DownStream CAM350 14.0 Release Notes

Build: 1501
Date: 4/18/2019

What's New?

This document describes the new features, enhancements and defect fixes in this Release:

Release Summary

CAM350 14.0 is a major update. CAM350 14.0 has been converted to 64 bit and now uses a new common database which it can share with BluePrint 6.0. Both products now render design data in 3D. CAM350 14.0 has significant updates to its user interface using Microsoft Windows latest ribbon protocols and many of the CAM350 Editors have been updated and improved. There is a new Stack Up Visualizer, 3D PDF export, and many other new features.

Installation and Licensing

There is a new 64-bit License Manager and License required to run the CAM350 14.0 and BluePrint 6.0 license.
The installer for the client software (CAM350 14.0 and BluePrint 6.0) will create new folders and you can run both your previous release (CAM350 12.2 and BluePrint 5.2) and your new Release software side by side on the same PC if you wish.
For many users your installation should be as simple as this:

1. Run the installation executable
2. Choose “Install License File” to install the new License Manager.
    a. If you are an existing customer on maintenance, choose “Install license from media” to install your new license file.
    b. If you are a new user or your license is not found on media, get your new license from DownStream, copy it to your PC and then choose “browse to select” you license file.
3. Choose “Install DownStream Products” to install the new CAM350 14.0 and BluePrint 6.0 Beta software on your PC.

If you are installing to a Virtual Machine or have any questions, reference our DownStream Installation Guide or contact us at support@downstreamtech.com.

System Requirements

Your PC should meet or exceed the following requirements:

- OS: Windows 8, 8.1, 10 (64 bit only)
- Processor: 2GHz or faster
- Memory: 8GB+
- Disk Space: 1GB available
- Graphics: Discrete graphics card with on-board memory preferred (for best 3D performance)

Note: Please be aware that CAM350 14.0 and BluePrint 6.0 are 64 bit applications and will ONLY run on 64 bit Windows 8 and 10. DownStream has discontinued support of Windows 7.

CAM350 14.0 New Functionality

- ✓ 64 bit database support
- ✓ 4K resolution support
- ✓ 2D Graphics - New net name and pin number visibility when zoomed in
- ✓ 2D Graphics engine - New Infotips
- ✓ Screentips for Menu ribbons
- ✓ New 3D Graphics engine and Features
- ✓ New 3D PDF Export
- ✓ New GUI, ribbons and dialogs (over 100 dialogs redesigned)
- ✓ Updated 2013/2016 UI backstage
- ✓ Improved Streams/Analysis
- ✓ Auto-Import
- ✓ Stack Up Visualizer
- ✓ Online Help rewrite and RoboHelp HTML (like BluePrint)

CAM350 14.0 New Functionality Details

64 bit Shared Database

CAM350 and BluePrint now share a 64 bit database. Our products can now import and work with very large CAD databases with the only restrictions being the processor and physical memory in your PC. You can also create a database with CAM350 that can be opened by BluePrint and vise a versa. If you import CAD data in CAM350 and save to our common database format (DPD), then you can open that file in BluePrint and work with the imported CAD data without having to re-import the data.

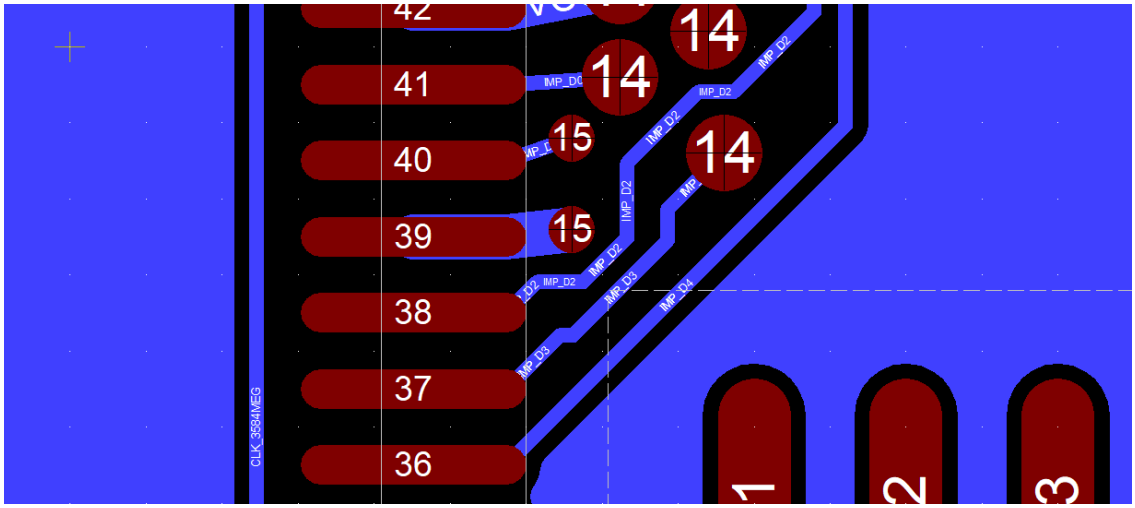
Note: CAM350 14.0 and BluePrint 6.0 are 64 bit ONLY. We have discontinued support for 32 bit. Microsoft's 64 bit OS was introduced on Vista in 2006. All new PC's and laptops are installed with 64 bit processors and Windows OS. CAM350 14.0 and BluePrint 6.0 take full advantage of today's PC power and performance.

