

TOOLDESIGNER

ToolDesigner 2014 Release Summary

November 2014

Overview

ToolDesigner 2014 is major release that includes enhancements as well as customer requested software modifications and corrections. This release summary briefly describes the software changes for this release to ExpertCAD 3D and ExpertCAD.

Platform Support

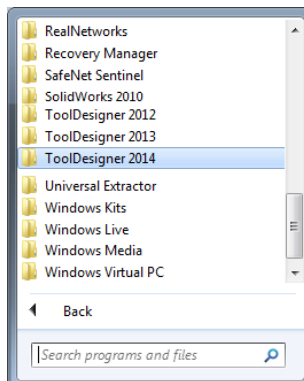
This is the first release that supports a 64-bit edition of ToolDesigner in addition to the 32-bit edition. If you are running a 64-bit operating system, you have the option of installing either edition. The table below lists the certified and supported operating systems for 2014. The full regimen of quality assurance testing has been performed on these platforms and any problems or defects with AMT software related to the operating system will be repaired:

Operating System	32-bit	64-bit	Minimum Revision Level
Windows 8.1	✓	✓	8.1 and 8.1 Update
Windows 8	✓	✓	All
Windows Server 2012	N.A.	✓	R1 & R2
Windows 7	✓	✓	Service Pack 1
Windows Server 2008 R2	✓	✓	All
Windows XP*	✓	✓	Service Pack 3
Windows Server 2003*	✓	✓	Service Pack 2

*This will be the final release that will fully support Windows XP and Windows Server 2003. Future releases will not prevent installation on these operating systems however no formal quality assurance will be performed to assure that the software will indeed install or run properly.

Installation

As always, a new release of ToolDesigner is installed as though it is a new application. It is not necessary to remove any older version of ToolDesigner from your computer. The installation program will not overwrite applications programs from any previous installation of ToolDesigner. A separate program group – ToolDesigner 2014 – is created and shown in the Windows start menu:

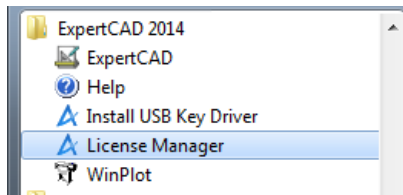


This Windows 7 computer has older versions of ToolDesigner installed side-by-side with the ToolDesigner 2014 release.

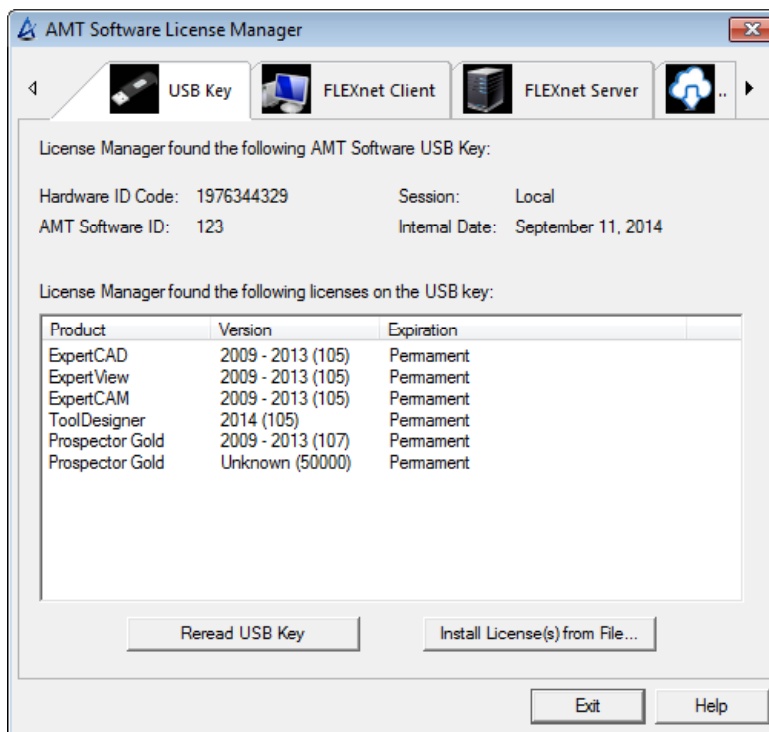
There are no changes to software licensing. Your current USB key or floating license will allow the 2014 version to run as well as all previous versions.

