Pl_Editor

Reference manual

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Feedback

Please direct any comments or suggestions about this document to the KiCad mailing list: *https://launchpad.net/~kicad-developers*

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1 - Introduction to Pl_Editor

Pl_Editor is a page layout editor tool to create custom title blocks, and frame references.
The title block, associated to frame references, and other graphic items (logos) is called here a page layout
Basic page layout items are:

- Lines
- Rectangles
- Texts (with format symbols, with will be replaced by the actual text, like the date, page number...) in Eeschema or Pcbnew.
- Poly-polygons (mainly to place logos and special graphic shapes)

items can be repeated, and texts and poly_polygons can be rotated.

2 - Pl_Editor files

2.1 - Input file and default title block

Pl_Editor reads or writes page layout description files *.kicad_wks (kicad **w**or**ks**heet).
An internal default page layout description to display the default Kicad title block is used until a file is read

2.2 - Output file

The current page layout description can be written in a *.kicad_wks file, using the S expression format, which is widely used in Kicad.
This file can be used to show the custom page layout in Eeschema and/or Pcbnew.

3 - Theory of operations

3.1 - Basic page layout items properties:

Basic page layout items are:
- **Lines**
- **Rectangles**
- **Texts** (with format symbols, with will be replaced by the actual text, like the date, page number...) in Eeschema or Pcbnew.
- **Poly-polygons** (mainly to place logos and special graphic shapes) these poly polygons are created by Bitmap2component, and cannot be built inside pl_editor, because it is not possible to create such shapes by hand.

Therefore
- **Texts and poly-polygons** are defined by a position, and can be rotated.
- **Lines** (in fact segments) and **rectangles** are defined by two points: a start point and a end point.
  They cannot be rotated (this is useless for segments)

These basic items can be repeated.
Texts which are repeated accept also an increment value for labels (has meaning only if the text is one letter or one digit)

3.2 - Coordinates definition

Each position, start point and end point of items is always relative to a page corner.
This feature ensure you can define a page layout which is not dependent on the paper size.