4K Resolution Support

CAM350 and BluePrint now support 4K resolution screens. "4K" refers to a horizontal screen display resolution in the order of 4,000 pixels (for instance, 4096x2160). 4K is used by many of today's most popular laptops. 4K support in a software program requires smaller, high resolution icons and modifications to dialogs and panes that are too large for a smaller screen.

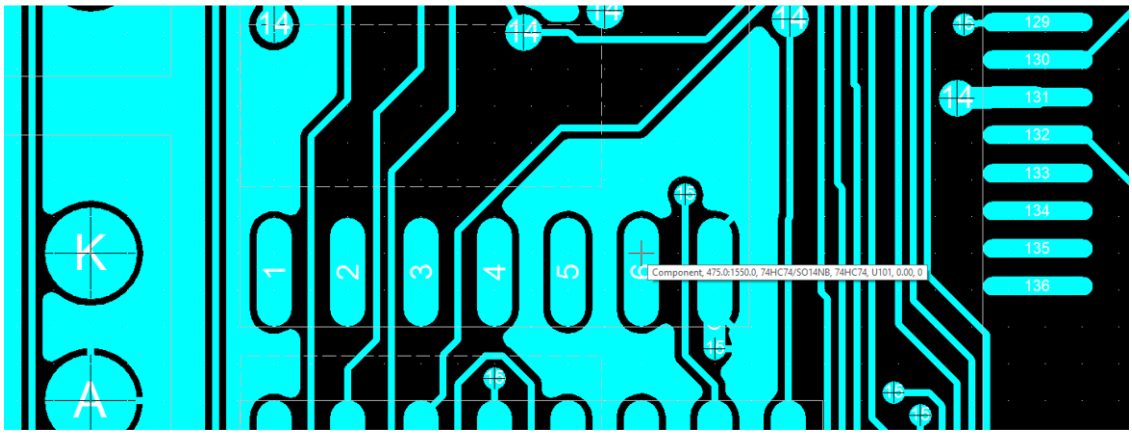
2D Graphics - New net name and pin number visibility when zoomed in

CAM350 display of CAD data now displays net name and pin numbers when you are zoomed in to the design.



