

User Guide Standards

Atelier with 13.3["] Gallery[™] Plus Display (AC133UT1) — 【Glass】

Table of Contents

ePape	r <mark>Disp</mark> la	ay Update SOP	1
1	Intro	duction	1
	(1)	PACKAGE CONTENTS	1
	(2)	13.3" E Ink Gallery Plus display SPECIFICATION	2
	(3)	TCON BOARD SPECIFICATION	2
2	Hard	ware Guide	3
	(1)	Hardware Requirements	
	(2)	Demo Kit Hardware Description	4
3	Setti	ng Environment and Preceding Operation	6
	(1)	Download files from E Ink Cloud Server	6
	(2)	Write Image File (*.bin) To USB drive	7
	(3)	Firmware and Waveform upgrade by E Ink Windows AP	
4	13.3'	' Gallery Plus Operation Manual	10
	(1)	How to connect TCON board to AC133UT1	10
	(2)	Example of using Raspberry Pi as the HOST	10
	(3)	Image File Type and Information	11
5	Rasp	berry Pi Operation	11
	(1)	Wireless network setting	11
	(2)	Display Gallery Plus panel preceding operation	12
	(3)	How to upload / download image files	14
6	Арре	endix	16
7	Cont	act Information	16
8	Legal	Information	16

ePaper Display Update SOP

1 Introduction

Atelier with 13.3" Gallery Plus display (AC133UT1) demo kit allows E Ink clients to access the hardware and software of E Ink's 13.3" Gallery Plus display module for evaluation. This kit demonstrates as a turnkey solution for those who are interested in designing with E Ink displays. Hardware and software design support is available from E Ink directly.

13.3" Gallery Plus display is suitable for various applications, e.g. Artwork, Signage, Retail, etc...

(1) PACKAGE CONTENTS

- 13.3" E Ink Gallery Plus display (EPD)
- Atelier TCON Board
- Adapter 5V/3A (Tcon)

(2) 13.3" E Ink Gallery Plus display SPECIFICATION

EPD	13.3" Gallery Plus display
Resolution(mm)	1600(H) x 1200(V)
Active Area(mm)	270.4(H) × 202.8(V)
Outline Dimension(mm)	285.8(W) × 213.65(H) × 0.97(D)
Surface Treatment	AG
Operating Temperature	15~35 degree

(3) TCON BOARD SPECIFICATION

TCON	E ink Gallery Plus T1000
RAM	Embedded 64MB
Flash Memory	External 16MB
Display Interface	TTL/FPC Connector
Debug Interface	UART J8
Host Interface	USB Port (Micro USB)
Power Adapter	DC +5V/3A
Dimension	Tcon board: 55mm x100mm
	TS board: 27mmx14.4mm
	FFC: 10cm
Operating Temperature	0~40 degree

* Note: All hardware specifications are for the demonstration of this evaluation kit only.

2 Hardware Guide

This section describes the hardware setup of the 13.3" Gallery Plus display demo kit.

(1) Hardware Requirements



Atelier - TCON Board



AC133UT1 - EPD



Adapter(Tcon)

(2) Demo Kit Hardware Description

The TCON board and E Ink panel are connected via a 39 pin FPC.

The micro USB port on the EVK work as interface can be used for control the TCON board such as update image on panel.



Atelier - TCON Board

Module Name	Description
FPC CONNECTOR	Back Flip Connector for 13.3" Gallery Plus
TS BOARD CONNECTOR	Connect to TS (thermal sensor) board via 10cm FFC
Micro USB	Micro USB, for Host connection
5V DC CONNECTOR	DC 5V/3A

Connector pin assignment

	FPC_J4	DC J1	UART_J8
PIN NUMBER	SIGNAL		SIGNAL
1	VNEG	+5V	VCCIO
2	VPOS	+5V	UART0_TX
3	GND	GND	UARTO_RX
4	VDD	GND	UARTO_CTS#
5	SDCLK		UARTO_RTS#
6	SDLE		GND
7	SDOE		
8	GND		
9	GND		
10	NC		
11	SDCE_N0		
12	SDDO0		
13	SDDO1		
14	SDDO2		
15	SDDO3		
16	SDDO4		
17	SDDO5		
18	SDDO6		
19	SDDO7		
20	GND		
21	VCOM		
22	VCOM		
23	VGH		
24	VGL		
25	NC		
26	NC		
27	XON		
28	GDOE		
29	GND		
30	GND		
31	GND		
32	GDSPV		
33	GDSCK		
34	BORDER		
35	GND		
36	GND		
37	GND		
38	GND		
39	GND		

3 Setting Environment and Preceding Operation

(1) Download files from E Ink Cloud Server

Please see the following steps for downloading E Ink Windows AP, rendering data and Image file (*.bin) from E Ink Cloud Server.

