The \texttt{ushort} package\textsuperscript{*}

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\textbf{Abstract}

With this package you may write shorter (or longer) underlines/underbars. This is particularly useful for ‘underlined’ variables which are needed by some engineers.

You may copy this package freely, as long as you distribute only unmodified and complete versions.

\textbf{Contents}

1 Changes

v2.2 (2001/06/13) As Alessandro Russo <russo@ian.pv.cnr.it> suggested, the case of arguments consisting of more than a single character is now documented. Corresponding macros \texttt{\ushortw} and \texttt{\ushortdw} have been added.

v2.1 (2001/06/07) Improved speed dramatically (up to factor 4) by not using \texttt{\phantom} anymore. Unfortunately, if bad hacks had been used for the argument “Additional calculations” in \texttt{\ushortCreate}, they could fail to work now. For this reason, the major release number has been changed.

Further internal change: In \texttt{\ushref@Main} the arguments are now expanded by a loop.

v1.4 (2001/04/06) Set defaults for the parameters as documented.

v1.3 (2001/04/05) Added the argument for additional calculations. Changed the default values of the arguments (and thus of \texttt{\ushort}).

v1.2 (2001/04/04) Removed a typing error in the scan macro and added the commands \texttt{\ushortd} and \texttt{\ushortdline}.

v1.1 (2001/04/04) Introduced clean version of \texttt{\ushortEnsuremath} (and eliminated the corresponding previous hack).

v1.0 (2001/04/03) First beta release.

\textsuperscript{*}This package has version number 2.2, last revised 2001/06/13.

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2 Introduction
In the newsgroup de.comp.text.tex the question arose whether it is possible to define ‘underlined’ variables: Such variables are required for complex vectors by electrical engineers. The usual \underline command is not appropriate for this purpose, because the underlines of concatenated variables merge which is not desired. One may use the macro \ushort of this package instead.
However, this package also provides a generic macro which allows to create new commands which work similarly but use different parameters for the underlines. In particular, it is possible to create e.g. a macro which draws longer underlines than usual or which does a similar task with \underbar.

3 Installation
This package was tested with plain \TeX, \LaTeX 2.09, and \LaTeX 2ε, and it should actually run with most other \TeX formats. To use “ushort”, you have to put the file ushort.sty in a path where \TeX looks for its input files. The \TeX documents using ushort need the following modifications in their header:

- If you use \LaTeX 2ε, put in the preamble the command

  \usepackage{ushort}

- If you use \LaTeX 2.09, use ushort as a style option, e.g.

  \documentstyle[ushort]{article}

  or

  \documentstyle[ushort,12pt]{article}

- If you use some other (non-\LaTeX) format, you will probably have to insert a line like

  \catcode`\@=11\relax \input ushort.sty \catcode`\@=12\relax

For \TeX insiders: The only \LaTeX-specific commands used in ushort.sty are:

- \newcommand (used only in the form \newcommand{⟨command⟩}) to ensure that ⟨command⟩ was not defined before

- \ProvidesPackage

- \typeout

The above commands are used only if they are defined (for \typeout a reasonable substitute is used, otherwise).
4 Description of the provided macros

This package provides the following macros.

\ushort \ ushort: This command is used analogously to \underline with the difference that the underlines are slightly shorter than usual (and so, in particular, in concatenations of \ushort’ed variable names the underlines do not merge). The length of the underline is chosen under the assumption that the argument is a single character. If you want to underline a variable name which consists of more than one character, use instead the following command \ushortw.

\ushortw \ ushortw: (Mnemonic: “ushort word”). This command is analogous to \ushort but such that the length of the underline is chosen appropriate for a ‘long’ argument. (This does not look as good as \ushort if the argument is a single character).

\ushortd \ ushortd: (Mnemonic: “ushort double”). This is analogous to \ushort except that the underline is doubled.

\ushortdw \ ushortdw: (Mnemonic: “ushortd word”). This is analogous to \ushortd except that the underline is doubled.

