ViewMate Release Notes

New Features

New features 10.0.30:

- No new features in this release.

New features 10.0.26:

- No new features in this release.

New features 10.0.10:

- See "Changed features" and "Bug fixes" for this release.

New features 10.0.1:

- **"Edit/Move Layers XY Position/Move Layer Tool"**
  A new tool has been added to facilitate layer alignment. The command will activate a tool which consists of two steps:
  ⇒ First the user picks an element in the layer that he desires to move. This is done by moving the crosshair close to the element and then clicking (or pressing Enter), similar to how one selects an element.
  ⇒ Next the user picks the corresponding element in another layer the same way as in the previous step.
  At this point the layer of the first element will be moved so that the first element is now on top of the second element (and hopefully the layers are aligned). The whole cycle can then be repeated again for moving another layer. When done, press Escape to cancel the move layer tool, or deactivate it by clicking on its menu entry. This command has the shortcut key combination Ctrl+Shift+Q.

- **Explicit Units**
  All the dialog items that refer to a coordinate or a dimension now accept numbers followed by optional units, independent of the current units in use. For instance in the "Move Cursor To" dialog box one could enter "2.3cm" for X, even though the current units may be "inch". This would cause the cursor to move to 0.905512 inches. The acceptable values for the units are the same as the ones shown in the "Coordinate Units" box: "inch", "mil", "cm" or "mm" or any prefix of them which is unambiguous (for instance "in" or even "i" will work instead of "inch").

- **"Setup/Preferences/User Confirmation For"**
  confirmation for dangerous operations. A new group of preferences that can be turned on or off. When on, they will cause the corresponding operations to prompt for user confirmation before they are done. Currently two such operations covered:
  ⇒ **Delete Selected**: will prompt for "Edit/Edit Selection/Delete"
  ⇒ **Drag And Drop Layers**: will prompt during a drag and drop in the layers toolbar

These are intended as a safety feature to protect against unintended operations, especially since "delete selected" has a shortcut key (Delete) which can easily be pushed by accident.

More such operations can be added in the future. Please let technical support know which you would like added.

- **"Setup/Preferences/Wheel Forwards Decreases Zoom"**
  user preference For those who are used to have the zoom decrease when the mouse wheel is moved forwards and increase when the mouse wheel is moved backwards.

- **New Shortcut Key Ctrl+Shift+U:**
  to return to last selection criterion picked previously. This is most often picked from the droplist in the Selection Toolbar ("Any", "Pads", etc.). There are many different criteria in that list and many times one wants to alternate between having one particular criterion picked, say "Polygons" and not having anything picked ("Any"). With this new shortcut one can do this from the keyboard only. After picking a criterion ,"U" will pick "Any" and "Ctrl+Shift+U" will bring back the criterion picked before.

New features 9.8.70:

- **Drag and Drop in Layers Toolbar**
  One can now drag and drop layers to reposition them. In the layers toolbar click on a layer and drag it to the desired spot. The insertion mark will be shown before the layer where the drop will occur. The number (and name) of the layer being dragged can be seen in the status line.

- **New shortcut keys (accelerator keys)**
  ⇒ **Ctrl+Space:** for the main view context menu (or mouse right-click)
  ⇒ **Ctrl+Shift+F10:** for "View/Visibility/Layers/Only Visible". This is a command that allows making visible just a group of layers (a comma-separated list of ranges).

- **"File/Import/Gerber" – "Options"**
  A new option has been added to the "File Interpretation" tab: "If data follows M02". It has two possible options: "Make new layer" and "Same layer".
  This applies to the (rare) cases where a file has a Gerber M02 command (End Of Program) followed by more Gerber data. If "Make new layer" is picked, the data that follows is put into a new layer. This is the more common setting (and the behavior of previous versions of the software). Sometimes, when the data that follows belongs to the same layer (and perhaps starts with scratch elements), the "Same layer" setting gives the desired results.

- **D Code Size Rounding**
  In "Setup/D Codes" (F5), the "Operations" menu has a new rounding item. In addition to the existing "Round to closest mil" (or "Round to closest 0.01 mm" in metric mode) there is now "Round to closest 0.1 mil" (or "Round to closest 0.1 mm" in metric).

- **"Edit/Edit Selection"**
  ⇒ **"Paint And Scratch/Raise To Top"**
    A new command that deals with the paint/scratch order of the selected elements. This command will change the polarity order so that the selected elements will be above (on top of) all the unselected elements (layer by layer). All paint elements in the selection remain paint and all scratch elements remain scratch, just that they will come earlier in the paint/scratch order when all elements in a layer are considered. They will be "promoted" on top of everything else and hence guaranteed to be visible.
  ⇒ **"Polygons/F To Polygons"**

A new options has been added to facilitate processing of complicated drawings. It is "Allow Intersecting Holes". This option is only relevant when "Nest Polygons" is checked. It allows for intersecting holes and will merge them to make combined holes.

New features 9.8.50:

- **New Layer Types**
  The following new layer types have been added:

PTH	Drill – Plated Through Hole
NTH	Drill – Non plated Through Hole
BLI	Drill – Blind vias
BUR	Drill – Buried vias
ROU	Routing – generic
RPE	Routing – external plated
RNE	Routing – external non plated
RPI	Routing – internal plated
RNI	Routing – internal non plated
PLA	Plating
SCG	Scoring

New features 9.8.20 / 25:

- **New Selection Criterion**
  A new entry has been added to the selection criteria in the Selection Toolbar. It is called "Scratch Elements" and, when active, will only select/pick elements that have scratch polarity inside a layer. Note that if the whole layer is set to scratch, that will not cause elements in it to be picked.

- "Setup/Preferences/**Splash Screen**"
  Allows enabling or disabling the display of the splash screen at program startup.

New features 9.8.5:

- See "Changed features" and "Bug fixes" for this release.

New features 9.8.0:

- **Inserting Scratch Elements Directly**
  One can now insert scratch elements into any layer.
  Previously, if one wanted to add new scratch elements, one needed to add them to a scratch layer (the whole layer was marked as scratch). While that is still possible, there is a new way to insert scratch elements: the commands "Paint" and "Scratch" in the "Insert"menu. There is also a "scratch" button on the Insert toolbar, which will cause scratch elements to be inserted when the button is depressed (active).
  While scratch mode is active using any of the above commands, any of the elements inserted with the normal insert commands ("Insert/Pad", "Insert/Trace", etc.) will be scratch elements. More precisely, scratch elements will be inserted into positive layers and paint elements into negative layers, the end result being that they will scratch away from copper.
  Note that the "Only" selector next to the layer box in the "Current Element" toolbar will be taken into account (as always the case with insert operations). So, if you want to insert into one layer only, make sure that the "Only" selector is checked.

- **Selecting A Particular Element When There Are Multiple Stacked Elements**
  Sometimes there are multiple stacked elements in the same layer. Often this is the case with stacked pads (perhaps a scratch pad to created a clearance and then a paint pad). Since they have the same center, it was previously difficult to select a desired element (just the scratch or
  just the paint in the example above).
  There is now a new way to do this. By executing the select command repeatedly, the selected element will cycle through all candidates in order and one can stop when the desired element is selected. This means double-clicking repeatedly (or single-clicking repeatedly when the selection tool is active).

- **Layer Colors**
  There are new commands for saving and restoring the layer color setup. The color setup consists of the color index for each layer (a number between 1 and 15, which maps to one of the 15 colors that can be set at any time) and the color composition (RGB) of each of these 15 colors.
  These commands are **"Setup/Layer Colors/Save To File"** and "**Setup/Layer Colors/Restore From File**" and they allow saving and restoring the configuration.
  To make such a setup the default setup (loaded when the program starts) the command "Setup/Layer Colors/Save As Default" should be used.
  Also, the complete color setup is now saved in .bin files. Previously only the layer indices were saved.

- **Distance Measurement**
  There are several changes and new features in the distance measurement commands ("View/Distance").
  ⇒ The distance is now displayed only in the view (next to the cursor). The Screen Toolbar will display relative X and Y displacement from the start of the distance measurement. The screen display also includes the angle from the start of measurement.
  ⇒ The "distance from edge" measurement has been merged into the distance tool. Is it now an option that can be turned on and off ("View/Distance/From Edge"), so there is only one distance tool with two modes.
  ⇒ The command to measure the edge-to-edge distance between two selected elements has been replaced with a tool ("View/Distance/Edge To Edge Measurement Tool"). While this tool is active one can click on two elements (click on first, then click on second) and the edge to edge distance between these two elements is displayed in the status line.

- **Transcoding NC Tools By Descending Size**
  The tools setup dialog ("Setup/Tools Codes" or "Shift+F5") had two buttons for transcoding tools by ascending size. These have been combined into one button "Transcode By Size" with two more methods added to allow transcoding by descending tool sizes also (previously only ascending order was implemented).
  The four methods are: "Ascending", "Ascending By Type", "Descending" and "Descending By Type".

- **"Setup/Preferences/Center On Wheel Zoom"**
  Controls how the zoom happens when zooming with the mouse wheel. When this option is active (checked) the zoom is combined with a pan so that the position where the zoom started becomes the new center of the view.

- **"View/Coordinates Origin/Set Relative Origin"**
  This is a newly added command that sets the relative origin at the current cursor position. It takes the name of the previous "set relative origin tool" (and also the shortcut Shift+R) which is now renamed "Relative Origin Tool" and has no shortcut key. However, it keeps its button on the Screen Toolbar.

- **"File/Import/File Path Options/Current Directory Is Set On Import"**
  This is an options that can be turned on or off. When on, the current directory is set to the path of the filename imported. This can be desirable if one imports files by dragging and dropping (rather than using the File/Import dialog).

- **"File/Import/Drill"**
  A new option (in the "Options" dialog "Data Format" tab) called "Tool diameters in opposite units". When checked, the tool diameter values read in will be interpreted in the opposite units from the ones specified in "Units". The value in "Units" will be used to interpret coordinates. If the file contains unit directives, such as M71, M72, INCH or METRIC, they will of course override any settings from this dialog.
  This is useful for importing files which have the header and the rest of the data in different units, such as diameters in metric and coordinates in English or vice versa.

New features 9.6.91:

- **"View/Visibility/Layer/Board #0 Always Visible"**
  A new option for controlling the behavior of the commands that step the visibility of layers. These are in "View/Visibility/Layer": "Next Layer", "Previous Layer, "Next Board Layer" and "Previous Board Layer". When "Board #0 Always Visible" is checked, then these commands will always cause board layer #0 to stay on (visible) together with the next board layer in the sequence (next or previous).

New features 9.6.81:

- **"File -> Import -> Apertures"**
  A new aperture type, Proteus.inf files, are now supported.

New features 9.6.78:

- **"Edit -> Edit Selection -> Special -> Convert Routing Paths To Traces"**
  This command replaces the selected routing paths with traces, one trace per edge. Previously this command was available only in CAMMaster (and higher) as "Tools -> Routing -> Ungroup To Traces".

New features 9.6.69:

- **Drag The View Using Scrollbars**
  When "View->Preferences->Drag View In Real Time" is checked, dragging the scrollbar boxes will also drag the view in real time. Note that the "Drag View In Real Time" also controls the behavior of dragging the view with Ctrl+Alt+Left Mouse button (this was present in previous versions also).

- "Setup->Tool Codes" (Shift+F5)
  A new command has been added for transcoding tool numbers. It is called "Transcode Selected" and will transcode all the selected tools (which can be contiguous or not) to a contiguous range of tool numbers specified by the user. Of course one can transcode just one tool number, for instance T4 to T9, but also sets like T1, T4, T7 to start at T10, which will cause the transcoding: T1->T10, T4->T11 and T7->T12.

- **"File->Import->"From Layers" Uses Cur Dir"**
  A new setting which applies only to the command "File->Import->From Layers". This command imports several files using the layer names as file names. For names that are not full paths, it is not obvious how to complete the path (which directory they are in). Previously the directory was assumed to be the directory of the jobfile. When

this new option ("From Layers" Uses Cur Dir) is checked, the "current directory" is used instead. The current directory is an operating system dependent concept and it is changed when file browsing dialogs are used. It is usually the last place where a file was saved/exported or opened/imported.

- **"Paint And Scratch->Expose Scratch"**
  Command available in the context menus in the layer toolbar and layer setup dialog (F10). Will correct layers that start with scratch elements (which are invisible). It will add a covering paint rectangle in front of them so as to expose the scratch elements.

New features 9.6.53:

- **Layers Toolbar**
  A new way to quickly turn on or off a range of layers has been added.
  This is done by clicking the right mouse button and pressing either the Shift or Control keys at the same time. If neither of these keys are pressed, then the normal context menu is displayed. However, if any of these keys is pressed, this action will cause instead to change the visibility of the layers ranging from the current layer to the layer on which the right button is clicked. Shift will cause the range to be made visible, Control will cause the range to be made invisible.

New features 9.6.43:

- **"File/Import/Drill & Rout"**
  A new option has been added for importing Excellon files. It is in the "Options" tab of the "Options" dialog. It is called "M00" and controls how M00 statements are interpreted.
  There are three possibilities:
  - "Treat as end of program". This will cause the current program to be terminated and any following data will appear on a new layer.
  - "Ignore". The statement will be completely ignored.
  - "Increment tool". The statement is interpreted as a tool change to the next sequential tool number.

- **Crash Report Generation**
  If the software crashes, a dialog will come up asking whether to email a crash report to PentaLogix technical support. These reports will be investigated by technical support and they help to find and fix the source of the problem.

- **"File/Import/Aperture"**
  A new aperture type "Metric Source" has been added. This aperture type recognizes files that use commas instead of decimal points and has special conversions for an aperture named "SYMB" to targets.

