

**NAME**

**autoinst** – wrapper around the LCDF TypeTools, for installing OpenType fonts in LaTeX.

**SYNOPSIS**

**autoinst** [*options*] **fontfile(s)**

**DESCRIPTION**

Eddie Kohler’s *LCDF TypeTools* are superb tools for installing OpenType fonts in LaTeX, but their use (even in automatic mode) is complicated: they need many, often long, commands and don’t generate the *fd* and *sty* files LaTeX needs. **autoinst** simplifies the use of the *TypeTools* for font installation by automatically generating and executing all commands and by creating and installing all *fd* and *sty* files.

Given a family of font files (in either *otf* or *ttf* format), **autoinst** will create several LaTeX font families:

- Four text families (with lining and oldstyle digits, in both tabular and proportional variants), each with the following shapes:

<i>n</i>	Roman text
<i>sc</i>	Small caps
<i>nw</i>	“Upright swash”; usually normal text with some “oldstyle” ligatures, such as ct, sp and st.
<i>tl</i>	Titling shape. Meant for all-caps text only (even though it sometimes contains lowercase glyphs as well), where letterspacing and the positioning of punctuation characters have been adjusted to suit all-caps text. This shape is generated only for the families with lining digits, since old-style digits make no sense with all-caps text.
<i>it</i>	Italic (or oblique) text
<i>scit</i>	Italic small caps
<i>sw</i>	Swash
<i>tlit</i>	Italic titling

- For each text family: a family of TS1–encoded symbol fonts, in roman and italic shapes.
- Four families with superiors, inferiors, numerators and denominators, in roman and italic shapes.
- An ornament family, in roman and italic shapes.

Of course, if the fonts don’t contain oldstyle digits, small caps etc., the corresponding shapes and families are not created. Furthermore, the creation of most families and shapes can be controlled by command-line options (see “COMMAND-LINE OPTIONS” below).

The generated font families are named *<FontFamily>-<Suffix>*, where *<Suffix>* is one of

<i>LF</i>	proportional (i.e., figures have varying widths) lining figures
<i>TLF</i>	tabular (i.e., all figures have the same width) lining figures
<i>OsF</i>	proportional oldstyle figures
<i>TOsF</i>	tabular oldstyle figures

<i>Sup</i>	superior characters (many fonts have only an incomplete set of superior characters: digits, some punctuation and the letters <i>abdeilmnorst</i> ; normal forms will then be used for the other characters)
<i>Inf</i>	inferior characters; usually only digits and punctuation, normal forms for the other characters
<i>Orn</i>	ornaments
<i>Numr</i>	numerators
<i>Dnom</i>	denominators

The generated fonts are named `<FontName>-<suffix>-<shape>-<enc>`, where `<suffix>` is the same as above (but in lowercase), `<shape>` is either empty, “sc”, “swash” or “titling”, and `<enc>` is the encoding. A typical name in this scheme would be “MinionPro-Regular-osf-sc-ly1”.

### On the choice of text encoding

By default, **autoinst** generates text fonts with OT1, T1 and LY1 encodings, and the generated style files use LY1 as the default text encoding. LY1 has been chosen over T1 because it has some empty slots to accomodate the additional ligatures and alternate glyphs provided by many OpenType fonts. Encodings can be chosen using the `-encoding` command-line option (see “COMMAND-LINE OPTIONS” below).

### Using the fonts in your LaTeX documents

**autoinst** generates a style file for using the font in LaTeX documents, named `<FontFamily>.sty`. This style file also takes care of loading the *fontenc* and *textcomp* packages, if necessary. To use the font, simply put `\usepackage{<FontFamily>}` in the preamble of your document.

This style file defines a number of options:

*lining, oldstyle, tabular, proportional*

Choose which digit style to use. The defaults are “oldstyle” and “proportional” (if available).

*scale=<scale>*

*scaled=<scale>*

Scale the font by a factor of `<scale>`. For example: to increase the size of the font by 5%, use the command `\usepackage[scaled=1.05]{<FontFamily>}`.

This option is only available when the *xkeyval* package is found in your TeX installation.

*ultrablack, ultrabold, heavy, extrablack, black, extrabold, demibold, semibold, bold*

Choose the weight that LaTeX will use for the “bold” weight.

