

L^AT_EXian notes on: Casio fx-991ES

C. Vogel, T U G D D*, Germany

October 2008

This document introduces some usage of the Casion fx-991ES' "natural display calculator" and explains how that supported Casio-font can be used in L^AT_EX.

Thanks to Gerrit Kirpal introducing me to the L^AT_EX-fontstructure and fontforge. Thanks to Tobias Nähring for successing me in the organisation and moderation of our meetings.

Inhaltsverzeichnis

1	Obtaining the files	2
2	Reencoding with fontforge	2
3	Creating .fd and .map	2
4	Updating the T_EX-System	3
5	Using the font	3

Listings

1	t1casiofx.fd	2
2	casiofx.map	2

*<http://www.tn-home.de/TUGDD/index.html>

1 Obtaining the files

fonts: http://www.casio-schulrechner.de/de/files/downloads/ES_Fonts.zip
manual: .../de/files/manuals/sgr/fx-991ES_G.pdf
appendix: .../de/files/manuals/sgr/fx-115ES_fx-570ES_fx-991ES_Appendix.pdf

2 Reencoding with fontforge

I simply opened that file in fontforge and did following things:

- Encoding → Reencode → Adobe Standard
- Encoding → Force Encoding → Adobe Standard
- Element → Font Properties →
 - uncheck: use quadratic splines
 - select in Name List: T_EX Names
- File → Create Fonts →
 - PS Type 1
 - Options → Create: TFM and ENC

3 Creating .fd and .map

A common mistake is to forget about the t1-prefix of that .fd-file. So you need to create a *t1<myfont>.fd* whereas the following example may be a hint:

Listing 1: t1casiofx.fd

```
%% casiofx.fd, Casio fx-991es font definition
%% Carsten Vogel, lego@wh10.tu-dresden.de
\ProvidesFile{t1casiofx.fd}[2008/10/17 ES01.TTF Casio fx
-991ES]
\DeclareFontFamily{T1}{casiofx}{}
\DeclareFontShape{T1}{casiofx}{m}{n}{<-> casiofx}{}
\endinput
%%
```

and you'll also need to create a *<myfont>.map* file like:

Listing 2: casiofx.map

```
casiofx casiofx "TeXBase1Encoding ReEncodeFont" <casiofx.enc
<casiofx.pfb
```

4 Updating the T_EX-System

Copy that .map-file into `/usr/share/texmf-texlive/fonts/map/dvips/`
Use: `updmap-sys --enable Map=casiofx.map`

5 Using the font

Assume you want to approximate π by the numerical integration of an semi-circle with radius of $\sqrt{2}$.

$$\int_{-\sqrt{2}}^{\sqrt{2}} \sqrt{2 - x^2} \partial x$$

Type in your Casio fx-991ES:



Note: This operation might take a while, even by exposing the solar cell to intense light.¹

Funny enough subtracting π from this result leads to an error of: 4.41×10^{-12} and can be obtained by pressing subsequently:



¹This calculation took 75 secs on mine.

Key	Symbol	Key	Symbol
a		A	$(\frac{\blacksquare}{\blacksquare})$
b	ENG	B	(DRG ▶)
c	hyp	C	AC
d	x^2	D	x^3
e	Abs	E	\triangle
f	x^{\blacksquare}	F	$(\sqrt{\blacksquare})$
g	log	G	(10^{\blacksquare})
h	ln	H	(e^{\blacksquare})
i	\log_{\blacksquare}	I	(\sum_{\blacksquare})
j	sin	J	RCL
k	cos	K	$\times 10^{\blacksquare}$
l	tan	L	(π)
m	M+	M	Ans
n	S+D	N	$(a \frac{b}{c} + \frac{d}{c})$
o	DEL	O	\times
p	$\frac{\blacksquare}{\blacksquare}$	P	\div
q	SHIFT	Q	ALPHA
r	CALC	R	∇
s	$\sqrt{\blacksquare}$	S	$(\sqrt[3]{\blacksquare})$
u	x^{\blacksquare}	U	(i)
w	MODE	W	ON
x	\circ, \circ, \circ	X	(\leftarrow)
y	\int_{\blacksquare}	Y	$(\frac{d}{dx} \blacksquare)$
z	$(-)$	Z	(\sphericalangle)
1	1	6	6
2	2	7	7
3	3	8	8
4	4	9	9
5	5	0	0
+	+	-	-
.	.	,	(,)
(())
\$	\blacktriangleright		

Tabelle 1: Charset for ES01.TTF font