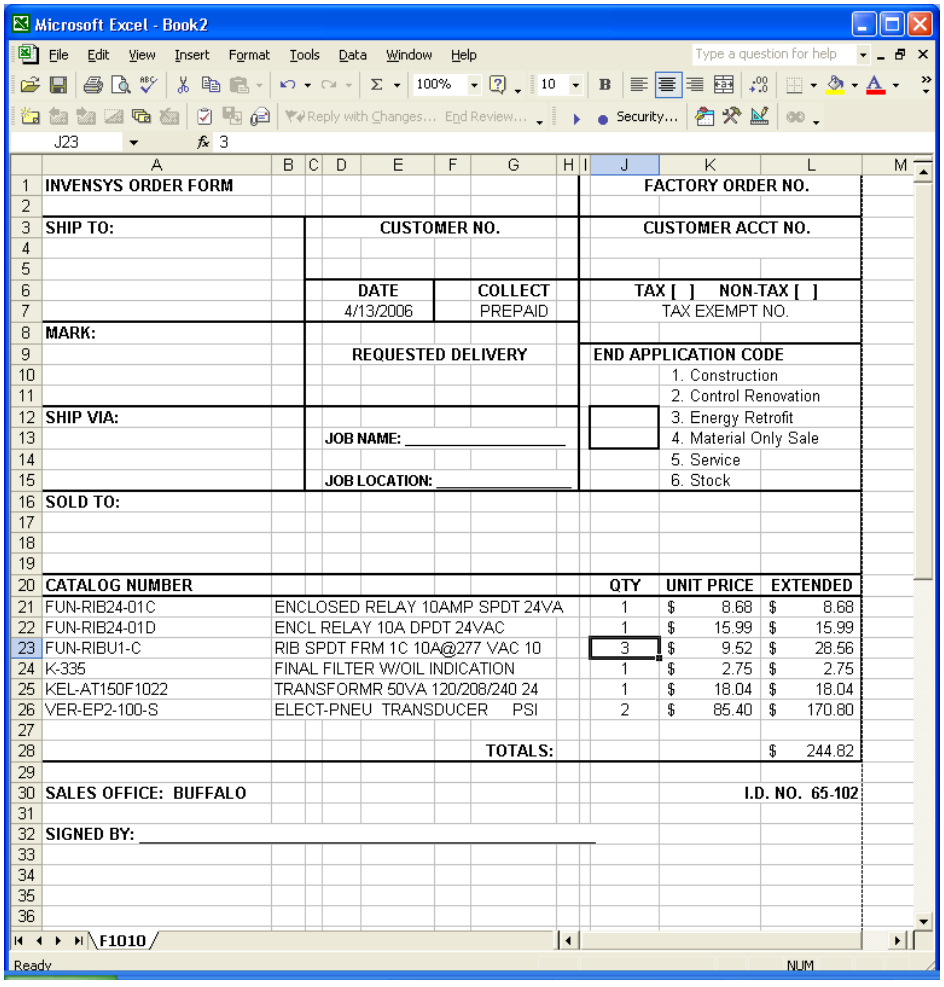
The *Bill Of Material* and *Total Bill Of Material* reports are similar, providing a complete list of the material with all of its detail. The generated report includes Excel filter boxes, making it easy to filter the resulting list from within Excel.



The *Total Bill of Material* report also provides the grouping features available when you create a Bill of Material shape in your drawing:



Also included is the generic *Material Request Form* and the Invensys-specific *F1010*.



These reports are useful starting points for creating custom order forms for other vendors.

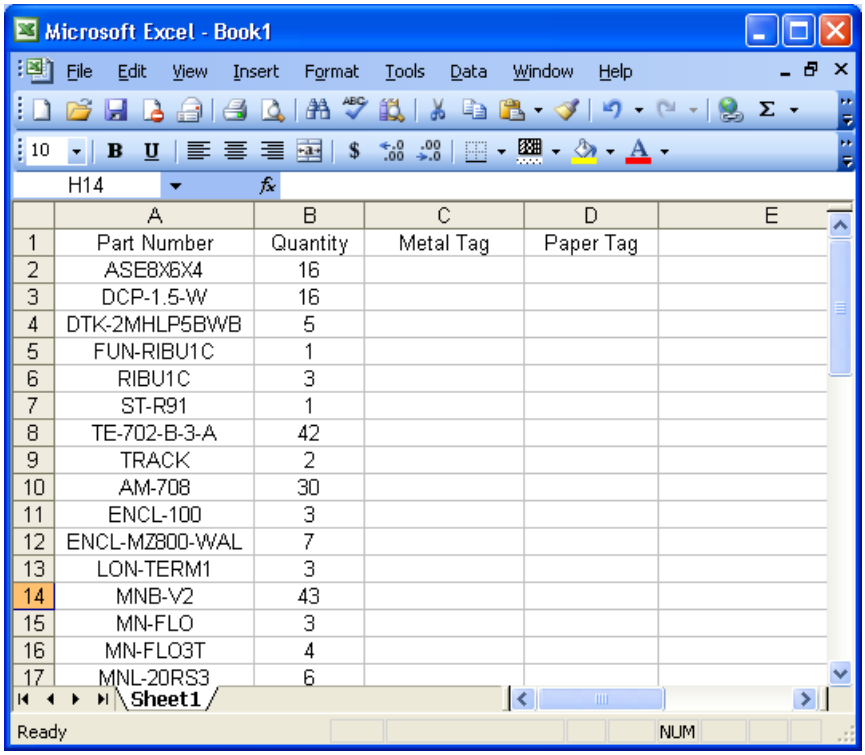
TAC iPortal Reports

The *TAC iPortal* system allows you to create, process and track your orders online through their web site. To make it easier to create these orders, you can export the data from your Designer Suite 2005 projects into a spreadsheet format that can be uploaded directly into an *iPortal* Shopping Cart.

There are two version of the report, one for regular parts (*TAC iPortal Import Sheet)* and other for Valves (*TAC iPortal Import Sheet (Valves)*).

To export your parts from Designer Suite 2005 and import them into iPortal:

- Follow the instructions and the start of this chapter to select the parts you want and run the *TAC iPortal Import Sheet* or *TAC iPortal Import Sheet (Valves)* report. The part list will be generated into an Excel spreadsheet suitable for importing into *iPortal*:

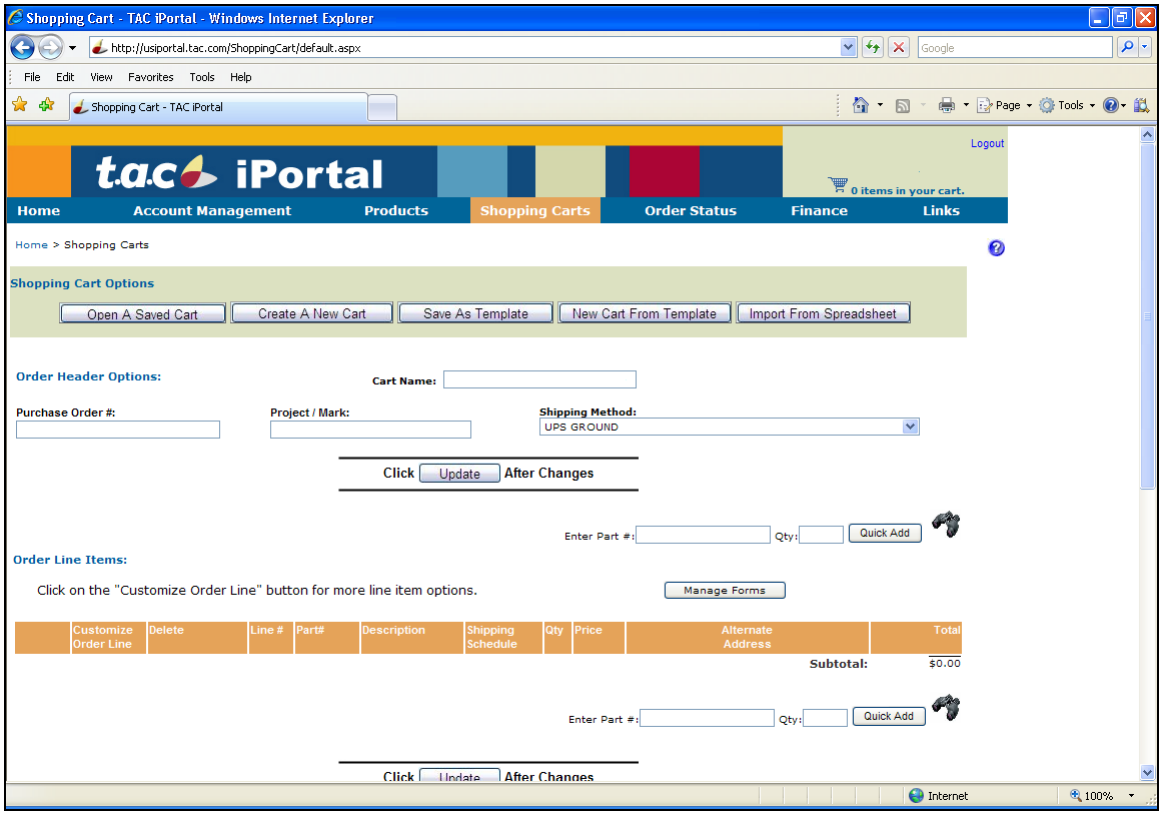


	A	B	C	D	E
1	Part Number	Quantity	Metal Tag	Paper Tag	
2	ASE8X6X4	16			
3	DCP-1.5-W	16			
4	DTK-2MHLP5BWB	5			
5	FUN-RIBU1C	1			
6	RIBU1C	3			
7	ST-R91	1			
8	TE-702-B-3-A	42			
9	TRACK	2			
10	AM-708	30			
11	ENCL-100	3			
12	ENCL-MZ800-WAL	7			
13	LON-TERM1	3			
14	MNB-V2	43			
15	MN-FLO	3			
16	MN-FLO3T	4			
17	MNL-20RS3	6			

- When using the Valve version of the report, the Bill of Material tag for each valve will be shown in both the *Metal Tag* and *Paper Tag* columns. If you want to order tags for the valves, erase the tag name in the column you *don't* want. If you don't want to order tags, erase the tag name in *both* columns.

- Save the file to any location on your hard drive or network.

- In the *iPortal* System, while working with a shopping cart, click on the IMPORT FROM SPREADSHEET button:



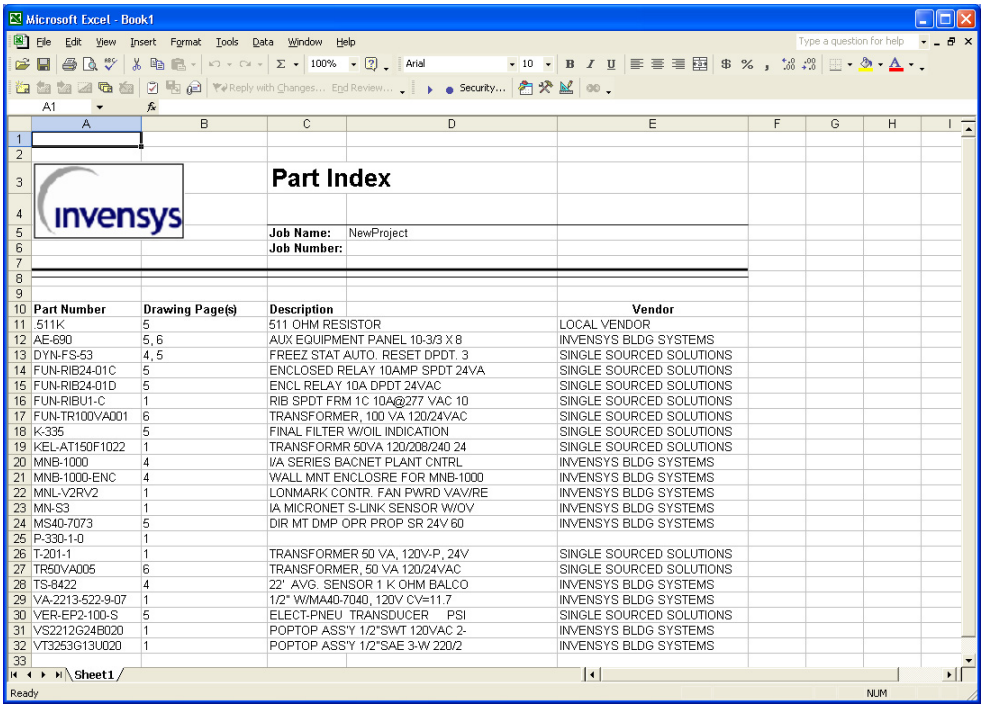
- Follow the instructions provided by *iPortal*, which will direct you to browse to and upload the spreadsheet generated by Designer Suite 2005.

For more information on *TAC iPortal*, please consult the help pages on the *iPortal* web site.

Parts Reports

Similar to Material Reports, these reports provide more technical information about the parts and where they were located within the project's files.

The *Part Index Report* shows a list of parts and the page numbers on which they appear.



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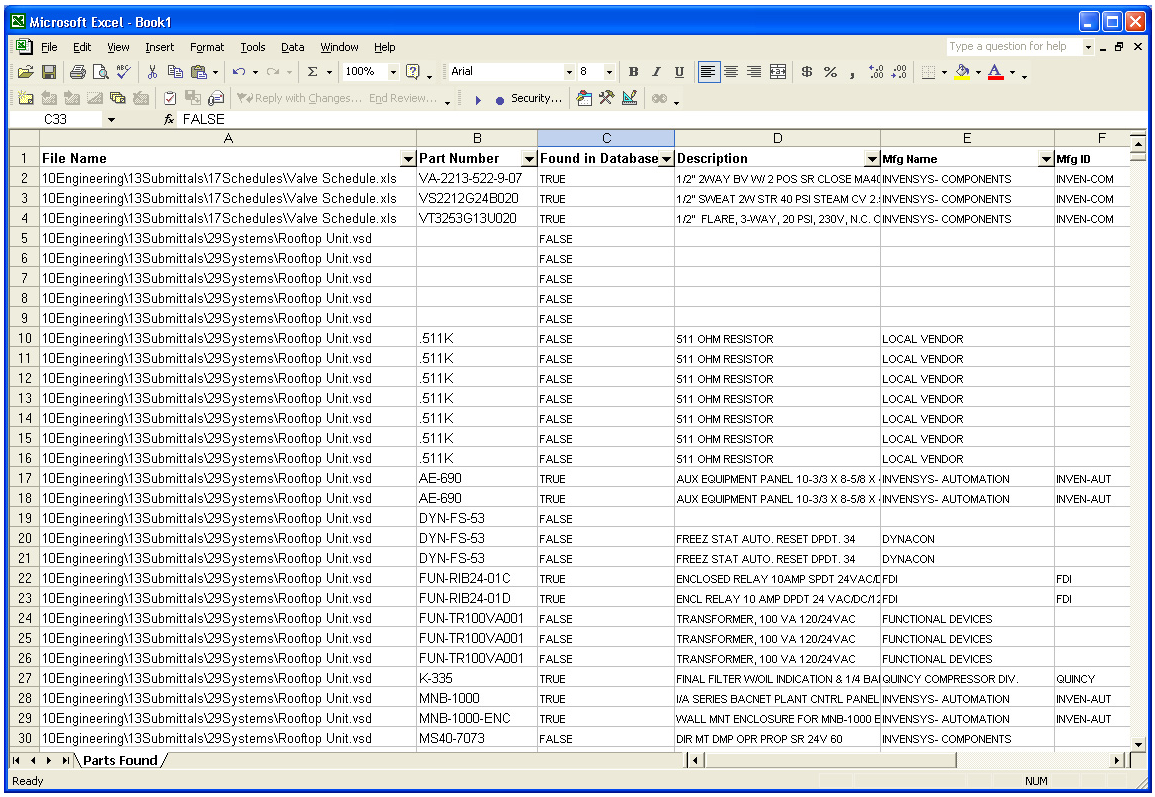
Part Index

Job Name: NewProject
Job Number:

Part Number	Drawing Page(s)	Description	Vendor
.511K	5	511 OHM RESISTOR	LOCAL VENDOR
AE-690	5, 6	AUX EQUIPMENT PANEL 10-3/3 X 8	INVENSYS BLDG SYSTEMS
DYN-FS-53	4, 5	FREEZ STAT AUTO. RESET DPDT. 3	SINGLE SOURCED SOLUTIONS
FUN-RIB24-01C	5	ENCLOSED RELAY 10AMP SPDT 24VA	SINGLE SOURCED SOLUTIONS
FUN-RIB24-01D	5	ENCL RELAY 10A DPDT 24VAC	SINGLE SOURCED SOLUTIONS
FUN-RIBU1-C	1	RIB SPDT FRM 1C 10A@277 VAC 10	SINGLE SOURCED SOLUTIONS
FUN-TR100VA001	6	TRANSFORMER, 100 VA 120/24VAC	SINGLE SOURCED SOLUTIONS
K-335	5	FINAL FILTER W/OIL INDICATION	SINGLE SOURCED SOLUTIONS
KEL-AT150F1022	1	TRANSFORMR 50VA 120/208/240 24	SINGLE SOURCED SOLUTIONS
MNB-1000	4	I/A SERIES BACNET PLANT CNTRL	INVENSYS BLDG SYSTEMS
MNB-1000-ENC	4	WALL MNT ENCLOSRE FOR MNB-1000	INVENSYS BLDG SYSTEMS
MNL-V2RV2	1	LONMARK CONTR. FAN PWRD VAV/RE	INVENSYS BLDG SYSTEMS
MN-S3	1	IA MICRONET S-LINK SENSOR W/OV	INVENSYS BLDG SYSTEMS
MS40-7073	5	DIR MT DMP OPR PROP SR 24V 60	INVENSYS BLDG SYSTEMS
P-330-1-0	1		
T-201-1	1	TRANSFORMER 50 VA, 120V-P, 24V	SINGLE SOURCED SOLUTIONS
TR50VA005	6	TRANSFORMER, 50 VA 120/24VAC	SINGLE SOURCED SOLUTIONS
TS-8422	4	22' AVG. SENSOR 1 K OHM BALCO	INVENSYS BLDG SYSTEMS
VA-2213-522-9-07	1	1/2" W/MA40-7040, 120V CV=11.7	INVENSYS BLDG SYSTEMS
VER-EP2-100-S	5	ELECT-PNEU TRANSDUCER PSI	SINGLE SOURCED SOLUTIONS
VS2212G24B020	1	POPTOP ASS'Y 1/2"SWT 120VAC 2-	INVENSYS BLDG SYSTEMS
VT3253G13U020	1	POPTOP ASS'Y 1/2"SAE 3-W 220/2	INVENSYS BLDG SYSTEMS

The *Parts Found* report shows a list of the parts, including the name of the file they appear it and an indication of whether the part was found in the Parts Database. Parts that aren't in the Parts Database may be obsolete, and will not have a price associated with them in a Material Report.



