

EA TFT-Simulator V1.0 manual

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1 General

TFT-Simulator "StartTFT.exe"

The program „[StartTFT.exe](#)^[3]“ simulates all displays from EA TFTxxx-AI series. Display setting will be done via menu [TFT](#)^[6]. This does mean that with this little program all display types can be simulated. This simulator can be used alone but also together with our Test- and Demoboard [EA 9782-1USB](#)^[9].

Test-Board "EA 9782-1USB"

For easy startup, a USB test board [EA 9782-1USB](#)^[9] is available that can be connected to a PC. All displays from EA TFTxxx-AI series will put into operation in a flash. There is no hardware or software knowledge necessary. The versions with optional Touch EA TFTxxx-AITC can also be tested. The program „[StartTFT.exe](#)^[3]“ runs also with a connected [EA 9782-1USB](#)^[9]. Text and pictures (BMP) can be shown directly on the connected display.

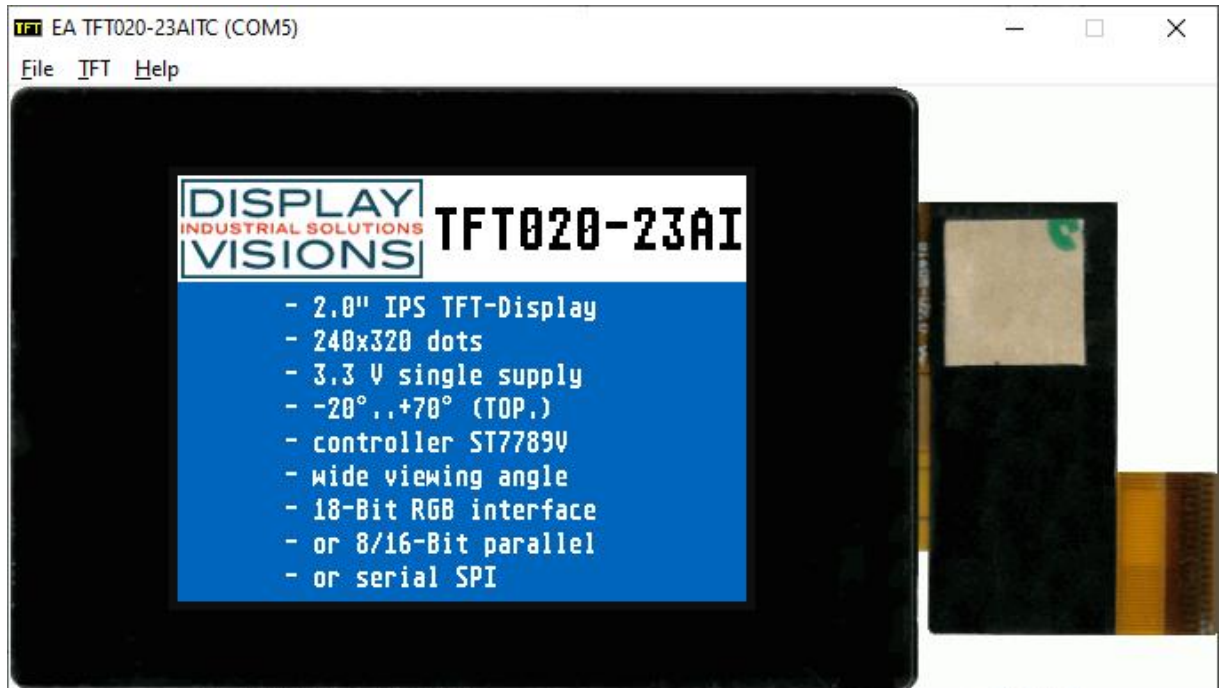


Zeppelinstrasse 19, D-82205 Gilching
Phone +49-8105-778090, Fax +49-8105-778099
<http://www.lcd-module.de>

2 StartTFT V1.0.exe

EA TFT-Simulator

StartTFT.exe V1.0



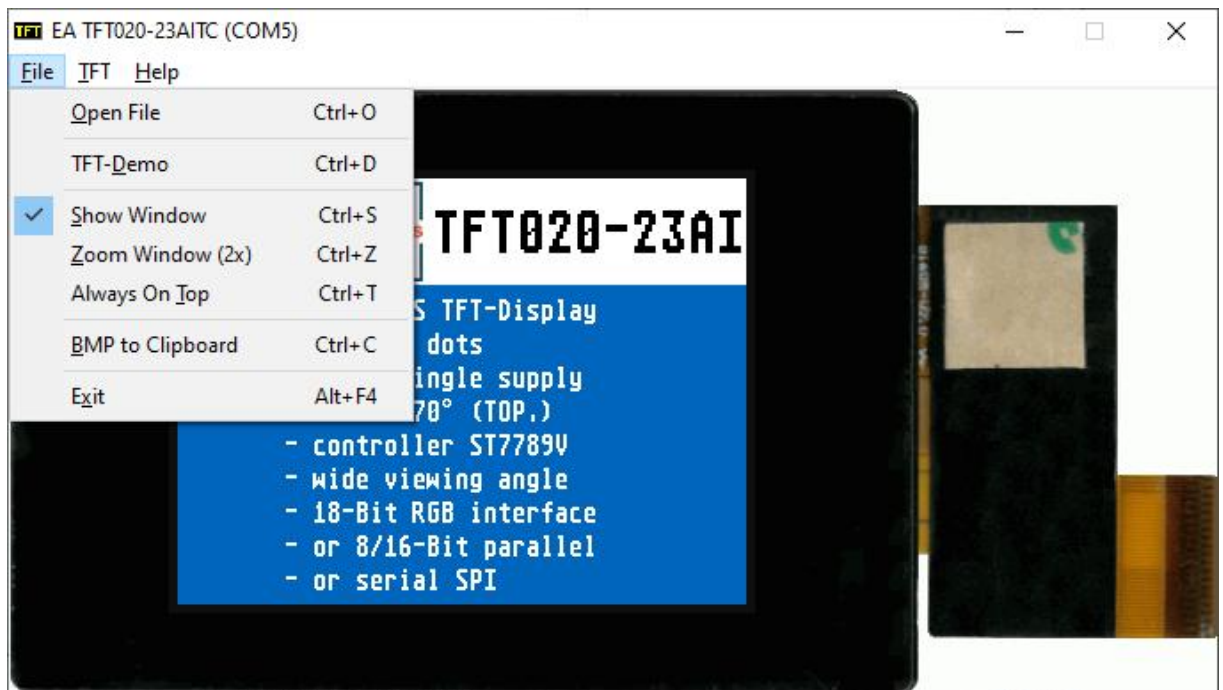
You can download the TFT Simulator Software V1.0 free of charge from our Homepage as a .zip file. After unzip you easily can start our StartTFT Simulator with a double click on the startTFT.exe. It starts up immediately with a windows frame and a tool bar with 3 pull down buttons:

