

The pagegrid package

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Abstract

The L^AT_EX package prints a page grid in the background.

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1 Documentation

The package puts a grid on the paper. It was written for developers of a class or package who have to put elements on definite locations on a page (e.g. letter class). The grid allows a faster optical check, whether the positions are correct. If the previewer already offers features for measuring, the package might be obsolete. Otherwise it saves the developer from printing the page and measuring by hand.

*Please report any issues at <https://github.com/ho-tex/pagegrid/issues>

1.1 Options

Options are evaluated in the following order:

1. Configuration file `pagegrid.cfg` using `\pagegridsetup` if the file exists.
2. Package options given for `\usepackage`.
3. Later calls of `\pagegridsetup`.

`\pagegridsetup{option list}`

The options are key value options. Boolean options are enabled by default (without value) or by using the explicit value `true`. Value `false` disable the option.

1.1.1 Options enable, disable

enable: This boolean option controls whether the page grid is drawn. As default the page grid drawing is activated.

disable: It is the opposite of option `enable`. It was added for convenience and allows the abbreviation `disable` for `enable=false`.

1.1.2 Grid origins

The package supports up to two grids on a page allowing measurement from opposite directions. As default two grids are drawn, the first from bottom left to top right. The origin of the second grid is at the opposite top right corner. The origins are controlled by the following options. The number of grids (one or two) depend on the number of these options in one call of `\pagegridsetup`. The following frame shows a paper and in its corners are the corresponding options. At the left and right side alias names are given for the options inside the paper.

left-top, lt, top-left	tl	tr	top-right, rt, right-top
left-bottom, lb, bottom-left	bl	br	bottom-right, rb, right-bottom

Examples:

```
\pagegridsetup{bl,tr}
```

This is the default setting with two grids as described previously. The following setups one grid only. Its origin is the upper left corner:

```
\pagegridsetup{top-left}
```

1.1.3 Grid unit

step This option takes a length and setups the unit for the grid. The page width and page height should be multiples of this unit. Currently the default is `1mm`. But this might change later by a heuristic based on the paper size.

1.1.4 Color options

The basic grid lines are drawn as ultra thin help lines and is only drawn for the first grid. Each tenth and fiftyth line of the basic net is drawn thicker in a special color for the two grids.

firstcolor: Color for the thicker lines and the arrows of the first grid. Default value is `red`.

secondcolor: Color for the thicker lines and the arrows of the second grid. Default value is `blue`.

Use a color specification that package `tikz` understands. (The grid is drawn with `pgf/tikz`.)

1.1.5 Arrow options

Arrows are put at the origin at the grid to show the grid start and the direction of the grid.

arrows: This boolean option turns the arrows on or off. As default arrows are enabled.

arrowlength: The length given as value is the length of the edge of a square at the origin within the arrow is put as diagonal. Default is 10 times the grid unit (10 mm). The real arrow length is this length multiplied by $\sqrt{2}$.

1.1.6 Miscellaneous options

double: The output page is doubled, one without page grid and the other with page grid. Possible values are shown in the following table:

Option	Meaning
<code>false</code>	Turns option off.
<code>first</code>	Grid page comes first.
<code>last</code>	Grid page comes after the page without grid.
<code>true</code>	Same as <code>last</code> .
<code><no value></code>	Same as <code>true</code> .

Note: The double output of the page has side effects. All whatsits are executed twice, for example: file writing and anchor setting. Some unwanted actions are caught such as multiple `\label` definitions, duplicate entries in the table of contents. For bookmarks, use package `bookmarks`.

foreground: Boolean option, default is `false`. Sometimes there might be elements on the page (e.g. large images) that hide the grid. Then option `foreground` puts the grids over the current output page.

