4.3inch e-Paper UART Module

Introduction

The 4.3inch e-Paper UART Module is a serial port E-paper module, 4.3 inches, with a resolution of 800×600, built-in Chinese and English fonts, and low power consumption. If you don't want to understand the complex details of the bottom of the e-paper screen, and don't pay attention to the specific display algorithms of graphics, text and pictures, then this product is born for you. One serial port can realize all functions, free you from complicated details and release your creativity.

Feature

It is Easy to use, only one serial port is needed to complete the display function, including drawing geometric figures and displaying text and pictures. Built-in font library supports 32, 48, 64 dot matrix GBK Chinese font library; 32, 48, 64 dot matrix English font library has built-in 128MB NandFlash, The font library and picture data can be stored in the external TF card, or imported into the internal NandFlash 4-level grayscale display, with a resolution of up to 800×600. The serial port baud rate can be customized. After the system is powered on, the default is 115200. 5V, the logic level is compatible with low power consumption, the current is less than 5mA after the system sleeps. With the host computer software, the display can be completed directly by using the computer

4.3inch e-Paper UART Module
4.3inch serial interface electronic paper display

(http://www.waveshare.com/4.3inch-e-Paper.htm)

4.3inch serial interface electronic paper display

Onboard Interfaces

UART (/wiki/Category:UART_interface)

Application

E-book reader, shopping mall POS, shelf label, industrial instrument display

Interface Introduction

VCC: 3.3V~5.5V GND: GND DOUT: Serial port data transmission DIN: Serial port data reception WAKE_UP: External wake-up pin RST: External reset pin

Important notices

- **System power up**

After powered up, the screen is refreshed to white. At this moment, if no external TF card is in used, the state indicator will flicker 3 times and then keep on. When there is an external TF card in used, the state indicator will light up and keep on without flickering.

- **Storage**

After powered up, the system reads the font and the image data from the internal NandFlash by default.

When using an external TF card, you should format the TF card into a FAT32 system, and place the font libraries provided by Waveshare and the images you want to display to the external TF card before using it.

When using the internal NandFlash, you should import the font libraries and image files you want to display to the internal NandFlash in advance. For more detailed information, please refer to the Section 2.2.

- **State indicator**

The state indicator is on when the system is working properly, and off when the system enters sleep mode. A rising edge on the WAKE_UP pin from the external MCU can wake up the system. And the state indicator will light up and remain on after resuming from sleep mode.

- **Font libraries**

The system built–in 32, 48 and 64 dots English font is always available without using the TF card or the NandFlash; however, for the 32, 48 and 64 dots Chinese font, you should store the relative library file to the TF card or the NandFlash before using it.

- **Image display**

The system supports 1–bit and 2–bit bitmap image display. For other image formats, you should convert these images into the specified format with the tool on the Demos so as to display them.

The name of the image should be in uppercase English character(s) with the length less than 10 characters, in which the symbol "." is included.

For example:

PIC7.BMP and PIC789.BMP are correct image names;

PIC7890.BMP is a wrong image name.

How to use

Power supply

If the e–Paper module is powered by 3.3V from a certain serial module, the refresh of e–Paper may cause instability of the serial module due to high current. In this case, please try 5V power supply from the serial module, or try another serial module.

How to generate bitmap images

- Make sure the resolution of the image is less than 800x600 pixels. Start the tool **mspaint.exe** on Windows to open the image to be converted;
- Select the option **24–bit bitmap** in the **Save as Type** list, to save the image as a bmp format file;
- Start the software tool provided by Waveshare: **uC–GUI–BitmapConvert.exe**;

- Click File –> Open, and select the bitmap image you want to convert;
- Click Image –> Convert Into –> Gray4 (2 BPP);
- Click File –>Save As, and select the option **Windows Bitmap file(*.bmp)** in the **Save as Type** list, and then enter a correct file name and save the image. Please take a note to the format of the file name.

How to work with PC

We have designed the software for E–Paper to work with PC. With this software, users can easily operate different basic displays on the E–Paper via a PC. In additional, a USB–to–serial module should be applied to build up the communication between the e–Paper and the PC. In here, we will take the serial module CP2102 USB UART Board(mini) as an example to illustrate the application. For more detailed information about this serial module, please refer to Appendix.

- **Hardware connection**
- Set the pin VCCIO on the CP2102 to 5V;
- Connect the CP2102 to the E–Paper with jump wire, in which the red wire of the cable is connected to the pin VCCIO on the CP2102, and the black wire to the pin GND, the white wire to the pin RXD, and the green wire to the pin TXD.

