Command Reference

- File Menu
- Edit Menu
- View Menu
- Draw Menu
- Cell Menu
- Setup Menu
- Tools Menu
- Window Menu
- Help Menu
- Key Commands

File Menu

Command	*Default Shortcut*	*Toolbar Button*
File > New	Ctrl+N	
File > Open	Ctrl+O	
File > Close	Ctrl+W	
File > Save	Ctrl+S	
File > Save As		
File > Import Mask Data		
File > Export Mask Data		
File > Replace Setup		
File > Export Setup		
File > Info		
File > Print	Ctrl+P	
File > Print Preview		
File > Print Setup		
File > (recently used files)		
File > Exit		

Edit Menu

Command	*Default Shortcut*	*Toolbar Button*
Edit > Undo	Ctrl+Z	
Edit > Redo	Ctrl+Y	
Edit > Cut	Ctrl+X	
Edit > Copy	Ctrl+C	
Edit > Paste	Ctrl+V	
Edit > Paste to Layer	Alt+V	
Edit > Clear	Del, Backspace	
Edit > Duplicate	Ctrl+D	
Edit > Clipboard > Copy Window		
Edit > Clipboard > Copy Selections		
Edit > Select All	Ctrl+A	
Edit > Deselect All	Alt+A	
Edit > Find	Ctrl+F	
Edit > Find Next	F	
Edit > Find Previous	P	
Edit > Edit Object(s)	Ctrl+E, double-click MOVE/EDIT mouse button	

Command	*Default Shortcut*	*Toolbar Button*
Edit > Edit In-Place > Push Into	PgDn	
Edit > Edit In-Place > Pop Out	PgUp	
Edit > Edit In-Place > View Top Cell	End	

View Menu

Command	*Default Shortcut*	*Toolbar Button*
View > Insides > Toggle Insides	Ctrl+I, TAB	
View > Insides > Show Insides	S	
View > Insides > Hide Insides	D	
View > Insides > Hide Leaves	Alt+L	
View > Icon		
View > Arrays		
View > Ports		
View > Grid		
View > Origin		
View > Home	Home	
View > Exchange	X	
View > Zoom > Mouse	Z	
View > Zoom > In	+	
View > Zoom > Out	-	
View > Zoom > To Selections	W	
View > Pan > To Selections	Y	
View > Pan > Left	←	

Command	*Default Shortcut*	*Toolbar Button*
View > Pan > Right	→	
View > Pan > Up	↑	
View > Pan > Down	↓	
View > Pan > To Cell Edge > Left	Shift + ←	
View > Pan > To Cell Edge > Right	Shift + →	
View > Pan > To Cell Edge > Up	Shift + ↑	
View > Pan > To Cell Edge > Down	Shift + ↓	
View > Objects > Boxes		
View > Objects > Polygons		
View > Objects > Wires		
View > Objects > Circles		
View > Objects > Ports		
View > Objects > Rulers		
View > Objects > Instances		
View > Objects > Show All		
View > Objects > Hide All		
View > Layers > Show [Layer name]		
View > Layers > Show All		
View > Layers > Hide All		

Command	*Default Shortcut*	*Toolbar Button*
View > Layers > Show Generated		
View > Layers > Hide Generated		
View > Cell Browser		
View > Toolbars		
View > Status Bar		
View > Redraw	Space	

Draw Menu

Command	*Default Shortcut*	*Toolbar Button*
Draw > Move By		
Draw > Nudge > Left	Ctrl + ←	
Draw > Nudge > Right	Ctrl + →	
Draw > Nudge > Up	Ctrl + ↑	
Draw > Nudge > Down	Ctrl + ↓	
Draw > Rotate	R	
Draw > Flip > Horizontal	H	
Draw > Flip > Vertical	V	
Draw > Nibble	Alt+X	
Draw > Slice > Horizontal		
Draw > Slice > Vertical		
Draw > Merge		
Draw > Group	Ctrl+G	
Draw > Ungroup	Ctrl+U	
Draw > Pick Layer	A	

Cell Menu

Command	*Default Shortcut*	*Toolbar Button*
Cell > New	N	
Cell > Open	O	
Cell > Copy	C	
Cell > Rename	T	
Cell > Delete	B	
Cell > Revert Cell		
Cell > Close As		
Cell > Instance	I, Ins	
Cell > Flatten		
Cell > Fabricate		
Cell > Info		

Setup Menu

Command	*Default Shortcut*	*Toolbar Button*
Setup > Palette		
Setup > Application		
Setup > Design		
Setup > Layers	double-click layer icon	
Setup > Special Layers		
Setup > DRC		
Setup > SPR		

Tools Menu

Command	*Default Shortcut*	*Toolbar Button*
Tools > Clear Rulers		
Tools > Generate Layers		
Tools > Clear Generated Layers		
Tools > DRC		
Tools > DRC Box		
Tools > Clear Error Layer		
Tools > Place and Route		
Tools > Extract		
Tools > Cross Section		
Tools > Macro		
Tools > Repeat Macro		

Window Menu

Command	*Default Shortcut*	*Toolbar Button*
Window > Cascade		
Window > Tile Horizontally		
Window > Tile Vertically		
Window > Arrange Icons		
Window > Close All Except Active		
Window > (open windows list)		

Help Menu

Command	*Default Shortcut*	*Toolbar Button*
Help > L-Edit User Guide		
Help > About L-Edit		
Memory		
Support		

Key Commands

The following table lists default key commands not associated with any menu item. All key commands in L-Edit (including default shortcuts) can be reprogrammed through **Setup Application – Keyboard**.

Command	*Description*
Q	Toggles the locator bar to display coordinates and distance relative to the cursor's initial position.

File > New

File Menu

Creates a new file.

File Type

The type of file to create. **Layout** produces a Tanner Database (TDB) file. **Text** creates an ASCII text file for normal text editing.

Copy TDB setup from file

For **Layout** files, the TDB file from which to take setup information for the new file. TDB files that are currently loaded and in the directories predefined by the **Setup > Application** menu command are listed. If no file is selected the new file is opened with the default empty setup (black background, single layer, no DRC rules).

File > Open

File Menu

Opens an existing file.

Look in

The source directory, with a list of its parent directory and its subdirectories, any of which may be chosen as the new source directory.

File name

The name of the file to be opened. The wildcard character ***** can be used to narrow down the list of available files. (For example, to list only TDB files whose names begin with the letter **a**, type **a*.tdb** and press **Return**.) Only one file can be opened at a time. All files of the specified type in the source directory are listed.

Files of type

The type of file listed. There are two predefined types: TDB (Tanner Database) and text files with the extension **.ext**, **.ttx**, **.txt**, or **.xst**. All files in the source directory (***.***) can be displayed; however, only TDB or text files can be opened with the **File > Open** command.

Open as read-only

Opens the TDB file as read-only. When this option is checked, any changes made to the file cannot be saved.

File > Close

File Menu

Closes the active file. If it has not been saved since the last change, a warning appears asking if the file should be saved.

File > Save

File Menu

Saves the active file using the same name, path, and format as when last saved. If the current file has not been saved previously, the **File > Save As** dialog appears.

File > Save As

File Menu

Saves the active file under a new name.

Save in

The target directory into which the file is to be saved, with a list of its parent directory and its subdirectories, any of which may be chosen as the new target directory.

File name

The file name by which the active window is to be saved. The wildcard character ***** can be used to search for a previously-named file (see **File > Open**). The saved file must have a specific name. All files of the specified type in the target directory are listed.

Save as type

The type of file listed. **Layout** files must be saved as TDB (Tanner Database) format, either in the current version 7.0 or version 6.x. There is no predefined type for **Text** files. (See **File > New** for information on **Layout** and **Text** file types.)

File > Import Mask Data

File Menu

Imports an existing CIF or GDS II file into a layout document.

From file	The name of the **.cif** or **.gds** file to import. Clicking the **Browse** button opens the **File > Open** dialog with **CIF Files** and **GDSII Files** listed as predefined types.
Import file type	Either **CIF** (Caltech Intermediate Form) or **GDSII** (stream).
Use setup file	The TDB file from which to take layout setup information for the imported file. If no setup file is specified L-Edit asks whether to **Generate new layers for all unknown layers automatically** or **Place objects on all unknown layers to the Icon Layer**.

When a CIF file is selected, additional import options are available. Clicking the **Options** button opens the **Import CIF Options** dialog.

Read rectangular polygons as boxes

When this box is checked, all orthogonal, rectangular polygons are read in as boxes. Boxes consume less memory and draw faster than polygons. For more information see Extensions.

File > Export Mask Data

File Menu

Exports an existing layout data into a mask document.

To file	The name of the target file. Clicking the **Browse** button opens the **File > Save As** dialog with **CIF Files** and **GDS II Files** listed as predefined types.
Export file type	Either **CIF** (Caltech Intermediate Form) or **GDSII** (stream).

Both CIF and GDSII file types have additional export options. Clicking the **Options** button opens the **Export CIF Options** or **Export GDSII Options** dialog.

For CIF:

Write Port-boxes (Nonstandard!)

L-Edit writes out ports using the 94 CIF extension, where the port's label is written along with the center of the port box. When this box is checked, L-Edit writes port boxes using the center/length/width syntax of CIF boxes. *This does not conform to standard CIF syntax.* For more information see Extensions.

For GDSII:

Use default GDSII units (0.001 micron)

When this box is checked, the dimensions of objects are converted into units of 0.001 micron (the default GDSII *database unit*) when written into the GDSII file. For example, a 10×10 box with 1 internal unit = 1 lambda = 1 micron in the L-Edit layout would be recorded in the GDS II file as having dimensions of 10,000×10,000 database units. When this GDSII file is reopened, the technology setup is automatically changed so that the resulting box is 10×10 microns = 10,000×10,000 *internal units* in size.

When this box is not checked, the dimensions of objects are written into the GDSII file as specified, with an appropriate comment on the units being used. No technology setup changes are made when the file is reopened.