[File](#)⁴ [TFT](#)⁶ [Help](#)⁸

3 TFT Simulator

3.1 File

Under the **File** Pull DownButton you can select special functions in four sections:



Open File

Open the File-Dialogbox where you can choose a [commandfile](#) ²⁰ (*.txt) or graphicfile (*.bmp, *.png, *.jpg, *.gif).

You can also Drag and Drop these files from the Explorer onto the TFT-Simulator Window .

Demo

Starts an internal demo with three alternating contents on the screen and optional on the display plugged to our [EA 9782-1USB](#) ⁹;

Show Window

Shows or hides the frame of the TFT Simulation on the PC screen; When the frame with the menu is hidden you can find the menu with a right mouse click in the display area;

Zoom Window (2x)

The Window of the TFT-Simulator can be zoomed twice;

Always on Top

The Window of the TFT-Simulator always stays in front of the other software pages, whatever page or other Software you are opening;

Exit

Stores display organization, options that had been changed in the last session and closes the application;

3.2 TFT

Under the TFT Pull Down Button you can select different display organisations in two sections:



EA TFT009_81AI

Graphicdisplay 80 by 160 dots 0.96 inch (solder connection)

EA TFT015_22AI

Graphicdisplay 240 by 240 dots 1.5 inch

EA TFT020_23AI

Graphicdisplay 240 by 320 dots 2.0 inch

EA TFT028_23AI

Graphicdisplay 240 by 320 dots 2.8 inch

EA TFT035_34AI

Graphicdisplay 320 by 480 dots 3.5 inch

with Touchpanel

switch between TFTxxx-xx**AINN** and TFTxxx-xx**AITC** version of the TFT display

View 0°

Set the orientation of the TFT display to 0 degree

View 90°

Set the orientation of the TFT display to 90 degree

View 180°

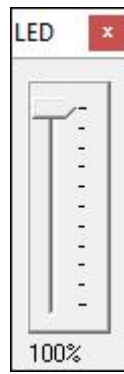
Set the orientation of the TFT display to 180 degree

View 270°

Set the orientation of the TFT display to 270 degree

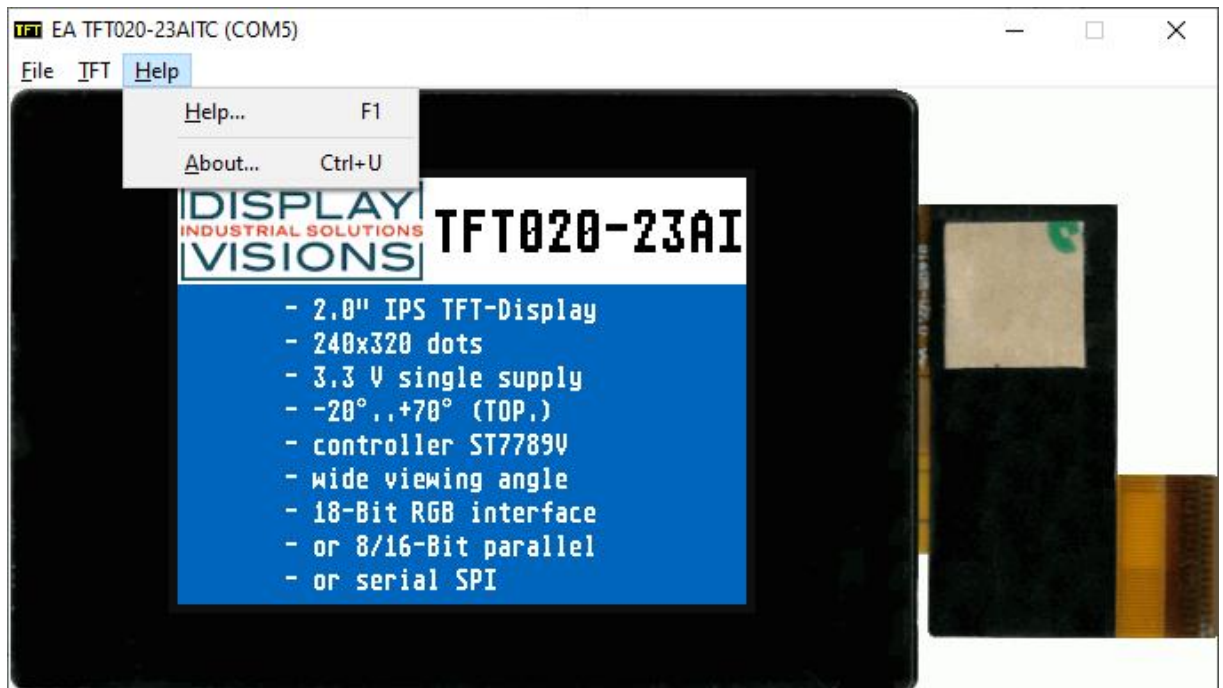
Set LED brightness

If a TFT display is connected with our test board [EA 9782-1USB](#) to the USB I/F of the computer the LED backlight can be dimmed.