CP2102 USB UART Board	4.3inch e–Paper
VCCIO	Red
GND	Black
RXD	White
TXD	Green

- Connect the CP2102 to the PC via a USB cable. Now, the E–Paper is powered up, and its state indicator lights up.
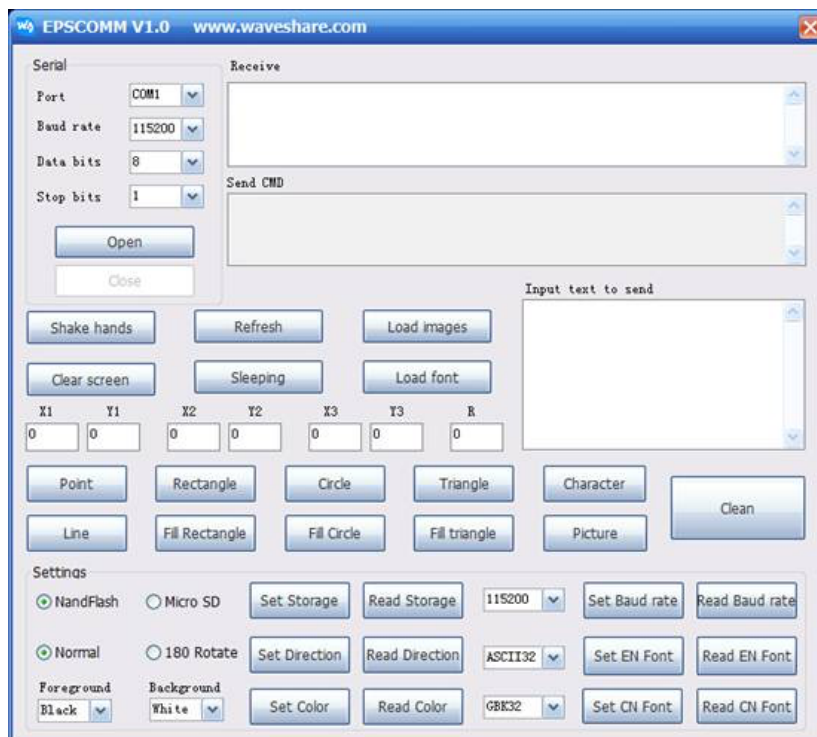
- **Software installation**

Unzip the software to the installation directory, and then double click the file "install.bat". Then, you will see a dialog box will pop up as the figure shows below, if the software is installed successfully.
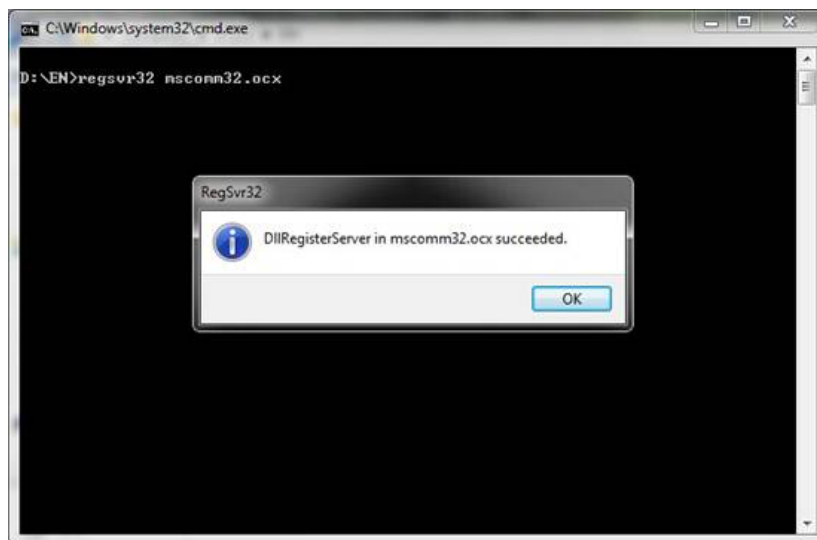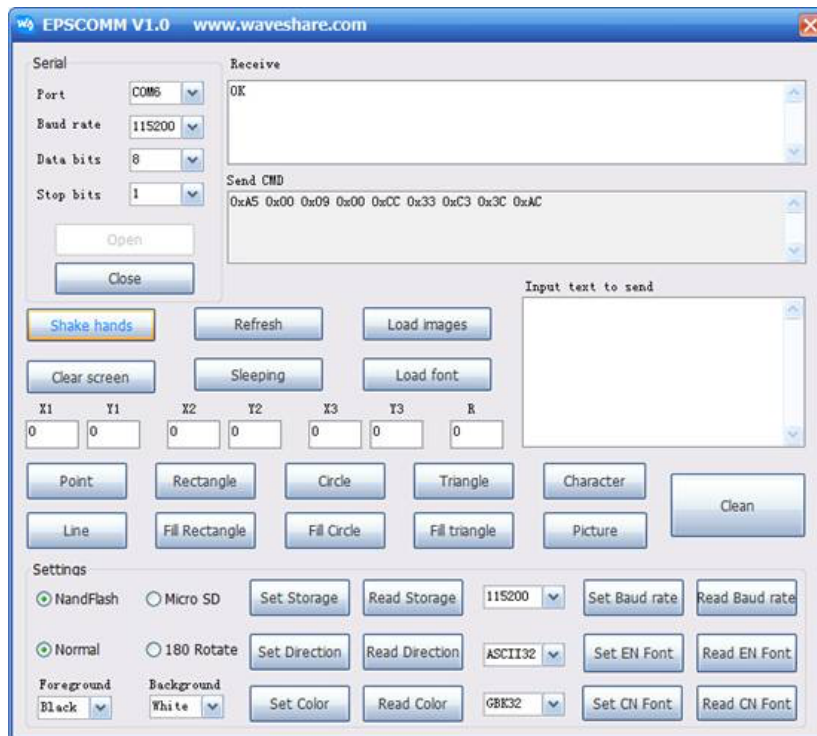
(/wiki/File:4.3inch–e–
Paper–User–Manual–1.jpg)