2 Implementation

```
1 (*package)
2 \begingroup\catcode61\catcode48\catcode32=10\relax%
3 \catcode13=5 % ^^M
4 \endlinechar=13 %
5 \catcode35=6 % #
6 \catcode39=12 % '
7 \catcode44=12 % ,
8 \catcode45=12 % -
9 \catcode46=12 % .
10 \catcode58=12 % :
11 \catcode64=11 % @
12 \catcode123=1 % {
13 \catcode125=2 % }
14 \expandafter\let\expandafter\x\csname ver@pagegrid.sty\endcsname
15 \ifx\x\relax % plain-TeX, first loading
16 \else
17 \def\empty{}%
18 \ifx\x\empty % LaTeX, first loading,
19 % variable is initialized, but \ProvidesPackage not yet seen
20 \else
21 \expandafter\ifx\csname PackageInfo\endcsname\relax
22 \def\x#1#2{%
23 \immediate\write-1{Package #1 Info: #2.}%
24 }%
25 \else
```

```

26     \def\x#1#2{\PackageInfo{#1}{#2, stopped}}%
27     \fi
28     \x{pagegrid}{The package is already loaded}%
29     \aftergroup\endinput
30     \fi
31     \fi
32 \endgroup%

Package identification:
33 \begingroup\catcode61\catcode48\catcode32=10\relax%
34 \catcode13=5 % ^^M
35 \endlinechar=13 %
36 \catcode35=6 % #
37 \catcode39=12 % '
38 \catcode40=12 % (
39 \catcode41=12 % )
40 \catcode44=12 % ,
41 \catcode45=12 % -
42 \catcode46=12 % .
43 \catcode47=12 % /
44 \catcode58=12 % :
45 \catcode64=11 % @
46 \catcode91=12 % [
47 \catcode93=12 % ]
48 \catcode123=1 % {
49 \catcode125=2 % }
50 \expandafter\ifx\csname ProvidesPackage\endcsname\relax
51   \def\x#1#2#3[#4]{\endgroup
52     \immediate\write-1{Package: #3 #4}%
53     \xdef#1{#4}%
54   }%
55 \else
56   \def\x#1#2[#3]{\endgroup
57     #2[#{#3}]%
58     \ifx#1@undefined
59       \xdef#1{#3}%
60     \fi
61     \ifx#1\relax
62       \xdef#1{#3}%
63     \fi
64   }%
65 \fi
66 \expandafter\x\csname ver@pagegrid.sty\endcsname
67 \ProvidesPackage{pagegrid}%
68 [2022-09-21 v1.6 Print page grid in background (HO)]%
69 \begingroup\catcode61\catcode48\catcode32=10\relax%
70 \catcode13=5 % ^^M
71 \endlinechar=13 %
72 \catcode123=1 % {
73 \catcode125=2 % }
74 \catcode64=11 % @
75 \def\x{\endgroup
76   \expandafter\edef\csname pagegrid@AtEnd\endcsname{%
77     \endlinechar=\the\endlinechar\relax
78     \catcode13=\the\catcode13\relax
79     \catcode32=\the\catcode32\relax
80     \catcode35=\the\catcode35\relax
81     \catcode61=\the\catcode61\relax
82     \catcode64=\the\catcode64\relax
83     \catcode123=\the\catcode123\relax
84     \catcode125=\the\catcode125\relax
85   }%
86 }%

```

```

87 \x\catcode61\catcode48\catcode32=10\relax%
88 \catcode13=5 % ^^M
89 \endlinechar=13 %
90 \catcode35=6 % #
91 \catcode64=11 % @
92 \catcode123=1 % {
93 \catcode125=2 % }
94 \def\TMP@EnsureCode#1#2{%
95   \edef\pagegrid@AtEnd{%
96     \pagegrid@AtEnd
97     \catcode#1=\the\catcode#1\relax
98   }%
99   \catcode#1=#2\relax
100 }
101 \TMP@EnsureCode{9}{10}% (tab)
102 \TMP@EnsureCode{10}{12}% ^^J
103 \TMP@EnsureCode{33}{12}% !
104 \TMP@EnsureCode{34}{12}% "
105 \TMP@EnsureCode{36}{3}% $
106 \TMP@EnsureCode{38}{4}% &
107 \TMP@EnsureCode{39}{12}% '
108 \TMP@EnsureCode{40}{12}% (
109 \TMP@EnsureCode{41}{12}% )
110 \TMP@EnsureCode{42}{12}% *
111 \TMP@EnsureCode{43}{12}% +
112 \TMP@EnsureCode{44}{12}% ,
113 \TMP@EnsureCode{45}{12}% -
114 \TMP@EnsureCode{46}{12}% .
115 \TMP@EnsureCode{47}{12}% /
116 \TMP@EnsureCode{58}{12}% :
117 \TMP@EnsureCode{59}{12}% ;
118 \TMP@EnsureCode{60}{12}% <
119 \TMP@EnsureCode{62}{12}% >
120 \TMP@EnsureCode{63}{12}% ?
121 \TMP@EnsureCode{91}{12}% [
122 \TMP@EnsureCode{93}{12}% ]
123 \TMP@EnsureCode{94}{7}% ^ (superscript)
124 \TMP@EnsureCode{95}{8}% _ (subscript)
125 \TMP@EnsureCode{96}{12}% '
126 \TMP@EnsureCode{124}{12}% |
127 \edef\pagegrid@AtEnd{\pagegrid@AtEnd\noexpand\endinput}

128 \RequirePackage{tikz}
129 \RequirePackage{atbegshi}[2009/12/02]
130 \RequirePackage{kvoptions}[2009/07/17]

131 \def\pagegrid@width{\paperwidth}%
132 \def\pagegrid@height{\paperheight}%
133 \@ifundefined{stockwidth}{%
134   {%
135     \ifdim \stockwidth > Opt\relax
136       \ifdim \stockheight > Opt \relax
137         \def\pagegrid@width{\stockwidth}%
138         \def\pagegrid@height{\stockheight}%
139       \fi
140     \fi
141   }

142 \SetupKeyvalOptions{%
143   family=pagegrid,%
144   prefix=pagegrid@,%
145 }
146 \def\pagegrid@init{%
147   \let\pagegrid@origin@a\@empty
148   \let\pagegrid@origin@b\@empty