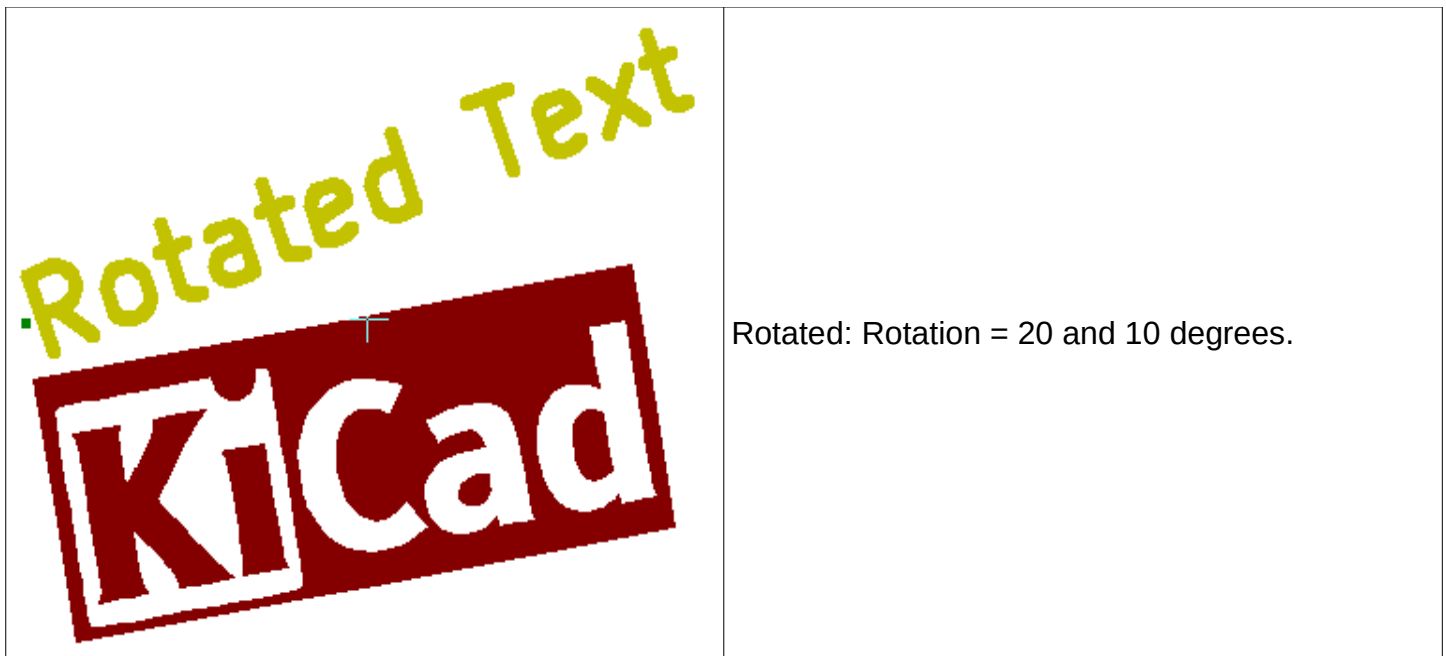### 3.3 - Reference corners and coordinates:
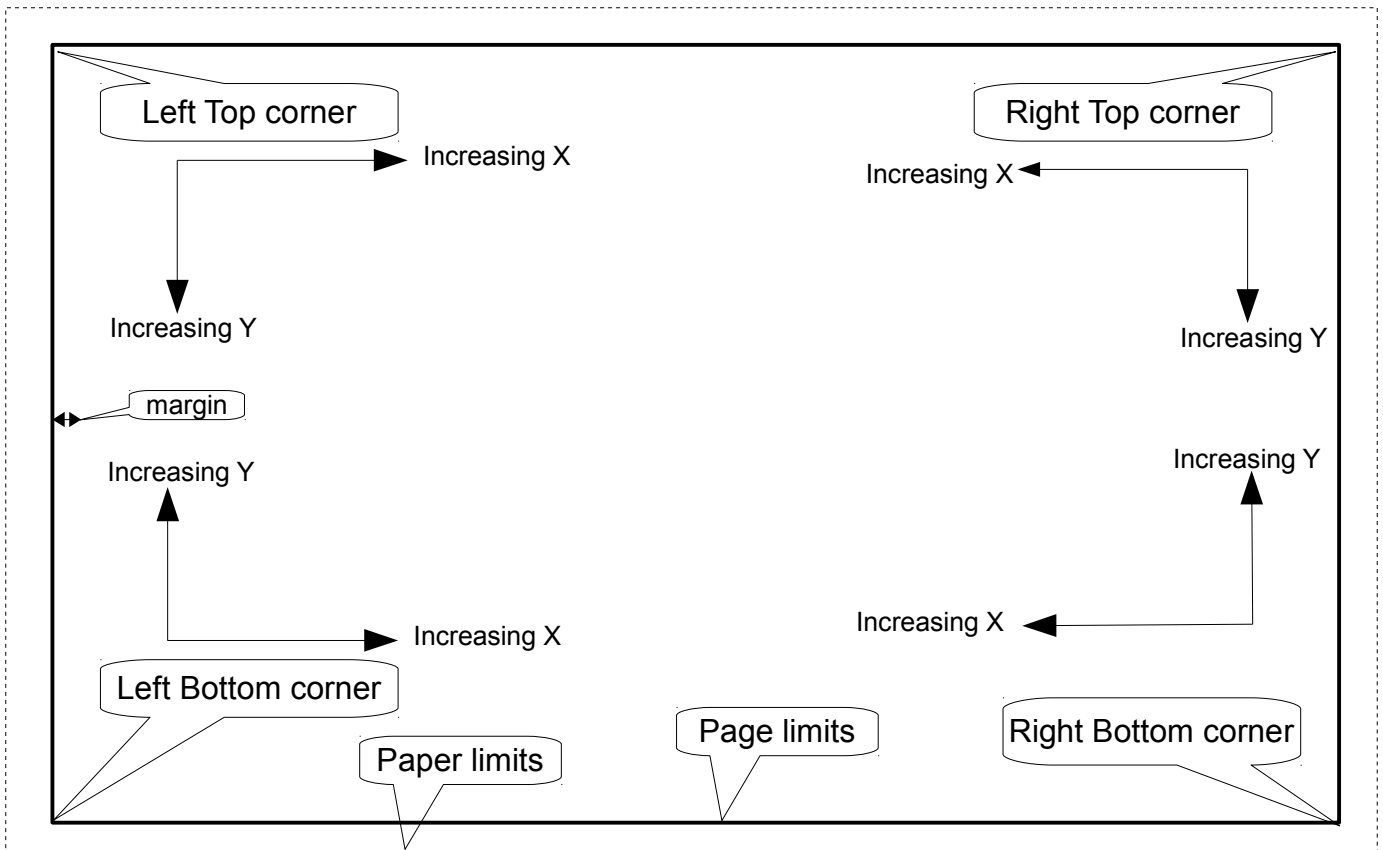
- When the page size is changed, the position of the item, relative to its reference corner does not change.
- Usually, title blocks are attached to the right bottom corner, and therefore this corner is the default corner, when creating an item.

For rectangles and segments, which have two defined points, each point has its reference corner.