3.3 Help

Under the **Help** Pull Down Button you have the choice to select this Help-text or an info box:



Help

This click shows you the Help-File;

About

This click shows you the software version of the TFT Simulator and whether the USB-Board is successfully connected to the PC;



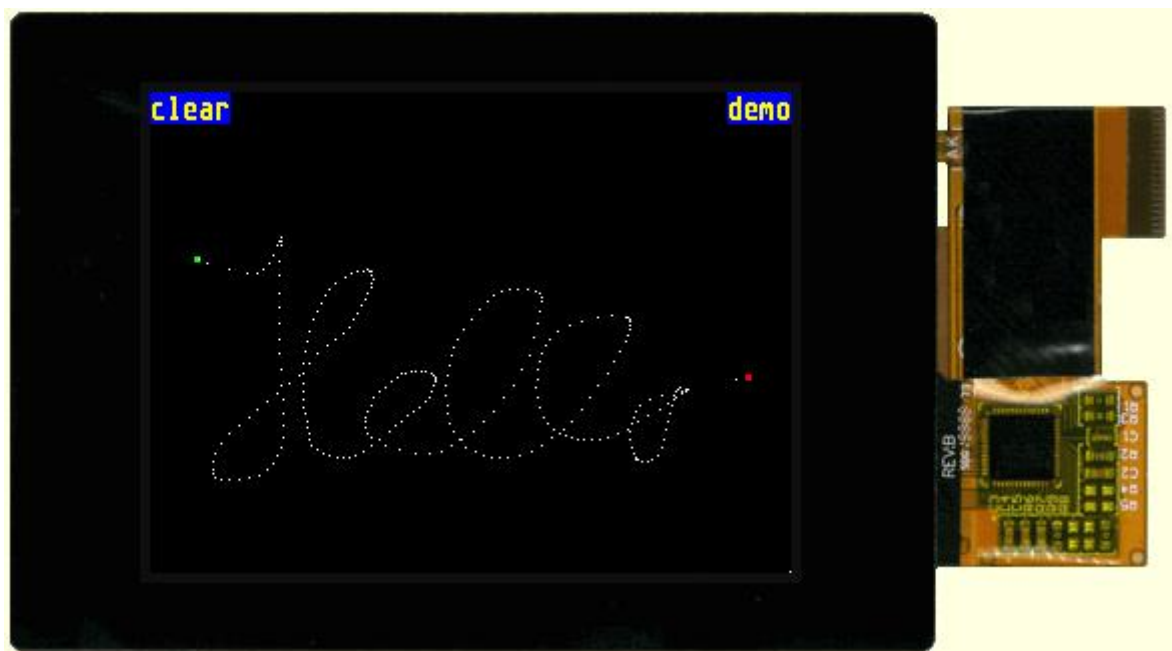
4 EA 9782-1USB

4.1 Features

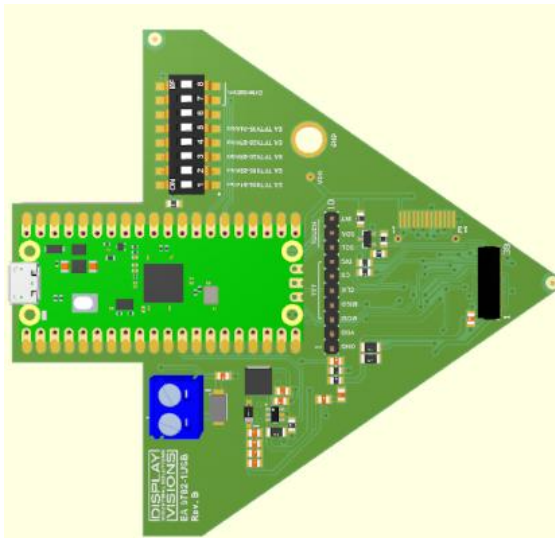
With that test board all displays from EA TFTxxx-AI series will put into operation in a flash. There is no hardware or software knowledge necessary. The included USB cable performs easily the connection to the PC. Pictures (BMP) can be shown direct on the connected display.

The display versions with optional Touch EA TFTxxx-AITC can also be tested.

- * Connection to USB: simple Usage
- * Good for all EA TFTxxx-AI series
- * test optional Touch EA TFTxxx-AITC
- * no power supply necessary
- * with demo-text and demo-pictures
- * individual text and pictures²⁰ are supported also
- * inclusive USB cable (1.5m)



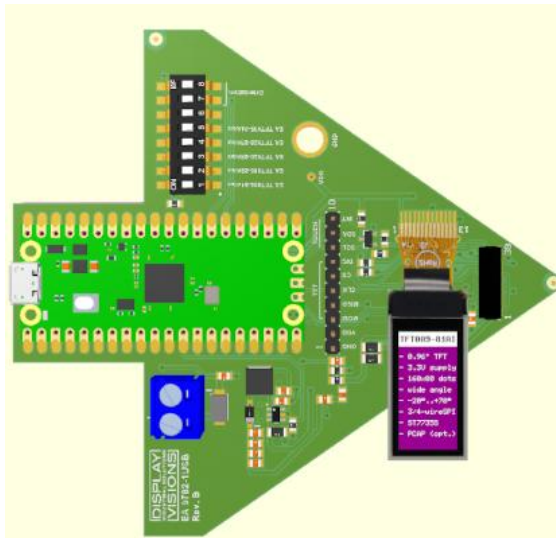
4.2 9782-1 EMPTY



EMPTY - [TFT009-81AINN](#) ¹¹

TFT015-22AINN ¹²	-	TFT015-22AITC ¹³
TFT020-23AINN ¹⁴	-	TFT020-23AITC ¹⁵
TFT028-23AINN ¹⁶	-	TFT028-23AITC ¹⁷
TFT035-34AINN ¹⁸	-	TFT035-34AITC ¹⁹