License Manager Application

A new application program – License Manager – is included as part of the program group in the start menu:

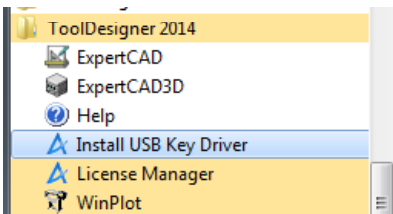


License Manager shows you the status of all your licenses. Separate tabs for USB license keys, floating licenses (client and server) and cloud licenses show the current state for that particular license enforcement mechanism:



Installing the Sentinel USB Driver

Also added to the program group is an entry to install the driver for the Sentinel USB key:



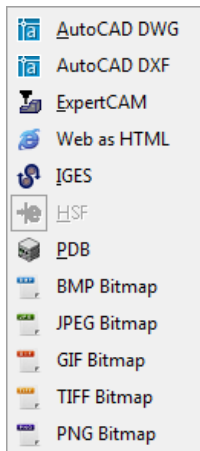
Normally this is done (if necessary) when the software is installed however there have been cases where the driver fails to install. The License Manager application will report if the driver is missing. If this is the case, login as Administrator and choose Install USB Key Driver from the program group in the start menu to install the driver.

Exporting Drawings as Bitmap Images from ExpertCAD & ExpertCAD 3D

Export of bitmap images has been overhauled to produce results that are more consistent and provide for better image quality. Several defects and issues with the previous implementation of bitmap output have been addressed with this revamped implementation.

This feature is available in both ExpertCAD and ExpertCAD 3D. In ExpertCAD 3D, the view that is currently active is used to project the design into 2D space prior to generating the image.

New options for the type of image to export have been added:



BMP Bitmap (.bmp) - Windows standard 24-bit color bitmap image.

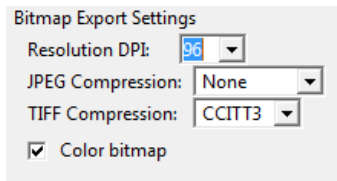
JPEG Bitmap (.jpg) – A compressed image format conforming to the JPEG standard. Defaults to a 24-bit color bitmap.

GIF Bitmap (.gif) – Graphic Interchange Format. A compressed image format supporting a maximum of 8 bits per pixel color.

TIFF Bitmap (.tif) – Tagged Image Format. Color and black and white output is supported along with standard compression options.

PNG Bitmap (.png) – Portable Network Graphics format defaulting to 24-bits per pixel color.

Options for writing a bitmap image have been added to the Import/Export tab in the Tools/Settings property sheet in ExpertCAD and the File I/O tab in ExpertCAD 3D:



Resolution DPI is the dots per inch for the image you wish to create. By default, the screen resolution is used which is typically 96 DPI.

JPEG Compression specifies the degree of compression. This is a selectable tradeoff between storage size and image quality.

TIFF Compression allows for the selection of the type of compression to use for the image: LZW, CCITT3, CCITT4, Rle and none. CCITT3 and CCITT4 compression can only be used for black & white images (i.e. you must disable the Color bitmap switch if you choose either of these forms of compression).

Color bitmap – if this switch is off, the output is to be 1 bit per pixel black and white image regardless of the type of image generated. If enabled a color image is produced if the format supports it.

A number of text buffers and primitive commands have been added to allow the output to be fine-tuned if needed by adding commands to your ExpertCAD.cfg or ExpertCAD3D.cfg file:

```
Command: set-bitmap-linewidth <line style> <width> [<line style> <width> ...]
        Alters the line width used for the different line styles. The units are in inch
        or metric depending on the system of units in effect at the time the command is
        used. The default is .008" (.2032 mm) for a all line styles except for style 1
        which is .016" (.4064).
```

```
Command: what bitmap-linewidths
        Lists the current line widths for each line style.
```

Command: set-bitmap-dashpattern <line style> <on> <off> [<on> <off> <on> <off>]
Sets the dash pattern for a line style. The <on> <off> sequence is in units that are 16ths of a pixel. For example, a style 2 line is: 96 32 96 32 96 meaning 6 pixels on, 2 off, ...(repeats)...

