NAME

fig2dev − translates Fig code to various graphics languages

SYNOPSIS

fig2dev −L *language* [**−m** *mag*] [**−f** *font*] [**−s** *fsize*] [*other options*] [*fig-file* [*out-file*]]

DESCRIPTION

Fig2dev translates fig code in the named *fig-file* into the specified graphics *language* and puts them in *out-file.* The default *fig-file* and *out-file* are standard input and standard output, respectively

Xfig (Facility for Interactive Generation of figures) is a screen-oriented tool which runs under the X Window System, and allows the user to draw and manipulate objects interactively. This version of fig2dev is compatible with xfig versions 1.3, 1.4, 2.0, 2.1, 3.0, 3.1 and 3.2.

Xfig version 3.2.3 and later saves and allows the user to edit comments for each Fig object. These comments are output with several of the output languages, such as PostScript, CGM, EMF, LaTeX, MetaFont, PicTeX, (as % comments), tk (as # comments), and pic (as .\" comments).

GENERAL OPTIONS (all drivers)

−L language

Set the output graphics language. Valid languages are **box, cgm, epic, eepic, eepicemu, emf, eps, gif, ibmgl, jpeg, latex, map (HTML image map), mf (MetaFont), mp (MetaPost), mmp (Multi-MetaPost), pcx, pdf, pdftex, pdftex_t, pic, pictex, png, ppm, ps, pstex, pstex_t, ptk (Perl/tk), shape (LaTeX shaped paragraphs), sld (AutoCad slide format), svg (beta driver), textyl, tiff, tk (tcl/tk), tpic, xbm and xpm**.

Notes:
dvips and *xdvi* must be compiled with the tpic support (-DTPIC) for epic, eepic and tpic to work.
You must have ghostscript and ps2pdf, which comes with the ghostscript distribution to get the pdf output and the bitmap formats (png, jpeg, etc.), and the netpbm (pbmplus) package to get gif, xbm, xpm, and sld output.

−h Print help message with all options for all output languages then exit.

−V Print the program version number and exit.

−D +/-rangelist

With +rangelist, keep only those depths in the list. With -rangelist, keep all depths except those in the list. The rangelist may be a list of comma-separated numbers or ranges separated by colon (:). For example, -D +10,40,55:70,80 means keep only layers 10, 40, 55 **through** 70, and 80.

-K The selection of the depths with the '-D +/-rangelist' option does normally not affect the calculation of the bounding box. Thus the generated document might have a much larger bounding box than necessary. If -K is given then the bounding box is adjusted to include only those objects in the selected depths.

−f font Set the default font used for text objects to *font.* The default is Roman; the format of this option depends on the graphics *language* in use. In TeX-based languages, the font is the base of the name given in lfonts.tex, for instance "cmr" for Roman, or "tt" for teletype. In PostScript, it is any font name known to the printer or interpreter.

–G minor[:major][:unit]
Draws a grid on the page. Specify thin, or thin and thick line spacing in one of several units. For example, "-G .25:1cm" draws a thin, gray line every .25 cm and a thicker gray line every 1 cm. Specifying "-G 1in" draws a thin line every 1 inch. Fractions may be used, e.g. "-G 1/16:1/2in" will draw a thin line every 1/16 inch (0.0625 inch) and a thick line every 1/2 inch.
Allowable units are: i, in, inch, f, ft, feet, c, cm, mm, and m.
Only allowed for PostScript, EPS, PDF, and bitmap (GIF, JPEG, etc) drivers for now.

–j Enable the I18N internationalization facility.

–m mag
Set the magnification at which the figure is rendered to *mag.* The default is 1.0. This may not be used with the maxdimension option (-Z).

–s size Set the default font size (in points) for text objects to *fsize.* The default is 11*mag, and thus is scaled by the **-m** option. If there is no scaling, the default font is eleven point Roman."

–Z maxdimension
Scale the figure so that the maximum dimension (width or height) is *maxdimension* inches or cm, depending on whether the figure was saved with imperial or metric units. This may not be used with the magnification option (-m).

other options
The other options are specific to the choice of graphics *language,* as described below.

