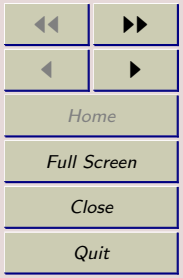
gEDA Utilities

John C. Luciani Jr.

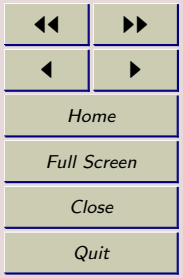
February 28, 2007

Contents

pcb-dim
Running the Program
Creating Configuration Files
Example
Configuration File
Output
refdes-update
Running the Program
Command-line Options
References
License



Contents
pcb-dim
Running the Program
Creating Configuration Files
Example
Configuration File
Output
refdes-update
Running the Program
Command-line Options
References
License



1 pcb-dim

The script `pcb-dim` outputs the positions of components (elements) in a printed circuit board (PCB) layout. The list of components is specified in a configuration file.

The component positions are calculated using the lines drawn in the outline layer. The datum is the lower-left corner of the boundingbox that contains all of the line endpoints. An offset to the datum may be specified in the configuration file. The default offset is $(0, 0)$.

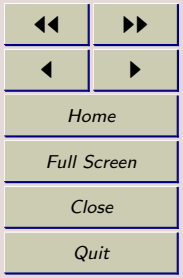
N.B. This script may not work for all layouts. I wrote sufficient code to work for my PCB layouts not for all possible PCB layouts.

Conventions

⟨*parameter*⟩	Replace with the value of *parameter*
`verbatim text`	Verbatim text when associated with a command or contents of a file.

Question, comments, observations, unmarked bills to jluciani at gmail dot com

Contents
pcb-dim
Running the Program
Creating Configuration Files
Example
Configuration File
Output
refdes-update
Running the Program
Command-line Options
References
License



1.1 Running the Program

`pcb-dim` (⟨*PCB filename*⟩)⋆

If no PCB filenames are specified on the command line then all of the PCB files in the current directory will be parsed.

1.2 Creating Configuration Files

Each file can contain comments, empty lines, lines that define component attributes and lines that define a datum offset. Comments start with a `#` and continue to the end of the current line. Comments and empty lines are ignored by the parser. The configuration filename is the base of the PCB filename with an `.dimcfg` extension.

Lines that create a datum offset are:

`xoffset` |⟨*value in mils*⟩

`yoffset` |⟨*value in mils*⟩

Lines that define component positions to output:

`element` |`description` |⟨*footprint description string*⟩ (|⟨*comment*⟩)?

`element` |`layout_name` |⟨*reference designator*⟩ (|⟨*comment*⟩)?

Contents
pcb-dim
Running the Program
Creating Configuration Files
Example
Configuration File
Output
refdes-update
Running the Program
Command-line Options
References
License

1.3 Example

The peripheral board in Figure 1 has a hex standoff in each corner and an input connector. Since this peripheral board is placed on top of a microcontroller board (of similar dimensions) the position of the standoffs and the input connector are critical.

Line 1 in the configuration file forces `pcb-dim` to output the position of each of the hex standoffs. The description (footprint name) of the standoffs is `HEXWASHER_2SS-156HD-149WD`.

Line 2 in the configuration file forces `pcb-dim` to output the position of the element with a refdes of `J3` with a comment of `Input Conector`.

Lines 3 and 4 define the offset that will be subtracted from all positions that are output.

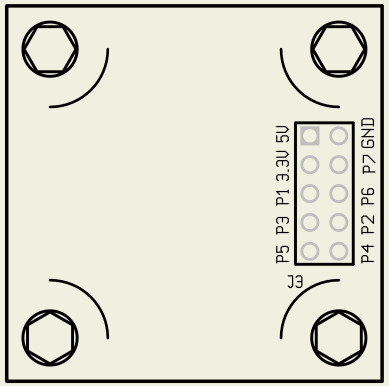


Figure 1: Example PCB

1.3.1 Configuration File

Listing 1: Example Configuration File

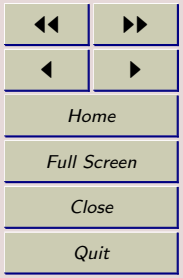
```
1  element | description  | HEXWASHER_2SS-156HD-149WD
2  element | layout_name  | J3 | Input Connector
3  xoffset | 150
4  yoffset | 150
```