Command: what bitmap-dashpatterns
Lists the current dash patterns in use for all line styles.

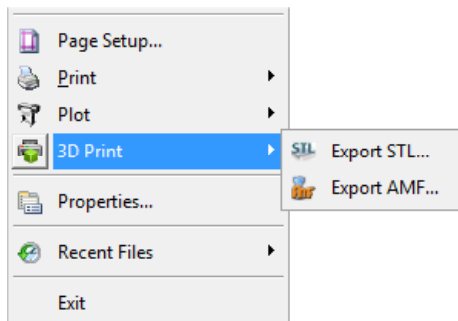
Command: set-bitmap-margins <left> <top> <right> <bottom>
Sets a margin around the drawing to be output. Units are in inch or metric depending on the current system of units. Defaults to .1" (2.54 mm).

Printing & Plotting

3D Printing from ExpertCAD 3D

3D printing is a process of creating a 3D part by laying down one layer of material at a time. The software applications that are used to create the output data that drives 3D printers take as input a 3D model in either STL format or AMF format. Both STL and AMF data formats represent a mesh of the part data. This mesh consists of a set of very small triangles that approximate the actual surface of the model. From this mesh the software provided by the 3D printer vendor cuts sections through the data to find the regions that need to be filled with material for each layer of material.

In ExpertCAD 3D you can choose to output your design data as either STL or AMF format:



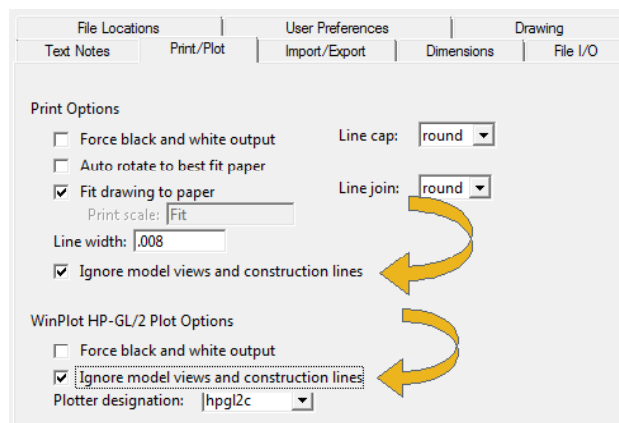
STL data is an ASCII format that contains only the triangles that approximate the design. These STL files can be quite large.

AMF data not only contains the triangles but also the color information. AMF data is a compressed format to save disk space.

The choice of STL or AMF is largely governed by which format your 3D printer software will accept.

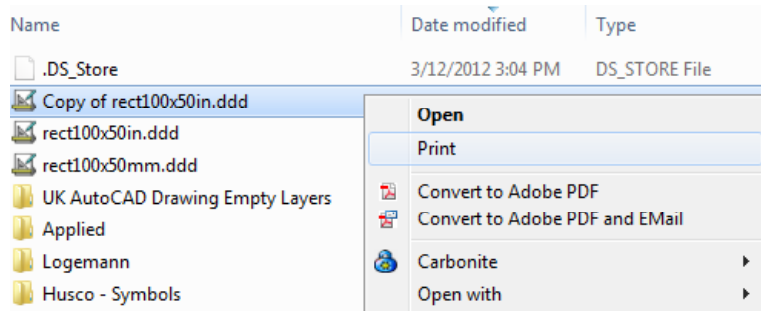
Omitting Model Views and Construction Lines in ExpertCAD

Printing and plotting of drawings will ignore model views and construction lines by default. Previous versions of ExpertCAD would always output these entities. It's usually the case that the outlines of model views and construction lines are not wanted when producing hardcopy output. If you wish to have these entities output, disable these switches in the Print/Plot property sheet:



Printing Directly from Windows Explorer from ExpertCAD

The default extension for an ExpertCAD file .ddd is has always been associated with the action (verb) Open to allow a .ddd file to be opened by double-clicking on it or right-click and choosing the Open menu item from the popup menu. For 2014 the verb Print has been added to allow you to print a .ddd file by choosing Print from the popup menu in Windows Explorer:



The print dialog will be posted allowing you choose which printer and associated options for that printer. All other related settings used are those that were last established in the Print/Plot tab of the Tools/Settings property sheet.