Convert all cell names to uppercase

Some GDSII systems do not recognize lowercase letters. When this box is checked, L-Edit changes all letters written to a GDSII file to uppercase.

Write circles as … sided polygons

By default, L-Edit circles are written as 64-sided polygons. The number of sides can be changed here.

File > Replace Setup

File Menu

Replaces or merges setup information from another file to use in the active document.

From file — The file from which the information is to be read. You can choose from available **.tdb** or **.ttx** files with the **Browse** button.

Layers — Under **General Setup**, if the **Layers** box is checked, layer setup information is updated on a layer-by-layer basis.There are two update options: **Replace** causes setup information from the source file to overwrite the setup information of the active file; **Merge** causes all layers present in both the source and destination files to be present in the destination file after the operation. Layers not originally present in the destination file before the merge are added to the end of the layer list.

Layers (continued)

Under **Replace**, check boxes indicate that **CIF names**, **GDS II numbers**, and **Wire settings** from the source file are replaced in the destination file. (See **Setup > Layers** for information on layers setup.)

Technology

Under **General setup**, if the **Technology** box is checked, technology setup information in the source file replaces the technology information in the destination file. When the **Maintain physical size** option is on, the internal units are changed to reflect the relationship between physical units and internal units. When the **Rescale** option is on, mapping of physical units to internal units is rescaled.

Replace

Setup information to be replaced in the destination file. Includes **Drawing**, **Palette**, **Grid**, **Selection**, and **Show/Hides**. (See Setup Menu commands and show/hide commands in the View Menu for an explanation of the different check boxes.)

Replace DRC setup

When the **DRC rules** check box is on, design rules in the source file replace those in the destination file. (See **Setup > DRC** for information on design rules.)

Replace SPR setup

Check boxes indicate which SPR setup information (**Core**, **Padframe**, **Pad route**) to replace in the destination file. When the **Place and Route run configuration** check box is checked, the information from the **Tools > Place and Route** dialog in the source file replaces the information in the destination file.

Note:

The **Replace SPR setup** options are disabled when the source file is in TTX format.

File > Export Setup

File Menu

Exports setup information in the active document to a Tanner Text Format File (TTX). The resulting TTX file can be read back into L-Edit with **File > Replace Setup**. TTX files may be edited with the L-Edit text editor or any other ASCII text editor.

To file

The name of the target file. Clicking the **Browse** button opens the **File > Save As** dialog with **Tanner Text Format Files** listed as the predefined type.

Layers

Check boxes indicate what layer setup information to save in the TTX file. Includes **Layers**, **Layer derivation**, **CIF names**, **GDS II numbers**, and **Wire settings**. (See **Setup > Layers** for more information.)

General

Check boxes indicate general setup information to save in the TTX file. Includes **Technology**, **Drawing**, **Palette**, **Grid**, and **Selections**. (See the Setup Menu° for more information.)

DRC

When the **DRC** box is checked, design rules are saved to the TTX file.

File > Info

File Menu

Displays general information for the active TDB file.

File path	The name and path of the active document.
File info	Includes **Author**, **Organization**, and **Information** (notes or messages) for the active document. Text fields can be edited.
File lock	Check box toggles locking of the file contents. Locked files cannot be edited, but their contents can be copied to other files.

File dates and versions

The date and time the file was created and last revised. **Setup info** and **Layout info** include version numbers. The version numbering system provides an internal accounting method for tracking layout design and file setup changes. Major numbers are increased by clicking the **Increment** button; minor numbers are automatically incremented each time changes in the file are saved.

File > Print

File Menu

Prints the active cell.

Printer	The device to which the data in the active window will be printed.
Properties	Accesses a **Printer Properties** dialog.
Print to file	When this box is checked the data in the active window is printed to a printer file (**.prn**).
Print range	Page range to be printed.
Copies	Number and order of copies to be printed.
Layout area	The portion of the Layout Area to print. Options are **Entire cell** or **Current window only**.
Resolution	The printer resolution in dots per inch (dpi). **Best** automatically matches the appropriate resolution for the printer.

Scaling

Option buttons control the magnification of the layout on the printed page. **Pages** refers to the number of pages (width × height) that the printed layout will occupy. For example, a 3×2 page scale will result in a layout that spans 6 printed pages: 3 wide and 2 high. Multiple pages can be pasted together after printing to create the layout as on the screen.

Locator Units per is the number of locator units to be printed per physical unit on the page. **Inch** and **centimeter** are available for selection from the drop-down menu.

File > Print Preview

File Menu

Displays the active cell as it will be printed in full-page mode. Cells cannot be edited in **Print Preview**.

File > Print Setup

File Menu

Changes the printer and printing options.

Printer	The default device to which the data in the active window will be printed.
Properties	Accesses a **Printer Properties** dialog.
Paper	The size and source of the paper.
Orientation	Whether the long side of the page(s) printed will be vertical or horizontal relative to the objects.
Layout area	The portion of the Layout Area to print. Options are **Entire cell** or **Current window only**.
Resolution	The printer resolution in dots per inch (dpi). **Best** automatically matches the appropriate resolution for the printer.

Scaling

Scaling options for the printed page. See **File > Print** for a more detailed description.

File > (recently used files)

File Menu

Recently used files can be reopened directly, bypassing the **File > Open** command. The most recently used files are listed first.

File > Exit

File Menu

Exits L-Edit. A warning appears for each unsaved file, asking if it should be saved.

Edit > Undo

Edit Menu

Reverses the previous editing operation. Only those operations that directly affect objects — drawing, copying, editing, moving, instancing, grouping, flipping, rotating, slicing, and merging — can be undone. Multiple operations can be undone, in reverse order.

Edit > Redo

Edit Menu

Reverses the previous **Undo** command. Multiple **Undo** operations can be redone, in reverse order.

Edit > Cut

Edit Menu

Removes the selected objects from the Layout Area of the active cell and places them on the internal L-Edit clipboard. The contents of the clipboard can be pasted to the Layout Area with **Edit > Paste**.

Edit > Copy

Edit Menu

Copies the selected objects from the Layout Area of the active cell to the internal L-Edit clipboard. The contents of the clipboard can be pasted to the Layout Area with **Edit > Paste**.

Edit > Paste

Edit Menu

Inserts the contents of the internal L-Edit clipboard into the Layout Area of the active cell.

Edit > Paste to Layer

Edit Menu

Inserts the contents of the internal L-Edit clipboard onto the current layer in the Layout Area of the active cell.

Edit > Clear

Edit Menu

Deletes the selected objects from the Layout Area of the active cell. Cleared objects are *not* put onto the internal L-Edit clipboard.

Edit > Duplicate

Edit Menu

Creates a duplicate of the selected object(s) and places it in the Layout Area of the active cell, one snap grid point apart from the originals. The new objects are selected and can be moved to a new offset. Subsequent **Duplicate** commands will place duplicates at the same offset from the new originals, aiding in the rapid creation of regular structures like arrays. **Duplicate** does not affect the contents of the internal L-Edit clipboard.

Edit > Clipboard > Copy Window

Edit Menu

Copies the view of the active cell to the Windows clipboard as a bitmap. Hidden objects are not copied.

Edit > Clipboard > Copy Selections

Edit Menu

Copies selected objects in the Work Area of the active cell to the Windows clipboard as a bitmap. Selected objects not visible in the Work Area are not copied.

Edit > Select All

Edit Menu

Selects all objects in the active cell.

Edit > Deselect All

Edit Menu

Deselects all objects in the active cell.

Edit > Find

Edit Menu

Searches for and selects items according to specified criteria.

Find what	A **Box**, **Circle**, **Polygon**, **Ruler**, and/or **Wire** search finds the object(s) on the specified layer. A **Port** search finds ports by name on the specified layer. When no layer is specified the search finds the items on all layers. An **Instance** search finds instances by **Instance name** or by originating **Cell name**.
Change view after finding	The view can be set to **Pan** or to **Pan & Zoom** to the found item, or to **No change**.
Match whole names only	If this box is checked, only exact matches to the specified text will be found. Otherwise, any port or instance which contains the search term as a portion of the full name will be selected.
Match case	If this box is checked, only text which matches the case of the specified text will be found.

Find next	Finds and selects the next matching item.
Find all	Finds and selects all matching items at once.

Edit > Find Next

Edit Menu

Searches for and selects the next object satisfying the criteria defined by **Edit > Find**. If the **Find** command has not yet been executed, the **Find Object(s)** dialog is opened.

Edit > Find Previous

Edit Menu

Searches for and selects previously found objects satisfying the criteria defined by **Edit > Find**. If the **Find** command has not yet been executed, the **Find Object(s)** dialog is opened.

Edit > Edit Object(s)

Edit Menu

Opens the **Editing Object(s)** dialog and prompts for textual edits to characteristics of the selected objects.

Note:

When multiple objects with different properties are selected, the affected fields appear as dark gray to represent multiple values for those properties. This is called *mixed-value appearance*. In the following tables, unless otherwise stated, all fields take on this characteristic when multiple objects are selected. Unlike disabled light gray (“grayed-out”) fields, fields with the mixed-value appearance can be edited. All selected objects take on the value entered in one of these fields.

On layer	The current layer on which the objects reside. This can be changed by selecting a layer from the drop-down list; all selected objects will convert to the new layer.

Data type	An integer primarily used by GDS II database users who intend to write out a GDS II file from L-Edit and read it into another program requiring additional information. Data type information is ignored by L-Edit.

The **Editing Object(s)** dialog contains seven tabs:

- **Boxes**
- **Polygons**
- **Wires**
- **Circles**
- **Ports**
- **Rulers**
- **Instances**

Each tab indicates the number of selected objects of that type in parentheses.

Edit Object(s) – Boxes

Coordinates (Locator Units) — The **X** and **Y** coordinates of the selected boxes' lower left and upper right vertices.

Edit Object(s) – Polygons

Vertices (Locator Units) — The **X** and **Y** coordinates of the selected polygon's vertices. **Add Vertex** creates a new vertex with the selected coordinates. **Delete vertex** removes the selected vertex from the object.

