

# **User Guide Standards**

## 6" ePaper Display (ED060KC1)



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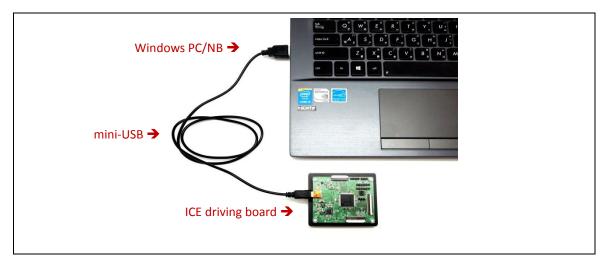
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### Firmware Update SOP

#### 1 Hardware Guide

#### (1) HARDWARE REQUIREMENTS

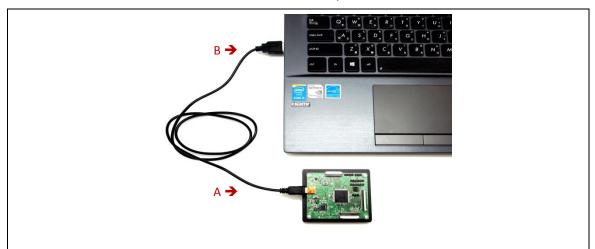
The firmware update requirements included the ICE driving board, mini-USB cable and Windows PC/NB.



#### (2) HARDWARE INSTALLATION

Refer to following figure to setup ICE driving board and connect it to your PC/NB :

- A Connect the mini-USB cable to ICE driving board
- B Connect the mini-USB cable to PC/NB USB port



#### 2 Software Guide

#### (1) SOFTWARE REQUIREMENTS

- Application software ITE\_TCon\_DemoAP\_v2.0.exe required.
- Firmware required:

Please follow ICE Part number(be shown on EVK backside) to choose the corresponding FW(.bin).

Otherwise, the ICE will be inoperable.

• Put the firmware with application software in the same folder.

#### (2) FIRMWARE UPDATE BY APPLICATION SOFTWARE

- Press ITE\_TCon\_DemoAP\_v2.0.exe to open application software.
- Click "connect" button to make sure the software has connected to physical drive.

connect EnMirror T EnFlip	Engineer Features Cancel
Generic Storage RamDisc 1.00	
Searched 1 Doks Panel Widh = 1448 Panel Height = 1022 Image Buffer Address = 0x209FC3 Waveform: (0 Modes, 14 Temperature Segments)	Refresh     Lograde       C     Nutropie     2       C     Statt     Repeat       C     Statt     Statt       Load Image and Display     Y     Start Mode       0     Start Mode     Image and Display       Width     Height     End Mode       En Convert to 3 color     AufuSet       Open File     EnCrWhite       EnChWhite     Set Full Panel

Click "Refresh" and choose the FW option which you need to load:

Please follow ICE Part number(be shown on EVK backside) to choose the corresponding FW(.bin).

Otherwise, the ICE will be inoperable.

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• Click "Upgrade" to load the FW to ICE.

E Ink TCon Demo AP v 20 (没有回答) connet ErNiror F ErNip	Engineer Features Cancel
Generic Storage RamDisc 1.00	[TT8951_V1 1448x1072 DX 6 inch.bin
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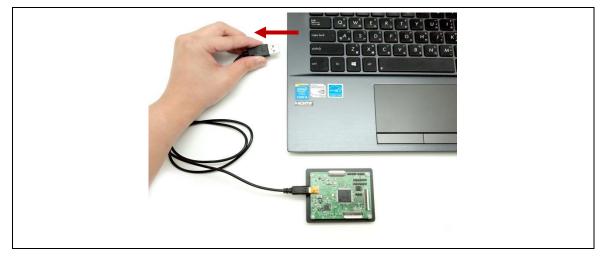
FW upgrade successful, click "OK" button.

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• Click "OK" button to close the AP.

Im Elnk TCon Demo AP v 20	rilg Engineer Features About OK Gancel Triffo51_V1.1446x1072.DX 6 inch.bm Refresh Ubgrade
Pend Hogit - 1972 Tinge Kuffer Address = 0x289FCB Woveform (§ Modes, 14 Temperature Segments) TT955_FW Upgrade Successful II	Display Mode     Centralace       Stadethow     Time Intervie(Seco)       Stadethow     Time Intervie(Seco)       Load Inage and Display     Start Mode       0     0       Victorin     Height       End Node     End Node       End Node     End Node       End Node     End Node       End Convert to 3 color     AutoBet       Open File     Sec Full Panel       Display     Display

• Pull out the mini-USB cable, firmware update finished.