CGM OPTIONS

CGM is Computer Graphics Metafile, developed by ISO and ANSI and is a vector-based plus bitmap language. Microsoft WORD, PowerPoint and probably other products can import this format *and display it on the screen,* something that they won't do with EPS files that have an ASCII preview.

–b dummyarg
Generate binary output (dummy argument required after the "-b").

–r Position arrowheads for CGM viewers that display rounded arrowheads. Normally, arrowheads are pointed, so fig2dev compensates for this by moving the endpoint of the line back so the tip of the arrowhead ends where the original endpoint of the line was. If the **-r** option is used, the position of arrows will *NOT* be corrected for compensating line width effects, because the rounded arrowhead doesn't extend beyond the endpoint of the line.

EMF OPTIONS

EMF is Enhanced Metafile, developed by Microsoft and is a vector-based plus bitmap language. Microsoft WORD, PowerPoint and probably other products can import this format *and display it on the screen,* something that they won't do with EPS files that have an ASCII preview.

EPIC OPTIONS

EPIC is an enhancement to LaTeX picture drawing environment. It was developed by Sunil Podar of Department of Computer Science in S.U.N.Y at Stony Brook.

EEPIC is an extension to EPIC and LaTeX picture drawing environment which uses tpic specials as a graphics mechanism. It was written by Conrad Kwok of Division of Computer Science at University of California, Davis.

EEPIC-EMU is an EEPIC emulation package which does not use tpic specials.

−A factor
Scale arrowheads by *factor.* The width and height of arrowheads is *divided* by this factor. This is because *EPIC* arrowheads are normally about double the size of *TeX* arrowheads.

−E num
Set encoding for text translation (0 = none, 1 = ISO-8859-1, 2 = ISO-8859-2)

−F Don't set the font face, series, and style; only set it's size and the baselineskip. By default, fig2dev sets all 5 font parameters when it puts some text. The disadvantage is that you can't set the font from your LaTeX document. With this option on, you can set the font from your LaTeX document (like "**\sfshape \input picture.eepic**").

If any of the pictures included in your LaTeX document has been generated with **-F**, then all pictures must be generated with this option.

This option can be used only when fig2dev was compiled with NFSS defined.

−l width
Use "**\thicklines**" when width of the line is wider than *lwidth.* The default is 2.

−P Generate a complete LaTeX file. In other words, the output file can be formatted without requiring any changes. The additional text inserted in the beginning and at the end of the file is controlled by the configuration parameter "Preamble" and "Postamble".

−R Allow rotated text. Rotated text will be set using the \rotatebox command. So, you will need to include "**\usepackage{graphics}**" in the preamble of your LaTeX document.

If this option is not set, then rotated text will be set horizontally.

−S scale
Set the scale to which the figure is rendered. This option automatically sets the *magnification* and size to *scale* / 12 and *scale* respectively.

−t stretch
Set the stretch factor of dashed lines to *sretch.* The default is 30.

−v Include comments in the output file.

−W Enable variable line width. By default, only two line widths are available: The normal line width (hinlines), and thick lines (hicklines), if a line width of more than one is selected in xfig.

−w Disable variable line width. Only "**\thicklines**" and/or "**\thinlines**" commands will be generated in the output file.

When variable line width option is enabled, "**\thinlines**" command is still used when line width is less than *LineThick*. One potential problem is that the width of "**\thinlines**" is 0.4pt but the resolution of Fig is 1/80 inch (approx. 1pt). If *LineThick* is set to 2, normal lines will be drawn in 0.4pt wide lines but the next line width is already 2pt. One possible solution is to set *LineThick* to 1 and set the width of the those lines you want to be drawn in "**\thinlines**" to 0.

Due to this problem, Variable line width *VarWidth* is defaulted to be false.

IBM-GL (HP/GL) OPTIONS

IBM-GL (IBM Graphics Language) is compatible with HP-GL (Hewlett-Packard Graphics Language).

−a Select ISO A4 (ANSI A) paper size if the default is ANSI A (ISO A4) paper size.