Microsoft Excel - Book1

File Edit View Insert Format Tools Data Window Help

C33 FALSE

	A	B	C	D	E	F
1	File Name	Part Number	Found in Database	Description	Mfg Name	Mfg ID
2	10Engineering\13Submittals\17Schedules\Valve Schedule.xls	VA-2213-522-9-07	TRUE	1/2" 2WAY BV VW 2 POS SR CLOSE MA4(	INVENSYS- COMPONENTS	INVEN-COM
3	10Engineering\13Submittals\17Schedules\Valve Schedule.xls	VS2212G24B020	TRUE	1/2" SWEAT 2W STR 40 PSI STEAM CV 2	INVENSYS- COMPONENTS	INVEN-COM
4	10Engineering\13Submittals\17Schedules\Valve Schedule.xls	VT3253G13U020	TRUE	1/2" FLARE, 3-WAY, 20 PSI, 230V, N.C. C	INVENSYS- COMPONENTS	INVEN-COM
5	10Engineering\13Submittals\29Systems\Rooftop Unit.vsd		FALSE			
6	10Engineering\13Submittals\29Systems\Rooftop Unit.vsd		FALSE			
7	10Engineering\13Submittals\29Systems\Rooftop Unit.vsd		FALSE			
8	10Engineering\13Submittals\29Systems\Rooftop Unit.vsd		FALSE			
9	10Engineering\13Submittals\29Systems\Rooftop Unit.vsd		FALSE			
10	10Engineering\13Submittals\29Systems\Rooftop Unit.vsd	.511K	FALSE	511 OHM RESISTOR	LOCAL VENDOR	
11	10Engineering\13Submittals\29Systems\Rooftop Unit.vsd	.511K	FALSE	511 OHM RESISTOR	LOCAL VENDOR	
12	10Engineering\13Submittals\29Systems\Rooftop Unit.vsd	.511K	FALSE	511 OHM RESISTOR	LOCAL VENDOR	
13	10Engineering\13Submittals\29Systems\Rooftop Unit.vsd	.511K	FALSE	511 OHM RESISTOR	LOCAL VENDOR	
14	10Engineering\13Submittals\29Systems\Rooftop Unit.vsd	.511K	FALSE	511 OHM RESISTOR	LOCAL VENDOR	
15	10Engineering\13Submittals\29Systems\Rooftop Unit.vsd	.511K	FALSE	511 OHM RESISTOR	LOCAL VENDOR	
16	10Engineering\13Submittals\29Systems\Rooftop Unit.vsd	.511K	FALSE	511 OHM RESISTOR	LOCAL VENDOR	
17	10Engineering\13Submittals\29Systems\Rooftop Unit.vsd	AE-690	TRUE	AUX EQUIPMENT PANEL 10-3/3 X 8-5/8 X	INVENSYS- AUTOMATION	INVEN-AUT
18	10Engineering\13Submittals\29Systems\Rooftop Unit.vsd	AE-690	TRUE	AUX EQUIPMENT PANEL 10-3/3 X 8-5/8 X	INVENSYS- AUTOMATION	INVEN-AUT
19	10Engineering\13Submittals\29Systems\Rooftop Unit.vsd	DYN-FS-53	FALSE			
20	10Engineering\13Submittals\29Systems\Rooftop Unit.vsd	DYN-FS-53	FALSE	FREEZ STAT AUTO. RESET DPDT. 34	DYNACON	
21	10Engineering\13Submittals\29Systems\Rooftop Unit.vsd	DYN-FS-53	FALSE	FREEZ STAT AUTO. RESET DPDT. 34	DYNACON	
22	10Engineering\13Submittals\29Systems\Rooftop Unit.vsd	FUN-RIB24-01C	TRUE	ENCLOSED RELAY 10AMP SPDT 24VAC/I	FDI	FDI
23	10Engineering\13Submittals\29Systems\Rooftop Unit.vsd	FUN-RIB24-01D	TRUE	ENCL RELAY 10 AMP DPDT 24 VAC/DC/1	FDI	FDI
24	10Engineering\13Submittals\29Systems\Rooftop Unit.vsd	FUN-TR100VA001	FALSE	TRANSFORMER, 100 VA 120/24VAC	FUNCTIONAL DEVICES	
25	10Engineering\13Submittals\29Systems\Rooftop Unit.vsd	FUN-TR100VA001	FALSE	TRANSFORMER, 100 VA 120/24VAC	FUNCTIONAL DEVICES	
26	10Engineering\13Submittals\29Systems\Rooftop Unit.vsd	FUN-TR100VA001	FALSE	TRANSFORMER, 100 VA 120/24VAC	FUNCTIONAL DEVICES	
27	10Engineering\13Submittals\29Systems\Rooftop Unit.vsd	K-335	TRUE	FINAL FILTER W/OIL INDICATION & 1/4 BA	QUINCY COMPRESSOR DIV.	QUINCY
28	10Engineering\13Submittals\29Systems\Rooftop Unit.vsd	MNB-1000	TRUE	I/A SERIES BACNET PLANT CNTRL PANEL	INVENSYS- AUTOMATION	INVEN-AUT
29	10Engineering\13Submittals\29Systems\Rooftop Unit.vsd	MNB-1000-ENC	TRUE	WALL MNT ENCLOSURE FOR MNB-1000 E	INVENSYS- AUTOMATION	INVEN-AUT
30	10Engineering\13Submittals\29Systems\Rooftop Unit.vsd	MS40-7073	FALSE	DIR MT DMP OPR PROP SR 24V 60	INVENSYS- COMPONENTS	

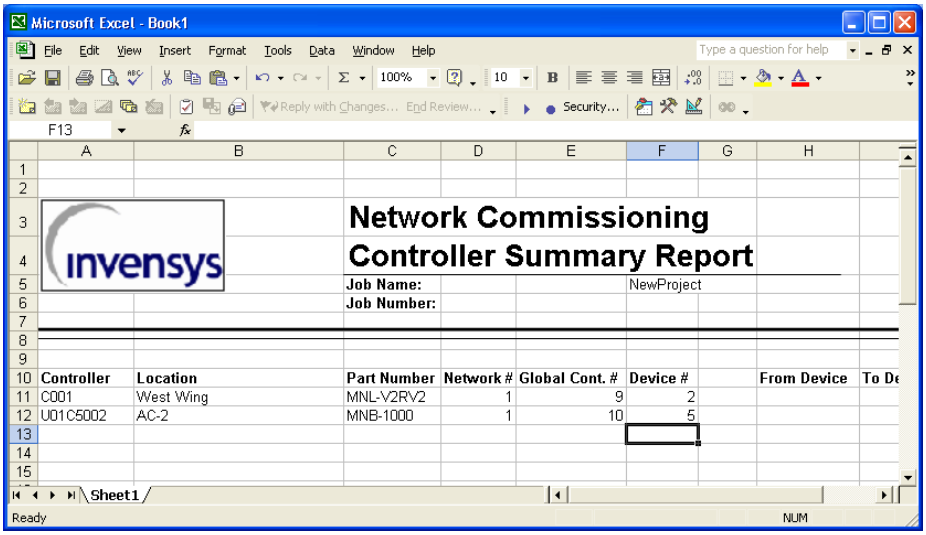
Parts Found

Ready NUM

Controller and Commissioning Reports

There are a number of reports that can be used to summarize device and point information for the purposes of doing commissioning and checkout procedures, and providing labels to put on the physical wire connecting the controllers.

The *Controller Summary* report provides a simple list of the controllers in the project, along with their addressing information.



Microsoft Excel - Book1

File Edit View Insert Format Tools Data Window Help

F13

invensys

Network Commissioning
Controller Summary Report

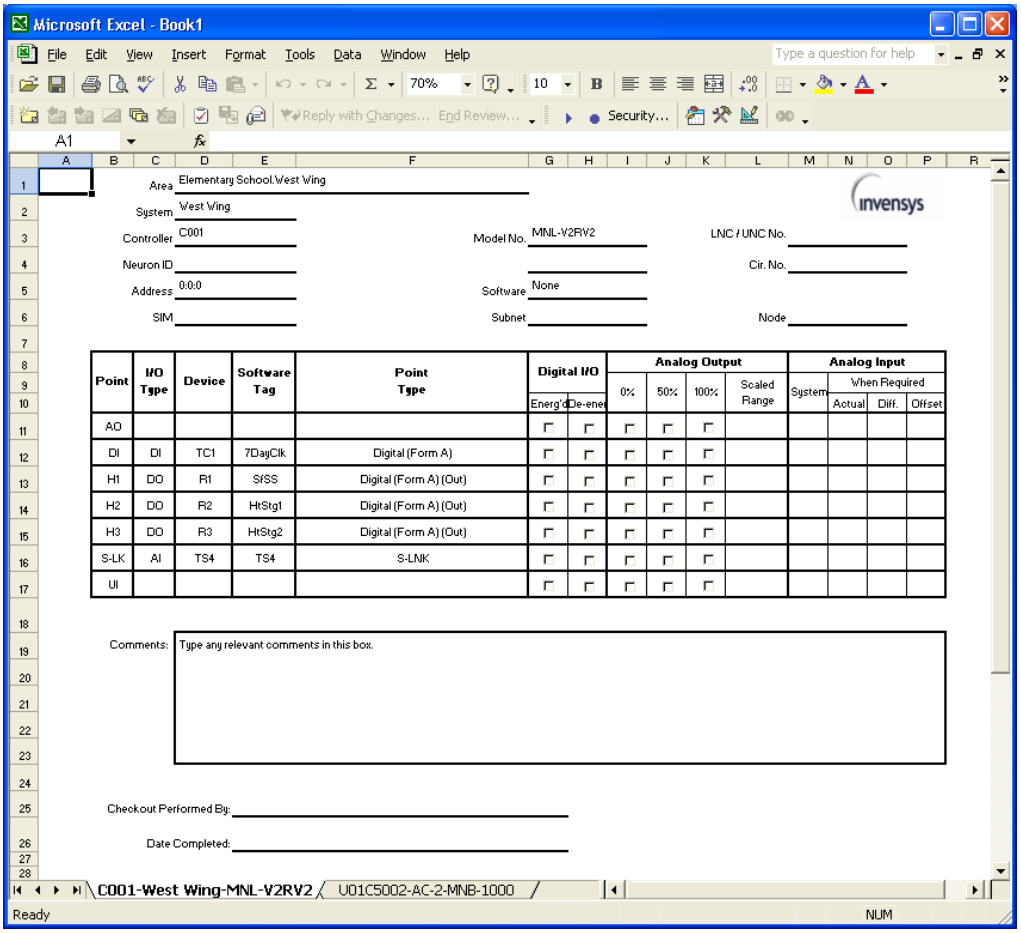
Job Name: NewProject
Job Number:

Controller	Location	Part Number	Network #	Global Cont. #	Device #	From Device	To De
C001	West Wing	MNL-V2R\V2	1	9	2		
U01C5002	AC-2	MNB-1000	1	10	5		

Sheet1

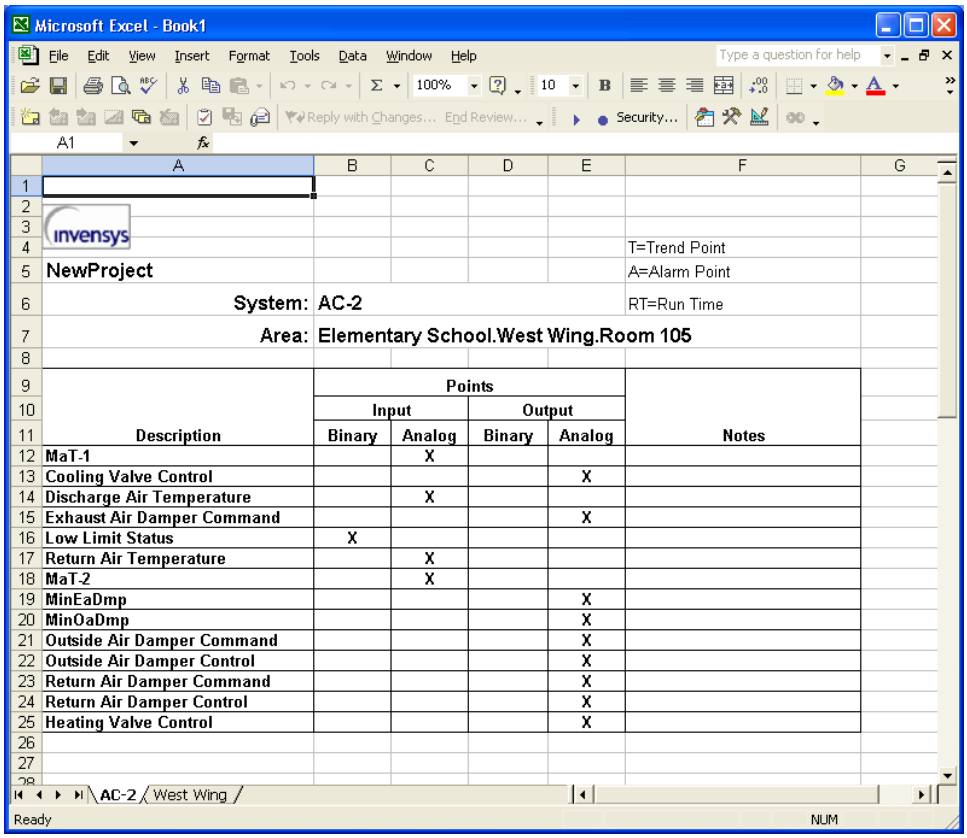
Ready NUM

The *Controller Checkout* report generates a workbook with a worksheet for each controller in the project listing all the points on the controller, along with the point type and check boxes, making them ideal as a commissioning checklist form.



The *Area* field is filled in based on the systems location in the Site Tree. Refer to the earlier chapter on the *Site Manager* for more information.

The *System Point List* report is similar to the checkout report, with one worksheet for each controller.



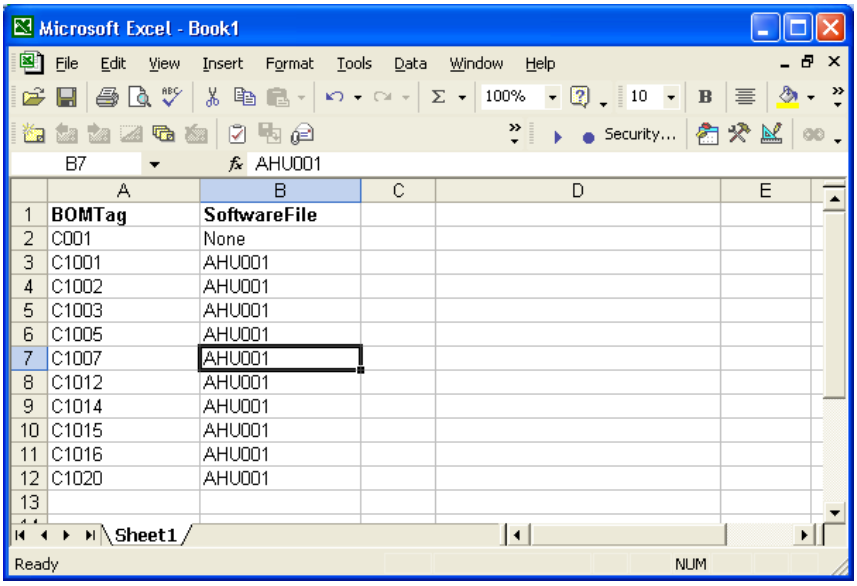
Microsoft Excel - Book1

	A	B	C	D	E	F	G
1							
2							
3	invensys						
4						T=Trend Point	
5	NewProject					A=Alarm Point	
6	System:	AC-2				RT=Run Time	
7	Area:	Elementary School.West Wing.Room 105					
8							
9		Points					
10		Input		Output			
11	Description	Binary	Analog	Binary	Analog	Notes	
12	MaT-1		X				
13	Cooling Valve Control				X		
14	Discharge Air Temperature		X				
15	Exhaust Air Damper Command				X		
16	Low Limit Status	X					
17	Return Air Temperature		X				
18	MaT-2		X				
19	MinEaDmp				X		
20	MinOaDmp				X		
21	Outside Air Damper Command				X		
22	Outside Air Damper Control				X		
23	Return Air Damper Command				X		
24	Return Air Damper Control				X		
25	Heating Valve Control				X		
26							
27							

AC-2 / West Wing

Ready NUM

The *Controller Wire Tags* report create a simple file that can be used as the source file for a mail merge.