Double click the **EPSCOMM.exe** to start the software:

(/wiki/File:4.3inch–e–
Paper–User–Manual–2.jpg)

Check the Device Manager, and configure the corresponding serial port. Click the button Open, and then the button Shake hands. The E–Paper module will return the message "OK", if the communication is built up.
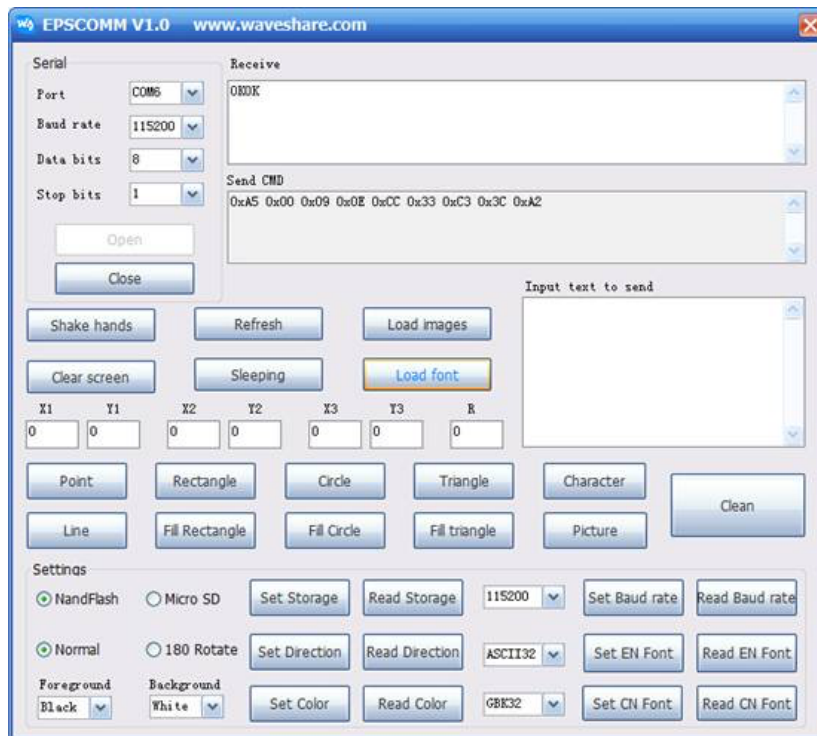
(/wiki/File:4.3inch–e–Paper–User–Manual–3.jpg)

- **Font libraries and image importation**

- Prepare a micro SD card (here we take an 8G micro SD card as an example), and format the micro SD card into a FAT32 system with 4096 bytes allocation unit size. Copy the font libraries and image files provided by Waveshare into the micro SD card. When finished, insert the micro SD card into the E–Paper.

- Click the button Load font. Then, the state indicator on the e–Paper will flicker 3 times, indicating the importation starts. When finished, the state indicator will flicker 3 times again and the e–Paper module will return the message "OK", indicating that the importation of font library is completed successfully.

(/wiki/File:4.3inch–e–

Paper–User–Manual–4.jpg)