New features 9.6.17:

- This maintenance release has no new features. See "Changed features 9.6.17", and "Bugs fixed 9.6.17" for improvements in this release.

New features 9.6:

- "Edit/Move Layers/Align Visible Layers" (Ctrl+Q)
  A new command to facilitate aligning layers has been added. It incorporates the methods that were available in the old "Edit/Move Layers/Align" (which it replaces) and it adds more methods.

This command works on all visible layers and will try to move some of them so they align with the others. The following methods are available:

1) <u>Pad or trace in a corner of a layer</u>. The corner to be considered can be specified by the user (upper-right, lower-right, upper-left or lower-left). The software will pick (in each visible layer) the element (pad or trace) closest to the corner <u>in that layer</u> and will use them as reference elements. The layers will be moved so that the reference elements end up on top of each other.

2) <u>One selected element in each layer</u>. The selected elements will be used as references in each layers. The layers will be moved so that the selected elements end up on top of each other. If more than one selected element exists in a layer, an error will be reported and the operation aborts. Layers which have no selected elements will be ignored. To select elements, one can use the selection tool (S) or simply double click on an element. Remember that to add to an existing selection one needs to keep the Shift key pressed while selecting.

3) One selected pad whose type is used as a guide. This is the old "Edit/Move Layers/Align" that has been around for quite a while. It requires the selection to consist of just one pad. If pads similar to it (using the additional rules of "D Code Number Only", "Shape Type Only" or "Shape Type And Size") are found in the other layers, the closest to the selected one is picked in each layer and used as the reference for that layer. The layers are then moved so that all these pads end up on top of each other.
This works well only for cases where the layers are not offset by much and there are distinguished pads (such as targets). If all layers have targets, aligning targets is an easy way to do the job.

In each of these cases some layers will be moved and others not. One layer (at least) is always left where it is. For method (3), that layer is the layer that contains the selected element. For methods (1) and (2), the largest number of layers that already match are left standing. If no layers match already or the operation is done on only two layers, then the "current layer" is left standing.

For many cases more that one method needs to be used. Pads can very often be used for alignment, but some layers have no pads (such as silkscreen layers) and so a second step to align them may be necessary (using traces, or selected elements).

- "File/Import/Drill & Rout"
  Added support for importing Excellon commands G32 and G33 ("Routing Circle Canned Cycle") and Sieb & Meyer commands G45, G46 ("Rout A Hole"), G47, G48 ("Rout A Round Card") and G49, G50 ("Rout a Hole (Rectangle)").

- "Setup/D Codes" (F5)
  A new command for selecting elements mapped to a set of D Codes. It is in the menu of the "D Code Table" dialog under "Operations/Select Pads And Traces". For all the picked D Codes in the table (which are highlighted in dark blue) the elements mapped to those D Codes, and in visible layers, will be selected. This allows selecting elements mapped to more than one D Code.

New features 9.4.73:

- **Unmapped** D Codes (of shape type "?") and N type D Codes for which the corresponding tools are unmapped (of type "?") will be displayed as a question mark inside a doughnut. This is to make them easy to recognize when looking at the display. Previously they were displayed as rounds.

New features 9.4.6-65:

- "File/Import/Discard Path In Layer Names"
  Controls how layers are named from file names during import operations.
  When checked, only the file name part will be stored as the layer name and the path part of the file name will be

discarded.

When unchecked, the hole path name will be used, unless the file is in the same directory as the currently loaded jobfile.

- "Setup/Visibility and Display"
  "**Step & Repeat Blocks**". New options have been added for the display of step and repeat blocks. The two options are "Display all details" and "Display outlines only". The new one is the second option. If selected, it will cause all step and repeated data to be displayed on the screen as a boxes, without the detail of the circuit elements inside. This saves time when examining large panels with a lot of panelized data. Note that this applies only to "blocked" step and repeat data. If the data was step and repeated using copying, this option does not apply, as the step and repeat information is not recorded in the database.

- "**Setup/Layers**" (F10)
  New commands to save/restore the default color setup for layers display. The commands are available from the context menu (right mouse click) under "**Colors Setup**". There are three commands:
  ⇒ "Save Current As Default": the current setup of layer colors and color definitions (RGB content of colors) becomes the default. The next time the software is started, it will display these settings as the default.
  ⇒ "Restore From Default": layers colors will be set to the default settings.
  ⇒ "Restore From Factory Settings": layers colors will be set to the PentaLogix default values.

- "Edit/Edit Selection/Move By Displacement"
  A new command to move the selection by user specified X and Y displacement values.

New features 9.4.1:

- **"File/Import/Bitmap"**
  ViewMate will now import bitmap files. This feature has been available in the higher PentaLogix products for some time. It is now being made available in the free version as well.

New features 9.4:

- **"File/Import"**
  ⇒ "Gerber"
     The extended Gerber command "IR' (Image Rotation) is now supported.
  ⇒ "Drill & Rout"
     Sieb & Meyer rout data is now supported. Previously only drill data was supported for Sieb & Meyer.
  ⇒ "Directory"
     Import a complete directory of files is a powerful feature that has been in higher PentaLogix products for many years. This feature is now available in ViewMate as well. The accelerator key (shortcut) is: Ctrl+F4.

- **"Insert/Arrow"**
  A tool to insert arrows made out of traces, similar to the arrows generated by "Insert/Dimension", except that there is no dimensioning. These arrows can be used to mark locations of interest. The height of the arrow is derived from the "Text Height" parameter in the "Inset/Loc and Dim Setup" dialog, similar to the "Insert/Dimension" tool. Once the tool is active, you need to click first at the position of the head of the arrow and then at the position of the tail of the arrow.

- **"Select Layers"**
  A new command to select all elements in a group of layers, specified as a comma-separated list of layer ranges

(for instance "3-5, 12, 14-22"). This will make a new selection, any previously selected elements will be deselected first.

New features 9.2.27:

- **"File/Import/ODB++"**
  By selecting "From Dir", the user can now import ODB jobs directly from the directory without having to create a TGZ or TAR file.

New features 9.2.2:

- "Select/**Duplicates**"
  Looks for duplicates among the currently selected elements. Only the duplicates will remain selected while all the other elements are deselected. Duplicates are elements that are geometrically identical and in the same spot (on top of each other) and of the same shape (although not necessarily the same D Code). Currently only pads and traces are checked for duplicates (polygons and routing paths are not).

- "Edit/Edit Selection/Special/**Merge Colinear Traces**"
  Looks for linear traces in selection that continue each other and are colinear (on the same line) and replaces them with one trace which spans the whole extension.

- **Layers toolbar** context menu (right-click)
  Five more commands have been added under "Select": "All", "Traces", "Pads", "Polygons" and "Routing Paths". These commands will select only elements from the layer that was picked and the selection is made independent of the other criteria (the "Only" buttons etc.) as well as independent of element visibility. It is always a "new" selection, meaning that all other previously selected elements will be deselected. The previously existing commands "New", "Add" and "Remove" are preserved and work the same way as before (they are affected by the normal selection criteria.
  The new commands give a quick way of selecting a whole layer or just some particular element type within a layer without worrying about the other settings in the software.

New features 9.2:

- **Paint elements and scratch elements** can now coexist in the **same layer**.
  Previously a layer was paint or scratch and all elements inside were of the same polarity (paint or scratch). However, because some import files contained many polarity switches (from paint to scratch and from scratch to paint) each requiring a new layer, the result was a large number of layers. It could even happen that the maximum number of 255 layers was exceeded and so the file could not be imported. Starting with this version, a polarity change in the input will not require a layer change as paint and scratch elements can now coexist in the same layer.
  To see how many polarity changes there are in a layer, make that layer the current layer and then do "File/Properties" or Alt+Enter. The number of polarity changes is one of the information lines in the displayed dialog. Multi-polarity layers are also marked with a '+' in the layers toolbar (instead of the '*' for a single polarity layer).
  One can still set the polarity of a whole layer as paint or scratch (same as before). If the whole layer polarity is scratch then the polarity of elements inside will be reversed: paint elements will act like scratch and scratch elements will act like paint.
  A layer which contains both paint and scratch elements can be <u>separated</u> into an equivalent sequence of layers which contain only one polarity. This makes it easier to edit the data (if necessary) and also conforms to how the software acted in previous releases (for users who prefer it that way). Note that for each polarity switch an extra

layer is required. This can be done using commands in the "Paint And Scratch" submenu which appears in several places:

⇒ in the main menu under "Edit"

⇒ in the layers toolbar context menu (right-click of mouse)

⇒ in the Layers Table dialog (F10) context menu.

There are two commands for separation:

⇒ "Separate Current Layer"

⇒ "Separate All". This separates all layers that have mixed polarity. Note that for users who prefer the old way of storing paint and scratch, the operation to do is "Separate All" after each import.

The reverse operation also exists, to combine a sequence of layers which belong to the same board layer (and perhaps have different polarities) into one layer. Commands for this are in the same "Paint And Scratch" submenus:

⇒ "Combine Layers"

⇒ "Combine All". This looks for adjacent layers that belong to the same board layer (and are visible) and combines them into one layer. The operation is then repeated for all the layers in the job.

The only way to change the polarity of elements is by setting the layer polarity. So if one needs to change the polarity of only a group of elements inside a layer, one needs to transfer them to an empty layer immediately following the layer in question, set the board layer number to be the same, then change the layer polarity to the desired value and finally combine the two layers into one layer again.

A new version of binfiles is also introduced with this version (V10 of binfiles). This is only needed when saving jobs that have mixed polarity elements in the same layer. Note that older versions of the software will not be able to read/open these binfiles.

The "Paint And Scratch" menu under "Edit" has one more command that acts on the selected elements only: "Optimize Selection". This command will examine the selection, layer by layer, and within each layer will attempt to reduce the number of polarity switches. Sometimes input files contain a lot of polarity switches that are unnecessary because later paint and scratch elements do not interact (overlap) with previous ones, so it is possible to merge them into fewer polarity groupings. This can be useful when one needs to edit the data and also makes the export/output more efficient.

- "Insert/**Chamfer**":
  Activates a tool to insert, move (slide) or delete a chamfer trace. This tool is a combination insert and edit tool. While the tool is active, pressing "Shift" puts it in the insert mode, while pressing "Ctrl" puts it in the remove mode. If none of the keys are pressed, it is in edit (move) mode.

- A chamfer trace is a trace connected at both endpoints to other linear traces which act as "rails". The chamfer can be moved parallel to itself while being guided by the rails. It can be a linear trace or an arc trace. In the edit/remove mode this is determined by what trace is picked for editing, in the insert mode this is determined by "Insert/Arc Chamfer Mode" (once set, it will be remembered for future operations).
  Note that when picking (either the chamfer to edit, or the junction of the rails where to insert) only active elements will be considered (this means all the "Only" buttons are active).
  The insert operation will create a new chamfer starting at the joint of the two rails, while the remove operation will delete an existing chamfer and extend the rails so that they meet.
  These operations can be used to rearrange circuits so that they provide more clearance spaces where needed.

- "Edit/**Edit Traces**":
  A new group of operations to edit traces. They affect up to three traces at a time. The traces can be straight (linear) or arc traces. The following table provides a summary of the operations.

Name Of Operation	Action	Traces affected
Move Trace	Picks closest trace. The trace then follows the cursor by moving parallel to itself.	1
Move Endpoint	Same as "Move Trace", but operation starts by picking trace at closest endpoint only.	1
Move Vertex	Picks closest junction (vertex) of two traces. Both traces then follow the mouse by moving parallel to themselves and staying connected.	2
Move Chamfer	Picks closest trace. Each endpoint of the trace needs to be connected to another trace. All three traces then follow the cursor by moving parallel to themselves (as a group).	3
Drag Trace	Picks closest trace and traces connected to each of its endpoints. The picked trace follows the cursor by moving parallel to itself while the connected traces will be stretched (the other endpoints of the connected traces will stay unchanged).	3
Drag Endpoint	Picks the closest trace endpoint. The endpoint then follows the cursor while the trace is stretched (the other endpoint stays unchanged). NOTE: this is the same as the older "Edit/Stretch Traces".	1
Drag Vertex	Picks closest junction (vertex) of two traces. This vertex then follows the cursor while the traces are stretched (the other endpoints stay unchanged).	2
Drag Chamfer	Picks the closest trace and the two guiding rails attached to each endpoint. The trace then follow the cursor while guided by the rails. NOTE: this is similar to the "Insert/Chamfer" tool in edit mode.	3

The shortcut key for the whole group of commands is F8. Pressing F8 will activate (or cancel) the last used "Edit Traces" command. Pressing Shift+F8 and Ctrl+F8 will step to the next or previous tool (up or down through the menu listing).

- **Viewing of selected elements:**
  Two new ways of visualizing selected elements have been added to the two that existed. They can be picked from "View/Visibility/Selected", "Setup/Visibility" or the Visibility Toolbar.
  The four modes are:

Mode Name	Color For Unselected	Color For Selected
Display In White	Layer color	Bright white
Display In Contrasting Color	Layer color	Color that contrasts with layer color
Display By Dimming Unselected	Dimmed layer color	Layer color
Display Unselected In Gray	Dark gray	Layer color

The last two modes are the new ones. In both of these modes the selected elements are displayed in the layer color (both traces and pads, even if contrast is turned on). This is meant to help in cases where the continuity of the selected elements across layers is important to visualize, such as when examining netlists. In the last mode the unselected are displayed in one color independent of what layer they belong to. This color defaults to dark gray but can be set by the user to any other color using the "Set Layer Color" dialog that can be reached from several places ("Setup/Colors", right-click on the Layers Toolbar or from the "Setup/Layers" dialog).