## ePaper Display Update SOP

#### **1** Introduction

E Ink's ICE demo kit is intended to highlight the features and benefits of the 6" ePaper display (EPD) display. This low power ePaper display has a resolution of 1072x1448 and uses E Ink technology which allows each pixel to show two color states – black and white. This document will provide details on how to load custom images onto the 6" EPD (ED060KC1).

Included in the ICE demo kit are an ICE driving board, a mini-USB cable, and the 6" EPD display.

#### (1) Package Contents

This demo kit contains the following:

- ICE driving board
- 6" EPD panel
- Mini-USB cable



Demo Kit Contents

Specification

Item	Specification	
TCON	IT8951 DX	
TCON Solution	Hardware TCON	
E Ink Display Panel		
Dimension (W × H × D, unit: mm)	101.8(W) × 138.4(H) × 1.01(D)	
Shape	Rectangular	
Resolution	1072 (H) × 1448(V)	
Controller Board		
Input	5Vdc (USB), power on when connected to PC	

#### 2 Hardware Guide

This section describes the hardware setup of the 6" EPD demo kit

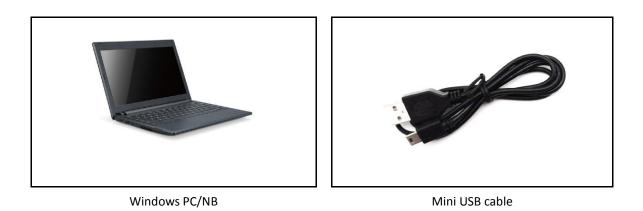
#### (1) Hardware Requirements



ICE Driving Board



EPD panel

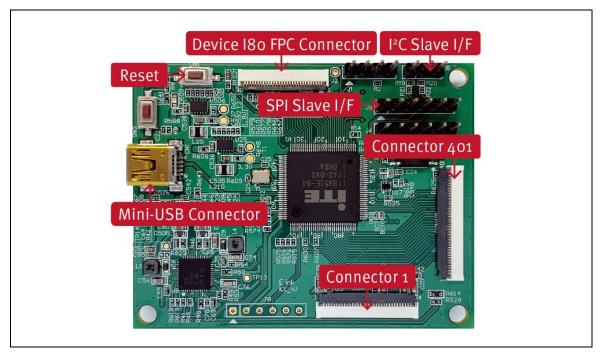


**Minimum PC Requirements** 

CPU	Pentium III 800 MHz or later
RAM	128MB or greater
Required Software	Windows 7 or newer
Interface	USB port

#### (2) Demo Kit Hardware Description

The 6" EPD demo kit includes an ICE driving board. The ICE driving board and E Ink display panel are connected via a 34 pin connector (connector 1). The mini USB port on the demo kit supplies data and power to the ICE driving board and E Ink panel. Using the E Ink PC application, users can send image data to the board or update settings.



ICE driving board Function

#### (3) Hardware Installation

The 6" EPD demo kit is connected to a PC/NB via a mini USB cable. Please follow the steps to install demo kit and 6" EPD display:

- EPD FPC need to be folded, FPC golden finger down. Attach the 6" panel to ICE driving board connector 1. (Figure 2-3-a)
- Connect the mini-USB cable to ICE driving board. (Figure 2-3-b)
- Connect the mini-USB cable to PC/NB (Figure 2-3-c)

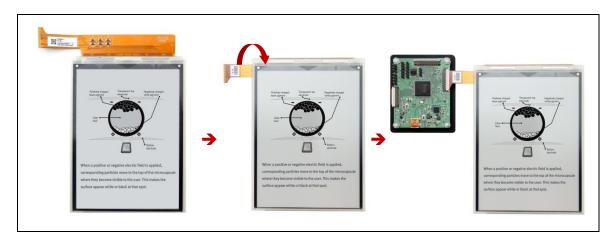


Figure 2-3-a



Figure 2-3-b



Figure 2-3-c

#### 3 Software Guide

#### (1) Software Requirements

Application software ITE\_TCon\_DemoAP\_v2.0.exe required.

