# ER-DBT1.08-1

## MCU 8051 Development Board & Kit User Guide

## EastRising Technology Co., Limited

Attention:

A. Some specifications of IC are not listed in this datasheet. Please refer to the IC datasheet for more details.

B. The related documents for interfacing, demo code, ic datasheet are all available, please download from our web.

| REV | DESCRIPTION | RELEASE DATE |
|---|---|---|
| 1.0 | Preliminary Release | Jul-22-2023 |
| | | |
| | | |

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# 1. ORDERING INFORMATION

1.1 Order Number

| Part Number(Order Number) | Description |
|---|---|
| ER-DBT1.08-1 | 8051 Microcontroller Development Board & Kit |

1.2 What's included in the package

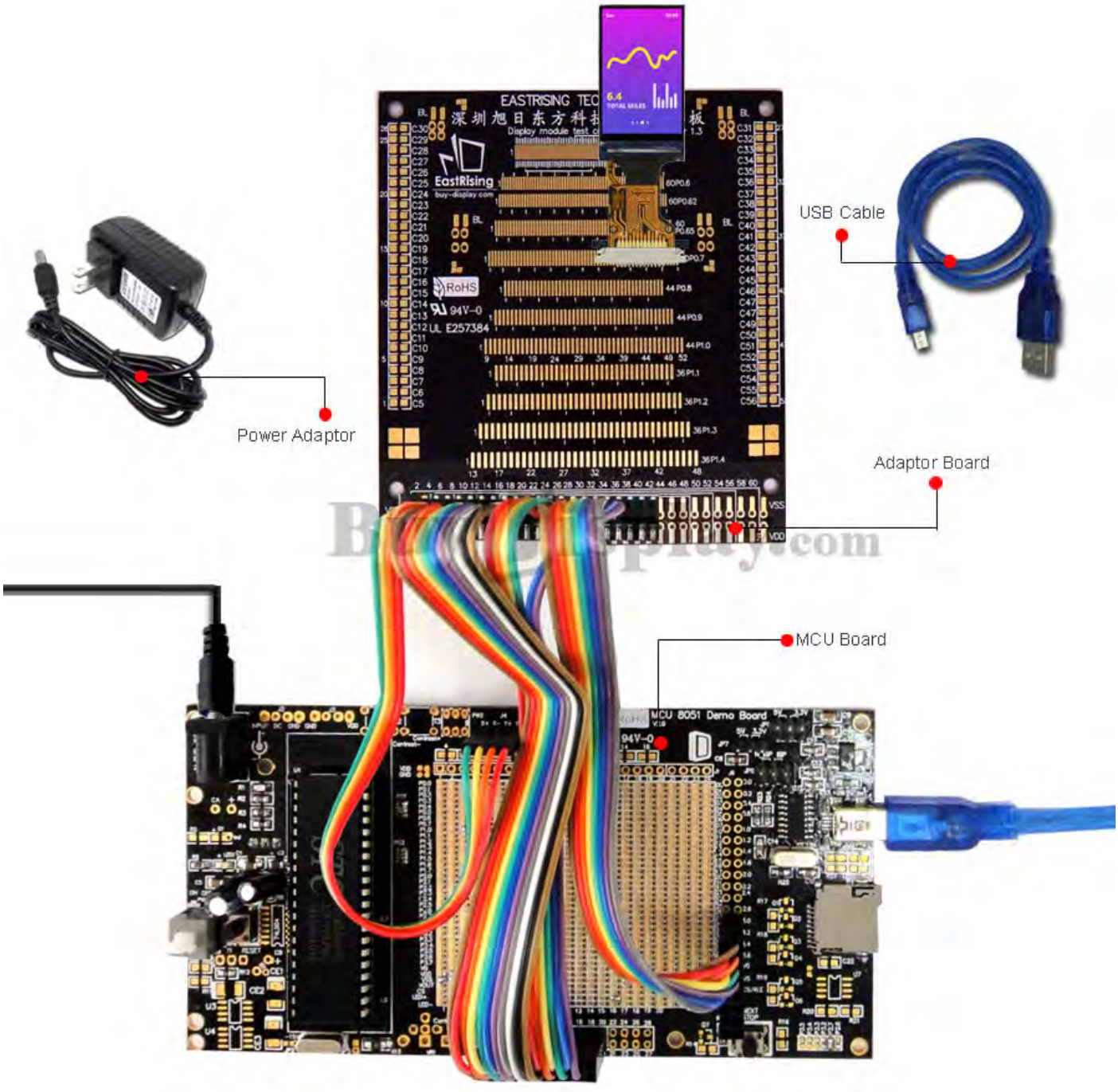
| No | Standard Accessory Name | Quantity |
|---|---|---|
| 1 | MCU Board | 1 |
| 2 | Adaptor Board | 1 |
| 3 | Power Adaptor (12V/2A) | 1 |
| 4 | USB Cable | 1 |
| 5 | MicroSD Memory Card Loaded with Images | 1 |

1.3 Compatible with following displays:

| Part Number(Order Number) | Description |
|---|---|
| ER-TFT1.08-1 | 1.08” IPS TFT LCD Display with GC9203 Controller |

## 2. QUICK START

2-1 Simply plug the power adaptor into an AC outlet and plug FFC(Cable) of lcd display into the ZIF connector of adaptor board as the below image shows.

