



User Guide Standards

**31.5" E Ink Spectra™ 6
ePaper Display (ED2208-QBA)**



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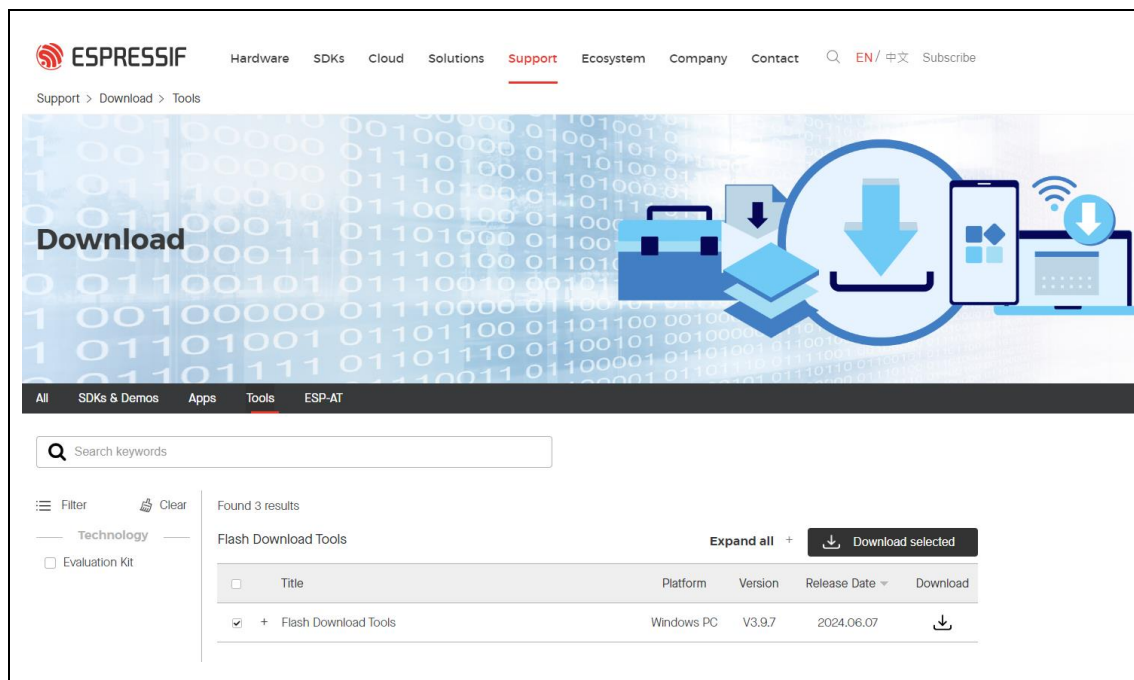
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Firmware Update SOP

1 Preparatory Work Guide

(1) Download Firmware Update Tool

<https://www.espressif.com/en/support/download/other-tools>

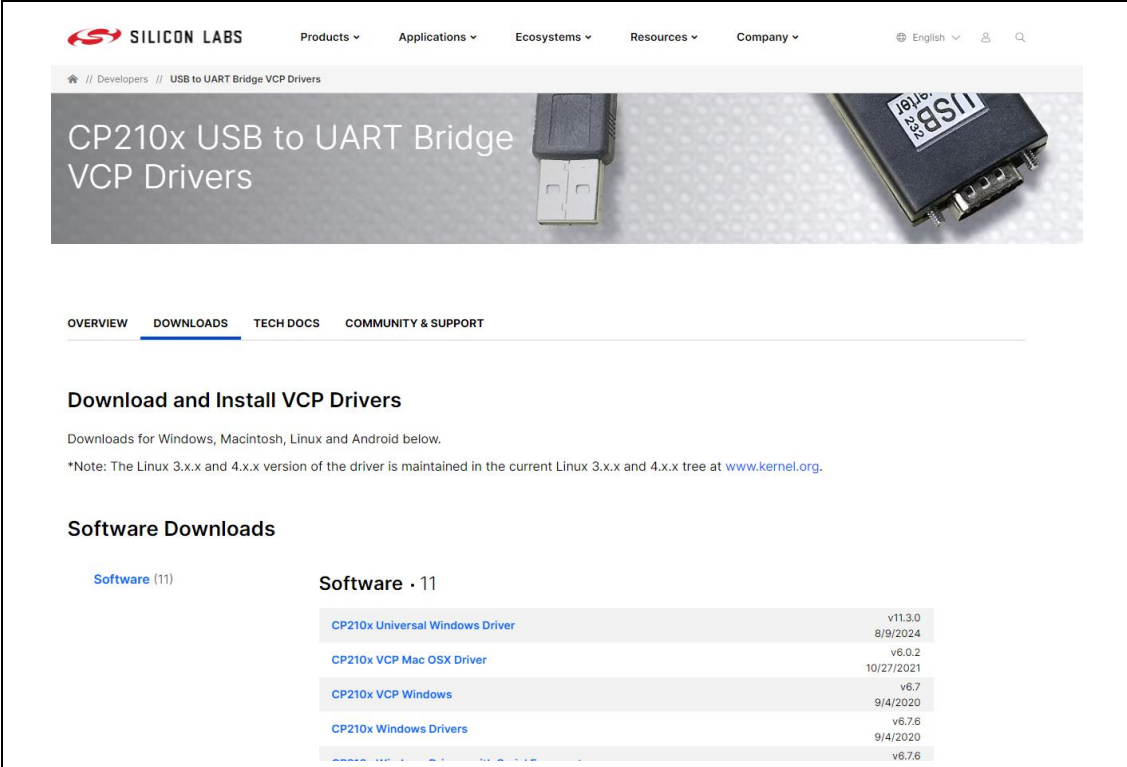


ESPRESSIF Website

(2) Download Driver

Refer to the guidelines in following SILICON LABS website to download and set the driver of “CP210x USB to UART Bridge VCP Drivers”.