- Click the button Load image. Then, the state indicator on the e–Paper will flicker 3 times, indicating the importation starts. When finished, the state indicator will flicker 3 times again and the e–Paper module will return the message "OK", indicating that the importation of image(s) is completed successfully.
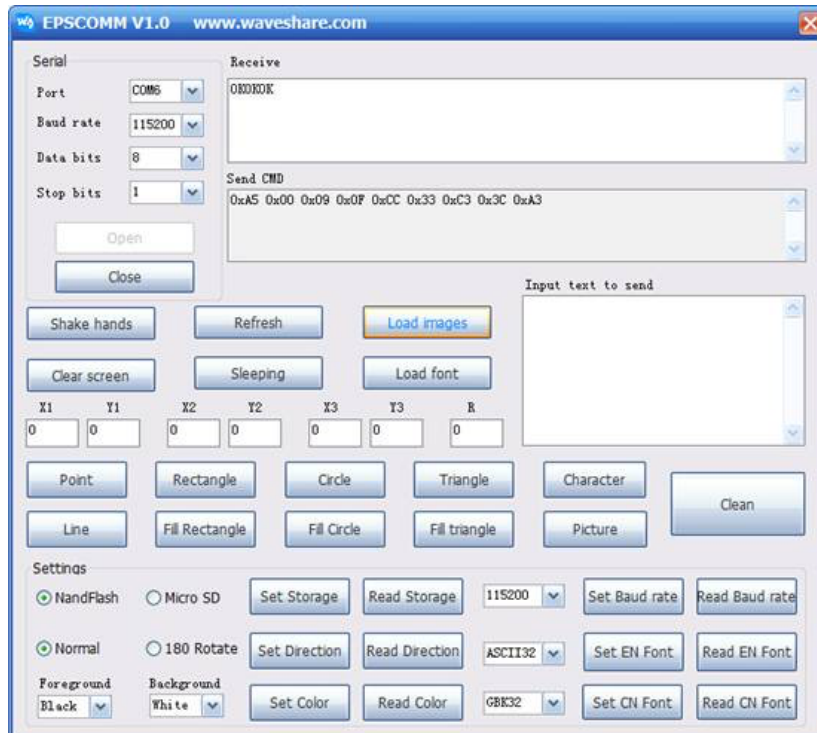
(/wiki/File:4.3inch–e–
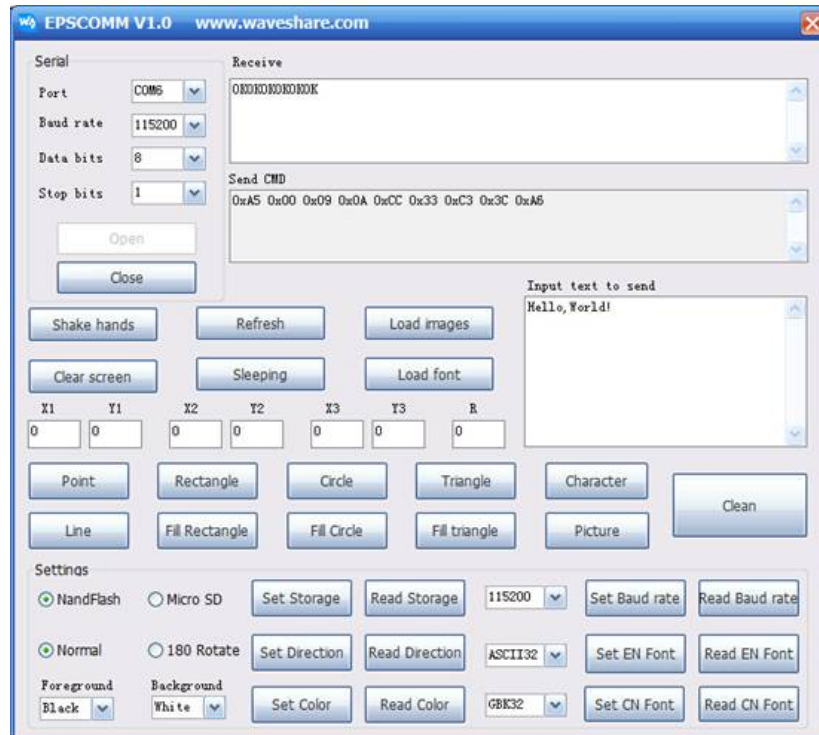
Paper–User–Manual–5.jpg)

Remarks:

[1] Once you do the operation, please check the state indicator. It flickers when the importation starts. Now, wait the importation finish.

[2] Normally, you only need to import the image(s) you want, but not need to import the font library, since it has been imported by default.

- **Display testing**

- **Display text**

Enter the text "Hello, World!" into the Input box, and set the coordinate options **X1** and **Y1** to 100. Then, click the button Character and then the button Refresh. Now, you can see the text inputted shows in the screen.
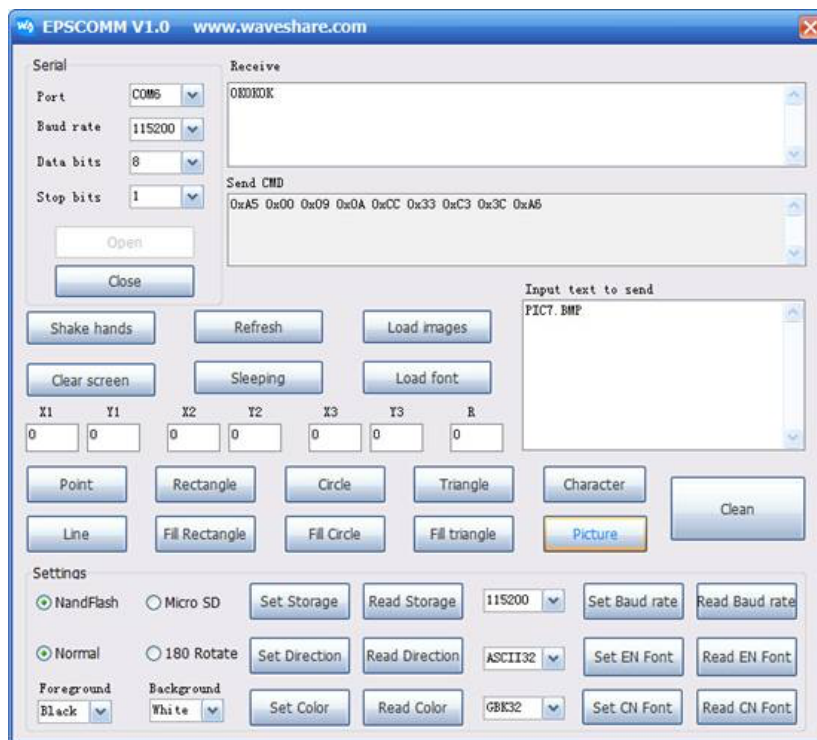

(/wiki/File:4.3inch–e– Paper–User–Manual–6.jpg)

- **Display image**

Enter the name of the image you want to display into the Input box, and set the coordinate options **X1** and **Y1** to 0. Then, click the button Picture, and then the button Refresh. Now, you can see the corresponding image shows in the screen.