- Step1: When E ink opens the download access, the system will notify and provide the hyperlink of E Ink Cloud Server via mail.
- Step2: After connecting to E Ink Cloud Server (sharefile) for the first time, you need to register account with email address.
- Step3: Image file and rendering data must be decompressed after downloading.
- Step4: Waveform file (*.wbf) is included in the rendering data archive.

Eink	Q Search files and folders	\supset		Help App	os Log Out
Dashboard	Folders > Ryan Shared Folders > Pimage file of 13.3' Gallery Plus				
🗋 Folders 🗸 🗸	Primage file of 13.3 Gallery Plus ···· More C	ptions			
🛱 Shared Folders	⊡ Items & People				•
☆ Favorites					
Workflows >	Name 🔻	Size	Uploaded	Creator	$\equiv \cdots$
└ Inbox	🔲 🏠 🛅 Windows AP_5.0.1.xx	10 MB	11/16/2022	c. ryan	
C Personal Settings	🔲 ☆ 🛅 rendering data and WF	0 B	11/16/2022	c. ryan	
	13.3 ACeP_TypeE_AAA04201_TA1605_aceprender030x_Pi4_20230313.bin.7;	1 GB	06/11/2023	C. Ryan	
	Email me	when a file is	: 🗾 Downloaded from	n this folder 🔽 Uploade	d to this folder

(2) Write Image File (*.bin) To USB drive

We can use software that supports Image File (*.bin) writing like ImgBurn / imageUSB.

We use imageUSB as an example. Please see the following steps for Image File (*.bin) writing.

Note: The image file must be decompressed after downloading.

Step1: Insert Empty MicroSD card (over than 8GB) and Quick Format MicroSD card.

Step2: Execute the Image software imageUSB.

Step3: Refresh drivers.

Step4: Select all of the USB drivers.

Step5: Select the option "Write image to USB driver".

Step6: Click the "Browse" button and choose the image file (*.bin) that we provided.

Step7: Click the "Write" button.

Step8: Click the "OK" button when imaging completed.

Sien 1: Select the USB drive(s) to be processed -		-	
School of the contraction of the processed of the procese)isk: 1, Part. Type: MBR. Size	: 7.31 GB, Volumes: D, G. NA, N	A, NA, NA 🔺
D: Label: RECOVERY, FileSystem: FAT32, Size:	1.61 GB		·····
G: Label: boot, FileSystem: FAT32, Size: 5.81	ЗВ		
Label: None, FileSystem: Unknown, Size: 32.0	MB		
Label: None, FileSystem: Unknown, Size: 5.71	ab MB		
< Step4			>
		Chan 2	Color Data
Select All Unselect All Drives Selected:	1	Steps	iresh Drives
Step 2: Select the action to be performed on the s	elected USB drive(s)	Available Options	
Write image to USB drive Step5		Post Image Verification	
O Create image from USB drive		Extend Partition (NTFS	Only)
◯ Zero USB drive		Boot Sector(s) Only	
O Reformat USB drive (Windows Vista or later) NTFS	~	Beep on Completion	
<please .bin,="" .img="" .iso="" a="" file="" or="" select=""></please>			Browse
_Step 4: Click the Write' button to begin			
Write Overall progress			
	ete	×	
Step7 imageUSB - Imaging completion			
Step7 Log oulput: 11:04:25 - Program: imagel			~
Step7 Log output: 11:04:25 - Program: imagel 11:04:25 - Date & Time: 03 11:04:25 - Application Path 11:04:25 - Adding eligibil 11:04:25 - Adding eligibil 11:04:25 - Ready	ing Com	pleted!	
Step7 Iog output: 11:04:25 - Program: imagel 11:04:25 - Date & Time: 03 11:04:25 - Date & Time: 03 11:04:25 - Getting list of eli 11:04:25 - Ready	ing Com	pleted!	

- (3) Firmware and Waveform upgrade by E Ink Windows AP
- Upgrade Firmware Operation
- Step1: Connect TCON board to PC via Micro USB and plug in the TCON board power adapter. (It is not necessary to connect panel)
- Step2: Execute the E Ink Windows AP to start the software
- Step3: Click the "connect" button to connect the TCON board.
- Step4: Select the "Firmware(*.bin)"
- Step5: Click the "Refresh" button. (Firmware file and Windows AP must be placed in the same directory)
- Step6: Select the Firmware file (*.bin).
- Step7: Click the "Upgrade" button.
- Step8: Please re-plug the TCON board power adapter (Reset) when firmware upgrade successful.

