ViewDraw File Formats

Introduction and purpose of this document.

ViewDraw stores information about schematics and symbols as ASCII text files.

This is an example:

V 51

K 01

Y 1

D 0 0 200 350

Z 10

i 674

U 0 -260 10 0 1 0 PKG_TYPE=FG456

U 0 -250 10 0 1 0 DEVICE=FOO_2S150FG456

U 0 -240 10 0 1 0 FPGALINK=C:\SDB\PHY_FPGA\PHY_FPGA_LOCAL\PHY_FPGA_LOCAL2\TOP.PA

+ D

U 0 -230 10 0 1 0 LEVEL=STD

U 0 -220 10 0 1 0 REFDES=U?

U 0 -210 10 0 1 0 COST=5.00

U -15 -20 10 0 1 1 PART_NUMBER=010-0000-00

b 10 10 190 340

P 671 200 315 190 315 0 3 0

L 205 315 37 0 2 0 1 0 TEST_LABEL

E

As is evident, ViewDraw stores information in a line-oriented fashion. The beginning of each line declares the item it will describe, and the remainder of the line carries the attributes of the item.

This document attempts to capture the meaning of the lines in the ViewDraw files so that people may write scripts for automation. When I work on this, I used ViewDraw 2007. The V number is 53. I also refer to the document: http://www.brorson.org/ViewDraw/FileFormat.html. The author basically completed the symbol file format. I improve the symbol file format and describe the schematic file format.

Anyone who want to discuss or improve that, can go to my blog: http://www.hwengineer.me. Also can email to me: li.jimmy85@gmail.com.

Symbol file format

V

Version number.

K

This line is a magic number.

F

The usual attribute is 'Case'

Y

Symbol type

Attribute	Explanation	Comment
0	Composite	
1	Module	
2	Annotate	
3	Pin	

D

Determines the size of the symbol block. The format is:

$$D\ x_{min}\ y_{min}\ x_{max}\ y_{max}$$

Where the min and max values are the numeric values giving the symbol block size available on the "properties" pop-up menu.

Z

Sheet size.

Attribute	Explanation	Comment
0	A	
1	B	
…	…	
5	A4	

…	…	
10	Z(user defined)	

i

The ID of symbol. It's a unique number.

U

It's available attribute of a symbol under the "properties" pop-up menu. The format is:

U x_{pos} y_{pos} text_size rotation text_pos scope attribute

Attribute	Explanation	Comment
x_{pos} y_{pos}	Position of attribute text	
text_size	Font size of text	Usually 10
rotation	0: 0 1: 90 2: 180 3: 270	
text_pos	Location of text anchor 1: lower 2: middle 3: upper	
scope	0: local 1: global	
attribute	Text form of attribute	Usually expressed as Attribute=value

The attribute can be:

- PKG_TYPE: the package type for PCB layout.
- LEVEL: usually is "STD"
- PARTS: unknown, but usually is 1
- REFDES: the prefix of symbol
- DEVICE: device name
- HETERO: if the symbol include multiple sub parts. The value should like "(xxx_1),(xxx_2),(xxx_3)"

You also can define attribute by yourself.

P

Pin. The format is:

P pin_id x_{end} y_{end} x_{begin} y_{begin} rotation side invert

Attribute	Explanation	Comment
pin_id	Unique numerical ID of pin.	Starts as 1.

x_{end} y_{end} x_{begin} y_{begin}	Begin and end of pin	
rotation	0: 0 1: 90 2: 180 3: 270	
side	0: Top 1: Bottom 2: Left 3: Right	Valid values are 0 .. 3, usual value is 2.
invert	0: not inverted 1: inverted	

A

Attribute attached to the preceeding pin. The format is:

A x_{pos} y_{pos} text_size rotation text_pos visibility attribute

Attribute	Explanation	Comment
x_{pos} y_{pos}	Position of attribute	
Text_size	Font size of text	Usually 10
rotation	0: 0 1: 90 2: 180 3: 270	
Text_pos	Location of text anchor 1: lower 2: middle 3: upper	
visibility	0: invisible 1: visible 2: name only 3: value only	
attribute	Text form of attribute	Expressed as Attribute=value

L

Label attached to the preceeding pin. The format is:

L x_{pos} y_{pos} text_size rotation text_pos scope visibility logic_sense text_label

Attribute	Explanation	Comment
x_{pos} y_{pos}	Position of attribute	
text_size	Font size of text	Usually 10
rotation	0: 0 1: 90	

	2: 180	
	3: 270	
Text_pos	Location of text anchor	
	1: lower	
	2: middle	
	3: upper	
Scope	0: local	
	1: global	
Visibility	0: invisible	
	1: visible	
	2: name only	
	3: value only	
Logic_sense	0: normal	
	1: inverted	Bar above label
Text_label	Text label of pin	

b

Determines the size of a box drawn on the screen(inside the symbol block). The format is:

b x_{min} y_{min} x_{max} y_{max}

l

A line. The format is:

l line_color x_{start} y_{start} x_{end} y_{end}

Attribute	Explanation	Comment
Line_color	The color code. It's numerical	Usually is 2. If want to change the color or line-style, should use 'Q' follow this line.
x_{start} y_{start}	The position of line start	
x_{end} y_{end}	The position of line end	

Q

Change the above line's color, line-style etc. the format is:

Q line_color line_style fill

Attribute	Explanation	Comment
Line_color	The color code. It's numerical	Usually is 2. For the color map, check the viewdraw.ini
Line_style		Usually is 0.

fill		Usually is 0.

c

Circle. The format is:

      c x_{center} y_{center} radius

Attribute	Explanation	Comment
x_{center} y_{center}	The position of circle center	
radius		

E

End of file.