(/wiki/File:4.3inch–e–Paper–User–Manual–7.jpg)

- **Display shape**

To draw shapes, you may need to input the parameters listed in the table below:

	Coordinate(X1, Y1)	Coordinate(X2,Y2)	Coordinate(X3, Y3)	Radius (R)
Point	●			
Line	●	●		
Rectangle	●	●		
Filled rectangle	●	●		
Circle	●			●
Filled circle	●			●
Tri–angle	●	●	●	
Filled tri–angle	●	●	●	

- **Other settings**

- Set the storage area, select the storage locations of font library and images, default location: NandFlash;

- Set the display direction;

- Set the drawing color, the option **Foreground color** for the text is set to Black and the option **Background color** for the background is set to White by default;

- Set Baud rate, default: 115200; it is not recommended to modify this option frequently;

- Set the font size of the English character;

- Set the font size of the Chinese character.

Remarks:

[1] When finished each command, there will be corresponding response. Normally, it will return "OK";

[2] For drawing point(s) or line(s), or displaying text(s) or image(s), you should click the button Refresh to update the display on the E-Paper screen whenever you finish each drawing.

[3] You may need to wait the response for a while after clicking the button Display image, since the image data is large.

For Arduino

- Hardware connection

Here, we take Arduino UNO development board as an example to illustrate the application. Connect the development board to the e-Paper with a serial cable as shown in the follow table. For more information about this development board, please refer to the Appendix.

Connection between Arduino UNO and 4.3inch e-Paper:

Arduino UNO	4.3inch e-Paper
5V	Red
GND	Black
RX/D0	White
TX/D1	Green
D2	Yellow
Reset, you can keep it unconnected	Blue

- Program compiling and uploading

Open the Arduino program on the Demo. Then, compile and upload it. Please take a note that the white cable should be removed on program uploading.

For NUCLEO

- Hardware connection

Here, we take NUCLEO-F103RBdevelopment board as an example to illustrate the application. Connect the development board to the e-Paper with a serial cable as shown in the follow table. For more information about this development board, please refer to the Appendix.

Connection between NUCLEO-F103RB and 4.3inch e-Paper:

NUCLEO-F103RB	4.3inch e-Paper
5V	Red
GND	Black
RX/D0	White
TX/D1	Green
D2	Yellow
Reset, you can keep it unconnected	Blue

- Program compiling and programming

Open the NUCLEO–F103RB program on the Demo. Then, compile and program it.

Note: You should set the JP4 jumper between A and B.

Open103Z

- Hardware connection

Here, we take Open103Z development board as an example to illustrate the application. Connect the development board to the e–Paper with a serial cable as shown in the follow table. For more information about this development board, please refer to the Appendix.

Connection between NUCLEO–F103RB and 4.3inch e–Paper:

Open103Z	4.3inch e–Paper
5v	Red
GND	Black
PA10	White
PA9	Green
PA11	Yellow
Reset, you can keep it unconnected	Blue

- Program compiling and programming

Open the Open103Z program on the Demo. Then, compile and program it.

Serial communication protocol

Basic rules

Serial port

This e–Paper module adopts full–duplex asynchronous UART communication with adjustable Baud rate.

Command frame format

Command	0xA5	0xXX XX	0xXX	0xXX…	0xCC 33 C3 3C	0xXX
Meaning (Description)	Frame header (1 byte)	Frame length[1] (2 bytes)	Command Type (1 byte)	Parameter or data (0~1024 bytes)	Frame end (fixed 4 bytes)	Parity (1 byte) [2]

[1] The frame length is calculated by the length begin with the frame header and end with the parity byte.

[2] Parity byte is the final result of the XOR operation on the bytes from the frame header to the frame end.

Transmission sequence

The data of the module is transmitted in the Network byte sequence, which means higher byte is sent at first, then lower byte following. For example, a parameter, 0x1234, is transmitted in two parts: 0x12 is sent at first, and then 0x34 following.

Command parameters

- Byte: 8 bits, single byte;

- Short: 16 bits, double bytes;

- Dword: 32 bits, four bytes;

- String: the character string end with "\0".

Color definition

This e–Paper module supports 4–level gray display, and 2 bits for each pixel.