```

```

149 \let\pagegrid@init\relax
150 }
151 \let\pagegrid@@init\pagegrid@init
152 \def\pagegrid@origin@a{bl}
153 \def\pagegrid@origin@b{tr}
154 \def\pagegrid@SetOrigin#1{%
155   \pagegrid@init
156   \ifx\pagegrid@origin@a\@empty
157     \def\pagegrid@origin@a{#1}%
158   \else
159     \ifx\pagegrid@origin@b\@empty
160       \else
161         \let\pagegrid@origin@a\pagegrid@origin@b
162       \fi
163     \def\pagegrid@origin@b{#1}%
164   \fi
165 }
166 \def\pagegrid@temp#1{%
167   \DeclareVoidOption{#1}{\pagegrid@SetOrigin{#1}}%
168   \@namedef{pagegrid@N@#1}{#1}%
169 }
170 \pagegrid@temp{bl}
171 \pagegrid@temp{br}
172 \pagegrid@temp{tl}
173 \pagegrid@temp{tr}
174 \def\pagegrid@temp#1#2{%
175   \DeclareVoidOption{#2}{\pagegrid@SetOrigin{#1}}%
176 }%
177 \pagegrid@temp{bl}{lb}
178 \pagegrid@temp{br}{rb}
179 \pagegrid@temp{tl}{lt}
180 \pagegrid@temp{tr}{rt}
181 \pagegrid@temp{bl}{bottom-left}
182 \pagegrid@temp{br}{bottom-right}
183 \pagegrid@temp{tl}{top-left}
184 \pagegrid@temp{tr}{top-right}
185 \pagegrid@temp{bl}{left-bottom}
186 \pagegrid@temp{br}{right-bottom}
187 \pagegrid@temp{tl}{left-top}
188 \pagegrid@temp{tr}{right-top}

189 \DeclareBoolOption[true]{enable}
190 \DeclareComplementaryOption{disable}{enable}

191 \DeclareBoolOption{foreground}

192 \newlength{\pagegrid@step}
193 \define@key{pagegrid}{step}{%
194   \setlength{\pagegrid@step}{#1}%
195 }

196 \DeclareStringOption[red]{firstcolor}
197 \DeclareStringOption[blue]{secondcolor}

198 \DeclareBoolOption[true]{arrows}
199 \newlength\pagegrid@arrowlength
200 \pagegrid@arrowlength=\z@
201 \define@key{pagegrid}{arrowlength}{%
202   \setlength{\pagegrid@arrowlength}{#1}%
203 }

204 \define@key{pagegrid}{double}[true]{%
205   \@ifundefined{pagegrid@double@#1}{%
206     \PackageWarning{pagegrid}{%
207       Unsupported value ‘#1’ for option ‘double’.\MessageBreak
208       Known values are:\MessageBreak