<https://www.silabs.com/developers/usb-to-uart-bridge-vcp-drivers?tab=downloads>



The screenshot shows the Silicon Labs website page for CP210x USB to UART Bridge VCP Drivers. The page has a navigation bar with links for Products, Applications, Ecosystems, Resources, and Company. Below the navigation bar is a breadcrumb trail: // Developers // USB to UART Bridge VCP Drivers. The main heading is "CP210x USB to UART Bridge VCP Drivers". Below the heading is a sub-navigation bar with links for OVERVIEW, DOWNLOADS (selected), TECH DOCS, and COMMUNITY & SUPPORT. The content area is titled "Download and Install VCP Drivers" and includes a note about Linux versions. Below this is a "Software Downloads" section with a list of software items.

Software	Version	Release Date
CP210x Universal Windows Driver	v11.3.0	8/9/2024
CP210x VCP Mac OSX Driver	v6.0.2	10/27/2021
CP210x VCP Windows	v6.7	9/4/2020
CP210x Windows Drivers	v6.7.6	9/4/2020
	v6.7.6	

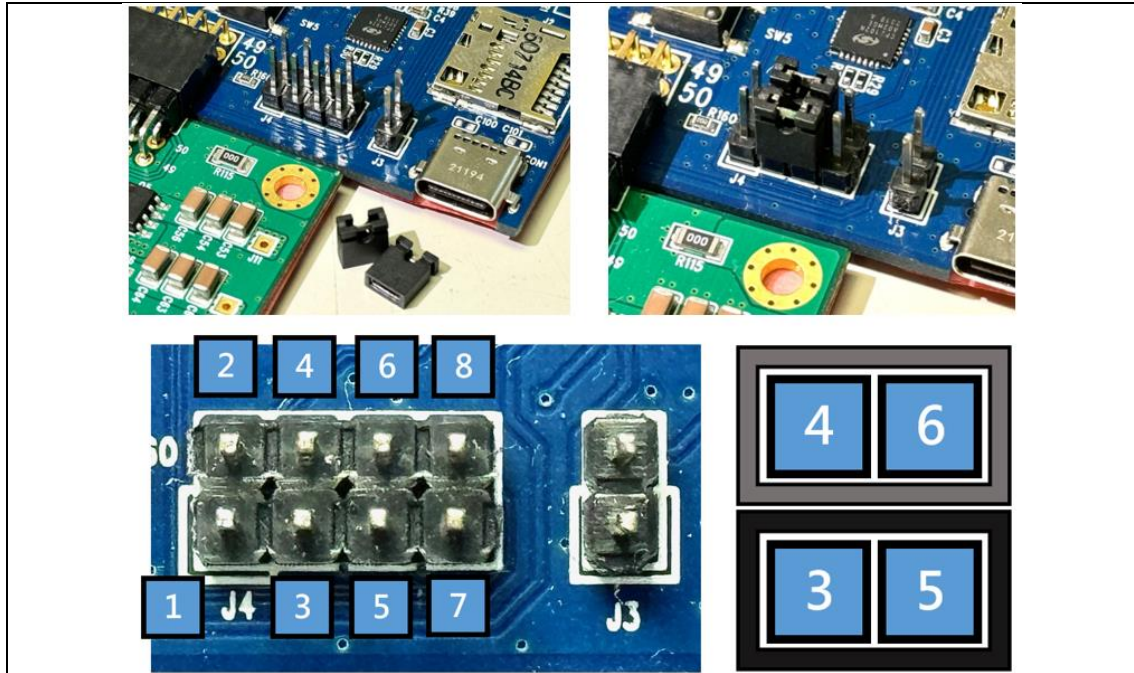
SILICON LABS website

2 Software Guide

(1) Firmware Update Guide

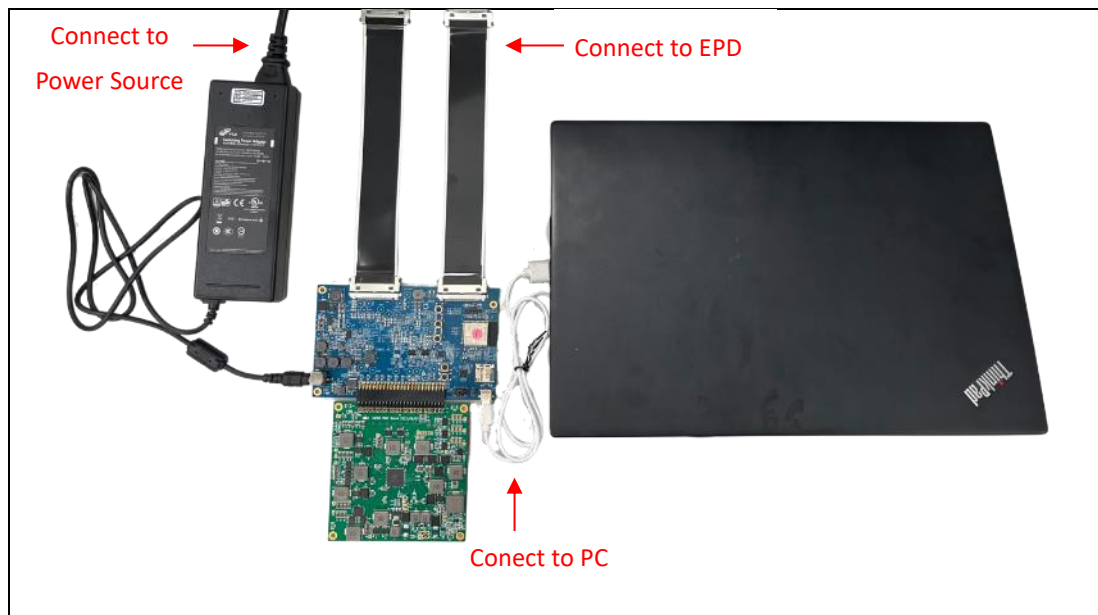
Please follow the below picture to set jumpers on the J4 of the motherboard.