Еіпк T1000 Demo AP v.5.0.1.14			x
connect Step3	En_42_Flip En_E4 EnCFA_RGB565 En_E5 Rotate_CCW_90	About Engineer Features	OK Cancel
Generic Storage RamDisc 1.00	Step6	AC133UT1_BX_FT_V3.1.bin	•
	Step5	Refresh	Upgrade Stop 7
Searched 1 Disks FW Version = 8X_FT_V3.1 Signature = 8957 Panel Width = 1600 Panel Width = 1000	Step4	Image: Timmware(*.bin) wbf Address(hex) Image: Waveform(*.wbf) 300000	uto Reset
Image Buffer Address = 0x5B18B8	Notice		
Waveform: (3 Modes, 7 Temperature Segments) Chip ID 0x:10010001!! FW Upgrade Successful !!	FW Upgrade Succe Please Reset Device	essful !! ce Display Mode Cen	tralize eat Start
	Step8	Y Start Mode 確定 0 2 Height End Mode 1 2	2
		☐ AutoSet	
		Open File	
		EnClrWhite 🗌 Set Full Panel	
	*	Display	
Clear			

- Upgrade Waveform Operation
- Step1: Connect TCON board to PC via Micro USB and plug in the TCON board power adapter. (It is not necessary to connect panel)
- Step2: Execute the E Ink Windows AP to start the software
- Step3: Click the "connect" button to connect the TCON board.
- Step4: Select the "Waveform(*.wbf)"
- Step5: Click the "Refresh" button. (Waveform file and the Windows AP must be placed in the same directory)
- Step6: Select the Waveform file (*.wbf).
- Step7: Click the "Upgrade" button.
- Step8: Please re-plug the TCON board power adapter (Reset) when firmware upgrade successful.

Eink T1000 Demo AP v.5.0.1.14	En_42_Flip En_E4 EnCFA_RGB565 Rotate_CCW_90	About OK Engineer Features Cancel	X
Generic Storage RamDisc 1.00 Searched 1 Disks FW Version = BX_FT_V3.1 Signature = 8957 Panel Width = 1600 Panel Height = 1200	Step6 Step5 Step4	ACEP_AAA04201_TA1605_AC133UT1C1_AA1020-NCA_TC.v v Refresh Upgrade © Firmware(*.bin) wbf Address(hex) Upgrade © Waveform(*.wbf) 300000 □ Auto Reset	Step7
Image Buffer Address = 0x5B18B8 Waveform: (3 Modes, 7 Temperature Segments) Chip ID 0x10010001!! FW Upgrade Successful !! Chip ID 0x10010001!! FW Upgrade Successful !!	Notice FW Upgrade Succe Please Reset Device	Display Mode 2 J Time Interval(Secs) 3 Display	
	Step8	確定 0 2 Height End Mode	
	-	Open File EnClrWhite Set Full Panel Display	
Clear			

4 13.3" Gallery Plus Operation Manual

(1) How to connect TCON board to AC133UT1

• Connect FPC of AC133UT1 to FPC connector of TCON board.

Note: Make sure the TS board is close to the EPD.

- Connect Micro USB to the HOST, we use Raspberry Pi as the HOST.
- TCON board 5V/3A power supply plug in.
- Raspberry Pi 5V/3A power supply plug in.

Note: Before you remove EPD, please make sure EPD is not updating image and then start to power off Raspberry Pi and TCON board.

(2) Example of using Raspberry Pi as the HOST

- <u>Please prepare Raspberry Pi, USB cable, SD card and Adaptor for Pi (5V/3A)</u> <u>before EVK operation.</u>
- Never modify, or format the SD card by yourself.
- After power on, needed waiting about 50s, the display will start to show image with E Ink logo. It means system is running successfully.



- (3) Image File Type and Information
- JPG(.jpg), JPEG(.jpeg), BMP(.bmp), PNG(.png), TIFF(.tiff) are supported image file types.
- The image recommended resolution is 1600 (W) x 1200 (H). And we also can use any image resolution, we will resize and rotate the image automatically.

5 Raspberry Pi Operation

(1) Wireless network setting

We use cell phone as portable hotspots. See the following steps for Wireless network setting.

Step1: Open your Tethering and Portable hotspots.

Step2: Enter Tethering and Portable hotspots setting.