−c Generate instructions for an IBM 6180 Color Plotter with (without) an IBM Graphics Enhancement Cartridge (IBM-GEC).

−d xll,yll,xur,yur
Restrict plotting to a rectangular area of the plotter paper which has a lower left hand corner at *(xll,yll)* and a upper right hand corner at *(xur,yur).* All four numbers are in inches and follow **-d** in a comma-sparated list - *xll,yll,xur,yur* - with no spaces between them.

−f file Load text character specifications from the table in the *fonts* file. The table must have 36 entries - one for each font plus a default. Each entry consists of 5 numbers which specify the 1.) standard character set (0 - 4, 6 - 9, 30 - 39), 2.) alternate character set (0 - 4, 6 - 9, 30 - 39), 3.) character slant angle (degrees), 4.) character width scale factor and 5.) character height scale factor.

−k Precede output with PCL command to use HP/GL

−l pattfile
Load area fill line patterns from the table in the *pattfile* file. The table must have 21 entries - one for each of the area fill patterns. Each entry consists of 5 numbers which specify the 1.) pattern number (-1 - 6), 2.) pattern length (inches), 3.) fill type (1 - 5), 4.) fill spacing (inches) and 5.) fill angle (degrees).

−m mag,x0,y0
The magnification may appear as the first element in a comma separated list - *mag,x0,y0* - where the second and third parameters specify an offset in inches.

−P Rotate the figure to portrait mode. The default is landscape mode.

−p penfile
Load plotter pen specifications from the table in the *penfile* file. The table must have 9 entries - one for each color plus a default. Each entry consists of 2 numbers which specify the 1.) pen number (1 - 8) and 2.) pen thickness (millimeters).

−S speed
Set the pen speed to *speed* (centimeters/second).

−v Plot the figure upside-down in portrait mode or backwards in landscape mode. This allows you to write on the top surface of overhead transparencies without disturbing the plotter ink on the bottom surface.

Fig2dev may be installed with either ANSI A or ISO A4 default paper size. The **-a** option selects the alternate paper size. Fig2dev does not fill closed splines. The IBM-GEC is required to fill other polygons. Fig2dev may be installed for plotters with or without the IBM-GEC. The **-c** option selects the alternate instruction set.

OPTIONS COMMON TO ALL BITMAP FORMATS

–b borderwidth
Make blank border around figure of width *borderwidth.*

–F Use correct font sizes (points, 1/72 inch) instead of the traditional size that xfig/fig2dev uses, which is (1/80 inch). The corresponding xfig command-line option is -correct_font_size.

–g color
Use *color* for the background.

–N Convert all colors to grayscale.

-S smoothfactor
This will smooth the output by passing *smoothfactor* to ghostscript in the *-dTextAlphaBits* and *-dGraphicsAlphaBits* options to improve font rendering and graphic smoothing. A value of 2 for *smoothfactor* provides some smoothing and 4 provides more.

GIF OPTIONS

-t color Use *color* for the transparent color in the GIF file. This must be specified in the same format that ppmmake(1) allows. It may allow an X11 color name, but at least you may use a six-digit hexadecimal RGBvalue using the # sign, e.g. #ff0000 (Red).

JPEG OPTIONS

-q image_quality
use the integer value *image_quality* for the JPEG "Quality" factor. Valid values are 0-100, with the default being 75.

LATEX OPTIONS

–d dmag
Set a separate magnification for the length of line dashes to *dmag.*

–E num
Set encoding for latex text translation (0 no translation, 1 ISO-8859-1, 2 ISO-8859-2)

–l lwidth
Sets the threshold between LaTeX thin and thick lines to *lwidth* pixels. LaTeX supports only two different line width: \thinlines and \thicklines. Lines of width greater than *lwidth* pixels are drawn as \thicklines. Also affects the size of dots in dotted line style. The default is 1.

–v Verbose mode.