(UART mode)

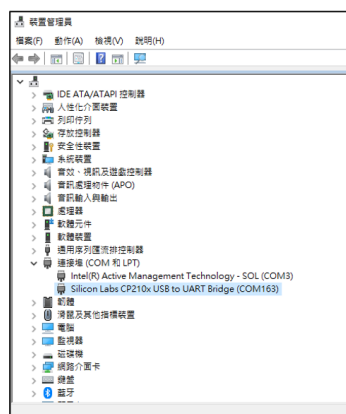


J4 - 8PIN Jumper (UART mode)

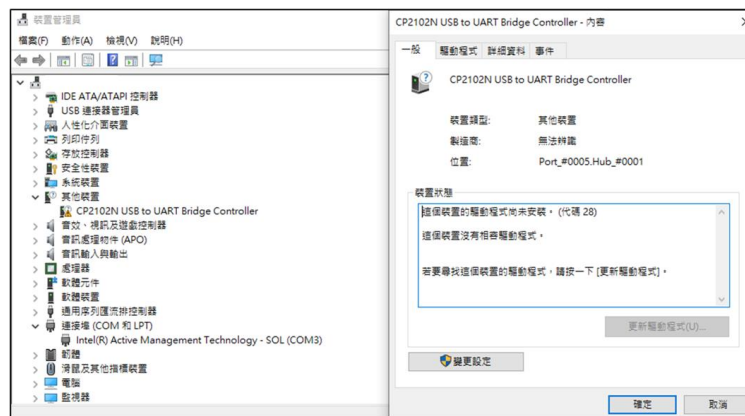
The motherboard is connected to a PC via a USB-A to USB-C cable and a 12V Adaptor.



Open “Device Manager”. A new device called “Silicon Labs CP210x USB to UART Bridge” should be on the list of the PORTS (COM & LPT)

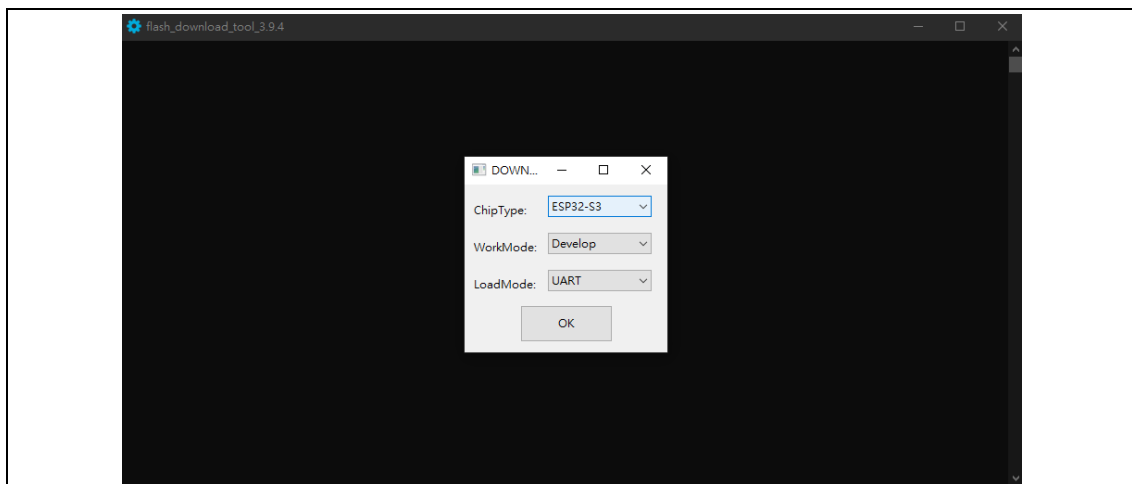


The device is successfully recognized.



If the device cannot be recognized, please go back to step 1.-(2) to install the driver.

- Execute “Flash Download Tools”
- Setting:
ChipType: ESP32-S3
WorkMode: Develop
Load Mode: Load Mode