Microsoft Excel - Book1

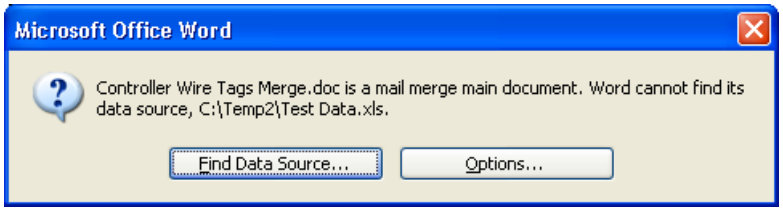
	A	B	C	D	E
1	BOMTag	SoftwareFile			
2	C001	None			
3	C1001	AHU001			
4	C1002	AHU001			
5	C1003	AHU001			
6	C1005	AHU001			
7	C1007	AHU001			
8	C1012	AHU001			
9	C1014	AHU001			
10	C1015	AHU001			
11	C1016	AHU001			
12	C1020	AHU001			
13					

Sheet1

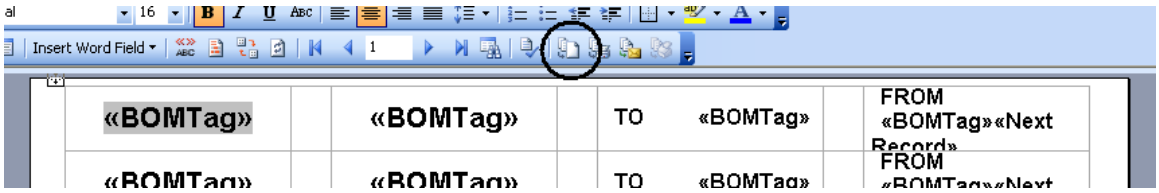
Ready NUM

You can use this data file to create wire tag labels in Microsoft Word.

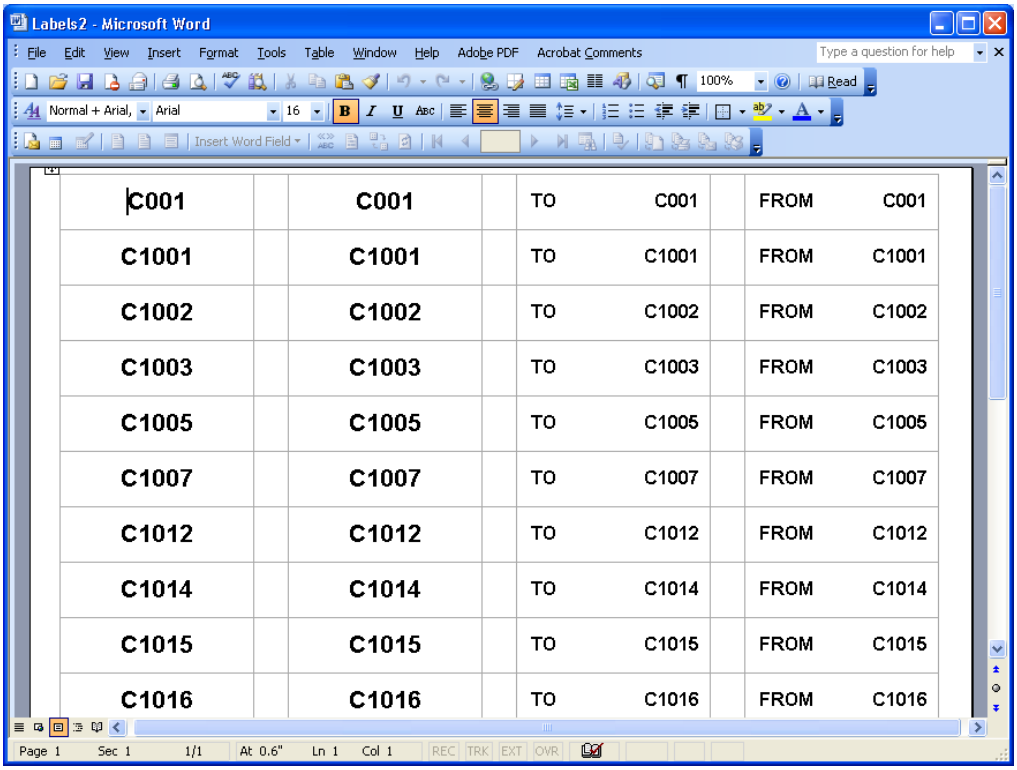
- Run the *Controller Wire Tags* report and save the resulting Excel file to a temporary location.
- Open the Controller Wire Tags Merge.doc file from the *C:\Program Files\Designer Suite 2005\Reports\Dsre* folder.
- Depending on the version of Microsoft Word, you will be prompted to locate or update the data file.



- Locate and select the Excel file to which you saved the data.
- The file will be opened in Word.
- If not visible already, make the Mail Merge toolbar visible.



- Click the MERGE TO NEW DOCUMENT icon to create the labels.



- The labels can be printed on Avery Standard 2160 Mailing Labels (1" x 2.63" each, 4 across x 20 down) or compatible.

Software Reports

The *Software Detail* and *Software Summary* reports list the Software File values specified in the controllers.

Wire Tag Reports

There are four Wire Tag reports which report on the information collected from the Wire Tag shapes.

- *Wire Tags – Grouped by System*
- *Wire Tags – Grouped by Controller*
- *Wire Tags – Total*
- *Wire Tags – Total with System*

Refer to the earlier chapter on *Wire Tags* for more information.

Creating Custom Reports

The Designer Suite 2005 Reports are stored in the *C:\Program Files\Designer Suite 2005\Reports\Dsre* folder. Though you can point the Reporting Engine to a different folder, it is not recommended.

You can create your own reports, either as slight variations of existing reports or from other forms, such as another vendor's order form. In either case, if you put the report template it the standard reports folder, the report will appear in the available report list automatically.

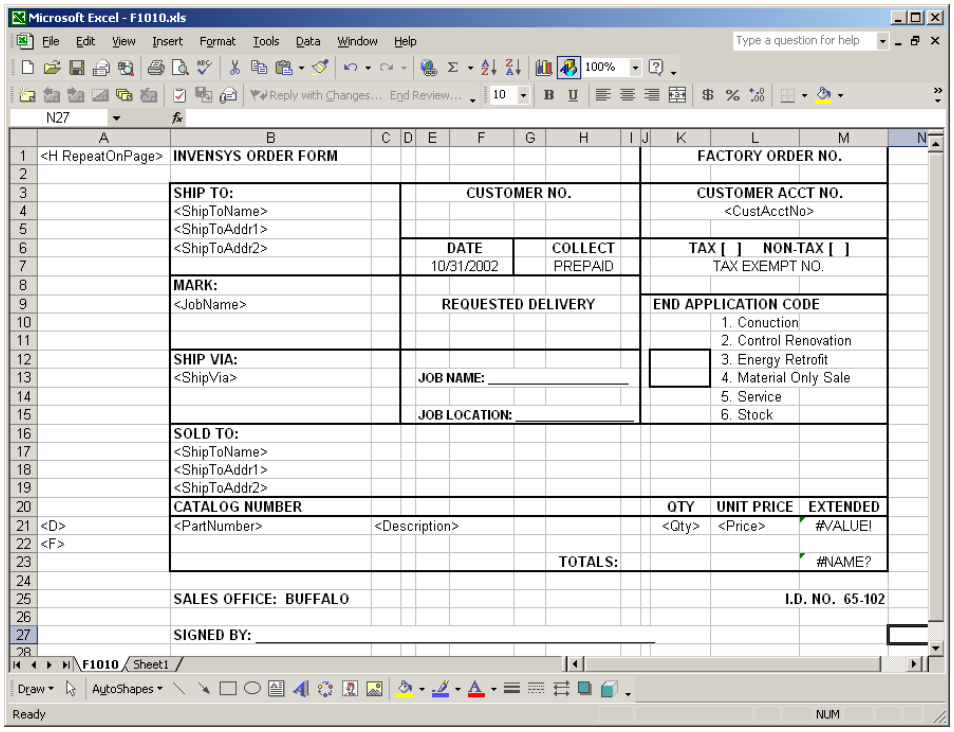
To create a customized version of a report:

- In Windows Explorer, copy the closest report to the one you want and rename it. Leave the new report in the same folder.
- Open your new template report and make your changes. Refer to the next section on *Report Templates* for more information.

Under no circumstances should you modify one of the Designer Suite 2005 reports directly. Your changes will be overwritten the next time Designer Suite 2005 is updated.

Report Templates

A Report Template is an Excel worksheet with field codes added to indicate where data will be inserted when the report is run. It contains a detail section, which is generated once for each output record, and can contain header and footer sections above and below the detail. There are also facilities for section breaks, aggregate formulas such as totals, and XML-style data.



	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	<H RepeatOnPage>	INVENSYS ORDER FORM									FACTORY ORDER NO.			
2														
3		SHIP TO:				CUSTOMER NO.					CUSTOMER ACCT NO.			
4		<ShipToName>									<CustAcctNo>			
5		<ShipToAddr1>												
6		<ShipToAddr2>				DATE		COLLECT			TAX [ ] NON-TAX [ ]			
7						10/31/2002		PREPAID			TAX EXEMPT NO.			
8		MARK:												
9		<JobName>				REQUESTED DELIVERY					END APPLICATION CODE			
10												1. Conuction		
11												2. Control Renovation		
12		SHIP VIA:										3. Energy Retrofit		
13		<ShipVia>				JOB NAME: _____						4. Material Only Sale		
14												5. Service		
15						JOB LOCATION: _____						6. Stock		
16		SOLD TO:												
17		<ShipToName>												
18		<ShipToAddr1>												
19		<ShipToAddr2>												
20		CATALOG NUMBER									QTY	UNIT PRICE	EXTENDED	
21	<D>	<PartNumber>	<Description>								<Qty>	<Price>	#VALUE!	
22	<F>													
23								TOTALS:					#NAME?	
24														
25		SALES OFFICE: BUFFALO											I.D. NO. 65-102	
26														
27		SIGNED BY: _____												

Field Codes

Field Codes are entered as placeholders in cells by enclosing them in angle brackets, such as “<PartNumber>” or “<Price>”. The fields that are available depend on the component generating the data for the report.

When the report is run the field code is removed and replaced with the value for that field. However, all formatting in the cell remains the same. This includes font, style (bold, italic, underline), size, color, and alignment, as well as numeric and date formats. When you design a report, you should put a sample value into the cell, format it appropriately, and then replace it with the field code.

Report Sections

A report will generally consist of three sections: a set of header rows, a single detail row, and a set of footer rows. When the report is run, the header section will appear once, while the detail row will be repeated for each record in the data set. The values for field codes that appear in the header are taken from the first output record.

If not specified explicitly with a Control Column, the detail row is assumed to be the last row in the sheet that contains a field code. All rows above it are assumed to be the header, and all rows below it are assumed to be the footer.

The Control Column

You can explicitly define the sections by including a Control Column. If cell A1 contains an <H> tag, the entire first column is assumed to contain section control information for the report, and will be removed when the report is generated. You can use the following tags:

<H>	Begin header section
<D>	Begin detail section
<F>	Begin footer section
<X>	Begin XML-style data section

After a section begins, it is assumed to continue until the next different tag or the end of the worksheet.

The <H> tag also accepts certain attributes, which appear after the H but before the closing angle bracket.

<H RepeatOnPage>	The entire header is repeated at the top of each page

Grouping

You can break up groups of records into multiple pages by using the following header tag attributes:

<H GroupField=*fieldcode* GroupOn=*groupon*>

In the output report, each time the value of the <*fieldcode*> field changes between two records, a new worksheet tab is created with a separate output report. The value of <*fieldcode*> is used for the name of the worksheet on its tab.

Generally speaking, the output needs to be sorted on the <*fieldcode*> field to group on it.

groupon=Sheets	Each group goes on a separate worksheet page
groupon=SamePage	The detail and footer sections of each group repeat on the same page (the header is suppressed after the first time)

Adding Filters

You can have Excel's AutoFilters added to your detail columns by including the following attribute in the detail tag:

<D Filter=Auto>

This will allow you to filter the output rows based on different criteria in each column, using drop down list boxes added to the column headings.

Using Formulas

Use can use any formula that you would normally use in Excel and use cells containing the <*fieldcode*> fields as parameters. The only thing to realize is that since the cells contain text in the template, the result of the formula will often be an error until the report is run.

For example, in the report template in the Overview you can see that the detail section (row 21) contains <Qty> and <Price> fields in columns K and L. Column M contains the product of these, with a formula of "`=K21*L21`". Since the text values "<Qty>" and "<Price>" can't be converted to numbers, Excel returns a "#VALUE" error. However, when the report is run and the field codes are replaced with numbers, the formula will be recalculated and produce the extended price we were looking for.

Aggregate Formulas

To produce totals and other formulas based on the aggregate of multiple rows in the output report, use the following special notation around the cell reference in the formula:

AGG(*cellref*)

When the report is run, the reference to the cell is expanded to include the range of cells for that column in all the output records.

For example, in the sample report shown in the Overview, cell M23 in the footer contains the formula "`=SUM(AGG(M21))`". If the report is run with 10 records, they will end up occupying rows 21 to 30 in the output report. The phrase "`AGG(M21)`" in the formula will be expanded to "M21:M30", and the resulting formula will be "`=SUM(M21:M30)`", which will properly evaluate to the sum of the values in that column for each row.

It doesn't matter whether the value in M21 was an Excel formula or a field code. Nor are you restricted to the SUM function, as any Excel function will work (e.g., "`=AVG(AGG(M21))`", or even "`=SUM(AGG(M21)) / COUNT(AGG(M21))`". The only restrictions are that the aggregate formula be in the footer section (which requires the use of the Control Column), and that the cell reference be a cell in the detail section.

If the detail section spans more than one row, the aggregate function will attempt to properly build the formula by creating a list of the appropriate cells. For example, if the detail section of a report template occupied rows 30 to 32, and the output report contained 5 records, a reference such as "`=SUM(AGG(F30))`" would be translated into "`=SUM(F30,F33,F36,F39,F42)`", which would evaluate properly. In Excel, however, most functions are limited to 32 parameters, so if there are more than 32 records in the generated report, there is no choice but to translate the cell reference into the entire column (i.e., "`=SUM(F30:F126)`"). This will only be a problem if the detail section contains other numeric values in the same column of its other rows (i.e., cells F31

or F32). As long as those cells are blank or contain only text, the formula will still evaluate properly.

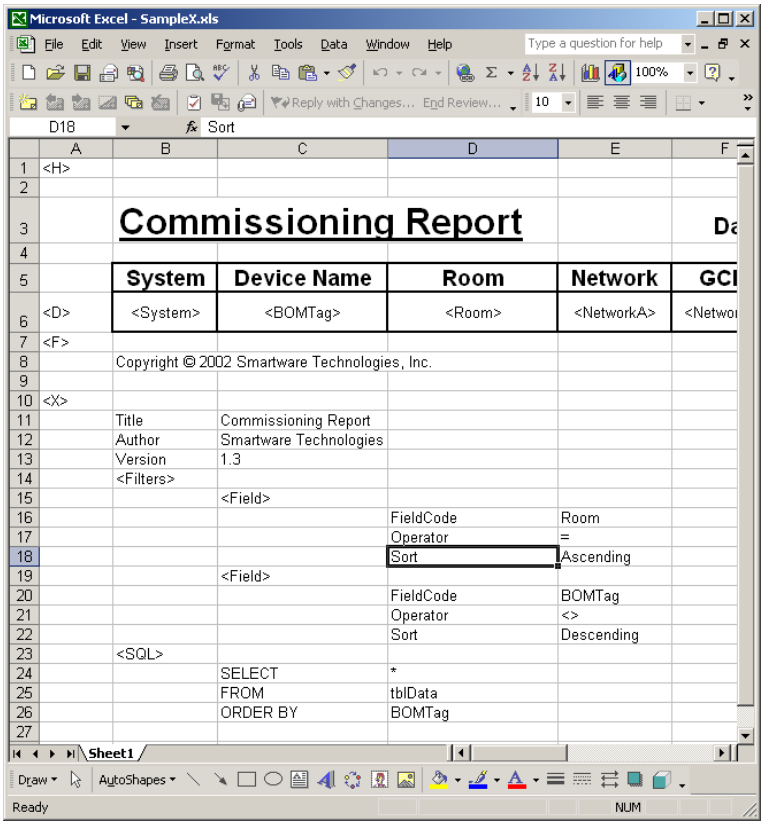
Grand Totals

By adding the *GrandTotal* attribute to the footer, the footer section is repeated one final time, with a Sum() function added for all fields that contained an AGG function in the footer.

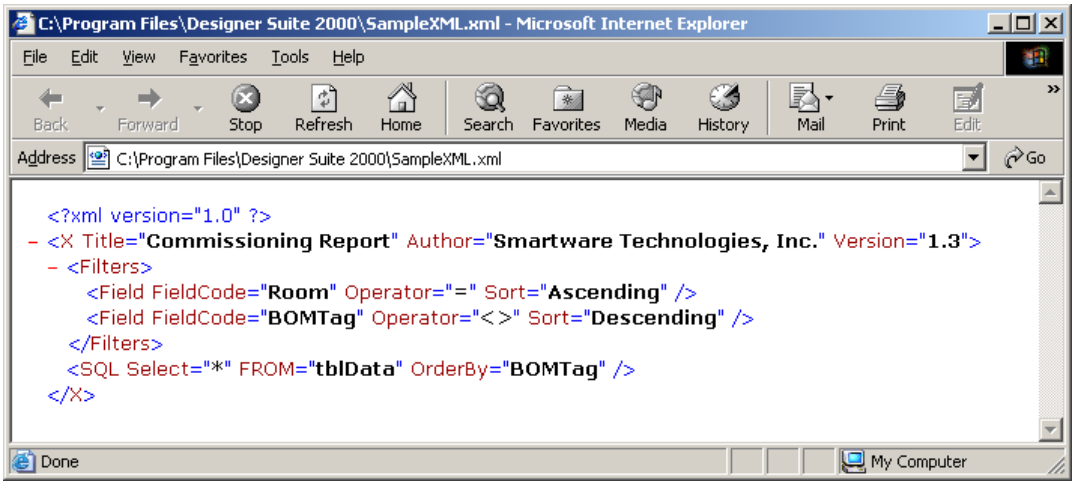
```
<F GrandTotal=true>
```

<X> Data Section

The Report Template can also include an XML-style data section, which is used by certain Designer Suite components to indicate properties of the report, such as which fields to sort on, which fields to offer as filters, etc. If not expected by the component, this section will be ignored.