LaTeX cannot accurately represent all the graphics objects which can be described by Fig. For example, the possible slopes which lines may have are limited. Some objects, such as spline curves, cannot be drawn at all. Fig2latex chooses the closest possible line slope, and prints error messages when objects cannot be drawn accurately

MAP (HTML image map) OPTIONS

Xfig version 3.2.3 and later saves and allows the user to edit comments for each Fig object. The fig2dev map output language will produce an HTML image map using Fig objects that have href="some_html_reference" in their comments. Any Fig object except compound objects may used for this. Usually, besides generating the map file, you would also generate a GIF file, which is the image to which the map refers.

For example, you may have an xfig drawing with an imported image that has the comment href="go_here.html" and a box object with a comment href="go_away.html". This will produce an image map file such the user may click on the image and the browser will load the "go_here.html" page, or click on the box and the browser will load the "go_away.html" page.

After the map file is generated by *fig2dev* you will need to edit it to fill out any additional information it may need.

−b borderwidth
Make blank border around figure of width *borderwidth.*

METAFONT OPTIONS

fig2dev scales the figure by 1/8 before generating METAFONT code. The magnification can be further changed with the **-m** option or by giving magnification options to **mf.**

In order to process the generated METAFONT code, the mfpic macros must be installed where **mf** can find them. The mfpic macro package is available at any CTAN cite under the subdirectory: graphics/mfpic

-C code
specifies the starting METAFONT font code. The default is 32.

-n name
specifies the name to use in the output file.

-p pen_magnification
specifies how much the line width should be magnified compared to the original figure. The default is 1.

-t top specifies the top of the whole coordinate system. The default is **ypos.**

-x xmin
specifies the minimum x coordinate value of the figure (inches). The default is 0.

-y ymin
specifies the minumum y coordinate value of the figure (inches). The default is 0.

-X xmax
specifies the maximum x coordinate value of the figure (inches). The default is 8.

-Y ymax
specifies the maximum y coordinate value of the figure (inches). The default is 8.

METAPOST OPTIONS

–i file Include file content via \input-command.

-I file Include file content as additional header.

-o Old mode (no latex).

-p number
Adds the line "prologues:=number" to the output.

PIC OPTIONS

-p ext Enables the use of certain PIC extensions which are known to work with the groff package; compatibility with DWB PIC is unknown. The extensions enabled by each option are:

arc	Allow ARC_BOX i.e. use rounded corners
line	Use the 'line_thickness' value
fill	Allow ellipses to be filled
all	Use all of the above
psfont	Don't convert Postscript fonts generic type (useful for files going to be Ditroff'ed for and printed on PS printer). DWB-compatible.
allps	Use all of the above (i.e. "all" + "psfont")

PICTEX OPTIONS

In order to include PiCTeX pictures into a document, it is necessary to load the PiCTeX macros.

PiCTeX uses TeX integer register arithmetic to generate curves, and so it is very slow. PiCTeX draws curves by **\put**-ing the *psymbol* repeatedly, and so requires a large amount of TeX's internal memory, and generates large DVI files. The size of TeX's memory limits the number of plot symbols in a picture. As a result, it is best to use PiCTeX to generate small pictures.

–E num

Set encoding for latex text translation (0 no translation, 1 ISO-8859-1, 2 ISO-8859-2)

POSTSCRIPT, ENCAPSULATED POSTSCRIPT (EPS), and PDF OPTIONS

With PostScript, xfig can be used to create multiple page figures Specify the -M option to produce a multi-page output. For posters, add -O to overlap the pages slightly to get around the problem of the unprintable area in most printers, then cut and paste the pages together. Due to memory limitations of most laser printers, the figure should not have large imported images (bitmaps). Great for text with very big letters.

The EPS driver has the following differences from PostScript:

o No showpage is generated because the output is meant to be imported into another program or document and not printed
o The landscape/portrait options are ignored
o The centering option is ignored
o The multiple-page option is ignored
o The paper size option is ignored
o The x/y offset options are ignored

The EPS driver has the following two special options:

-B 'Wx [Wy X0 Y0]'

This specifies that the bounding box of the EPS file should have the width Wx and the height Wy. Note that it doesn't scale the figure to this size, it merely sets the bounding box. If a value less than or equal to 0 is specified for Wx or Wy, these are set to the width/height respectively of the figure. Origin is relative to screen (0,0) (upper-left). Wx, Wy, X0 and Y0 are interpreted in centimeters or inches depending on the measure given in the fig-file. Remember to put either quotes (") or apostrophes (') to group the arguments to -B.