3.4 - Rotation

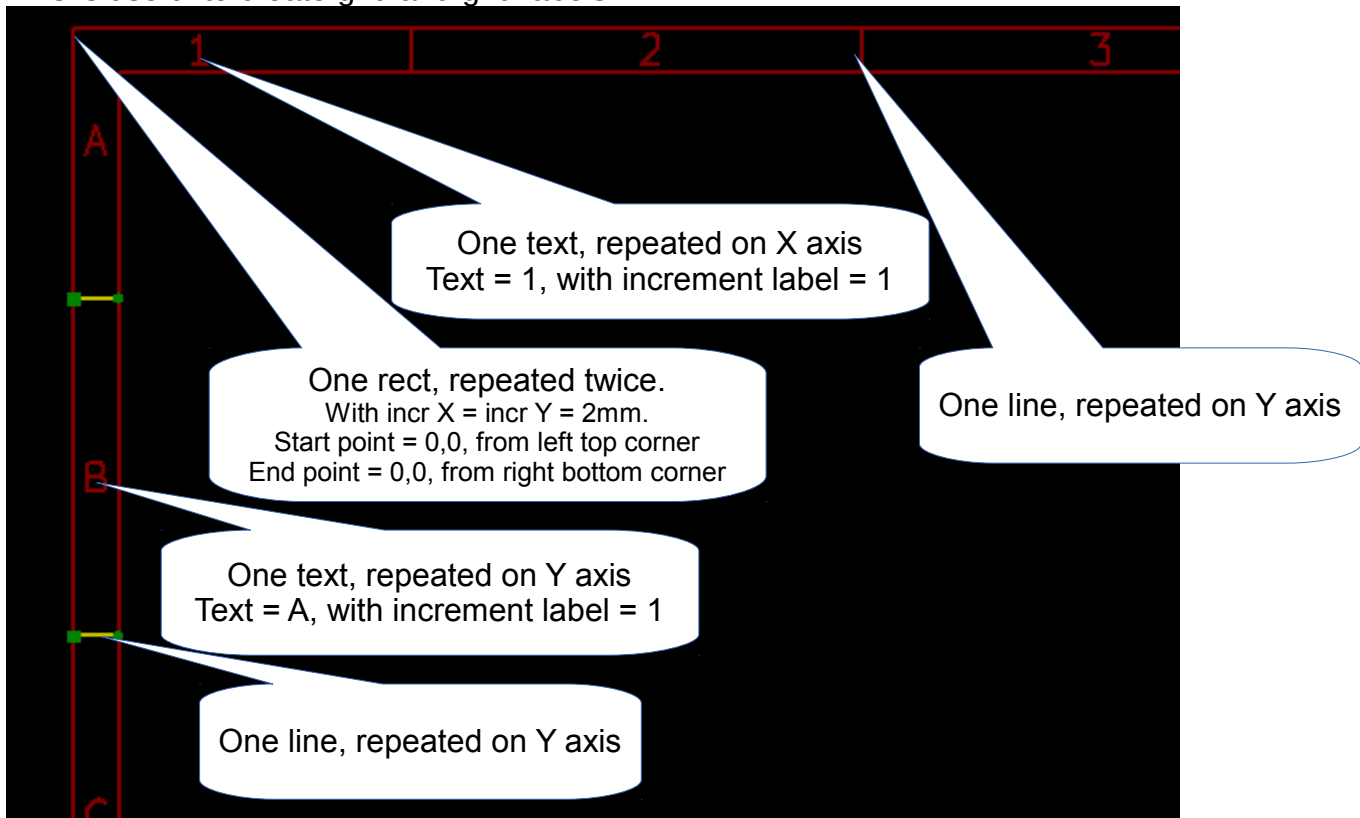Items which are a position defined by one point (texts and poly-polygons) can be rotated:

Rotated Text	Normal: Rotation = 0
KiCad	

Rotated: Rotation = 20 and 10 degrees.

3.5 - Repeat option

Items can be repeated:
This is useful to create grid and grid labels.

One text, repeated on X axis
Text = 1, with increment label = 1

One rect, repeated twice.
With incr X = incr Y = 2mm.
Start point = 0,0, from left top corner
End point = 0,0, from right bottom corner