The data in this report would represent the following similar XML file:



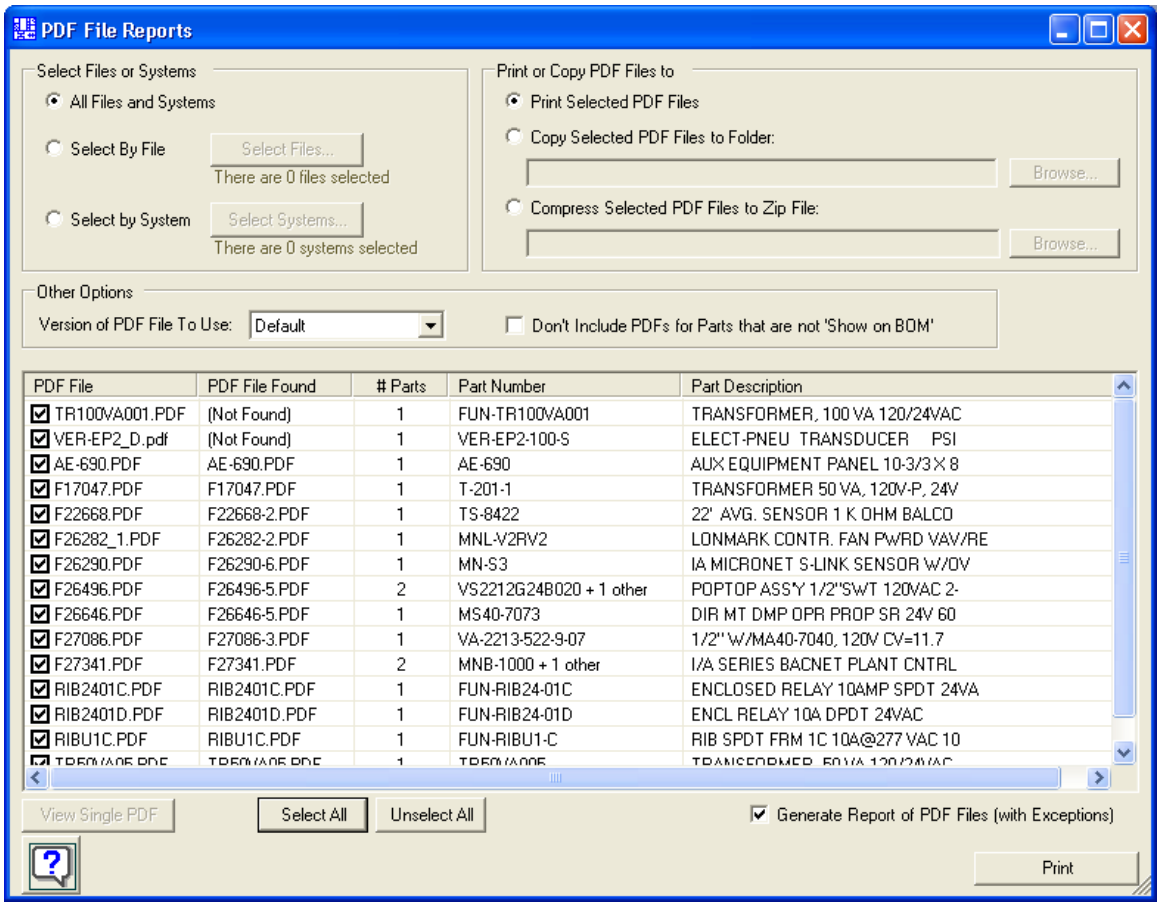
30. PDF File Reports

When generating submittal documents it is often necessary to generate a set of Product Information Cut Sheets for each part used in the job. The PDF File Reports Tool makes it easy to gather up the appropriate files, print them, or store them to disk for easy distribution.

For more information on obtaining, storing and locating the PDF Files, refer to the earlier chapters on *Installing Designer Suite 2005* and *Configuring Designer Suite 2005*.

The PDF File Reports Tool

To access the PDF File Reports tool, select TOOLS→PDF FILE REPORTS from the Designer Suite 2005 Project Explorer.



- As with the Reporting Engine, you can select all the files, or you can select a subset of the Files and/or Systems in the project.

- The PDF File List shows all the PDF Files that are referenced in the selected files and systems. Each file is listed once, regardless of the number of different parts that reference it.
- The tool scans the PDF search directories (specified in the TOOLS→OPTIONS→ PDF FILES tab) to determine if it can locate them file. The PDF File Found column indicates if it could.
- The tool understands the naming and revision conventions used by Invensys. For example, the PDF File List shows "F27086.PDF" in the *PDF File* column, and "F27086-3.PDF" in the *PDF File Found* column (the -3 indicates the third revision).
- You can select which version of the PDF (*Submittal*, *Installation* or *Other*) to use.
- There is an option to not include PDFs if the parts reference are configured to not be included on the Bill of Materials.
- You can view a single PDF by selecting it in the list and clicking the VIEW PDF button.

Gathering and Printing the PDF Files

Once you have selected the files to include, you can choose what you want to do with them.

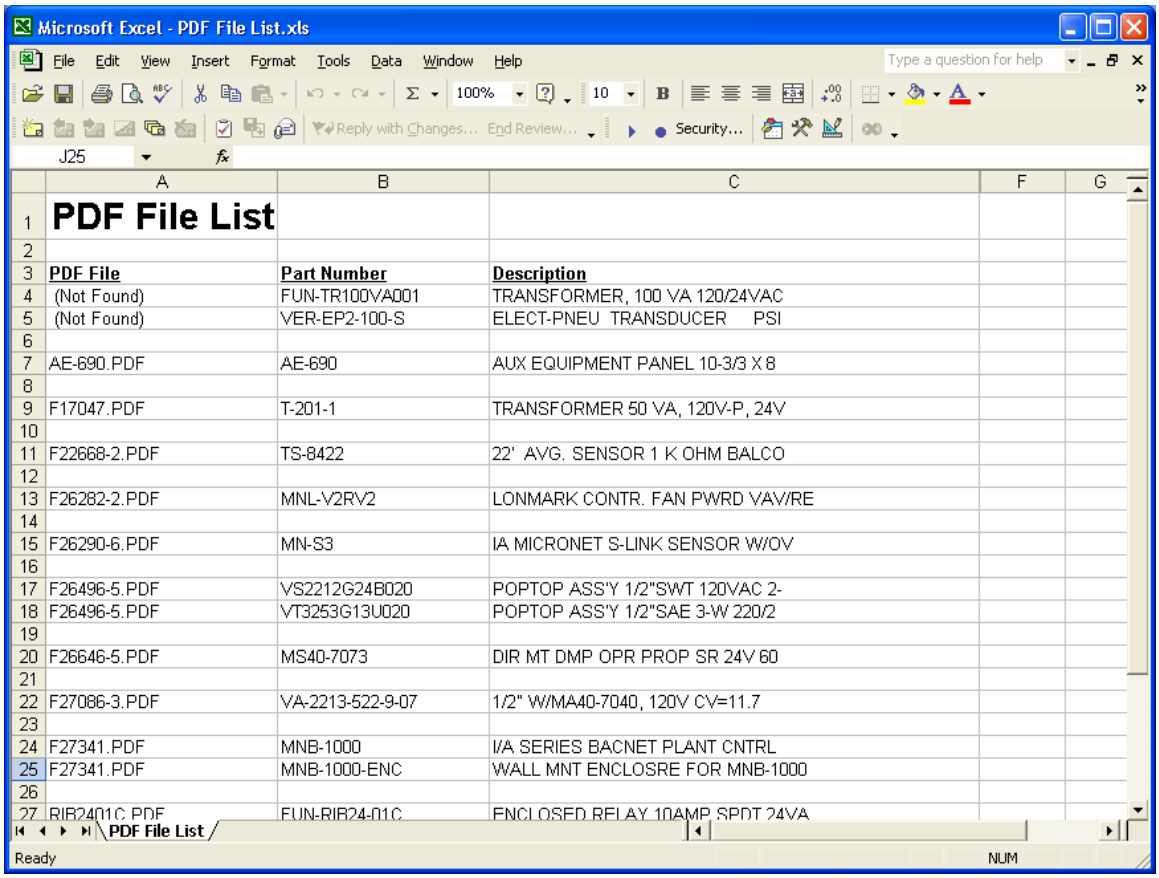
- To print all the PDFs, select PRINT SELECTED PDF FILES.
- To copy all the PDFs to a folder on the computer or local network, select COPY SELECTED PDF FILES TO FOLDER and BROWSE to the folder.
- To zip up all the PDFs into a new zip file, select COMPRESS SELECTED PDF FILES TO ZIP FILE and BROWSE to specify the file name.

Click the PRINT, COPY or GENERATE ZIP button to complete the action.

The PDF Report

When you generate the PDF set, you can optionally create an Excel report that summarizes the files and the parts that referenced them. By default the GENERATE REPORT OF PDF FILES (WITH EXCEPTIONS) is turned on.

- When printing, the report will be shown in Excel (but not printed).
- When copying, the Excel report file will be copied to the destination folder.
- When zipping, the Excel report file will be included in the zip file.



Microsoft Excel - PDF File List.xls

File Edit View Insert Format Tools Data Window Help

Type a question for help

100% 10

Reply with Changes... End Review... Security...

J25

PDF File List

PDF File	Part Number	Description
(Not Found)	FUN-TR100VA001	TRANSFORMER, 100 VA 120/24VAC
(Not Found)	VER-EP2-100-S	ELECT-PNEU TRANSDUCER PSI
AE-690.PDF	AE-690	AUX EQUIPMENT PANEL 10-3/3 X 8
F17047.PDF	T-201-1	TRANSFORMER 50 VA, 120V-P, 24V
F22668-2.PDF	TS-8422	22' AVG. SENSOR 1 K OHM BALCO
F26282-2.PDF	MNL-V2RV2	LONMARK CONTR. FAN PWRD VAV/RE
F26290-6.PDF	MN-S3	IA MICRONET S-LINK SENSOR W/OV
F26496-5.PDF	VS2212G24B020	POPTOP ASS'Y 1/2"SWT 120VAC 2-
F26496-5.PDF	VT3253G13U020	POPTOP ASS'Y 1/2"SAE 3-W 220/2
F26646-5.PDF	MS40-7073	DIR MT DMP OPR PROP SR 24V 60
F27086-3.PDF	VA-2213-522-9-07	1/2" W/MA40-7040, 120V CV=11.7
F27341.PDF	MNB-1000	I/A SERIES BACNET PLANT CNTRL
F27341.PDF	MNB-1000-ENC	WALL MNT ENCLOSRE FOR MNB-1000
RIB2401C.PDF	FUN-RIB24-01C	ENCLOSED RELAY 10AMP SPDT 24VA

PDF File List

Ready NUM

31. The Database Manager

Most of the features in Designer Suite 2005 are driven by the Parts Database, which stores the list of parts along with a wide range of associated information, such as pricing, descriptions, PDF file and technical information. The Database Manager allows you to enhance Designer Suite by adding your own parts and customizing other information to suit your organization.

Before reading this chapter, be sure to read the earlier chapter on *The Parts Database*.

For a complete demonstration of how to use the Database Manager, download or view the *Designer Suite 2005 – Part III – The Database Manager* presentation available on our website.

How the Database Manager Works

The idea behind the Database Manager (also called the *Database Import Wizard*) is to use Excel spreadsheets to maintain the list of additions and changes that need to be made. These changes are then read from the spreadsheets and applied to the database. In the preferred scenario, the changes are applied to a copy of the default database and saved to a different file. This avoids the common problems associated with database updating tools, such as confirming deletions and merging changes, that can easily corrupt such databases.

The changes and additions are grouped together into *Import Sets*. The files associated with each Import Set is stored in their own folder, and are easily moved from one machine to another. Third party companies also offer their own Import Sets that add their parts and prices.

Each Import Set is made up of one or more *Actions*. Each action generally applies to a spreadsheet, adding the parts in the sheet to the database, or updating one or more fields for those parts.

Preparing to Use the Database Manager

Before working with the Database Manager, you should understand and determine

- How the changes will be applied to the Parts Database
- What will happen when the base Parts Database is updated with Designer Suite 2005
- How the customized Parts Database will be distributed to other users in your organization.

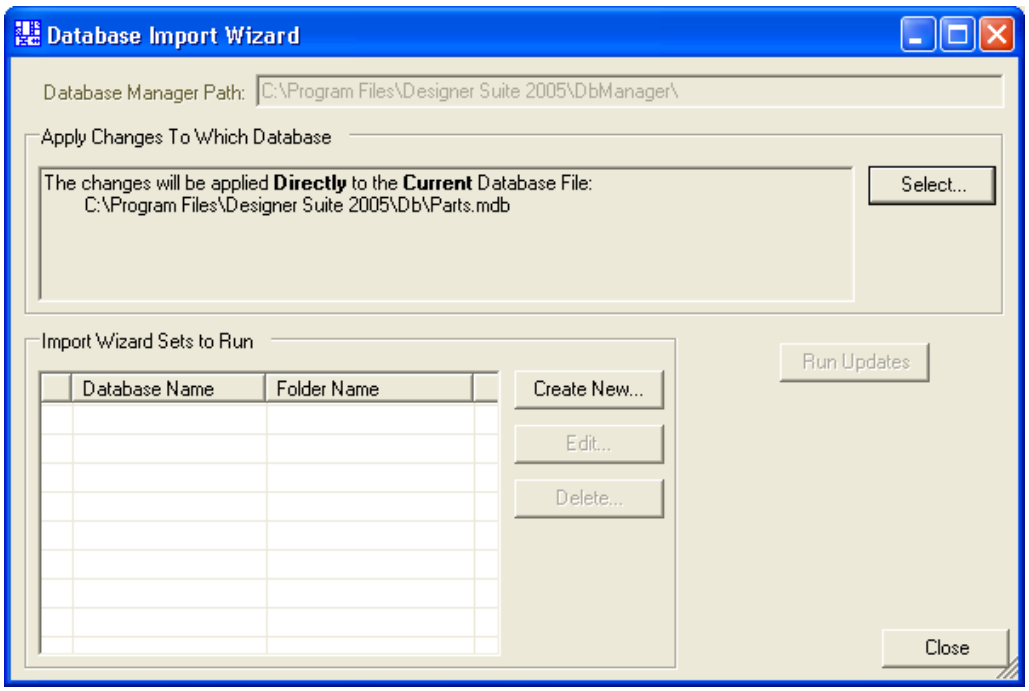
In a single person scenario, you can apply the changes directly to the default database (*Parts.mdb*) and simply rerun the updates whenever Designer Suite 2005 is updated.

A preferred scenario is to have the updates applied to a copy of the default Parts Database, have them saved to a different file name (e.g. *Our Parts.mdb*) and point Designer Suite 2005 to the new database as the current database. With this method, even when Designer Suite is updated the custom database won't be lost. You will, however, want to reapply your changes to the new default database, since it may contain new parts and updated pricing.

In an enterprise environment, you will generally assign one person to be the Database Administrator. That person will run the updates as in the preferred scenario described above. They will then put a copy of the custom database on a network drive and have all the other users subscribe to it, as described in a later section.

Using the Database Manager

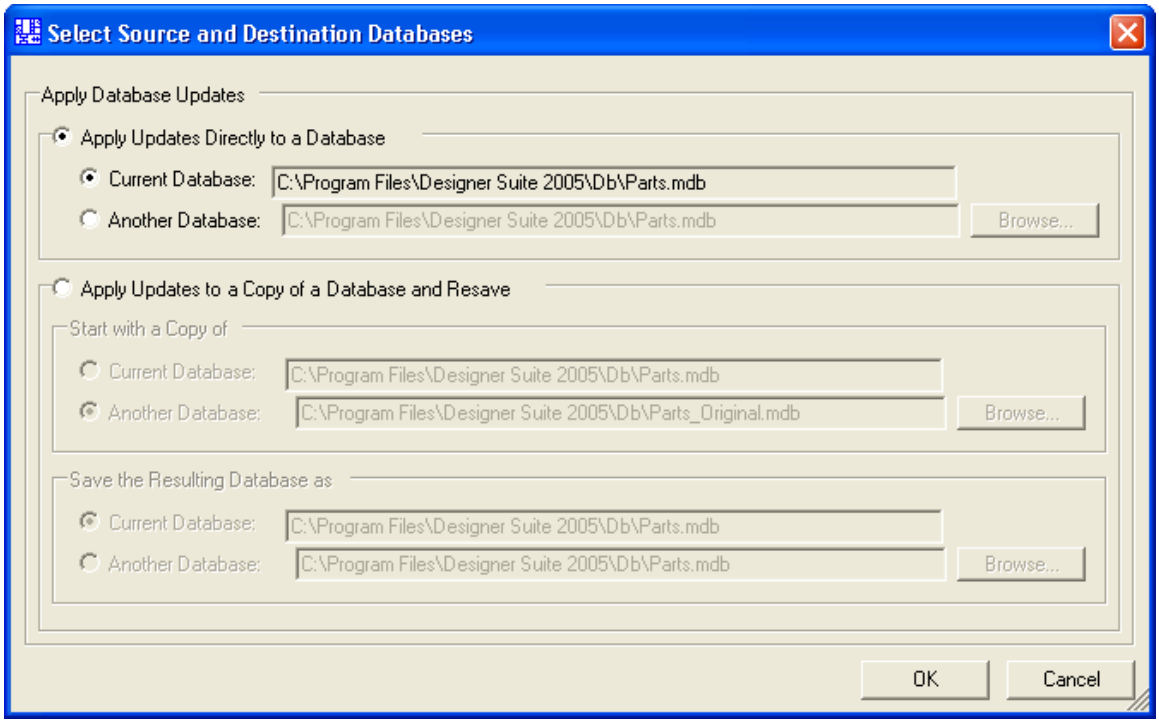
You access the Database Manager by selecting the TOOLS→DATABASE MANAGER menu item. From this screen you can apply your changes and edit your Import Sets.



