1 Introduction

The \texttt{fgruler} is an abbreviation for the \textit{foreground ruler}. This package draws a horizontal and a vertical ruler on the foreground of every (or a given) page at absolute position. In this way, you can check the page layout dimensions.

Besides, you can draw various rulers in the text, too.

The \texttt{fgruler} package requires the services of the following packages: \texttt{kvoptions}, \texttt{etoolbox}, \texttt{xcolor}, \texttt{graphicx}, \texttt{eso-pic}.

2 Loading package

Load the package with

\begin{verbatim}
\usepackage[⟨options⟩]{fgruler}
\end{verbatim}

or

\begin{verbatim}
\usepackage{fgruler}
\setfgruler[⟨options⟩]
\end{verbatim}

The \texttt{\setfgruler} command is usable in the \texttt{document} environment, too.

3 Options

By default, the \texttt{fgruler} package draws a square ruler on the foreground of every page. The following package options set the parameters of these rulers.

\begin{verbatim}
\begin{itemize}
\item \texttt{unit=⟨unit⟩}
  Ruler unit.
  \begin{verbatim}
  ⟨unit⟩ values:
  \begin{itemize}
  \item \texttt{cm} Metric ruler (centimeter). Default value.
  \item \texttt{in} English ruler (inch).
  \end{itemize}
  \end{verbatim}
\item \texttt{type=⟨type name⟩}
  Origin and directions.
  \begin{verbatim}
  ⟨type name⟩ values:
  \begin{itemize}
  \item \texttt{upperleft} Origin: upper left corner. Directions: down and right. Default value.
  \item \texttt{upperright} Origin: upper right corner. Directions: down and left.
  \item \texttt{lowerleft} Origin: lower left corner. Directions: up and right.
  \item \texttt{lowerright} Origin: lower right corner. Directions: up and left.
  \item \texttt{none} Not drawing ruler.
  \end{itemize}
  \end{verbatim}
\end{itemize}
\end{verbatim}
Horizontal shift. The shift direction is right, if the (type name) is upperleft or lowerleft, otherwise it is left. Default: hshift=0cm

Vertical shift. The shift direction is down, if the (type name) is upperleft or upperright, otherwise it is up. Default: vshift=0cm

Ruler color (see xcolor package). Default: color=black

Separation between number and ruler. Default: numsep=3pt

Mark thickness. Default: markthick=0.4pt

Mark length at integer units: 0 1 2 3 Default: marklength=2mm

See the length of the other marks in Section 6.

Number font type. You can use this option only in \setfgruler command. Default: numfont=\scriptsize\sffamily

It draws visible frames for the text and margin area, and lines for the head and foot. Their color and thickness are determined by the color and the markthick options.

It deactivates the showframe option.

It kills all of the rulers on the foreground, including also those, which are generated by \fgruler (see Section 4). But the rulers, which were drawn by \ruler and \squareruler (see Section 5), do not disappear. Furthermore it deactivates the showframe option, too. In this case the fgruler package does not load the eso-pic package. This option works only in preamble.

It is recommended to use in two cases:

- To draw rulers only in text, there is no need for the checking function.
- To halt the checking function temporarily.

The type=none is not identical with nonefgrulers option. The differences:

- type=none does not kill the fgruler command and the showframe option.
- type=none is alterable in any point of the document.
- type=none works in document environment, too.
- The fgruler package loads the eso-pic package, if you use the type=none option without nonefgrulers.

4 Drawing square rulers on the foreground of a given page

\fgruler[(\unit)]{(\type)}{(\hshift)}{(\vshift)}

It draws a square ruler on the foreground of that page, where this command is expanded. You can use more \fgruler commands in the same page.

The package options (see Section 3) also work on this command, except for unit, type, hshift and vshift, since these are the parameters of the \fgruler.

If you use nonefgrulers option in preamble, then this command is effectless.
\{\textbf{unit}\} options:
\begin{itemize}
  \item \texttt{cm} Metric ruler (centimeter). Default option.
  \item \texttt{in} English ruler (inch).
\end{itemize}
\{\textbf{type name}\} parameters:
\begin{itemize}
  \item \texttt{upperleft} Origin: upper left corner. Directions: down and right.
  \item \texttt{upperright} Origin: upper right corner. Directions: down and left.
  \item \texttt{lowerleft} Origin: lower left corner. Directions: up and right.
  \item \texttt{lowerright} Origin: lower right corner. Directions: up and left.
\end{itemize}
\{\textbf{hshift}\} Horizontal shift. The shift direction is right, if the \{\textbf{type name}\} is \texttt{upperleft} or \texttt{lowerleft}, otherwise it is left.
\{\textbf{vshift}\} Vertical shift. The shift direction is down, if the \{\textbf{type name}\} is \texttt{upperleft} or \texttt{upperright}, otherwise it is up.