Note: Only a single polygon can be edited at a time. If multiple polygons are selected, the **Vertices (Locator Units)** list on the **Polygons** tab is disabled.

Edit Object(s) – Wires

Vertices (Locator Units)	The **X** and **Y** coordinates of the selected wire's vertices. **Add Vertex** creates a new vertex with the selected coordinates. **Delete vertex** removes the selected vertex from the object.
Wire width	The width of the selected wires in Locator units.
Join style	The type of join for the wires. A drop-down menu lists the 4 styles: **Layout**, **Round**, **Bevel**, or **Miter**. (See Wire Styles for more information on join styles.)
End style	The type of end for the wires. A drop-down menu lists the 3 styles: **Butt**, **Round**, or **Extend**. See Wire Styles for more information on end styles.)
Angle	The angle between two segments in a Miter style join. (See Wire Styles for more information on a Miter join.)

Note: Only a single wire's vertices can be edited at a time. If multiple wires are

selected, the **Vertices (Locator Units)** list on the **Wires** tab is disabled.

Edit Object(s) – Circles

Coordinates (Locator Units)	The **Radius** of the selected circle(s) and the center's **X** and **Y** coordinates.

Edit Object(s) – Ports

Port name	The visible text associated with the selected ports.
Text size	The size of the on-screen text, in Locator Units, for the selected ports.
Coordinates (Locator Units)	The **X** and **Y** coordinates of the selected ports' lower left and upper right vertices.

Edit Object(s) – Rulers

Size	The letter height, in Locator Units, for text associated with the ruler.

Display	Ruler text can be displayed in one of four ways: **No text**, **Centered**, **At end points**, or **At tick marks** (Major). Select the desired option from the drop-down list.
Angle	The angle at which the text is displayed.
Show text on the other side of the ruler	Moves the text to the opposite side of the line.
Visible	Check box toggles the visibility of tick marks. When this box is unchecked, text that is displayed **At tick marks** in the **Display** drop-down list will not be visible.
Major	The distance, in Locator Units, between major tick marks.
Minor	The distance, in Locator Units, between minor tick marks.
Symmetric	When this box is checked tick marks are symmetrical around the ruler line.
End style	Select the desired end style by highlighting the illustration in the drop-down list.
Start point (Locator Units)	The **X** and **Y** coordinates, in Locator Units, of the beginning of the ruler.

End point (Locator Units) The **X** and **Y** coordinates, in Locator Units, of the end of the ruler.

Edit Object(s) – Instances

Instance of cell The instanced cell. Clicking the **Change** button opens the **Select cell to instance** dialog. If more than one instance is selected the field is disabled.

Instance name Identifies the instance or array in the active cell. This name is assigned by L-Edit if the space is left blank. Each instance in a cell must have a unique name. If more than one instance is selected the field is disabled.

Rotation angle

The integer angle by which the instance is rotated. The coordinate axes illustration is updated as the angle is changed. Coordinates of arrays are specified with respect to the instanced cell. If the underlying subgrid is insufficient for accurate rendering of the rotated instance, a warning appears, suggesting the grid be rescaled. This occurs if the mouse snap grid parameter is less than 100. (See **Setup Design – Grid** for information on the mouse grid.) The physical sizes of objects are unchanged.

Mirror

When this box is checked, the instance's coordinate system is flipped horizontally. The coordinate axes illustration reflects the change.

Translation (Locator Units)

The position of the instance with respect to the origin of the instancing cell, in Locator Units. When first created, an instance is placed at the center of the active Work Area. Moving the instance changes the **X** and **Y** coordinates.

Scale factor

A fraction that defines the scaling of the instance relative to the original cell. The top box is the numerator, the bottom box the denominator. This factor is applied to each coordinate of all objects in the instanced cell. Scalable instances are fully supported in both GDSII and CIF formats. (CIF output results in the creation of new cells which are scaled versions of the originals. CIF does not support instance-based scaling.)

Array parameters

Repeat count is the number of times the instance is to be arrayed in the **X** and **Y** directions of the instanced cell's coordinate system. **Delta (Locator Units)** refers to the **X** and **Y** spacing between array elements. The distance is measured from the lower left corner of each array element in the instanced cell's coordinate system: Δx increases to the right, Δy increases upwards. If both of these numbers are zero, all of the array elements will be placed exactly on top of one another.

Edit > Edit In-Place > Push Into

Edit Menu

Allows the contents of an instance to be edited within the current cell without directly opening its originating cell. Regular geometry, other instances, and arrays can be edited. Multiple **Push Into** commands can be invoked to edit instances all the way down the hierarchy.

Edit > Edit In-Place > Pop Out

Edit Menu

Terminates an **Edit > Edit In-Place > Push Into** editing session in an instance and “pops” up to the next higher-level (instancing) cell.

Edit > Edit In-Place > View Top Cell

Edit Menu

Displays the home view of the top-level cell.

View > Insides > Toggle Insides

Edit Menu

Toggles the visibility of instance contents for all instances in the active cell. Ports and objects on the Icon layer are not affected by the command. (See **View > Icon** for information on the Icon layer.)

View > Insides > Show Insides

Edit Menu

Displays the contents of the selected instances.

View > Insides > Hide Insides

Edit Menu

Hides the contents of the selected instances.

View > Insides > Hide Leaves

Edit Menu

Hides all leaf-level cells in the hierarchy. A leaf cell contains no instances.

View > Icon

View Menu

Toggles the visibility of lower-level geometry in conjunction with **View > Insides > Toggle Insides** being off. When **Icon** is on, the objects in the instance residing on the Icon layer are shown and the rest of the instance's contents are hidden.

Many IC fabricators allow the identification of an Icon layer whose geometry is ignored during fabrication. Exactly one L-Edit layer may be specified as the Icon layer (see **Setup > Special Layers**). Objects on the Icon layer can be used to annotate an instanced cell or highlight one cell's relationship to another.

View > Arrays

View Menu

Toggles the visibility of instance contents in arrays in the active cell. When **Arrays** is on, all arrays are shown in full, with all repeated instances visible. When **Arrays** is off, arrays are displayed as single instances with only one element per array visible.

View > Ports

View Menu

Toggles the visibility of ports within instances. When **Ports** is on, all ports inside instances and at the top level are shown. When **Ports** is off, only top-level ports are shown. Ports on hidden layers are never shown.

View > Grid

View Menu

Toggles the visibility of the displayed grid (not the mouse snap grid) when the Grid layer is shown. (See **Setup > Layers** for information on showing/hiding layers.) The displayed grid will not be visible under all magnifications.

View > Origin

View Menu

Toggles the visibility of the crosshair marker that indicates the origin (0,0) when the Origin layer is shown. (See **Setup > Layers** for information on showing/hiding layers.) The origin will only be visible if it is within the Work Area.

View > Home

View Menu

Zooms the view to fit all of the contents of the active cell within the Work Area.

View > Exchange

View Menu

Exchanges the current view of the Work Area (result of a pan or zoom operation) with the previous view.

View > Zoom > Mouse

View Menu

Enters mouse zoom mode for one operation. The mouse buttons are redefined: the DRAW button becomes the ZOOM IN button, the MOVE/EDIT button becomes the PAN button, and the SELECT button becomes the ZOOM OUT button.

Zoom In

Can be clicked at a single point or can be used to drag out a rectangle. *Clicking* at a single point magnifies the general area about the mouse pointer by a factor of two. *Dragging* with the button held allows you to specify a rectangle in any portion of the Work Area. When the button is released, L-Edit zooms the Work Area directly to the area inside the rectangle. L-Edit must maintain the correct height-to-width ratio of the display, so the new Work Area may not be exactly the region outlined by the rectangle.

Pan	Can be clicked at a single point or used to drag out a direction. *Clicking* pans the Work Area so that the new center is located at the pointer's position. *Dragging* with the button held allows you to control the distance and direction of the pan. As you drag, an outline of the window moves with the pointer. When the button is released, L-Edit pans the view so that objects contained in the final outline are visible.
Zoom Out	Clicking zooms the Work Area out from the location of the pointer.

After the operation, the mouse buttons revert to their previous functions.

View > Zoom > In

View Menu

Magnifies the central portion of the Work Area by a factor of two, reducing the visible portion of the Layout Area.

View > Zoom > Out

View Menu

Reduces the magnification of the central portion of the Work Area by a factor of two, enlarging the visible portion of the Layout Area.

View > Zoom > To Selections

View Menu

Zooms the Work Area view to the minimum bounding box (MBB) of the selected items. Aspect ratio constraints are maintained.

View > Pan > To Selections

View Menu

Moves the Work Area view to place selected objects at the center.

View > Pan > Left

View Menu

Moves the Work Area view a quarter-width to the left.

View > Pan > Right

View Menu

Moves the Work Area view a quarter-width to the right.

View > Pan > Up

View Menu

Moves the Work Area view a quarter-height up.

View > Pan > Down

View Menu

Moves the Work Area view a quarter-height down.

View > Pan > To Cell Edge > Left

View Menu

Moves the Work Area view so that the left edge is flush with the left edge of the contents of the active cell.

View > Pan > To Cell Edge > Right

View Menu

Moves the Work Area view so that the right edge is flush with the right edge of the contents of the active cell.

View > Pan > To Cell Edge > Up

View Menu

Moves the Work Area view so that the top edge is flush with the top edge of the contents of the active cell.

View > Pan > To Cell Edge > Down

View Menu

Moves the Work Area view so that the bottom edge is flush with the bottom edge of the contents of the active cell.

View > Objects > Boxes

View Menu

Toggles the visibility of boxes in all open files. When boxes are hidden, the **Box** tool on the Drawing toolbar is shaded and disabled.

View > Objects > Polygons

View Menu

Toggles the visibility of polygons in all open files. When polygons are hidden, the **Polygon** tools on the Drawing toolbar are shaded and disabled.

View > Objects > Wires

View Menu

Toggles the visibility of wires in all open files. When wires are hidden, the **Wire** tools on the Drawing toolbar are shaded and disabled.