1.3.2 Output

Listing 2: Sample Output

```
1
2  [pcb-dim-example.pcb]
3
4  # PCB Size = 1300.00 x 1300.00 mils
5
6  # field       |                      value |                    comment |        x |        y | units
7
8  description   | HEXWASHER_2SS-156HD-149WD |                            |     0.00 |  1000.00 | mils
9  description   | HEXWASHER_2SS-156HD-149WD |                            |     0.00 |     0.00 | mils
10 description   | HEXWASHER_2SS-156HD-149WD |                            |  1000.00 |  1000.00 | mils
11 description   | HEXWASHER_2SS-156HD-149WD |                            |  1000.00 |     0.00 | mils
12 layout_name   |                        J3 |          Input Connector |   950.00 |   500.00 | mils
```

Contents
pcb-dim
Running the Program
Creating Configuration Files
Example
Configuration File
Output
refdes-update
Running the Program
Command-line Options
References
License



2 refdes-update

The script `refdes-update` is designed to change the reference resignator (refdes) attributes of schematic symbols in gschem schematics. The program is called with the command-line —

`refdes-update` ⟨*option*⟩⋆ ⟨*schematic filename*⟩⋆

The command-line options and default values are listed in Table 1. If `refdes-update` is called without schematic filename arguments all of the schematic filenames in the current directory will be parsed.

N.B. This script may not work for all gschem schematics. I wrote sufficient code to work with my schematics not for all possible schematics.

Conventions

⟨*parameter*⟩	Replace with the value of *parameter*
`verbatim text`	
refdes	Reference designator. Character string used to identify a schematic component. Each refdes consists of a prefix, an ordinal and an optional suffix.
prefix	Alphabetic string at the beginning of the refdes.
ordinal	Cardinal number that follows the prefix in a refdes. An undefined ordinal is represented by the `?` character.
suffix	Character string that follows the ordinal in a refdes.

Contents
pcb-dim
Running the Program
Creating Configuration Files
Example
Configuration File
Output
refdes-update
Running the Program
Command-line Options
References
License

2.1 Running the Program

`refdes-update` ⟨*option*⟩⋆ ⟨*schematic filename*⟩⋆

Schematics may be updated as individual pages or as a collection of pages. For a collection of pages there is a `pageoffset` added to each refdes ordinal. The options are listed in Table 1.

Notes

- Prior to changing the schematic file a backup file will be created. The name of the file will be ⟨*schematic filename*⟩`.bak`⟨n⟩.
- The alphabetic suffix on a refdes is ignored when determining the new refdes ordinal. It is also ignored when creating the refdes list.

2.2 Command-line Options

Option	Default	Description
`--clear`	0	Resets all refdes ordinals to the undefined value.
`--list`	1	Outputs a list, to **STDOUT**, of refdes's that were found in each schematic. Suffixes are ignored.
`--verbose`	1	Sundry annoying messages.
`--dryrun`	0	Outputs a list of actions to be taken without performing them.
`--reuse`	0	Reuses refdes ordinals that were skipped in each schematic.
`--update`	0	Only change refdes's were the ordinal is undefined.
`--renum`	0	Change all refdes's.
`--nopageoffset`	0	Do not add an offset to subsequent schematic pages. The default sets a pageoffset.
`--pageoffset` ⟨*value*⟩	100	The offset value added to the refdes ordinal is $(pagenumber - 1) \cdot pageoffset$. The default value is set to 100. Each schematic specified on the command-line is considered a page.

Table 1: refdes-update command-line options

References

Eaton, H., & Nau, T. (2002). Pcb [Computer software and manual]. (Retrieved February 7, 2007 from http://pcb.sourceforge.net/pcb-cvs/pcb.html)

Contents

pcb-dim
Running the Program
Creating Configuration Files
Example
Configuration File
Output
refdes-update
Running the Program
Command-line Options
References
License

Contents
pcb-dim
Running the Program
Creating Configuration Files
Example
Configuration File
Output
refdes-update
Running the Program
Command-line Options
References
License

3 License

No-Fee License Version 0.2

Intent

The intent of this license is to allow for distribution of this documentation without fee. Usage of this documentation, other than distribution, is unrestricted.

License

Permission is granted to make and distribute verbatim copies of this document provided that (1) no fee is charged and (2) the original copyright notice and this license document are preserved on all copies.

Permission is granted to make and distribute modified versions of this document under the conditions for verbatim copying, provided that the entire resulting derived work is distributed under the terms of a license identical to this one.

This documentation is provided by the author **"AS IS"** and any express or implied warranties, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose are disclaimed. In no event shall the author be liable for any direct, indirect, incidental, special, exemplary, or consequential damages (including, but not limited to, procurement of substitute goods or services; loss of use, data, or profits; or business interruption) however caused and on any theory of liability, whether in contract, strict liability, or tort (including negligence or otherwise) arising in any way out of the use of this software, even if advised of the possibility of such damage.