- "**Edit/Edit Selection**":
  ⇒ "Special/Replace M-Type Pads With Primitives"
  This is a new command which works on the selection. It will replace all pads in the selection that are of shape M (Custom) with the primitives that make up the shape. The result will look exactly the same, but will contain no custom shapes. This can be useful when data needs to be exported to devices (or software) that

have trouble understanding custom shapes (photoplotters etc.).

A similar command already existed in the software, but was only accessible from the D Code Table (F5) and did not act on the selection, but rather on the D Codes that were picked from the table.

That command was "Custom Apertures/Replace With Primitives" and is still there in this version as well. It has been improved to handle custom shapes that contain scratch primitives. Previously such shapes were not processed. Now, these shapes are converted to polygons and then the pads are replaced with these polygons. "Replace M-Type Pads With Primitives" works the same way: shapes with scratch primitives are replaced with polygons and shapes without scratch primitives are replaces with the constituent primitives (pads, traces, polygons).

- "File/Import/**Drill & Rout**":
  Support for FMAT command in Excellon program header.

- "Setup":
  ⇒ "Layers" (F10) Context Menu: a new command has been added – "Compact". The purpose of this command is to eliminate any empty layers from within the sequence of layers in a job. Layers will be transferred so that the relative layer order is the same, but there are no intervening empty layers.
  ⇒ "Visibility:
  All the global visibility settings for elements have been assembled into this dialog. All these items exist as other menu entries or dialogs, under "View/Visibility/…" but have been assembled here for quick access.
  ⇒ "Colors":
  To set the color of the current layer.

New features 9.0.50:

- For the context menu (the right-click menu over the view): the most recently used command will appear as the first entry of the context menu, to facilitate repeating the same command.

- "Edit/Edit Selection/Arcs/**Break Into Quadrants**": same as "Tools/Convert Arcs/Break Into Quadrants", but works on selected arcs.

- "File/Import/Drill & Rout": "Options/Options": new options added for importing Excellon files.
  The purpose of this new option is to specify the user desired handling for the "Block Delete" command (the slash ("/")) at the start of a block. There are now three possibilities in the new "**Block Delete**" box:
  (1) Follow BLKD command: the BLKD command in the header of the file will specify whether blocks marked with slash will be read in or ignored. The two forms of the BLKD command are "BLKD,ON" and "BLKD,OFF".
  (2) Read in always: BLKD commands in the header are ignored and blocks marked with slash are always imported.
  (3) Delete always: BLKD commands in the header are ignored and blocks marked with slash are always deleted (ignored).
  Note that the last two options will override any BLKD setting in the header of the Excellon file.

New features 9.0:

- A **new layer type** has been added.
  The new type is a <u>generic plane layer type</u>. Previously there were five power layer types (PW1-PW5) and five ground layer types (GD1-GD5). In addition to these, there are now 99 generic plane layer types (P01-P99). They can be used for netlist extraction for either ground or power plane layers.

- A new **navigation aid** has been added.
One can now **drag the view** by dragging the mouse (with the left button pressed) while both the Ctrl and Alt keys are pressed. Since redraw times can be long when a lot of data is loaded, the drag can be done in real time or not. This real time feature can be enabled or disabled via "Setup/Preferences/Drag View In Real Time" or "View/Preferences/Drag View In Real Time".

- **Commas** as decimal separators.
In the case of numbers typed into dialogs: commas can now be used as decimal separators (as well as points) to facilitate data entry in countries where the point is not the decimal separator. So the numbers "1.2345" and "1,2345" will be considered the same.

- "**File/Import**":
  ⇒ "Guess": a new command for importing files of unknown type or format. The software will attempt to guess the type (Gerber, DPF, Excellon, netlist, etc.) and (where applicable) the format (Leading/Trailing etc.). The file is then imported into the current layer.
  ⇒ "Aperture": the wizard now has an additional radio button: "TCodes". When selected, only a tool code and a drill size need be identified. The wizard will translate the codes into Tool codes rather than D codes.

- "**Insert/Text**"
  ⇒ A new checkbox has been added to the "Add Text" dialog called "Grouped". This will determine whether the newly inserted text will be grouped or ungrouped. It was done so that users who prefer the old (ungrouped) way of storing text do not need to do an "ungroup" after the text is inserted (one can always do an "ungroup" after the fact using "Edit/Edit Selection/Text/Ungroup").
  ⇒ A new font has been added: ODB Standard.

- "**Edit**":
  ⇒ "Edit Selection":
    o "**Replace Arcs With Chords**". Same as "Tools/Convert Arcs/Approximate By Chords" but works on the selected elements only. Note that the "Tools…" function works on all active elements that are inside the frame.
  ⇒ "Step And Repeat": A new way to load the step distance. There is now a button to the right of the Step X and Y fields (labeled "<"). When pressed it will load the step fields from the current values of the X and Y boxes in the "Screen" toolbar. Most useful when the display is in relative mode or distance measurement mode.

- "**Setup**":
  ⇒ "Preferences":
    o "**Drag View In Real Time**": see the "drag the view" item above.
    o "**Ignore Preferences From Jobfiles**": affects the processing of user preferences and parameters when job files (binfiles) are opened. When checked, these preferences will be ignored (the data in the job files is of course read in). Some users prefer to have the preferences set a certain way and do not want them changed by opening a job file. One example of a set of such preferences are the Gerber import options (from "File/Import/Gerber/Options").
  ⇒ "D Codes": a new command to quickly go to the first unused D Code following the current D Code ("Goto/Next Unused").
  ⇒ "Frame/Visible": command to turn frame visibility on or off.
  ⇒ "Advanced/Intensity Contrast By RGB": this defines how the color intensity contrast is done for the following commands: "View/Visibility/Element/Options/Show Pad-to-Trace Contrast As Contrasting Intensity" and "View/Visibility/Selected/Display In Contrasting Intensity":

- o When <u>unchecked</u>, the contrasting color is taken from the table of fifteen defined colors. The table is conceptually divided in two halves, where the lower half (colors 1-7) is usually the "low intensity" half and the upper half (colors 8-15) is usually the "high intensity" half. The contrasting color will be the corresponding spot in the other half (so 1 and 9 are contrasting, 2 and 10 etc).
  Note that the actual colors in the table of 15 can be redefined by the user in an arbitrary fashion, so the two halves may not really reflect the "low intensity"/"high intensity" division, but the contrasting mechanism will stay the same.
- o When <u>checked</u>, the contrasting color will be derived by flipping the high order bit of each R,G,B component of the layer color. For instance, the color that is normally color "1" in the fifteen color table (Dark Blue) has R=0, G=0, B=127 (7F hex), so the contrasting color will be R=128, G=128, B=255 (a color that is not in the default fifteen color table).
  Some users prefer this mode, although it can be problematic. For instance: a color very close to the Dark Blue from above, for instance R=0, G=0, B=128 (80 hex) will contrast to R=128, G=128, B=0, which is quite different to the previous contrasting color.

- "**Location and Dimensioning** Tool Setup" dialog: a new mode for the number of digits after the decimal point has been added: "**Exact**". When this option is chosen, that exact number of digits will appear after the decimal point including any trailing zeros. This is useful when the number of digits after the decimal point imply a tolerance for the drawing. The old mode of "Maximum" still exists and works the same way – at most that many digits will be generated, but trailing zeros are dropped.

- "**Go/Favorite Positions**"
  A new command has been added, "**Remove All**", to clear the current list of favorite position (leaves the list empty).

- "**Help**":
  ⇒ "Check For Updates": Checks the PentaLogix website and reports if there are newer versions of the software available for downloading.
  ⇒ "Release Notes": To read the release notes for the current version.

- New **accelerator keys** (shortcut keys):

File/Import/Drill	Shift+F2
File/Import/Guess	F4
View/Toolbars/Navigation	Shift+F12

New features 8.4.50

- **Layer Visibility:**
  "View/Visibility/**Layer**" Two new commands have been added to facilitate turning ON and OFF groups of layers:
  ⇒ "Make Visible" - Shift+F10
  ⇒ "Make Invisible" - Ctrl+F10
    One can type a list of layer range, such as "2-4, 14, 20-23" and this list can be interpreted as either layer numbers or board layer numbers (determined by the "Board Layer" item in the dialog.

New features 8.4.10

- **Elements Overlapping Cursor**:
  "View/Info/Elements Overlapping Cursor": A new command to provide information about elements covering the cursor. A list of all the elements (pads, traces etc.) which cover the cursor will be displayed.
  This is useful when investigating pad stacks, as it is difficult to know how many pads there are on top of one another. It can also be used in troubleshooting connectivity as one can see the net names of all elements that connect at a certain point.

New features 8.4

- **Navigation View:**
  A navigation view has been added to show an overview of the relative positions of the current view and the visible data and to allow quick modifications of the view ("View/Toolbar/Navigation"). The current view is represented as a black rectangle and the extents of the visible data are shown as a filled green rectangle.
  As opposed to the other toolbars, the Navigation View is not dockable, as its square nature would cause it to take up too large an area of the screen. However its size and position can be modified by the user and it is remembered and restored at the next activation of the software. The input focus can be shifted to the Navigation View by clicking on it or by pressing Ctrl+PgUp. While in the Navigation View Ctrl+PgUp will transfer control back to the main view.
  The Navigation View window responds to the following user interaction:
  ⇒ Left mouse button drag-and-draw:
  the view will match the user drawn rectangle.
  ⇒ Left mouse button click:
  will center the view at the spot of the click (at the current zoom level).
  ⇒ PgUp:
  zoom up (same as pressing PgUp in the main view).
  ⇒ PgDn:
  zoom down (same as pressing PgDn in the main view).
  ⇒ Arrow keys:
  pan the view in the direction of the arrow.
  ⇒ Home:
  Same as pressing Home in the main view.

- **Wheel Mouse Support:**
  Added support for navigation with a **wheel mouse** and support for the middle button of three-button mice:
  ⇒ Rolling the wheel
  zooms in and out. Rolling forward zooms in and backwards zooms out. Each click zooms the same amount as a PgUp or PgDn would do. This mode is only active if the scrollbars are off. When the scrollbars are on, rolling the wheel will normally scroll up and down.
  ⇒ Clicking the wheel
  (or middle-button of a three-button mouse) will pan the image so that the spot where the click happened will end up in the center of the screen. This is similar (though not identical) to using the End key. One can pan repeatedly in one direction by making sure that the arrow and crosshair cursors are not joined, then moving the arrow cursor close to one of the window edges and clicking the wheel repeatedly.
  Notes about setting up the mouse: Mouse button actions and properties can be set up in the Windows Control Panel. The wheel is often set up to cause a scrolling action and pressing the wheel (or middle button) is sometimes set

up to simulate a left button double-click. These are user preference that can be changed if desired. This is how these settings interfere with the new features introduced above:

⇒ Scroll:

If the wheel is set to scroll (in the Control Panel) and the CAM scrollbars are visible, then moving the wheel will scroll vertically rather than zoom. This action was present in older versions of the software as well. Note that if the scrollbars are not visible ("View/Scroll Bars") then the setting in the Control Panel does not matter.

⇒ Middle Button:

If the wheel (or middle button) click is set to some other action (other than "Middle Button" or default), the panning described above will not work. Instead, pressing the wheel will activate whatever action it has been programmed to generate in the Control Panel.

So, if the new functionality is desired, one must make sure that the mouse is set up as desired in the Windows Control Panel. In certain cases (depending on the type of mouse) the action of the buttons can be programmed per application, so one could have a particular setting for the CAM software and a different one for other applications.

- "**Setup/Layers**" (F10):

  ⇒ By layer or Board Layer:

  These two views of this setup dialog are now available. The first:

  o By Layer

  is the same as the operation of this dialog in previous versions.

  o By Board Layer

  shows only board layers (one entry per board layer).

  When one changes a setting for an entry in this mode, all layers in that board layer will be changed. For instance, changing the color of a board layer will cause the color of all layers in the board layer to be changed.

  ⇒ Right Click Mouse:

  The context menu (right mouse click) has several new commands. Two commands that previously showed up only when clicking on top of the "B Layer" column heading now appear at all times. The new commands are

  o "Move Up",

  o "Move Down"

  The "Move" commands will move (up or down) by one position a sequence of layers starting from the layer that one clicks on and continuing with all successive loaded layers (until the next empty layer is reached). This is useful (for instance) for making an empty spot to insert a VIA layer.

  o "Insert Selection"

  "Insert Selection" will move a selected layer (or range) to the location where one clicks. Loaded layers in the destination range will be moved up to make room for the inserted layers. This command is useful for rearranging the order of layers.

  The previously existing commands that now always appear on the context menu are "Renumber board layers" and "Order layers by B Layer".

- **Layers Toolbar**:

  context menu (right click). Two menu entries have been added:

  ⇒ "Board Layer ON"

  ⇒ "Board Layer OFF"

  These will turn the visibility of a whole board layer ON or OFF that is for all the layers that are part of that board layer.

- **Remember Directory for Import -**
  "Setup/Remember Directory for Import": If set, the File/Import dialog will open in the directory last used for a File/Import operation.

- **Import Files:**
  "File/**Import**" has a new feature:
  ⇒ "Drill":
     added support for the following Sieb & Meyer format commands:
     M97, M98 (Drill Plain Text), G84 (Nibble Hole), G85 (Nibble Slot).

- **Export Files:**
  "File/**Export**" has these features:
  ⇒ "Drill":
     o For Excellon format: a new option for exporting Step & Repeat blocks: "R Repeat Blocks". If checked, repeat codes (R#) will be used when possible. If unchecked, repeat codes will not be used and each M02 block will be output by itself. This is useful for machines that do not support the R codes and to minimize the number of M01 (End of Pattern) commands, as there is a limitation of at most 3 nested M01s (Excellon spec).
     o for Sieb & Meyer format: support for G84 (Nibble Hole) and G85 (Nibble Slot).