- As noted the folder where the Import Sets are stored is *C:\Program Files\ Designer Suite 2005\DbManager*. Each Import Set will be stored in its own sub-folder of this directory.
- The APPLY CHANGES TO WHICH DATABASE region shows how the changes will be applied. Refer to the next section for more detail.
- The IMPORT WIZARD SETS TO RUN list shows all the available Import Sets.

Apply Changes to Which Database

The Database Manager window shows how the changes will be applied. Click the SELECT button to alter this configuration:



There are two methods:

Apply Updates Directly to a Database

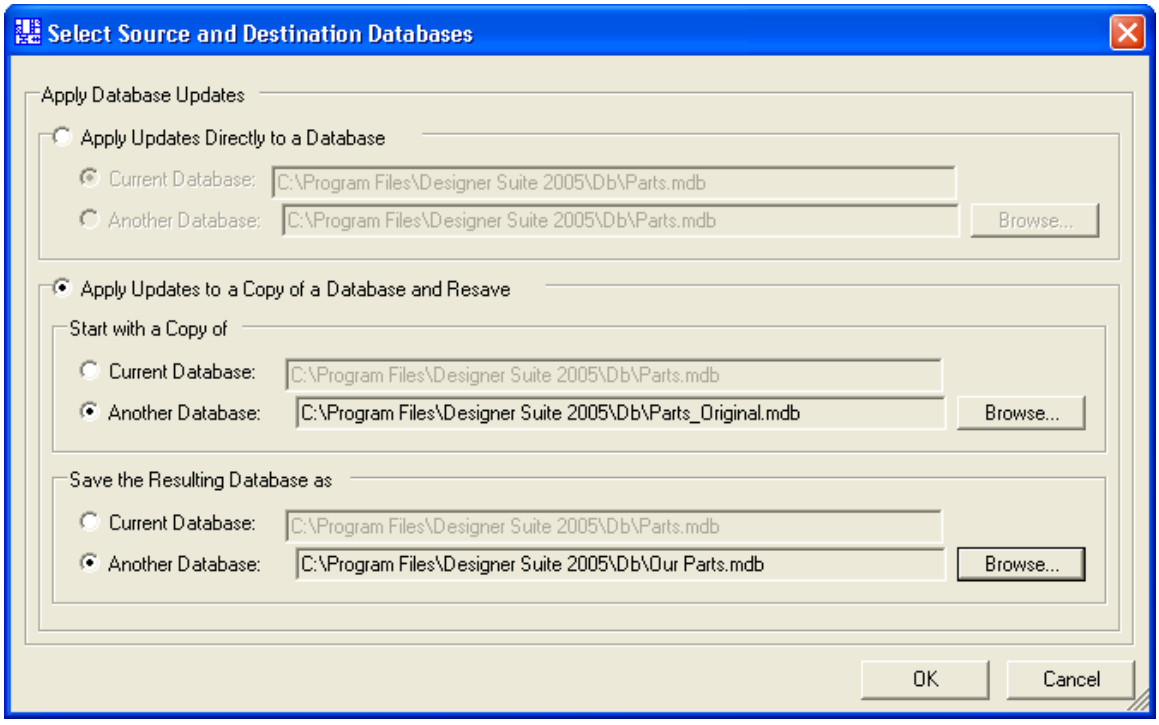
In simple scenarios, you can have the changed applied directly to a database, usually the Current Database.

- If the current database is the default database (*Parts.mdb*), this file will be overwritten whenever Designer Suite 2005 is updated. You will receive a notice when Designer Suite 2005 restarts after an update reminding you to rerun the updates.
- The Database Manager is smart enough to ensure that running the same updates on a database multiple times does not result in duplicated parts (i.e., it removes the added parts before adding them again). Proper use of the *Database Name* field when creating an import set is important to ensuring this works properly.
- It would be rare to want to apply the changes directly to ANOTHER DATABASE.

Apply Updates to a Copy of a Database and Resave

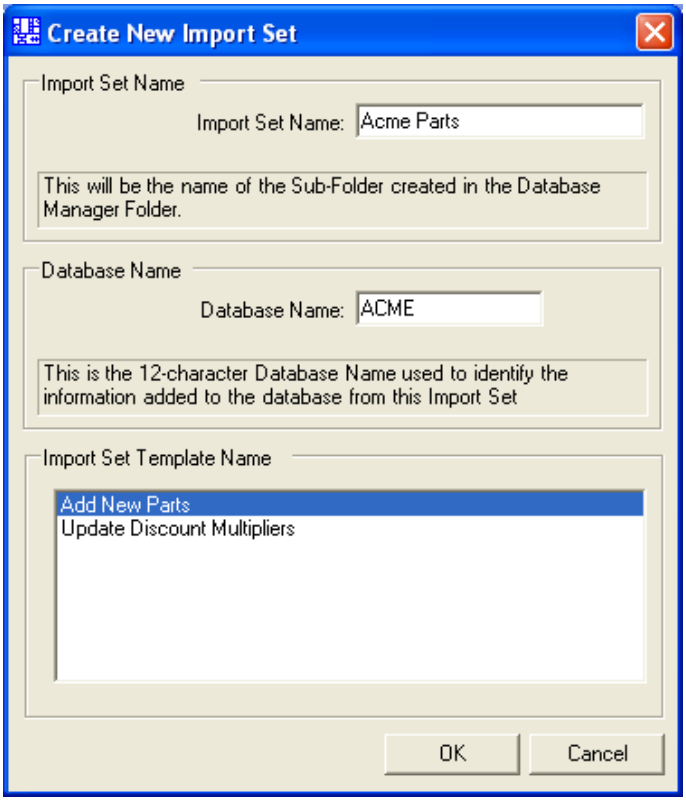
The preferred method is to allow the Database Manager to start with a fresh copy of the base Parts Database every time you run an update. It will copy this file to a new file and then apply the changes. This ensures that the all the changes in the base database are included, and removes any chance of oddities or duplicate parts that could arise from an error in an Import Set action.

- You first specify the database to START WITH A COPY OF. This should be a version of the default parts database shipped with Designer Suite 2005. To avoid any possibility of error, you should select the *Parts_Original.mdb* file in the *C:\Program Files\Designer Suite 2005\Db* directory, which is an exact copy of the *Parts.mdb* often used as the default current database.
- You also specify the file to SAVE THE RESULTING DATABASE AS. Again, you can select the current database or another database. For best results, make a copy of the Parts Database in the *Db* directory, rename it to something such as *Our Parts.mdb*, and point to it.



Creating an Import Set

To create a new Import Set, click the CREATE NEW button next to the Import Set list.



The Import Set Name

The *Import Set Name* is used to create a sub-folder in the *C:\Program Files\Designer Suite 2005\DbManager* folder. The spreadsheets that contain the parts to be imported should be placed in this folder as well.

The Database Name

The *Database Name* is used to distinguish parts added by this Import Set from other parts. This is particularly important if you apply changes directly to a database (as opposed to a copy), and then apply the changes again. The Database Name is used so the Database Manager can remove the parts that were added before adding them again, avoiding duplicates.

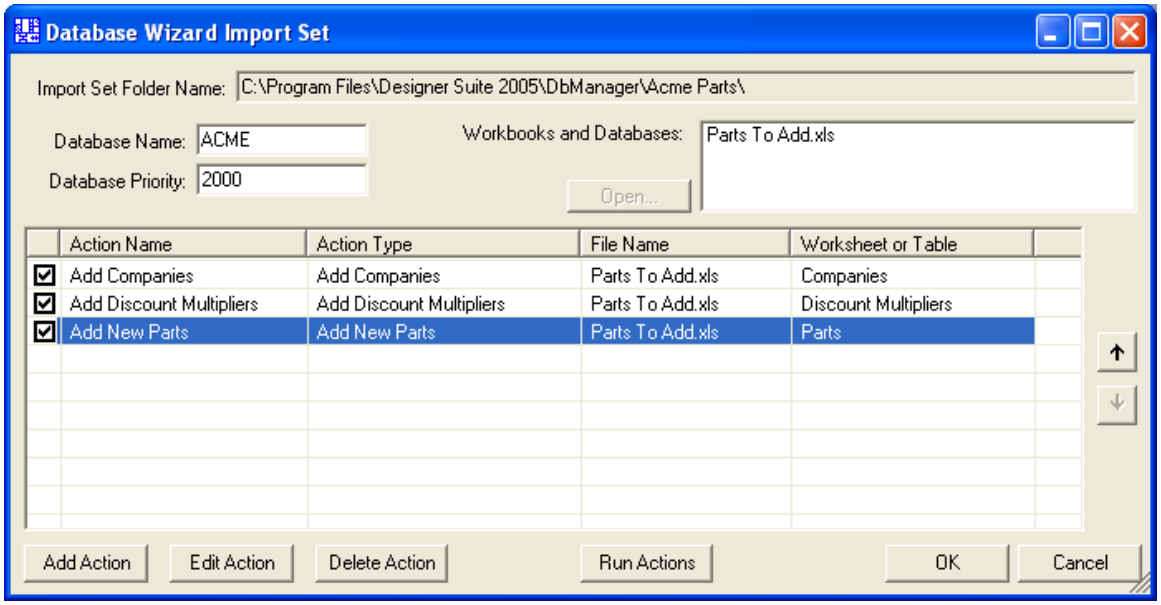
Note: Make sure the Database Name is unique between your Import Sets, and do not use the name 'INVENSYS', which is used by the default parts in the Part Database.

Import Set Template Name

There are a few templates available for your new Import Set. These templates provide workbooks that have the standard structure used for the most common import scenarios. If you already have a spreadsheet of parts from a third party, you probably won't use these, but they can still serve as a reference.

Editing an Import Set

Once created, you edit the actions in an Import Set by selecting the Import Set from the list and clicking EDIT.



- The WORKBOOKS AND DATABASES list shows all Excel and Microsoft Access files in the Import Set folder. You can select one and open it by clicking OPEN.

The list of actions is shown in the list. The ones that are checked will be executed, in order, when the actions are Run. You can reorder the actions using the arrows on the right.

Each action either adds data to a table in the Parts Database or updates existing data.

The Database Tables

There are three main tables in the Parts Database where you will generally want to add records.

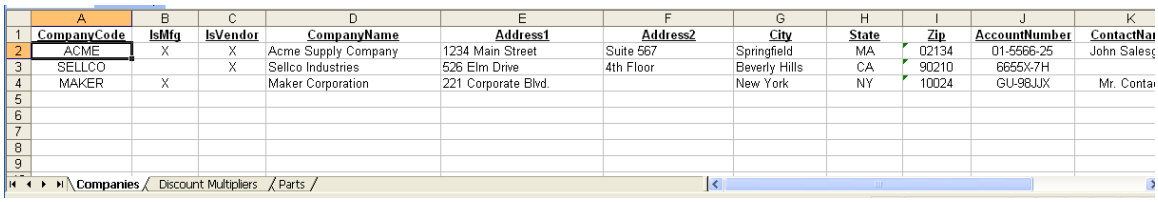
- *Parts*: Contains a record for each part, organized by the Manufacturer's Part Number.
- *Companies*: Contains a record for each Manufacturer or Vendor that is referenced by the parts.
- *Discount Multipliers*: Contains a record for each discount multiplier for each Vendor referenced by the parts.

The Parts To Add.xls Sample Workbook

The *Parts to Add.xls* workbook included with the default template contains sample import worksheets for each table. These correspond to the default Actions included in the set as well. If you want to use these templates, simply delete the sample rows from the spreadsheet and replace them with your own.

The Companies Spreadsheet

The Companies tab shows Vendors and Manufacturers not already in the database, but referenced by the parts to be added.



	A	B	C	D	E	F	G	H	I	J	K
1	CompanyCode	IsMfg	IsVendor	CompanyName	Address1	Address2	City	State	Zip	AccountNumber	ContactNa
2	ACME	X	X	Acme Supply Company	1234 Main Street	Suite 567	Springfield	MA	02134	01-5566-25	John Salesg
3	SELLCO		X	Sellco Industries	526 Elm Drive	4th Floor	Beverly Hills	CA	90210	6655X-7H	
4	MAKER	X		Maker Corporation	221 Corporate Blvd.		New York	NY	10024	GU-98JJX	Mr. Contac
5											
6											
7											
8											
9											

Companies | Discount Multipliers | Parts

- The *CompanyCode* is a 12 character ID that corresponds to the *MfgID* and *VendorID* fields of the Parts table.
- The *IsMfg* and *IsVendor* fields specify if the company is a Manufacturer, Vendor, or both.
- The *CompanyName* field is the name displayed on reports and other forms.
- All other fields are optional and generally not used at this time, though they may be in the future.

The Discount Multipliers Spreadsheet

The Discount Multipliers spreadsheet has a row for each combination of *VendorID* and *DiscountCode*, along with the corresponding multiplier value.

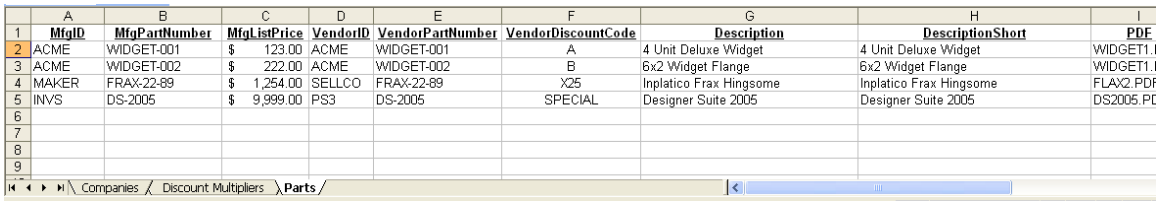
	A	B	C
1	**VendorID**	**DiscountCode**	**DiscountMultiplier**
2	ACME	A	0.4500
3	ACME	B	0.4350
4	SELLCO	X25	0.7623
5	SELLCO	X27	0.7312
6	INVS	SPECIAL	0.2500
7			
8			
9			

Companies | **Discount Multipliers** | Parts

For example, parts that you add that have a *VendorID* of 'ACME' and a *DiscountCode* of 'B' will have their *VendorPrice* computed by multiplying its *MfgListPrice* by 0.4350.

The Parts Spreadsheet

The Parts spreadsheet will have one row for each part to add.

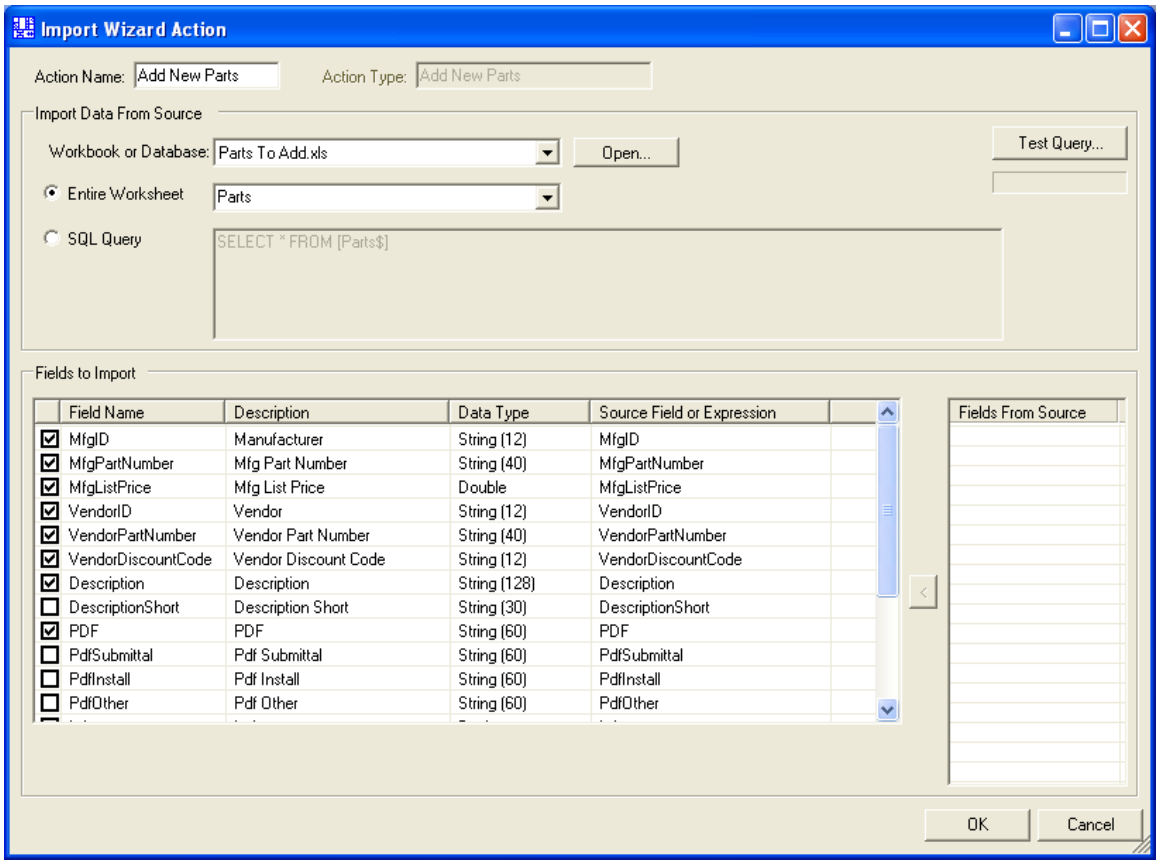


	A	B	C	D	E	F	G	H	I
1	**MfgID**	**MfgPartNumber**	**MfgListPrice**	**VendorID**	**VendorPartNumber**	**VendorDiscountCode**	**Description**	**DescriptionShort**	**PDF**
2	ACME	WIDGET-001	$ 123.00	ACME	WIDGET-001	A	4 Unit Deluxe Widget	4 Unit Deluxe Widget	WIDGET1.I
3	ACME	WIDGET-002	$ 222.00	ACME	WIDGET-002	B	6x2 Widget Flange	6x2 Widget Flange	WIDGET1.I
4	MAKER	FRAX-22-89	$ 1,254.00	SELLCO	FRAX-22-89	X25	Inplatico Frax Hingsome	Inplatico Frax Hingsome	FLAX2.PDF
5	INVS	DS-2005	$ 9,999.00	PS3	DS-2005	SPECIAL	Designer Suite 2005	Designer Suite 2005	DS2005.PD
6									
7									
8									
9									

Companies | Discount Multipliers | **Parts**

The Add New Parts Action

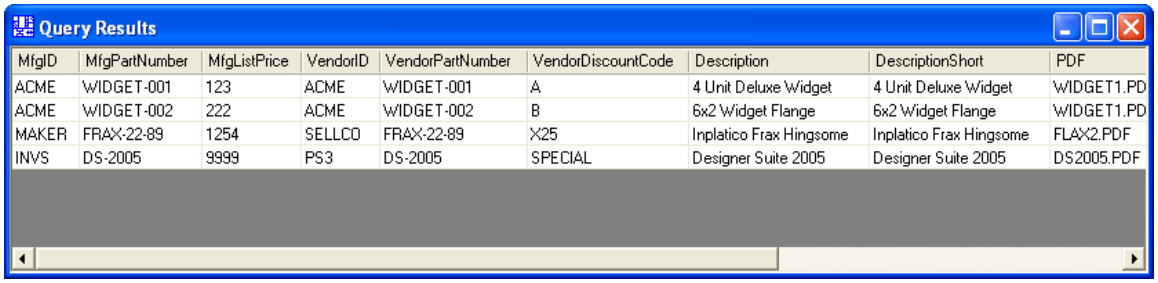
If you select the *Add New Parts* Action from the list and click EDIT, you will bring up the Import Wizard Action dialog.