0x00: Black

0x01: Dark gray

0x02: Light gray

0x03: White

Command set

Command look–up table

SUJET :

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const char staticframe_microsd[]

Functions	Frame length	Command	Command parameter	Descriptions
System control	0x0009	0x00	Null	Handshake command. If the module is ready, it will return an "OK".
	0x000D	0x01	Dword: Set the serial Baud rate	Set the serial Baud rate
	0x0009	0x02	Null	Return the current Baud rate value in ASCII format
	0x0009	0x06	Null	Return the information about the currently used storage area. 0: NandFlash 1: MicroSD
	0x000A	0x07	Byte: Set the storage area	0x00: NandFlash 0x01: MicroSD
	0x0009	0x08	Null	System enters sleep mode
	0x0009	0x0A	Null	Refresh and update the display at once
	0x0009	0x0C	Null	Return the current display direction 0: Normal 0x01: 90° 0x02: 180° 0x03: 270°
	0x000A	0x0D	Byte: Set the	0x00: Normal 0x01: 90°

			display direction	0x02: 180°
				0x03: 270°
	0x0009	0x0E	Null	Import font library: 48MB
	0x0009	0x0F	Null	Import image: 80MB
Display parameter configuration	0x000B	0x10	Byte0: foreground color Byte1: background color	Set the drawing color
	0x0009	0x11	Null	Return the current drawing color
	0x0009	0x1C or 0x1D (may differ depending on Firmware (/wiki/File:Epd43–uart–module–firmware.zip))	Null	Get the English font size 1: 32 dots matrix 2: 48 dots matrix 3: 64 dots matrix
	0x0009	0x1D	Null	Get the font size 1: 32 dots matrix 2: 48 dots matrix 3: 64 dots matrix
	0x000A	0x1E or 0x1F (may differ depending on Firmware (/wiki/File:Epd43–uart–module–firmware.zip))	Byte0: Set the English font size	Set the English font size 0x01: 32 dots matrix 0x02: 48 dots matrix 0x03: 64 dots matrix
	0x000A	0x1F	Byte0: Set the font size	Set the font size 0x01: 32 dots matrix 0x02: 48 dots matrix 0x03: 64 dots matrix
	0x000D	0x20	Short0: coordinate x Short1: coordinate y	Display a point on a given coordination Default: foreground color
	0x0011	0x22	Short0: coordinate x0 Short1: coordinate y0 Short2: coordinate x1	Draw a line

			Short3: coordinate y1	
	0x0011	0x24	Short0: coordinate x0 Short1: coordinate y0 Short2: coordinate x1 Short3: coordinate y1	Fill a rectangle
	0x0011	0x25	Short0: coordinate x0 Short1: coordinate y0 Short2: coordinate x1 Short3: coordinate y1	Draw a rectangle
Basic drawings	0x000F	0x26	Short0: coordinate x0 Short1: coordinate y0 Short2: r radius	Draw a circle
	0x000F	0x27	Short0: coordinate x0 Short1: coordinate y0 Short2: r radius	Fill a circle
			Short0: coordinate x0 Short1: coordinate y0	

	0x0015	0x28	Short2: coordinate x1 Short3: coordinate y1 Short4: coordinate x2 Short5: coordinate y2	Draw a tri–angle
	0x0015	0x29	Short0: coordinate x0 Short1: coordinate y0 Short2: coordinate x1 Short3: coordinate y1 Short4: coordinate x2 Short5: coordinate y2	Fill a tri–angle
	0x0009	0x2E	Null	Clear the screen with background color
Display text	0x0D + string length	0x30	Short0: coordinate x Short1: coordinate y String: bitmap name	Support English and Chinese fonts mixed display Maximum string length = 1024 − 4
Display image (.bmp and .jpg Only)	0x0D + string length	0x70	Short0: coordinate x0 Short1: coordinate y0 String: .BMP file name	Support bitmap file: .BMP, .JPG

UART input stream (new)	0x0D + string length	0x40		String: file name	Send a file into the SD card using UART and specify a file name for saving
Storage manager (new)	0x09	0x50			Nand Flash full erase

Remarks:

[1] The string length is the length of the character string end with "\0", in which the ending "\0" is included.

[2] The name of the image should be in uppercase English character(s) with the length less than 10 characters (the symbol "." is included). And the string length of the image name should be less than 11 characters, in which the ending "0" is included.

Command explanations

System control

- Handshake command (0x00)

After powered up, you can send this command to the terminal to make sure whether the terminal is ready and able to receive commands or data.

Example: A5 00 09 00 CC 33 C3 3C AC

Descriptions: Handshake command

- Set the Baud rate (0x01)

After powered up, the default Baud rate is 115200. This command is used to set the Baud rate. You may need to wait 100ms for the module to return the result after sending this command, since the host may take a period of time to change its Baud rate.

Example: A5 00 0D 01 00 00 25 80 (tel:00 00 25 80) CC 33 C3 3C 0C

Descriptions: 0x2580: set the Baud rate to 9600. The parameter of Baud rate is consisted of 4 bytes, so you need to complete the rest by yourself.

- Read the current Baud rate (0x02)

Example: A5 00 09 02 CC 33 C3 3C AE

Descriptions: Read the current Baud rate of the system.

- Return the information about the currently used storage area (0x06)

Example: A5 00 09 06 CC 33 C3 3C AA

Descriptions: When returns 0x00, the currently used storage area is internal NandFlash; when returns 0x01, the currently used storage area is external TF card.