One line, repeated on Y axis

One text, repeated on Y axis
Text = A, with increment label = 1

One line, repeated on Y axis

4 -   Texts and formats

Texts can be simple strings or can include format symbols.
Format symbols are replaced by the actual values in Eeschema or Pcbnew.
They are like format symbols in printf function.
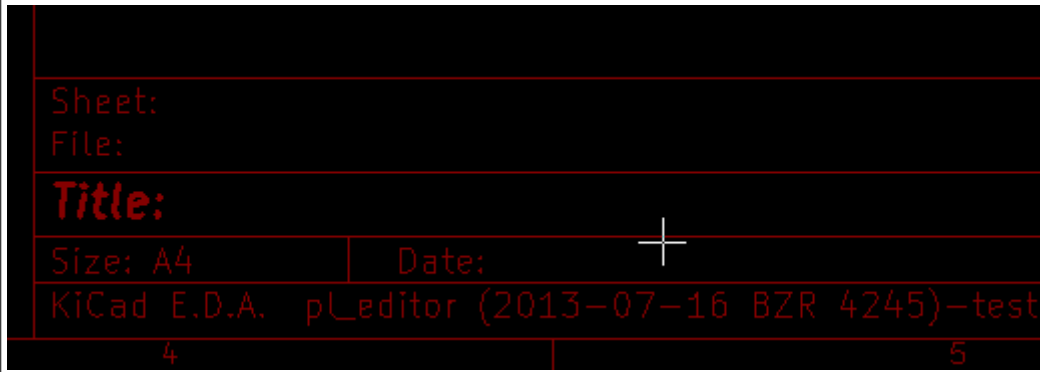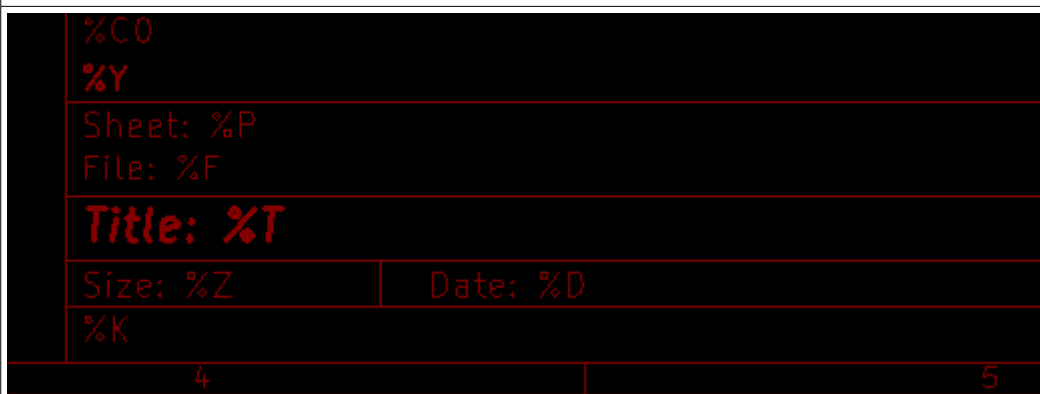A format symbol is **%** followed by 1 letter.
The **%C** format has one digit (comment identifier)

Formats symbols are:

%% = replaced by %
%K = Kicad version
%Z = paper format name (A4, USLetter ...)
%Y = company name
%D = date
%R = revision
%S = sheet number
%N = number of sheets
%Cx = comment (x = 0 to 9 to identify the comment)
%F = filename
%P = sheet path (sheet full name, for Eeschema)
%T = title

example:
"Size: %Z\" displays "Size A4" or Size USLetter"

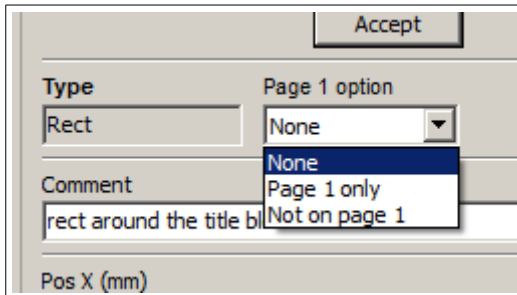|	
	User display mode: activated. Title block displayed like in Eeschema and Pcbnew
	"Native" display mode: activated. The native texts entered in Pl_Editor, with their format symbols.

5 -   Constraints

5.1 - Page 1 constraint

When using Eeschema, the full schematic often uses more than one page.
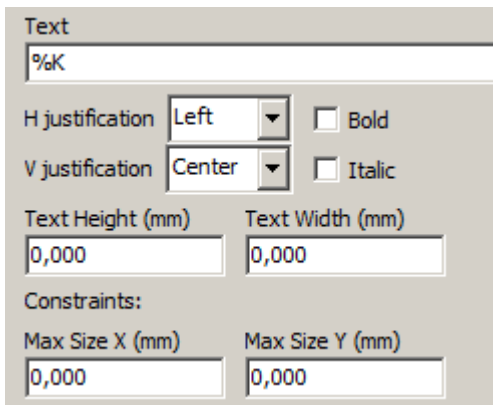Usually layout items are displayed on all pages.
But if a user want some items to be displayed only on page 1, or not on page 1, the "page 1 option"
this is possible by setting this option:

	Page 1 option:
Type Page 1 option: Rect | None ▼ | None Page 1 only Not on page 1 Comment rect around the title bl| Pos X (mm)	• None: no constraint. • Page 1 only: the items is visible only on page 1 • Not on page 1: the items is visible on all pages but the page 1

5.2 - Text full size constraint

Text
%K

H justification Left ▼ ☐ Bold
V justification Center ▼ ☐ Italic

Text Height (mm)   Text Width (mm)
0,000   0,000

Constraints:
Max Size X (mm)   Max Size Y (mm)
0,000   0,000

Only for texts, one can set 2 parameters :
• the max size X
• the max size Y
which define a bounding box

When these parameters are not 0, when displaying the text, the actual text height and the actual text width are dynamically modified if the full text size is bigger than the max size X and/or the max size Y, to fit the full text size with this bounding box.