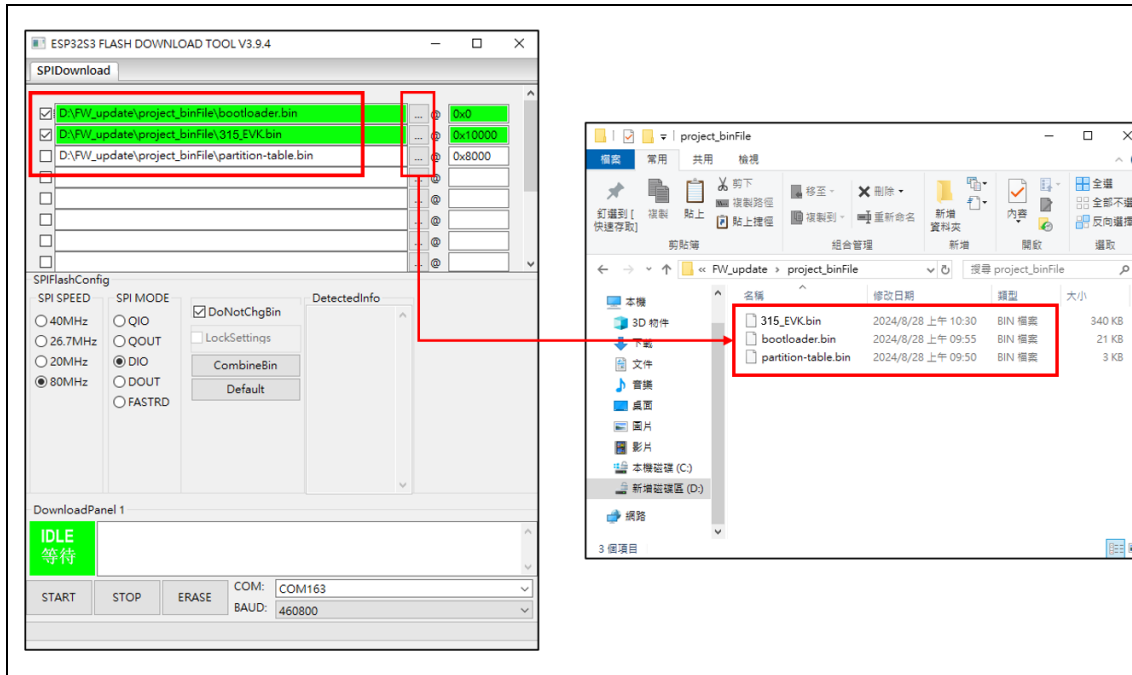


Flash Download Tool

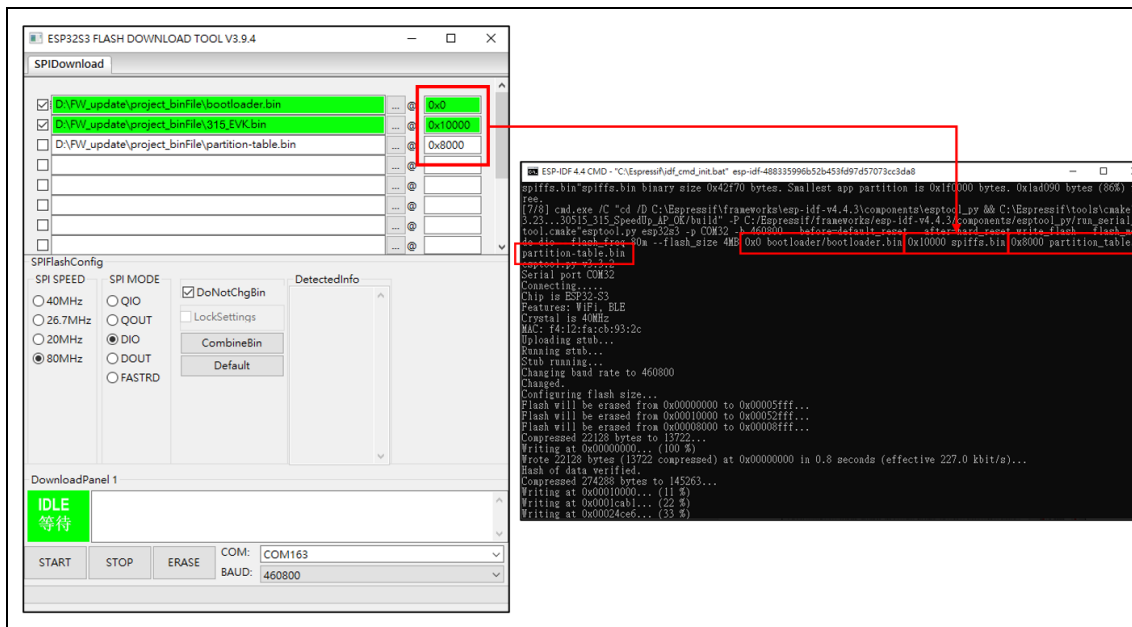
There are 3 binFiles: bootloader.bin, partition-table.bin, and xxx.bin(yyy will be changed by your project name or be shown “spiffs.bin”).

- Click “...” button to select the “binFile”.
(bootloader.bin/ 315_EVK.bin/ partition-table.bin)

- Tick the check box, and the background color will change to green.