Example: \texttt{\textbackslash fgruler[\texttt{in}]{upperright}{1in}{2.5in}}

\section{Drawing rulers in the text}

\texttt{\textbackslash ruler[\{\textbf{unit}\}]{\{\textbf{type name}\}}{\{\textbf{length}\}}}

It draws a horizontal or a vertical ruler. The bottom of the ruler is aligned to the baseline of the surrounding text. The package options (see Section 3) do not work on this command.

\{\textbf{unit}\} options:
\begin{itemize}
  \item \texttt{cm} Metric ruler (centimeter). Default option.
  \item \texttt{in} English ruler (inch).
\end{itemize}
\{\textbf{type name}\} parameters:
\begin{itemize}
  \item \texttt{downright} Direction: down. The numbers are on the right side.
  \item \texttt{downleft} Direction: down. The numbers are on the left side.
  \item \texttt{upright} Direction: up. The numbers are on the right side.
  \item \texttt{upleft} Direction: up. The numbers are on the left side.
  \item \texttt{rightdown} Direction: right. The numbers are on the down side.
  \item \texttt{rightup} Direction: right. The numbers are on the up side.
  \item \texttt{leftdown} Direction: left. The numbers are on the down side.
  \item \texttt{leftup} Direction: left. The numbers are on the up side.
\end{itemize}
\{\textbf{length}\} Ruler length.

Example: \texttt{\textbackslash ruler\{\texttt{rightdown}\}{5cm}}

\texttt{\textbackslash ruler*[\{\textbf{unit}\}]{\{\textbf{type name}\}}{\{\textbf{length}\}}}

It works like \texttt{\textbackslash ruler}, but the top of the ruler is aligned to the baseline of the surrounding text.

Example: \texttt{\textbackslash ruler*\{\texttt{rightdown}\}{5cm}}

\texttt{\textbackslash squareruler[\{\textbf{unit}\}]{\{\textbf{type name}\}}{\{\textbf{width}\}}{\{\textbf{height}\}}}

It draws a square ruler. The bottom of the square ruler is aligned to the baseline of the surrounding text. The package options (see Section 3) do not work on this command.

\{\textbf{unit}\} options:
\begin{itemize}
  \item \texttt{cm} Metric ruler (centimeter). Default option.
  \item \texttt{in} English ruler (inch).
\end{itemize}
\{\textbf{type name}\} parameters:
\begin{itemize}
  \item \texttt{upperleft} Directions: down and right.
  \item \texttt{upperright} Directions: down and left.
  \item \texttt{lowerleft} Directions: up and right.
  \item \texttt{lowerright} Directions: up and left.
\end{itemize}
\{\textbf{width}\} Square ruler width.
\{\textbf{height}\} Square ruler height.
Example: \squireruler\{upperleft\}\{5cm\}\{1cm\}

\texttt{\squireruler\{[\textit{unit}]\}\{\textit{type name}\}\{\textit{width}\}\{\textit{height}\}}

It works like \squireruler, but the top of the square ruler is aligned to the baseline of the surrounding text.

Example: \squireruler\{upperleft\}\{5cm\}\{1cm\}

\texttt{\rulerparams\{\textit{markthick}\}\{\textit{numfont}\}\{\textit{color}\}\{\textit{marklength}\}\{\textit{numsep}\}}

It sets the parameters of the rulers, which are drawn by \ruler or \squireruler. If an argument is empty, then that parameter will not be changed.

\texttt{\langle\textit{markthick}\rangle} Mark thickness. Default: 0.4pt
\texttt{\langle\textit{numfont}\rangle} Number font type. Default: \scriptsize\sffamily
\texttt{\langle\textit{color}\rangle} Ruler line color. Default: black
\texttt{\langle\textit{marklength}\rangle} Mark length at integer units. Default: 2mm
\texttt{\langle\textit{numsep}\rangle} Separation between number and ruler. Default: 3pt

For example, \rulerparams{}{}{\textcolor{red}}{}{} changes the ruler color to red.