Defect Corrections

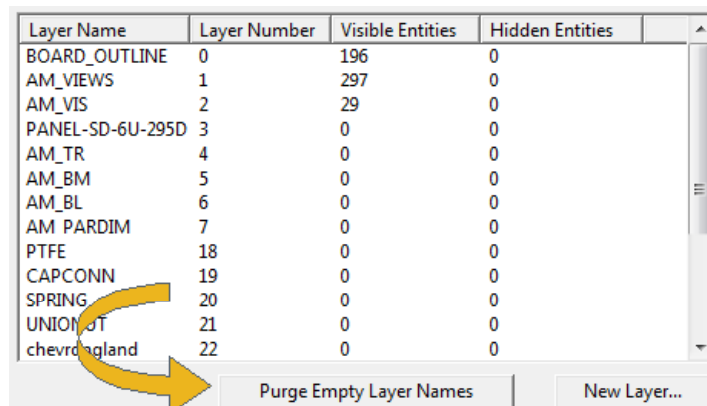
WinPlot has been corrected to use the default style (ds=) plotcap entry when plotting arcs that do not have an associated line style (aXX=) plotcap entry. This only affected plotcap entries that do not support color (i.e. entries that do not end with a capital C).

If you use the Browse button in WinPlot to select a file to plot and make a mistake by picking a file of the wrong format, the program would post an "improper argument" error if the Browse button clicked again to choose the correct file to plot.

ExpertCAD 3D has been modified to correct a printing problem where certain trimmed surfaces would cause a segmentation violation.

Purging Layer Names for Empty Layers

A new feature has been added to the Layer Manager dialog for both ExpertCAD and ExpertCAD 3D to allow named layers to be deleted if there are no corresponding entities associated with a particular named layer.



ScriptLink Macro Language

Scroll/no Scroll for Edit Controls in Dialogs

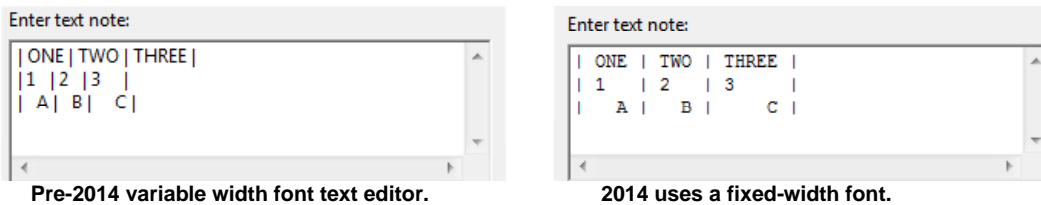
The flag that allows for scrolling in a text box control in a dialog has been corrected to allow for or prevent the text from scrolling when it overflows the allotted area. If bit 0 in the flags parameter for the primitive command `panel-textbuf` is set (i.e. set to 1) then the text is allowed to scroll. If this bit is zero then the text will not scroll. Examples:

```
// allow scrolling
panel-textbuf mgmt 1 1 50 (Drawing number: ) DWG_NO 1;

// prevent scrolling...
panel-textbuf mgmt 1 1 50 (Drawing number: ) DWG_NO 0;
```

Font for Text Edit Controls in Dialogs

Dialogs with a text editing control (`panel-textedit`) have been revised to use a fixed width font by default to make it easier to align text items into columns:



By default, the fixed-width font Courier New is used for text edit controls. This font can be modified by setting the text buffer `PANEL_TEXTEDITOR_FONT` to the font of your choosing in your `ExpertCAD.cfg` file.

Internet Connectivity

A new primitive command: `http-read <http request>` has been added to ScriptLink. This command sends an HTTP formatted request to a web server, reads the response and publishes the output for redirection. This interface allows you to develop custom macros to connect to cloud-based PLM/PDM systems or any other web-based service. The http request is of the form:

```
http://host [ : port ] absolute path [ ? query ]
```

where:

- host - the domain name to connect to.
- port - optional port number to use. Default port is 80.
- path - path to the data source to read from.
- query - parameters to pass to the data source.