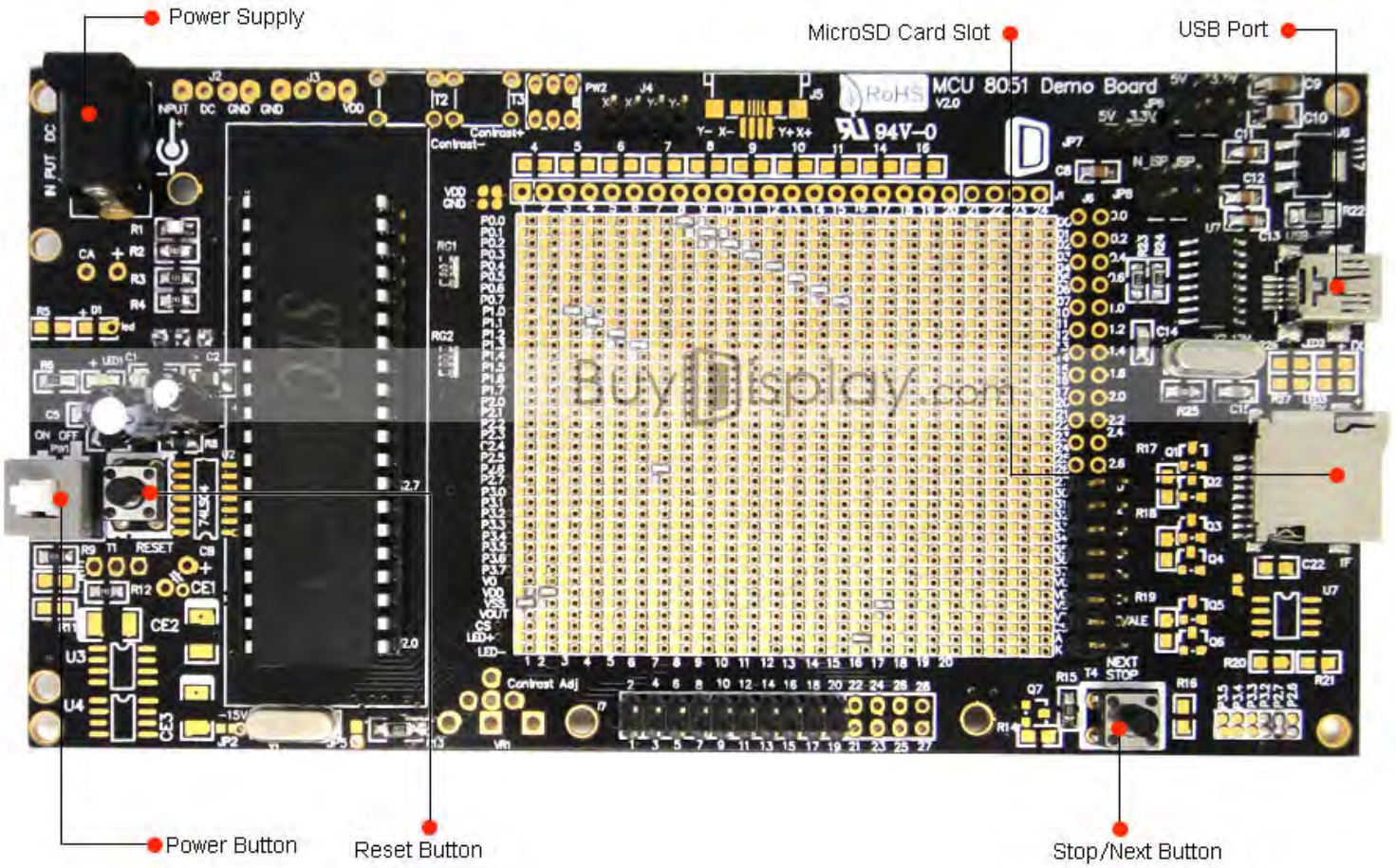



2-2 Press the power button to run the demonstration program.

