

# **User Guide Standards**

## 2.9<sup>"</sup> ePaper Display (VC2207-BJB)



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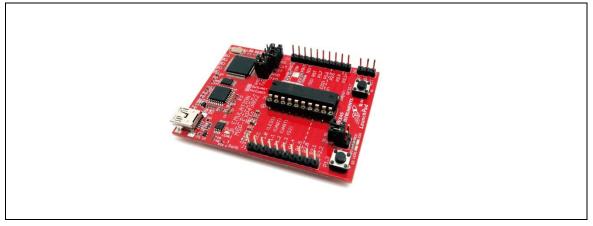
### Firmware Update SOP

#### **1** Hardware Guide

#### (1) Hardware Requirements

Buy a set of MSP-EXP430G2 from Digi-Key

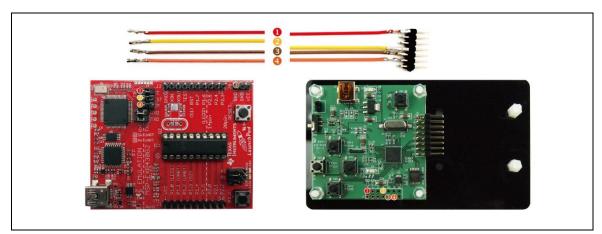
You will get following stuffs in the package



MSP-EXP430G2

#### (2) Hardware Installation

The programmer need the jump line as the picture below



Connect to MSP430 and HULK MCU board

- Please connect the Dupont line from J3 (VCC pin) of MSP430 LaunchPad to J1's 2nd pin of HULK
- Please connect the Dupont line from J3 (TEST pin) of MSP430 LaunchPad to J1's

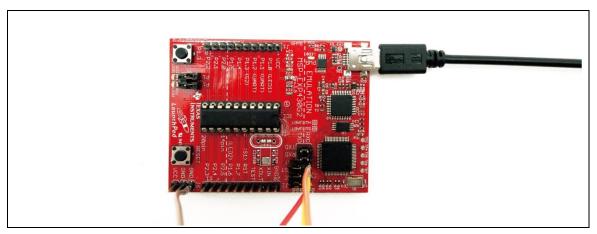
8th pin of HULK

- Please connect the Dupont line from J3 (RST pin) of MSP430 LaunchPad to J1's 11th pin of HULK
- Please connect the Dupont line from J6 (GND pin) of MSP430 LaunchPad to J1's 9th pin of HULK

Please pay attention! It must remove the HULK's adapter board when updating Firmware.

When you update Firmware, please confirm if the D2(power indicator) or D2(power indicator) and D1(data indicator) of HULK are lighted.

- It can update Firmware when indicators are lighted.
- If the indicators are not lighted, please confirm the connect again.



Refer to following figure to setup MSP-EXP430G2 and connect it to your PC

Connect to PC

#### 2 Software Guide

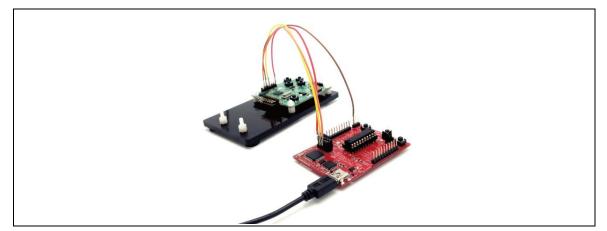
#### (1) Software Requirements

Refer the guideline in following FET-Pro430 Lite website to download and setup driver of MSP-EXP430G2

https://www.elprotronic.com/pages/downloads

FET-Pro-430	
Inst. package for FET-Pro-430, includes GUI, DLL, and supporting material. Standard. V3.51 (TI-DLL V3.14.00.00) (21.Jun.2019)	
Inst. package for FET-Pro-430-LITE, includes GUI, and supporting material. Lite. V3.51 (TI-DLL V3.14.00.00) (21.Jun.2019)	

#### Refer to following figure to connect MSP-EXP430G2 with your PC and HULK together.



Connect to PC

#### (2) Firmware Update by Application Software

Press drop-down menu "Microcontroller Type" to select a MCU model MSP430F5502

Please check "Port USB Automatic" to select 4-wires

OpenCode File > C2_Example tot SN File Microcontroller Type Sumpli MSP430F550 MSP430F5502 Tark Tark Tark Balance BSL Selected Denice Information ReAd. 6144 bytes: FLASH - 24 kB: Report Read Read file Code File Co	CUserrywoou InDestopridemo ki     Cuserrywoou InDestopridemo ki     Source Internet Adapter     Cover Device Internet Adapter     Cover Device Internet     Cover Device	Blow Seculty Fue Enable BLOW FUSE Device Action F Robod Code Fie F Enable Blank Check AUTO PROG. Verily Seculty Fue ERASE FLASH BLANK CHECK WRITE FLASH VERILPY FLASH VERILPY FLASH READ / COPY	
Port: USB Automatic JTAG (4-wires)	Erase / Write memory option:		