#### (2) E Ink APPLICATION Display mode Introduction

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Generic Storage RamDisc 1.00		
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#### • What is a Waveform?

A predefined sequence of voltages applied to the E Ink material to switch it from one gray tone to another gray tone.

Paired to display by production lot, display size, and waveform type.

Standard waveforms ensure proper product performance and reliability.

#### • The waveform contains the following WF modes:

#### > MODE 0 — INIT

Initialize is used to completely clear the display, if it's left in an unknown state (i.e. if the previous image has been lost by a re-boot)

➢ MODE 1 ─ DU

Direct update Non-flashing waveform that can be used to update. It can update any changed gray tone pixel to black or white only. This waveform can be used for pen or other fast menu updates. It only updates changed pixels.

➢ MODE 2 ─ GC16

Grayscale Clear, 16 Levels. A "flashy" waveform used for 16 level grayscale images. This provides the best image appearance. All the pixels are updated or cleared.

#### ➢ MODE 3 ─ GL16

The GL16 waveform is used to update anti-aliased text with reduced flash. GL16 should be used only with Full Display Update, the entire display except pixels staying in white will update as the new image is written. The GL16 waveform has 16 unique gray levels.

#### • WF Guidelines Overview

User Experience	Description	Experience-Enabling Waveform Mode
Interacting	Fast updates Pop-up menu Typing Pen input Cursor	DU – DIRECT UPDATE DU DRIVES TO WS OR DS DU: 260MS UPDATE TIMES (85Hz FRAME RATE) NO FLASH
Viewing	HIGH-QUALITY IMAGES	<b>GC16</b> – Grayscale Clear (16 level) Drives between any (4-bit) gray tone 450ms update time (85Hz Frame Rate) Medium Flash
Reading north idea nout by thinking	Anti-aliased text Images Icons	<b>GL16</b> – GRAYSCALE (16 LEVEL) DRIVE BETWEEN ANY (4-BIT) GRAY TONE 450MS UPDATE TIME (85Hz FRAME RATE) LOW FLASH

- (3) Display selected image to EPD
- Uploading Image

When connected to a PC/NB, the interface, AP, could upload pictures in .BMP format from PC/NB to 6" EPD through mini USB. Please notice: the picture format needs to be fit the resolution of EPD.

- Procedures are as following:
  - Run "ITE\_TCon\_DemoAP\_v2.0.exe" software
  - Click "Connect" button to make sure the software has connected to physical drive (Figure 3-2-a)
  - > Display EPD operation by USB interface contains the following steps:
  - Check AutoSet Item to auto set the parameters (Resolution, mode) (Figure 3-2-b)
  - Click "Open File.." to open a file browser to select an image (Figure 3-2-b)
  - Display selected image to EPD (Figure 3-2-c)

Genetic Storage RamDio: 1.00  Searched 1 Dida Padi White + 123 Padi White		EnFlip Engineer Features	About OK Cancel	
Secreted 10dds Pand Hoff + 325 Pand Hoff + 325 Wortform: (I) Modes, 14 Temperature Segments) Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success Success	Generic Storage RamDisc 1.00		•	
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C NuBrigne 2 ■ C SideShow The Intervel@keck       C SideShow The Intervel@keck     Repeat Start       C Load Image and Display     X       X     Y       Start Mode       0     0       Width     Height       End Mode       En Convert to 3 color     AutoSet       Open File       Enc/White     Set Ful Panel	Panel Height = 825 Image Buffer Address = 0x104860	Success		
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X Y Start Mode Viddh Height End Mode End Start End Mode End Start		C slideShow Time Interva	(Secs)	
X Y Start Mode Viddh Height End Mode End Start Fide End Mode End Start Fide End S		Load Image and Display		
Width Height End Mode		XY	Start Mode	
Open File		-	ht End Mode	
Open File				
Enclwhite E Set Full Parel		En Convert to 3	color 🗖 AutoSet	
		Open File		
Display		EnCkWhite	Set Full Panel	
		Display		

Figure 3-2-a Software connected to physical drive

Image Buffer Advess       Depler of Enrip         Generic Storage RatDio: 1.00       Refeath         Parel Vect 1 Dists       Refeath         Value of the Log 200       Refeath         Value of the Log 200       Start         Load Image of Display       Value of the Log 200         Care       Care
e Display? monly referred to as s mean? Bistable an E Ink screen will be wer sources are wer only when or example, when over is only needed no ever is only needed no ever is only needed ige but no power is while reading the able when an eReader there is still an image fast, with a traditional