4.3 9782-1 TFT009-81AINN



EMPTY ¹⁰ - TFT009-81AINN

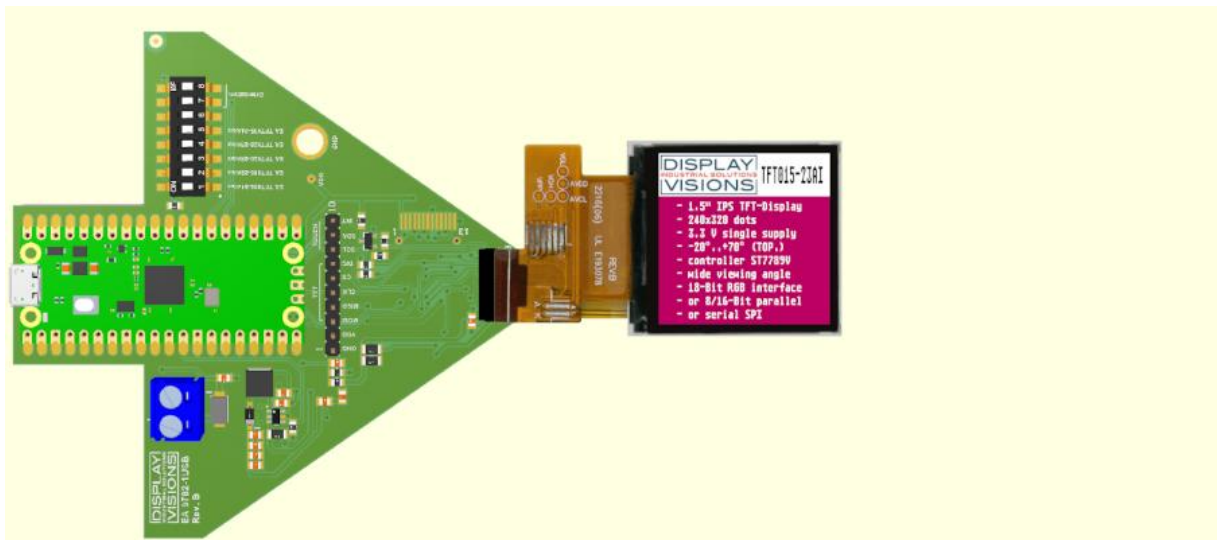
TFT015-22AINN ¹² - TFT015-22AITC ¹³

TFT020-23AINN ¹⁴ - TFT020-23AITC ¹⁵

TFT028-23AINN ¹⁶ - TFT028-23AITC ¹⁷

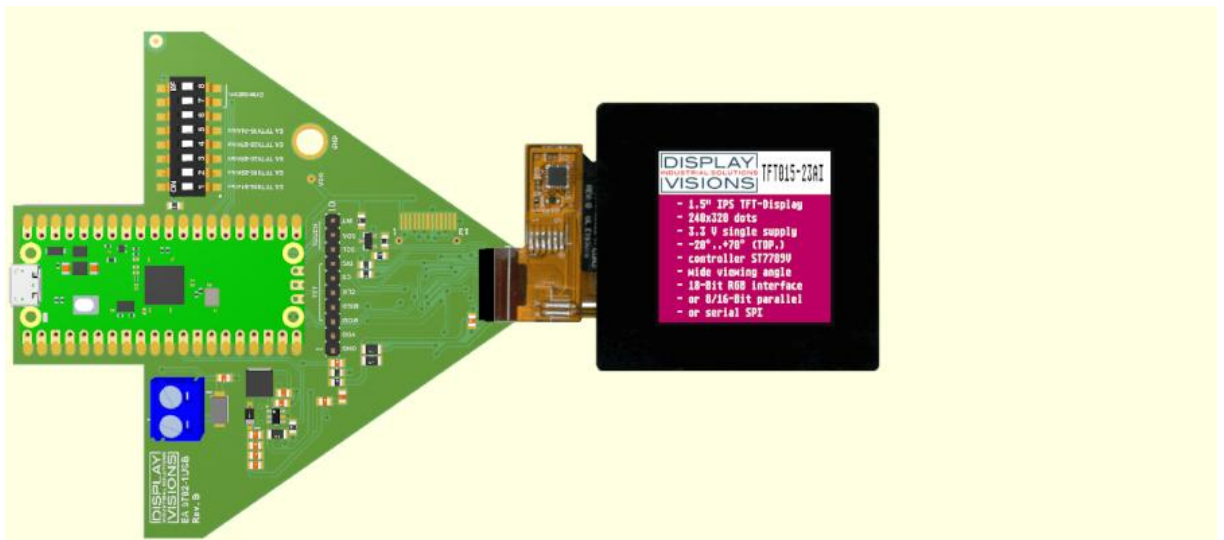
TFT035-34AINN ¹⁸ - TFT035-34AITC ¹⁹

4.4 9782-1 TFT015-22AINN



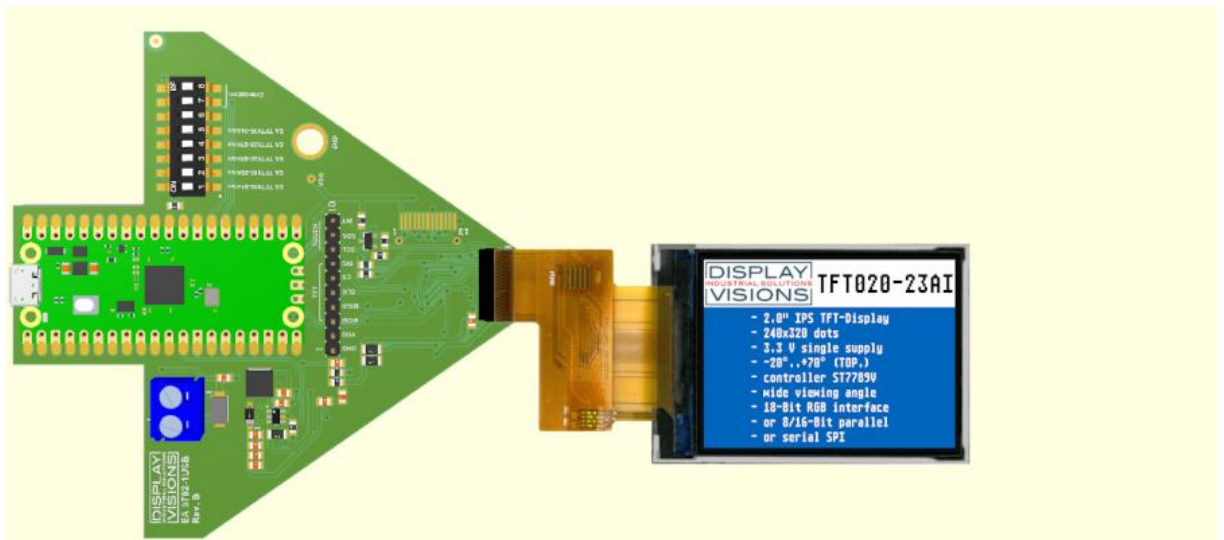
[EMPTY](#) ¹⁰ - [TFT009-81AINN](#) ¹¹
[TFT015-22AINN](#) - [TFT015-22AITC](#) ¹³
[TFT020-23AINN](#) ¹⁴ - [TFT020-23AITC](#) ¹⁵
[TFT028-23AINN](#) ¹⁶ - [TFT028-23AITC](#) ¹⁷
[TFT035-34AINN](#) ¹⁸ - [TFT035-34AITC](#) ¹⁹