## 3. BUTTONS DEFINITIONS

| Button Name | Description |
|---|---|
| *Stop/Next Button | Stop or Next the Image Slideshows |
| Reset Button | Restart to Initialized State |
| Power Button | Press On or Press Off |

*For color display, this button is used to next the image slideshows.
For mono display, this button is used to stop the image slideshows.



# 4. SPECIFICATION

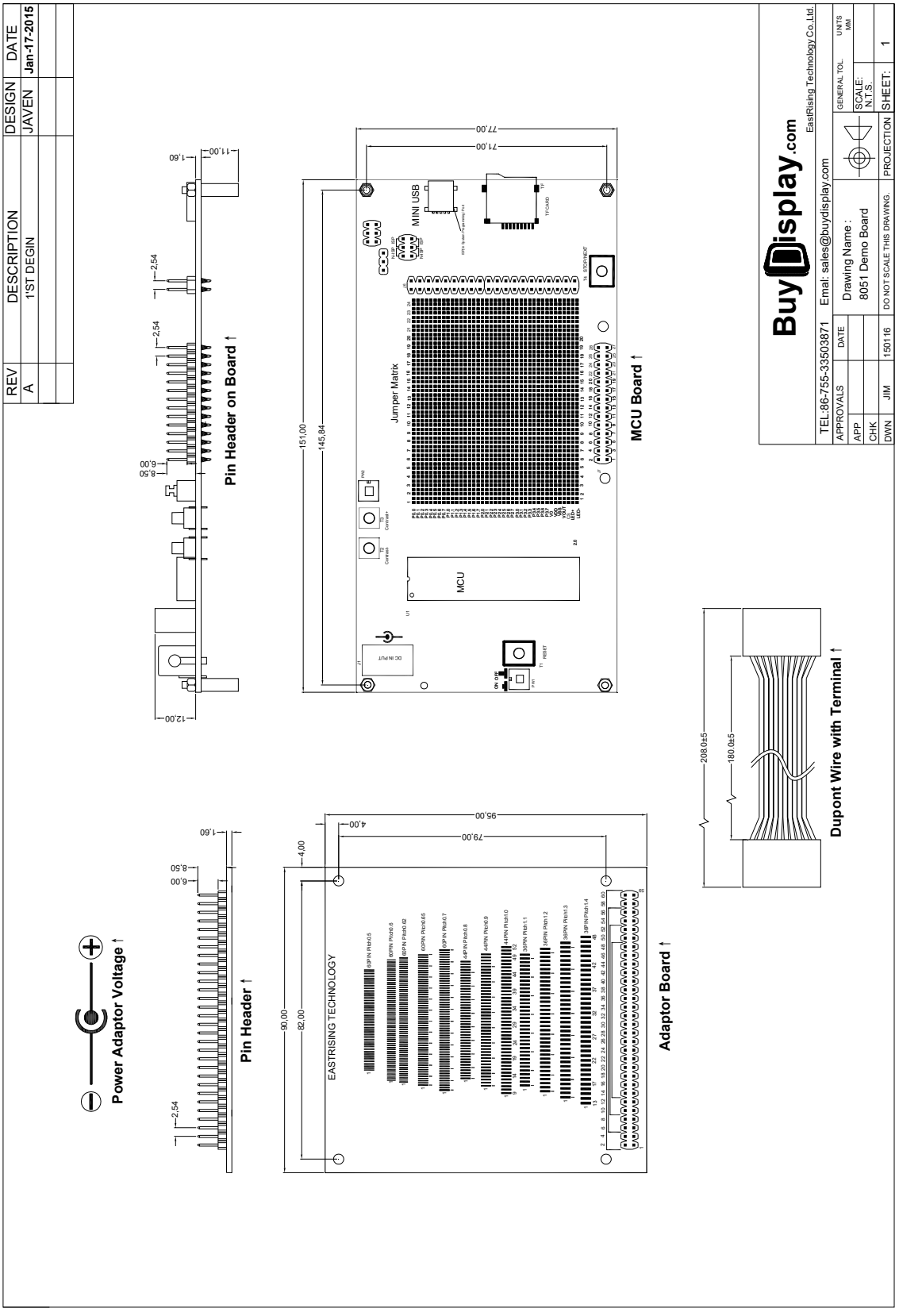
4.1 Mechanical Specification

| ITEM | STANDARD VALUE | UNIT |
|---|---|---|
| MCU Board Outline Dimension | 151.00×77.00 | mm |
| Adaptor Board Outline Dimension | 90.00×95.00 | mm |
| Gross Weight for Whole Demo Kit | 0.40 | kg |