- **Polygons with Holes:**
  The ability to replace polygons with holes with a set of polygons without holes. This is useful for many reasons. One is that the Gerber syntax for polygons (G36/G37) does not allow specification of certain polygons as being holes inside other (containing) polygons. As a result, in order to represent polygons with holes in Gerber one has two options:
  1. Make the holes scratch entities (on a separate layer)
  2. Decompose the polygons with holes into a set of polygons without holes (which fit together similar to a jigsaw puzzle).
  Method (2) has been added in this release. In appears in two places:
  ⇒ "Edit/Edit Selection/Polygons/Decompose Into Strips":
     Will replace any selected polygons that have holes with a number of horizontal polygonal strips without holes, such that the result will represent the exact same copper (same image).
  ⇒ New Tab:
     A new tab in the "File/Export/Gerber" Options dialog called "Polygons":
     It has two choices for exporting polygons with holes: "Put holes in scratch layer" and "Decompose into strips". Note that this does not modify the database itself, it just controls how the polygons are exported. Also note that this tab does not appear for exporting MDA Gerber data, as polygons with holes can be represented using POIN/POEX D Codes.

- **Custom Shapes - Polygons with Arcs:**
  (D Codes of type **M**) can now contain polygons with arc edges. Previously only polygons with straight edges were stored and arcs were replaced with approximating straight edges.
  These types of shapes can be generated from several sources:
  ⇒ File import
  ⇒ D Codes table/Dimensions/Build Shape:
     when the frame includes polygons with arcs
  ⇒ Tools/Convert Drawn Pads/Global:
     when the convert pads included polygons with arcs Note that if these shapes exist in the data and a binfile is saved, a new version of the binfile will be written (version 7) which will not be accepted by older versions of

the software.

For exporting Gerber extended variants: The standard Gerber extended does not have a polygon primitive with arc edges (for custom shapes). When exported these edges will be replaced with chords. The MDA extended Gerber format allows arc edges for the polygon primitives.

- **New Edit Selection Features:**
  "Edit/Edit Selection" has these new features:
  ⇒ "Swell":
    a new option has been added - "Transcode all swelled D Codes". If checked will force all D Codes that are swelled to be transcoded even when no unselected elements of that D Code exist. This is useful when preserving the integrity of the original D Codes is desired.
  ⇒ "Match Two Points":
    This is a general purpose transformation which combines translation (move), rotation and scaling in one step. The user picks two pairs of points. The transformation is done so that the first point in each pair is transformed into the second point.
    Note that although all elements in the selection are transformed, the D Codes with which they are drawn are not. Because of this, it is most useful for transforming polygons.
  ⇒ "Step And Repeat":
    added the ability to edit and change step-and-repeated data. The procedure is the following:
    (1) Select the step-and-repeated data.
    (2) Do "Edit/Edit Selection/Step And Repeat/One-up". This will remove the step and repeat from the selected data and make the result ordinary data that can be edited and modified. Up to this point all of the above was available in previous versions. What we have added is that after "One-up" is done the "Step And Repeat" menu will show the step-and-repeat parameters that have just been removed (counts and displacements) at the bottom of the menu (in a list of up to 5 recent step and repeat parameters). These parameters can later be reapplied by just selecting the menu item.
    (3) Edit the one-up data as desired.
    (4) Select the data for which the step-and-repeat needs to be restored, then pick the step-and-repeat parameters from the bottom of the "Step And Repeat" menu.
    When step and repeat blocks are nested, this procedure may need to be repeated several times if the data to be edited is in some inner step-and-repeat block.
  ⇒ "Polygons"
    o "Separate Holes":
      For all polygons with holes in the selection: remove the holes and add as separate polygons.
    o "Group Holes":
       Group all the contours in the selected polygons and attach as holes contours that are included in others. A contour is defined as a closed path component of a polygon and could be a container or a hole. Note that for polygons that do not overlap a "Separate Holes" followed by a "Group Holes" will reconstruct the original polygons.
    o "Replace With Fill":
      Selected polygons will be replaced with filled areas using traces of a D Code specified by the user. This D Code must be of shape "C". Note that to achieve the same result in the past, the polygons had to be converted to F outlines and then one could use "Tools/Fill Polygons/Solid".

- **Insert Text Spacing:**
  Extra Spacing - items added for extra character and line spacing. Character and line spacing can be increased by entering the desired values in the dialog boxes. Use 0 for default spacing.

- "**Go**":
  ⇒ "Center Of Selection":
  moves the cursor to the center of the bounding box of the currently selected elements.
  ⇒ Center of Element:
  "Active Element/Center of Closest". Similar to "Active Element/Closest" except that the cursor is moved to the center of the element. Most useful for polygons. Shortcut is Ctrl+Shift+A.

- **Shortcut keys:**
  ⇒ Layers greater than 9:
  To make active a layer number larger than 9. It was previously not possible to quickly set active a layer number that had more than one digit. Pressing any of the digit keys would make the corresponding layer active.
  To set higher numbered layers the Ctrl+Shift modifier has been added. So to set the active layer to 24 and should do the following:
  Press Ctrl+Shift, while keeping Ctrl+Shift pressed press 2, then 4, then release Ctr+Shift. This would be 3 keystrokes.
  Note that this does not save many keystrokes over the already existing way ("Setup/Layer/Active (L)"), which would have required:
  L, 2, 4, Enter (4 keystrokes).
  However, some people seem to prefer the new method.
  ⇒ Dimensioning Tool:
  For the dimensioning tool (Insert/Dimension): Ctrl overrides the "Extended bars" setting in the setup dialog.

- **View Loaded Data From 0,0:**
  "View/Zoom/…Include (0,0)" This affects the operation of the "View/Zoom/To Show All" (Home) command. If "…Include (0,0)" is set then the origin (coordinates X=0, Y=0) is always included in the data displayed even when it is outside the loaded data (this is how to Home command worked until now). Sometimes it is desirable to only display the loaded data, as the origin can be far away from it. The user has now the option to pick the preferred mode of operation for this command.

New features 8.2.5

- **Auto-Snap to Elements:**
  "Go/Closest/**Auto-Snap**". When activated, will cause the cursor to snap to the closest active element before certain operations: element insertion, move etc. These are the same operations that cause the cursor to snap to the closest grid point when the grid is on. Auto-Snap uses the same criteria as Go/Closest/Align ("A") except that a tolerance is in effect: elements that are farther than the tolerance will not be considered.
  When both the grid is on and Auto-Snap is active, Auto-Snap is tried first.
  One example when this is useful is when inserting traces that need to align with existing traces or pads.

- **Dimension Tool:**
  "Insert/**Dimension**"
  New dimensioning tool (similar to the "Insert/Location" tool).
  Will insert dimensioning text and arrows. It is a three-step operation:
  (1) Pick the point to measure from

(2) Pick the point to measure to

(3) Pick the desired location of the dimensioning text, arrows and bars

There is a separate setup dialog (Insert/Loc and Dim Setup) for specifying the text size and font as well as various options. This dialog is common to this and the Insert/Location tools. It can also be activated using a context menu (right click) while any of these two tools is active. The options that are specific to the dimensioning tool are:

⇒ Forcing Measurements

to always be horizontal or vertical (depending on whether the vector from step (1) to step (2) is closer to the horizontal or vertical). Note that this setting can be temporarily overridden by pressing the Shift key while picking point (3).

⇒ Extending the Bars

to reach close to the step (1) and (2) points.

- **Polygon Features:**

"Edit/Edit Selection/**Polygons**"

⇒ "Make Well Formed":

Replaces any malformed polygons in the selection with well formed ones. Well formed polygons have no intersecting edges (except at vertices) and no overlapping edges.

⇒ "Chords To Arcs":

Approximates sequences of chords with arcs for polygons in the selection. The user can specify a tolerance. The new selection will consist of the changed polygons. If none were changed, the selection remains as before.

⇒ "Arcs To Chords":

Replaces arcs with sequences of chords that approximate them. The resulting polygons will contain no arcs. The new selection will consist of the changed polygons. If none were changed, the selection remains as before.

New features 8.1

- **Save File Crtl+S:**

Normal Windows shortcut for File/Save (Ctrl+S) has finally been implemented. We had postponed the implementation of this shortcut because Ctrl+S used to have a different meaning in our DOS products.

- **BMP File Export:**

"File/**Print to .bmp File**": a way to generate standard Windows bitmap files from the currently loaded data; either the current view or what is inside the frame. The image can be combined layers or one board layer at a time (with one .bmp file per board layer). Besides other uses, this can be another way of printing in cases where direct printing (to printer) does not produce the desired results.

- "**File/Import**":

⇒ Inexact Arcs:

"Gerber/Options": added an option in the "File Interpretation" tab called "Inexact arcs". This controls how inexact arcs (arcs that have different radii at the two endpoints) are interpreted. One can pick one of two ways to deal with these arcs (as they are illegal as presented):

o "Move center"

If selected then the center of the arc will be moved to make the two radii the same. This is sometimes dangerous as the guessing for the arc orientation can be wrong resulting in "Mickey Mouse ears" (large multi-quadrant arcs where short single-quadrant arcs were intended by the user).

o "Add connector"

If selected then the center is preserved and one of the arc endpoints is moved to be closer to the center. A

connecting linear "bridge" is added to go to the original endpoint (so that electrical connectivity is not lost). This would cause an arc to be replaced by an arc and a (short) linear trace.

⇒ Ignore G92/93:
Added an option called "Ignore Excellon G92/G93" in "Drill/Options". When set causes G92 and G93 commands to be ignored. These are "Zero set" commands that change the origin.

- **DRC Violation Colors:**
DRC violation errors display colors are now saved in the .cfg file.

- **Define Report Filename:**
"File/Report/**Set Name**": to set the report file name. The report file is used in many operations where the name cannot be set, such as for generating D Code transcoding reports while importing Gerber files.

New features 8.0.X

- **Import Gerber via File/Open:**
One can now import Gerber files using the File/Open dialog. This has the additional benefit that one can associate a common Gerber file extension (such as .ger) with these executables, so that double-clicking on that file would launch the executable. The .bin extension is automatically associated with the PentaLogix CAM products (excluding ViewMate).
To create the association: right click on the desired file and select "Open With", then choose the executable. One more step is needed to make sure that path names that have spaces in them are handled correctly. Open Explorer, then "View/Folder Options/File Types".
Pick the type you just added and click on Edit, then "open", "Edit". In the "Application used to perform action", add "%1" after the name of the executable. The double quotes around %1 are needed to make sure that the entire path name is passed to the executable.

- **"File/Import Enhancements"**
⇒ "Gerber":
o Mirror Image:
Support for "MI" (mirror image) RS-274X parameter.
o Padstacking:
A new option in "Options/File Interpretation". "Consecutive flashes at same position". This has two options: "Keep only one" and "Keep all". The previous versions would always "Keep only one", but apparently some users need these padstacks preserved.

- **Drill Import Options:**
"Setup/Layers" (F10): added a button to bring up the drill import options.

- **Goto Favorite Position:**
"Go/Favorite Positions": a quick way to go to a favorite (X, Y, Zoom) triplet that one can previously record.

- **Gerber IPNEG Followed by IPD or IPC:**
For both import and export of Gerber Extended files: a new option in the "**RS274-X Options**" tab. The option is "Negative layer is IPNEG followed by:" and the two possibilities are "LPD" and "LPC". It appears that various plotters and CAM packages expect different commands to render a negative layer: either "IPNEG" followed by "IPD" or "IPNEG" followed by "IPC". As usual, the Gerber manual is no help, as it does not elaborate as to what the correct combination should be, so we decided to let the user pick one or the other (separate for import and for export). Previously "IPNEG" followed by "IPD" was the only interpretation.

- **MDA Output – Unique Layer Names:**
  "File/Export/MDA Autoplot/Options/MDA Options": a new checkbox called "Force unique layer names". This is only relevant when "Merge paint and scratch " is also checked and will append ".L<*layer_number*>" to each layer name to insure that the individual files generated have distinct names.

- **Select Invalid Polygons:**
  A **new selection criterion** in the "Special selection" droplist called "Invalid Polygons". This will select polygons that are invalid as far as the PentaLogix CAM software is concerned (for instance self-intersecting polygons are invalid). The intention is to replace this command in the future with one that can "fix" the invalid polygons.

<div style="border:1px solid black; text-align:center;">

Changed Features

</div>

Changed features 10.0.30:

- No changed features in this release.

Changed features 10.0.26:

- No changed features in this release.

Changed features 10.0.10:

- **Shortcut keys for Layers Toolbar**
  An options has been added to enable shortcut keys for the layers toolbar. This is in the layers toolbar context menu and is called "Shortcuts enabled". Shortcuts were removed a few versions back because they were deemed dangerous, as they have a different meaning than the same shortcuts in the main view. However, some users complained and wanted them back so now they are restored (if enabled by the user).
  The shortcut keys available are the same as in the past: "V", "N" and "S". Note that "V" and "N" work on the whole board layer, just as in the past.

Changed features 10.0.1:

- **"Edit/Move Layers XY Position/Move By Displacement", improved**
  This command has been improved to make it easier to align layers. Previously the command dialog included only the X and Y displacements and it moved the "active layers" (as determined by layer visibility and by the "Only" button next to the current layer in the Current Element toolbar).There are two improvements to this command:
  ⇒ One can now pick the layers to move in the dialog. There is a text box where one can type in a comma separated list of layer ranges, such as "3, 7-9, 15" (one can also type "All" here). This list is initialized to the currently active layers, so that the command acts as before if the user leaves the layers text box alone.
  ⇒ The X and Y displacements in the dialog are initialized to the result of the most recent distance measurement command (if any). This allows the user to previously do a distance command ("D") to set the move displacement.