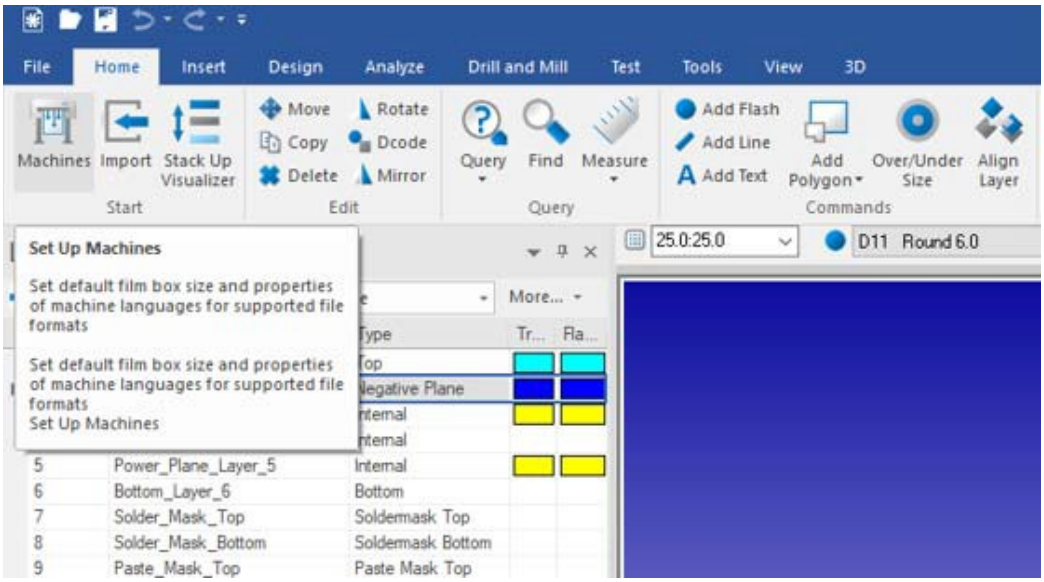
New Infotips

As you move your cursor over design data in your CAM view a Infotip will appear with information about the object under your cursor.



New Ribbon Screentips

As you move your cursor over the Ribbons a Screentip will appear with information about the command under your cursor.



New 3D Graphics Engine and Features

CAM350's 3D Design View lets you visualize a 3D model of your imported design data. The 3D Design View is rendered automatically from your imported ODB++, IPC2581, or PADS ASCII design data. You can also render a 3D model using unintelligent Gerber and NC data after leveraging CAM350's new automatic import processing. Components are rendered based on their silkscreen outline and height information. The board, components, pins, drills, vias, nets and copper are all rendered in 3D. Because the 3D visualization is rendered directly from your imported CAD data it is updated in real time when a design ECO occurs and new data is imported.

You can interact with your 3D Design visualization by changing the rotation, zoom, camera angles and other features found on the **3D ribbon** and by using your mouse.

Mouse Commands	Rotate, Zoom, Move
Zoom large increments Center Mouse Button Scroll	Zoom in and Zoom out. Uses large increments to zoom in/out.
Zoom small increments Ctrl-Center Mouse	Zoom in and Zoom out. Uses small increments to zoom in/out.

Button Scroll	
Move Select Right Mouse Button in 3D Design View, hold down and drag cursor	Moves 3D image.

3D Ribbon - Perspective	Home, View, Flip Board, Previous View, Next View
Home	Brings 3D image back to Home position in 3D View. Typically centered on first layer.
View	If you think of the 3D PCB image as a cube, you can use the View command to display the Top, Bottom, Front, Back, Right, and Left sides of the cube.
Flip Board	Flips the Board
Previous View	Shows the 3D image before your most recent change was made
Next View	If you have selected Preview View, Next View will bring your display back to the state before your Previous View command.

3D Ribbon - Axis Cut	The 3D image can be cut by X, Y and Z planes or any combination.
X Plane	Select the X plane button on the Axis Cut group of the 3D ribbon. A rectangle representing the plane will display next to the 3D image. Select and drag the plane into the 3D image to cut the image.
Y Plane	Select the Y plane button on the Axis Cut group of the 3D ribbon. A rectangle representing the plane will display next to the 3D image. Select and drag the plane into the 3D image to cut the image.
Y Plane	Select the Z plane button on the Axis Cut group of the 3D ribbon. A rectangle representing the plane

	will display next to the 3D image. Select and drag the plane into the 3D image to cut the image.

3D Ribbon - Camera	Commands that reflect the view as if you were looking through the lens of a camera.
Move	The display of the 3D image changes based on the position of the camera. For instance, if you move the camera Forward towards the 3D image, the image will get larger as you would expect. If you move the camera Backward from the 3D image then the image will appear smaller.
Pitch	Camera Pitch is the rotation of the camera around the 3D image up/down and right/left.
Field of View	The field of view is the extent of the 3D image that can be viewed through a pre-defined camera lens angle, 90, 45 or 22.5 degrees.
Level	Level brings the camera level (90 degrees) to the Home surface. Level removes pitch, but retains zoom and rotation.