Figure 3-2-b Load image to demo board

	EInk TCon Demo AP v 20
	Generic Strage RenDisc 1.00     Refresh     Lbprade       Searched 1 Dela Parel Hoght = 200 Parel Hoght = 200 Rendright Reddes = 0°x (0.460 Widerform (\$Mode, 1+" emperature Segments) Decode image Time = 3962 Sendrg Image File to Device.     Refresh     Lbprade       C     MulEright = 2 Sendrg Image File to Device.     Centralize Centralize Sendrg Image File to Device.     Start       Lead Image Time = 965     V     Y     Start Mode Start       Lead Image Time = 965     P     2 Videh       Lead Image Time = 302     Cincralize Centralize       Lead Image Time = 965     Start
Di	Splay Selected Image to EPD Cooper File.

Figure 3-2-c Display the image

Button/Option	Description
Connect	Tell the software to connect to the EPD demo kit
Open File	Open a file browser to select an image
AutoSet	Auto set the parameters (Resolution, mode)
Display Image	Display selected image to EPD

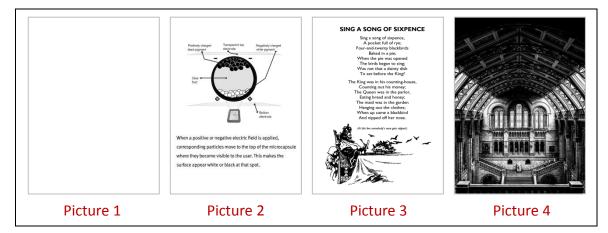
#### (4) Slide Show Function

• SELECT THE DISPLAY IMAGE

Named the folder "SlideShowImages" that including the pictures you want to display, it needs to be in the same folder with the "ITE\_Tcon\_DemoAP\_v2.0.exe"

🎉 SlideShowImages	2016/11/14下午	檔案資料夾		
Fink ITE_TCon_DemoAP_v2.0.exe	2015/11/2 下午 0	應用程式	2,978 KB	

#### For example: "SlideShowImages" contains 4 pictures:



• CONNECTING TO THE ICE driving board

The AP is connecting to the demo kits successfully.

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Width Height End Mode	Search	Width = 1200	Constant of the set of the s	act	

SLIDE SHOW DISPLAY (NOT REPEAT)

Operating Steps:

- Choose "SlideShow" option
- Press "Start" button

EInk TCon Demo AP v2.0	Engineer Features     About     OK       Engineer Features     Cancel       Refeatin     Upgrade       Controllate     Controllate       Controllate     Start       Conditioner     Start       Conditioner     Start       Conditioner     Start       Conditioner     Start       Conditioner     Dipole       Controllate     Controllate       Conditioner     Start       Denote     End Mode       En Convert to 3 color     AutoSet       Open File.     Open File.       EncOtWhite     Set Ful Panel       Dejay     Dipole	
Clear	uipay	

Image order: Picture 1 Picture 2 Picture 3 Picture 4

• SLIDE SHOW DISPLAY (REPEAT)

Steps:

- Choose "SlideShow " option
- Check "Repeat" option
- Press "Start" button

503 1	E Ink TCon Demo AP v 2.0	Engineer Features About OK Cancel	
	Generic Storage RamDisc 1.00		
	Searched 1 Doks Penel Width = 1200 Penel Height = 825 = = +104800 Waveformt (8 Modes, 14 Temperature Segments)	Refielh Upgrade	
	Clear	James J.	
l Ima <sub>i</sub>	ge order: Picture 1 ► Pictu	re 2 ► Picture 3 ► Picture 4	1

#### 4 Troubleshooting

Below list is commonly asked question:

Number	Name	Description
1	6" EPD demo kit is not	Cause: USB cable is damaged
	detected by the PC/NB	Solution: Replace the USB cable

#### 5 Contact Information

For more information, please visit

http://www.eink.com

For sales office addresses, please visit

http://www.eink.com/contact\_sales.html

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#### Revision History

Version	Date	Page	Description	Author
0.1	2016/12/29		Initial	Joseph Wu
0.2	2020/03/24		Revise "FW Update"	Debby Lin
0.3	2021/03/22		E Ink APPLICATION	Debby Lin
			Display mode	