Fontfile Format *.unx/unf (Unicode font) for the firmware

valid from GUI (graphical user interface) version 5.5.0 on (firmware > 4.0)

Header:

4 BYTES FF | FE | XX | XX
XX XX = (Version Number=2 (unx) 3 (unf))

Name:
32 BYTES Name of Font with extension .mfx for vector fonts and .dmx for dot matrix fonts.

Sizes:
22 BYTES

0xXXXX 2 Bytes Reference Size ('EM_size')
0xXXXX 2 Bytes minx Minimum x-position of all chars
0xXXXX 2 Bytes maxx Maximum x-position of all chars
0xXXXX 2 Bytes miny Minimum y-position of all chars
0xXXXX 2 Bytes maxy Maximum y-position of all chars
0xXXXX 2 Bytes BaselineY of char '2'
0xXXXX 2 Bytes MaxsizeX for char '2'
0x..... 8 Bytes reserved

Blockindexheader (4Bytes position pointer array):
1024 BYTES

0xXXXXXXXX 4Bytes (position of Block 0)
0xXXXXXXXX 4Bytes (position of Block 1)

0xXXXXXXXX 4Bytes (position of Block 255)

Block 0 holds pointer for characters 0 - 255
Block 1 holds pointer for characters 256-511
.....
Block 255 holds pointer for characters ...-0xFFFF

If a blockpointer is not NULL than a complete 4*1024 BYTES wide Block with 4BYTE wide pointers (for 256 characters and 4 glyphs each) will be saved within the file. This Block contains a 256x4x4 Bytes array of pointers to the character data.

Block (4Bytes position pointer array pointing to character glyph position within a block):
4*1024 BYTES

0xXXXXXXXX 4Bytes (position of glyph 0 for char 0)
0xXXXXXXXX 4Bytes (position of glyph 1 for char 0)
0xXXXXXXXX 4Bytes (position of glyph 2 for char 0)
0xXXXXXXXX 4Bytes (position of glyph 3 for char 0)

.....

0xXXXXXXXX 4Bytes (position of glyph 3 for char 255)

e.g. : If Character <258> is saved in the fontfile, Block 1 will be saved, and the 258 - 255 th character of this block will contain the data.

Data for each character:

0xXXXX (short) 2 Bytes minchar_x Minimum x-position
0xXXXX (short) 2 Bytes maxchar_x Maximum x-position
0xXXXX (WORD) 2 Bytes Number of Outlines
0xXXXX (WORD) 2 Bytes Number of points (first outline)

1.point

Version=2 (unx)
0xXXXXXXXX 4 Bytes x-position (float)
0xXXXXXXXX 4 Bytes y-position (float)
0xXX 1 Bytes Cp Type (0x00 for line 0x01 for spline)

Version=3 (unf)
0xXXXX (short) 2 Bytes x-position
0xXXXX (short) 2 Bytes y-position
0xXX 1 Bytes Cp Type (0x00 for line 0x01 for spline)

2.point

Version=2 (unx)
0xXXXXXXXX 4 Bytes x-position (float)
0xXXXXXXXX 4 Bytes y-position (float)
0xXX 1 Bytes Cp Type

Version=3 (unf)
0xXXXX (short) 2 Bytes x-position
0xXXXX (short) 2 Bytes y-position
0xXX 1 Bytes Cp Type (0x00 for line 0x01 for spline)

.....

.....

0xXXXX 2 Bytes Number of points (second outline)

1.point

Version=2 (unx)
0xXXXXXXXX 4 Bytes x-position (float)
0xXXXXXXXX 4 Bytes y-position (float)
0xXX 1 Bytes Cp Type

2.point

Version=3 (unf)

0xXXXX	(short)	2 Bytes	x-position
0xXXXX	(short)	2 Bytes	y-position
0xXX		1 Bytes	Cp Type

.....

Remarks: Extension name .mfx: standard outline fonts where the points are connected by straight lines.

Extension name .dmx: same format as standard font but points are not connected but just marked as a dot (crystall font).

Cp Type: the default value is 0x00 indicating straight lines between the outline points.

Glyph0 is the glyph for the standard character. Glyph 1 – Glyph3 are only used for some arabic fonts where a single character has different glyphs according to the appearance of the character in the word.

The basic difference between unx (version number 2) and unf (version number 3) is that the points in the unf font are stored as (short) instead as (float).