4.5 9782-1 TFT015-22AITC



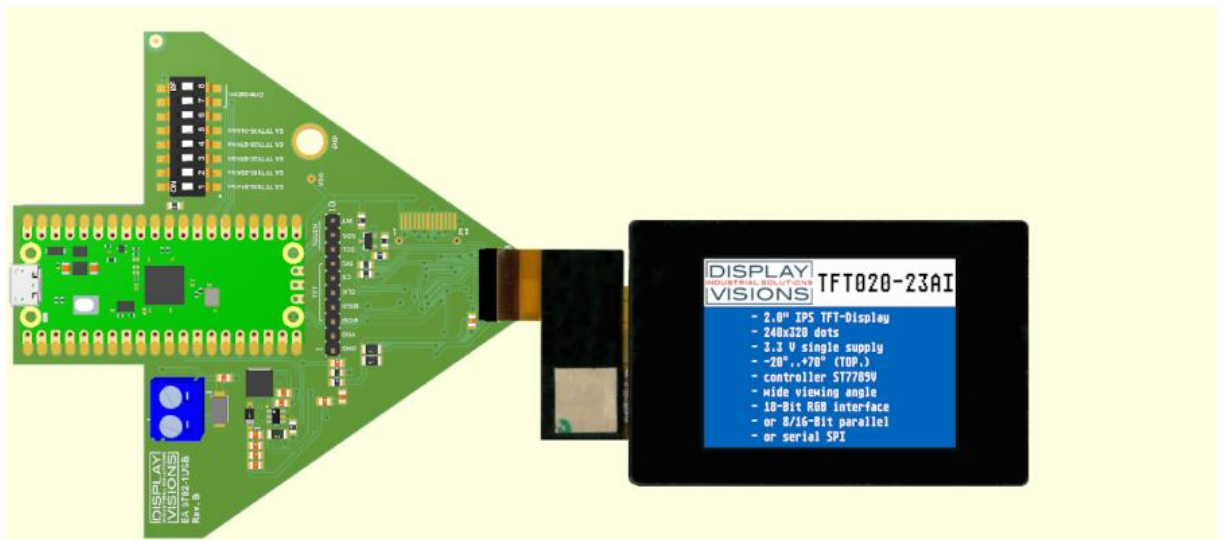
[EMPTY](#) ¹⁰ - [TFT009-81AINN](#) ¹¹
[TFT015-22AINN](#) ¹² - [TFT015-22AITC](#)
[TFT020-23AINN](#) ¹⁴ - [TFT020-23AITC](#) ¹⁵
[TFT028-23AINN](#) ¹⁶ - [TFT028-23AITC](#) ¹⁷
[TFT035-34AINN](#) ¹⁸ - [TFT035-34AITC](#) ¹⁹

4.6 9782-1 TFT020-23AINN



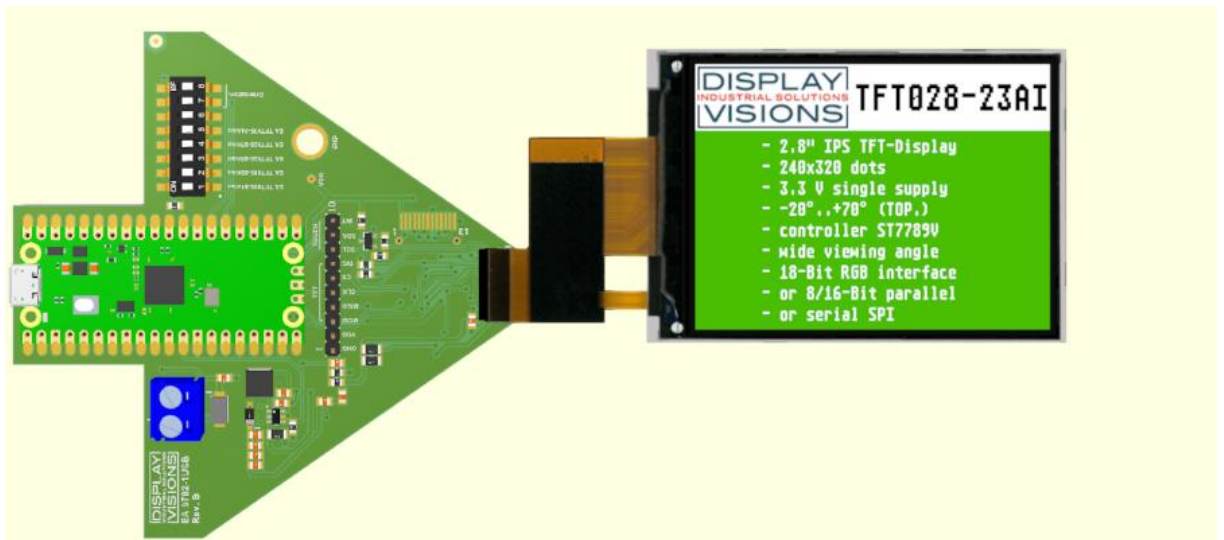
EMPTY ¹⁰ - TFT009-81AINN ¹¹
TFT015-22AINN ¹² - TFT015-22AITC ¹³
TFT020-23AINN - TFT020-23AITC ¹⁵
TFT028-23AINN ¹⁶ - TFT028-23AITC ¹⁷
TFT035-34AINN ¹⁸ - TFT035-34AITC ¹⁹

