Abstract
The \LaTeX{} package prints a page grid in the background.

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*Please report any issues at https://github.com/ho-tex/oberdiek/issues
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.

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 tr
top-bottom, lb, bottom-left bl br bottom-right, rb, right-bottom br
```

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 heigth should be multiples of this unit. Currently the default is \texttt{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 fiftieth line of the basic net is drawn thicker in a special color for the two grids.

\textbf{firstcolor}: Color for the thicker lines and the arrows of the first grid. Default value is \textit{red}.

\textbf{secondcolor}: Color for the thicker lines and the arrows of the second grid. Default value is \textit{blue}.

Use a color specification that package \texttt{tikz} understands. (The grid is drawn with \texttt{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.

\textbf{arrows}: This boolean option turns the arrows on or off. As default arrows are enabled.

\textbf{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

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

<table>
<thead>
<tr>
<th>Option</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>\texttt{false}</td>
<td>Turns option off.</td>
</tr>
<tr>
<td>\texttt{first}</td>
<td>Grid page comes first.</td>
</tr>
<tr>
<td>\texttt{last}</td>
<td>Grid page comes after the page without grid.</td>
</tr>
<tr>
<td>\texttt{true}</td>
<td>Same as \texttt{last}.</td>
</tr>
<tr>
<td>\langle no value \rangle</td>
<td>Same as \texttt{true}.</td>
</tr>
</tbody>
</table>

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

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

2 Implementation

1 (*package)

Reload check, especially if the package is not used with L\TeX. 

2 \begingroup\catcode61=10\catcode48=32\catcode32=10\relax%

3 \catcode13=5 \catcode35=6 \catcode39=12

4 \endl

5 \catcode35=6 \catcode39=12

6 \catcode39=12
\RequirePackage{tikz}
\RequirePackage{atbegshi}[2009/12/02]
\RequirePackage{kvoptions}[2009/07/17]
\begingroup\expandafter\expandafter\expandafter\endgroup
\expandafter\ifx\csname stockwidth\endcsname\relax
  \def\pagegrid@width{\paperwidth}%
  \def\pagegrid@height{\paperheight}%
\else
  \def\pagegrid@width{\stockwidth}%
  \def\pagegrid@height{\stockheight}%
\fi
\SetupKeyvalOptions{%
  family=pagegrid,%
  prefix=pagegrid@,%
}
\def\pagegrid@init{%
  \let\pagegrid@origin@a\@empty
  \let\pagegrid@origin@b\@empty
  \let\pagegrid@init\relax
}
\let\pagegrid@@init\pagegrid@init
\def\pagegrid@origin@a{bl}
\def\pagegrid@origin@b{tr}
\def\pagegrid@SetOrigin#1{%
  \pagegrid@init
  \ifx\pagegrid@origin@a\@empty
    \def\pagegrid@origin@a{#1}%
  \else
    \ifx\pagegrid@origin@b\@empty
    \else
      \let\pagegrid@origin@a\pagegrid@origin@b
    \fi
    \def\pagegrid@origin@b{#1}%
  \fi
}
\def\pagegrid@temp#1{%
  \DeclareVoidOption{#1}{\pagegrid@SetOrigin{#1}}%
  \@namedef{pagegrid@N@#1}{#1}%
}
\pagegrid@temp{bl}
\pagegrid@temp{br}
\pagegrid@temp{tl}
\pagegrid@temp{tr}
\pagegrid@temp{bl}{bottom-left}
\DeclareBoolOption{true}{enable} \DeclareComplementaryOption{disable}{enable} \DeclareBoolOption{foreground} \newlength{\pagegrid@step} \define@key{pagegrid}{step}{\setlength{\pagegrid@step}{#1}} \DeclareStringOption[red]{firstcolor} \DeclareStringOption[blue]{secondcolor} \DeclareBoolOption{true}{arrows} \newlength{\pagegrid@arrowlength} \pagegrid@arrowlength=\z@ \define@key{pagegrid}{arrowlength}{\setlength{\pagegrid@arrowlength}{#1}} \define@key{pagegrid}{double}{true} \ifdefined{pagegrid@double}0 \else \ifdefined{pagegrid@double@first}1 \else \ifdefined{pagegrid@double@last}2 \else \ifdefined{pagegrid@double@true}2 \else 0 \fi \fi \fi \fi} \@namedef{pagegrid@double@false}{0} \@namedef{pagegrid@double@first}{1} \@namedef{pagegrid@double@last}{2} \@namedef{pagegrid@double@true}{2} \chardef\pagegrid@double\z@ \newcommand*{\pagegridsetup}{\let\pagegrid@init\pagegrid@@init \setkeys{pagegrid}} \pagegridsetup{\step=1mm} \InputIfFileExists{pagegrid.cfg}{\ProcessKeyvalOptions*{\relax \AtBeginDocument{\ifdim\pagegrid@arrowlength>\z@ \else \pagegrid@arrowlength=10\pagegrid@step \fi}}}
\def\pagegridShipoutDoubleBegin{% 
\begingroup
\let\newlabel@gobbletwo
\let\zref@newlabel@gobbletwo