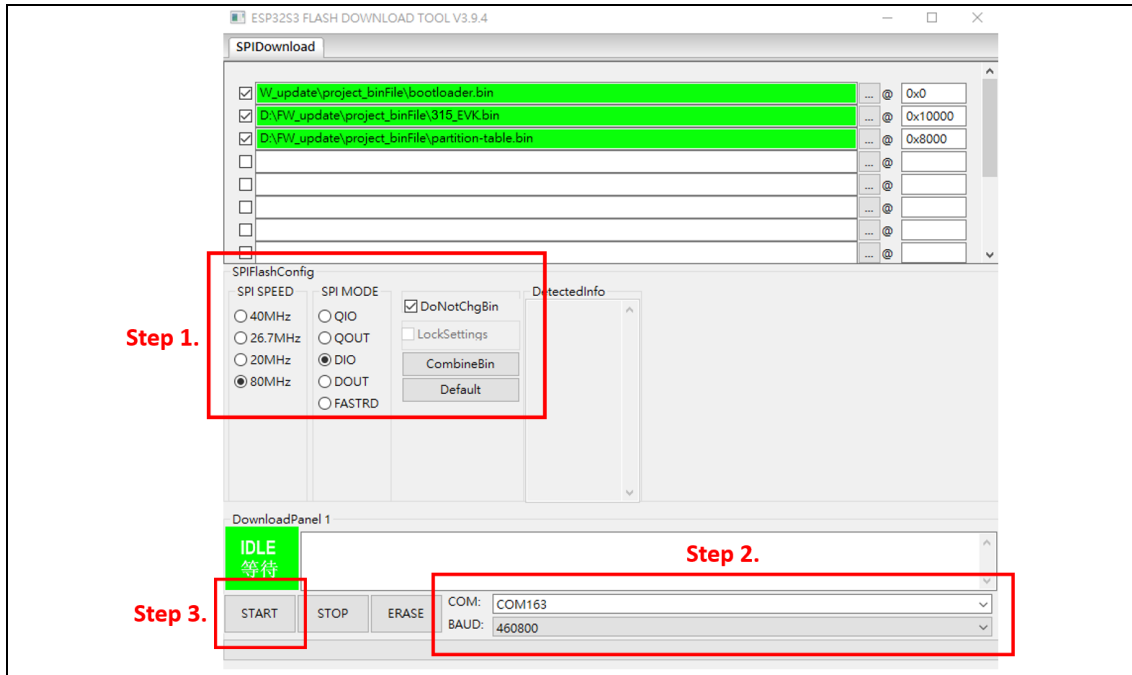
- It would show the hexadecimal memory address of the binary file in the log.
Please enter the corresponding hexadecimal memory address into the AP table.
- bootloader.bin : 0x00 ; xxx.bin : 0x10000 ; partition-table.bin : 0x8000 。



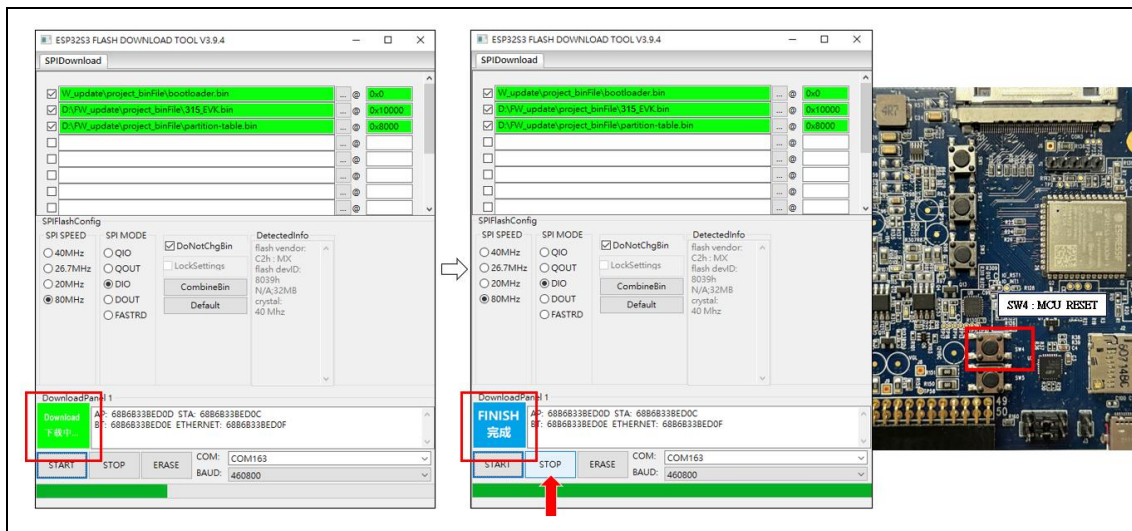
Setting SPI Flash Config.

- SPI Flash Speed: 80MHz / SPI Mode: DIO /Check "DoNotChgBin"
- Choose "UART COM port" and "Buad"(default setting is 460800).

- Press “START”.



- There is a green bar to show the progress rate.
- Press “STOP” and press “SW4” which is on the main board to restart ESP32.



ePaper Display Update SOP

1 Introduction

31.5" demo Kit, with Spectra 6 ePaper display allows E Ink clients to access hardware and software 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.

The 31.5" (ED2208-QBA) EPD is a reflective electrophoretic E Ink Spectra 6 technology display module based on an active matrix TFT substrate. It has 31.5" active area with 2560x1440 pixels and 16:9 aspect ratios. The display is capable to display images at Black/White/Red/Yellow/Blue/Green depending on the display controller and the associate waveform file it used.

The kit allows E Ink clients to experience loading and viewing custom images on EPD. The use of MCU board to drive an E Ink EPD is demonstrated with the kit.