Press "Open code file" button to select a firmware file (.txt)

Press "AUTO PROG" button to update the firmware into MCU

SN F76 Group (18743)F56 WSP43)F56 Total Selected Device Infomation Robot - Statuse Statuse Total Balance 0 Statuse Selected Device Infomation Robot - Statuse Robot - Statuse Statu	C CUVertyacou KDesktoptdemo ki  Power Device from Adapter Usidage POWER ON/OFF OOV Device Serialization  Device Serialization  Periode Serialization  Neet Model Gincup Revision.  Neet SNI (0000000  Format: yyyy1224	Blow Seculty Fuse Blow Fose Blow Fuse Blow Fuse Blow Fuse Blow Fuse Blow Fuse Blow Code Fie Enable Blark Check Weity Seculty Fuse BLANK CHECK WRITE FLASH WRITE FLASH WRITE FLASH ERAD / COPY	
Port: USB Automatic JTAG (4-wires)	Erase / Write memory option: "All Memory "		

Show the Pass is firmware update ok.

SN File Microcontroller Type Group (NSP430F5602) Target: MSP430F5602 BSL: Selected Device Information RAA4 - 5144 byter: FLASH - 24 kB: Report		Blow Seculy Fure           IF Enable           BLOW FUSE   Device Action           P Enable Code File           IF Enable Blank Deck           AUTO PROG           Verity Security Fure           ERASE FLASH           BLANK CHECK           WRITE FLASH           Veritie Sin / Model           VERITY FLASH           BEAD / COPY
Port: USB Automatic JTAG (4-wires)	Erase / Write memory option: "All Memory "	AUTO PROGRAM

## ePaper Display Update SOP

#### **1** Introduction

Hulk - demo kit, with 2.9" e-Paper display(EPD) - VC2207-BJB, 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.

2.9" EPD is suitable for various applications, e.g. E-badge

The low power consumption of the VC2207-BJB makes it possible to create battery-less designs and utilize mainstream energy harvesting techniques.

An All-in-one IC is embedded in the EPD, it include source/gate driver, TCON(Timing controller), PMIC(power management IC) and Temp. sensor. It allows users to rapidly design systems by using E Ink displays.

The kit allows E Ink clients to experience loading and viewing custom images on 2.9" EPD. The use of MCU board to drive an E Ink EPD is demonstrated with the kit.

IAR Integrated Development Environment (IDE) is adopted to write, download, and debug an application.

#### (1) Package Contents

This demo kit contains the following:

- E Ink demo kit: MCU driving board and E Ink display adapter
- 2.9" EPD
- Mini USB cable



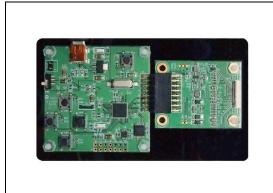
#### Demo Kit Contents

#### Specification

Item	Specification
МСИ	MSP430
TCON Solution	Hardware TCON
E Ink Display Panel	
Dimension (W × H × D, unit: mm)	50.22(W) × 80.2(H) × 0.741(D) (W/PF)
Shape	Square
Resolution	200 (H) × 300(V),
Controller Board	
Input	5V(USB), power on when connected to PC

#### 2 Hardware Guide

#### (1) Hardware Requirements



MCU board and display adapter



EPD panel



Mini USB cable



Windows PC

#### Minimum PC Requirements

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

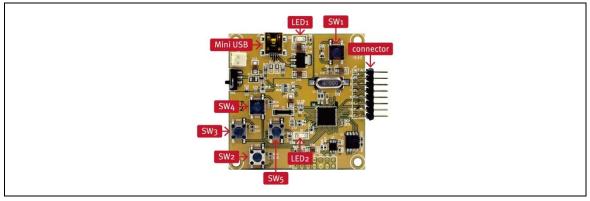
#### (2) Demo Kit Hardware Description

The HULK\_2.9" demo Kit includes an MCU board and an E Ink display adapter board. The MCU board and E Ink display adapter board are connected via a 16 pin header. The mini USB port on the demo kit supplies data and power to the MCU board and E Ink panel. Using the E Ink PC application, users can send image data to the board or update settings.