When the actual full text size is smaller than the max size X and/or the max size Y, the text height and/or the text width is not modified.

|	
Size: A4 Date: •KiCad E.D.A. pl_editor (2013—07—16 BZR 4245)— 4	The text with no bounding box. Max size X = 0 Max size Y = 0
Size: A4 Date: •KiCad E.D.A. pl_editor (2013—07—16 BZR 4245)-testing 4	The **same** text with constraint. Max size X = 40 Max size Y = 0

6 -   Invoking Pl_Editor

Pl_Editor is typically invoked from a command line, or from the Kicad manager.
From a command line, the syntax is pl_editor <*.kicad_wks file to open>.

7 -   Pl_Editor Commands

7.1 - Main Screen

The image below shows the main window of PI_Editor.
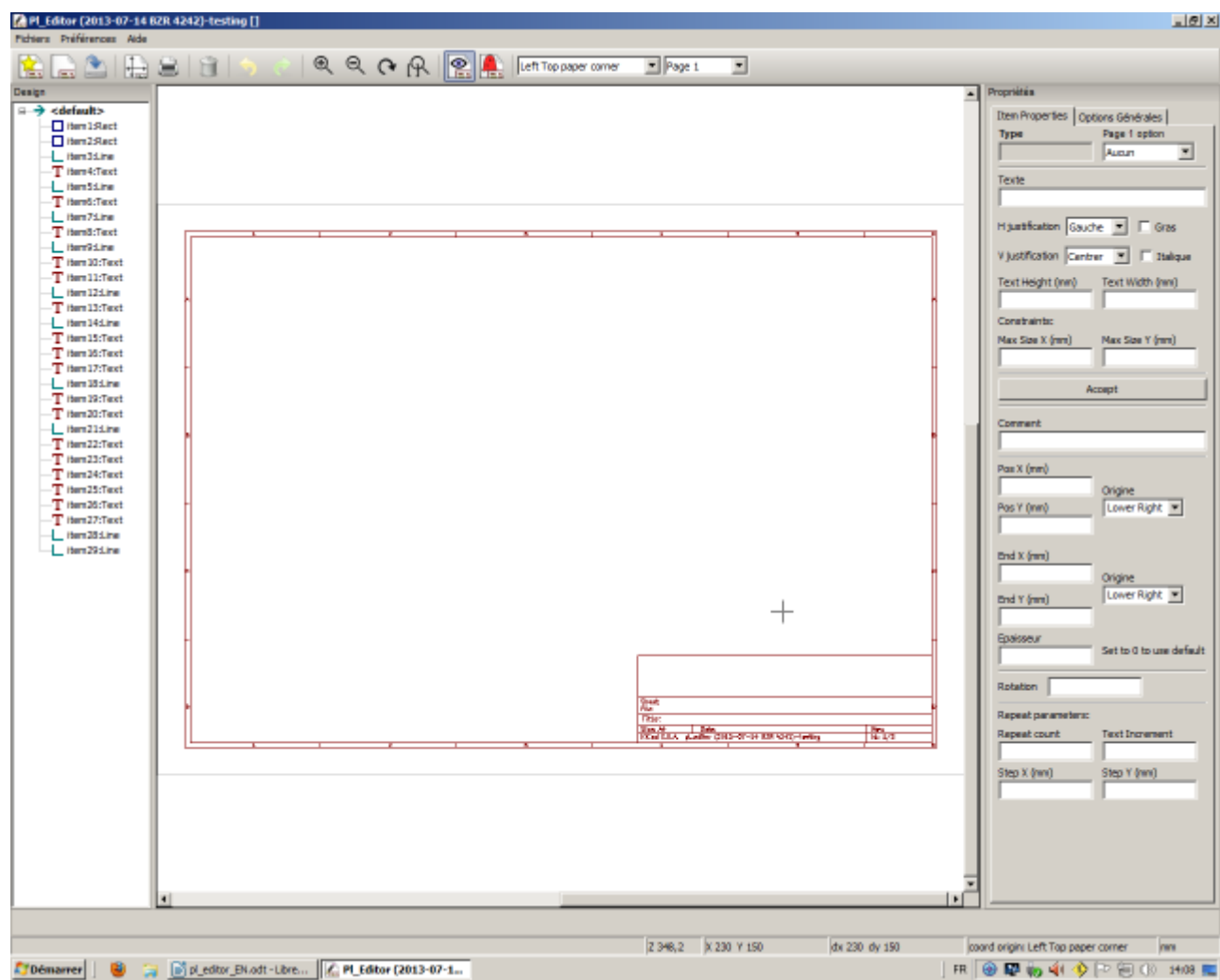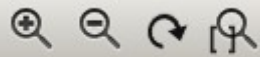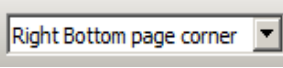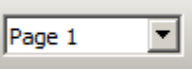
The left pane contains the list of basic items.
The right pane is the item settings editor.