- Set the storage area (0x07)

Set the storage area to select the storage locations of font library and images, either the external TF card or the internal NandFlash is available.

SUJET :

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const char staticframe_microsd[]

Example: A5 00 0A 07 00 CC 33 C3 3C A8

Descriptions: 0x00: set the currently used storage area as NandFlash.

- Sleep mode (0x08)

The system will enter the sleep mode and reduce system power consumption by this command. Under sleep mode, the state indicator is off, and the system does not respond any commands. Only the rising edge on the pin WAKE_UP can wake up the system.

Example: A5 00 09 08 CC 33 C3 3C A4

Descriptions: Switch the system to sleep mode.

- Refresh (0x0A)

Refresh and update the display on the screen. After the host send out the drawing command, the system will only write the relative data into the internal video memory, but not update the display on the screen. So you should operate this command whenever you finish each drawing.

Example: A5 00 09 0A CC 33 C3 3C A6

Descriptions: Refresh and update the display on the screen

- Get the display direction (0x0C)

Example: A5 00 09 0C CC 33 C3 3C A0

Descriptions: When returns 0, the screen is in normal display; when returns 1 or 2, the display on the screen will be rotated by 180°.

- Set the display direction (0x0D)

Set the display direction, only 180° rotation display supported.

Example: A5 00 0A 0D 01 CC 33 C3 3C A3, or, A5 00 0A 0D 02 CC 33 C3 3C A0

Descriptions: 0x01: The display on the screen will be switch from normal display to 180° rotation display.

- Import font library (0x0E)

Import the font library files from the TF card to the internal NandFlash. The font library files include GBK32.FON/GBK48.FON/GBK64.FON. The state indicator will flicker 3 times when the importation is start and ending.

Example: A5 00 09 0E CC 33 C3 3C A2

Descriptions: Import the font library

- Import image (0x0F)

Import the image files from the TF card to the internal NandFlash. The state indicator will flicker 3 times when the importation is start and ending.

Example: A5 00 09 0F CC 33 C3 3C A3

Descriptions: Import the images

Display parameter configuration

- Set the pallet (0x10)

Set the foreground color and the background color on drawing, in which the foreground color can be used to display the basic drawings and text, while the background color is used to clear the screen.

Example: A5 00 0B 10 00 03 CC 33 C3 3C BD

Descriptions: 0x00: The foreground color is set to Black

0x03: The background color is set to White

- Get the pallet data (0x11)

Example: A5 00 09 11 CC 33 C3 3C BD

Descriptions: For example, when returns "03", "0" means the foreground color is Black and "3" means the background color is White.

- Get the English font size (0x1C or 0x1D, may differ depending on version)

Example: A5 00 09 1C CC 33 C3 3C B0, or, A5 00 09 1D CC 33 C3 3C B1

Descriptions: Return the index of currently used English font size.

- Get the Chinese font size (0x1D)

Example: A5 00 09 1D CC 33 C3 3C B1

Descriptions: Return the index of currently used Chinese font size.

- Set the English font size (0x1E or 0x1F, may differ depending on version)

Set the English font size, currently support 32/48/64 dots matrix.

Example: A5 00 0A 1E 03 CC 33 C3 3C B2, or, A5 00 0A 1F 03 CC 33 C3 3C B3

Descriptions: 0x03: Set the English font size to 64 dots matrix

- Set the Chinese font size (0x1F)

Set the Chinese font size, currently support 32/48/64 dots matrix.

Example: A5 00 0A 1F 01 CC 33 C3 3C B1

Descriptions: 0x01: Set the Chinese font size to 32 dots matrix

Basic drawings

- Draw a point (0x20)

Display a point on a specified coordination position with foreground color.

Example: A5 00 0D 20 00 0A 00 0A CC 33 C3 3C 88

Descriptions: Display a point on the position (0x0A, 0x0A) with foreground color.

- Draw a line (0x22)

Draw a line between two specified point coordinates with foreground color.

Example: A5 00 11 22 00 (tel:00 11 22 00) 0A 00 0A 00 FF 00 FF CC 33 C3 3C 96

Descriptions: Draw a line between the point coordinates (0x0A, 0x0A) and (0xFF, 0xFF) with foreground color.

- Fill a rectangle (0x24)

Fill a rectangle according to two point coordinates with foreground color, in which these two points serve as the diagonal points of the rectangle.

Example: A5 00 11 24 00 (tel:00 11 24 00) 0A 00 0A 00 FF 00 FF CC 33 C3 3C 90

Descriptions: Fill a rectangle according to the point coordinates (0x0A, 0x0A) and (0xFF, 0xFF), in which these two points serve as the diagonal points of the rectangle.

- Draw a rectangle (0x25)

Draw a rectangle according to two point coordinates with foreground color, in which these two points serve as the diagonal points of the rectangle.

Example: A5 00 11 25 00 (tel:00 11 25 00) 0A 00 0A 00 FF 00 FF CC 33 C3 3C 91

Descriptions: Draw a rectangle according to the point coordinates (0x0A, 0x0A) and (0xFF, 0xFF), in which these two points serve as the diagonal points of the rectangle.