Demo Kit

There are two LEDs on the MCU board, LED 1 and LED 2. LED 1 indicates the board is powered. LED 2 is used as a multi-purpose function light



MCU Board for Demo Kit

\* When LED2 is light on, EPD can't accept any command

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

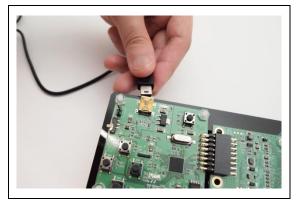
Description of button functions

Button	Function
SW1	Reset
SW2	Display NEXT image
SW3	Display White image
SW4	Display PREVIOUS image
SW5	Display White / Black image

#### (3) Hardware Installation

The HULK\_2.9" demo kit is connected to a PC via a mini USB cable. The PC requires a USB driver to be installed on the PC.

Connect one end of the mini-USB cable to the HULK\_2.9" demo kit and other end to a USB port on a PC.





Open Device Manager on the computer. A new device called **MSP430-USB Example** should be in the list. If this is the first time setting up the hardware, installation of the device driver is required.

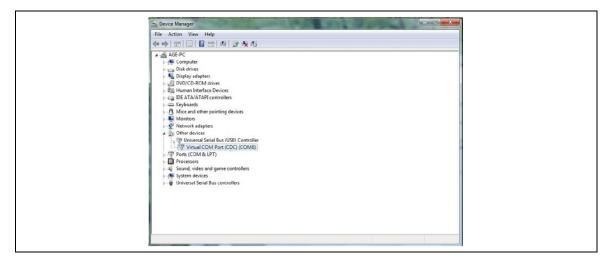
Device Manager      File Action View Help      Action View Help      Did drives      Did	

To install the device driver for **MSP430-USB Example**, double click on the device to bring up the device Window. Click on "Update Driver" and select the file "HULK-USB-Driver.inf".

Device Manager
File Action View Help 争争 同 副 2 回 西 四 路 慶 氏
AGE-PC     Disk drives     Disk drives
Launches the Update Driver Software Wizard for the selected device.

\* This driver has been tested on Windows 7 64-bits

To verify the installation of the driver was successful, a new device called Virtual COM Port (CDC) should be present under COM LPT.



#### 3 Software Guide

#### (1) Demo Kit Connection

- Open Flash\_Burner\_for\_2.9\_1bit.exe.
- If connection is correct, the COM port number will show up.
- Select the COM port and press "connect"

COM port	
Device: COM257 - disconnect	
Data	
Initial Data	Load_Image
Write data	Image 1 💚
	Write_Image

 If connection is incorrect, the COM port will show COM1~COM6 (Please check driver for the EVK)

#### (2) Update Initial Data

- Select "Initial Data"
- Press "Load file" to select a Initial file (.eink) that you want to use for the EPD.
- Press "Write data" to update Initial file into the kit

COM port Device: COM257 v disconnect Data Initial Data Vite data Write data	Eink	-Image	
Initial Data	COM port	disconnect	
Write data	Load File		Load_Image
	Initial Data 🗸 Write data	i	

	Image	
Eink		
COM port		
Device: WF29KWR COM257 - disco	nnect	
Data Load File		Load_Image
Initial Data - Write data		Image 1
		Write_Image

\* After Initial Data are updated, you should press "disconnect" and un-plug/plug Mini USB to restart the kit. If update is successful, the device name will show up

#### (3) Update Waveform

- Select "Temperature 0" to "Temperature 10"
- Press "Load file" to select a waveform file (.eink) that you want to use for the EPD.
- Press "Write data" to update waveform file into the kit

Eink	Image	
COM port	sconnect	
Data Load File		Load_Image
Write data		Image 1 🚽

\* You only need to update waveform at first setup or when you would like to change to another waveform

#### (4) Update Image

- Press "Load\_Image" to select a image
- Select "image 1" ~ "image 2" to decide display sequence
- Press "Write\_Image" to update image into the kit

Eink		
COM port	END OF SEASON	
Device: WF29KWR COM257 - disconne	SALE	
Data	50%	T 3 T
Temperature 0		Load_Image
Write data	ENJOY UP	Image 1 👻
	50% OFF	Write_Image

- \* E Ink suggests that images are in 1-bits format for black and white.
- \* After all image are updated, you should press "disconnect" and un-plug/ plug Mini USB to restart the kit.

#### 4 Troubleshooting

Below lists commonly asked questions.

Num	Name	Description	
1	HULK_2.9" demo kit is not	Cause: USB cable is damaged	
1	detected by the PC	Solution: Replace the USB cable	
	Demo kit connection fails	Cause: Progress bar is not completed	
2		Solution: Disconnect the demo kit from Mini USB and	
		restart Flash_Burner_for_2.9.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

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0.1	2016/12/15		Initial	Yaozu