- **"Setup/D Codes" (F5), custom shapes**
  Custom shapes (M-type) setup dialog: now has two added buttons, "Import" and "Export". These will

import/export to/from Gerber the current custom shape. These commands were available previously as a separate step in the "Custom Apertures" menu of the main dialog, under "Import From File" and "Export To File". The addition of the new buttons saves some operator steps.

- **"Edit/Edit Selection/Polygons/F To Polygons", algorithm improved**
  Three options have been added for handling polygon holes (when nesting is requested).
  ⇒ "Holes cannot overlap": if two holes overlap one of them becomes a container
  ⇒ "Overlapping holes are merged": two overlapping holes are merged to make a larger hole
  ⇒ "Overlapping holes not merged": the overlapping area of two holes becomes a new container

- **"File/Import/Guess-Directory-Zip"**
  ⇒ Now supports the Excellon format for decimal placement (000.000).
  ⇒ The results dialog has been changed.
    o The leading, trailing, all present, decimal present radio buttons will enable/ disable the 'm' and 'n' labels in a similar way that the Import/Drill & Rout/ options dialog behaves.
    o If the size the user selects creates a coordinate value outside the 1000 inch, 1000 cm limit, an error is reported and the "OK" button is disabled.
    o Files with no data (drill with tool sizes but no drill data) will now report the board size as "0 x 0" instead of "No Data Found".

Changed features 9.8.70:

- "Setup/Frame/Surround All Data" (Ctrl+W)
  A new option has been added "Consider scratch elements also". When unchecked, scratch elements will not be considered in the computation. When checked, scratch elements are considered the same as if they were paint (this was the previous behavior of this command).

- **Mapping D Codes to N-type shapes**
  The user interface for re-mapping non-N shapes to N-shapes in "Setup/D Codes" (F5) has been improved.

Changed features 9.8.50:

- "File/Import/Gerber" - "Options" – "File Interpretation"
  ⇒ **"Zero-Length Draws"**: an additional option has been added: "Ask". Previously there were only two possibilities: "Make pads" and "Ignore". Now there are three: "Make pads", "Ask" and "Ignore".
    "Make pads"   A pad will be generated to replace the zero-length trace
    "Ignore"   Zero-length draws will be ignored
    "Ask"   The user will be prompted and given one of the above choices
  ⇒ "**End of Block Characters**": an additional option has been added: "**Auto**". When "Auto" is selected, the software will try to determine which the proper setting is for the file being imported.

- **"View/Grid/Display Grid" (G)**
  The grid points are now rendered with 5 pixels. The previous 1-pixel grid was difficult to see on high resolution monitors.

- "File/Import/Guess- Directory- Zip"
  ⇒ **HPGL**- recognition has been improved.
  ⇒ **IPC-D350/ IPC-D356 –** now searches in the comment areas to determine type.
  ⇒ **"Tool diameters use opposite units"**- checkbox has been added to the results dialog for drill files. When checked, the tool codes will use the opposite UOM than the data (inch – mm, mm – inch). To use this feature in import directory and Zip, highlight the file in the scan results then press "Edit Format".

Changed features 9.8.20 / 25:

- "File/Import/Guess Directory Zip"
    - ⇒ TAP format drill files with T-Code definitions in the header section will now use the T-Code value rather than the hole size number. The 'n' value still defaults to three. The 'm' value is now calculated by subtracting the 'n' value from the total number of digits in the coordinate data.
    - ⇒ The results dialog now resizes better.
    - ⇒ Gerber files that use CR/LF instead of '*' are now recognized.
    - ⇒ Recognizing HPGL and HPGL/2 files has been improved.

Changed features 9.8.5:

- **"Edit/Edit Selection/Polygons/F To Polygons"**
  Algorithm has been improved.

Changed features 9.8.0:

- **D Code rotation**
  The operation to rotate a group of D Codes, available in the "Setup/D Codes" (F5) table, has been changed to allow for a user specified angle of rotation. Previously only a rotation of 90 degrees was available. The command is now "Operations/Rotate" (was "Operations/Rotate 90 Degrees").

- **"View/Distance/Edge To Edge"**
  Has been changed from a command to a tool. See description under "Distance Measurement" in the "New" section below.

- **"View/Coordinates Origin/Set Relative Origin"**
  This command has been renamed "Relative Origin Tool" and has lost its shortcut (Shift+R) now linked to a new command that sets the relative origin but is not a tool (immediate action). See below under "New" commands.

- **"File/Import/Gerber/Options"**
  The "Data Format" tab items "Left of decimal" and "Right of decimal" are selectively grayed out to convey to the user when they are irrelevant. "Left" is irrelevant in "Leading" omit zeros mode and "Right" is irrelevant in "Trailing".

- **"File/Import/Guess"**
  The Import Guess results dialog has changed for setting m and n. It now uses two buttons to shift the decimal point instead of dropdown boxes. Also the "Apply" button has been removed as the board size is automatically recalculated whenever a parameter is changed.

- **"File/Import/Apertures"**
  When importing Pads aperture files, German headers will be recognized. Also the units will default to mm.

- **"File/Import/ODB++"**
    - ⇒ The ODB++ layer name value will be used during import to set the layer name in the F10 menu.
    - ⇒ ODB++ will now tag the first copper layer as CPU, last copper layer as CPL. Any layers before the CPU that are silk, soldermask, or solderpaste will be marked as 'U'pper. If these files are listed the CPU layer, they will be marked as 'L'ower. Drill layers are now DRI instead of PAD.

Changed features 9.6.91:

- **"Edit/Edit Selection/Polygons/Make Well Formed"**
  The algorithm has been improved to handle a larger variety of malformed polygons.

- **"Select/Duplicate Active Elements"**
  Elements that have no width will now be processed by this command also. Previously they were ignored. This includes pads and traces mapped to D Codes that have zero width or of shape type "F".

- **"File/Import/DPF"**
  Now uses the Windows temp directory for temporary files during import.

Changed features 9.6.81:

- **"File -> Import -> Directory/ Zip"**
  A new button has been added to the scan results dialog, "ReScan". When pressed, the user can change the import option settings and rescan the files. In the past the user had to start the import over from the beginning.

Changed features 9.6.78:

- **"File -> Import -> Apertures"**
  ApSource7 now imports diamonds.

- **"File -> Import -> ODB++"**
  Import time has been greatly improved.

Changed features 9.6.43:

- "File/Import/Guess" (also, Directory and Zip)
  Gerber extended (RS-274X) files with incorrect format statements (**FS**) are now easier to import.
  Hard to believe, but some Gerber files have format statements which are incorrect. Previously the only way to correct this was to edit the file and change or remove the statement.
  Now one can use "Import/Guess" (or "Zip" or "Directory") which will guess the format and will allow the user to override it in the dialog that appears (checkbox item "Override parameters").

- **Pads / Traces Contrast**
  Contrasting pads and traces with different colors in the same layer is not guaranteed to display correctly when the board layer contains paint and scratch. However, certain users need this feature so much that they would rather use it on such layers also, even if the display is not guaranteed to be correct.
  This version enables them to do so, by checking the option "Allow contrast on paint/scratch also" in "View/Visibility/Element/Options". This is a "use at your own risk" kind of option. The data will always be correct, but the paint/scratch rendering may be incorrect when pads contrast is on.

- **"Edit/Paint And Scratch/Optimize Selection"**
  The optimization operation has been improved to pair scratch and paint polygons. Polygons with holes are often represented via paint and scratch because some of the import languages do not have ways of representing polygons with holes directly. Gerber is such an example where holes are represented as scratch polygons.
  The optimization operation will now detect such situations and add the scatch polygons as holes of the

corresponding paint polygons. This results in fewer scratch elements and sometimes in the complete elimination of scratch elements.

- **"File/Import/Apertures"**
  If the aperture import encounters problems, an error file is generated. When the dialog box appears to report that errors have been encountered, a button has been added to view the error file.

- **NC Tool Sizes**
  Tool sizes are now saved in jobfiles (binfiles) even if they are not mapped to any D Codes. This facilitates using common setups of NC tools. One can set up the tools, then save an empty (no circuit data) binfile, which can later be opened or imported to restore the settings.

Changed features 9.6.17:

- "File/Import/Gerber/Options/RS274-X Options"
  ⇒ The handling of "IPNEG" commands has been improved.
    These are used to define a layer as a negative layer. "IP" stands for "Image Polarity". The issue is how to treat subsequent "LP" commands ("Layer Polarity"). These can be "LPD" or "LPC". Some files assume "LPD" to be the paint polarity, some "LPC" ("LPC" seems to be more prevalent).
    Previously there were only two modes for this option. Now a third one, called "Automatic" has been added that will try to guess the correct setting.

Changed features 9.6:

- **"Setup/Preferences/Only One Tool Can Be Active"**
  This is a new preference, but it modifies a behavior that existed previously. Certain user tools: zoom ("View/Zoom/Tool" (Z)), select ("Select/Selection Tool" (S)), distance ("View/Distance" (D)) and others are considered "helper" tools in the sense that it is sometimes useful to activate them while another (perhaps multi-step) tool is active (in dormant state). When the helper tool is canceled (by Escape or otherwise) the dormant main tool is reactivated.
  Some users do not want this behavior, because they would rather have just one tool active. For those user, this new option has been introduced. When checked and a helper operation is activated, any previous operation is canceled.

- "File/Import/ODB++"
  ⇒ Improved import algorithm is much faster.
  ⇒ The import process has been streamlined by importing according to the ODB matrix rather than requiring the user to select import order.
  ⇒ Step and repeat, rotations, and offsets are now imported correctly.
  ⇒ The profile step is now imported as a BOL type.
  ⇒ When running in Batch mode, all menus are suppressed.

- **"File/Import/DPF"**
  When importing files in metric, the conversion is now much more accurate by using a conversion factor to eight decimal places.

- **Selection Toolbar**
  There are several new options to specify elements to select or pick (in the dropdown list):
  ⇒ "Open Paths": picks open routing paths only.

- ⇒ "Closed Paths": picks closed routing paths only
- ⇒ "No Lead-In": picks closed routing paths which have no lead-in
- ⇒ "Net Midpoints": picks elements which have a net number (or name) and have been marked as net midpoints by a previous net import or net extract operation.
- ⇒ "Net Endpoints": picks elements which have a net number (or name) and have not been marked as net midpoints by a previous net import or net extract operation.

- • **"Edit/Break Traces And Clip Polygons" (Ctrl+B)**
  This command was called "Break Traces" before. Now polygons are included in the operation also (when a frame is used for clipping). Any polygons that touch the frame will be clipped by it and subdivided into several polygons, similar to the way a trace is clipped. This provides a powerful new way to manipulate polygons. Note that this operation is affected by the state of the "Inside" button on the "Selection" toolbar.

- • "File/Import/Gerber"
  - ⇒ The settings in a Gerber extended "FS" statement (Format Statement) will not change the user settings in File/Import/Gerber/Options. They will of course apply to the current plot, but will not affect later files. This allows the values set by the user to persist.
  - ⇒ Improved handling of approximate arcs (when the radius at one endpoint is different from the radius at the other endpoint).
  - ⇒ The "AM" Rotation modes for "Rotate around" have been expanded to three. Previously there was "Rotate around center of each primitive" and "Rotate around aperture center". Now a new mode has been added, called "Automatic". This will pick one of the two previous modes, depending on the type of primitive. This has been determined after examining a number of sample file, some of which needed both types of rotation in the same file.
    The auto mode seems to be working well with all the sample files examined, but the other two modes have been left in the user interface as a fallback position, to account for different types of Gerber files that the user may encounter.

- • **"View/Distance"**
  The distance measurement tools now display the current distance next to the cursor in the main view, in addition to the X box in the "Screen" toolbar.

- • **"File/Import/Guess-Directory"**
  - ⇒ The import options now has checkboxes to include/ exclude certain file types. The file types are:
    - o Scan for Data Files
    - o Scan for Aperture files.
    - o Scan for Netlist files
  - ⇒ The default import order has been changed. Drill files are placed near the bottom of the list; and drill files with tool definitions but no data, immediately precede the drill files. Netlist files are placed last. This is to accommodate net lists with 'T' codes.
  - ⇒ Certain file types are filtered from scanning to prevent crashes. Files ending in "PDF", "DWG", and DXF" are ignored. Other files are scanned to detect binary data and will be ignored if appropriate.
  - ⇒ Zip now has the same options button found in import directory.
  - ⇒ Tap files without format data will default to the most common parameters. This file format will now be identified as three possible types:
    - o Tap definitions without tool changes will be treated as an aperture file, no drill data imported.
    - o Tap files with Excellon tool definitions will be treated as Excellon drill files.

- o TAP files with TAP tool definitions and with tool changes will be identified as a new type, NC_TAP. Tool definitions and data imported.
- ⇒ Imports both the tool and drill data if present. The file type is called "NC-TAP/ Excellon". When the format isn't provided, default settings will be used that seem to work in most cases.
- ⇒ Recognition of Excellon format improved handling of 'T', 'F', 'C', 'S' commands. Metric 1, 2, formats recognized.
- ⇒ Gerber files with large AM (Aperture Macros) import quicker.

- **"File/Import/Apertures"**
  - ⇒ Valor aperture files now import diamonds, thermals, obrounds, and octagons.
  - ⇒ LAV501 apertures now supports octagons and tool definitions.