7.2 - Main Window Toolbar.

The top toolbar allows for easy access to the following commands:

	Select the net list file to be processed.
	Load a page layout description file.
	Save the current page layout description in a .kicad_wks file.
	Display the page size selector and the title block user data editor.
	Prints the current page.
	Delete the currently selected item.
	Undo/redo tools.

	Delete all footprint assignments.
	Show the page layout in user mode: texts are shown like in Eeschema or Pcbnew: text format symbols are replaced by the user texts.
	Show the page layout in native mode: texts are displayed "as is", with the contained formats, without any replacement.
Right Bottom page corner ▾	Reference corner selection, for coordinates displayed to the status bar..
Page 1 ▾	Selection of the page number (page & or other pages). This selection has meaning only if some items have a page option, are are not shown on all pages (in a schematic for instance, which contains more than one page)

## 7.3 - Commands in drawing area (draw panel)

7.3.1 - Keyboard Commands

F1	Zoom In
F2	Zoom Out
F3	Refresh Display
F4	Move cursor to center of display window
Home	Fit footprint into display window
Space Bar	Set relative coordinates to the current cursor position
Right Arrow	Move cursor right one grid position
Left Arrow	Move cursor left one grid position
Up Arrow	Move cursor up one grid position
Down Arrow	Move cursor down one grid position

7.3.2 - Mouse Commands

Scroll Wheel	Zoom in and out at the current cursor position
Ctrl + Scroll Wheel	Pan right and left
Shift + Scroll Wheel	Pan up and down
Right Button Click	Open context menu

7.3.3 - Context Menu

Displayed by right-clicking the mouse:
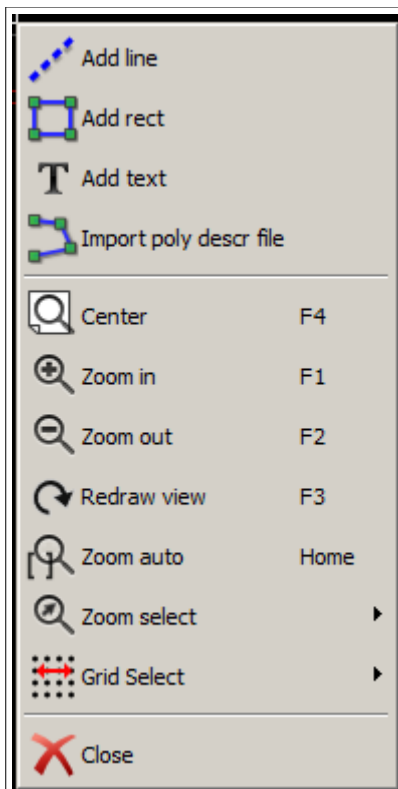
- Add line
- Add rect
- Add text
- Import poly descr file

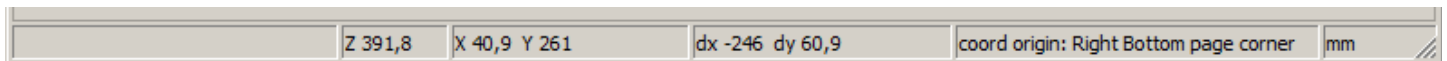are commands to add a basic layout item to the current page layout description.
You cannot add a polygon here (because usually it needs hundred of vertices).
You only can Import a poly description file, created by Bitmap2Component.

- Zoom selection: Direct selection of the display zoom
- Grid selection: Direct selection of the grid.

7.4 - Status Bar Information

The status bar is located a the bottom of the Pl_Editor and provides useful information to the user.

| | Z 391,8 | X 40,9 Y 261 | dx -246 dy 60,9 | coord origin: Right Bottom page corner | mm |