3D Ribbon - Display	Commands that change the display of the 3D rendering
Configure - Wireframe	A 3D wireframe model is an edge or skeletal representation of the 3D image
Configure - Hollow Planes	Displays "see through" planes
Configure - Thickness	Displays planes with thickness from design data, no plane thickness or only the thickness of copper (pcb layer) planes.
Spread	The Spread command creates distance between the layers so that you can see between them. Selecting the Spread button on the 3D ribbon "spreads" one layer at a time. The Spread command is disabled once all layers have been spread.
Squeeze	The Squeeze command "un-spreads" (squeezes) the distance between the layers, one layer at a time. The Squeeze command becomes available when any layer is Spread.
Peel	The Peel command "peels" one layer at a time off

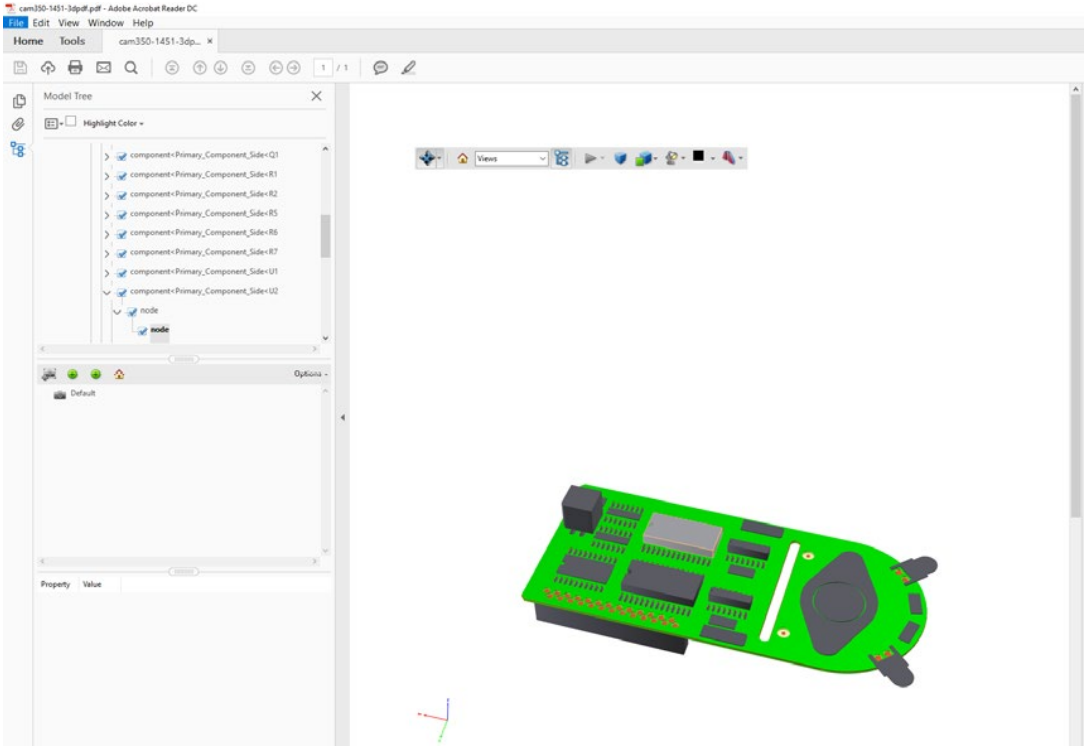
	the 3D PCB image and places it to the side.
Reapply	The Reapply command "un-peels" one layer at a time and places it back onto the 3D PCB image.
Colors Preset	You can define colors and transparency levels for different layer types.
Colors by Layer	When this command is selected your Color Presets are displayed. When this command is not enabled, the colors defined in the PCB View Format pane are displayed.

3D Ribbon - Components	Actions that can be performed on components.
Show	This command toggles Components on/off in the 3D PCB view

3D Ribbon - Utilities	
Screen Shot	The screen shot command will create a bitmap of the image in the 3D Design View window. You can define the name, location and file type to save the bitmap.