View > Objects > Circles

View Menu

Toggles the visibility of circles in all open files. When circles are hidden, the **Circle** tool on the Drawing toolbar is shaded and disabled.

View > Objects > Ports

View Menu

Toggles the visibility of ports in all open files. When ports are hidden, the **Port** tools on the Drawing toolbar is shaded and disabled.

View > Objects > Rulers

View Menu

Toggles the visibility of rulers in all open files. When rulers are hidden, the **Ruler** tools on the Drawing toolbar are shaded and disabled.

View > Objects > Instances

View Menu

Toggles the visibility of instances in all open files. When instances are hidden, the **Instance** tool on the Drawing toolbar is shaded and disabled.

View > Objects > Show All

View Menu

Displays all objects in all open files.

View > Objects > Hide All

View Menu

Hides all objects in all open files *except* for the tool type currently selected. All hidden drawing tools are shaded and disabled.

View > Layers > Show [*Layer name*]

View Menu

Toggles the visibility of the selected layer in the active file. When a layer is hidden, its icon on the Layer Palette is shaded and disabled.

View > Layers > Show All

View Menu

Displays all mask layers in the active file.

View > Layers > Hide All

View Menu

Hides all mask layers in the active file *except* for the layer currently selected. All hidden layer icons become shaded and disabled on the Layer Palette.

View > Layers > Show Generated

View Menu

Displays all generated layers in the active file. (See **Tools > Generate Layers** for information on generated layers.)

View > Layers > Hide Generated

View Menu

Hides all generated layers *except* for the generated layer currently selected on the Layer Palette. All hidden generated layer icons on the Layer Palette are shaded and disabled. (See **Tools > Generate Layers** for information on generated layers.)

View > Cell Browser

View Menu

Opens the hierarchical list of cells for the active file.

View > Toolbars

View Menu

Displays the list of available toolbars: **Standard**, **Drawing**, **Layers**, **Locator**, and **Mouse buttons**. Checks indicate which toolbars are currently displayed.

View > Status Bar

View Menu

Toggles the visibility of the Status Bar.

View > Redraw

View Menu

Redraws the active layout window.

Draw > Move By

Draw Menu

Opens the **Move By** dialog.

Move amount (Locator Units)

Moves selected objects in the active cell by a specified number of Locator Units in the **X** and **Y** directions.

Draw > Nudge > Left

Draw Menu

Moves (“nudges”) the selected objects to the left by a predetermined distance. The distance moved is set by the **Setup Design – Drawing** command.

Draw > Nudge > Right

Draw Menu

Moves (“nudges”) the selected objects to the right by a predetermined distance. The distance moved is set by the **Setup Design – Drawing** command.

Draw > Nudge > Up

Draw Menu

Moves (“nudges”) the selected objects up by a predetermined distance. The distance moved is set by the **Setup Design – Drawing** command.

Draw > Nudge > Down

Draw Menu

Moves (“nudges”) the selected objects down by a predetermined distance. The distance moved is set by the **Setup Design – Drawing** command.

Draw > Rotate

Draw Menu

Rotates the selected objects in the active cell counterclockwise 90°. The rotation takes place around the center of the set of all selected objects.

Draw > Flip > Horizontal

Draw Menu

Flips the selected objects in the active cell horizontally. The flip takes place around the vertical axis through the center of the set of all selected objects.

Draw > Flip > Vertical

Draw Menu

Flips the selected objects in the active cell vertically. The flip takes place around the horizontal axis through the center of the set of all selected objects.

Draw > Nibble

Draw Menu

Removes (“nibbles”) a polygonal area from the selected objects in the active cell, using the Box, 45° Polygon, 90° Polygon, or Wire tools. Nibble outlines are drawn on the Drag box layer. (See **Setup > Special Layers** for information on the Drag box and other special layers.) When one of the Wire tools is used to nibble, the width of the nibbled area is the wire width specified for the Drag box layer. (See **Setup > Layers** for information on wire settings.)

Draw > Slice > Horizontal

Draw Menu

Divides the selected objects in the active cell along a horizontal line. The location of the axis is determined with the pointer. If all of the selected objects are not visible at the current zoom level, the command zooms the display to include the selections.

Draw > Slice > Vertical

Draw Menu

Divides the selected objects in the active cell along a vertical line. The location of the axis is determined with the pointer. If all of the selected objects are not visible at the current zoom level, the command zooms the display to include the selections.

Draw > Merge

Draw Menu

Merges intersecting selected objects into a single object. The selection may include non-intersecting objects and objects on multiple layers; however, only sets of intersecting objects on a single layer are merged into single objects.

All-angle objects (polygons and wires) cannot be merged with other objects.

Draw > Group

Draw Menu

Opens the **Group** dialog and creates a new cell containing the selected objects and instances that cell in the active cell. Any type of object (geometry, ports, instances) may be grouped. The command can also be used to create an array from selected instances of the same cell with regular translations and transformations.

Group Cell Name	The name of the new cell.
Cell info	Includes **Author**, **Organization**, and **Information** (notes or messages) for the new cell.

Draw > Ungroup

Draw Menu

Flattens the selected grouped instances into their component instances or cells. When used on an array, the command “explodes” the array into its component instances.

Draw > Pick Layer

Draw Menu

Changes the current layer to the layer of the selected object. If multiple objects are selected, the current layer changes to the layer of the last object selected in the sequence (excluding instances). If no objects are selected, the current layer changes to the layer of the object closest to the cursor. If the cursor is over or near an instance, L-Edit checks inside the instance for the closest object.

Cell > New

Cell Menu

Opens the **Create New Cell** dialog. The newly created cell becomes the active cell.

New cell name	The name of the new cell. Each component cell of a file must have a unique name.
Cell info	Includes **Author**, **Organization**, and **Information** (notes or messages) for the active cell.
Open in new window	When this box is checked, the cell will open in a new layout window. Changing the state of the same box in the **Select Cell To Edit** dialog (see **Cell > Open**) changes the state of this box. The last state of the check box is saved when L-Edit is closed.

Cell > Open

Cell Menu

Opens the **Select Cell To Edit** dialog.

File	The name of the active TDB file (default). All open TDB files are listed in the drop-down list.
Cell	The specified file's component cells are displayed in the scrollable list. Highlight a cell by clicking its name in the scrollable list, then double-click or click **OK** to open the cell.
Open in new window	When this box is checked, the cell will open in a new layout window. Changing the state of the same box in the **Create New Cell** dialog (see **Cell > New**) changes the state of this box. The last state of the check box is saved when L-Edit is closed.

Cell > Copy

Cell Menu

Opens the **Select Cell To Copy** dialog. Cells may be replicated within a file or copied from one file to another. All instances and primitives are copied and the new cell becomes the active cell. The new cell must have a unique name.

File The name of the active document (default). All open TDB files are listed in the drop-down list.

Cell The specified file's component cells are displayed in the scrollable list. Highlight a cell by clicking its name in the scrollable list, then double-click or click **OK** to copy the cell and open the **Cell Copy** dialog.

Clicking **OK** opens the **Cell Copy** dialog.

Cell copy's name The name of the copy. Each cell in a file must have a unique name.

Cell > Rename

Cell Menu

Opens the **Rename Cell [cell name]** dialog.

Rename cell as	The new name of the active cell.
Cell info	Includes **Author**, **Organization**, and **Information** (notes or messages) for the active cell. Text fields can be edited.

Cell > Delete

Cell Menu

Opens the **Select Cell To Delete** dialog. Only cells which are not instanced in other cells can be deleted.

File	The name of the active TDB file (default). All open TDB files are listed in the drop-down list.
Cell	The specified file's component cells are displayed in the scrollable list. Cells which cannot be deleted (due to being instanced in other cells) have a red (**x**) next to them. Highlight an available cell and click **OK** to delete the cell.
Hierarchical delete	Checking this box causes all cells instanced within the selected cell to also be deleted, unless they are instanced in additional cells.

Cell > Revert Cell

Cell Menu

Returns the active cell to its last saved state. All changes made since that time are discarded and cannot be recalled with the **Edit > Undo** command. A warning prompts you to confirm the operation.

Cell > Close As

Cell Menu

Opens the **Close Cell As** dialog. Closes the edited active cell as a new cell.

Make cell with current edits into new cell with name The new name of the edited cell.

Cell > Instance

Cell Menu

Opens the **Select Cell To Instance** dialog and instances a cell in the active cell.

File	The name of the active document (default). All open documents are listed in the drop-down list.
Cell	The specified file's component cells are displayed in the scrollable list. Highlight a cell and click **OK** or double-click to instance the cell.

Replace

Enabled only when an instance in the Layout Area is selected. When the **Replace** box is checked, the selected instance is replaced with an instance of the new cell. There are two replacement options: **Abutment** matches the new instance with the Abut ports in the cell, designated in the **Setup > SPR** dialog. **Origin** places the origin of the new instance at the origin of the instance being replaced. The translation of the new instance is the same as the instance being replaced. (See **Edit Object(s) – Instances** for information on **Translation**.)

Cell > Flatten

Cell Menu

Flattens the hierarchy in the active cell. All instances in the current cell — including instances within instances — are replaced by the instance's contents. A warning prompts you to confirm the operation. This command is irreversible.

Cell > Fabricate

Cell Menu

Opens the **Select Cell to Fabricate** dialog. A cell can be selected to be tagged for foundry fabrication in conformity to CIF conventions for specifying the design cell to be fabricated. By convention, the fabrication tag is placed on a single cell at the topmost level of the design. An (**F**) to the left of the cell name in the Cell Browser designates a cell as tagged for fabrication.

File	The name of the active TDB file (default). All open TDB files are listed in the drop-down list.
Cell	The specified file's component cells are displayed in the scrollable list. Highlight a cell and click **OK** to tag the cell.

Cell > Info

Cell Menu

Opens the Cell Information dialog and displays information for the active cell.