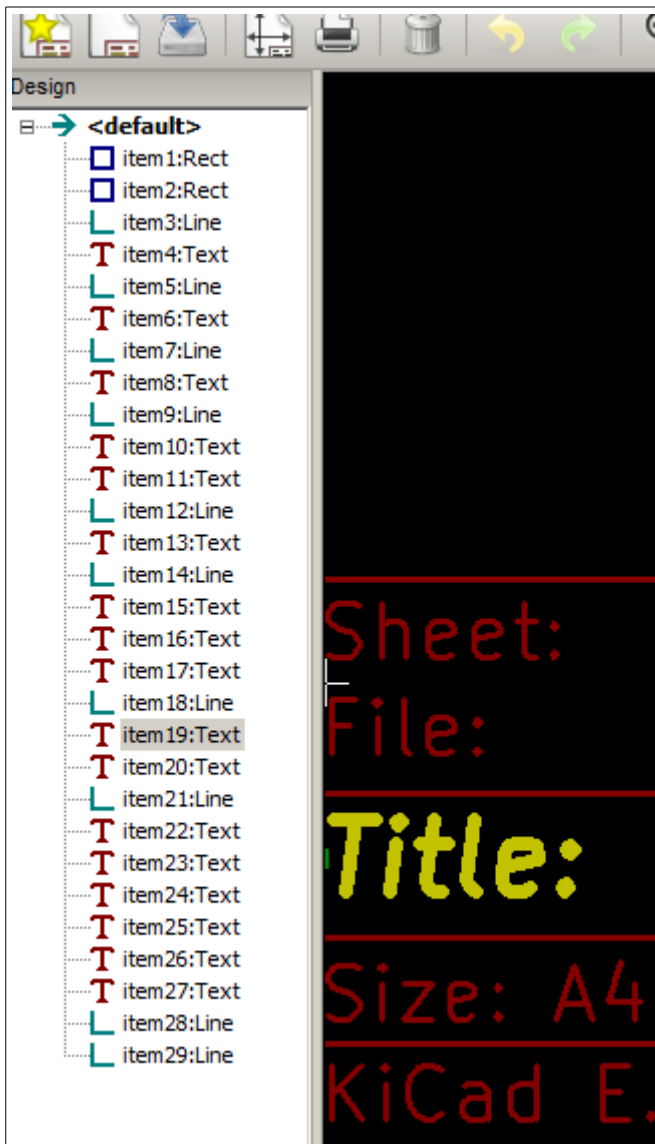Coordinates are **always relative to the corner** selected as **reference**.

8 - Left window

The left windows shows the list of layout items.
One can select a given item (left clicking on the line), of when right clicking on the line, display a pop up menu
This menu allows basic operations: add a new item, or delete the selected item.

➔ **A selected item is also drawn in Yellow on draw panel**.

Design

- <default>
  - item1:Rect
  - item2:Rect
  - item3:Line
  - item4:Text
  - item5:Line
  - item6:Text
  - item7:Line
  - item8:Text
  - item9:Line
  - item10:Text
  - item11:Text
  - item12:Line
  - item13:Text
  - item14:Line
  - item15:Text
  - item16:Text
  - item17:Text
  - item18:Line
  - item19:Text
  - item20:Text
  - item21:Line
  - item22:Text
  - item23:Text
  - item24:Text
  - item25:Text
  - item26:Text
  - item27:Text
  - item28:Line
  - item29:Line

Sheet:
File:
Title:
Size: A4
KiCad E.

Design tree: the item 19 is selected,
and shown in Yellow on the draw panel.

9 -   Right window

Properties

Item Properties | General Options

Type   Page 1 option

[   ]   None ▼

Text

[   ]

H justification [Left ▼]   ☐ Bold

V justification [Center ▼]   ☐ Italic

Text Height (mm)   Text Width (mm)

[   ]   [   ]

Constraints:

Max Size X (mm)   Max Size Y (mm)

[   ]   [   ]

[Accept   ]

Comment

[   ]

Pos X (mm)

[   ]   Origin

Pos Y (mm)   [Lower Right ▼]

[   ]

End X (mm)

[   ]   Origin

End Y (mm)   [Lower Right ▼]

[   ]

Thickness

[   ]   Set to 0 to use default

Rotation   [   ]

Repeat parameters:

Repeat count   Text Increment

[   ]   [   ]

Step X (mm)   Step Y (mm)

[   ]   [   ]

Properties

Item Properties | **General Options**

Default Values:

Text Size X (mm)   Text Size Y (mm)

[1,500]   [1,500]

Line Thickness (mm)   Text Thickness

[0,150]   [0,150]

Page Margins

Left Margin (mm)   Right Margin (mm)

[10,000]   [10,000]

Top Margin (mm)   Bottom Margin (mm)

[10,000]   [10,000]

[Accept   ]

The right window is the edit window.
On can set properties of the page and properties of the current item.

Displayed settings depend on the selected item:

Settings for lines and rectangles	Settings for texts	Settings for poly-polygons

Settings for lines and rectangles

Accept

Type: Line Page 1 option: None

Comment: [ ]

Pos X (mm): 50,000
Pos Y (mm): 2,000 Origin: Upper Left

End X (mm): 50,000
End Y (mm): 0,000 Origin: Upper Left

Thickness: 0,000 Set to 0 to use default

Repeat parameters:
Repeat count: 30
Step X (mm): 50,000 Step Y (mm): 0,000

Settings for texts

Accept

Type: Text Page 1 option: None

Text: %K

H justification: Left ☐ Bold
V justification: Center ☐ Italic

Text Height (mm): 0,000 Text Width (mm): 0,000

Constraints:
Max Size X (mm): 0,000 Max Size Y (mm): 0,000

Comment: [ ]