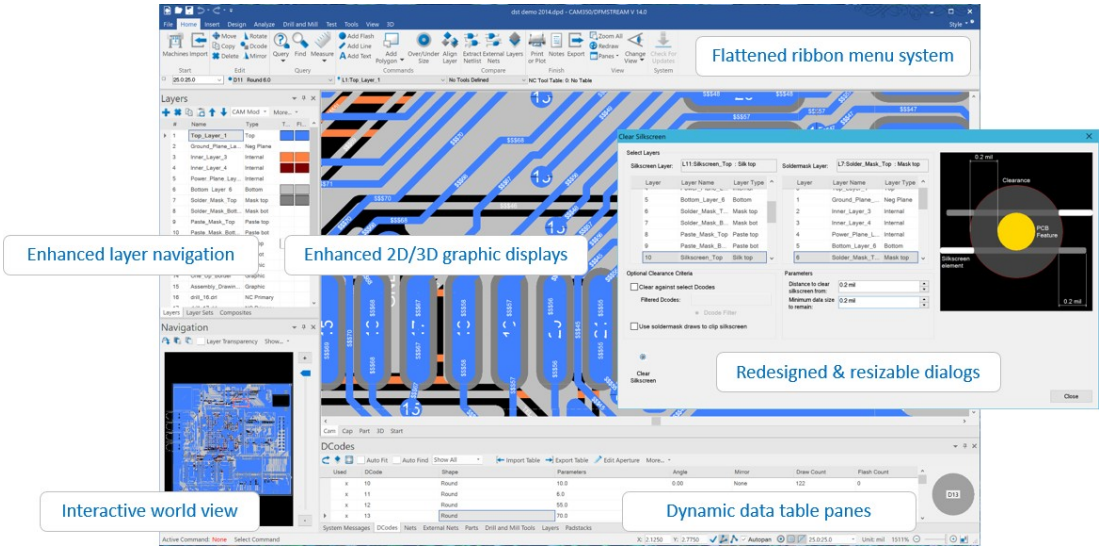
New 3D PDF Export

You can now export your imported CAD design to 3D PDF. The command is found on the 3D ribbon. Your 3D Design image will be exported to 3D PDF with the same camera and visibility settings you have set in CAM350's 3D Design view. Below is an example PDF. In Adobe Reader, you have access to tools like spin, rotate and view, as well as the CAD model tree where you can select a PCB object like a component and have it highlight in your 3D PCB View.



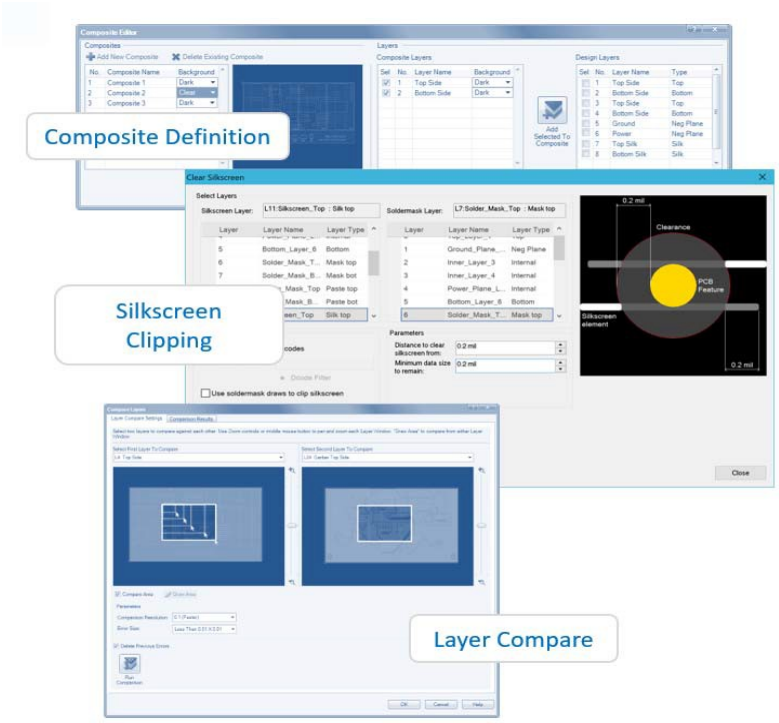
New CAM350 GUI layout, Ribbons, Dialogs and Panes

CAM350 now meets GUI industry standards, leveraging Microsoft Windows ribbon technology, redesigned and resizable dialogs and dynamic data panes.