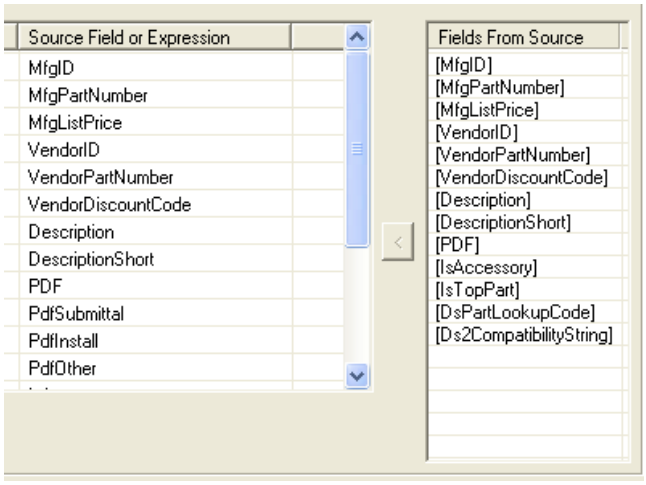
- The WORKBOOK OR DATABASE field specifies the name of the Excel workbook (or Microsoft Access database file) that contains the data to import.
- You can choose to import an Entire worksheet (which you select from the list) or specify an SQL Query to import more specifically.
- The FIELDS TO IMPORT list shows the specific fields that can and will be imported by the action. The Data Type shows the type of the data expected to be found in the corresponding spreadsheet column. For text (String) fields, the maximum size of the field is shown in parentheses (e.g., String(40) is a piece of text up to 40 characters).
- The SOURCE FIELD OR EXPRESSION generally refers to the name of the column in the spreadsheet that should be imported into the field. Though it might be the same as the Field Name (how Designer Suite refers to the field), they can be distinct. The name of the spreadsheet column can be anything, and in cases where the spreadsheet is obtained from a third party, often will be.

Testing the Query

If you click on the TEST QUERY button, the worksheet will be scanned and the results displayed.



There are four records in the sample spreadsheet included with the template. These records are what will be imported as part of the action. Testing the query will also populate the FIELDS FROM SOURCE list on the right of the Field List.



To map the fields from the spreadsheet to the fields in the Designer Suite table, enter them in the appropriate SOURCE FIELD OR EXPRESSION cell. You can also select the column name in the FIELDS FROM SOURCE list, select the appropriate SOURCE FIELD OR EXPRESSION cell, and then click the arrow button to copy the name over.

Running the Actions

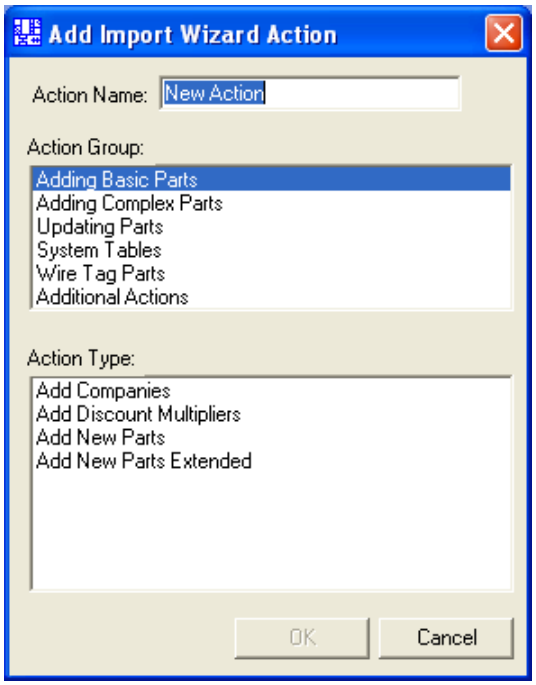
There are two ways to run the Import Actions

- When editing an Import Set, click the RUN ACTIONS button. This will run only the actions for the set being edited.
- From the main Database Manager window, check the appropriate Import Sets and click RUN UPDATES.

When you updates are run, a log of the actions taken will be shown.

Adding New Actions

If you want to add parts from a third party spreadsheet, or want to create different types of actions, you can add your own actions to the Import Set. Click on the ADD ACTION button while editing the Import Set.



You will need to specify an *Action Name* (for your own reference) and an *Action Type*. The Action Types are sorted into groups. As you select a different group, a different selection of Action Types will be shown. Select the Action Type you want to create a click OK.

After you create the action, you can select it and click EDIT ACTION to edit it. You will need to specify the name of the workbook and worksheet containing the data and map the source fields to import fields as described earlier.

Practical Examples

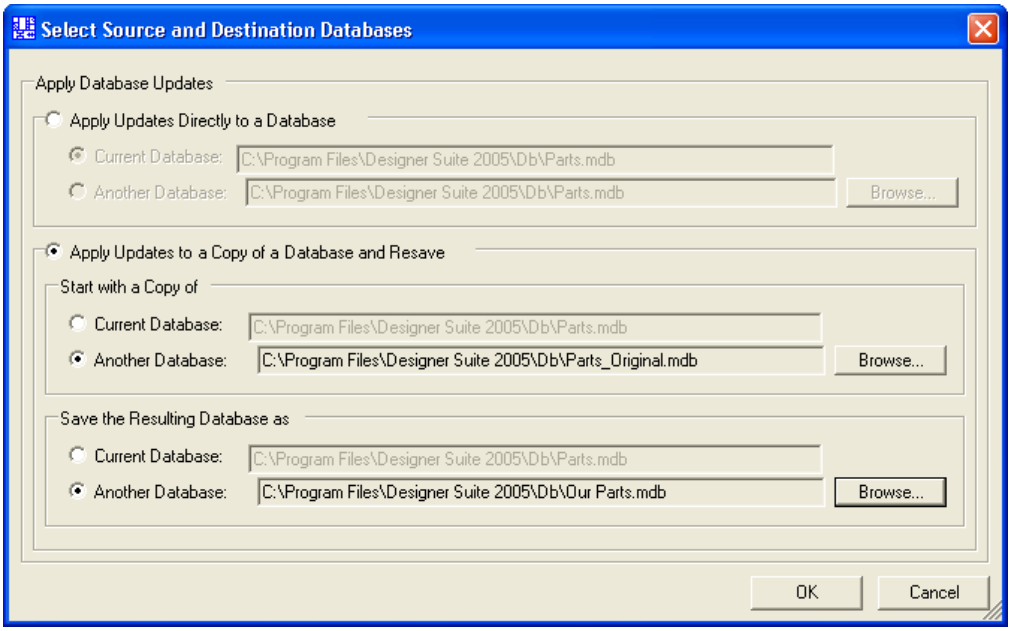
For a complete demonstration of importing third party price lists into the database, download and view the video training session *Designer Suite 2005 – Part III – The Database Manager* from our website.

For other examples, look at the database import sets provided by third parties. Some are available for download from our website.

Distributing the Updated Parts Database

If you are maintaining the database for other users in your organization, you can follow these procedures to ensure that all your users have the latest database without needing to use the Database Manager at all.

1. As described earlier, configure the Database Manager to apply the changes to a copy of the *Parts_Original.mdb* database and save to a database with a custom name, such as *Our Parts.mdb*.



2. Run the updates. You will probably want to include an Update Discount Multipliers action to make sure the multipliers are correct for your organization.

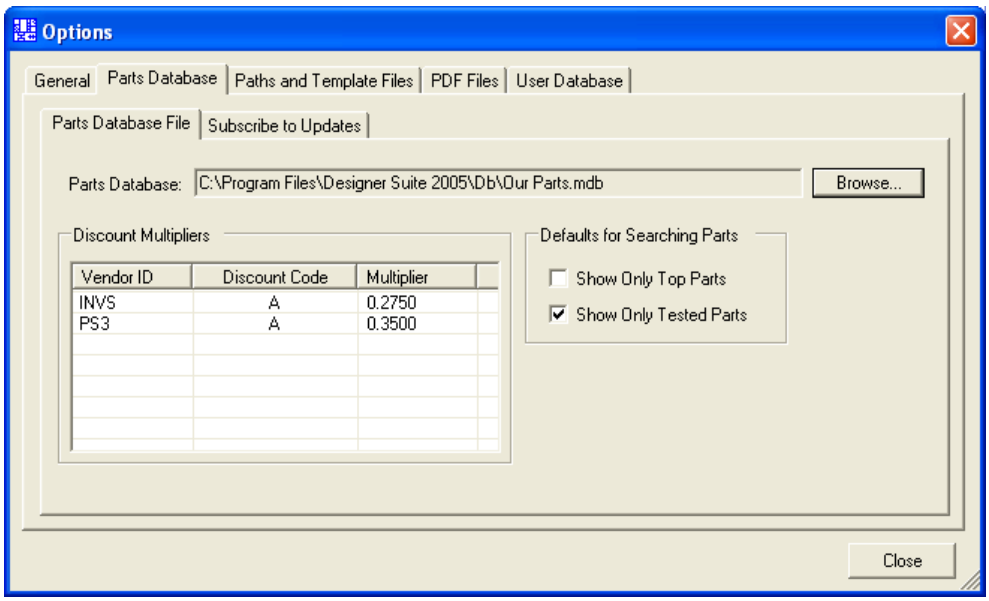
3. Select a location on your network that all users can access. Copy the resulting database to that location.

Your users should now subscribe to that database file. Instruct them to:

1. Copy your database file from the network to their *C:\Program Files\Designer Suite 2005\Db* folder.

2. Select TOOLS→OPTIONS and go to the PARTS DATABASE tab.

3. Browse to their copy of your database file to select it as the current database.



4. Select the SUBSCRIBE TO UPDATES sub-tab.

5. Select the SUBSCRIBE TO A FILE ON MY LOCAL NETWORK radio button.

6. Browse to the database file on the network.

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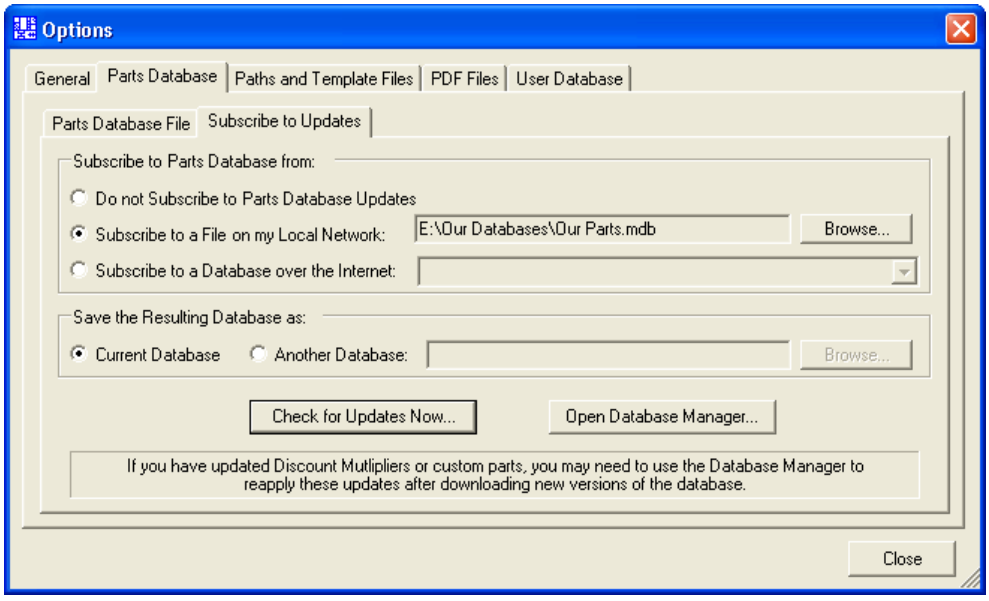


When your users start Designer Suite 2005, it will check the copy of the database file on the network. If it is different than the one they have they will be notified, and the updated version will be downloaded and installed for them.

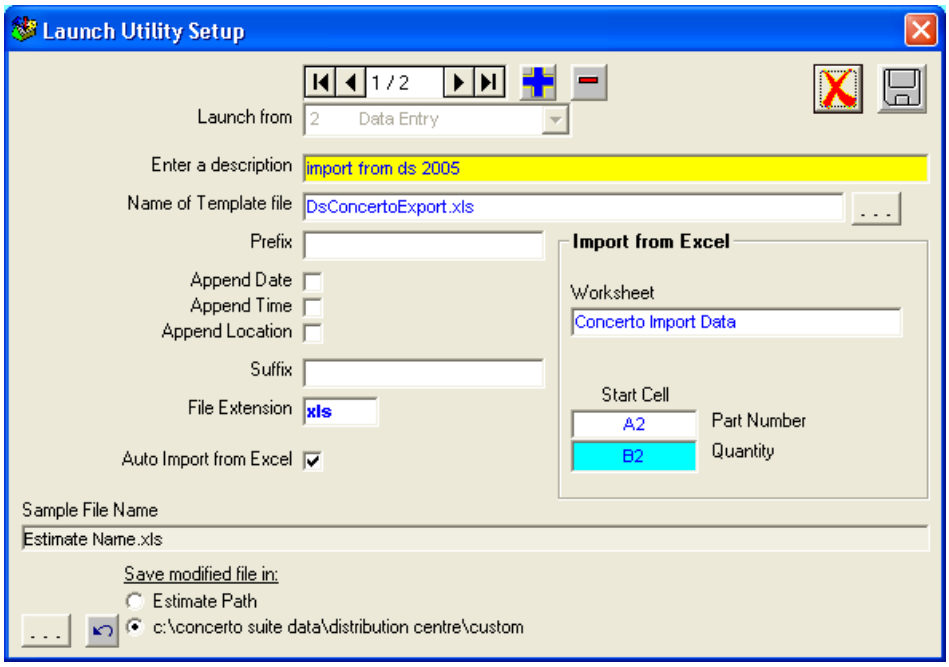
32. Exporting to Concerto Suite

You can use Designer Suite 2005 to create a list of parts that can be imported into Concerto Suite's estimating package. This two-step procedure involves using the Designer Suite 2005 Reporting Engine to select the parts and generate the export file, and then using Concerto's File Launch feature to import the parts from the list.

Setting up Concerto Suite for Importing

Before you can import data from Designer Suite 2005 (or anywhere), you need to configure a Launch File in Concerto Suite to tells that program where and how to get the data to import.

- Log into Maestro as the Administrator
- From the MODULES menu, select ADMINISTRATION MANAGER
- From the CHOICES menu, select FILE LAUNCH SETUP
- Add a record as follows:



This record tells Concerto to load data from columns A and B of an Excel file called *DsConcertoExport.xls*, which it expects to find in its *C:\Concerto Suite Data\Distribution Centre\Custom* folder. Designer Suite 2005 will create this file in this folder using the appropriate format.

Generating the Export File from Designer Suite 2005

The export file contains a list of parts and their quantities. You generate this list in the same way you would any Designer Suite 2005 report.

- From the Designer Suite 2005 TOOLS menu, select REPORTING ENGINE
- In the Report List, select the *Concerto Export* report.
- Select any other choices and filters, such as a sub-set of the files or systems, or a specific manufacturer or vendor. Refer to the earlier chapter on the *Designer Suite 2005 Reporting Engine* for more details
- Click the Run Selected Report button.

The report will run and the part list will be shown in Excel. Unlike most other reports, this report will automatically be saved in the appropriate Concerto folder (*C:\Concerto Suite Data\Distribution Centre\Custom*). Close this file before proceeding.

The following message will be displayed.