Schematic file format

V

Version number.

K

This line is a magic number.

F

The usual attribute is 'Case'

Y

Symbol type

Attribute	Explanation	Comment
0	Composite	
1	Module	
2	Annotate	
3	Pin	

D

Determines the size of the symbol block. The format is:

D x_{min} y_{min} x_{max} y_{max}

Where the min and max values are the numeric values giving the symbol block size available on the "properties" pop-up menu.

Z

Sheet size.

Attribute	Explanation	Comment
0	A	
1	B	
…	…	
5	A4	
…	…	
10	Z(user defined)	

i

It's a unique number.

I

It's a component. The format is:

I id symbol_name unknown1 x y unknown2 unknown3 '

Attribute	Explanation	Comment
id	The ID of this component	
Symbol_name	Ex: 74H144	
Unknown1		Usually is 1
x y	The position of this component	
Unknown2		Usually is 0
Unknown3		Usually is 1
'	End mark	

C

The connection information of a pin. This information attach to the follow line. The format is:

C net_id joint_order pin_id unknown

Attribute	Explanation	Comment
Net_id	The ID of the net which The pin connect to.	
Joint_order	The order of the joints in net joint list.	Usually 10
Pin_id	The Pin id. The id come from the symbol information.	
unknown		Usually is 0

X

Non-connected. The format is:

        X pin_id unknown

Attribute	Explanation	Comment
Pin_id	The Pin id. The id come from the symbol information.	
unknown		Usually is 0

A

Attribute attached to the preceeding pin. The format is:

        A x_{pos} y_{pos} text_size rotation text_pos visibility attribute

Attribute	Explanation	Comment
x_{pos} y_{pos}	Position of attribute	
Text_size	Font size of text	Usually 10
rotation	0: 0 1: 90 2: 180 3: 270	
Text_pos	Location of text anchor 1: lower 2: middle 3: upper	
visibility	0: invisible 1: visible 2: name only 3: value only	
attribute	Text form of attribute	Expressed as Attribute=value

N

Net. The format is:

    N net_id

J

The joint point of a net. The format is:

    J x_{pos} y_{pos} type

Attribute	Explanation	Comment
x_{pos} y_{pos}	Position of this joint point	
type	1: open 2: connect to pin 3: Inflection point 4: unknown 5: convergence point	

S

Describe the connectivity between two joint points. The format is:

    S joint_point1 joint_point2

For example, we have a net:

N 143	
J 440 330 2	---- joint point 1
J 430 290 2	---- joint point 2
J 400 330 5	---- joint point 3
J 330 350 2	---- joint point 4
J 400 350 3	---- joint point 5
J 400 290 5	---- joint point 6
J 360 290 2	---- joint point 7
J 320 330 2	---- joint point 8
S 3 1	---- connect joint point 3 to joint point 1
S 6 2	---- connect joint point 6 to joint point 2
S 8 3	---- connect joint point 8 to joint point 3
S 6 3	---- connect joint point 6 to joint point 3
S 4 5	---- connect joint point 4 to joint point 5
S 3 5	---- connect joint point 3 to joint point 5
S 7 6	---- connect joint point 7 to joint point 6

L

Label attached to the preceeding pin. The format is:

L x_{pos} y_{pos} text_size rotation text_pos scope visibility logic_sense text_label

Attribute	Explanation	Comment
x_{pos} y_{pos}	Position of attribute	
text_size	Font size of text	Usually 10
rotation	0: 0 1: 90 2: 180 3: 270	
Text_pos	Location of text anchor 1: lower 2: middle 3: upper	
Scope	0: local 1: global	
Visibility	0: invisible 1: visible 2: name only 3: value only ...	Usually 9
Logic_sense	0: normal 1: inverted	Bar above label
Text_label	Text label of pin	

b

Determines the size of a box drawn on the screen(inside the symbol block). The format is:

b x_{min} y_{min} x_{max} y_{max}

l

A line. The format is:

l line_color x_{start} y_{start} x_{end} y_{end}

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x_{start} y_{start}	The position of line start	
x_{end} y_{end}	The position of line end	

Q

Change the above line's color, line-style etc. the format is:

    Q line_color line_style fill

Attribute	Explanation	Comment
Line_color	The color code. It's numerical	Usually is 2. For the color map, check the viewdraw.ini
Line_style		Usually is 0.
fill		Usually is 0.

c

Circle. The format is:

    c x_{center} y_{center} radius

Attribute	Explanation	Comment
x_{center} y_{center}	The position of circle center	
radius		

E

End of file.

Other information

Line continuation

Note that line continuation is effected by placing a '+' symbol in the next line, inserting one space, and then continuing with the information from the previous line.

Record of modification

the format is:

    |R time

For example: |R 3:08_2-28-14