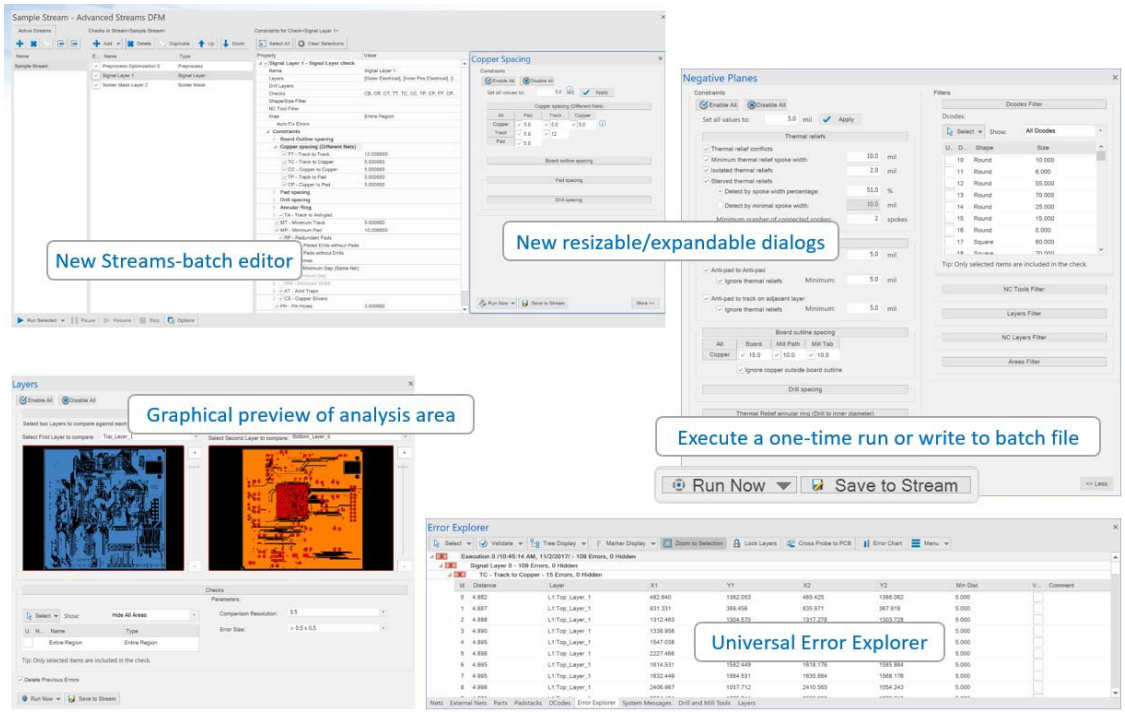
Redesigned dialogs

We redesigned and improved over 100 CAM350 dilogs. They are now more useful. Many can be resized and we've added graphical previews where appropriate. We've also consolidated and removed redundant dialogs to make the GUI more intuitive.



Improved Streams/Analysis

CAM350 comparison and DRC functionality has been improved with all new dialogs, graphical previews of analysis data, a new streams batch process editor, and the ability to run a single check or write to a stream.



Automatic Import

Use Automatic Import as a universal importer of design data in various formats. It expedites the file import process by batch processing a collection of files in a folder versus individual file election in other import operations. Using Automatic Import templates enables more expedient processing of files by matching file names or portions of file names to specific file types.

Automatic import can parse both CAM and non-CAM file types to complete definition of a CAM database. For example, aperature report files can be imported and applied to their respective Gerber files. An IPC-D-356 netlist can be imported to facilitate netlist comparison, bed of nails and flying probe outputs. Automatic import facilitates the definition of a layer stackup and drill layer pairs to arrive at a more robust design database post import. This eliminates the need to perform these steps individually after a file import. These individual definition steps are optional and can be skipped during the automatic import process.

Note: If importing entire designs in ODB++, PADS ASCII, IPC2581, or GenCAD use other file import operations. Automatic Import is intended for batch import of Gerber, NC Drill, NC Mill and other like CAM formats.

File – Import – Automatic Import.

Merged Editor functionality

The CAM, NC, Bed of Nails and Flying Probe Editors have been merged into a common CAM Editor.