4.7 9782-1 TFT020-23AITC



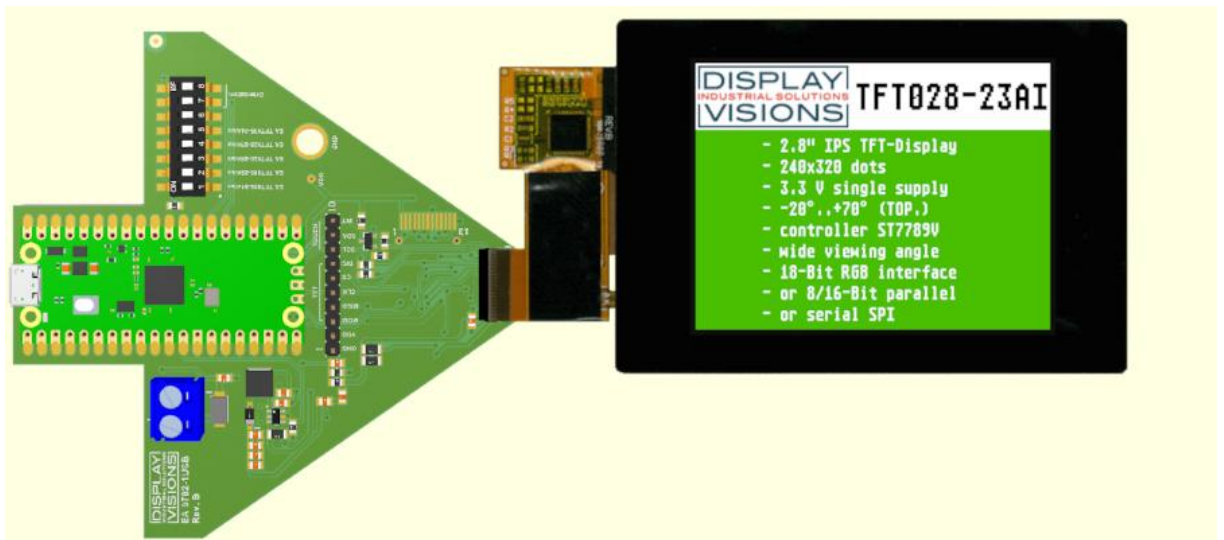
[EMPTY](#) ¹⁰ - [TFT009-81AINN](#) ¹¹
[TFT015-22AINN](#) ¹² - [TFT015-22AITC](#) ¹³
[TFT020-23AINN](#) ¹⁴ - [TFT020-23AITC](#)
[TFT028-23AINN](#) ¹⁶ - [TFT028-23AITC](#) ¹⁷
[TFT035-34AINN](#) ¹⁸ - [TFT035-34AITC](#) ¹⁹

4.8 9782-1 TFT028-23AINN



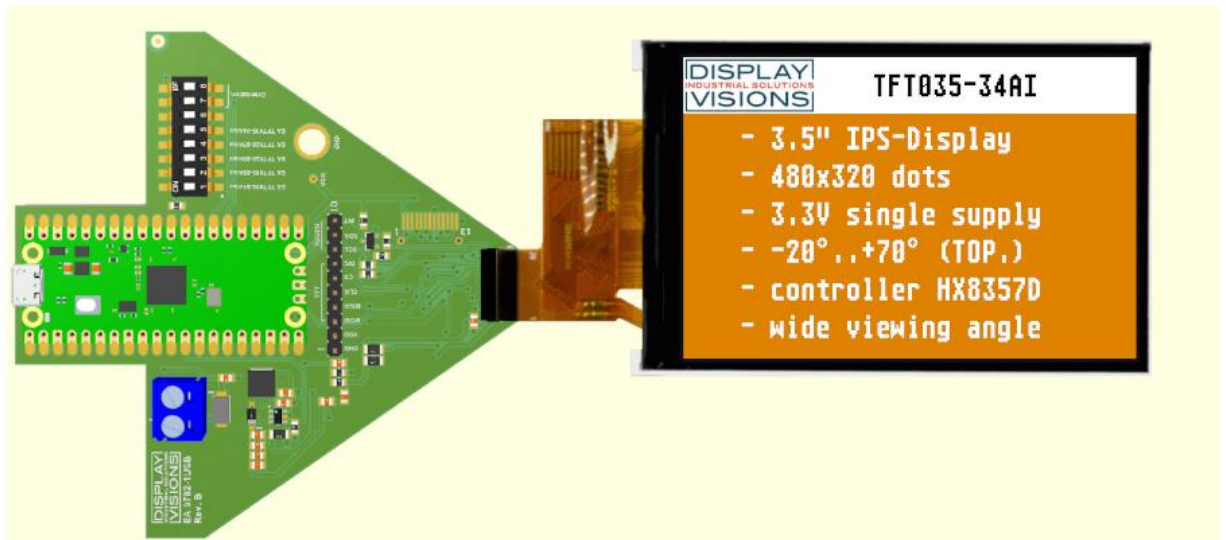
[EMPTY](#) ¹⁰ - [TFT009-81AINN](#) ¹¹
[TFT015-22AINN](#) ¹² - [TFT015-22AITC](#) ¹³
[TFT020-23AINN](#) ¹⁴ - [TFT020-23AITC](#) ¹⁵
[TFT028-23AINN](#) - [TFT028-23AITC](#) ¹⁷
[TFT035-34AINN](#) ¹⁸ - [TFT035-34AITC](#) ¹⁹