-R 'Wx [Wy X0 Y0]'

Same as the -B option except that X0 and Y0 is relative to the lower left corner of the **figure.** Remember to put either quotes (") or apostrophes (') to group the arguments to -R.

The PDF driver uses all the PostScript options.

Text can now include various ISO-character codes above 0x7f, which is useful for language specific characters to be printed directly. Not all ISO-characters are implemented.

Color support: Colored objects created by Fig can be printed on a color postscript printer. There are 32 standard colors: black, yellow, white, gold, five shades of blue, four shades of green, four shades of cyan, four shades of red, five shades of magenta, four shades of brown, and four shades of pink. In addition there may be user-defined colors in the file. See the xfig FORMAT3.2 file for the definition of these colors. On a monochrome printer, colored objects will be mapped into different grayscales by the printer. Filled objects are printed using the given area fill and color. There are 21 "shades" going from black to full saturation of the fill color, and 21 more "tints" from full saturation + 1 to white. In addition, there are 16 patterns such as bricks, diagonal lines, crosshatch, etc.

-A Add an ASCII (EPSI) preview.

-b borderwidth
Make blank border around figure of width *borderwidth.*
Not availble in EPS.

-C dummy_arg
Add a color *binary* TIFF preview for Microsoft products that need a binary preview. See also -T (monochrome preview). A dummy argument must be supplied for historical reasons.

-c option centers the figure on the page. The centering may not be accurate if there are texts in the *fig_file* that extends too far to the right of other objects.

-e option puts the figure against the edge (not centered) of the page. Not availble in EPS.

-F Use correct font sizes (points) instead of the traditional size that xfig/fig2dev uses, which is 1/80 inch. The corresponding xfig command-line option is -correct_font_size.

-g color
Use *color* for the background.

-l dummy_arg
Generate figure in landscape mode. The dummy argument is ignored, but must appear on the command line for reasons of compatibility. This option will override the orientation specification in the file (for file versions 3.0 and higher).
Not availble in EPS.

-M Generate multiple pages if figure exceeds paper size.
Not availble in EPS.

–N Convert all colors to grayscale.

-n name
Set the Title part of the PostScript output to *name.* This is useful when the input to *fig2dev* comes from standard input.

-O When used with **-M**, overlaps the pages slightly to get around the problem of the unprintable area in most printers.
Not availble in EPS.

-p dummy_arg
Generate figure in portrait mode. The dummy argument is ignored, but must appear on the command line for reasons of compatibility. This option will override the orientation specification in the file (for file versions 3.0 and higher). This is the default for Fig files of version 2.1 or lower.
Not availble in EPS.

-T Add a monochrome *binary* TIFF preview for Microsoft products that need a binary preview. See also -C (color preview).

-x offset
shift the figure in the X direction by *offset* units (1/72 inch). A negative value shifts the figure to the left and a positive value to the right.

Not availble in EPS.

-y offset
shift the figure in the Y direction by *offset* units (1/72 inch). A negative value shifts the figure up and a positive value down.
Not availble in EPS.

-z papersize
Sets the papersize. Not availble in EPS.
Available paper sizes are:
"Letter" (8.5" x 11" also "A"),
"Legal" (11" x 14")
"Ledger" (11" x 17"),
"Tabloid" (17" x 11", really Ledger in Landscape mode),
"A" (8.5" x 11" also "Letter"),
"B" (11" x 17" also "Ledger"),
"C" (17" x 22"),
"D" (22" x 34"),
"E" (34" x 44"),
"A4" (21 cm x 29.7cm),
"A3" (29.7cm x 42 cm),
"A2" (42 cm x 59.4cm),
"A1" (59.4cm x 84.1cm),
"A0" (84.1cm x 118.9cm),
and "B5" (18.2cm x 25.7cm).