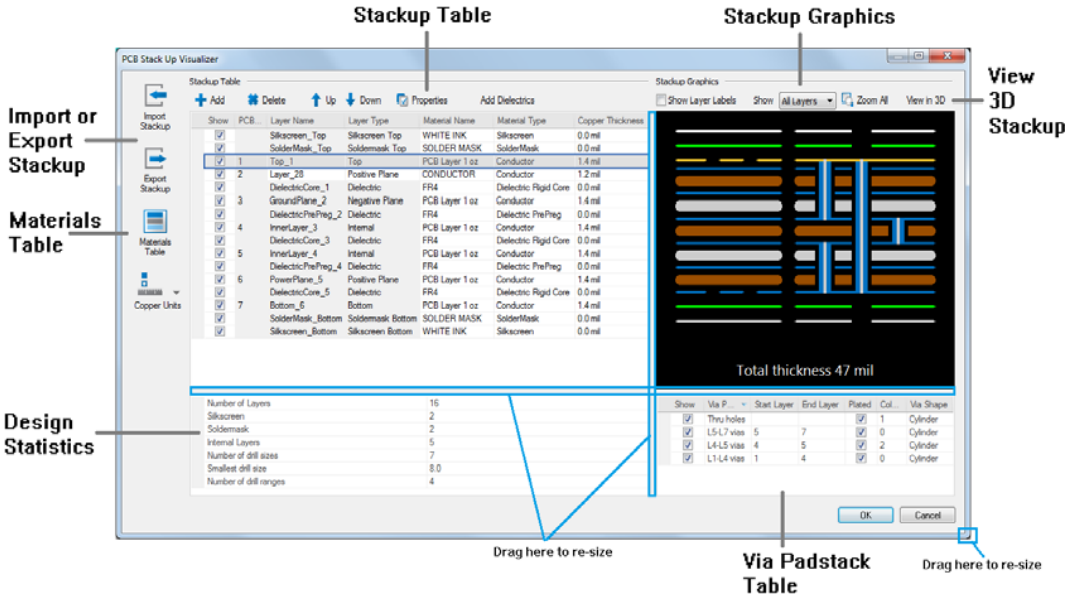
New Centralized Option dialog

Options for ALL Editors have been merged into one Options dialog.

New Stack Up Visualizer

Users can now visually orientate manufacturing files in a new Stack Up Visualizer (SUV). The SUV allows users to order imported manufacturing files in the form of layers in the order of which they are to be implemented in the finished PCB. The stack up layer order allows users to graphically see the PCB in several ways: Tablature, cross section, and 3D representation. Tablature view allows users to see a given manufacturing file as well as its associated attributes that support the manufacturing process including material thickness within a layer table. User may also add dielectric layers and their associated properties for thickness, dielectric constant, material type, etc. to gain a more accurate depiction of the finished PCB. Each layer whether imported or added as dielectric in the layer table is also represented in a graphical cross section that identifies the layers or materials position within the PCB cross section. Applicable changes to Layer table are automatically reflected in the cross section. The stack up can also be visualized as a 3D sample of the finished PCB with accurate rendering of each material layer in the stack up with its respective thicknesses. In all views, the SUV also supports the definition of various NC drill files and their associated layer spans. This combination of both imported layer data as well as via data provides a realistic depiction of the finished PCB based on materials used in the construction process. The SUV also supports the importation and exportation of IPC-2581 Stack Up data to share with your PCB manufacturer. This allows users to accurately model a PCB Stack Up based on materials that are available by a specific PCB manufacturer. The result is that the SUV serves as a “sandbox” that allows both the design and manufacturer to hone in which materials are to be used in the design.

Below is a pictorial of the CAM350 user interface.



Stackup Table
The Stackup Table presents the stackup as a table. Layers in the stackup are presented in top to bottom order and include Solder Mask, Silkscreen, PCB and Dielectric layers.
Here you can:

- Add Layers
- Delete Layers
- Move Layers
- View Layer Properties
- Show Layer Labels
- Automatically Add Dielectric Layers
- Assign Layer Material

1.1.1.

Stackup Graphics
The Stackup Graphics presents a cross section of the layer stackup. Layers are presented in top to bottom order with layer color coding and via drills.

Via Padstack Table
The Via Padstack Table presents one row for each layer set in the design and one row for through drills. Each row is identified by a layer set name.

Design Statistics
The Design Statistics area presents stackup relevant data from the design. Statistical data includes Number of Layers in the stackup, Number of Silkscreen and Soldermask layers, Number of Internal layers, Number of drill sizes, smallest drill size and the number of drilling ranges (or layer sets).

View 3D Stackup
Select View in 3D to view the layer stackup in 3D.

Materials Table
The Materials Table is for managing a library of materials used in the creation of layer stackups. The materials table is a library of PCB fabrication materials and other layer types like soldermask and silkscreen.

Import or Export Stackup
Use Import and Export Stackup to share and collaborate on stackup design. Layer stackups can be exported, reviewed, modified and then imported to update design materials, stackup layers, layer properties and so on.