\texttt{\rulernorotatenum}

By default, the numbers of the vertical rulers (which were generated by \ruler or \squireruler) are rotated by 90°. It kills this action. This command is usable only in \texttt{document} environment.

Example: \ruler\{upright\}\{1cm\}

but \rulernorotatenum\ruler\{upright\}\{1cm\}

\texttt{\rulerrotatenum}

After \rulernorotatenum, it reactivates the number rotating. This command is usable only in \texttt{document} environment.

6 Additional setting commands

The following commands can work on all of the rulers, which are drawn by \texttt{fgruler} package.

\texttt{\fgrulerstartnum\{\textit{num}\}}

The \texttt{\langle\textit{num}\rangle} is a nonnegative integer, which will be the starting number on the ruler. Default: \fgrulerstartnum\{0\}

Example: {\fgrulerstartnum\{5\}\ruler\{rightup\}\{3cm\}} 5 6 7 8

\texttt{\fgrulernoborderline}

By default, there is a borderline on one side of the ruler. It disappears by this command.

Example: \ruler\{rightup\}\{3cm\}

but {\fgrulernoborderline\ruler\{rightup\}\{3cm\}}

\texttt{\fgrulerborderline}

After \fgrulernoborderline, it reactivates the previous default effect.

\texttt{\fgrulercaptioncm\{\textit{caption}\}}

Unit caption in metric ruler. Default: \fgrulercaptioncm\{cm\}

Example: \ruler\{rightup\}\{3cm\}

but {\fgrulercaptioncm{}\ruler\{rightup\}\{3cm\}}
\fgrulercaptionin{(caption)}
Unit caption in English ruler. Default: \fgrulercaptionin{inch}

\fgrulerdefnum{(definition)}
The ruler numbers are determined by the \fgrulernum counter. Its current value is printed by the \thefgrulernum. Its default definition is \def\thefgrulernum{\arabic{fgrulernum}}, which is equivalent to \fgrulerdefnum{\arabic{fgrulernum}}.

Example:
\{fgrulerdefnum{fgrulercaptioncm{}}\ruler{rightdown}{2cm}\}

\fgrulerratiocm{(ratio1)}{(ratio2)}
Mark length ratios in metric rulers. If an argument is empty, then that parameter will not be changed.

\(\langle ratio1 \rangle\) Mark length ratio at \(k/10\) cm, where \(k\) is positive integer and not divisible by 5.
\[
\begin{array}{c}
0 \\
1 \\
2 \\
3
\end{array}
\]

For example, if this ratio is 0.5 and the mark length at integer unit is 2 mm, then this mark length will be \(0.5 \cdot 2 \text{ mm} = 1 \text{ mm}\).

\(\langle ratio2 \rangle\) Mark length ratio at \(k/2\) cm, where \(k\) is positive odd integer.
\[
\begin{array}{c}
0 \\
1 \\
2 \\
3
\end{array}
\]

Default: \fgrulerratiocm{0.5}{0.75}

\fgrulerratioin{(ratio1)}{(ratio2)}{(ratio3)}{(ratio4)}
Mark length ratios in English rulers. If an argument is empty, then that parameter will not be changed.

\(\langle ratio1 \rangle\) Mark length ratio at \(k/16\) inch, where \(k\) is positive odd integer.
\[
\begin{array}{c}
0 \text{ inch} \\
1 \text{ inch} \\
2 \text{ inch}
\end{array}
\]

\(\langle ratio2 \rangle\) Mark length ratio at \(k/8\) inch, where \(k\) is positive odd integer.
\[
\begin{array}{c}
0 \text{ inch} \\
1 \text{ inch} \\
2 \text{ inch}
\end{array}
\]

\(\langle ratio3 \rangle\) Mark length ratio at \(k/4\) inch, where \(k\) is positive odd integer.
\[
\begin{array}{c}
0 \text{ inch} \\
1 \text{ inch} \\
2 \text{ inch}
\end{array}
\]

\(\langle ratio4 \rangle\) Mark length ratio at \(k/2\) inch, where \(k\) is positive odd integer.
\[
\begin{array}{c}
0 \text{ inch} \\
1 \text{ inch} \\
2 \text{ inch}
\end{array}
\]

Default: \fgrulerratioin{0.25}{0.375}{0.625}{0.75}

\fgrulerthickcm{(thick1)}{(thick2)}{(thick3)}
Mark thicknesses in metric rulers. If an argument is empty, then that parameter will not be changed.

