A LaTeX-Package for IEEE PES Transactions

Volker Kuhlmann
Dept of Electrical and Electronic Engineering
Christchurch, New Zealand

20 April 1999

Contents

Abstract

This LaTeX 2ε package implements the layout requirements for Transactions of the IEEE Power Engineering Society (PES). This covers the Transactions on Energy Conversion (T-EC), Transactions on Power Delivery (T-PWRD), Transactions on Power Systems (T-PWRS), and Special Publications. Discussions and closures can also be generated in the required form.

This document is version V4.0, 20 April 1999, and describes package ieeepes version 4.0, 1999/04/13.

Thanks are due to John Crequer for proofreading an early version of the documentation.

1 Introduction

This document comprises the documentation for the LaTeX 2ε package ieeepes, which implements the layout for publications of the Power Engineering Society (a branch of IEEE). It is assumed that the reader is familiar with a standard LaTeX setup. Only new commands implemented by ieeepes are described in this document. This document by itself is by now means sufficient in describing the requirements to papers for submission to the IEEE PES. The specifications [1] must still be consulted. Wherever possible, ieeepes enforces any requirements, but there are limits to what can be done. Refer to section 17 for a list of limitations of ieeepes. Every author should be particularly careful with these.

Provided with ieeepes are the files ieeepes_skel.tex, a skeleton for new papers which might be useful, and ieeepes_check.tex, a document exercising the various features of ieeepes and intended as a test. It is also useful as example.

This documentation can be compiled with standard LaTeX, but the check file needs ieeepes to be installed, and ieeepes_check.bib to be available.

ieeepes requires LaTeX 2$_\varepsilon$ version 1998/06/01. It will probably work with older versions of LaTeX 2$_\varepsilon$, however this has not been tested. It will not work with LaTeX 2.09.

Please report any problems to Volker Kuhlmann[1], and I will do my best to fix them.

2 Installation

The file ieeepes.sty must be copied into a directory where TeX looks for input files. The file ieeepes.bst must be copied into a directory where BibTeX looks for BibTeX styles. The exact location of these directories is dependant on the particular platform used and can not be discussed here. Refer to the documentation of your LaTeX software.

Package ieeepes requires package vmargin. Refer to section 4 for other requirements. All the software mentioned can be downloaded from any CTAN[2] host. A copy of package vmargin is included for your convenience, vmargin.sty should be installed in the same place as ieeepes.sty.

3 Changes from older Versions

It is now necessary to use `\maketitle`. The LaTeX 2$_\varepsilon$ user interface changed, and ieeepes can no longer use the `\AtBeginDocument` hook to insert the page title. A warning is displayed if `\maketitle` is not used.

[1] **v.kuhlmann@elec.canterbury.ac.nz**

[2] Comprehensive TeX Archive Network. Try **ftp://ftp.dante.de/** or **http://www.dante.de/**.

Using a reserved filename for the image file in the `biography` environment suppresses the author image for this instance only. See section 13.

4 Options to the Package

The following options will be recognised by the ieeepes package:

draft: Print page numbers. This violates requirements, but is very useful while writing the paper. This also enables markers which can be used to determine a useful width for a `minipage` (section 8). Do not use this for the final version.

psphotos: A photographic image of the author can be printed into the space which is reserved for this. See section 13 for further details.

This option requires the graphics bundle to be installed, as the graphicx package is loaded. The graphics bundle can be obtained from any CTAN host (see section 2).

photofit: This option will scale the photographic image of the author in the biography in both directions so that the image fills up the space provided. If the image had the required aspect ratio, this scaling will have no effect. If the aspect ratio was not as required, the image will be slightly distorted. However, this distortion might be less visible than an image which does not "fit" the space. Also see section 13.

PStimes: Use font PostScript Times for the main document font. Typesetting mathematics is shifted over to PostScript fonts as much as possible without using commercial fonts.

This option requires the psnfss bundle to be installed. The psnfss bundle can be obtained from any CTAN host (see section 2). Packages times and mathptm are loaded.

noieeebox: This option suppresses the empty box at the bottom of the left column of the title page. I added this option because someone had a purpose for it.

Do not use this option for papers submitted to the IEEE PES!

puttoc: Put a table of contents into the paper, which is useful while writing the paper, but do not use this for the final version! This option has no effect unless option draft is also used.

5 Document Structure

The main structure of an IEEE PES document is as follows:

```
\documentclass[10pt,...]{article}
\usepackage[...]{ieeepes}
\title{...}
\author{... \and ... \and ...}
\begin{document}
\maketitle
\begin{abstract}
...
\end{abstract}
...
\end{document}
```

The point size must be 10pt (which is the default). Do not use any of the paper size options for the class, because the paper size is set up by the ieeepes package.