- **"Help/Check For Updates"**
  The user can now specify an interval of time for automatically checking for software updates from the PentaLogix website. This check will be done in the background and the user will only be notified if there is a new version available.

Changed features 9.4.6-65:

- **"Insert/Pad"**
  During the insert operation an outline of the shape to be inserted is dragged along with the cursor, giving better feedback as to what the result will be. This includes outlines of complex shapes also.

- **"View/Distance"**
  The distance measurement tools ("From Point (D)" and "From Edge") now stay active until explicitly canceled. So they will stay active when starting other tools, such as the insert trace and pad tools. This is useful for accurate positioning during such insert operations.

- **Pad outline mode (O)**
  Custom apertures (shapes of type M) will be showed outlined with primitives displayed individually (both paint and scratch primitives are shown). This allows for a better understanding of the components of a custom shape.

- "File/Import"
  - ⇒ "Gerber"
    "AM" rotation. It has been determined that both interpretation for the rotation of AM apertures exist in Gerber files. The two possibilities are:
    - rotate each primitive individually around its center or
    - rotate the whole aperture (around the aperture center)
    In versions previous to 9.4, the second method was used, then in the early 9.4 releases it was change to the first method. We have now seen files that assume one or the other, so the decision was made to add a user setting, so the user can pick which one to use. It is in "Options/RS274-X Options" and it is called "Rotate around".
  - ⇒ "Bitmap"
    Better handling of color bitmaps based with a color palette.
  - ⇒ "Directory/ Zip/ Guess"
    Recognition of Excellon format has been improved.
    The Excellon format statements Metric 1-3 is now recognized.
    Adobe Acrobat .PDF, Illustrator .AI, AutoCAD .DXF and certain .DSN files will be ignored for import.
    The import order has been changed. Netlist files will be listed last. Drill files will be listed before the Netlist

files. If a drill file does not contain coordinate data, it will be the first drill file listed. These changes will help drill sizes to be properly imported.

⇒ "ODB"
ODB import is now much faster. Step and Repeat as well as rotate is now handled properly. Profile layer is now imported as BOL. The menu to arraign layer order has been eliminated. The layers will now import in the order defined by the ODB file.

- "Setup/D Codes/Operations/Unique Shapes"
  A new option has been added called "Shape types to consolidate". This allows handling N-type shapes differently. One can apply the operation only to N-type shapes, only to non-N type shapes or to all shapes.

- "Tools/Compare Layers"
  Two new options have been added:
  ⇒ "Stop after … errors". Allows the user to specify a number of errors after which checking should stop.
  ⇒ "Tolerance". Differences smaller than this will be ignored.

Changed features 9.4.1:

- **Pad outline mode (O)**
  Custom apertures (shapes of type M) will be showed outlined with primitives displayed individually (both paint and scratch primitives are shown). This allows for a better understanding of the components of a custom shape.

- **"View/ Distance"**
  The distance measurement tools ("From Point (D)" and "From Edge") now stay active until explicitly canceled. So they will stay active when starting other tools, such as the insert trace and pad tools. This is useful for accurate positioning during such insert operations.

- **"Insert/ Pad"**
  During the insert operation an outline of the shape to be inserted is dragged along with the cursor, giving better feedback as to what the result will be. This includes outlines of complex shapes also.

Changed features 9.4:

- **"Setup"**
  ⇒ "Remember Directory for Import" has been replaced with "Remember Directories". When checked, separate directory names are remembered for import, export and macros.
  ⇒ "D Codes" (F5 dialog)
    o The dialog has been redesigned to allow for column resizing. One can do this in the usual way by dragging the gridline that separates two headings in the headings row, for instance between "X" and "Y".
    o One can sort the table by values in a given column. This can be done by clicking on the heading of the column. For instance, clicking on "X" will sort the table by the X dimension of the D Codes (ascending or descending).
    o The dimensions of the D Code (in the X and Y columns) are displayed at their highest accuracy. Previously, only 6 digits were displayed and the value was rounded if it needed more that 6 digits (including the decimal point).
    o The shape of the current D Code is displayed in the dialog.
    o The whole table can now be printed: "Operations/Print".

o The "similar shapes consolidation" command "Operations/Unique Shapes" will now consolidate two D Codes of N-type that are mapped to different tool codes but the same diameter.

- **"View"**
  ⇒ "Visibility/Layer/Toggle Layers":
  A comma separated list of layers or layer ranges can now be entered. Previously only a single layer could be toggled.

- **"Insert/Loc and Dim Setup"**
  A new option has been added for the "Insert/Location" and "Insert/Dimension" tools: "Append Units". When checked the text for the units ("inch", "mm", etc.) will appear after the dimension number, otherwise only the number will appear by itself. Previously the text for the units was always present.

- **"File/Import"**
  ⇒ "ODB++"
    o The net information will now also be imported, if present in the ODB file. If multiple netlists are available, the user will be prompted to choose the appropriate netlist
    o PentaLogix layer type recognition has been improved
    o ODB can now be imported with messages suppressed for batch mode operations
  ⇒ "DPF"
    o TEXT commands are now handled.
    o Nested blocks now supported. Rotations, scaling, etc. are supported.
  ⇒ "Apertures"
    Added a new GAPFile type. Supports the following string types:
    !GAPFile Version 3.0
    11 Round d:8.0
    309 Oblong w:13.0 h:48.0 a:0.00
    310 Rectangle Sq w:84.0 h:76.0 a:0.00

Changed features 9.2.41:

- **"File/Print"**
  The print dialog has two new items: a "Font" button and a "Raster" checkbox.
  "Font" allows selection of the font for the header. Previously a default font was used and will still be used if no new font is picked.
  "Raster" picks which printing method is used: raster bitmap based or Windows GDI based. Note that for Windows ME and lower only the raster method is available. For the other Windows versions the user can pick the preferred method. The Windows GDI based method is faster and works with all printers, whereas the raster method (which sends a potentially large raster bitmap to the printer) is more similar to the screen display (in color mode) as translucency of colors is supported (although the colors may be different on screen and on the printer).

- Import Apertures/ Netlists: In any dialog where the user has the option to **view a file**, the users' defined viewer will be used. If the file type doesn't have a viewer assigned, wordpad.exe will be used.

Changed features 9.2.27:

- **"Edit/Edit Selection/Polygons/Separate Holes"**
  The holes that result from the separation will be selected, whereas the containers will be unselected. This makes it easy to further process holes if desired. Previously both the holes and the containers where selected.

Changed features 9.2.21:

- **"Layers Toolbar"**
  When a layer contained only scratch elements inside (although the layer as a whole could be marked as paint) it was difficult to figure out what was going on, as the layer would be invisible when viewed by itself. Now, layers of this kind are marked with a "+" (instead of the "*") to draw attention that something unusual is going on. Then the right click context menu command "Paint And Scratch/Force Inner Polarity To Paint" (which replaces "Separate Layer…" in this case) will make all the inside elements paint and also flip the polarity of the whole layer (if it was paint it becomes scratch and vice versa). At this stage, the data is equivalent to what was there before, but now the polarity can be easily manipulated (via the "Scratch" checkmark).

- **Mouse Wheel Behavior**
  Moving the mouse wheel scrolled up and down when the scrollbars were visible and zoomed in and out otherwise. The behavior when the scrollbars are off is unchanged. However when the scrollbars are on, moving the wheel will scroll up and down when no other key is pressed, scroll left and right when the Shift key is pressed and zoom in and out when the Ctrl key is pressed.

Changed features 9.2:

- **"Layers Toolbar":**
  Two buttons have been added to facilitate access to two frequently used commands from "View/Visibility/Layer": "Next Layer" (Shift+Equals) and "Previous Layer" (Shift+Backspace).

- "File/**Import**":
  ⇒ "ODB++": One can now import Valor ODB files in Viewmate.
  ⇒ "Excellon": Files with 'T' codes that also have 'F'eed or 'S'peed or 'C'diamter commands on the same line will be recognized as Excellon.
  ⇒ "Apertures": TraxMaker apertures are now supported using the same algorithms as Protel.
  ⇒ "Guess":
    o Gerber files that use CR/LF as a block delimiter. Dialog boxes now have radio buttons for Asterisk or CR/LF block delimiters.
    o G70/71 (inch/mm) will be recognized in extended gerber files.
    o Will now gray out parameters defined in files so that the user cannot change things like the Inch/MM.
    o Will grey out Quadrant and 360 arc buttons only if G74/ G75 have been found, and G74/ G75 appear in the file before the arc commands (G02/ G03).
    o Excellon files in inch will be set to 2,4 but won't be greyed out in the view format dialogs.
    o When "Format unknown files to known files" is checked in the options box; if the unknown file had m,n or in/metric defined, the algorithm will not change those values.

- "File/**Print**":
  A new item has been added for the "Content" box: "Visible layers (combined)". This will print on one page all visible layers.

- "Edit/**Edit Selection**" Because of new commands that needed to be added to this submenu (see "Replace M-Type Pads With Primitives") and to prevent this submenu becoming too long, it has been slightly **reorganized**. A new submenu "**Special**" has been added, which contains the above mentioned new command as well as "Match Two Points" and commands that used to be in the "Arcs" submenu. These commands are likely to be used less often, so they are separated in this submenu.

- "**Swell**": speed has been improved, especially for swelling large polygons.

- "Polygons": "**Make Well Formed**" and "**Chords To Arcs**": More accurate results are computed.

- "Setup/**Layers**" : The height of the rows in the layers dialogs is now remembered and restored. The height can be adjusted by moving the cursor to the border of two rows, waiting for the cursor shape to change, then dragging the border to the desired position.

- **Visibility Toolbar**
  A new button has been added for the **visibility of polygons**. A group of four buttons have been added to control how the **selected** elements are displayed (two of these modes are new in this version, see below).

- **Insert Toolbar**
  A new button has been added for the new "Insert Chamfer" tool.

Changed features 9.0.50:

- "**File/Save Options**"
  The two options: "Include Net Info" and "Step And Repeat Blocks" have been moved to a new dialog: "Preferences". This dialog also has a new item, the desired version number of the jobfile (.bin file).
  With newer versions of the CAM software, as more features were added, the jobfile format needed to be updated. The current version of the jobfile format is 9, but it is in general not directly related to the version number of the software. Older versions of the software can of course not read these new jobfiles, so the option has now been added to save older version jobfiles when needed.
  When a user chooses for output an older version jobfiles and the job contains elements and features that cannot be represented in that version, those elements will be dropped or converted (if possible). The user will be prompted before the output.
  For a short history of jobfile version numbers press the "Info" button in the "Preferences" dialog. This feature is especially useful when saving files for the Pulsar photoplotters. The Pulsars cannot accept files newer than version 6.

- "**File/Export/Cutter Code (HPGL)**"
  There is now an "Options" dialog that allows specification of whether to output pads and the manner in which they are output. There are three choices: pads are not output, they are output as a "Pen Down" or they are output as a small circle. Previously pads where always ignored.

- "**File/Import/Guess or Zip or Directory**" : Filenames with the extension of ".err" will be ignored. Files that have import parameters defined in the file, will be displayed with those parameters grayed out (cannot be changed).

Changed features 9.0:

- "**View**":
  ⇒ "Toolbars/Editing": the "Delete" button has been moved to the end of the toolbar. Some users have complained that it was too easy to press it by mistake.

- "Edit/Edit Selection/**Swell**": previously, if N-type D Codes were in the selection, an error message was displayed and the swell was not done. Now, N-type D Codes in the selection can be swelled, but only if all of the D Codes of that tool number are in the selection (otherwise a transcoding of the tool number would be necessary and this is currently not supported).

- "**Insert**":
  ⇒ "Text": the font of the dialog has been changed to Courier, which is a fixed width font. This facilitates entering tabular data into the "Text" box (columnar text where the columns need to line up). Note that for this to work the chosen CAM software font should also be of fixed width (one of: DMPL, Uppercase, ODB, 4X7 or 5X7).
  ⇒ "Location": the coordinates that are inserted will be relative to the "Relative Origin" when in "Relative" mode.

Changed features 8.4.50

- **High Resolution Only:**
  "File/Save Options": The "**High Resolution**" option has been removed. Binfiles are now always saved in high resolution. Low resolution is only needed for versions 6.0 or earlier of the CAM software.

- **Scroll Bars Changed:**
  "View/**Scroll Bars**": the scroll bars now scroll over the loaded data rather than over a user defined workspace ("Setup/Preferences/Workspace"). For instance: moving the horizontal scroll bar to the leftmost position will place the view over the left margin of the loaded data.

Changed features 8.4.10

- **Exporting Polygon Data:**
  "File/Export" Gerber varieties: Improved rounding of polygonal data when exporting to lower resolutions (lower than .6 in English or .5 in metric).

Changed features 8.4

- **Changes to Printing Routines:**
  "File/**Print**": The graphics rendering routines for printing have been changed. Windows GDI routines are now used instead of rendering to a bitmap and then sending the bitmap to the printer (as was done previously). As a result, printing should now work for all printers. Previously some printers did not work properly because of memory limitations (the bitmaps were too large) or raster operation limitations.
  This change should also allow capturing the image in a PDF file (with Adobe Acrobat Distiller) or a PostScript file.
  Note: This new method does not work on Windows 98 or ME, in which case the old method (bitmap based) will still be used. It does work on Windows NT, 2000, XP, 2003 Server.
  The color output options have been reduced to two: "black on white" and "colors on white". Note that colors will not be translucent when printed (this is different from how the colors show on the computer screen). When running under Win98 or ME an additional checkbox is shown called ("Negative") which will cause the bits in a "black on white" output to be inverted (this is needed on some printers).