Cell name	The name of the active cell.
Cell data	Includes **Author**, **Organization**, and **Information** (notes or messages) for the active cell. Text fields can be edited.
Cell lock	Toggles locking of the cell contents. Locked cells cannot be edited, but they can be instanced in other cells and their content can be copied.
Cell version and dates	The date and time the cell was created and last revised. The version numbering system provides an internal accounting method for tracking changes. Major numbers are increased by clicking the **Increment** button; minor numbers are automatically incremented each time changes in the cell are saved.

Setup > Palette

Setup Menu

Opens the **Setup Palette** dialog which prompts for modifications to the color palette. The palette contains 16 colors, each with two attributes: a unique 4-bit identifying code and the “amounts” of the color’s three components (red, green, and blue).

(4-bit codes)

The numbers from 0 to 15 are represented by 4-bit codes (filled=1, empty=0; for example, ●○●● = 1011 = 11). Each code is associated with a color, which can be changed.

Color (RGB)

Click a sample bar or code on the left side of the dialog to display its composition on the right side as a function of the three components (red, green, and blue). Each component takes one of 256 levels. Thus, L-Edit's 16 colors can be chosen from a pool of 16 million possibilities. To change the level of a component, move the slider of the desired color or type the desired level (0–255) in the text field at the bottom of the sliding control.

Setup > Application

Setup Menu

Opens the **Setup Application** dialog which prompts for changes to application-wide settings.

Configuration files

ASCII files containing application-wide setup information that can be edited and shared among multiple users. When both **Workgroup** and **User** (personal) files are specified, settings from the **User** file override settings in the **Workgroup** file. Any changes made to the application-wide parameters in the **Setup Application** dialog (listed below) are saved to the **User** file.

To load settings from an existing file, enter the name of the file in the **Workgroup** or **User** field or choose from available files with the **Browse** button next to the desired field. Click **Load** to load the settings into L-Edit.

To save settings to a new or existing file, enter the name of the file in the **User** field or choose from available files with the **Browse** button next to the **User** field. Click **OK** to save the settings to the file.

The **Setup Application** dialog contains two tabs:

- **General**
- **Keyboard**

Setup Application – General

Active-push rubberbanding

If this box is checked, the mouse button does not need to be held down during a drag. For example, when drawing a box you can click and release the Draw button at one corner of the box, move the pointer to the opposite corner of the box, then click the Draw button again to complete the operation.

Paste to cursor

If this box is checked, the contents of the paste buffer appear in the Work Area when the **Edit > Paste** command is executed but move with the pointer until any mouse button is clicked. They are then “dropped” into place at the location of the pointer. Before they are “dropped,” the objects may be rotated or flipped from the keyboard (see **Draw > Rotate**, **Draw > Flip > Horizontal**, **Draw > Flip > Vertical**).

Auto-panning

If this box is checked, L-Edit automatically pans the view when the pointer touches an edge of the Work Area during a draw, move, or edit operation.

Hide instance insides if less than

Two parameters define the minimum size (in pixels) that an instance must have to be drawn to the screen. If the width of the instance is smaller than the **Horizontal** parameter *or* the height of the instance is smaller than the **Vertical** parameter, the instance is drawn in outline mode (its insides are not shown). Suppressing the display of instances can not only enhance screen redraw times but also serves to clarify the layout if the screen is zoomed out to a relatively small magnification.

Layer icon size

Controls the pixel size of the icons on the Layer Palette.

Drawing mode

Sets the default display of drawing tools on the Drawing Bar. When **Orthogonal** or **45 Degrees** is chosen, only those tools fitting that description will be displayed. When **All Angle** is selected, all tools are displayed.

Use large buttons

Checking this box increases the size of all toolbar buttons by 50 percent.

Recently used file list

Controls the number of recently used files displayed in the **File** menu. (See **File > (recently used files)**.

TDB setup path

Predefined directories for TDB setup files. TDB files in these directories are listed in the **Copy TDB setup from file** field in the **File > New** and **File > Import Mask Data** dialogs.

Setup Application – Keyboard

Category

Command categories corresponding to L-Edit menu items. To select a category, highlight an item in the drop-down list.

Editor

L-Edit contains two editors that correspond to the two available file types: **Layout** and **Text**. (See **File > New** for information on file types.) Each editor contains its own set of commands and shortcuts. To remap shortcut keys for a specific editor, select the desired choice from the drop-down list.

Commands

The set of commands for the selected category. Highlight a command from the list to select it. Additional commands may be viewed by moving the scrollbar up or down.

Description

A description of the command highlighted in the **Commands** list.

Current keys

The current shortcut key combination for the command highlighted in the **Commands** list. To delete a shortcut, highlight the shortcut and click the **Remove** button.

Press new short key

With the cursor in the field, press the desired shortcut on the keyboard, which will then be textually represented in the field. Click the **Assign** button to register the new shortcut.

Default

Reassigns shortcut key assignments in the current editor to their default settings.

Setup > Design

Setup Menu

Opens the tabbed **Setup Design** dialog and prompts for file-specific editing options.

The Setup Design dialog contains four tabs:

- **Technology**
- **Grid**
- **Selection**
- **Drawing**

Setup Design – Technology

Technology name

Used by L-Edit to determine whether two design files are compatible. If you attempt to copy a cell from a file with a technology name different from that of the current cell, a warning is presented.

Technology units

A technology is characterized by a specific unit of measurement. Select one of the predefined units (**Microns**, **Mils**, **Millimeters**, **Centimeters**, or **Inches**), or a custom unit (**Other**). If you choose a custom unit then you must also specify its equivalent in microns and in Internal Units (for CIF/GDS II output, design rule checking, and other purposes) in the **Technology setup** group.

Maintain physical size of all objects

Changes the Internal Units to reflect the relationship between physical units and Internal Units.

Rescale the design

Rescales the mapping of physical units to Internal Units.

Technology setup

The relationships defined for a custom unit with Internal Units and with microns.

For example, you might choose to define one Internal Unit as one foot (= 12 inches Ý 304800 microns). Under **Technology units**, click **Other** and enter “Foot” as the name of the unit. Then, under **Technology setup**, define **1 Internal Unit =** 1⁄ 1 **Foot** and **1 Foot =** 304800⁄ 1 **Microns**.

Setup Design – Grid

Displayed grid

The absolute spacing, in Locator Units, of the displayed grid. The value entered in this field is the length of a grid square side.

Suppress grid less than

The *apparent* spacing of the displayed grid varies with the magnification of the Work Area. If the number of screen pixels per grid square side falls below the value entered in this field, then the grid is hidden.

Cursor type

Snapping sets the only possible positions of the pointer to be at the mouse snap gridpoints. **Smooth** sets the pointer's position to be unconstrained.

Mouse snap grid

The absolute spacing, in Locator Units, of the mouse snap grid. The value entered in this field is the length of a grid square side.

One Locator Unit

The value entered in this field is the number of internal units equivalent to one Locator Unit. Locator Units are used by the coordinate system of the Layout Area.

Setup Design – Selection

Selection range

A positive integer *S* such that: if the pointer is outside an object but is still within *S* Locator Units of any of the object's edges, then the object can still be explicitly, implicitly, or cyclically selected.

When multiple objects are within the selection range, L-Edit determines which object to select using the following priority: (1) objects the pointer is inside, ordered by the closest edge; (2) objects the pointer is outside, yet still within the selection range, ordered by the closest edge.

Deselection range

A positive integer *D* such that: if a mouse button is clicked (for example, to initiate a move, edit, or copy operation) when the distance between the pointer and a selected object is greater than *D* Locator Units, then the selected object is deselected before the operation is performed. By default the deselection range is set to the largest possible number (to indicate infinity) so that a selected object is never automatically deselected.

Edit range

A positive integer *E* such that: if the pointer is within *E* internal units of an edge or vertex of a selected object, then an operation with the MOVE/EDIT button is an edit; otherwise it is a move. Two numbers are supplied: one in **Locator Units**, the other in **Pixels**. *E* takes the value that is larger on-screen at any given time.

Select drawn objects

If this box is checked, L-Edit automatically selects an object after it is created. This is useful for designers who like to position or edit objects after creating them, rather than while drawing them.

Setup Design – Drawing

Default port text size

The default letter height, in Locator Units, for text associated with ports. Changing this value affects all subsequently created ports; those created previously are not affected.

Nudge amount

The default distance, in Locator Units, that an object moves during a nudge operation.

Default ruler settings:	The default text and tick mark settings for the ruler. Changing these values affects all subsequently created rulers; those created previously are not affected.
Text size	The default letter height, in Locator Units, for text associated with rulers.
Display text	Ruler text can be displayed in one of four ways: **No text**, **Centered**, **At end points**, or **At tick marks**. Select the desired option from the drop-down list.
End style	Ruler lines contain one of two end styles: arrows or tick marks. Highlight the illustration in the drop-down list to select the default end style.
Show tick marks	Toggles the display of tick marks. To change the position of **Major** and **Minor** tick marks (in Locator Units), type the desired spacing in the appropriate field. **Major** tick marks are twice as long as **Minor.**
Symmetric	When this box is checked, tick marks are symmetrical around the ruler line.

Create rulers on

The default layer for rulers. The **Current Layer** option places rulers on whichever layer is currently selected on the Layer Palette. To set rulers to a specific layer, click the second option button and select a layer from the drop-down list.

Setup > Layers

Setup Menu

Opens the **Setup Layers** dialog and prompts for modifications to the layer structure of the active file. L-Edit supports an unlimited number of layers; each layer contains three pass lists; each pass list consists of any number of separate passes.

Layers

The list of layers in the active file. To add a layer to the list, click the **Add layer** button. A **New Layer [n]** (where [*n*] is the number of the new layer) is highlighted and can be edited. Two layers cannot have the same name and generated layers must be entered in the list after the layers from which they are derived. Layers can be repositioned in the list by clicking the up or down **Move Layer** arrow.

To delete a layer, highlight the layer in the list and click **Delete layer**. A layer can only be deleted if it contains no geometry.