(1) Package Contents

This EVK Demo kit contains the following:

- 31.5" EVK MCU driving board and E Ink display adapter board.
- Adaptor 12V for MB
- 2pcs 51 pin FPC
- 31.5" EPD (EPD size is decided by order)
- Bridge FPC



EVK Demo Kit Contents

Specification

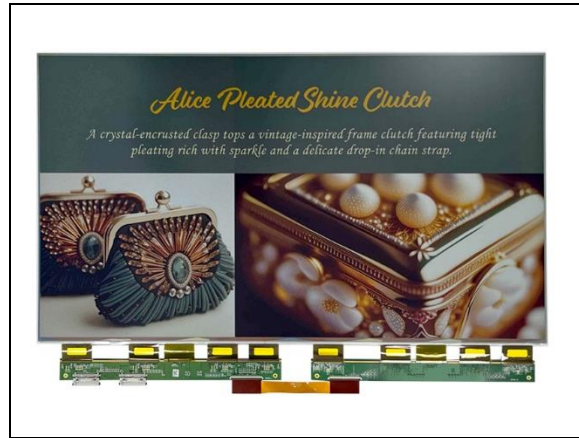
Item	Specification
MCU	ESP32-S3
TCON Solution	Hardware TCON
E Ink Display Panel	
Dimension (W × H × D, unit: mm)	703.52 (W) x 406.48 (H) x 0.848(D)
Shape	Square
Resolution	2560(H) x 1440(V)
Controller Board	
Input	Adaptor 12V for MB

2 Hardware Guide

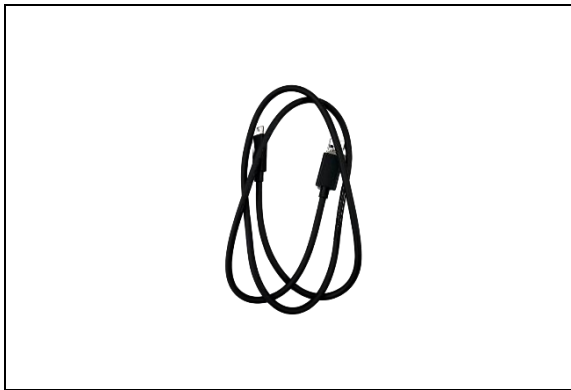
(1) Hardware Requirements



MCU board and display adapter



EPD panel



USB-A to USB-C cable



Windows PC

Minimum PC Requirements

CPU	Pentium III 800 MHz or later
RAM	128MB or greater
Required Software	Windows 10
Interface	Type-C

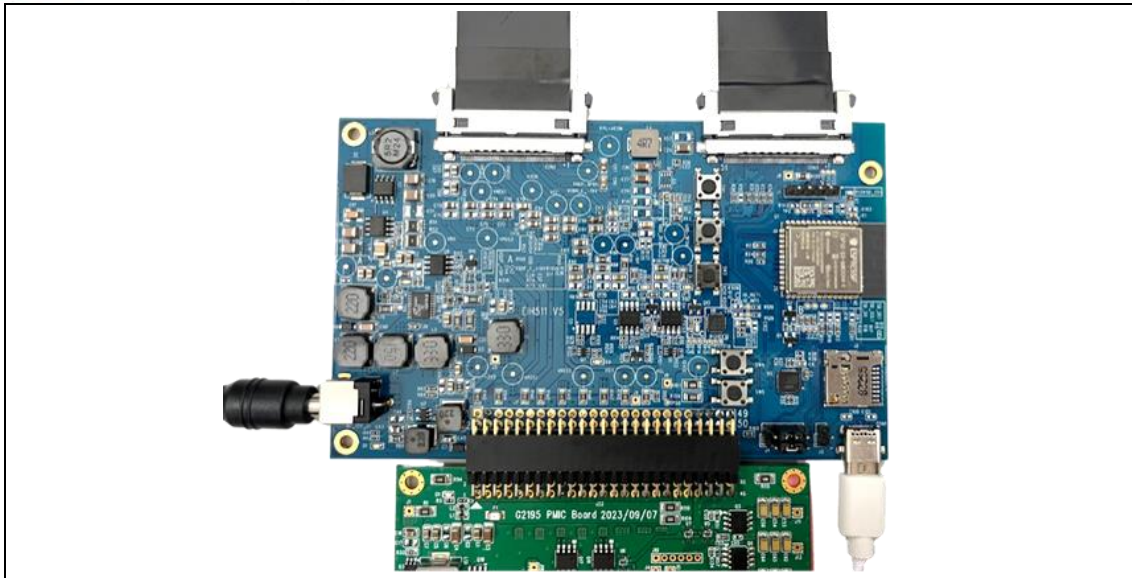
(2) Demo Kit Hardware Description

The 31.5" Demo Kit includes an MCU board and an E Ink display adapter board. The USB-C port on the demo kit supplies data to the MCU board. Adaptor 12V for MB supplies power to E Ink panel. Using the E Ink PC application, users can send image data to the board or update settings.



Demo Kit

On the MCU board and power board, there is a power LED (D1) indicating that the power is ready. When an action is in progress, three LEDs (D8/D10/D11) on the main board will light up. Once these three action LEDs turn off, it indicates that the action has been completed.



MCU Board for Demo Kit

* You must wait for all three action LEDs (D8/D10/D11) to completely turn off before proceeding with the next action.

Four push button switches are also on the MCU board. The table below provides a short description of the functions for each button.

Description of button functions

Button	Function
SW1	Single step to show image
SW2	Slide Show
SW3	White image
SW4	Reset ESP32
SW5	X

(3) Hardware Installation

Make sure the 31.5" demo kit and 31.5" EPD are connected properly via 51-pin FPC, and use the bridge FPC to connect the left and right PCBAs at the bottom of the panel.

The 31.5" demo kit is connected to a PC via a USB-A to USB-C cable. The PC requires a USB driver to be installed on the PC.

Connect one end of USB-C cable to the 31.5" demo kit and other end to a USB port on a PC. And connect the 12V Adaptor to the demo kit(DC_12V_J1).