\(\langle thick1 \rangle\) Mark thickness at \(k/10\) cm, where \(k\) is positive integer and not divisible by 5.
\(\langle thick2 \rangle\) Mark thickness at \(k/2\) cm, where \(k\) is positive odd integer.
\(\langle thick3 \rangle\) Mark thickness at integer units.

The default values are given by \(\langle markthick \rangle\) of \rulerparams, respectively by \markthick option.

Example:
\{fgrulerthickcm{}{}{2pt}\}
\rulerparams{}{}{5mm}{}
\fgrulernoborderline
\ruler{rightdown}{3cm}

\fgrulerthickin{(thick1)}{(thick2)}{(thick3)}{(thick4)}{(thick5)}
Mark thicknesses in English rulers. If an argument is empty, then that parameter will not be changed.
Mark thickness at \(\frac{k}{16}\) inch, where \(k\) is positive odd integer.

Mark thickness at \(\frac{k}{8}\) inch, where \(k\) is positive odd integer.

Mark thickness at \(\frac{k}{4}\) inch, where \(k\) is positive odd integer.

Mark thickness at \(\frac{k}{2}\) inch, where \(k\) is positive odd integer.

Mark thickness at integer units.

The default values are given by \(\text{markthick}\) of \texttt{rulerparams}, respectively by \texttt{markthick} option.

Example:

\[
\begin{array}{c}
\texttt{\{fgrulerthickin{}{}{}{}{2pt}\}} \\
\texttt{\{rulerparams{}{}{}{5mm}\}{}{}} \\
\texttt{\{fgrulernoborderline\}} \\
\texttt{\{ruler\{in\}\{rightdown\}\{3in\}\}} \\
\end{array}
\]

\texttt{\textcolor{color1}{\{color2\}{}{color3\}}}

Mark colors in metric rulers. If an argument is empty, then that parameter will not be changed.

Mark color at \(\frac{k}{10}\) cm, where \(k\) is positive integer and not divisible by 5.

Mark color at \(\frac{k}{2}\) cm, where \(k\) is positive odd integer.

Mark color at integer units.

The default values are given by \(\text{color}\) of \texttt{rulerparams}, respectively by \texttt{color} option.

Example:

\[
\begin{array}{c}
\texttt{\{fgrulercolorcm\{green\}\{blue\}\{red\}\}} \\
\texttt{\{rulerparams\{lpt\}\{5mm\}\}} \\
\texttt{\{fgrulernoborderline\}} \\
\texttt{\{ruler\{cm\}\{rightdown\}\{3cm\}\}} \\
\end{array}
\]

\texttt{\{color1\}\{color2\}\{color3\}\{color4\}\{color5\}}

Mark color in English rulers. If an argument is empty, then that parameter will not be changed.

Mark color at \(\frac{k}{16}\) inch, where \(k\) is positive odd integer.

Mark color at \(\frac{k}{8}\) inch, where \(k\) is positive odd integer.

Mark color at \(\frac{k}{4}\) inch, where \(k\) is positive odd integer.

Mark color at \(\frac{k}{2}\) inch, where \(k\) is positive odd integer.

Mark color at integer units.

The default values are given by \(\text{color}\) of \texttt{rulerparams}, respectively by \texttt{color} option.

Example:

\[
\begin{array}{c}
\texttt{\{fgrulercolorin\{yellow\}\{orange\}\{green\}\{blue\}\{red\}\}} \\
\texttt{\{rulerparams\{lpt\}\{5mm\}\}} \\
\texttt{\{fgrulernoborderline\}} \\
\texttt{\{ruler\{in\}\{rightdown\}\{3in\}\}} \\
\end{array}
\]

\texttt{\textcolor{color1}{\{color2\}{}{color3\}{}{color4\}{}{color5\}}}

\texttt{\{gulserreset\}

It sets all options and parameters to default values. This command is usable only in \texttt{document} environment.

⚠️ **Warning**: All setting commands\(^1\) obey the normal scoping rules, i.e. if you use them inside a group, then the changing of the parameters is not valid outside the group.

\(^1\)Namely \texttt{\textcolor{color1}{\{color2\}{}{color3\}}}, \texttt{\textcolor{color3}{\{color4\}{}{color5\}}}, furthermore all commands in this section.
7 Examples

7.1 Default case

The output of the following code is the ruler in this page. It is the default case.

