

# Location Reference of Components by Frame

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## Abstract

In schematic drawings or boards with an larger amount of electrical components it is a challenge to seek for a particular component if no location reference is available. To overcome this problem, a user language program is created to obtain a table of location reference of each component in a schematic or board. Further, existing projects could be upgraded with table of location references.  
Pls. paste attached file XYLOC.ULP in the subdirectory EAGLEDIR\ulp and execute it by calling RUN XYLOC.

## Workflow

A schematic sheet is prepared to obtain the location reference design flow.

**Schematic Drawing.** If a new schematic design is started or is still available, a provided frame **without** alphanumeric frame instances have to be selected. In Figur 1 the library *frames* is shown. Here, the frame family *DINAx.y* is the best choice.

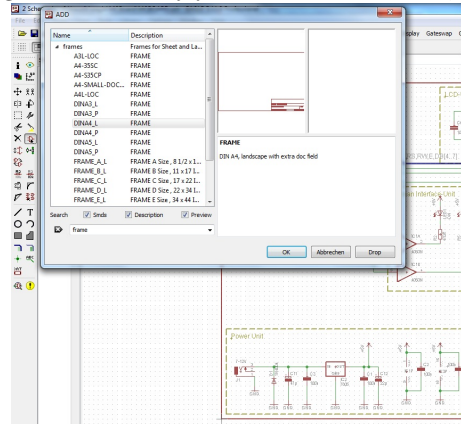


Figure 1: Selecting proposed frame for placing in schematic drawing at origin position

After placing the proper frame in the canvas origin, the command **FRAME** has typed in the command line to access the build in **FRAME** function. In the upper windows area in Figure 2 the submenu of **FRAME** is opened and shows modification options. Here, it is recommended to change layer to e.g. 98-Guide.  
The parameter values for columns and rows could now increased or decreased as necessary but pls. be advised to use for more convenient location seeking not too large values of columns or rows.

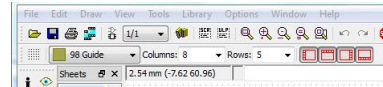


Figure 2: FRAME command shwows the corresponding attributes

If done, scroll by mouse below left lower corner of the already placed *DINAx.y* frame. If frame is placed exactly to origin, it is recommended to scroll to an offset position (-5.08,-5.08), press left mouse key to start circumventing the *DINAx.y* -Frame by keeping command **FRAME** and finalizing it by clicking left mouse key at the upper right corner of frame. So, the **FRAME** is now placed.  
If the result is not sufficient, delete frame and start procedure again by typing **FRAME** in command window.

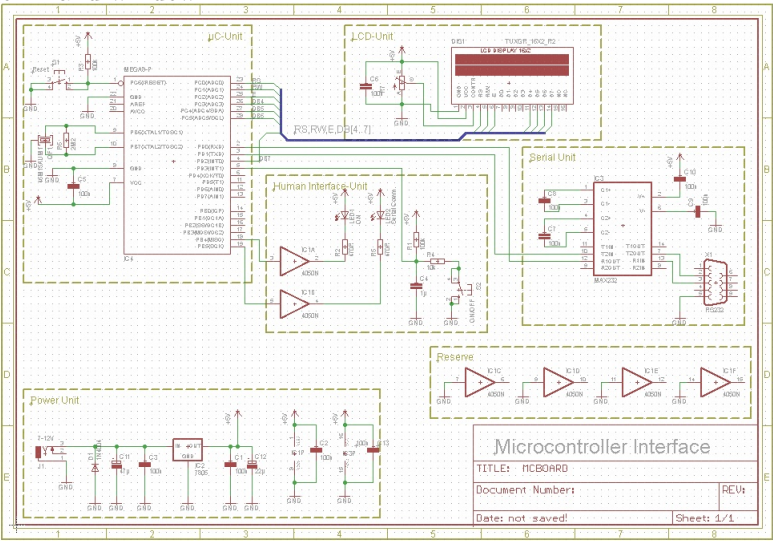


Figure 3: Final schematic sheet with frame circumvents all components

**Board Drawing.** It is quite the same procedure as described in schematic.

## User Language Program

To obtain the location position of the placed components in the column and row notification, the absolute canvas position of each component's origin is extracted and compared with the appropriate frame enumerator [1]. After that, the position is mapped to **FRAME** alphanumeric offset and printed out in a text file with suffix \*.XRS for sheet table and respectively \*.XRB for board table. The amount of **FRAME** cells are limited to each 19 for printing reasons, that is A-S and 1-19, which should surely be enough for most applications.

## Syntax of location table

The syntax for the position is the component reference number and then number of the sheet where the component is placed followed by the corresponding **FRAME** column sign and respectively the **FRAME** row sign. Gates have more XY-locations and are printed in one line.

### File \*.XRS:

EAGLE Version 5.11.0 Copyright (c) 1988-2010 CadSoft

Schematic Parts XYRef Loaction table.  
List exported from MCBOARD.sch at 10.04.2012 15:27:43

Framesize in mm: (-5.080000 -5.080000), (269.240000 185.420000)  
Frame columes: 8, Frame rows: 5; (each max. 19)  
Location consists of: Partno., Sheetno., Xloc(1-19), Yloc(A-S)

| Part | Sheet_XYLocation                          |
|------|---|
| C1   | 1__3E                                     |
| C2   | 1__4E                                     |
| C3   | 1__2E                                     |
| .... |   |
| DIS1 | 1__6A                                     |
| IC1  | 1__4C 1__4C 1__5D 1__6D 1__7D 1__8D 1__4E |
| IC2  | 1__2E                                     |
| IC3  | 1__7C 1__4E                               |
| IC4  | 1__2B                                     |

For Board location reference table, additional attributes are printed.

### File \*.XRB:

EAGLE Version 5.11.0 Copyright (c) 1988-2010 CadSoft

Board Parts XYRef Location table.  
List exported from MCBOARD.brd at 15.04.2012 14:18:22

Framesize in mm: (-5.000000 -5.000000), (165.000000 104.000000)  
Frame columes: 8, Frame rows: 5  
Location consists of: Partno., Xloc(1-19), Yloc(A-S), Angle, Mirrored

| Part  | XYLocation | Angle | Mirrored |
|-------|------------|-------|----------|
| C1    | _2D        | 270   | 0        |
| C2    | _2B        | 0     | 0        |
| C3    | _2D        | 270   | 0        |
| ..... |            |       |          |

## Compatibility

Because of increasing intrinsic accuracy in EAGLE Version 6 onwards [2], a file XYLOC-V6.ULP is provided for Version 6 and respectively file XYLOC-V5.ULP is provided for former Versions.

## References

- [1] XREF.ULP from Adrianus den Toom's;
- [2] EAGLE Version 6, Releasenotes.pdf at <http://www.cadsoft.de>