- Draw a circle (0x26)

Draw a circle based on the given center coordination and radius.

Example: A5 00 0F 26 00 FF 00 FF 00 80 CC 33 C3 3C 0C

Descriptions: Draw a circle with the center coordination (0xFF, 0xFF), and radius 0x80.

- Fill a circle (0x27)

Fill a circle based on the given center coordination and radius.

Example: A5 00 0F 27 00 FF 00 FF 00 80 CC 33 C3 3C 0D

Descriptions: Fill a circle whose center coordination is (0xFF, 0xFF) and radius is 0x80.

- Draw a tri–angle (0x28)

Draw a tri–angle according to three given point coordinates.

Example: A5 00 15 28 00 (tel:00 15 28 00) 0A 00 0A 00 20 00 80 00 80 00 (tel:00 20 00 80 00 80 00) FF CC 33 C3 3C 47

Descriptions: The three point coordinates of the tri–angle are (0x0A, 0x0A), (0x20, 0x80) and (0x80, 0xFF).

- Fill a tri–angle (0x29)

Fill a tri–angle according to three given point coordinates.

Example: A5 00 15 29 00 (tel:00 15 29 00) 0A 00 0A 00 20 00 80 00 80 00 (tel:00 20 00 80 00 80 00) FF CC 33 C3 3C 46

Descriptions: The three point coordinates of the tri-angle are (0x0A, 0x0A), (0x20, 0x80), (0x80, 0xFF)

- Clear the screen (0x2E)

Clear the screen with the background color.

Example: A5 00 09 2E CC 33 C3 3C 82

Descriptions: Clear the screen

Display text

- Display character string (0x30)

Display a character string on a specified coordination position. Chinese and English mixed display is supported.

Example: A5 00 17 30 00 (tel:00 17 30 00) 0A 00 0A C4 E3 BA C3 57 6F 72 6C 64 00 CC 33 C3 3C 9E

Descriptions: 0x0A, 0x0A: This is the given coordination position

0xC4E3:你

0xBAC3:好

0x57 6F 72 6C 64:World

After executed this command, the screen will show the text:你好World

Each character string should be end with a "0". So, you should add a "00" at the end of the string C4 E3 BA C3 57 6F 72 6C 64.

UART input Stream (new)

- Send a file to the SD card using UART (0x40)

Example:A5 00 12 40 50 49 43 37 (tel:00 12 40 50 49 43 37) 2E 42 4D 50 00 CC 33 C3 3C EB

Descriptions:

50 49 43 37 (tel:50 49 43 37) 2E 42 4D 50 are the ASCII codes of "PIC7.BMP". After this command executed, any data from UART will be saved into the SD card and saved as PIC7.BMP. If the transmission stops more than 1s, this function will stop too. After the file sent, file size and Xor check will be returned and you should compare them to check if the file was sent properly. Last, if the file was sent properly, you should send the character 'y' to confirm. If the file is an image (.JPG or .BMP), you should set the storage area to SD card (A5 00 0A 07 01 CC 33 C3 3C A9), and then use the display image command to display it. UART input stream command is not affected by the storage area settings.Files are only going to be saved into the Micro SD card.

Display image

- Display bitmap (0x70)

SUJET :

PERMET DE COMPRENDRE LE TABLEAU

const char staticframe_image[]

Before executing this command, please make sure the bitmap file you want to display is stored in the storage area (either TF card or internal NandFlash).

Example: A5 00 16 70 00 00 00 00 (tel:00 16 70 00 00 00 00) 50 49 43 37 (tel:50 49 43 37) 2E 42 4D 50 00 CC 33 C3 3C DF

Descriptions: Image start coordination position: (0x00, 0x00)

0x50 49 43 37 2E 42 4D 50: Bitmap name: PIC7.BMP

Each character string should be end with a "0". So, you should add a "00" at the end of the string 50 49 43 37 (tel:50 49 43 37) 2E 42 4D 50.

The name of the bitmap file should be in uppercase English character(s). And the string length of the bitmap name should be less than 11 characters, in which the ending "0" is included. For example, PIC7.BMP and PIC789.BMP are correct bitmap names, while PIC7890.BMP is a wrong bitmap namem.
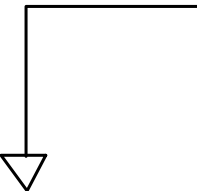
> LE NOM DE L'IMAGE DOIT ÊTRE TRADUIT EN HÉXADÉCIMALE EXTENSION INCLUSE

Resources

- User Manual (/wiki/File:4.3inch–e–Paper–UserManual.pdf)
- Code (/wiki/File:4.3inch–e–Paper–Code.7z)
- Demo video (https://youtu.be/06rDuQzYovk)
- Datasheets (/wiki/4.3inch_e–Paper_Datasheets)
- Software (/wiki/4.3inch_e–Paper_Software)
- Firmware (/wiki/File:Epd43–uart–module–firmware.zip)

Support

If you require technical support, please go to the Support (https://support.wave share.com/hc/en–us/requests/new) page and open a tickets.