The syntax for `\title` and `\author` is as for standard LaTeX. There can be any number of authors (separated by `\and`), but they all have to fit next to each other on the width of the paper. No overfull warning is generated if the author names overlap, or extend into the margin. Within the argument to `\author` lines can be separated by `\\`.

If the space available does not fit all the authors, other solutions must be found. The standard LaTeX command `\parbox` and environments minipage and tabular might be useful, but `\and` probably is not. The argument to `\author` is inside a tabular environment.

The standard LaTeX commands `\tableofcontents` is not necessary and has been disabled. It is now necessary to use `\maketitle` at the beginning of the document. The use of LaTeX's `\appendix` command might lead to papers not meeting the requirements.

The text of the abstract is enclosed in the abstract environment, which follows the `\begin{document}` and the `\maketitle`.

The sectioning commands `\section`, `\subsection`, and `\subsubsection` are available, but `\paragraph` and `\subparagraph` can not be used in IEEE PES papers.

Strictly speaking, the title text for `\section` should be all upper case, but this can not always be accomplished easily. Currently it is set in small caps. If this is not desired, entering the text in capitals will have the desired result.

When the text of the paper is finished, the two columns on the last page must be justified manually by inserting a `\columnbreak` at the correct position. This should put the text on the last page equally into the two column. Automation of this is tricky and left for a future version (if not left out).

6 Paper Sizes

Printing can be done on either A4 or USletter paper, there is no difference for the resulting camera ready copy. Refer to [1] when using A4 paper, for cutting the paper after printing.

When using dvips for generating PostScript code for printing, the default paper size for which dvips generates code can be overridden with the **-t** option: **-t letter** for USletter paper, and **-t a4** for A4 paper. This might help to keep the printer happy.

7 PostScript Fonts

Package option PStimes switches the text font and as much math as possible to PostScript Times (see section 4). There are no complete mathematical fonts in the public domain, if these are desired then they must be purchased. Do not use option PStimes for selecting purchased fonts.

8 Figures and Tables

Figures and tables are used exactly as before, except that their contents is now centred by default. Care must be taken with table captions, which have to be inserted *before* the table. Example:

```
\begin{table}
\caption{Table caption text.}
\label{label name}
   The table matter goes here.
\end{table}
```

As always with LaTeX, the `\label` must be after the `\caption`, and inside the figure or table environments.

The new environments `Table` and `Figure` have been introduced to make figures and tables easier to handle. Use of these environments is recommended because they take care of a few things which otherwise would have to be done manually (e.g. the caption position). Their syntax is:

```
\begin{Table}[FLOATPLACE]{LABEL}%
                [TOC CAPTION]{CAPTION}
   The table matter goes here.
\end{Table}
```

Arguments in square brackets are optional and can be left out, those in braces are required. FLOATPLACE is the float placement parameter, and TOC CAPTION is the caption for the table of contents if they have been enabled with the package options draft and puttoc. TOC CAPTION defaults to CAPTION.

`Figure` has the same syntax as `Table`.

The width of the caption is held in `\capwidth`, and is initialised to `0.8\columnwidth`.

Reference figures with `\figref`, and tables with `\tabref`. Their syntax is equal to `\ref`. Use these two new reference commands within as well as at the beginning of a sentence, and do not write out "figure", "table", or something to this effect. Do not use `\ref` for figures or tables. Example:

```
is shown in \tabref{table1}
and \figref{figure2}.
```

Footnotes can be used within tables. For this the table must be put inside a minipage environment. The problem with this is that the width of the minipage must be specified before the width of the contents can be known. When writing the paper, specify the width as `1\columnwidth`, and when finished, step by step reduce the width of the minipage (by reducing the `1`) to the width of the table produced by tabular.

To aid with this, markers can be printed which show the extent of the tabular and the minipage. Ideally, the two arrows facing the same direction are horizontally aligned. The markers are generated by `\Lhighlight` and `\Rhighlight`, they do not take up any space and are only displayed when option draft is in effect. `\Lhighlight` and `\Rhighlight` are equivalent to `\mbox{}`.

```
\begin{table}
\caption{...}
\label{...}
\Lhighlight
\begin{minipage}{1\columnwidth}
   \centering
   \Lhighlight
   \begin{tabular}{...}
   Here can be footnotes.
   \end{tabular}
   \Rhighlight
\end{minipage}% <--!!
\Rhighlight
\end{table}
```

Note the % sign after `\end{minipage}`, which ensures that there is no white space between the minipage and the arrow produced by the following `\Rhighlight`. Refer to file ieeepes_check.tex for an example.

9 Equations

Equations are used in the same way as described in the LaTeX manual.