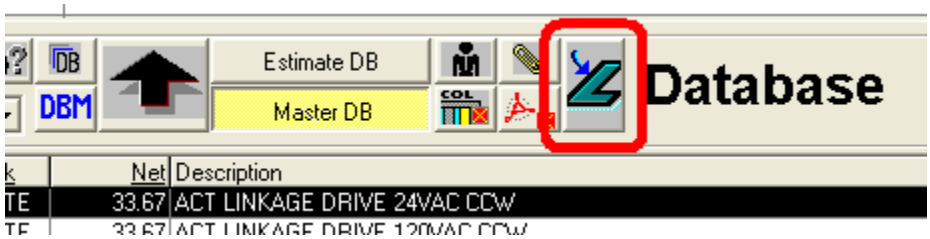
You are now ready to import the data in Concerto Suite.

Importing the Data into Concerto Suite

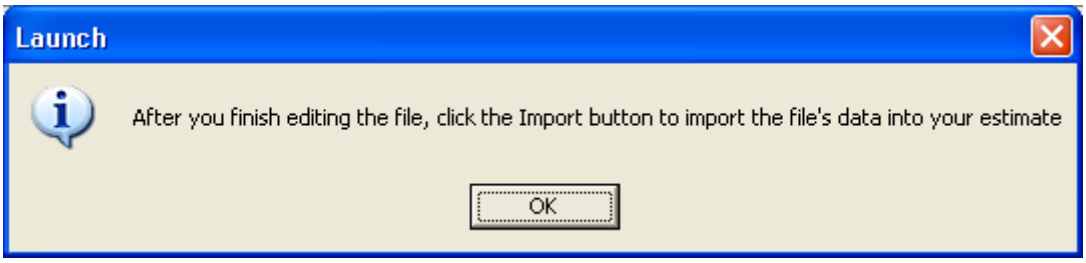
To import the generated part list, start Concerto Suite and do the following.

- Open the Estimate
- Navigate to the appropriate Area and Section
- Go to the Data Entry screen

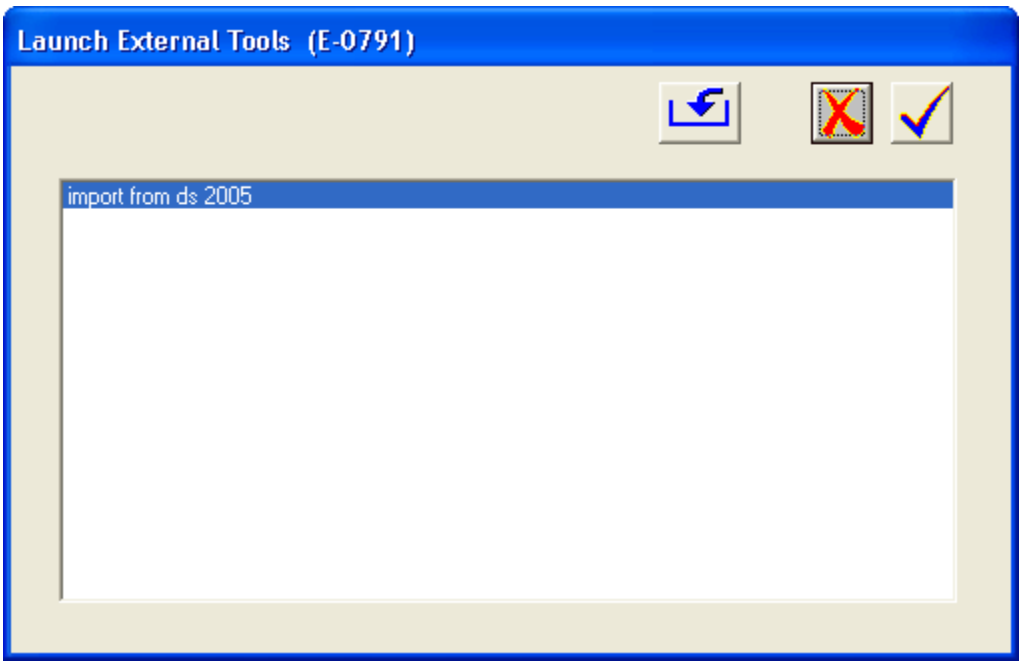
Click on the LAUNCH A CUSTOM FILE button on the toolbar in the center of the screen. This is the blue-green 'L' icon that resembles the Excel icon:



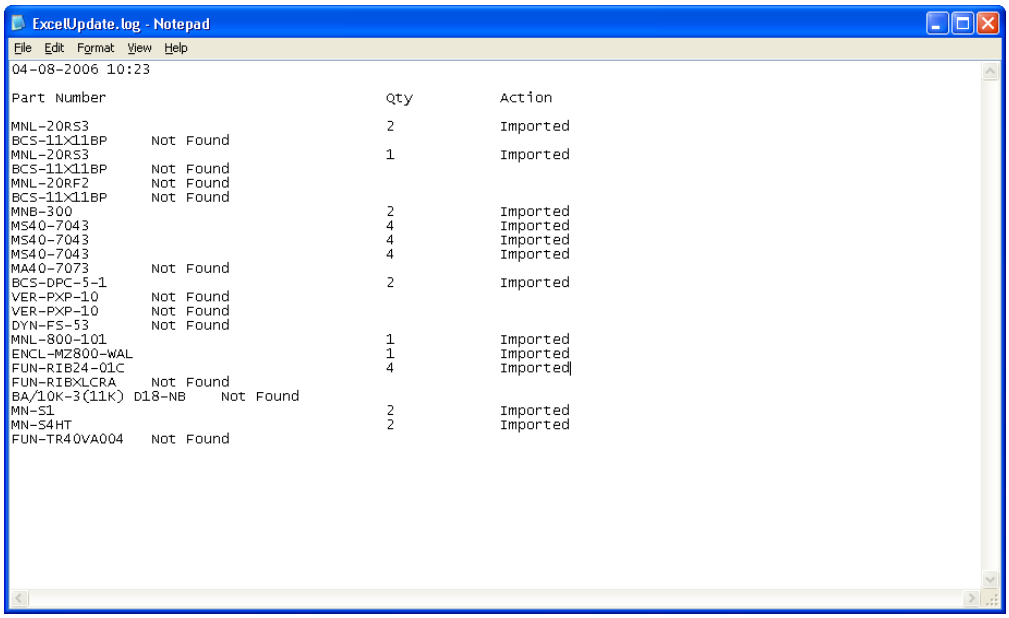
Concerto Suite will display the following message:



The Excel file will be opened. Review the part list and close it. The LAUNCH EXTERNAL TOOLS dialog will be displayed:



Click on the IMPORT icon (the blue arrow pointing into the open box). Concerto will display a list of the parts it could find in its database:



Click on the Cancel (red 'X') button in the LAUNCH EXTERNAL TOOLS. This does not cancel the action, but instead finalizes it. The imported parts should appear in the Data Entry screen (you may need to click on that screen to force it to update).

Note About the Parts Databases

Concerto will only import parts that it can find in its database, and only based on matching the Part Number. In general the base parts lists distributed with Designer Suite 2005 and Concerto Suite are the same, but if you have custom parts added to Designer Suite 2005 that are not in Concerto, they will not import. You would need to add them to Concerto Suite's database separately.

33. Integrating with WorkPlace Tech

If your Designer Suite 2005 drawings contain shapes representing controller devices that can be programmed with WorkPlace Tech (such as the I/A Series LON and BACnet devices), you can use the information contained in these shapes to generate template applications as a starting point for developing the application program in WorkPlace Tech.

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*Note: This feature will work only with WorkPlace Tech Version 5.3 or later. WorkPlace Tech does **not** have to be installed on the same machine as Designer Suite 2005.*

Overview of the WorkPlace Tech Integration

The purpose of this feature is to take the information about one or more devices from a Designer Suite 2005 project and use it to build a corresponding WorkPlace Tech application file for each device.

- Designer Suite 2005 can create a new WorkPlace Tech project that contains the applications, or the applications can be added to an existing WorkPlace Tech project.
- You can select the devices individually, viewing the list by Designer Suite 2005 drawing file or by Designer Suite systems as organized by the Site Manager.
- You can have the applications created immediately (if WorkPlace Tech 5.3 is installed on the same machine as Designer Suite 2005) or generate an import file that can be run through WorkPlace Tech 5.3 on another machine.

An I/O control object (Analog Input, Analog Output, Binary Input or Binary Output) will be created for each I/O point defined in the Designer Suite 2005 controller shape.

- Each I/O control object will be automatically be linked to the appropriate physical point.
- The name of the I/O control object will be based on the software tag specified in the Designer Suite 2005 controller shape.
- The point type and limits will be set according to the Designer Suite 2005 I/O Point or Sensor shape specified in the drawing.

In addition, the application will include:

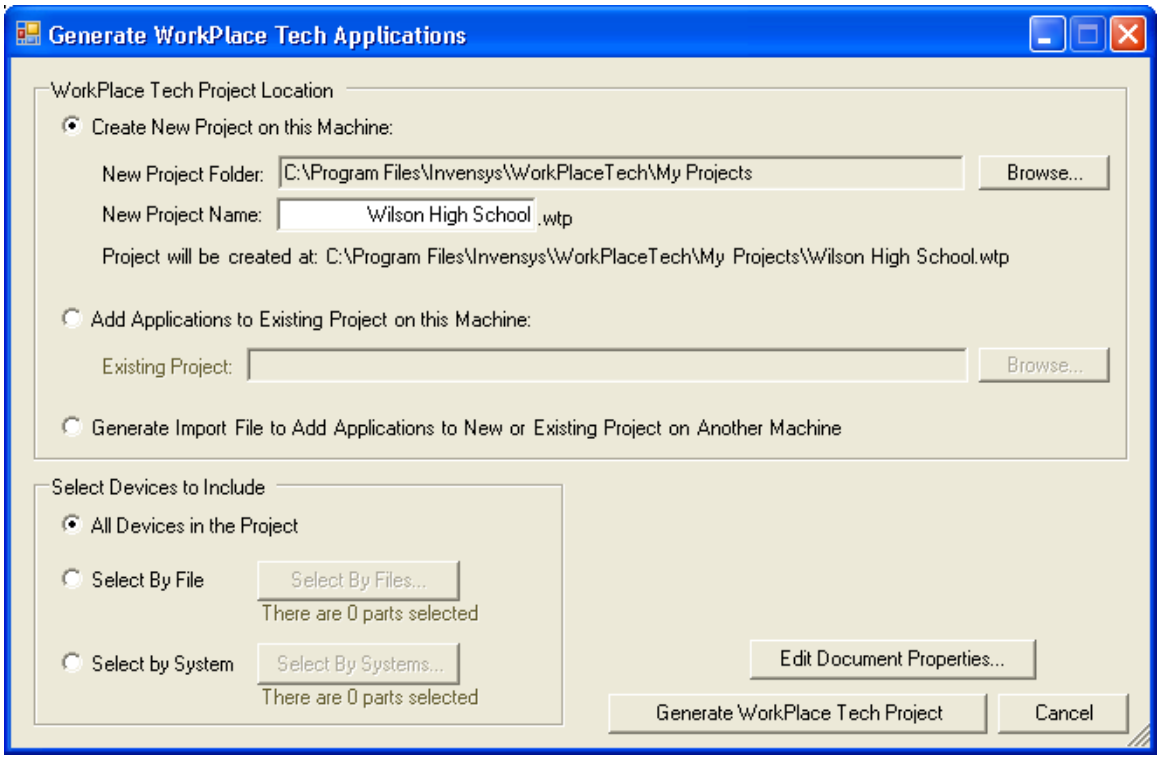
- A reference to any S-Link sensor specified in the Designer Suite 2005 drawing.
- A control object for any Digital Expander Cards shown in the Designer Suite 2005 drawing.
- Title Block property values carried over from the Designer Suite 2005 Project Properties, and customizable at the time the applications are generated.

This feature is designed to utilize the information specified in Designer Suite 2005 and transfer it to WorkPlace Tech as a starting point for application development. It cannot:

- Generate any logic within the application.
- Read the application project back in to update any changes to the I/O points.
- Regenerate the application once it has been edited without overwriting any changes made by the user.

Selecting the WorkPlace Tech Project

To generate WorkPlace Tech Applications for the devices in your projects, select TOOLS→GENERATE WORKPLACE TECH APPLICATIONS…

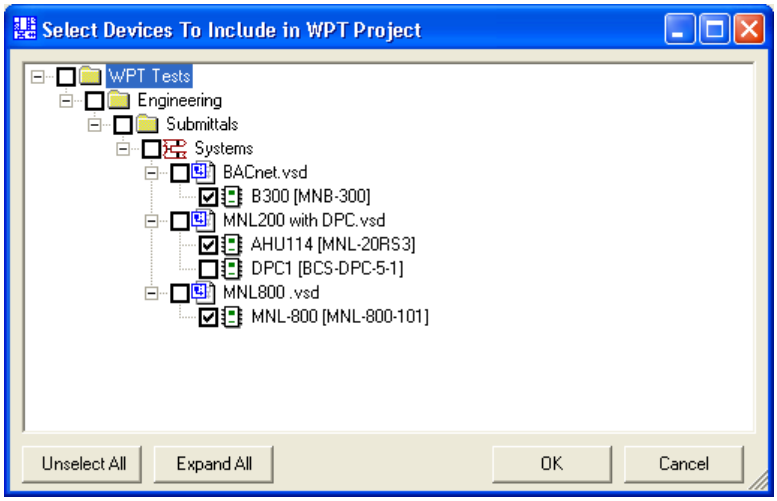


- To generate a new WorkPlace Tech project on the same machine, select the CREATE NEW PROJECT ON THIS MACHINE radio button, select the folder in which to generate the project and specify the name of the new project file.
- To add the generated applications to an existing WorkPlace Tech project on the same machine, select the ADD APPLICATIONS TO EXISTING PROJECT ON THIS MACHINE radio button and browse to the existing WorkPlace Tech project (.wtp) file.
- To generate a WorkPlace Tech import file (.wxp) to create a new project or add applications to an existing project on another machine, select the GENERATE IMPORT FILE … ON ANOTHER MACHINE radio button.

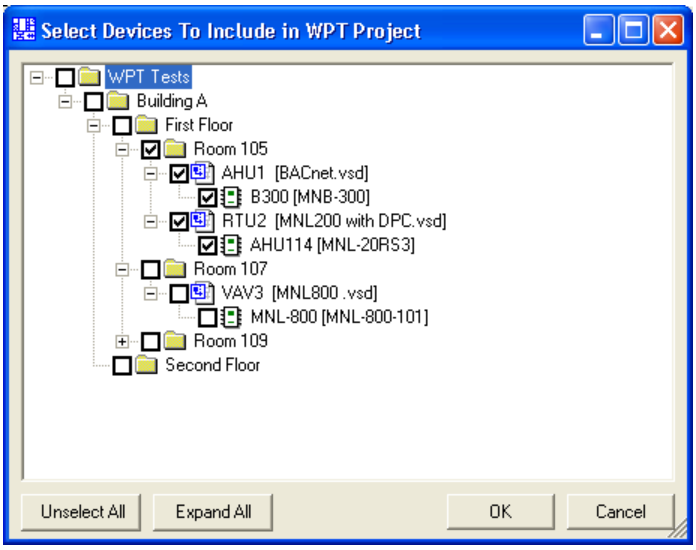
Selecting the Devices to Convert to Applications

An individual WorkPlace Tech application file will be generated for each selected device in the currently open Designer Suite 2005 project.

- To generate an application for each device in the project, select the ALL DEVICES IN THE PROJECT radio button.
- To select the devices by viewing them within the tree of Designer Suite 2005 drawing files, choose the SELECT BY FILE radio button and then click the SELECT BY FILES… button.

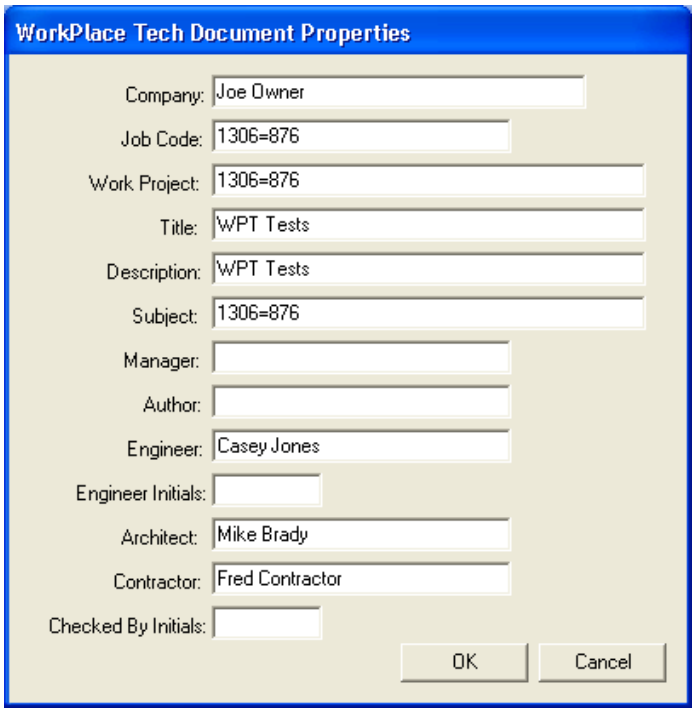


- To select the devices by viewing them within the Designer Suite 2005 Site Tree, which shows all the systems and areas in the project as organized with the Site Manager utility, choose the SELECT BY SYSTEM radio button and then click the SELECT BY SYSTEMS… button.