Layer name The name of the highlighted layer in the **Layers** list. This field can be edited.

The **Setup Layers** dialog contains three tabs:

- **General**
- **Derivation**
- **Rendering**

Setup Layers – General

Locked	When this box is checked, geometry on this layer cannot be drawn, moved, or edited.
Hidden	When this box is checked, the layer is hidden (not displayed).
Layer-to-substrate capacitance	Specify the **Area** and **Fringe** capacitance between the layer and the substrate.
Resistivity	Specify the resistivity (resistance per square unit area) of the layer material in Ohms/square.
Import/Export	To edit the import/export parameters of the selected layer, enter values in the **GDSII number** and **CIF name** fields.
Default wire settings	Set the default **Width** (in Locator Units), **End style**, and **Join style** for the layer's wire settings. (See Wire Styles for more information on wire settings.)

Setup Layers – Derivation

Enable Derivation	When this box is checked and source layer information (below) is entered, the named layer is generated as a generated layer. Checking or unchecking this box is a convenient way to activate or deactivate the generation of a particular derived layer without needing to change other setup information.
Source layers (Locator Units)	Existing layers from which the new layer will be created (derived). Up to three source layers can be selected.
NOT	When this box is checked, the source layer is specified as a NOT operation.
Grow	Enter a positive or negative integer for the amount, in locator units, by which objects on the source layer are grown or shrunk on the derived layer. The size of the object is changed by expanding or decreasing each side by the specified number of units.
Layer 1... Layer 2... Layer 3	Select each source layer from the drop-down list. Only layers listed prior to the target layer are available.

Operation

Select **AND** or **OR** from the drop-down lists between **Layer 1** / **Layer 2** and **Layer 2** / **Layer 3** to specify pairwise operations. For example, if **Layer 1** is *Poly* and **Layer 2** is *Active*, choosing **AND** between them results in *Poly & Active* for the derived layer.

Setup Layers – Rendering

Pass list

Select the type of pass list to edit in the drop-down list: **Object**, **Port**, or **Text**. (See Pass Lists for more information on pass types.)

The list below the **Pass list** drop-down list contains the **Pass**, **Color-Plane**, **Write-Mode**, and **Stipple** of the pass. To edit a pass, highlight it in the list. To add a pass to the list, click the **Add pass** button. A new pass is highlighted and can be edited. To delete a pass, highlight the pass in the list and click **Delete pass**. (For more information on passes and their attributes, see Pass Lists.)

Color

To change the color of the pass, click one of the sample bars or 4-bit codes in the drop-down list.

Mode

To change the write-mode of the pass, select **Set** or **Clear** from the drop-down menu.

Stipple

To change the stipple of the pass, click one of the pattern buttons surrounding the stipple edit box, or edit the pixel pattern in the stipple edit box directly.

Setup > Special Layers

Setup Menu

Opens the **Setup Special Layers** dialog and assigns special layers. To select a layer for each option, highlight a layer from the option's drop-down list.

Grid	The layer on which the displayed grid points are drawn.
Drag box	The layer on which the boxes displayed during a drag operation are drawn.
Origin	The layer on which the origin crosshair marker is drawn.
Cell outline	The layer on which instanced cell outlines are drawn.
Error	The layer on which DRC and SPR error markers are drawn.
Icon	The layer on which nonfabricated comment items are drawn.

First mask

The layer in the top left corner of the Layer Palette.

Setup > DRC

Setup Menu

Opens the **Setup Design Rules** dialog and prompts for modifications of design rules.

Rule set

Name identifies the design rule set. **Tolerance** is a value *T*, common to all rules in the set, which together with the distance *D* for each rule (see below) determines the precision of error checking. A distance on the layout must be outside the range $D \pm T$ to be flagged as a violation. A minimum tolerance of 5 internal units is required for designs containing 45° geometry. The tolerance may be set to zero for pure orthogonal designs.

Rules list

The list of available rules. To add a new rule, click the **Add rule** button and type the name of the new rule in the **Rule** field. To delete a rule highlight the rule and click the **Delete rule** button. Rules can be repositioned in the list by highlighting the rule and clicking the up or down **Move Rule** arrows.

Rule

The name of the rule highlighted in the **Rules list**. **Rule type**, **Ignore**, **Rule distance**, and **Rule layers** all pertain to the uniquely named rule.

Enable

If this box is checked, the rule will be checked when DRC is run. If violations are detected, the names of the violated rules are indicated.

Rule type

Selected by clicking the appropriate option button. See Design Rule Types for information on the seven supported types.

Ignore

Cases which will not be considered a design rule violation. See Rule Exceptions for information on how minimum width, spacing, and surround rules can be fine-tuned by checking these boxes.

Rule distance

The distance value associated with a rule. Distances are measured either in Locator Units or in user units. (User units are defined with the command **Setup Design – Technology**.)

Rule layers

DRC specifies which layers are involved in each of the design rules. For example, selecting the **Spacing** rule type automatically specifies **Minimum Layer [ ] to Layer [ ] spacing**. The appropriate layers can be selected from the drop-down menus.

Write to file

This button opens the **Write DRC Rules to File** dialog, which prompts for the name, path (location), and type (extension) for the text file. There is one predefined file type: .rul.

Setup > SPR

Setup Menu

Opens the **SPR Setup** dialog and prompts for modifications to parameters for standard cell place and route.

Standard cell library file

Contains the standard cells and pad cells that will be used to generate the components of the design. Enter the full pathname if the file is not in the current L-Edit directory.

Netlist file

The Tanner Place and Route (TPR) netlist file of the circuit. This is a textual description of the schematic design and identifies which cells are required from the standard cell library. It can be produced by S-Edit or a SPICE netlist can be converted to TPR with a conversion tool such as NetTran. The netlist file is not required if only padframe generation is performed.

Power/Ground node names The schematic netlist names of the **Power signal** and the **Ground signal** must match the names of the power and ground ports in the standard cells.

There are three buttons associated with SPR setup:

- **Core setup** — prompts for modifications to core setup parameters.
- **SPR Padframe Setup** — prompts for modifications to padframe setup parameters.
- **SPR Pad Route Setup** — prompts for modifications to pad route setup parameters.

Each tab in each dialog contains a **Reset** button, which will reset all fields and options to the values they held when you accessed the tab.

SPR Core Setup

The **SPR Core Setup** dialog consists of five tabs:

- **General**
- **Layers**
- **Design Rules**

- I/O Signals
- Global Signals

SPR Core Setup – General

L-Edit requires three special standard cells in a library set: a *row crosser cell*, the *tie-to-power* cell, and the *tie-to-ground* cell. They are used for node connections only and are not included in the TPR netlist.

Row crosser cell	A row crosser cell contains one row cross port and is placed to make up a cross-row pass to route wires across a standard cell.
Tie-to-Power cell	The tie-to-power cell is needed where a TPR standard cell has a pin directly tied to Vdd.
Tie-to-Ground cell	The tie-to-ground cell is needed where a TPR standard cell has a pin directly tied to Gnd.
Row crosser port	The name of a row crosser port. A row crosser port is used to identify crossing paths to route wires across a standard cell row.
Abutment port	The name of an abutment port in a standard cell. L-Edit uses the abutment port for precise positioning of a cell.

Core cell	The name of the core cell to be created.
Row cell	The name of the row cells to be created.
Channel cell	The name of the channel cells to be created.

SPR Core Setup – Layers

Signal routing layer assignment

Choose the **Horizontal** (for signals running left and right), **Vertical** (for signals running up and down), and **Contact** signal routing layers by highlighting the desired layer in the drop-down list. **Overlap capacitance** values are calculated automatically using the **Layer-to-substrate capacitance** entered in the **Setup Layers – General** dialog. This information is required if the **Write nodal properties file** option in the **Standard Cell Place and Route** dialog is checked.

Power/Ground routing layer assignment

Choose the routing layer assignment for power and ground by highlighting the desired layer in the drop-down list.

Layer-to-layer area capacitance

Enter the **Horizontal to vertical layer** capacitance. This entry is required if the **Write nodal capacitance file** option in the **Standard Cell Place and Route** dialog is checked. The units of capacitance should be the same as those used in the simulation file and can be obtained from your chip foundry.

SPR Core Setup – Design Rules

Wire/contact width	Minimum wire width of horizontal and vertical routing segments and minimum width of contacts (vias).
Layer spacing	**Hotizontal layer** and **Vertical layer** define the minimum distance between two routing segments or contact surrounds in the horizontal and vertical layers. Contact defines the minimum spacing between neighboring contacts (vias).
Layer - Cell spacing	The minimum distance between standard cells and routing segments or contact surrounds in the horizontal and vertical layers.
Contact surround	The width of contact surrounds in the horizontal and vertical layers.
Cell - Cell spacing	The minimum distance between two standard cell rows.
Cell - Power spacing	The minimum distance between the **Vdd** and **Gnd** rails and the outermost standard cells in each row.

SPR Core Setup – I/O Signals

Power (Vdd) rail on

Power and ground can be run on either the **Left side** or the **Right side** of the cell. Click the option button to select a side. The Vdd side is overriden by the location of the Vdd pad on the padframe if there is a conflict.

I/O signals leave core on

Click the option button for which layer I/O signals should leave the core on: **Horizontal layer** or **Vertical layer**.

I/O signal list

This list defines the names of the signals leaving the core and the side from which they exit. The signals must be ordered according to the side from which they exit the core: Upper left, then bottom, then right, then top.

To add a signal to the list, click the **Add** button. A **New Signal** is highlighted and can be edited. The name of the signal must be the same as in the netlist or schematic. To delete a signal, highlight the signal in the list and click **Delete**.

The **I/O Signal list** is only required for a separate core place and route.

SPR Core Setup – Global Signals

Global input signal names in netlist

Specify the names of one or two signals for global routing.

Port names in standard cells

The names of the ports to be used for each global input signal. These port names subsequently define the bus, rail, and pad positions used to route each global signal net.