Step3: Configure hotspots default setting as following: (See Figure 4.1)

Network name (SSID): image_host

Security: WPA PSK

Password: imagekey

Step4: Record IP address of Raspberry Pi from connected devices to link Raspberry Pi in the chapter "How to upload / download image files". (See Figure 4.2)
 For example: IP address of Raspberry Pi is 192.168.43.240 in the Figure 4.2







(2) Display Gallery Plus panel preceding operation

Display config setting

In the AceP_linux_usb folder, user can modify config.txt to change the directory of the image source path, dwell time and display initial mode.

<image_source> Image source path must be under '/home/pi/Desktop'.

<dwell_time>: Present the time interval between each display time, must be over 15 seconds.

```
1 # image_source: image source path must be under '/home/pi/Desktop'
2 # dwell_time: Present the time interval between each display time, must be over 15 seconds.
4 [path]
5 image_source=image_library
6
7 [dwell]
8 dwell_time=15
```

- Image file placed folder
 According the above figure, <u>put image files in the image_source folder. All of</u> these images in the folder will be displayed repeatedly.
- Place render data files

In the render_tool folder, user can place whole folder of render data. These files should be matched with Gallery Plus EPD and waveform version.

	ACEP_A00401_TA2601_AC133UT1C1_TC_02		
ile Edit View Sort Go Tools			
🝸 品 雛 雛 🔳 🖲 🗇 🔶	/home/pi/Desktop/render_tool/acep_data/ACEP_A00401_TA2601_AC133UT10	1_TC_02	~
	Name	Size	Modified
Dime	ACEP_A00401_TA2601_AC133UT1C1_0Cto18C_02.lut	34.2 KiB	30/09/19 13:3
	ACEP_A00401_TA2601_AC133UT1C1_0Cto18C_02.bin	1.1 MiB	30/09/19 13:3
🗆 🔲 Desktop	ACEP_A00401_TA2601_AC133UT1C1_18Cto21C_02.lut	34.2 KiB	30/09/19 15:0
acep_linux_usb	ACEP_A00401_TA2601_AC133UT1C1_18Cto21C_02.bin	1.1 MiB	30/09/19 15:0
🕀 🔄 ezxml_lib	ACEP_A00401_TA2601_AC133UT1C1_21Cto24C_02.lut	34.2 KiB	30/09/19 17:0
Include	ACEP_A00401_TA2601_AC133UT1C1_21Cto24C_02.bin	1.2 MiB	30/09/19 17:0
Image: Intered_files	ACEP_A00401_TA2601_AC133UT1C1_24Cto27C_02.lut	34.2 KiB	30/09/19 18:3
	ACEP_A00401_TA2601_AC133UT1C1_24Cto27C_02.bin	1.1 MiB	30/09/19 18:3
	ACEP_A00401_TA2601_AC133UT1C1_27Cto30C_02.lut	34.2 KiB	30/09/19 20:0
	ACEP_A00401_TA2601_AC133UT1C1_27Cto30C_02.bin	1.2 MiB	30/09/19 20:0
	ACEP_A00401_TA2601_AC133UT1C1_30Cto33C_02.lut	34.2 KiB	30/09/19 21:3
Career_555005_TA2101_AC133	ACEP_A00401_TA2601_AC133UT1C1_30Cto33C_02.bin	1.1 MiB	30/09/19 21:3
	ACEP_A00401_TA2601_AC133UT1C1_33Cto50C_02.lut	34.2 KiB	30/09/19 22:5
Downloads	ACEP_A00401_TA2601_AC133UT1C1_33Cto50C_02.bin	1.1 MiB	30/09/19 22:5
	ACEP_A00401_TA2601_AC133UT1C1_TC.wbf	153.6 KiB	09/10/19 16:5
	render_file_sel_ACEP_A00401_TA2601_AC133UT1C1_TC_02.bin	1.3 KiB	09/10/19 17:0

User defined networks

If we want to define multiple networks please see the following steps:

Step1: Create a new file named "wpa_supplicant.conf".

Don't use "Notepad" to save the file, please use other Linux-supported editors like Sublime Text / EmiEditor / Notepad++.

Step2: Type following commands to define networks.

ssid: Name of network hotspots

psk: Password of network hotspots

key_mgmt: Key management protocols.

Priority: Priority of network. (Higher number with higher priority)



Step3: Insert SD card to PC, place the "wpa_supplicant.conf" under the "boot" directory.



Step4: The file "wpa_supplicant.conf" will be copied when Raspberry Pi reboot.