- **"**File/**Import":**

⇒ "Job": "Options":
Origin selection has been removed. Origin is now always at (0,0). Allowing to set the import origin in a sub-dialog was confusing and dangerous. The imported data can always be moved later if that is desired.

⇒ "Gerber":
- o The user is warned if a self-intersecting polygon is encountered in the input.
- o The "Full circles in polygons" settings has been removed from "Options/File Interpretation". The "Ignore" choice caused full circles to be silently ignored, which was a problem for many users.

⇒ "Aperture Wizard":
A new checkbox has been added in the third menu titled "Treat commas as decimal ex: 1,00 = 1.00" This will allow the aperture wizard to import files using the European style of decimal identifiers.

- **Setup Layer Improvements:**
  "Setup/Layers" (**F10**): Position and size of the dialog as well as the widths of columns in the table are now saved in the registry and restored next time the program is started. Note that the width of the columns can be modified by the user by dragging the column separators.

- **Replicate to Non-Contiguous Layers:**
  In the Layers Toolbar; layers can now be replicated to a number of layers that need not be contiguous. Previously only a range of contiguous layers was allowed as the destination.

- **"Edit":**
  ⇒ Chords to Arcs:
  "Edit Selection/Polygons/Chords To Arcs"; improved detection of arcs.

  ⇒ Transcoding:
  "Edit Selection/Transcode"; The "First Unused" option has been changed to "First Unmapped". This will pick the first D Code that is either not present in the D Code table or has shape of type "?" (unspecified).

  ⇒ Aligning Layers:
  "Move Layers/Align"; the guide element needs to be selected and to be the only selected element. Previously the guide element was the one from the last "element align with properties" (Shift+A) operation. The new method makes the identity of the guide element clearer.
  Also, previously the guide element was only matched against elements of the same D Code. There is now a new setup command "Move Layers/Align Method" that allows the user to pick the method to be used: same D Code (as before), same shape type and same shape (shape type and shape dimensions).

- **TEXT is now Grouped:**
  The <u>internal representation of text</u> has been changed.
  In previous versions text was stored as a sequence of strokes (traces or pads) which were not distinguishable from other (non-text) traces and pads. With this new implementation text is a separate entity (a composite element) so that it can be modified later (by editing the text string, changing the font, rotation etc.) This modification can be done with "Edit/Edit Selection/Text/Change" after selecting one (or more) text blocks. When selecting only one text block, all parameters of the text (including the text string) can be changed. When more than one text block is selected, only parameters that have the same value can be changed (the others are grayed out). An exception to this rule is the font, which can be changed even if the selected blocks have different fonts.
  Note that there are other methods to change parameters that are not common to all blocks. For instance one can change the D Code of a group of text blocks by using "Edit/Edit Selection/Transcode" (as one would for other elements).
  One can ungroup text by using "Edit/Edit Selection/Text/Ungroup". This will transform the selected text blocks into their stroke representation (normal traces or pads).

- **Select Text:**

  The <u>Selection Toolbar</u> criterion dropbox has a new added item called "Text" which can be used to select or navigate over text blocks. Text blocks can only be edited with operations that would result in another text block. So, for instance, moving, rotating and mirroring are allowed, whereas scaling can preserve text blocks only if the two scale factors (X and Y) are the same. If there are not the same, scaling will be done but the text will be ungrouped before the scaling operation.

  For other commands, if one finds that they do not affect text blocks in the desired fashion the workaround is to ungroup the text blocks first.

  Text blocks will be ignored by most of the commands under "Tools", except Netlist, DRC and "Generate Soldermask". Note that for netlist extraction the copper of text blocks is taken into consideration when computing connectivity (of other circuit elements), but no net numbers are ever assigned to text blocks.

  Binfiles that contain blocked text will not be readable by older versions of the CAM software. If you need to send such data to users of older versions make sure to unblock all text blocks before saving the binfile.

- "Insert/**Loc and Dim Setup**":

  a new parameter has been added: "Max digits to the right of decimal". This can be used to control the precision of the inserted text for location or dimension. Possible values are from 0 to 6 inclusive.

- "**Tools**":
  - ⇒ "Design Rules Check/Load Errors from File":

    More than one file can be loaded at the same time (with the same load operation). This allows the display of the contents of several files simultaneously. One example where this would be useful is for viewing together the results of several different DRC operations done with per layer rules.

Changed features 8.2.5

- "**Edit/Insert**":
  - ⇒ Menu Location Has Moved:

    The position of the menu has been move to "Insert" (top-level menu), because this is a very commonly used submenu. Note that the shortcut key (Insert) still works even with the new location.
  - ⇒ Insert:

    When inserting a trace-type (linear or arc), the outline of the shape to be inserted will be displayed around the cursor as a guide to the user.

- **Setup Selected Tools:**

  A new group has been added: Setup/Tool Codes (Shift+F5) with two buttons:
  - ⇒ "Type + Diameter"

    Same as double clicking on the selected tools and will set the type and diameter of the selected tools.
  - ⇒ "Type Only"

    Sets only the type of the selected tools, keeping their diameters.

- **Extended Gerber Parsing:**

  Changed to where LP (layer polarity) commands do not reset pending G36 (polygon area fill) commands. We have seen customer files of the form:

  `G36*%LPD*%X-1757Y13D02*…G37*`

  Previously the LPD command would reset the G36 and the polygon would be lost (replaced with outline traces).

- **Transcoding D Codes:**

  "Edit/Edit Selection/Transcode" (Ctrl+T): When the user is prompted for the D Code to transcode to, a choice is

given between the current D Code and the first unused. Previously only the first unused would appear. Some users preferred the current D Code as they have just set it up in the D Code table in preparation for the Transcode operation.

Changed features 8.1

- **Screen Toolbar Display Boxes Widened:**
  Widened X and Y coordinate display boxes in **Screen Toolbar** to allow the display of all the digits.

- **Individual User's Preferences:**
  The product configuration files **(*.cfg**, for instance CAMMaster.cfg) are now stored in a different directory to facilitate **per user configurations.** They used to be stored in "Windows directory" (normally C:\Windows). Now, if the environment variable "HOMEPATH" is defined, that directory will be used instead. This variable is automatically set in certain versions of Windows, such as XP, but can be set by the user otherwise.
  If you want to preserve you're your old settings, please move the .cfg file to the HOMEPATH directory. To determine the setting of HOMEPATH or to set it to a different directory, use "set" from the command prompt.

- **Move to Cursor has Independent Relative/Absolute Mode:**
  In the "**Move Cursor To**" dialog, the type of move (Absolute, Relative, Incremental) is now set separately depending on the coordinate display mode (Absolute, Relative), that is once set in Absolute display mode it will stay the same even if changed while the display mode is Relative. The two settings will be remembered independently.

- **Report Files List Both Import and Export Formats:**
  The **report file** will now separately list the Gerber import and export formats, as well as the Drill import and export formats. Previously only the import formats were reported.

- **Custom Apertures with Polygons:**
  "Setup/D Codes" (F5): "Custom Apertures/**Replace With Primitives**": primitives that are polygons will now generate polygons rather than F-type outlines.

Changed features 8.0.X

- **Handling of negative and scratch layers.**
  Layers that were set as both negative and scratch (NS) were handled differently in the contour methods versus the raster methods. A unified way of handling them has been implemented following the rules below:
  ⇒ A scratch layer cannot be the first layer in a board layer.
    Such a situation will be flagged as an error during processing of connectivity information. We have sometimes seen the first layer set to both negative and scratch. If the user's intention was to have it as a paint layer then both the scratch and negative settings should be removed. If the user's intention was to have it as negative, then the scratch setting should be removed.
  ⇒ If an NS layer follows a negative layer
    (N = Negative set, but not Scratch), then the NS elements will be scratched from the N elements and then the whole image will be inverted (to make it negative)
  ⇒ If an NS layer follows a non-negative layer
    (P=Negative not set), then the NS layer will be first inverted (to make it Negative) and then the result will scratch P. This will make an NS following a P act as scratching everything except where there are elements of NS.
    This will affect Raster and Contour netlist as well as Raster and Contour DRC as well as AOI tools.

- **Layers Toolbar is Longer:**
  The layers toolbar is now longer.

- **Loading 10,000 D-Codes:**
  All possible **D Codes (10000)** can be loaded at the same time (previously there was a limit of 2000 simultaneously loaded D Codes).

- **255 Layers:**
  The number of **layers** has been increased from **99 to 255**.

- **Negative and Scratch Rendering:**
  The rendering (display on screen) of negative and scratch layers has been improved. For the case of negative layers: when more than one negative layer existed the rendering was sometimes incorrect in the past, since it did just one negative operation on the merged negative layers. For scratch layers: they will automatically be displayed in the color of the immediately preceding paint layer, so that manually setting the layer color to match is no longer necessary.

- "**File/Import**":
  ⇒ "HPGL":
  "PG" command ("Advance Full Page") will cause step to next layer. Previously it was ignored.

- **Distant Measurement Handles All Types:**
  "View/Distance/**From Edge**": distance measurement tool from edges of elements now handles all element types. Previously it only handled linear traces and certain pads (of simple shapes).

- **Sum of all trace lengths**
  "View/Selection/Properties": a new item has been added – "Sum of all trace lengths". This will appear when traces are part of the selection. When nets are made of chains of head-to-head traces, this will also be a good approximation for the length of the part of the net that is selected.

- **"Setup/Layers" (F10):**
  ⇒ Paths:
  The "Path" button has been expanded to give a choice of 3 operations:
  o Strip path
  o Make relative to current directory
  o Fill in full path.

- **Viewing Text Files:**
  The application used to **view text files** (such as by File/Report/View) used to be "notepad.exe". It has now been changed to use any application that the user registered for opening a "Text Document" (.txt extension). This is usually done with "Explorer/View/Folder Options/File Types".

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Bugs Fixed

Bugs fixed 10.0.30:

- Correcting self-intersecting polygons would in certain cases cause a crash.

Bugs fixed 10.0.26:

- **"File/Import/HPGL"**
  Certain HPGL files were imported incorrectly.

Bugs fixed 10.0.10:

- **"File/Import/Job"**
  When tool codes (N shapes) needed transcoding, the results were sometimes incorrect.

- "View/Distance/Edge To Edge Measurement Tool"
  Did not work correctly.

Bugs fixed 10.0.1:

- **"Setup/D Codes" (F5)**
  A crash happened when several D Codes were selected and mapped to H (thermal) type, if they were not previously of H type.

- **"File/Import/Drill & Rout"**
  Routing paths with tool codes of sizes which conflicted with already loaded tool codes did not transcode properly.

- **"File/Import/DPF"**
  ⇒ Rotated, mirrored BOX apertures wouldn't rotate properly.
  ⇒ Zero length draws weren't supported
  ⇒ Some aperture definitions would be reported as undefined.

Bugs fixed 9.8.70:

- **Drag-N-Drop**
  Drag-N-Dropping of files onto the graphical area for import wasn't working in the previous release.

Bugs fixed 9.8.50:

- "Edit/Edit Selection/Rotate"
  If "Cursor position" was picked in the "Rotate around" dialog, the rotation was not done at the picked cursor location.

- "Edit/Paint And Scratch/Optimize Selection"
  Generated incorrect result in certain cases that contain overlapping scratch elements.

- "**File/Import/DPF**"

  Files with undefined complex shapes would crash. An undefined aperture will now be created.

- "File/Import/ODB++"
  - ⇒ Custom apertures that required mirroring in 'X' (rotations 4-7) would draw arcs improperly.
  - ⇒ Half ovals were drawn incorrectly.

- "File/Import/Guess- Directory- Zip"
  - ⇒ **Gerber**- very large AM commands could cause the guessing routine to hang.
  - ⇒ **"All files use same units"** – setting wouldn't work properly with some aperture types such as "Ap Source 44".

Bugs fixed 9.8.20/ 25:

- "File/Import/ODB++"

  Certain files which had NC tools with conflicting sizes were imported incorrectly. Rotated rounded rectangles were not imported correctly.

- "File/Import/Guess Directory Zip"
  - ⇒ Files with TZ omitted gave incorrect board size if the actual string length was less than the sum of M and N.
  - ⇒ Gerber files with a G02 code would crash.
  - ⇒ Gerber files with an "AM" that weren't preceded with a '%' sign would create errors.

Bugs fixed 9.8.5:

- "**File/Import/Guess**"

  The guess routine was not recognizing bmp file formats.

- "**File/Import/DPF**"

  Certain complex apertures were imported incorrectly.

- "**Select/Properties**"

  Could cause a crash if the selection included polygons or routing paths.

Bugs fixed 9.8.0:

- "**File/Import/DPF**"
  - ⇒ Certain files with malformed polygons did not import properly.
  - ⇒ DPF text (not VText) would send the wrong text height if the DPF file didn't include a height parameter.
  - ⇒ DPF import blocks with net names after the closing parenthesis would be ignored.

- "**File/Import/HPGL**"

  Files sometimes mistaken for HPGL/2 were crashing. Before attempting to import, the file is now checked to see if it is actually an HPGL/2 file.

Bugs fixed 9.6.91:

- "File/Import/Gerber"

  The mirror command ("MI") caused data to be interpreted incorrectly in certain custom apertures.

- **"File/Import/Zip"**
  If a zip file had a .tgz file, the import would report an error

- **"File/Import/DPF"**
  Rounded rectangles with rotation weren't represented properly.

Bugs fixed 9.6.81:

- **"File -> Import"**
  ⇒ "DPF"
    Traces that were drawn by non round apertures are allowed in DPF. The ends of the line segments weren't
    properly represented.
  ⇒ "ODB"
    Board layers that were negative and started as a scratch layer were not being imported.
  ⇒ "Drill"
    In certain circumstances drill files could lose holes when rotated.