PSTEX OPTIONS

The **pstex** language is a variant of **ps** which suppresses formatted (special) text. The **pstex_t** language has the complementary behavior: it generates only the LaTeX special text and the commands necessary to position special text, and to overlay the PostScript file generated using **pstex.** These two drivers can be used to generate a figure which combines the flexibility of PostScript graphics with LaTeX text formatting of special text.

-F Use correct font sizes (points) instead of the traditional size that xfig/fig2dev uses, which is 1/80 inch. The corresponding xfig command-line option is -correct_font_size.

-g color
Use *color* for the background.

-n name
sets the Title part of the PostScript output to *name.* This is useful when the input to *fig2dev* comes from standard input.

PSTEX_T OPTIONS

The pstex_t language produces only the LaTeX special text and the commands necessary to position special text, and to overlay the PostScript file generated using **pstex.** (see above)

–E num
Set encoding for latex text translation (0 no translation, 1 ISO-8859-1, 2 ISO-8859-2)

–F Don't set the font face, series, and style; only set it's size and the baselineskip. By default, fig2dev sets all 5 font parameters when it puts some text. The disadvantage is that you can't set the font from your LaTeX document. With this option on, you can set the font from your LaTeX document (like "**\sfshape \input picture.eepic**").

-p file specifies the name of the PostScript file to be overlaid. If not set or its value is null then no PS file will be inserted.

TK and PTK OPTIONS (tcl/tk and Perl/tk)

-l dummy_arg
Generate figure in landscape mode. The dummy argument is ignored, but must appear on the command line for reasons of compatibility. This option will override the orientation specification in the file (for file versions 3.0 and higher).

-p dummy_arg
Generate figure in portrait mode. The dummy argument is ignored, but must appear on the command line for reasons of compatibility. This option will override the orientation specification in the file (for file versions 3.0 and higher). This is the default for Fig files of version 2.1 or lower.

-P Generate canvas of full page size instead of using the bounding box of the figure's objects. The default is to use only the bounding box.

-z papersize
Sets the papersize. See the POSTSCRIPT OPTIONS for available paper sizes. This is only used when the -P option (use full page) is used.

SEE ALSO

[x]fig(1), pic(1) pic2fig(1), transfig(1)

BUGS and RESTRICTIONS

Please send bug reports, fixes, new features etc. to:
xfig-bugs@epb1.lbl.gov (Brian V. Smith)

Arc-boxes are not supported for the tk output language, and only X bitmap pictures are supported because of the canvas limitation in tk.

Picture objects are not scaled with the magnification factor for tk output.

Because tk scales canvas items according to the X display resolution, polygons, lines, etc. may be scaled differently than imported pictures (bitmaps) which aren't scaled at all.

Rotated text is only supported in the IBM-GL (HP/GL) and PostScript (including eps) languages.

COPYRIGHT

AUTHORS

Micah Beck
Cornell University
Sept 28 1990

and Frank Schmuck (then of Cornell University)
and Conrad Kwok (then of U.C. Davis).

drivers contributed by
Jose Alberto Fernandez R. (U. of Maryland)
and Gary Beihl (MCC)

Color support, ISO-character encoding and poster support by
Herbert Bauer (heb@regent.e-technik.tu-muenchen.de)

Modified from f2p (fig to PIC), by the author of Fig
Supoj Sutanthavibul (supoj@sally.utexas.edu)
University of Texas at Austin.

MetaFont driver by
Anthony Starks (ajs@merck.com)

X-splines code by
Carole Blanc (blanc@labri.u-bordeaux.fr)
Christophe Schlick (schlick@labri.u-bordeaux.fr)
The initial implementation was done by C. Feuille, S. Grobois, L. Maziere and L. Minihot as a student practice (Universite Bordeaux, France).

Japanese text support for LaTeX output written by T. Sato (VEF00200@niftyserve.or.jp)

The tk driver was written by
Mike Markowski (mm@udel.edu) with a little touch-up by Brian Smith

The CGM driver (Computer Graphics Metafile) was written by
Philippe Bekaert (Philippe.Bekaert@cs.kuleuven.ac.be)

The EMF driver (Enhanced Metafile) was written by
Michael Schrick (m_schrick@hotmail.com)