\documentclass{article}
\usepackage{fgruler}
\begin{document}
% ...
\end{document}
7.2 The showframe option

\documentclass{article}
\usepackage[color=red,showframe]{fgruler}
\begin{document}
% ...
\end{document}
7.3 Shifting

\documentclass{article}
\usepackage[hshift=1cm,vshift=2cm]{fgruler}
\begin{document}
% ...
\end{document}
7.4 Shifting in case type=uperright

\documentclass{article}
\usepackage[type=uperright,hshift=1cm,vshift=2cm]{fgruler}
\begin{document}% ...
\end{document}
7.5 Shifting in case type=lowerleft

\documentclass{article}
\usepackage[type=lowerleft,hshift=1cm,vshift=2cm]{fgruler}
\begin{document}
% ...
\end{document}
7.6 Shifting in case type=lowerright

\documentclass{article}
\usepackage[type=lowerright,hshift=1cm,vshift=2cm]{fgruler}
\begin{document}
% ...
\end{document}
7.7 Rulers on the foreground of a given page, and in text

\documentclass{article}
\usepackage[color=blue]{fgruler}
\begin{document}
\fgruler{upperleft}{1cm}{1.5cm}
\noindent text
\rulerparams{}{\color{red}\tiny\ttfamily}{green}{}{}
{\fgrulernoborderline\ruler{rightdown}{3cm}}
text
\ruler*[rightdown]{3cm}
text
\rotatebox[origin=tl]{30}{\ruler*[rightdown]{3cm}}
text
\end{document}

Remark. The \rotatebox command is defined in the graphicx package!
7.8 Ruler types in text

\documentclass{article}
\usepackage{fgruler}
\begin{document}
\noindent
\rulerparams{}{}{red}{}{1pt}
\ruler[rightdown]{3cm}
\hfill
\ruler[rightup]{3cm}
\hfill
\ruler[leftup]{3cm}
\hfill
\ruler[leftdown]{3cm}

\bigskip
\noindent
\rulerparams{}{}{green}{}{}
\rulernorotatenum\ruler[upright]{3cm}
\hfill
\ruler[downright]{3cm}
\hfill
\ruler[upleft]{3cm}
\hfill
\ruler[downleft]{3cm}

\bigskip
\noindent
\rulerparams{}{}{blue!50!black}{}{}
\rulernorotatenum\fgrulercaptioncm\squareruler[upperleft]{2cm}{3cm}
\hfill
\squareruler[lowerright]{2cm}{3cm}
\hfill
\squareruler[lowerleft]{2cm}{3cm}
\hfill
\squareruler[upperright]{2cm}{3cm}
\hfill
\rulerparams{}{\footnotesize\bfseries\color{red}}{}{5mm}{-8pt}
\squareruler[in]{lowerleft}{2in}{3cm}
\end{document}
7.9 Mark length and rotating

\documentclass{article}
\usepackage[nonefgrulers]{fgruler}
\begin{document}
\noindent
\fgrulerdefnum{\rotatebox{45}{\arabic{fgrulernum}\,cm}}
\fgrulercaptioncm{}
\rulerparams{}{\tiny\color{red}}{blue}{8mm}{}
\fgrulercolorcm{}{}{black}
\rotatebox{-45}{\ruler[rightup]{10cm}{\ruler[rightup]{5cm}}}
\end{document}
7.10 Coordinate system

\documentclass{article}
\usepackage{fgruler}
\begin{document}
\noindent
\rulernorotatenum
\fgrulercaptioncm{}
\fgrulercolorcm{}{}{red}
\rulerparams{}{\scriptsize\color{red}}{}{}{ }
\fgrulerdefnum{$-\arabic{fgrulernum}$}
squareruler*{upppright}{3cm}{3cm} \\
squareruler{lowerleft}{13cm}{6cm}
\end{document}
7.11 Tape measure

\documentclass{article}
\usepackage[a4paper,margin=25mm]{geometry}
\usepackage{nonefrulers}\fgruler
\newcommand{\tapemeasure}{\textwidth}\parbox{\textwidth}{\fgrulerdefnum\fgrulercaptioncm\ruler[rightdown]{#1}\[2pt]\ruler[rightup]{#1}}\[2pt]\begin{document}\noindent\tapemeasure{\textwidth}\[2pt]\rotatebox[origin=br]{-90}{\tapemeasure{3cm}}\tapemeasure{10cm}\end{document}