Retired Features

Macro Recording.CAM350 14.0 will allow you to play existing macros, but you can no longer record. We will be moving to an Automation API with VB scripting capabilities in a future release.

Windows versions. CAM350 14.0 and BluePrint 6.0 will support Windows 8.1 and Windows 10. Windows 7 and earlier releases are no longer supported. CAM350 14.0 and BluePrint 6.0 will ONLY run on Windows 64 bit OS.

Interfaces. CAM350 14.0 does NOT include the following Direct CAD interfaces (Import and Export): PCAD, Accel EDA , TangoPRO, Zuken Visula, and Mentor BoardStation. These interfaces are being retired.

Note: The import and export interfaces for IPC-D-350 are also retired as of the CAM350 14.0 release.

CAM350 14.0 Issues Resolved

Build 1501

Defect ID	Description
61217	Drill paths not set to plating status set in SUV
61239	Cannot add CR in change text control
60903	Cannot change drill type on NC table to backdrill
60902	Support for backdrill on ODB++ import
59234	Pre-process netlist extract errors – ODB++ import error
60731	Draw to flash – interactive to custom failure
61055	Gerber import crash on this file
60749	Gerber export – change file names to layers names failure
59612	Bad mill tab data added in this case
61133	Bed of Nails editor license missing common test features
60840	Layer re-order drops layer
61054	Comp outlines drawn with rotated regular apertures incorrect
60625	Area rules set for 1 check end up in other checks
60631	False copper sliver errors
60624	Min width check failure
60857	Drill Export crash on this design

Build 1496

Defect ID	Description
60691	Failure when selecting Tools Panel
60660	PART_NAME attribute is not used for DEVNAME
60644	Custom Aperture display is incorrect in 3D
60589	Draw to Flash does not convert polygon shapes
60601	Panel Editor incorrect stepped image rotation
60672	Assign NC Table dialog shows incorrect layer numbers
60584	Column headers disappear after dragging
60645	Macro playback failure $ variable incorrectly changes

Build 1491

Defect ID	Description
60570	Coordinate Bar input does not work properly
60436	Seib & Meyer Drill imports incorrectly for Auto Import
60582	DXF Export licensing problem for 070 bundle
60578	Print black and white option not working
60561	Failure on Seib & Meyer 3000 drill export
60560	Design Compare does not retain mapping
60564	Product selection dialog appears twice
60568	Streams execution runs once only
60562	Gerber export incorrect overwrite warning
60581	Drill and Mill decimal input for non-US region doesn’t work
60005	Panel Editor Merge Panel command missing

Build 1485

Defect ID	Description
60365	DFM preprocess results in false errors on this design stream
60298	Error on ODB++ import for this file
60213	PADS ASCII Export improvements
60201	Expedition ODB++ import CAP errors
60199	DFM misses annular ring errors for this design
60198	New drill on track check
60180	Incorrect cap rotation on gerber import causes short
59786	Installation improvements for Virtual Machines
59778	Allow negative values for Mill Tabs
59774	Re-Export of Mill Data gets unexpected results
59708	Gerber to Mill compensation error at plunge point
59239	Missing mask checks do not distinguish via drills from through hole drill
58757	IPC2581 import improvements

How to Contact Us

Please send any defects, feedback or questions to support@downstreamtech.com.

Defects: Please include a detailed description with steps on how to reproduce the defect and attach any media necessary to reproduce the issue.

Feedback: If you have feedback for us about what we could improve or add to the product, even if not a defect, we still want to hear from you. Please send description.

Questions: If you have any questions about the Release software, please contact us through support@downstreamtech.com.

Patents, Copyrights, and Trademarks

Patents

"AUTOMATED PCB MANUFACTURING DOCUMENTATION RELEASE PACKAGE SYSTEM AND METHOD", United States Patent No. 7,409,666 B2

"ADAPTIVE TEMPLATE SYSTEM FOR AN AUTOMATED PCB MANUFACTURING RELEASE PACKAGE SYSTEM", United States Patent No. 8,875,072 B2

Copyrights

DownStream Technologies, LLC, 225 Cedar Hill Street, Marlborough, Massachusetts 01752

Trademarks

We have done our best to ensure that the material found in this publication is both useful and accurate. However, please be aware that errors may exist in this publication, and that neither the authors nor DownStream Technologies, LLC make any guarantees concerning the accuracy of the information found here or in the use to which it may be put.