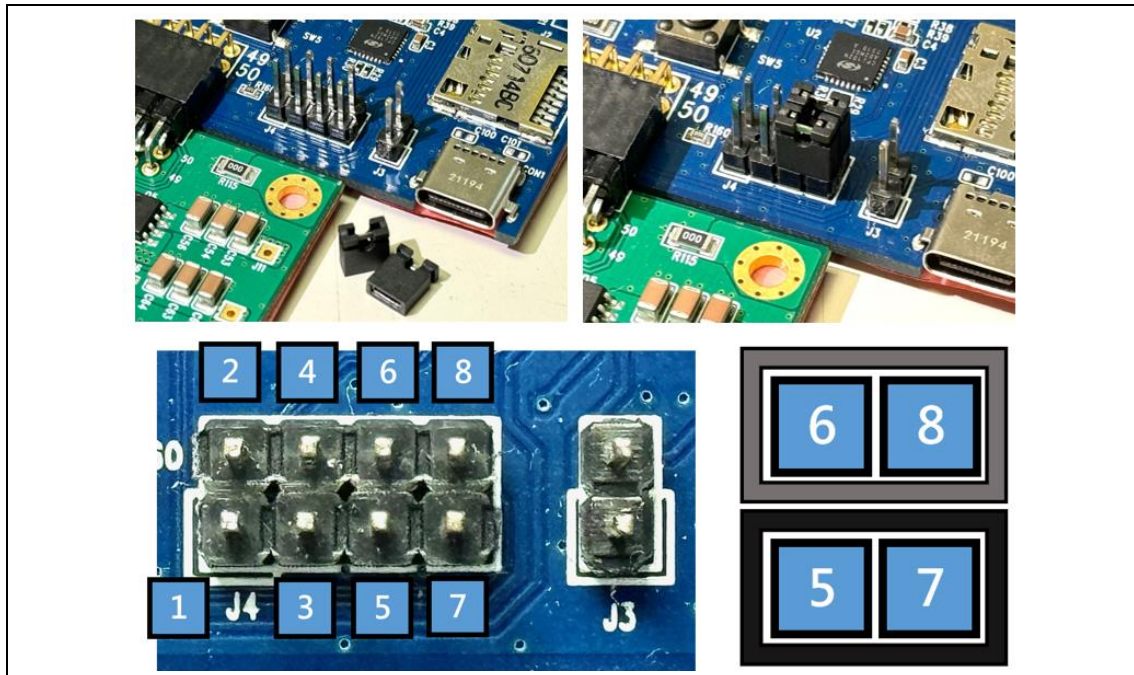
* For regular use, simply connect the 12V power supply. Use the USB-C connection only if you need to update the firmware or upload an image.

3 Software AP Guide

(1) Update Image

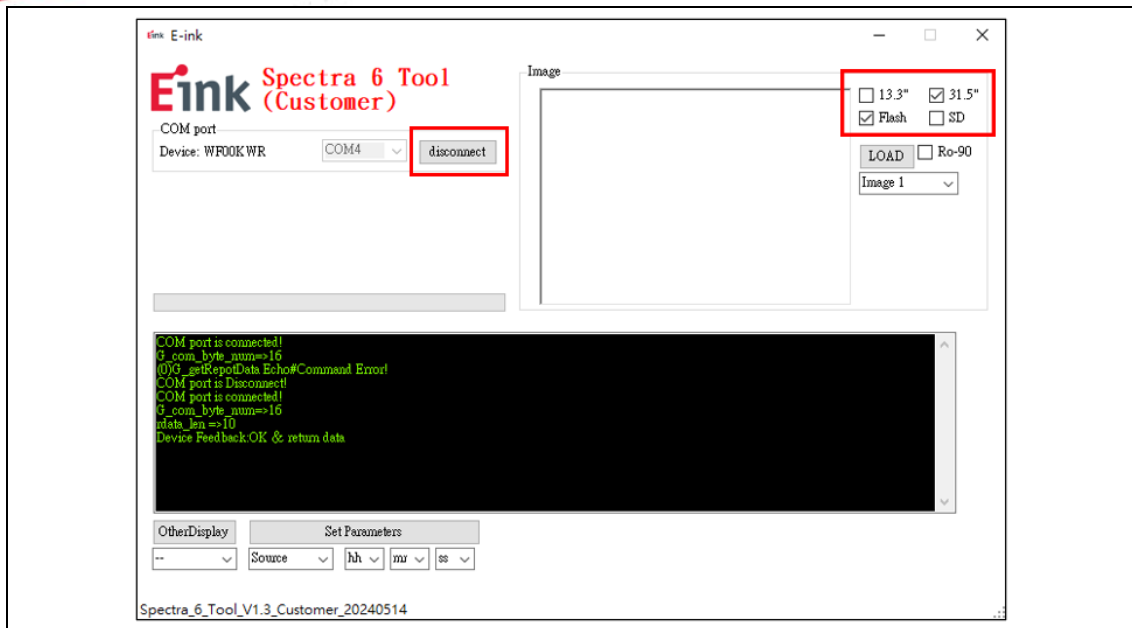
Please follow the below picture to set jumpers on the J10 of the motherboard.