*light, medium, regular*

Choose the weight that LaTeX will use for the “regular” weight.

These last two groups of options will only work if you have the *mweights* package installed.

The style file will also try to load the *fontaxes* package, which gives easy access to various font shapes and styles. It is available from CTAN (<http://www.ctan.org/tex-archive/macros/latex/contrib/fontaxes>). Using the machinery set up by *fontaxes*, the generated style file also defines a number of commands (which take the text to be typeset as argument) and declarations (which don’t take arguments, but affect all text up to the end of the current group) of its own:

DECLARATION	COMMAND	SHORT FORM OF COMMAND
<code>\tlshape</code>	<code>\texttitling</code>	<code>\textttl</code>
<code>\sufigures</code>	<code>\textsuperior</code>	<code>\textsu</code>
<code>\infigures</code>	<code>\textinferior</code>	<code>\textin</code>

In addition, the `\swshape` and `\textsw` commands are redefined to place swash on the secondary shape axis (*fontaxes* places it on the primary shape axis); this makes these commands behave properly when nested, so that `\swshape\upshape` will give upright swash.

There are no commands for accessing the numerator and denominator fonts; these can be selected using `fontaxes'` standard commands, e.g., `\fontfigurestyle{numerator}\selectfont`.

The style file also provides a command `\ornament{<number>}`, where `<number>` is a number from 0 to the total number of ornaments minus one. Ornaments are always typeset using the current family, series and shape. A list of all ornaments in a font can be created by running LaTeX on the file *nfssfont.tex* (part of a standard LaTeX installation) and supplying the name of the ornament font.

To access the ornaments, **autoinst** creates a font-specific encoding file `<FontFamily>_orn.enc`, but only if that file doesn't yet exist in the current directory. This is a deliberate feature that allows you to provide your own encoding vector, e.g. if your fonts use non-standard glyph names for ornaments.

These commands are only generated for existing shapes and number styles; no commands are generated for shapes and styles that don't exist, or whose generation has been turned off using command-line options. Also: these commands are built on top of *fontaxes*; if that package cannot be found, you're limited to using the lower-level commands from standard NFSS (`\fontfamily`, `\fontseries`, `\fontshape` etc.).

### Using multiple font families in one document

Style files generated by versions of **autoinst** older than 2013-07-25 redefined `\mddefault` and `\bfdefault`, whereas newer style files use the *mweights* package instead. If you use multiple **autoinst**-generated font families in the same document, it is best if all style files are generated by the same version of **autoinst**; re-generate the older families if necessary.

### NFSS codes

NFSS identifies fonts by a combination of family, series (weight plus width), shape and size. **autoinst** parses the output of `otfinfo --info` to determine these parameters. When this fails (e.g., because the font family contains uncommon widths or weights), **autoinst** would end up with different fonts having the *same* values for these font parameters, which means that these fonts cannot be used in NFSS. In this case, **autoinst** will split the font family into multiple subfamilies (based on each font file's "Subfamily" value) and try again. (Since many font vendors misunderstand the "Subfamily" concept and make each font file its own separate subfamily, this strategy is only used as a last resort.)

If such a proliferation of font families is unwanted, either run **autoinst** on a smaller set of fonts or add the missing widths, weights and shapes to the tables `%FD_WIDTH`, `%FD_WEIGHT` and `%FD_SHAPE`, near the top of the source code. Please also send a bug report (see AUTHOR below).

**autoinst** maps widths, weights and shapes to NFSS codes using the following tables. These are based as much as possible on the standard *Fontname* scheme and Philipp Lehman's *Font*

*Installation Guide*, but some changes had to be made to avoid name clashes in font families with many widths or weights.

WEIGHT		WIDTH	
Thin	t	Ultra Compressed	up
Ultra Light	ul	Extra Compressed	ep
Extra Light	el	Compressed	p
Light	l	Compact	p
Book	[1]	Ultra Condensed	uc
Regular	[1]	Extra Condensed	ec
Medium	mb	Condensed	c
Demibold	db	Narrow	n
Semibold	sb	Semicondensed	sc
Bold	b	Regular	[1]
Extra Bold	eb	Semiextended	sx
Ultra	ub	Extended	x
Ultra Bold	ub	Expanded	e
Black	k	Wide	w
Extra Black	ek		
Ultra Black	uk		
Heavy	h	SHAPE	
Poster	r		
		Roman, Upright	n [2]
		Italic	it
		Cursive, Kursiv	it
		Oblique, Slanted	it [3]
		Incline(d)	it [3]