Pos X (mm): 109,000
Pos Y (mm): 4,100 Origin: Lower Right

Thickness: 0,000 Set to 0 to use default

Rotation: 0,000

Repeat parameters:
Repeat count: 1 Text Increment: 1
Step X (mm): 0,000 Step Y (mm): 0,000

Settings for poly-polygons

Accept

Type: Poly Page 1 option: Page 1 only

Comment: [ ]

Pos X (mm): 136,002
Pos Y (mm): 18,002 Origin: Lower Right

Thickness: 0,010

Rotation: 20,000

Repeat parameters:
Repeat count: 1
Step X (mm): 0,000 Step Y (mm): 0,000

10 - Interactive edition
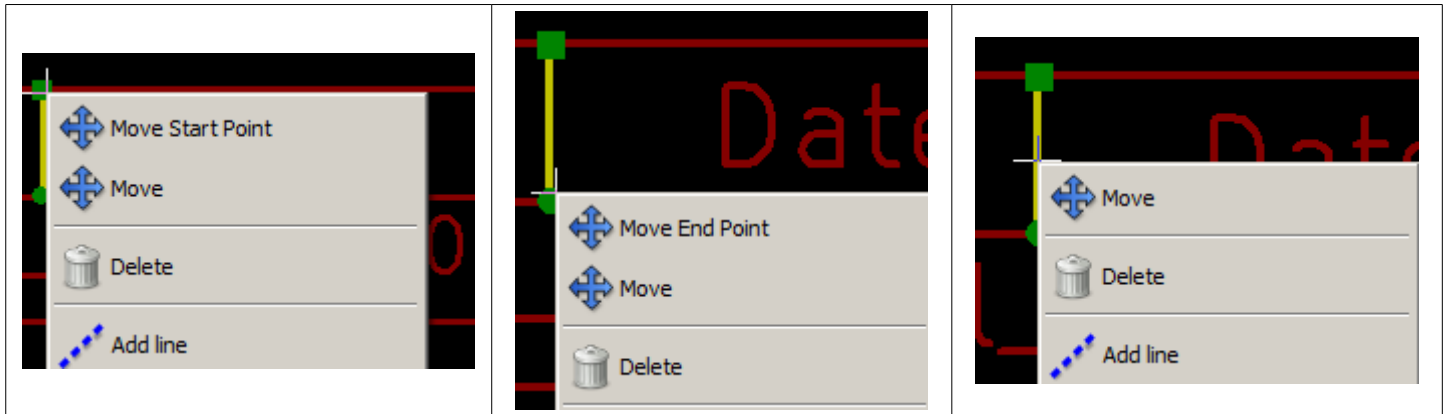
An item can be selected:
- From the Design tree.
- By Left clicking on it.
- By Right clicking on it (and a pop up menu will be displayed).
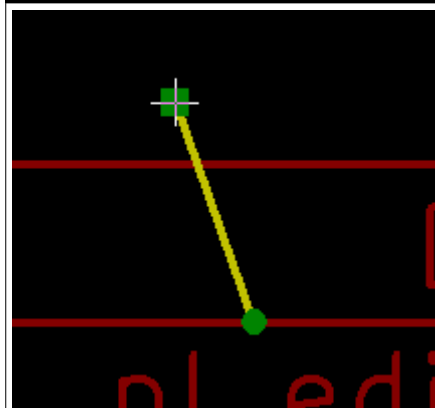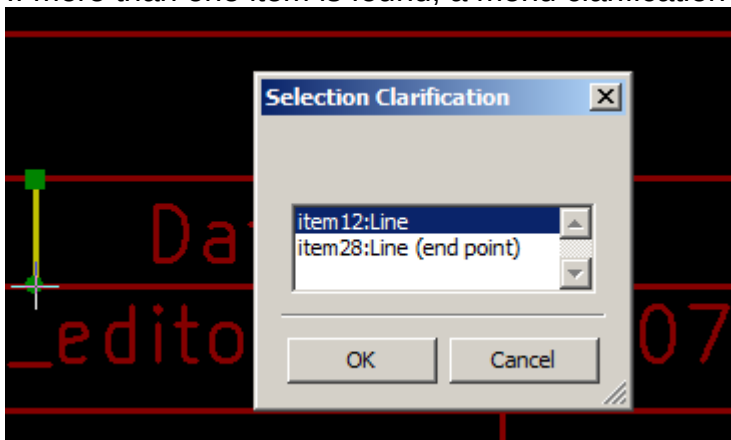
When selected, this item is drawn in Yellow.

The starting point ( ) and the ending point ( ) are highlighted.

When right clicking on the item, a pop-up menu is displayed.
The pop menu options slightly depend on the selection:

If more than one item is found, a menu clarification will be shown, to select the item:

Once selected, the item, or one of its end points, can be moved by moving the mouse and placed (right clicking on the mouse).