\let\@writefile@gobbletwo
\let\select@language@gobble
}
\def\pagegridShipoutDoubleEnd{% 
\endgroup
}
\def\pagegrid@WriteDouble#1#2{% 
\immediate\write#1{% 
@backslashchar \csname \pagegridShipoutDouble#2\endcsname%
}
}
\def\pagegrid@ShipoutDouble#1 {% 
\begingroup
\if@filesw
\pagegrid@WriteDouble\@mainaux{Begin}% 
\ifx\@auxout\@partaux
\pagegrid@WriteDouble\@partaux{Begin}% 
\def\pagegrid@temp{% 
\pagegrid@WriteDouble\@mainaux{End}% 
\pagegrid@WriteDouble\@partaux{End}% 
}% 
\else
\def\pagegrid@temp{% 
\pagegrid@WriteDouble\@mainaux{End}% 
}% 
\fi
\else
\def\pagegrid@temp{}%
\fi
\let\protect\noexpand
\AtBeginShipoutOriginalShipout\copy#1\relax
\pagegrid@temp
\endgroup
}
\AtBeginShipout{% 
\ifdim\pagegrid@step>\z@
\else
\pagegrid@enablefalse
\fi
\ifnum\pagegrid@double=\@ne
\pagegrid@ShipoutDouble\AtBeginShipoutBox
\else
\ifnum\pagegrid@double=\tw@
\ifundefined{pagegrid@DoubleBox}{% 
\newbox\pagegrid@DoubleBox
\fi
\setbox\pagegrid@DoubleBox=\copy\AtBeginShipoutBox
}\fi
\fi
\ifpagegrid@foreground
\expandafter\AtBeginShipoutUpperLeftForeground
\fi
\expandafter\AtBeginShipoutUpperLeftForeground
\else\expandafter\AtBeginShipoutUpperLeft\fi\
\begin{tikzpicture}[bl/.style={},br/.style={xshift=\pagegrid@width,yscale=-1},
    tl/.style={yshift=\pagegrid@height,yscale=-1},tr/.style={xshift=\pagegrid@width,
    yshift=\pagegrid@height,yscale=-1}]
    \useasboundingbox
    (0mm,\pagegrid@height) rectangle (0mm,\pagegrid@height);\%
    \draw[pagegrid@origin@a,\%
    step=\pagegrid@step,\%
    style=help lines,\%
    ultra thin\%
    ] (0mm,0mm) grid (\pagegrid@width,\pagegrid@height);\%
    \if\pagegrid@origin@b\@empty\else\draw[\%
    pagegrid@origin@b,\%
    step=10\pagegrid@step,\%
    \{\pagegrid@secondcolor},\%
    very thin\%
    ] (0mm,0mm) grid (\pagegrid@width,\pagegrid@height);\%
    \fi\draw[\%
    pagegrid@origin@a,\%
    step=10\pagegrid@step,\%
    \{\pagegrid@firstcolor},\%
    very thin\%
    ] (0mm,0mm) grid (\pagegrid@width,\pagegrid@height);\%
    \if\pagegrid@origin@b\@empty\else\draw[\%
    pagegrid@origin@b,\%
    step=50\pagegrid@step,\%
    \{\pagegrid@secondcolor},\%
    thick\%
    ] (0mm,0mm) grid (\pagegrid@width,\pagegrid@height);\%
    \fi\draw[\%
    pagegrid@origin@a,\%
    step=50\pagegrid@step,\%
    \{\pagegrid@firstcolor},\%
    thick\%
    ] (0mm,0mm) grid (\pagegrid@width,\pagegrid@height);\%
    \if\pagegrid@arrows\fi
    \if\pagegrid@origin@b\@empty\else\draw[\%
    pagegrid@origin@b,\%
    \{\pagegrid@secondcolor},\%
    stroke,\%
    ] (0mm,0mm) grid (\pagegrid@width,\pagegrid@height);\%
    \fi\end{tikzpicture}%
3 Installation

3.1 Download

Package. This package is available on CTAN:\footnote{CTAN:pkg/pagegrid}


Bundle. All the packages of the bundle ‘oberdiek’ are also available in a TDS compliant ZIP archive. There the packages are already unpacked and the documentation files are generated. The files and directories obey the TDS standard.

CTAN:install/macros/latex/contrib/oberdiek.tds.zip

TDS refers to the standard “A Directory Structure for \TeX\ Files” (CTAN:pkg/tds). Directories with texmf in their name are usually organized this way.

3.2 Bundle installation

Unpacking. Unpack the oberdiek.tds.zip in the TDS tree (also known as texmf tree) of your choice. Example (linux):

```
unzip oberdiek.tds.zip -d ~/texmf
```
3.3 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 \texttt{texmf} tree):

- \texttt{pagegrid.sty} → \texttt{tex/latex/oberdiek/pagegrid.sty}
- \texttt{pagegrid.pdf} → \texttt{doc/latex/oberdiek/pagegrid.pdf}
- \texttt{pagegrid.dtx} → \texttt{source/latex/oberdiek/pagegrid.dtx}

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

3.4 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 \texttt{texhash} or \texttt{mktexlsr}.

3.5 Some details for the interested

Unpacking with L\TeX{}. The .dtx chooses its action depending on the format:

plain \TeX{}. Run \texttt{docstrip} and extract the files.

\L\TeX{}. Generate the documentation.

If you insist on using \L\TeX{} for \texttt{docstrip} (really, \texttt{docstrip} does not need \L\TeX{}), 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 \texttt{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\L\TeX{}:

```
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 \texttt{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.

6 Index

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