Examples:

Read information about the configuration of PHP services on the web site for `amt-software.com`. Publish the data as an HTML file in `c:\temp` directory:

```
set PHP_INFO `(http-read http://amt-software.com/phpinfo.php)
buf2file PHP_INFO c:\\temp\\php.html
```

Run a PHP program named divide.php on the web server. This simple PHP program takes 2 numbers and returns the result of dividing the first by the second. This is the source for divide.php:

```
<?php
$numerator = $_GET['numer'];
$denominator = $_GET['denom'];
if(empty($numerator) || empty($denominator))
{
    echo 'No numerator and/or denominator.';
    exit(-1);
}
$answer = $numerator / $denominator;
echo $answer;
exit(0);
?>
```

The call to this program from ScriptLink:

```
set HTTP_REQUEST_METHOD GET
http-read http://www.amt-software.com/divide.php?numer=88&denom=11
```

produces the output: 8

The text buffer `HTTP_REQUEST_METHOD` defines how variables are to be sent. By default, the POST method is used. If you prefer to use the GET method, change the value of this text buffer to the string GET.

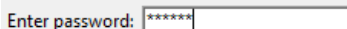
The text buffer `INTERNET_CONNECTION` is a boolean text buffer to indicate if the computer has an internet connection. A value of true means that there is a connection; false means no connection.

Secret Prompts

There are 2 methods to secretly enter a response to a prompt in ScriptLink. In a dialog definition, the a panel-textbuf item can be programmed to hide the characters entered by setting the 3rd bit of the flags field to '1' (i.e. set flags to 4 if this is the only option you wish to use):

```
panel-textbuf PassWordGet 1 1 25 "Enter password: " PASS 4
```

Creates a text edit item in the dialog that responds like this:



Enter password: *****

Characters you type are replaced by a '•' symbol to hide the real data you are entering.

A new primitive command - password-prompt – has been added to post a dialog to capture one item of input from the user in a secretive manner:

```
password-prompt <x> <y> <w> <prompt> [<default> <title>]
```

Where:

<x> <y> - screen coordinates in pixels of the upper left corner of the dialog placement.

<w> - width of the dialog in characters.

<prompt> - the prompt to appear before the text edit control.

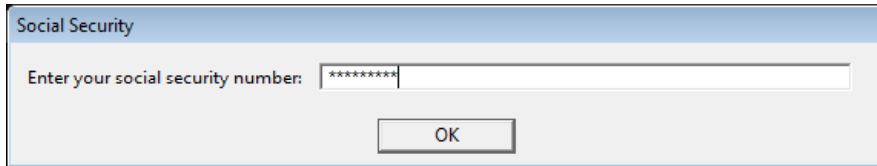
<default> - a default value to be entered in the text edit control.

<title> - text to appear in the title bar of the dialog.

The output from this command is the actual character string entered into the text edit control and can be redirected to a text buffer.

Example:

```
password-prompt 20 20 30 "Enter your social security number:" "" "Social Security"
```



Miscellaneous

The copy-file primitive command would fail to copy a file if the destination file exists. This has been changed so that it will succeed (if possible) regardless of whether the destination file exists or not.

A new command – md5 <string> - has been added to ScriptLink. md5 is a widely used cryptographic hash function producing a 128-bit (16-byte) hash value expressed as a 32 digit hexadecimal number. This is useful for encoding a password or checking for data integrity:

```
md5 "AMT Software"  
ce19f2f1c8a93d227
```