*Notes:*

- [1] When *both* weight and width are empty, the “series” attribute becomes “m”.
- [2] Adobe Silentium Pro contains two “Roman” shapes (“RomanI” and “RomanII”); the first of these is mapped to “n”, the second one to “it”.
- [3] Mapping the “Slanted”, “Oblique” or “Inclined” shape to “it” instead of “sl” simplifies **autoinst**. Since font families with both italic and slanted shapes do – to the best of my knowledge – not exist (apart from Computer Modern), this shouldn’t cause problems.

#### A note for MiKTeX users

Automatically installing the fonts into a suitable TEXMF tree (as **autoinst** does by default) requires a TeX-installation that uses the *kpathsea* library; with TeX distributions that implement their own directory searching (such as MiKTeX), **autoinst** will complain that it cannot find the *kpsewhich* program and install all generated files into subdirectories of the current directory. If you use such a TeX distribution, you should either move these files to their correct destinations by hand, or use the *-target* option (see “COMMAND-LINE OPTIONS” below) to specify a TEXMF tree.

Also, some OpenType fonts lead to *pl* and *vpl* files that are too big for MiKTeX’s *pltoif* and *vptovf*; the versions that come with W32TeX (<http://www.w32tex.org>) and TeXLive (<http://tug.org/texlive>) don’t have this problem.

## COMMAND-LINE OPTIONS

You may use either one or two dashes before options, and option names may be shortened to a unique prefix (e.g., **-encoding** may be abbreviated to **-enc** or even **-en**, but **-e** is ambiguous (**-encoding**, **-extra**)).

### **-encoding=encoding[,encoding]**

Use the specified encodings for the text fonts. The default is “OT1,T1,LY1”. For each encoding, a file *<encoding>.enc* (in all *lowercase*) should be somewhere where *otftotfm* can find it. Suitable encoding files for OT1, T1/TS1 and LY1 come with **autoinst**. (Note that these files are called *fontools\_ot1.enc* etc. to avoid name clashes with other packages; the “fontools\_” prefix doesn’t need to be specified.)

Multiple text encodings can be specified as a comma-separated list: **-encoding=OT1,T1**. The encodings are passed to *fontenc* in the order specified, so the last one will be the default text encoding.

### **-sanserif**

Install the font as a sanserif font, accessed via `\sffamily` and `\textsf`. Note that the generated style file redefines `\familydefault`, so including it will still make this font the default text font.

### **-typewriter**

Install the font as a typewriter font, accessed via `\ttfamily` and `\texttt`. Note that the generated style file redefines `\familydefault`, so including it will still make this font the default text font.

### **-ts1**

### **-nots1**

Turn the creation of TS1-encoded fonts on or off. The default is **-ts1** if the text encodings (see *-encoding* above) include T1, **-nots1** otherwise.

### **-smallcaps**

### **-nosmallcaps**

Turn the creation of small caps fonts on or off. The default is **-smallcaps**.

### **-swash**

### **-noswash**

Turn the creation of swash fonts on or off. The default is **-swash**.

### **-titling**

### **-notitling**

Turn the creation of titling fonts on or off. The default is **-titling**.

### **-superiors**

### **-nosuperiors**

Turn the creation of fonts with superior characters on or off. The default is **-superiors**.

### **-inferiors**

### **-noinferiors**

Turn the creation of fonts with inferior digits on or off. The default is **-noinferiors**.

### **-fractions**

### **-nofractions**

Turn the creation of fonts with numerators and denominators on or off. The default is **-nofractions**.

**-ornaments****-noornaments**

Turn the creation of ornament fonts on or off. The default is **-ornaments**.

**-verbose**

Verbose mode; print detailed info about what **autoinst** thinks it's doing.

**-extra=***text*

Pass *text* as options to *otftotfm*. To prevent *text* from accidentally being interpreted as options to **autoinst**, it should be properly quoted.

**-figurekern****-nofigurekern**

Some fonts provide kerning pairs for tabular figures. This is very probably not what you want (e.g., numbers in tables won't line up exactly). The option **-nofigurekern** adds extra *--ligkern* options to the commands for *otftotfm* to suppress such kerns (but of course only for the families with tabular figures). Since this leads to very long commands (one hundred such options in total!) and the problem only occurs in very few fonts, the default is **-figurekern**.