```

```

209     'false', 'first', 'last', 'true'.\MessageBreak
210     Now 'false' is used%
211     }%
212     \chardef\pagegrid@double\z@
213     }{%
214     \chardef\pagegrid@double\csname pagegrid@double@#1\endcsname\relax
215     }%
216 }
217 \@namedef{pagegrid@double@false}{0}
218 \@namedef{pagegrid@double@first}{1}
219 \@namedef{pagegrid@double@last}{2}
220 \@namedef{pagegrid@double@true}{2}
221 \chardef\pagegrid@double\z@
222 \newcommand*{\pagegridsetup}{%
223     \let\pagegrid@init\pagegrid@@init
224     \setkeys{pagegrid}%
225 }
226 \pagegridsetup{%
227     step=1mm%
228 }
229 \InputIfFileExists{pagegrid.cfg}{}%
230 \ProcessKeyvalOptions*\relax
231 \AtBeginDocument{%
232     \ifdim\pagegrid@arrowlength>\z@
233     \else
234         \pagegrid@arrowlength=10\pagegrid@step
235     \fi
236 }
237 \def\pagegridShipoutDoubleBegin{%
238     \begingroup
239     \let\newlabel\@gobbletwo
240     \let\zref@newlabel\@gobbletwo
241     \let\@writefile\@gobbletwo
242     \let\select@language\@gobble
243 }
244 \def\pagegridShipoutDoubleEnd{%
245     \endgroup
246 }
247 \def\pagegrid@WriteDouble#1#2{%
248     \immediate\write#1{%
249         \@backslashchar csname %
250         pagegridShipoutDouble#2%
251         \@backslashchar endcsname%
252     }%
253 }
254 \def\pagegrid@ShipoutDouble#1{%
255     \begingroup
256     \if@filesw
257         \pagegrid@WriteDouble\@mainaux{Begin}%
258         \ifx\@auxout\@partaux
259             \pagegrid@WriteDouble\@partaux{Begin}%
260             \def\pagegrid@temp{%
261                 \pagegrid@WriteDouble\@mainaux{End}%
262                 \pagegrid@WriteDouble\@partaux{End}%
263             }%
264         \else
265             \def\pagegrid@temp{%
266                 \pagegrid@WriteDouble\@mainaux{End}%
267             }%
268         \fi
269     \else
270         \def\pagegrid@temp{}%

```

```

271 \fi
272 \let\protect\noexpand
273 \AtBeginShipoutOriginalShipout\copy#1\relax
274 \pagegrid@temp
275 \endgroup
276 }

277 \AtBeginShipout{%
278 \ifdim\pagegrid@step>\z@
279 \else
280 \pagegrid@enablefalse
281 \fi
282 \ifpagegrid@enable
283 \ifnum\pagegrid@double=\@ne
284 \pagegrid@ShipoutDouble\AtBeginShipoutBox
285 \else
286 \ifnum\pagegrid@double=\tw@
287 \@ifundefined{pagegrid@DoubleBox}{%
288 \newbox\pagegrid@DoubleBox
289 }{%
290 \setbox\pagegrid@DoubleBox=\copy\AtBeginShipoutBox
291 \fi
292 \fi
293 \ifpagegrid@foreground
294 \expandafter\AtBeginShipoutUpperLeftForeground
295 \else
296 \expandafter\AtBeginShipoutUpperLeft
297 \fi
298 {%
299 \put(0,0){%
300 \makebox(0,0)[lt]{%
301 \begin{tikzpicture}[%
302 bl/.style={},%
303 br/.style={xshift=\pagegrid@width,xscale=-1},%
304 tl/.style={yshift=\pagegrid@height,yscale=-1},%
305 tr/.style={xshift=\pagegrid@width,%
306 yshift=\pagegrid@height,scale=-1}%
307 ]%
308 \useasboundingbox
309 (0mm,\pagegrid@height) rectangle (0mm,\pagegrid@height);%
310 \draw[%
311 \pagegrid@origin@a,%
312 step=\pagegrid@step,%
313 style=help lines,%
314 ultra thin%
315 ] (0mm,0mm) grid (\pagegrid@width,\pagegrid@height);%
316 \ifx\pagegrid@origin@b\@empty
317 \else
318 \draw[%
319 \pagegrid@origin@b,%
320 step=10\pagegrid@step,%
321 {\pagegrid@secondcolor},%
322 very thin%
323 ] (0mm,0mm) grid (\pagegrid@width,\pagegrid@height);%
324 \fi
325 \draw[%
326 \pagegrid@origin@a,%
327 step=10\pagegrid@step,%
328 {\pagegrid@firstcolor},%
329 very thin%
330 ] (0mm,0mm) grid (\pagegrid@width,\pagegrid@height);%
331 \ifx\pagegrid@origin@b\@empty
332 \else