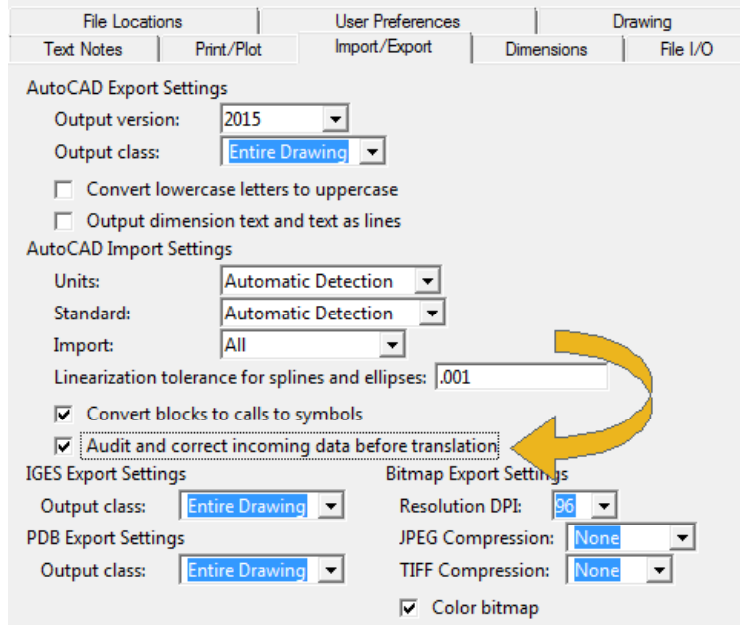

AutoCAD Interface

AutoCAD 2015 Support

The AutoCAD translators – acad2ddd.exe and ddd2acad.exe – have been updated to handle files for AutoCAD 2015.

Audit and Correct Feature

A new option has been added to the Tools/Options/Import Export property sheet in ExpertCAD to cause the AutoCAD translator perform an audit of the incoming AutoCAD file and correct errors in the data if possible:



Enabling this switch performs essentially the same function as the AUDIT command in AutoCAD. By default this switch is disabled. Enabling this switch will cause translation to be somewhat slower.

Maintenance

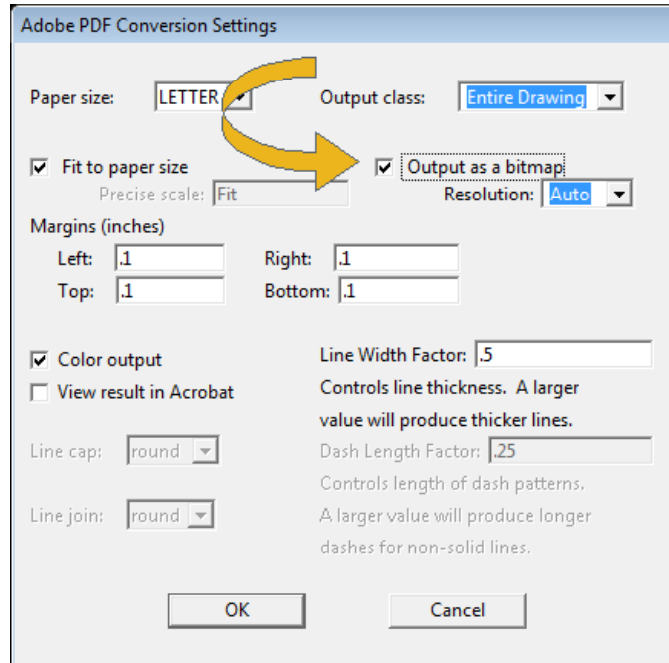
Importing AutoCAD data files with that contain one or more improperly named blocks has been modified to check for the case where a block name starts with a space character. A block name can have one or more spaces in the name however the space character cannot be the first character. This would cause a crash in previous versions. This problem has been corrected so that the translator will automatically fix the block name prior to translation.

If the temporary directory has one or more spaces in the path name, importing AutoCAD files would fail. This problem has been corrected to allow any valid path to be used for the temporary directory name.

PDF Output

Bitmap Output Option

A new option has been added to ExpertCAD and ExpertCAD 3D for PDF output to cause generate the PDF document as a raster image instead of a vectors:



The image of the drawing that is embedded in the document is a JPEG with quality set to maximum (minimum compression). The resolution of the image (DPI) can also be specified. By default (the Auto setting), a bitmap of the highest resolution possible is produced by starting at 300 DPI and working to lower resolutions until it is possible to produce an image (memory constraints and the size of the drawing may require lower resolution than 300 DPI).

Maintenance

Editing a file in ExpertCAD 3D that has workplanes defined but are not named would cause a segmentation violation. This problem has been corrected such that the unnamed workplanes are discarded on input.