4.9 9782-1 TFT028-23AITC



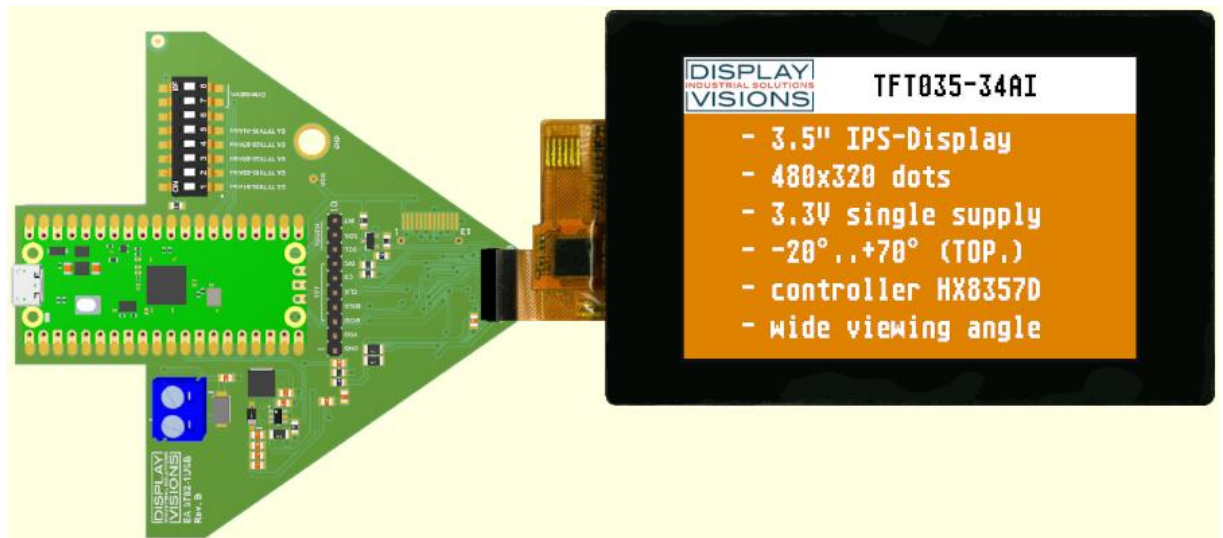
[EMPTY](#) ¹⁰ - [TFT009-81AINN](#) ¹¹
[TFT015-22AINN](#) ¹² - [TFT015-22AITC](#) ¹³
[TFT020-23AINN](#) ¹⁴ - [TFT020-23AITC](#) ¹⁵
[TFT028-23AINN](#) ¹⁶ - [TFT028-23AITC](#)
[TFT035-34AINN](#) ¹⁸ - [TFT035-34AITC](#) ¹⁹

4.10 9782-1 TFT035-34AINN



[EMPTY](#) ¹⁰ - [TFT009-81AINN](#) ¹¹
[TFT015-22AINN](#) ¹² - [TFT015-22AITC](#) ¹³
[TFT020-23AINN](#) ¹⁴ - [TFT020-23AITC](#) ¹⁵
[TFT028-23AINN](#) ¹⁶ - [TFT028-23AITC](#) ¹⁷
 TFT035-34AINN - [TFT035-34AITC](#) ¹⁹

4.11 9782-1 TFT035-34AITC



[EMPTY](#) ¹⁰ - [TFT009-81AINN](#) ¹¹
[TFT015-22AINN](#) ¹² - [TFT015-22AITC](#) ¹³
[TFT020-23AINN](#) ¹⁴ - [TFT020-23AITC](#) ¹⁵
[TFT028-23AINN](#) ¹⁶ - [TFT028-23AITC](#) ¹⁷
[TFT035-34AINN](#) ¹⁸ - [TFT035-34AITC](#)

5 Commands/Pictures

5.1 Commands

How to bring Text/Pictures to the Display

If you want to show your own text you can change the commandfile (*.txt) for each display and angle in the folder StartTFT (TFTx_x.txt) and save it. Immediately the program will take the new file and show your commands in the textfile.
Also you can take a commandfile (*.txt) or graphicfile (*.bmp, *.png, *.jpg, *.gif) with the mouse and drop it on the TFT-Simulator Window .

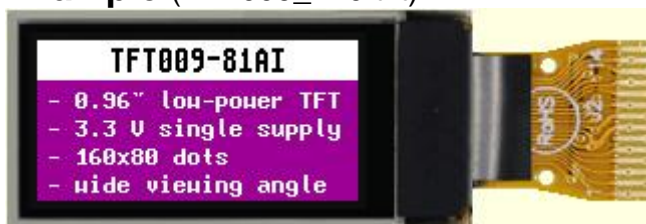
Syntax:

comment: begin with ';' SEMICOLON, end -> linefeed LF = 0x0A
command: '#', end -> linefeed LF = 0x0A
delimiter: SPACE or COMMA or TAB
values: dec=123 hex=\$AB bin=%01000010
strings: "Text" or 'Text'

Commands:

LED Brightness	#LB percent	set LED Brightness, percent = 0..100 (only for EA 9782-1USB)
Display Orientation	#DO angle	set Display Orientation, angle = 0,90,180 or 270 degree
Display Clear	#DC	Display Clear (color black)
Display Fill	#DF r,g,b	Display Fill with color r,g,b
Fill Area	#FA r,g,b, xs,ys,xs,ys	Fill Area xs,ys xs,ys with color r,g,b
Text Color	#TC rt,gt,bt rb,gb,bb	set Text Color r,g,b -> text + background
Text Font	#TF no, zx,zy	set Text Font (1= 6x8 , 2= 7x12 , 3= 8x16 , 4= 30x38 only numbers and ':') and zoom zx,zy (1..4)
Text Place	#TP x,y,"text"	Text Place at position x,y
place BitMap	#BM x,y,BMdata..	place Bitmap at position x,y BMdata=binary data from *.BMP File
place BitMap (startTFT.exe)	#BM x,y,"filename"	only for "startTFT.exe", filename = *.bmp, *.png, *.jpg, *.gif The Image will be converted and resized

Example (TFT009_270.txt):



#DO 270 ; set display orientation 270°

#FA 255,255,255 0,0 159,19 ; fill Title rectangle white

```
#FA 155, 0,150 0,20 159,79 ; fill Text rectangle violet

#TC 0,0,0 255,255,255 ; set Title color black/white
#TF 3 1,1 ; set Title font 8x16
#TP 36,2 "TFT009-81AI" ; place Title

#TC 255,255,255 155,0,150 ; set Text color white/violet
#TF 2 1,1 ; set Text font 7x12
#TP 5,24 '- 0.96" low-power TFT'
#TP 5,38 "- 3.3 V single supply"
#TP 5,52 "- 160x80 dots"
#TP 5,66 "- wide viewing angle"
```