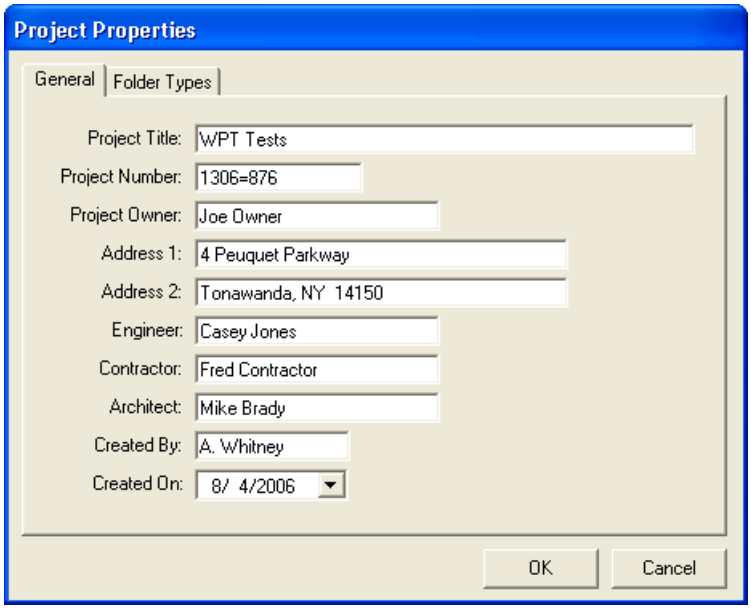


Selecting the WorkPlace Tech Document Properties

To review and update the information that will appear in the title block of the generated WorkPlace Tech applications, click on the EDIT DOCUMENT PROPERTIES… button.



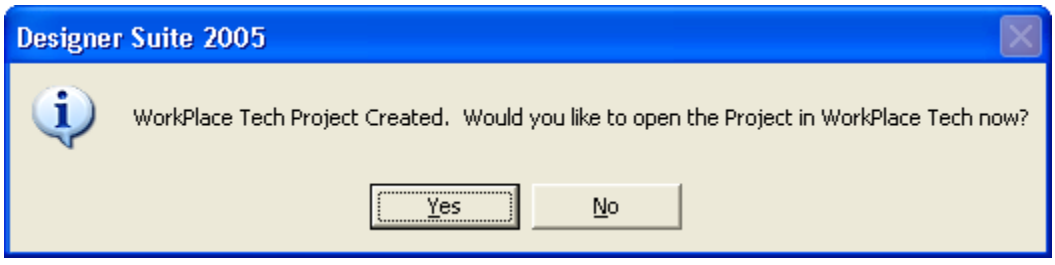
Some of the fields are carried over from the Designer Suite 2005 Project Properties, which are initially entered when the project is created in Designer Suite 2005, and can be edited by selecting VIEW→PROJECT PROPERTIES from the Project Explorer:



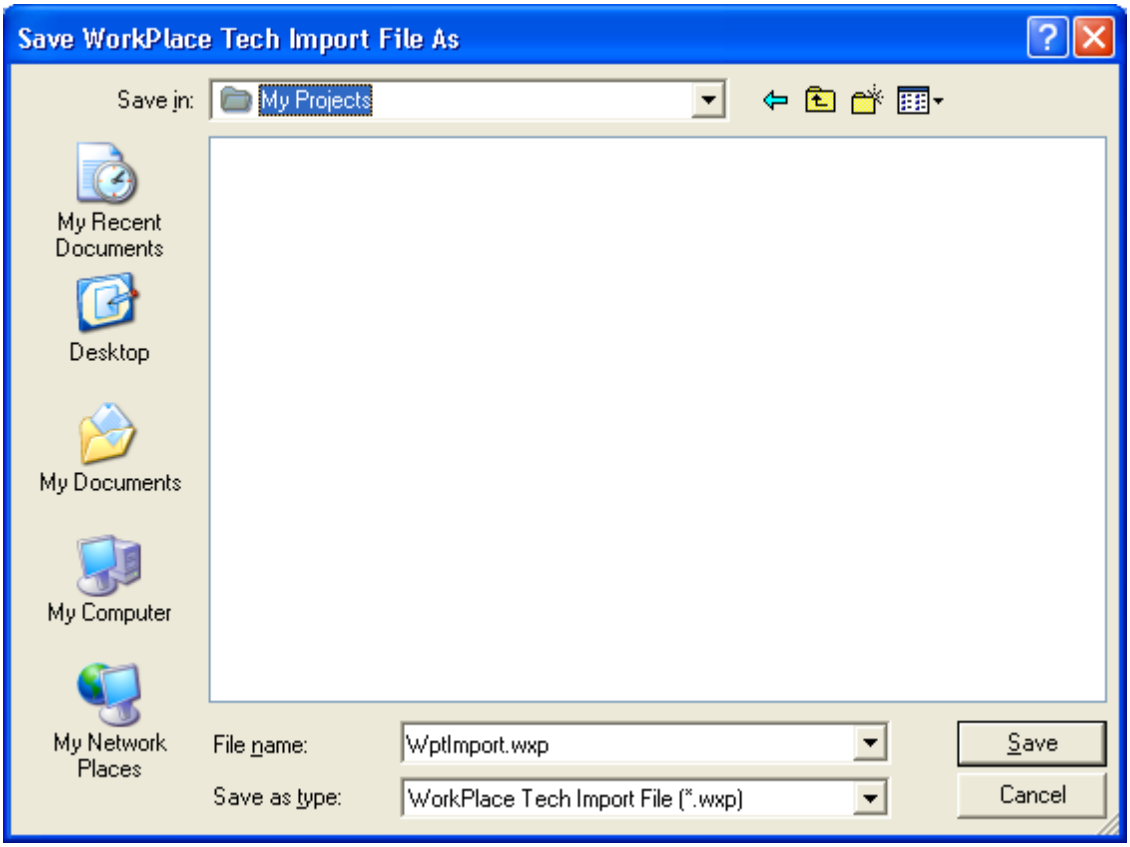
Creating the WorkPlace Tech Applications

After you have selected the WorkPlace Tech Project and the devices to generate, click the GENERATE WORKPLACE TECH PROJECT / GENERATE WORKPLACE TECH APPLICATIONS / GENERATE IMPORT FILE button.

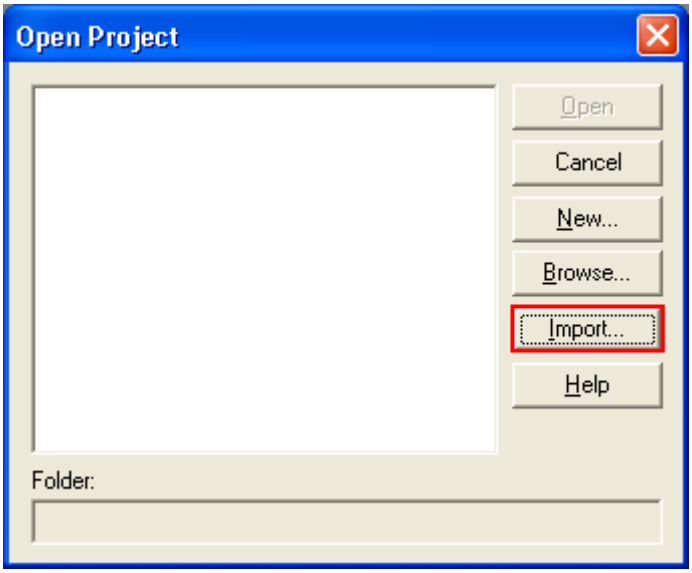
If you are creating the applications on the same machine, WorkPlace Tech will be launched and fed the information needed to create the project and/or applications. When it has finished, WorkPlace Tech will shutdown. You will then be given the option to re-open the WorkPlace Tech project:



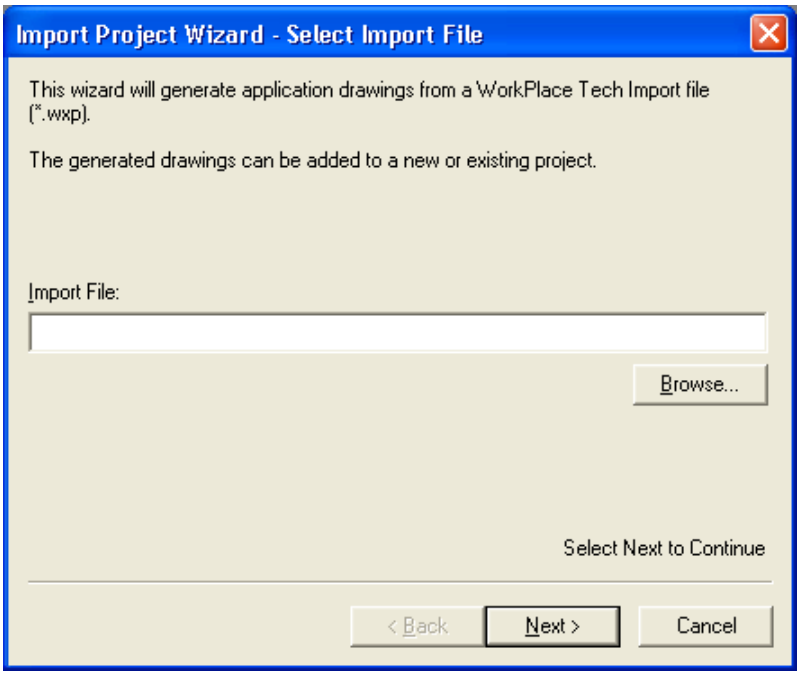
If you are generating an Import File, you will be prompted to save the .wxp file:



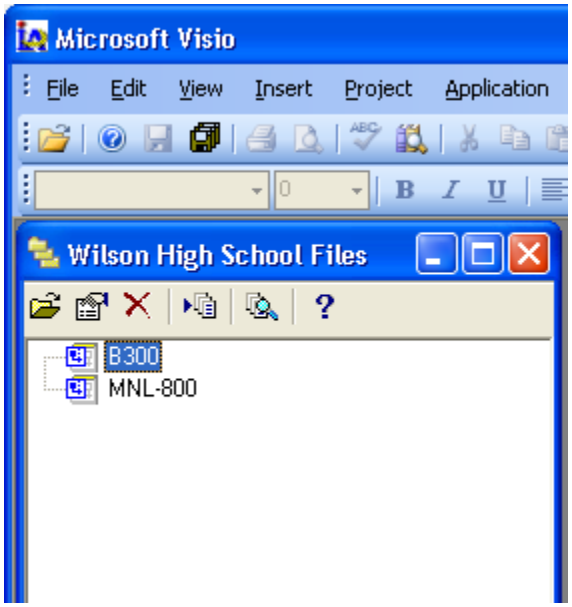
You will then need to transfer the generated .wxp file to another machine running WorkPlace Tech 5.3 or later, and from its Open Project dialog click on the new IMPORT… button.



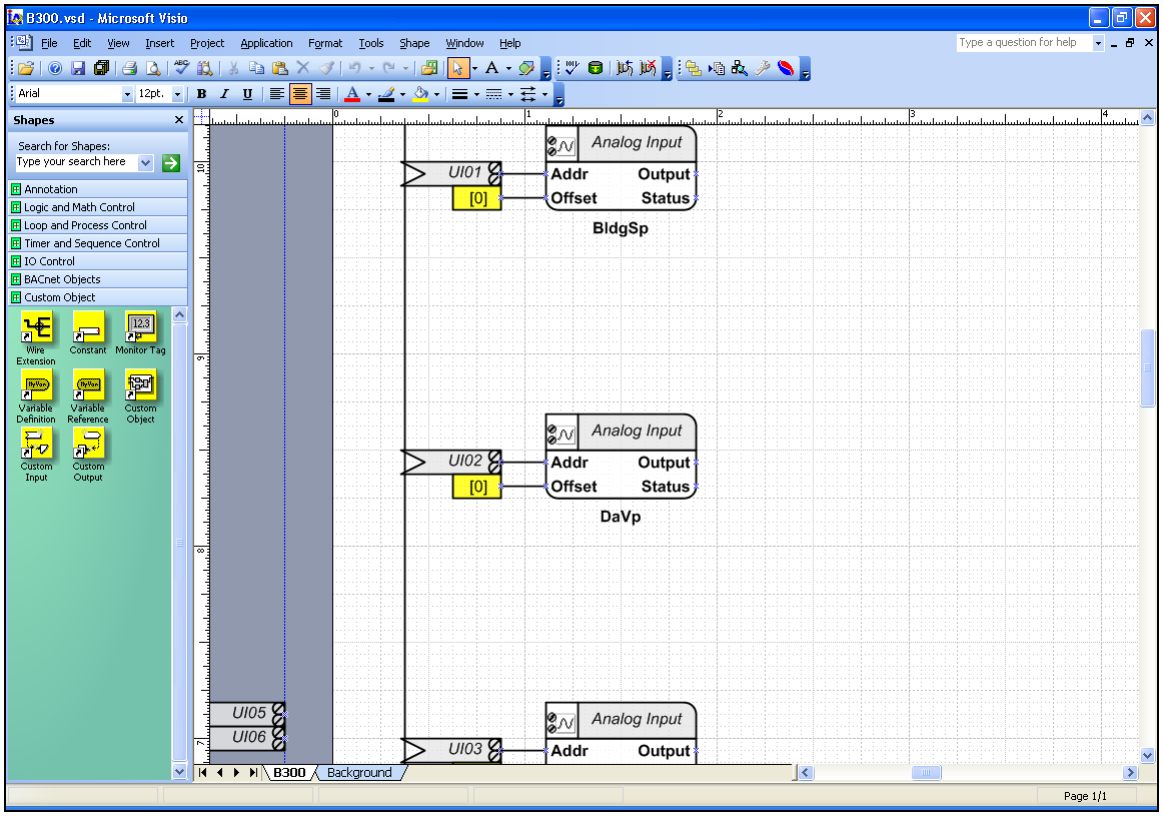
You will then be prompted for the import file and asked how and where you want to create the project and applications:



Once the generation or import is complete, the WorkPlace Tech Project folder will show the applications that were generated. They will be named with the Bill of Material tag of the corresponding Designer Suite 2005 shapes for the controller devices:



If you look at an application, you will see the I/O control objects that were created:



You can now begin to create the logic for the application.

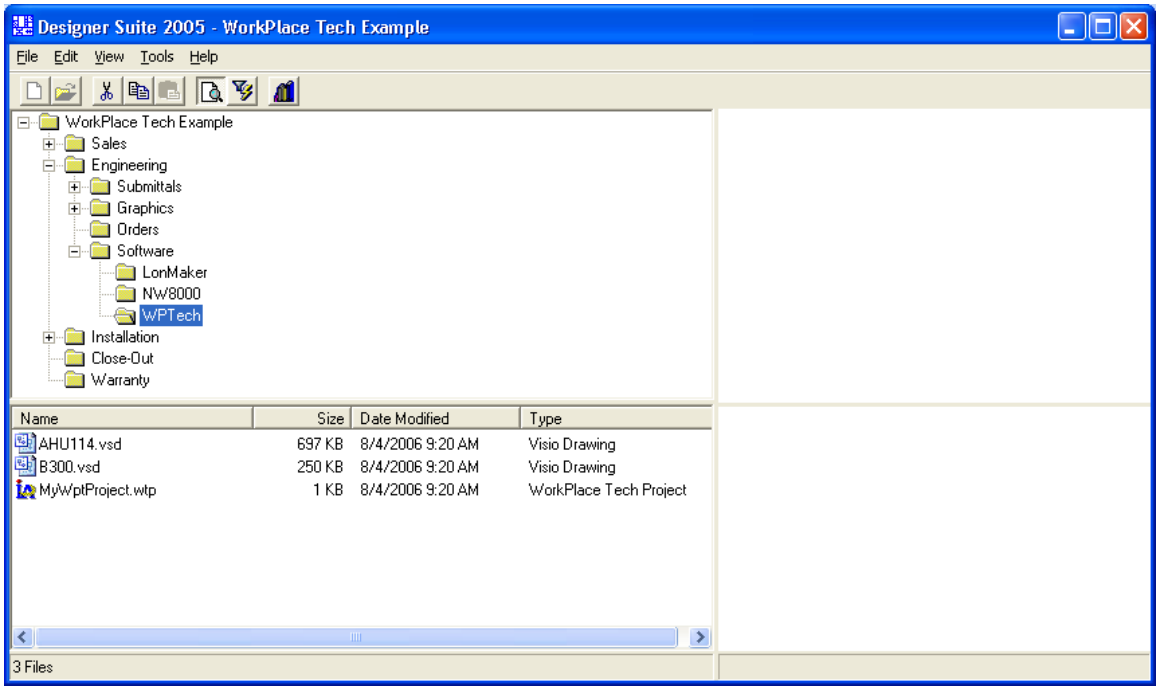
Typical Of Systems and Smart Charts

In Designer Suite 2005, you can indicate that a system is used multiple times in a project by setting the Typical Of value for the system containing the device (refer to the earlier chapter on *System Names and the System List*). If only the Typical Of value is set, Designer Suite 2005 will still only generate a single application for the system, named for the controller's Bill of Material tag.

If, however, you want to generate a separate application for each instance of the controller in a Typical Of scenario, you should create a Smart Chart for the device, which allows you to specify a separate Bill of Material tag for each instance. In this case the list of devices available will include each of the individual names specified in the Smart Chart. Refer to the earlier chapter on *Smart Charts* for more information.

Launching WorkPlace Tech from Designer Suite 2005

You can choose to store your WorkPlace Tech projects within the Designer Suite 2005 project structure (for instance, in the *Engineering\Software\WPTech* folder included in the default folder profile):



- While older versions of Designer Suite 2005 would rename folders added by other applications (prefixing them with folder type codes, such as '00'), this will no longer occur. You can therefore safely store the WorkPlace Tech project folder in Designer Suite's without problem.
- You can open the WorkPlace Tech project by simply double-clicking the .wtp file in the file list.
- Designer Suite 2005 will force you to close any open Designer Suite 2005 drawings before launching WorkPlace Tech.
- Designer Suite 2005 will remove its stencil path from Visio's stencil path list before opening WorkPlace Tech, ensuring that there will be no conflicts and that Designer Suite's stencils are not shown while editing the WorkPlace Tech application in Visio.