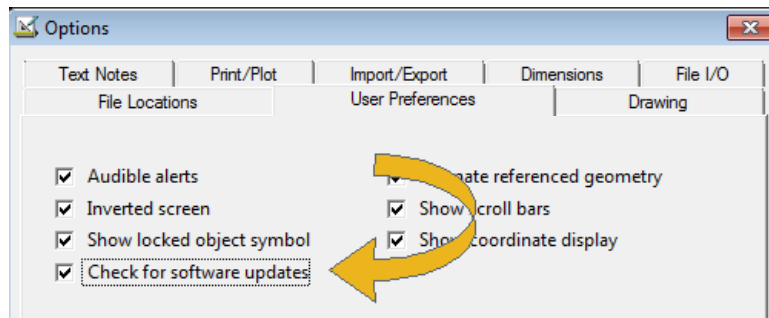
Cut & Copy from ExpertCAD 3D into ExpertCAD could cause arcs in 3D to turn into full circles in 2D. This problem has been corrected in ExpertCAD 3D so that arcs are always preserved.

When writing a 3D design to 2D, arcs that are not in the plane of the 2D view being written are always linearized to the best possible tolerance. This corrects a problem where arcs would sometimes appear faceted in 2D because the tolerance used for linearization was too large relative to the radius and sweep of the arc.

Improved error handling for file translations in ExpertCAD to ensure that if there is a problem converting a file, an error regarding the problem is always issued. In certain circumstances, the translation would fail but no error was reported.

The Recent Files menu list in the Files menu has been revised to omit files that are no longer on disk or otherwise inaccessible.

The Check for Updates feature will automatically check to see if an update is available when the program starts. This may take a few more moments for the program to start. If you do not wish to check for updates, disable the automatic update switch in the Tools/Options/User Preferences property sheet:



New text buffers have been added to ExpertCAD to provide alternatives for how the arrows indicating the direction of a line are drawn:

KCURVE_ARROW_LENGTH - the length of the arrow in model units (defaults to 0.6")

KCURVE_ARROW_WIDTH - the width of the arrow in model units (defaults to 0.4")

By default, the arrow is scaled like any other entity as you zoom in and out of the drawing. If the zoom scale is very small, ExpertCAD will make sure the arrow covers at least 6 pixels in length or width to prevent it from virtually disappearing entirely. The arrow size can also be a fixed size regardless of the scale of the display, by setting the text buffer `FIXED_SIZE_KCURVE_ARROW` to true. There are no provisions in the user interface to adjust the arrows; add the appropriate commands to your ExpertCAD.cfg file to effect the needed changes.

Angular dimensioning will now allow a 180 degree angle to be dimensioned in ExpertCAD. Previous versions would not allow this because the vertex of the dimension could not be determined.

The offset line feature in ExpertCAD has been corrected for a discrete case that could cause a segmentation violation where end points of an arc embedded in a line are incorrectly positioned.

The HTML help has been revised to work properly with Microsoft IE11 web browser.

Resolved Software Requests

When you report a problem or request an enhancement, our customer service representative will input your request into our software lifecycle management system and give you an ID number. Listed in the table below are the ID number and a synopsis of each record from our system that has been discharged for this release.