5.2 Font 6x8

<div>+ Lower</div> <div>Upper</div>	\$0 (0)	\$1 (1)	\$2 (2)	\$3 (3)	\$4 (4)	\$5 (5)	\$6 (6)	\$7 (7)	\$8 (8)	\$9 (9)	\$A (10)	\$B (11)	\$C (12)	\$D (13)	\$E (14)	\$F (15)
\$20 (dez: 32)		!	"	#	\$	%	&	'	()	*	+	,	-	.	/
\$30 (dez: 48)	Ø	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
\$40 (dez: 64)	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
\$50 (dez: 80)	P	Q	R	S	T	U	V	W	X	Y	Z	[\]	^	_
\$60 (dez: 96)	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
\$70 (dez: 112)	p	q	r	s	t	u	v	w	x	y	z	{		}	~	À
\$80 (dez: 128)	Ç	ù	é	ā	ä	å	ā	ē	ē	ē	ï	î	ï	Ä	Å	
\$90 (dez: 144)	É	æ	Æ	ø	ö	ö	Ü	ü	ÿ	ö	Ü	¢	£	¥	ß	f
\$A0 (dez: 160)	á	í	ó	ú	ñ	Ñ	¿	¿	¿	¿	¿	¿	¿	¿	¿	¿
\$B0 (dez: 176)	⋮	⋮	⋮		+	+	+	+	+	+	+	+	+	+	+	+
\$C0 (dez: 192)	L	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥
\$D0 (dez: 208)	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥
\$E0 (dez: 224)	α	β	Γ	Π	Σ	σ	μ	Τ	ϋ	ϋ	Ω	δ	ω	ø	Ε	Π
\$F0 (dez: 240)	≡	±	≥	≤	Γ	↓	÷	≈	•	•	√	n	z	■		

5.3 Font 7x12

<div>+ Lower</div> <div>Upper</div>	\$0 (0)	\$1 (1)	\$2 (2)	\$3 (3)	\$4 (4)	\$5 (5)	\$6 (6)	\$7 (7)	\$8 (8)	\$9 (9)	\$A (10)	\$B (11)	\$C (12)	\$D (13)	\$E (14)	\$F (15)
\$20 (dez: 32)		!	"	#	\$	%	&	'	()	*	+	,	-	.	/
\$30 (dez: 48)	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
\$40 (dez: 64)	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	
\$50 (dez: 80)	P	Q	R	S	T	U	V	W	X	Y	Z	[\]	^	_
\$60 (dez: 96)	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
\$70 (dez: 112)	p	q	r	s	t	u	v	w	x	y	z	{		}	~	Δ
\$80 (dez: 128)	Ç	ü	é	â	ä	à	â	ç	é	ë	è	ï	î	ï	ñ	â
\$90 (dez: 144)	É	æ	Æ	ô	ö	ò	û	ù	ÿ	ö	ü	¢	£	¥	ß	f
\$A0 (dez: 160)	á	í	ó	ú	ñ	ñ	æ	ø	¿	¬	¼	½	¾	¿	«	»
\$B0 (dez: 176)	⌘	⌘	⌘					π	π	π	π	π	π	π	π	π
\$C0 (dez: 192)	L	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥
\$D0 (dez: 208)	⌘	⌘	⌘	⌘	⌘	⌘	⌘	⌘	⌘	⌘	⌘	⌘	⌘	⌘	⌘	⌘
\$E0 (dez: 224)	α	β	Γ	π	Σ	σ	μ	τ	ϋ	θ	Ω	δ	φ	φ	ε	π
\$F0 (dez: 240)	≡	±	≥	≤	∫	J	÷	≈	°	•	•	•	•	•	•	—

5.4 Font 8x16

+ Lower Upper	\$0 (0)	\$1 (1)	\$2 (2)	\$3 (3)	\$4 (4)	\$5 (5)	\$6 (6)	\$7 (7)	\$8 (8)	\$9 (9)	\$A (10)	\$B (11)	\$C (12)	\$D (13)	\$E (14)	\$F (15)
\$20 (dez: 32)		!	"	#	\$	%	&	'	()	*	+	,	-	.	/
\$30 (dez: 48)	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
\$40 (dez: 64)	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
\$50 (dez: 80)	P	Q	R	S	T	U	V	W	X	Y	Z	[\]	^	_
\$60 (dez: 96)	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
\$70 (dez: 112)	p	q	r	s	t	u	v	w	x	y	z	{		}	~	Δ
\$80 (dez: 128)	Ç	ü	é	â	ä	à	ã	ç	ê	ë	è	ï	î	ì	ñ	ñ
\$90 (dez: 144)	É	æ	Æ	ô	ö	ò	û	ù	ÿ	ö	Ü	ç	£	¥	β	f
\$A0 (dez: 160)	á	í	ó	ú	ñ	ñ	ä	o	ì	í	½	¼	í	«	»	
\$B0 (dez: 176)	⋮	⋮	⋮		†	‡		π	¶							
\$C0 (dez: 192)	L	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥
\$D0 (dez: 208)	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥
\$E0 (dez: 224)	α	β	Γ	π	Σ	σ	μ	τ	ϕ	θ	Ω	δ	φ	φ	ε	π
\$F0 (dez: 240)	≡	±	≥	≤	∫	J	÷	≈	°	•	•	√	π	2	3	—

5.5 Font 30x38

only numbers and ':' are included (e.g.: **12:34** for time values)

\$30 (48)	\$31 (49)	\$32 (50)	\$33 (51)	\$34 (52)	\$35 (53)	\$36 (54)	\$37 (55)	\$38 (56)	\$39 (57)	\$3A (58)
0	1	2	3	4	5	6	7	8	9	:

6 Troubleshooting

No Demo appears on the display plugged to the EA 9782-1USB

Please click in the menu [Help](#)⁸ the button About;
The display may be damaged;

"Board: not connected" please check:

Is the USB-cable plugged in well on both sides;

Is the USB driver installed on the PC;

The test board [EA 9782-1USB](#)⁹ may be damaged;

Nothing is seen on the display:

The display pins are not correct plugged in;

The display may be damaged;