For referencing equations, use `\equref` within a sentence, and `\Equref` at the beginning of a sentence. The syntax is the same as for `\ref`. Do not spell out "Eq.", "equation", or anything similar. Using these two commands will keep your paper in line with requirements.

10 Footnotes

There are no changes to the standard LaTeX use of footnotes.

11 Referencing

For figure and table references, see section 8. For equation references, see section 9.

12 Citations

There are no changes in the use of the `\cite` command. Do not spell out "ref.", "reference", or similar.

For conference citations (BibTeX entry type InProceedings) the publication number (e.g. "91CH3070-0") is entered into the BibTeX note entry field. This will result in the number being printed after the page number instead of before, as shown in the example paper [1]. Correction of this is left for a future version of the ieeepes package.

The BibTeX style ieeepes.bst was derived from ieee.bst found on CTAN. The only changes made are the spelling out of the month names (as in plain.bst), and the definition of the additional strings: **ieeepes**, **ieeetec**, **ieeetpd**, **ieeetps**, yielding the respective texts "IEEE Power Engineering Society", and the titles of the three transactions.

A call to `\bibliographystyle` is performed by the ieeepes package, and it is not necessary to use this command again.

The bibliography supplied with the ieeepes package should be consulted for an example of how to enter bibliographic data.

13 Biographies

A biography for each author of the paper can be typeset with the `biography` environment. Space is reserved for the image, which is inserted by the publisher photographically. Optionally, an encapsulated postscript image of the author can be printed with the text. The general syntax is:

```
\begin{biography}{AUTHOR NAME}%
                 [UP SHIFT]{FILENAME}
```

Substitute the name of the author for AUTHOR NAME.

FILENAME is the name of the file containing the image of the author. This argument can be empty and no image is printed. UP SHIFT is optional and is the amount by which the image is shifted up or down, the default is 0 mm. This parameter might be useful for certain aspect ratios of the author's image. Package option psphotos is required for printing author images, see section 4.

Using the reserved FILENAME `nophoto` will suppress the insertion of an image altogether and will not reserve space for one, for this instance only. This is useful if not all authors of a paper want to have an image appear in the paper.

Because of the use of the TeX paragraph parameters `\hangindent` and `\hangafter` to leave enough space for the photograph, it is vitally important to have enough text material in the first paragraph of the `biography` environment. Care should also be taken when the biography starts close to the bottom of the column; if the photo does not fit into the space left it will extend into the bottom margin.

As many `biography` environments as needed can be used.

14 Summary

A summary is started with the `\summary` command, which is used much in the same way as `\appendix` from LaTeX. A summary can be put into a separate document:

```
\begin{document}
\summary
  ...
\end{document}
```

or appear at the end of the paper, before the `\end{document}`.

15 Discussions

The discussion environment is provided for typesetting discussions. The syntax is:

```
\begin{discussion}{PAPER NUMBER}%
        {PAPER TITLE}%
        {AUTHOR NAMES}%
        {DISCUSSER NAME}%
        {AFFILIATION INCL ADDRESS}%
        {SHORT AFFILIATION}
```

enter the respective data. AUTHOR NAMES are the authors of the paper, DISCUSSER NAME is the author of the discussion about the paper. The next argument is the affiliation including a complete mailing address, while the last argument is of the form "*University of . . . , town, country*".

The general document structure for a discussion is:

```
...
\begin{document}
\begin{discussion}{.....
.. text of discussion ..
\end{discussion}
\end{document}
```

There can be multiple discussion environments, though this is not of much use.

16 Closures

Closures are written using the closure environment:

```
...
\begin{document}
\begin{closure}{AUTHOR NAME}
.. text of closure ..
\end{closure}
\end{document}
```

There can be multiple closure environments in one document, but again this is not of much use. It is however possible to have a closure environment at the end of a paper, following the biographies, or the summary. This feature relies on an internal LaTeX mechanism behaving in a certain way, so caution is required. It works with the example—but please report any problems.

17 What This Package Can Not Do

There are a few things with which authors must take care themselves, because they can not be enforced by LaTeX. Consult [1] for details. Some are:

Table captions must be inserted *before* the table. See section 8 for details. Better, use the `Table` environment.

Commands provided for referencing figures, tables, and equations should be used, and no additional words should be spelled out in the sentence.

Punctuation marks follow the `\cite` command.

The main document point size must be 10pt.

Use initials for the Christian names of authors in the `\author` command.

Ensure that there is enough material in the first paragraph of a biography environment, and that the biography does not appear at the bottom of a page.

Ensure the two columns on the last page are balanced.

References

[1] J. W. Hagge and L. L. Grigsby, "Preparation of papers in a two-column format for ieee transactions on energy conversion ieee transactions on power delivery ieee transactions on power systems", in *IEEE Power Engineering Society Publication Guide*. IEEE Power Engineering Society, January 1995.