NAME

hyp2mat − convert hyperlynx files to octave/matlab scripts for electromagnetic simulation.

SYNOPSIS

hyp2mat [*-h*] [*-o outfile*] [*-f pdf|csxcad*] [*-n net*]... [*OPTIONS*]... [*-v*] [*infile*]

DESCRIPTION

hyp2mat 0.0.9

Converts Hyperlynx Signal−Integrity Transfer Format files to Octave/matlab scripts.

OPTIONS

−h, **−−help**
Print help and exit

−V, **−−version**
Print version and exit

−o, **−−output**=*filename*
Output file. (default=‘−’)

−f, **−−output−format**=*ENUM*
Output file format. (possible values="csxcad", "pdf" default=‘pdf’)

Processing options:

−n, **−−net**=*STRING*
Import net. Repeat to import several nets. Default is importing all nets.

−l, **−−layer**=*STRING*
Import layer. Repeat to import several layers. Default is importing all layers.

−e, **−−epsilonr**=*DOUBLE*
Set dielectric epsilon r.

−x, **−−xmin**=*DOUBLE*
Crop pcb. Set lower bound of x coordinate.

−X, **−−xmax**=*DOUBLE*
Crop pcb. Set upper bound of x coordinate.

−y, **−−ymin**=*DOUBLE*
Crop pcb. Set lower bound of y coordinate.

−Y, **−−ymax**=*DOUBLE*
Crop pcb. Set upper bound of y coordinate.

−z, **−−zmin**=*DOUBLE*
Crop pcb. Set lower bound of z coordinate.

−Z, **−−zmax**=*DOUBLE*
Crop pcb. Set upper bound of z coordinate.

−g, **−−grid**=*DOUBLE*
Set output grid size. (default=‘10e−6’)

−p, **−−arc−precision**=*DOUBLE*
Set maximum difference between perfect arc and polygonal approximation. (default=‘0’)

−c, **−−clearance**=*DOUBLE*
Set default trace−to−plane clearance. (default=‘0.0002’)

−F, **−−flood**
Flood plane layers with copper. (default=off)

PDF output options:

−−hue=*DOUBLE*
Set PDF color hue. Range 0.0 to 1.0 (default=‘0’)

−−saturation=*DOUBLE*
Set PDF color saturation. Range 0.0 to 1.0 (default=‘0.6’)

−−brightness=*DOUBLE*
Set PDF color brightness. Range 0.0 to 1.0 (default=‘0.9’)

Debugging options:

−r, **−−raw**
Raw output. Do not join adjacent or overlapping copper. (default=off)

−d, **−−debug**
Increase debugging level. Repeat for more detailed debugging.

−v, **−−verbose**
Print board summary.

Hyperlynx input files conventionally end in **.hyp** .

hyp2mat reads input from file *infile***.** If no input file is specified input is read from standard in.

If no output file is specified output is to standard out.

If a syntax error occurs during conversion, error recovery is attempted. *hyp2mat* exits with zero status if conversion was succesful and non-zero if not.

The **--verbose** option can be used to list board dimensions.

If only a small region of the board needs to be simulated the **--xmin --xmax --ymin --ymax --zmin** and **--zmax** options can be used to crop the board to a smaller region.

If not all layers of the board need to be simulated, the **--layers** option may be used to specify layers of interest.

If not all nets of the board need to be simulated, the **--nets** option may be used to specify nets of interest. The option **--net=?** lists all available nets.

Circles and arcs are approximated by polygons. By default a circle is approximated by an octagon. If higher accuracy is needed, set **--arc-precision** to the desired precision. This will increase the number of line segments used to draw circular, oval and oblong pads, amongst others.

The **--flood** option floods plane layers (power and ground planes) with copper. Signal layers are not affected. The flooded copper respects trace-to-plane clearances. Copper net name is identical to layer name.

Typical use of *hyp2mat* is with simulation packages such as OpenEMS.

All lengths are in meters.

FILES

/usr/share/hyp2mat/matlab/
Supporting matlab routines for OpenEMS.

/usr/share/hyp2mat/eagle/
Examples and tutorial.

EXAMPLES

Convert pcb.hyp to pdf:
hyp2mat -o pcb.pdf pcb.hyp

Examine original Hyperlynx file:
hyp2mat -o pcb.pdf --raw pcb.hyp

Draw arcs with an accuracy of 10 mil or better:
hyp2mat -o pcb.pdf --arc-precision 0.000254 pcb.hyp

NOTES

Board outlines and copper polygons should not be self-intersecting.

Common causes of syntax errors are unquoted strings, and unassigned component values.

Unquoted strings

Error: *syntax error, unexpected STRING at 'Logo'*

Source:

(? REF=My Logo BOT1 L=Bottom_Layer)

Cause: An unquoted string contains a space (' ').

Solution:

Edit the .hyp file and put the string between double quotes:
(? REF="My Logo BOT1" L=Bottom_Layer)

Unassigned component values

Error: *syntax error, unexpected L, expecting FLOAT or STRING at 'L'*

Source:

(R REF="R1" VAL= L="Top")

Cause: Component has not been assigned a value (VAL=).

Solution:

Edit the .hyp file and assign a value to resistor R1:
(R REF="R1" VAL=0 L="Top")
or assign the resistor a value in the schematics editor and re-export to HyperLynx.

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SEE ALSO

octave(1)
OpenEMS, a free and open-source electromagnetic field solver using the FDTD method.