**-manual**

Manual mode. By default, **autoinst** executes all *otftotfm* commands it generates; with the **-manual** option, these commands are instead written to a file *autoinst.bat*. Also, the generated *otftotfm* commands specify the *--pl* option (which tells *otftotfm* to generate readable/editable *pl* and *vpl* files instead of the default *tfm* and *vf* files) and leave out the *--automatic* option (which tells *otftotfm* to leave all generated files in the current directory, rather than install them into your TEXMF tree).

When using this option, you should run *pltotf* and *vptovf* after executing all commands, to convert the *pl* and *vf* files to *tfm* and *vf* format.

The following options are only meaningful in automatic mode, and hence ignored in manual mode:

**-target=***DIRECTORY*

Install all generated files into the TEXMF tree at *DIRECTORY*.

By default, **autoinst** searches your \$TEXMFLOCAL and \$TEXMFHOME paths and installs all files into subdirectories of the first writable TEXMF tree it finds (or into subdirectories of the current directory, if no writable directory is found).

**-vendor=***VENDOR***-typeface=***TYPEFACE*

These options are equivalent to *otftotfm*'s *--vendor* and *--typeface* options: they change the "vendor" and "typeface" parts of the names of the subdirectories in the TEXMF tree where generated files will be stored. The default values are "lcdftools" and the font's FontFamily name.

Please note that these options change *only* directory names, not the names of any generated files.

**-updmap**

**–noupdmap**

Control whether or not *updmap* is called after the last call to *otftotfm*. The default is **–updmap**.

**SEE ALSO**

Eddie Kohler’s **TypeTools** (<http://www.lcdf.org/type>).

**Perl** can be downloaded from <http://www.perl.org>; it is often already installed on many Linux distros. For Windows, try ActivePerl (<http://www.activestate.com>) or Strawberry Perl (<http://strawberryperl.com>).

**XeTeX** (<http://www.tug.org/xetex>) and **LuaTeX** (<http://www.luatex.org>) are TeX engines that can use fonts in many formats (including both flavours of OpenType) without TeX-specific support files.

The **FontPro** project (<https://github.com/sebschub/FontPro>) offers very complete LaTeX support for Adobe’s Minion Pro and Myriad Pro (including math), and is currently working on Cronos Pro as well.

John Owens’ **otfinst** (available from CTAN) is another wrapper around *otftotfm*.

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When sending a bug report, please give as much relevant information as possible; this includes at least (but may not be limited to) the output from running **autoinst** with the *–verbose* option. Please make sure that this output includes all (if any) error messages.

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**RECENT CHANGES**

(See the source code for the rest of the story.)

*2013–07–25* The generated *sty* files now use the *mweights* package instead of redefining `\mddefault` and `\bfdefault`. Added `scale` as an alias for the package option `scaled`.

*2013–02–06* Bugfix: the directory names for map and encoding files contained the “vendor” instead of the “typeface”.

*2013–01–03* Added extra “ssub” rules to the *fd* files that substitute “b” for “bx”. Verbose mode now also prints all generated commands before they’re executed.

*2012–10–25* Added extra “ssub” rules to the *fd* files that substitute italic shapes for slanted ones.

- 2012-09-25 Added the *-vendor*, *-typeface* and *-(no)updmap* command line options.
- 2012-07-06 Documentation update.
- 2012-03-06 Implemented the “splitting the font family into multiple subfamilies” emergency strategy when font info parsing fails. Added recognition for a number of unusual widths, weights and shapes.
- 2012-02-29 Fixed a bug in the font parsing code, where possible widths, weights and shapes were tested in the wrong order; this led to “ExtraLight” fonts being recognised as “Light”. Added recognition for “Narrow” and “Wide” widths. Also added the *-(no)figurekern* command-line option.
- 2012-02-01 Reorganised the code, and fixed some bugs in the process. Added the *-target* command-line option. Made **autoinst** install the *fd* and *sty* files in the same TEXMF tree as the other generated files. Generate OT1, T1 and LY1 encoded text fonts by default. Made *-titling* a default option (instead of *-notitling*). Updated the documentation.