- **"Insufficient Memory Error"**
  In rare cases, users would report an "insufficient memory" error when starting their CAM product. This error
  has been corrected.

Bugs fixed 9.6.78:

- **"File -> Import"**
  ⇒ "Apertures"
    Import Apertures wouldn't recognize saved wizard aperture types if the type used the option: "If the
    program can successfully map X apertures".
  ⇒ "Gerber (F2)"
    Import Gerber (F2) could crash if the user selected Options – Auto Features – Autoload Aperture Files and
    the aperture file had errors during import.
  ⇒ "DPF"
    DPF files where a block was reversed and the block contained a contour that also was reversed would
    generate files with incorrect polarity.
  ⇒ "ODB"
    o Files with over 400 Feature symbol names/ Feature attribute names/ Feature attribute test strings
       wouldn't be imported.
    o ODB files can start with scratch data. Since the data wouldn't be useful and isn't considered proper
       Gerber data, it is ignored when importing.
    o Import was incorrectly assigning dcodes if the ODB file used valid dcodes D10- D9999.

Bugs fixed 9.6.69:

- "Edit->Paint And Scratch->Optimize Selection"
  Crashed when a layer to be optimized started with a scratch component.

Bugs fixed 9.6.53:

- "View/Info/Elements Overlapping Cursor"

Did not work properly.

Bugs fixed 9.6.43:

- "Edit/Edit Selection/Rotate"
  Blocked text was sometimes not rotated correctly.

- "**File/Import/Apertures**"
  An earlier release had a new form of GAP file. This form would cause other GAP styles to be ignored.

- "**File/Import/Guess**"
  Zip files would not be recognized.

Bugs fixed 9.6.17:

- "File/Print"
  Incorrect images were generated for data that contained very short arcs.

Bugs fixed 9.6:

- "File/Import/DPF"
  ⇒ Files with text were sometimes imported incorrectly.
  ⇒ Importing complex apertures wasn't handling modal X and Y coordinates.
  ⇒ Vector text could cause import to hang.
  ⇒ Rounded rectangles and thermals wouldn't import rotation correctly.

- "File/Import/ODB"
  Extremely small arcs would convert to full circles. Full circles may not import at all.

- "File/Import/Guess-Directory-Zip"
  ⇒ Extended Gerber files now recognize improperly formatted %FS statements.
  ⇒ Aperture files wouldn't be matched to Extended Gerber file types.
  ⇒ G01, G02, G03 commands would crash if an X coordinate wasn't present.
  ⇒ Import would hang if the board X dimension was 0.0
  ⇒ EIA formats weren't recognized.

- "**Setup/D Codes**" (F5)
  While changing shape types or sizes in this dialog, the changes were reflected immediately in the main view. This caused performance problems (especially when a lot of data was loaded) as the redraw takes time. The software was changed to display the modified shapes only after the dialog is closed.

Bugs fixed 9.4.73:

- "Edit/Edit Selection/Polygons/**Chords To Arcs**": did not work for polygons with holes – holes were discarded.

- "File/Import/**DPF**": did not import complex apertures properly if the coordinates were modal.

- "File/Import/**Directory-Zip-Guess**": Gerber files that contained a G75 code would cause the board size guessing routine to fail.

Bugs fixed 9.4.6-65:

- "Edit/Edit Selection/Transcode (Ctrl+T)"
  Was incorrectly transcoding routing paths also. Routing paths have no associated D Code, so they should not be affected by a D Code transcoding operation.

- "Import/Gerber"
  Certain Gerber 274-X files which had "AM" D Code shapes with rotated primitives were interpreted incorrectly.

Bugs fixed 9.4.1:

- **"Import/Gerber"**
  Certain Gerber 274-X files which had "AM" D Code shapes with rotated primitives were interpreted incorrectly.

Bugs fixed 9.4:

- **"Go/Center Of Data"** (C)
  The cursor did not move immediately, but only on a subsequent refresh.

- **"Edit/Edit Selection/Rotate"** (Ctrl+R)
  Generated incorrect results for some polygons.

- **"Setup/Layers"** (F10)
  The **"Order layers by B Layer"** command in the context menu (right click) did not always preserve the order or layers that were part of the same board layer.

- **"Import / DPF"**
  ⇒ Previously DPF blocks were only expected to have flashes at the end of the block. 'U' is also legal.
  ⇒ DPF apertures in contour were not outputted correctly if they were at the end of a block
  ⇒ DPF apertures with patterns would only output when not a scratch layer

Bugs fixed 9.2.41:

- **"File/Print"**
  Arcs drawn with a square or rectangular aperture could cause a crash.

- **"Edit/Edit Traces/Drag Vertex"**: did not work properly.

Bugs fixed 9.2.27:

- **"File/Import/Gerber"**
  Aperture macro (AM) blocks with primitive 20, 21 or 22 were imported incorrectly when the rotation angle was non-zero. < Introduced in earlier 9.2 release>

- **"File/Import/ODB++"**
  ⇒ When drawing a non orthogonal line with a square aperture, the ends of the lines were drawn orthogonally as per Gerber conventions. The line ends are now drawn non-orthogonally as per ODB conventions.
  ⇒ Diamond apertures were being imported as squares.

Bugs fixed 9.2.21:

- **"File/Import/Drill & Rout"**
  Excellon rout files with arcs defined with I and J were sometimes interpreted incorrectly.

- "Tools/**Compare Layers**"
  Although the differences were detected correctly and highlighted, the message in the status line always reported "One difference" instead of the actual number of differences. < Introduced in earlier 9.2 release>

- **Grouped Text**
  When present, caused certain operations to crash. Examples of such operations are "Tools/Compare Layers", "Edit/Stretch Traces" etc. < Introduced in earlier 9.2 release>

- **"File/Print"**
  Did not print correctly for layers with multiple polarity (paint and scratch elements in the same layer). < Introduced in earlier 9.2 release>

Bugs fixed 9.2.2:

- "**File/Export/Drill**"
  When exporting with trailing zeros omitted and negative coordinates, the software will not export coordinates that are at the limit of the number of digits allowed (so, for instance, in 2.4 format, a number such as "-064960", although legal, will cause the export to stop, because the minus sign is counted as one of the digits). This problem does not apply to export with leading zeros omitted.

Bugs fixed 9.2:

- "File/**Import**":
  ⇒ "Gerber":
    o certain custom apertures were imported incorrectly. This affected only aperture definitions (AM) that contained the "outline" primitive (4) and when the outline contained edges that were very short.
    o For Extended Gerber files with a mirror command (MIAXBX), custom apertures that followed were not mirrored.
  ⇒ "Guess": Extended gerber files with optional parameters in the %FS statement will be properly interpreted.
  ⇒ "HPGL": The HPGL2 import wasn't working properly. The driver was updated and the dll was corrected.
  ⇒ "DPF":
    o Fixed a bug that would cause DPF files that redefined the block aperture within the block to not step and repeat properly.
    o DPF files with 'F'lash or 'D'raw commands that lacked coordinates, would cause the import to be incorrect.
  ⇒ "Drill & Rout":
    o Some Excellon files with rout data caused a crash. M15 was not recognized when not at the beginning of a line.
    o Tools that needed transcoding caused the software to hang in certain cases.

- "File/Report/**Generate**":
  Crashed when layer names were extremely long.

- "Edit/**Edit Selection**":
  ⇒ "Polygons/F To Polygons": "Tolerance" value had no effect.

Bugs fixed 9.0.51:

- "**Edit/Edit Selection/Scale**": Scaling of some polygons would fail.

Bugs fixed 9.0.50:

- "**File/Import/Drill**": import of canned text commands failed (M97 and M98). Also, in the "5X7" font, the definition for the characters "0", "8" and "X" were incorrect.

- "**File/Import/Job**": transcoding N-type shapes did not always work correctly.

- "**Select/Area**": area was reported for all elements in a layer (not only for selected elements).

- Certain operation involving arcs, such as "**Tools/Convert Arcs/Approximate By Chords**" generated incorrect results.

- "**Edit/Stretch Traces**": caused a crash.

- "**File/Import/Zip or Directory**" : Wouldn't import aperture files correctly. After recognizing the aperture format, the routine would sometimes decide that the file was also a netlist file.

- **HPGL2** – files wouldn't import.

- **DPF Translation:** Block apertures that were redefined within the block wouldn't step. Draw and flash commands without coordinates weren't handled properly.

Bugs fixed 9.0:

- Software **crashed** occasionally when the scrollbars were on ("View/Scroll Bars") or the navigation view was on ("View/Toolbars/Navigation") and large amounts of data were being selected or unselected.

- "**File**":
  ⇒ "Import":
    o **Aperture**:
      "rectan" was not recognized as a valid Zuken shape.
      Wizard files could not be saved if the wizard path was the root directory (i.e. C:\)
  ⇒ "Print": When "Add page header" was checked, the header sometimes did not appear on pages following the first page.

- "Edit/Edit Selection/**Swell**": incorrect results for certain polygons.

Bugs fixed 8.4.50

- **"File":**
  ⇒ "Print":
    o Blank Images:
      Certain custom apertures (D Codes of type M) that resulted in a blank image (due to large scratch primitives) caused the software to crash. Very short arcs were sometimes printed as full circles.
  ⇒ "Save":
    When saving in "lo-res" mode (settable from "File/Save Options/High Resolution") the sizes of N-type D Codes were corrupted.

⇒ Incorrect Conversion from English to Metric:
When converting loaded data from English to metric or from metric to English, D Codes of shape type "N" (NC tool type) where converted incorrectly.

Bugs fixed 8.4.10

- **Importing DPF Files:**
  "File/**Import/DPF**": polygonal data (CONTOUR) with holes were parsed incorrectly.

Bugs fixed 8.4

- **"View/Selection/Properties":**
  The combined length of all traces was calculated incorrectly.

- **"Edit/Edit Selection":**
  ⇒ Scaling:
    o Polygons:
      When the X and Y scaling factors were different and polygons were scaled, the resulting polygons may have been self-intersecting (not well-formed)
    o N-Type D Codes:
      When N type D Codes existed in the selection and the sizes of the D Codes were also scaled (selected by user), the scaled sizes did not appear correctly in the "Setup/Tool Codes" table or when the a drill file was exported.
  ⇒ Polygons:
    o "Chords To Arcs":
      Occasionally produced incorrect result
    o "Make Well Formed":
      Crashed or computed incorrect results with certain input polygons

- "File/**Import:**
  ⇒ "Apertures":
    o Zuken files:
      "Oblongs" are now translated to rectangles. Start angle (rotation) is supported.
    o Dazix aperture files:
      Will now import rectangular apertures that have a drilled hole. Previously only surface mount rectangles were supported.
    o Eagle apertures:
      Now accept rectangles even if the UOM isn't defined. Sometimes the first d-code would be dropped.
  ⇒ "Gerber":
    o Extended Gerber Primitives:
      Certain patterns of primitives caused the software to crash.
    o Importing More than 127 Layers:
      When several files were selected to import and the layer progression crossed layer number 127, the import continued at layer number 1 instead of continuing with 128.
    o G36/37 Blocks with D02:
      Certain G36/G37 blocks (polygons) that contained moves (D02) where parsed incorrectly.
    o Undefined D Codes in Basic Gerber:
      Files that had arcs drawn with D Codes that were not defined in the file header (Basic Gerber) caused the software to crash

$\Rightarrow$ "HPGL":

HPGL2 files can be imported again.

$\Rightarrow$ "DPF":

 o Polygonal data (Contour) with holes was parsed incorrectly.

Bugs fixed 8.2.5

- **Importing Gerber files with polygons:**
  $\Rightarrow$ Add Connector:

  When Options/File Interpretation/Inexact arcs was set to "Add connector" some polygons were either lost or imported as not well formed (self-intersecting edges).

- **"File/Import/Gerber" MDA Autoplot format:**
  A gap of up to 3 mils is allowed between consecutive sides of a give polygon (D Codes of type POEX or POIN). Previously, polygons with gaps were discarded.

- **"Edit/Stretch Traces":**
  Did not take into account the D Code "Only" filter.

- **"File/Import/DPF":**
  Some polygons were incorrectly interpreted as holes of surrounding polygons.

Bugs fixed 8.1

- **Layer Operations over 99:**
  Some layer operations dialogs did not allow for the larger number of digits now permissible (for 255 one needs 3 digits as opposed to 2 for 99).

- **Tooltips:**
  Layers toolbar filename tooltips did not always appear.

Bugs fixed 8.0.X

- **Bin files** could not be opened in Windows XP (Error 61).

- **Printing with Elements Highlighted:**
  Print function wouldn't work properly if there were highlighted elements. This would also affect other functions such as DRC and Copper Area Calculation.

- **"Help/PentaLogix Home Page":**
  The browser to go to the PentaLogix home page didn't work.

Release History

Version	Release Date
10.0.30	05/30/2008
10.0.26	05/14/2008
10.0.10	04/02/2008
10.0.1	03/17/2008
9.8.70	12/31/2007
9.8.50	12/04/2007
9.8.25	10/26/2007
9.8.20	10/22/2007
9.8.5	09/25/2007
9.8.0	09/10/2007
9.6.91	05/31/2007
9.6.81	05/09/2007
9.6.78	05/04/2007
9.6.69	04/16/2007
9.6.68	04/15/2007
9.6.53	03/21/2007
9.6	01/02/2007
9.4.73	06/22/2006
9.4.1	03/03/2006
9.2.41	06/30/2005
9.2	04/05/2005
9.0.51	09/14/2004
9.0	08/05/2004
8.4.50	12/17/2003
8.4	10/27/2003
8.2.5	02/26/2003
8.1	10/23/2002

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