(3) How to upload / download image files

We can use software which supports FTP like FileZilla / File Manager + / AndFTP to upload / download image files. We use File Manager + as an example, please see the following steps:

Step1: Open File Manager + application and click the "Remote" icon. (See Figure 4.3)

Step2: Add a remote location and choose "FTP". (See Figure 4.4)

Step3: Type IP address of Raspberry Pi which is mentioned in the chapter "Wireless network setting", username and password before "OK" button is clicked. (See Figure 4.4)

Host: IP address of Raspberry Pi

Port: 21

Username: pi

Figure 4.3

Password: raspberry

File Manager + **>>>** ł + Add a remote location + Add a remote location € FTP Main storage SD card Downloads Add Remote 32.3 GB / 64 5 GB / 15.9 GE 85.7 MB (79 192.168.43.240 Host Local Network Н Á Л 21 Port SMB ● FTP ○ FTPS Audio Videos Images 4.6 GB (782) 0.9 GB (9) FTP FTP Username pi $(\$ SFTP Password ••••• Anonymous Documents New files Apps webDAV 1.6 GB (54) 118 MB (74) 80.1 MB (43) MORE CANCEL ок **L** 3 Cloud Remote Access from ...

Figure 4.4

Figure 4.5

Step4: Copy / move image files from other image folders. (See Figure 4.6)Step5: Paste image files to image_library directory of Raspberry Pi. (See Figure 4.7)We can also delete image file from image_library directory. (See Figure 4.8)

Figure 4.6

Figure 4.7

Figure 4.8

×	1/19			\$	≡	192.168.43	.240	۹	:	×	1/5			÷
	> > Pictu	res		Ĵ	nome 2	> pi > Deskto	p > image_	library	Ĵ	nome	> pi > Des	sktop > im	age_libra	ary Ĵ
	alpha_ruriko.jp 8.30 MB	pg	3/30/2	2016		New 15 items		4/6/	2020		New 15 items			4/6/2020
m	alpha_stmorit	z_train.jpg	3/30/2	2016	ð	2_r.bmp 4.91 MB		3/27/	2020	ð	2_r.bmp 4.91 MB			3/27/2020
	burgundy.jpg 1.11 MB		3/30/2	2016	ð	2.jpg 237 kB		3/17/	2020	ð	2.jpg 237 kB			3/17/2020
	cherry_tomato	o.jpg	3/30/2	2016	ð	14701482357 56.95 kB	194.jpg	4/6/	2020	ð	1470148 56.95 kB	235194.jpg		4/6/2020
	france_field_w 3.28 MB	vpo.jpg	3/30/2	2016						e	germany 1.80 MB	_colors_wp	o.jpg	4/7/2020
	germany_colo 1.80 MB	ors_wpo.jpg	3/30/2	2016										
	paris_flowers. 1.87 MB	jpg	3/30/2	2016										
Сору	X Move Re	I Dele	te Mo	ore		X Cancel		Paste		Сору	X Move	I Rename	D elete	: More

Ownership of Software:

This software belongs to E Ink Proprietary & Confidential Information

6 Appendix

7 Contact Information

For more information, please visit

http://www.eink.com

For sales office addresses, please visit

http://www.eink.com/contact_sales.html

8 Legal Information

• Definitions

The document is a draft version only. The content is still under internal review and subject to formal approval which may result in modifications or additions. E Ink does not give any representations or warranties as to the accuracy or completeness of information included herein and shall have no liability for the consequences of use of such information.

• Right to make changes

E Ink reserves the right to make changes to information published in this document, including without limitation specifications and product descriptions, at any time and without notice.

• Suitability for use

Products described in this document are intended for development purposes only and comes without any warranty. E Ink accepts no liability for inclusion and/or use of E Ink products in commercial products or applications and therefore such inclusion and/or use is at the customer's own risk. In no event shall E Ink be liable for any direct, indirect, incidental, special, exemplary, or consequential damages (including, but not limited to, procurement of substitute goods or services; loss of use, data, or profits; or business interruption) however caused and on any theory of liability, arising in any way out of the use of the software.

Applications

Applications that are described herein for any of these products are for illustrative purposes only. E Ink makes no representation or warranty that such applications will be suitable for the specified use without further testing or modification.

• No offer to sell or license

Nothing in this document may be interpreted or construed as an offer to sell products that is open for acceptance or the grant, conveyance or implication of any license under any copyrights, patents or other industrial or intellectual property rights.

• Trademarks

Notice: All referenced brands, product names, service names, and trademarks are the property of their respective owners.

Version	Date	Pag	Description	Author
1.0	2022/07/05		Initial	Stewark
2.0	2023/06/12		Update Cloud server download operation	Stewark

• Revision History