\ushortdline \ ushortdline: This is analogous to \underline except that the underline is doubled. This command is internally used by \ushortd and \ushortdw, and thus redefinitions change also the behavior of \ushortd and \ushortdw correspondingly. In Plain \TeX, this macro can be used only in math mode.

\ushortCreate \ushortCreate: This can be used to generate a macro which behaves similarly to \ushort or \ushortd but for which certain parameters can be changed. For a detailed description, see below.

\ushortEnsuremath \ushortEnsuremath: This is rather equivalent to the \\LaTeX\ L macro \ensuremath (but is available also e.g. in compatibility mode or if this package is used with plain \TeX or \\LaTeX\ 2.09).

Only \ushortCreate needs a detailed description. Its call syntax is:

\ushortCreate*:\langle\text{command}\rangle\langle\text{summand}\rangle\langle\text{factor before}\rangle\langle\text{factor after}\rangle\langle\text{additional calculations}\rangle\langle\text{name}\rangle

All arguments except for the last one \langle\text{name}\rangle are optional. Moreover, also the order of these arguments can be changed arbitrarily, and they can be repeated (all except for the last occurrence of each type of argument is ignored). Only the last argument \langle\text{name}\rangle can not be repeated and must be at the end.

This command creates a new macro \langle\text{name}\rangle. It is not tested whether \langle\text{name}\rangle already exists; if it exists already, it is overridden. In particular, it is admissible to use \ushortCreate to redefine \ushort, \ushortw, \ushortd, or \ushortdw. This is the recommended method, if you want to change the default values. The macro \langle\text{name}\rangle can be used analogously to \underline, but the precise behavior depends on the arguments of \ushortCreate.

The meaning of the arguments is as follows:
* If the • is present, then the command \underline is used (instead of the default \underline) to draw the underline. Moreover, the command \underline is not used in math mode (while \underline is used in math mode).

:\⟨command⟩ Use \⟨command⟩ instead of the default \underline to draw the underline. Whether \⟨command⟩ is executed in math mode or not depends on whether • has been used.

[⟨summand⟩] Add ⟨summand⟩ to the length of the underline before drawing. Values like -.3\ht0 are admissible. ⟨summand⟩ is expanded only when \⟨name⟩ is expanded, and \wd0 or \ht0 give the width respectively height of the argument given to \name. In particular, also the value of the unit em depends on the mode in which \⟨name⟩ is called. The default is empty (which means 0pt but is faster).

⟨factor before⟩ Multiply the length of the underline before adding ⟨summand⟩. The empty string means 1 (and costs no time). The default is empty.

⟨factor after⟩ Multiply the length of the underline after adding ⟨summand⟩. The empty string means 1 (and costs no time). The default is 0.8.

+⟨{Additional calculations}⟩ With this argument, you can introduce an arbitrary command sequence into the generated command: This sequence is executed (within a group) after ⟨summand⟩ was added, but before ⟨factor after⟩ is applied. This sequence is meant to do additional calculation with \dimen0 which is the length of the generated underline. When the calculations are carried out, \box0 contains the content which is to be underlined. However, in contrast to previous releases of this package, modifications of this box are ignored. Instead, the registers \dimen1 and \dimen2 also contain the height and depth of this box – you have to modify these values to attain the desired effect.

Examples: The most important examples are the macros \ushort, \ushortw, \ushortd, and \ushortdw which have been created by

\ushortCreate{ushort}
\ushortCreate()[-.1em]{ushortw}
\ushortCreate:ushortdline{ushortd}
\ushortCreate:ushortdline()[-.1em]{ushortdw}

A further example demonstrating other parameters is

\ushortCreate*(3)(.5){uline}

This creates the macro \uline which underbars its argument but such that the underbar has only half of the usual length (the argument (3) in the above call is overridden by the later argument (.5)).

A more useful example is

\ushortCreate()[-.3\ht0]{ushort}

This modifies \ushort such that the underline is shrunk by .3 times the height of the argument of \ushort. If the argument is one letter, this means: The higher the letter, the shorter the underline. This looks good for italic fonts with some exceptions (like the letter b).