Record ID	Synopsis
SRX00001	Editing this file in ExpertCAD 3D causes a segmentation violation.
SRX00002	Support the Print feature in the context menu when you right-click on a .ddd file in Windows Explorer.
SRX00003	Changing the temp directory in the Tools/Options/File Locations property sheet to a directory with spaces in the name causes translation of AutoCAD files to fail.
SRX00004	When translation of an AutoCAD file fails in ExpertCAD, an error message is not always presented to the user that a failure has occurred.
SRX00005	The SHOW_LOCKS text buffer is always defaulting to true regardless of what the user sets for User Preferences in the Tools/Options property sheet in ExpertCAD.
SRX00006	When temporary files are created, the path to the temporary directory set in the Tools/Options/File Locations property sheet is not always used.
SRX00007	The render application in ExpertCAD 3D is not working correctly when the window is closed.
SRX00008	Add the ability to remove layer names in ExpertCAD 3D that do not have any entities associated with the named layer.
SRX00010	Provide a native 64-bit edition of ToolDesigner.
SRX00013	Add the ability to output a TIFF format bitmap.
SRX00016	Add a method to adjust the width of lines for printing that is independent of line dash lengths.
SRX00015	Provide a native 64-bit edition of ToolDesigner.
SRX00018	WinPlot will not allow the selection of a different file if the first file you choose is not of the right format.
SRX00020	The ScriptLink panel-textbuf primitive is not honoring the flags field setting that prevents horizontal scrolling.
SRX00024	Color of text notes is not being maintained when exporting the drawing as a .bmp (Windows bitmap) file from ExpertCAD.
SRX00028	Use a fixed width font in the text edit control instead of the default variable width font.
SRX00029	Add a way to enter a secret prompt to ScriptLink.
SRX00031	This event definition in a configurable post is causing a segmentation violation during post processing.
SRX00038	This AutoCAD file will not translate because a block name begins with a space character.
SRX00039	Add the ability to audit and correct AutoCAD files on input.
SRX00043	The F1 keystroke is not causing the Help to be posted.
SRX00044	The ScriptLink copy-file primitive command will not overwrite a file if it already exists.
SRX00045	Add an option to save the drawing as a bitmap when generating a PDF file.
SRX00048	The text buffer KEEP_PROF in ExpertCAD 3D is reset to the default regardless of the setting in the configuration file.
SRX00050	If an empty file is picked for editing, the wrong error message is posted in ExpertCAD.
SRX00051	The F1 key is not posting the HTML help from ExpertCAM.
SRX00052	Changes made to the temporary directory in the Tools/Option property sheet are not being saved to the ExpertCAD-Setup.cfg file.
SRX00053	If the temporary files directory path has one or more spaces in the name, opening or inserting an AutoCAD file will fail.
SRX00054	Add the ability to write .bmp, .gif, .png, .tif and .jpg files from ExpertCAD 3D.
SRX00055	Arcs in 3D are turning into circles when Cut and Pasted from 3D to 2D.
SRX00056	Linearization of arcs when writing from 3D to 2D can produce faceted arcs in 2D.
SRX00057	The recent files list in the File menu should not include files that are no longer accessible.
SRX00058	Automatically check for an update on program start.
SRX00063	Deleting a command from the sequence editor dialog in ExpertCAM causes an error.
SRX00064	The Grab Edges along Blank feature in ExpertCAD 3D for electrode design is causing a segmentation violation in ExpertCAD 3D in this example.

SRX00065	Printing this design from ExpertCAD 3D using the front view is causing a segmentation violation.
SRX00068	ExpertCAD is not prompting for an update to symbol definitions if a file is opened by double clicking on it or drag & drop.
SRX00070	Add a way to control the size of the arrows drawn when showing the direction of a line in ExpertCAD.
SRX00072	Ignore model views and/or construction lines when plotting and printing drawings from ExpertCAD.
SRX00073	Add the ability to dimension a 180 degree angle in ExpertCAD.
SRX00075	Add the ability to purge named layers which don't correspond to any entities.
SRX00076	Add support for AutoCAD 2015 files.
SRX00077	Offsetting this line in ExpertCAD is causing a segmentation violation.
SRX00079	The filter surfaces feature in ExpertCAD 3D does not finish and sometimes crashes when filtering the surface data in this file.
SRX00080	Certain settings established in the Tools/Options property in ExpertCAM are not being restored when a new session is started.
SRX00081	Dimension setting to do dual dimensioning (inch & metric) is not being saved properly to the ExpertCAD-Setup.cfg file.
SRX00084	The Cut & Select class operator in ExpertCAD is failing in this example.
SRX00085	Radial dimensions are missing when this old ExpertCAD drawing file from a 7.x version is edited.
SRX00088	Backup after 'n' number of changes switch in the Tools/Options/File IO property sheet in ExpertCAD is not being initialized properly when this feature is enabled.
SRX00103	ExpertCAD 3D cannot convert this file to VDA format.
SRX00106	ExpertCAD 3D cannot import this VDA file.
SRX00107	The Draw/Body Lines... feature in ExpertCAD 3D is not producing the correct output for the top view with horizontal and vertical lines specified.