Buffer cells in standard cell library

Type the names of the **Buffer cell left side** and **Buffer cell right side** for the standard cell rows. If the design has only a single global input signal, specify one buffer cell on the same side as the global input signal rail.

Driving force is the driving capability (fanout) of one buffer cell — the maximum number of standard cells that can be driven by this buffer cell. The value must be greater than or equal to 1. L-Edit uses this value to calculate the number of buffer cells to place on the edge of each row.

Global input signal rail positions

Click the option button for whether the **Global input signal 1 rail** should be on the **Left side** or the **Right side**. The rail for signal 2 will be placed on the opposite side.

SPR Padframe Setup

The **SPR Padframe Setup** dialog consists of two tabs:

- **General**
- **Layers**

SPR Padframe Setup – General

Library cells

Specify the name of the **Power pad cell**, the **Ground pad cell**, and the **Corner pad cell** to be drawn from the standard cell library.

Port names

Enter the name of the port that defines the edge of each pad cell in the **Pad cell abutment port** field. In the **Pad cell mirror port** field, enter the name used in the standard cell library to designate mirror ports in pad cells. L-Edit places pad cells with this port name in a special orientation. Enter the name of the port that defines the inner edge of the padframe in the **Padframe port** field.

Output cell name

Specify the name of the **Padframe cell**.

SPR Padframe Setup – Layers

Padframe dimensions (Locator Units)

Specify the **Width** and **Height** of the padframe in Locator Units. If you enter zero for either or both dimensions, L-Edit automatically determines the minimum size required.

Padlist

A numbered list of pads and their attributes. If the padlist is empty, the pad configuration in the netlist will be used. If the padlist contains a padframe specification, L-Edit asks if the padframe should be generated using the padlist or the pad configuration in the netlist.

To add an instance to the list, click the **Add** button. A **New Pad** is highlighted and can be edited. To delete a pad, highlight it by clicking any of its attributes and click **Delete**.

#

The number of the pad in the padframe. L-Edit orders pads counterclockwise along each side according to this number.

Instance name

The name of the pad instance. The name of the pad must be the same as the instance name in the netlist file. Pad cell names can be entered if no netlist is provided. (Padframe generation only.)

Side

The side of the padframe on which the pad is placed. Pads must be entered into the list in order: Left, then bottom, then right, then top.

Mirror

When this column specifies **Yes** for a given pad, the pad will be mirrored through its vertical axis — unless this will conflict with information present in the standard cell library. This column is used for pad placement at specific locations and orientations.

Power/Ground

Enter Vdd and Gnd to designate particular pads as power and ground. Only one of each pad may be placed. (See SPR Padframe Setup if more than one power or ground pad is required in your design.)

SPR Pad Route Setup

The **SPR Pad Route Setup** dialog consists of five tabs:

- **General**
- **Layers**
- **Design Rules**
- **Core Signals**
- **Padframe Signals**

SPR Pad Route Setup – General

Output cell name

Specify the name of the **Chip cell**. The chip cell contains the core and the padframe instance, and is where the pad routing will be placed.

SPR Pad Route Setup – Layers

Pad routing layer assignment

Choose the **I/O signal layer** and **Power/ Ground layer** by highlighting the desired layer in the drop-down list. I/O signals and power/ ground signals must be routed in different layers. I/O signals must be assigned to the same layer as what is specified in the **SPR Core Setup – I/O Signals** dialog.

SPR Pad Route Setup – Design Rules

Wire width

Minimum wire width of I/O signals.

Layer spacing

The minimum distance between two routing segments in the I/O signal routing layer and the power/ground routing layer.

Layer - Core spacing

The minimum distance between the core cell and any routing segment in the I/O signal routing layer and the power/ground routing layer.

Layer - Pad spacing

The minimum distance between the pad cells and any routing segment in the I/O signal routing layer and the power/ground routing layer.

SPR Pad Route Setup – Core Signals

I/O signal list

Defines the names of all signals exiting or entering the core, beginning with the first signal on the upper left side of the core and proceeding counter-clockwise. Edit the **Signal name**, **Side**, or **Connect** (**Yes** or **No**) by highlighting the item and typing the desired value.

To add a signal to the list, click the **Add** button. A **New Signal** is highlighted and can be edited. To delete a signal, highlight it by clicking any of its attributes and click **Delete**.

This list can be left empty if you perform pad route in conjunction with core place and route.

SPR Pad Route Setup – Padframe Signals

I/O signal list

Defines the names of all signals exiting or entering the padframe, beginning with the first signal on the upper left side of the padframe and proceeding counterclockwise. Edit the **Signal name**, **Side**, or **Connect** (**Yes** or **No**) by highlighting the item and typing the desired value.

To add a signal to the list, click the **Add** button. A **New Signal** is highlighted and can be edited. To delete a signal, highlight it by clicking any of its attributes and click **Delete**.

This list can be left empty if you perform pad route in conjunction with core place and route and padframe generation.

Tools > Clear Rulers

Tools Menu

Opens the **Delete Rulers** dialog and prompts for options, then removes all rulers from the current cell, the current file, or all open files. This command cannot be undone.

This Cell (*cell name*)	Removes rulers in the active cell.
This File (*file name*)	Removes rulers in the active file.
All Files	Removes rulers in all open files.

Tools > Generate Layers

Tools Menu

Opens the **Generate Layers** dialog, prompts for options, then creates generated Boolean layers defined with the **Setup > Layers** command. All objects on existing generated layers are cleared automatically before new ones are generated.

Note: **Tools > Generate Layers** only operates on boxes and 45°/90° polygons and wires. Objects are not created on layers generated from circles or all-angle objects.

Layers are generated inside the minimum boundary of the active cell, defined by the outer edge of the outermost objects. In other words, a NOT operation on an object will not result in a huge polygon which spans the entire Layout Area; instead, the created object will be as large as the area including all existing objects, and an extra amount to account for the **Grow** operation. Generated objects are placed directly into the active cell. They are the same as other L-Edit objects and can be edited.

Warning: When the **Generate Layers** command is executed, objects previously drawn on generated layers will be deleted.

During generation, a dialog displays which layer is currently being generated and the status of the overall process.

Target The layer to be generated is selected from the **Layer** drop-down list. If any of the selected layer's source layers are generated layers, then those layers are recursively generated as well. Alternatively, **All Layers** may be generated at once.

Binning

L-Edit divides the layout into a grid of square bins and performs layer generation within each bin. Choosing the optimal bin size significantly increases performance because objects which are very distant from one another are not involved together in layer-generation operations. **Bin size** is the length (in Locator Units) of one side of a bin. If the **Merge objects after generation** box is checked, intersecting objects on the same generated layer are merged *after* all layers have been generated. (See **Draw > Merge** for more information on merging layers.)

Tools > Clear Generated Layers

Tools Menu

Opens the **Delete Objects on Generated Layers** dialog and prompts for options, then removes all generated layers from the current cell, the current file, or all open files. All objects on those layers are deleted, regardless of how they were created. This command cannot be undone.

This Cell (*cell name*)	Removes generated layers in the active cell.
This File (*file name*)	Removes generated layers in the active file.
All Files	Removes generated layers in all open files.

Tools > DRC

Tools Menu

Opens the **Design Rule Check** dialog, prompts for options, then checks the layout for design rule violations. **DRC** only operates on boxes and on 45°/90° polygons and wires; it cannot check for design rule violations on circles or all-angle polygons and wires.

Clicking the **Setup** button opens the **Setup Design Rules** dialog (see **Setup > DRC**).

Place error ports — When this box is checked, an *error port* is placed at the location of each violation. An error port consists of the name of the violated design rule and a bracketed expression; the expression indicates the spacing or nature of the error and the rule distance.

Place error objects — When this box is checked, marker objects are placed at the locations of violations.

Write errors to file

When this box is checked, errors are written to a text file. The default name of the file is ***cell*.drc**, where ***cell*** is the name of the current cell. This file can be read with any text editor.

Bin size

DRC performs a check of the entire cell. The layout is divided into a grid of square *bins*. The **Bin Size** is measured in locator units. The entire cell check is performed bin-by-bin, beginning in the lower left corner of the layout and moving to the right. When the right edge is reached, L-Edit moves up to the next row, beginning again on the left. Thus two objects placed relatively far apart will never be checked for design rule correctness. This poses no danger, since objects far apart always satisfy any applicable spacing rules.

When each bin is completed, it is marked with a large × from corner to corner if a design rule violation was discovered within its boundaries. When the whole check is completed, L-Edit displays the total number of errors detected.

Tools > DRC Box

Tools Menu

Checks a specified area in the layout for design rule errors. Use the DRAW mouse button to drag a rectangular region surrounding the layout to be checked (this region is represented by a box on the Error layer). When the DRAW mouse button is released, the **Design Rule Check** dialog appears (see **Tools > DRC**).

Tools > Clear Error Layer

Tools Menu

Opens the **Delete Objects on Error Layer** dialog, prompts for options, then removes all objects on the Error layer from the current cell, the current file, or all open files. This command cannot be undone.

It is not necessary to run **Clear Error Layer** before running **DRC**. **DRC** automatically clears the Error layer in the active cell and in its instanced cells as its first step.

This Cell (*cell name*)	Removes all objects on the error layer in the active cell.
This File (*file name*)	Removes all objects on the error layer in the active file.
All Files	Removes all objects on the error layer in all open files.

Tools > Place and Route

Tools Menu

Opens the **Standard Cell Place and Route** dialog. Clicking the **Setup** button opens the **SPR Setup** dialog (see **Setup > SPR**).

Core place and route	When this box is checked, L-Edit runs the core place and route module.
Padframe generation	When this box is checked, L-Edit runs the padframe generation module.
Pad route	When this box is checked, L-Edit runs the pad router module.
Global input signal routing	When this box is checked and **Core place and route** is run, L-Edit performs a separate global route of up to two input signal nets. (For more information see SPR Core Setup – Global Signals.)

Placement

The **Optimization** option instructs L-Edit to analyze the design in order to reduce its overall area. When this option is off, L-Edit places cells according to their sequence in the netlist.