(USB AP mode)

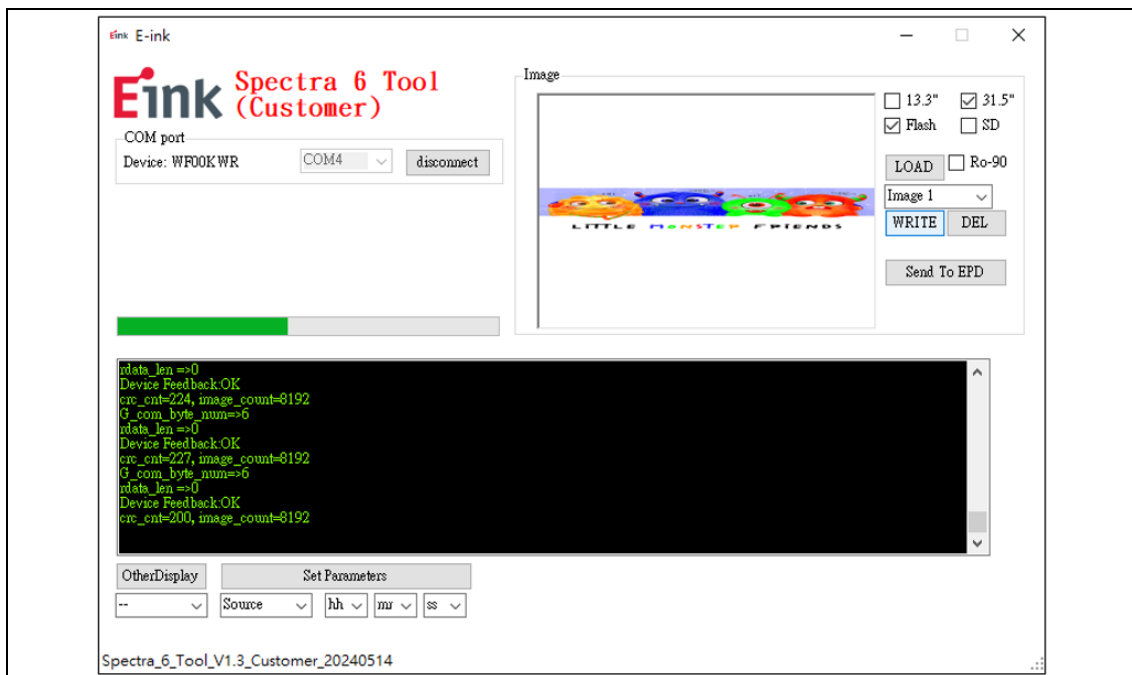


J4 - 8PIN Jumper (USB AP mode)

- Execute Spectra_6_Tool_Vx.x_Customer_202xxxxx.exe
- If connection is correct, the COM port number will show up.
- Select the COM port and press "connect".
- Select "31.5" & "Flash".



- Press "LOAD" to select an image.
- Select "Image X" to decide display sequence.
- Press "WRITE" to update image into the kit or Press "DEL" to delete image X.

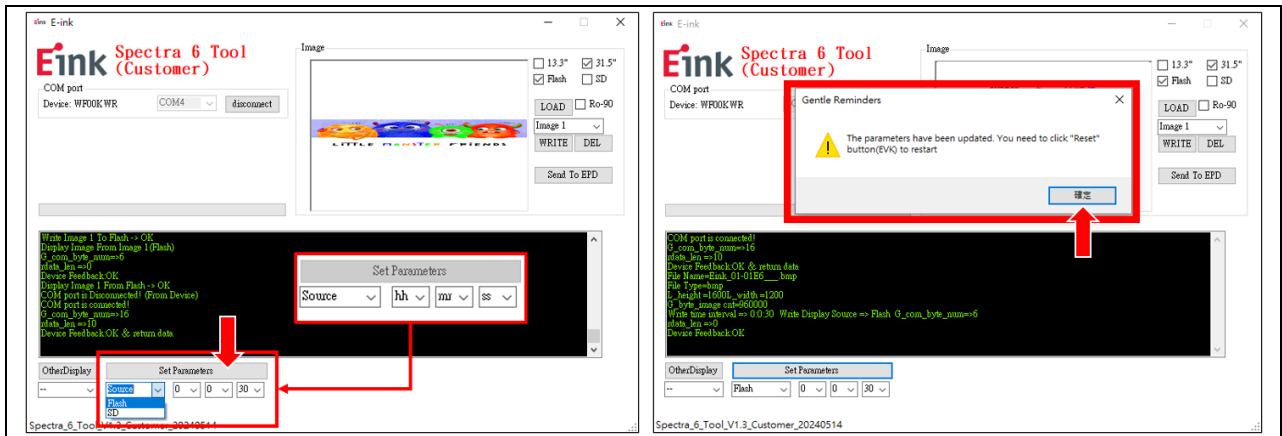


* The 2560x1440 image must be processed through HGD before loading into the flash.

And you could connect the EPD with the EVK, and select "Image X", press "Send To EPD" to display Image X on EPD.

(2) Set Slide Show Update Time

- The default setting of the slideshow update time is 20 seconds.
- Please select “Flash” and select “hh/mr/ss” in the “Set Parameters”.
- Press “Set Parameters”, and will show a reminders window on the AP. Then press the button of “SW4” to reset MCU which is on the MCU board, and the setting will be successful after pressing “enter” on the AP.



After all image are updated, you should press “disconnect” to close AP connection.

4 Troubleshooting

Below lists commonly asked questions.

Num	Name	Description
1	31.5" demo kit is not detected by the PC	Cause: USB cable is damaged
		Solution: Replace the USB cable
2	Demo kit connection fails	Cause: Progress bar is not completed
		Solution: Disconnect the demo kit from USB and restart Spectra_6_Tool_Vx.x_Customer_202xxxxx.exe

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

6 Legal Information

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- Revision History

Version	Date	Pag	Description	AuTHOR
0.1	2024/10/30		Initial	Tom