```



```

333         \draw[%
334             \pagegrid@origin@b,%
335             step=50\pagegrid@step,%
336             {\pagegrid@secondcolor},%
337             thick%
338         ] (0mm,0mm) grid (\pagegrid@width,\pagegrid@height);%
339     \fi
340     \draw[%
341         \pagegrid@origin@a,%
342         step=50\pagegrid@step,%
343         {\pagegrid@firstcolor},%
344         thick%
345     ] (0mm,0mm) grid (\pagegrid@width,\pagegrid@height);%
346     \ifpagegrid@arrows
347         \ifx\pagegrid@origin@b\@empty
348         \else
349             \draw[%
350                 \pagegrid@origin@b,%
351                 {\pagegrid@secondcolor},%
352                 stroke,%
353                 line width=1pt,%
354                 line cap=round%
355             ] (0mm,0mm) %
356                 -- (\pagegrid@arrowlength,\pagegrid@arrowlength) %
357                 (\pagegrid@arrowlength,.5\pagegrid@arrowlength) %
358                 -- (\pagegrid@arrowlength,\pagegrid@arrowlength) %
359                 -- (.5\pagegrid@arrowlength,\pagegrid@arrowlength);%
360         \fi
361         \draw[%
362             \pagegrid@origin@a,%
363             {\pagegrid@firstcolor},%
364             stroke,%
365             line width=1pt,%
366             line cap=round%
367         ] (0mm,0mm) %
368             -- (\pagegrid@arrowlength,\pagegrid@arrowlength) %
369             (\pagegrid@arrowlength,.5\pagegrid@arrowlength) %
370             -- (\pagegrid@arrowlength,\pagegrid@arrowlength) %
371             -- (.5\pagegrid@arrowlength,\pagegrid@arrowlength);%
372     \fi
373     \end{tikzpicture}%
374     }%
375     }%
376     }%
377     \ifnum\pagegrid@double=\tw@
378         \pagegrid@ShipoutDouble\pagegrid@DoubleBox
379     \fi
380 \fi
381 }

382 \pagegrid@AtEnd%
383 \end{package}

```

3 Installation

3.1 Download

Package. This package is available on CTAN¹:

[CTAN:macros/latex/contrib/pagegrid/pagegrid.dtx](https://ctan.org/ctan/packages/macros/latex/contrib/pagegrid/pagegrid.dtx) The source file.

[CTAN:macros/latex/contrib/pagegrid/pagegrid.pdf](https://ctan.org/ctan/packages/macros/latex/contrib/pagegrid/pagegrid.pdf) Documentation.

¹[CTAN:pkg/pagegrid](https://ctan.org/ctan/packages/macros/latex/contrib/pagegrid)

3.2 Package installation

Unpacking. The `.dtx` file is a self-extracting `docstrip` archive. The files are extracted by running the `.dtx` through plain \TeX :

```
tex pagegrid.dtx
```

TDS. Now the different files must be moved into the different directories in your installation TDS tree (also known as `texmf` tree):

```
pagegrid.sty → tex/latex/pagegrid/pagegrid.sty
pagegrid.pdf → doc/latex/pagegrid/pagegrid.pdf
pagegrid.dtx → source/latex/pagegrid/pagegrid.dtx
```

If you have a `docstrip.cfg` that configures and enables `docstrip`'s TDS installing feature, then some files can already be in the right place, see the documentation of `docstrip`.

3.3 Refresh file name databases

If your \TeX distribution (\TeX Live, MiK \TeX , ...) relies on file name databases, you must refresh these. For example, \TeX Live users run `texhash` or `mktexlsr`.

3.4 Some details for the interested

Unpacking with \LaTeX . The `.dtx` chooses its action depending on the format:

plain \TeX : Run `docstrip` and extract the files.

\LaTeX : Generate the documentation.

If you insist on using \LaTeX for `docstrip` (really, `docstrip` does not need \LaTeX), then inform the autodetect routine about your intention:

```
latex \let\install=y\input{pagegrid.dtx}
```

Do not forget to quote the argument according to the demands of your shell.

Generating the documentation. You can use both the `.dtx` or the `.drv` to generate the documentation. The process can be configured by the configuration file `ltxdoc.cfg`. For instance, put this line into this file, if you want to have A4 as paper format:

```
\PassOptionsToClass{a4paper}{article}
```

An example follows how to generate the documentation with `pdf \LaTeX` :

```
pdflatex pagegrid.dtx
makeindex -s gind.ist pagegrid.idx
pdflatex pagegrid.dtx
makeindex -s gind.ist pagegrid.idx
pdflatex pagegrid.dtx
```

4 Acknowledgement

Klaus Braune: He provided the idea and the first `tikz` code.

5 History

[2009/11/06 v1.0]

- The first version.

[2009/11/06 v1.1]

- Option foreground added.

[2009/12/02 v1.2]

- Color options, arrow options added.
- Names for origin options changed.

[2009/12/03 v1.3]

- Option double added.
- First CTAN release.

[2009/12/04 v1.4]

- Option double: Some unwanted side effects removed.

[2016/05/16 v1.5]

- Documentation updates.

[2022-09-21 v1.6]

- Adapted the test for stockwidth/stockheight to a change in the L^AT_EX kernel.

6 Index

Numbers written in *italic* refer to the page where the corresponding entry is described; numbers underlined refer to the code line of the definition; plain numbers refer to the code lines where the entry is used.

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