The **Optimization factor** controls the degree of optimization and thus the quality of the placement. The higher the value, the greater the total placement time.

Configuration

Grid is the side of a square of the grid on which the placement optimizer and channel router operate. Typically, this value is equal to the port grid within the standard cells.

Number of rows in the finished core. If zero is entered, L-Edit computes the actual number of rows using the formula $\sqrt{N/2}$, where N is the total number of cells. This value has been found to produce relatively square core cells for most designs.

Configuration (continued)

Row indent ratio is the ratio of the target length of the middle row of cells to that of the top row. This value must be between 0 and 1. For designs with a significant number of row crossers added to the middle rows (thus increasing their width), the ratio should be decreased if the middle rows are much wider than those at the top or bottom of the design.

Output options

If the **Write nodal properties file** box is checked, a file of node capacitances is written out after the routing is completed. The name of the file is the same as that of the TPR netlist file with a **.cap** extension.

If the **Label nodes with ports** box is checked, L-Edit places ports with node names on the layout. This is useful if manual modifications to the results of the routing will be necessary: individual nodes can be traced as they wind through the core.

Tools > Extract

Tools Menu

Opens the **Extract** dialog.

Clicking **Accept** saves the current settings without running the **Extract** module. Clicking **Run** begins the extraction process on the active cell. Any instances are temporarily “flattened” (except for those marked as subcircuits).

The **Extract** dialog contains three tabs:

- **General**
- **Output**
- **Subcircuit**

Extract – General

Extract definition file

The name of the input file containing the extractor device and interconnection definitions. You can choose from available files and directories with the **Browse** button.

SPICE extract output file

The name of the output file containing the extracted netlist. Enter the name (or use the default). You can choose from available files and directories with the **Browse** button.

Bin size

To improve performance, the extractor divides the layout into a grid of square bins, which are handled individually. The **Bin size** is the length of one side of a bin, in Locator Units. Binning is not used if the **Recognize subcircuit instances** box in the **Subcircuit** tab is checked.

Extract – Output

Write node names

If this box is checked, the names of nodes are included in the descriptive comment lines that are written into the netlist with each device statement.

Write device coordinates (Locator Units)

If this box is checked, the location of each device in the layout is placed in a comment line in Locator Units.

Write shorted devices

If this box is checked, shorted devices are written into the netlist as comments; otherwise, they are ignored.

Note:

The **Write shorted devices** check box only applies to those devices in the extract definition file containing the **IGNORE_SHORTS** flag.

Write nodes as

Ports in the layout can be used as node or element names in the netlist. This option controls whether nodes are written as internally generated numbers (**Integers**) or as descriptive strings (**Names**).

The strings produced by the extractor are the hierarchical names; each instance involved in a node is mentioned and separated from the others by a slash ***/***, with the port name at the end. (Instances that are unnamed in the layout are named automatically by the extractor.) For example, the node name **U1/alpha/in** describes a port **in** contained by an instance **alpha**, which in turn is contained by an instance **U1**.

A port on the device recognition layer for a particular device, and completely enclosed by that device, is used to name that device in the netlist.

Write nodal parasitic capacitance

Computes the capacitance with respect to the substrate of each node in the circuit using the area and fringe capacitance constants specified with the **Setup > Layers** command. The node to substrate capacitance of ***N*** is written to the netlist as a capacitor between ***N*** and the substrate/ground (***0***).

Write nodal parasitic capacitance is not generally turned on for LVS since the other netlist (typically derived from a schematic) will not contain parasitic capacitors associated with nodes.

Ignore nodal parasitic capacitance less than

Specify a limit, in femtofarads, below which the nodal parasitic capacitance will not be written to the netlist. This field is disabled when the **Write nodal parasitic capacitance** box is unchecked.

Note:

L-Edit cannot determine if other nodes in the circuit are ground nodes. If other nodes are to represent ground, then they must be renamed **0** — or any of its equivalents — in the netlist.

Write values in scientific notation

When this box is checked, numerical values are written in scientific notation rather than in engineering units.

Write verbose SPICE statements

Writes resistors, inductors, and capacitors to the netlist file with the device value preceeded with a **R=**, **L=**, or **C=**. For example, a capacitor would have the following format: **C*xxx* n1 n2 *modelName* C=*cValue***.**

Label all devices

For each device, creates a two-dimensional port in the layout at the location of the device from its recognition layer. The port is placed on the layer specified in the **Place device labels on layer** drop-down list. The text of the port is the text of the element name for the device.

SPICE include statement

This field is written unaltered as the second line of the output netlist. Typically, an **.include *file*** command is entered, where ***file*** represents a model or subcircuit file name.

Extract – Subcircuit

Recognize subcircuit instances

Activates the subcircuit recognition feature.

Subcircuit recognition layer	The name of the *subcircuit recognition layer* (SRL). This mandatory layer should not be a layer containing electrically significant geometry.
Write netlist as a subcircuit definition (.SUBCKT ... .ENDS)	If this box is checked, the entire netlist is written in subcircuit format: a **.subckt** command appears before the first device, and an **.ends** command appears after the last device.
Flag improper overlaps	This box controls the reaction to geometry violations: under- or over-filled connection ports or geometry that overlaps the subcircuit boundary. When the box is checked, warnings are displayed. When the box is unchecked, warnings are suppressed. Suppressing warnings can be useful when extracting auto-routed standard cell designs with known over- and under-fill characteristics.
Ignore subcircuit connection ports with names	If a port in the layout has either one of the predefined names or the one user-defined name, it is not recognized as a subcircuit connection port. (For more information see Designing Subcircuit Cells.)

Ignore subcircuit connection port on layer contains the name of a layer on which intruding geometry and subcircuit connection ports will not be recognized. In addition, any geometry on the Icon layer (often used for documentation purposes), as defined with **Setup > Special Layers**, is ignored. (For more information see Designing Subcircuit Cells.)

Subcircuit cross port names

If a port in the layout has either one of the predefined names or the one user-defined name, it is not recognized as a subcircuit connection port. (For more information see Crossing Over a Subcircuit Instance.)

Tools > Cross Section

Tools Menu

Opens the **Generate Cross-Section** dialog, prompts for options, then generates a cross-section view of the layout in the active cell.

Process definition file — The name of the text file that defines the cross-section process. This file must exist prior to generating a cross-section. You can choose from available files with the **Browse** button. (See XST Files for more information on process definition files.)

Pause after first step — When this option is checked, the cross-section view is developed one process step at a time. Click the **Next Step** button to proceed through each step.

Vertical coordinate (Y)

The position of the cross-section in the layout. To choose the position graphically, click the **Pick** button. The cursor becomes a horizontal line that can be dragged up or down. Clicking the mouse button over the desired position reopens the dialog with the *y*-coordinate in the text field.

Exaggeration factor

Since process depths are measured in technology units, the displayed thicknesses of layers in cross-section scale with the current Work Area magnification. At very large or very small magnifications, it may be impossible effectively to display cross-section views at a 1:1 horizontal-to-vertical aspect ratio. The two fields (numerator and denominator) specify the fraction by which to compress or expand the vertical axis of the cross-section.

Auto-fit in window

Automatically zoom the cross-section to fit in the available window.

Tools > Macro

Tools Menu

Opens the **Macro** dialog to add, remove, and edit User Programmable Interface (UPI) macros. The **Macro** dialog is the interface to the UPI.

Macros	The list of registered macros. Click on a macro to select it.
Macro Files	The name and complete paths of all loaded macro files. Click on a macro file to select it.
Load Files at Startup	When this box is checked, the **Macro Files** listed are loaded when the application is started.

There are eight buttons associated with UPI macros:

- **Run** – Executes the macro highlighted in the **Macros** list.
- **Close** – Closes the **Macro** dialog.

- **Mode** – Opens the **Mode Setup** dialog where you specify the UPI operating mode.
- **Edit** – Invokes the macro text editor and opens the selected macro file for editing.
- **Add** – Invokes the **Open** dialog to load a macro file and add it to the **Macro Files** list. (See **File > Open** for more information on the **Open** dialog.)
- **Delete** – Unregisters all macros defined in the highlighted macro file and unloads the file from memory.
- **Setup** – Opens the **Interpreter Setup** dialog and specifies the interpreter setup parameters.

Mode

The **Mode Setup** dialog specifies the UPI operating mode.

Graphics mode — When the **On** option is selected, the L-Edit screen is updated after every relevant UPI call in a user-defined macro. When the **Off** option is selected, the screen is refreshed only on completion of the macro.

Quiet mode — When this box is checked, all alert boxes are suppressed. This mode is required for batch processing.

Setup

The **Interpreter Setup** dialog specifies the interpreter setup parameters.

Location of header files The complete path of the directory containing the L-Edit interpreter header files. These files are used by L-Edit to interpret the macro. Click the **Browse** button to locate a particular file.

Log file Enter the name of the log file to which macro errors will be written. Click the **Browse** button to locate a particular file.

Tools > Repeat Macro

Tools Menu

Runs the last macro executed by the **Tools > Macro** command.

Window > Cascade

Window Menu

Arranges windows in overlapping fashion, starting from the top left corner of the display area, so that the title bars are visible. The active window remains active (in front).

Window > Tile Horizontally

Window Menu

Tiles windows from top to bottom.

Window > Tile Vertically

Window Menu

Tiles windows from left to right.

Window > Arrange Icons

Window Menu

Arranges any minimized window icons present in rows starting at the bottom left of the display area.

Window > Close All Except Active

Window Menu

Closes all open windows except for the active window.

Window > (open windows list)

Window Menu

All open files are listed in the order they were opened. The active file is indicated with a check (√).

Help > L-Edit User Guide

Help Menu

Opens the *L-Edit User Guide*.

Help > About L-Edit

Help Menu

Displays program information.

Memory

Button calls a dialog that displays system and memory information.

Support

Button calls a dialog that provides information on how to contact Tanner EDA Technical Support.