4.2 Electrical Specification

| ITEM | STANDARD VALUE | UNIT |
|---|---|---|
| Microcontroller | STC12LE5A60S2 | -- |
| Interface | 4-Wire Serial SPI | -- |
| Power Supply Voltage | 12V | V |

## 5. OUTLINE DRAWING

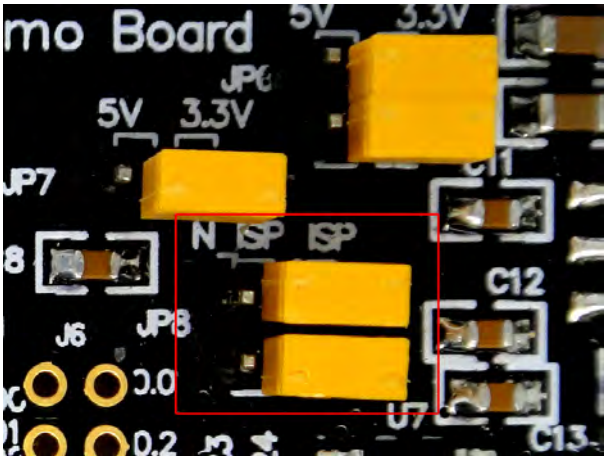


## 6. HOW TO MAKE A CUSTOM DEMONSTRATION

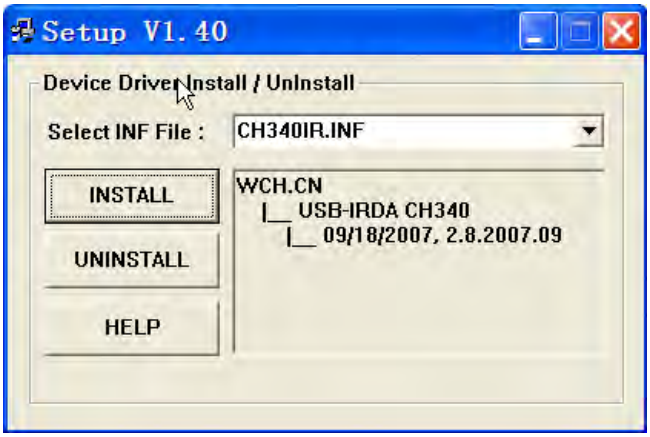
By using the software of LCD Font Maker or Image2LCD and ISP(In System Programming) to customize the demonstration that includes your own bitmap images, personalized fonts, symbols, icons and burn sketches. The large capacity of the MicroSD card allows you to store more fonts or images. We also prepare the demo code, interfacing document (download from each product page) and schematic MCU datasheet (download from each 8051 microcontroller development board page) for your further study.
LCD Font Maker: http://www.buydisplay.com/download/software/LCDFontMaker.zip
Image2LCD: http://www.buydisplay.com/download/software/Image2Lcd.zip

## 7. METHODS FOR USING IN SYSTEM PROGRAMMING

7-1 Hardware Preparation
7-1-1 Please power off the development board,
7-1-2 No power supply is connecting with 8051 development board,
7-7-3 The jumpers on JP8 is on ISP position as below image shows



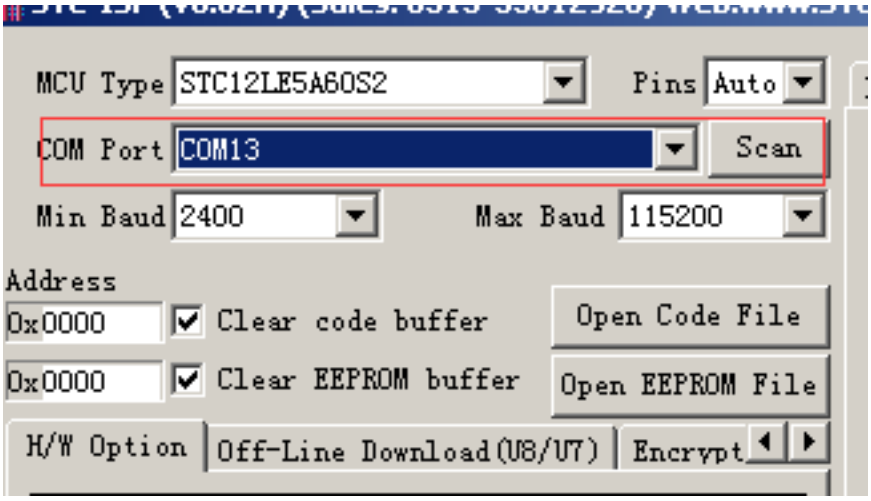

7-2 Install the USB to RS232 Driver
http://www.buydisplay.com/download/software/USB-TO-RS232-DRIVER.rar



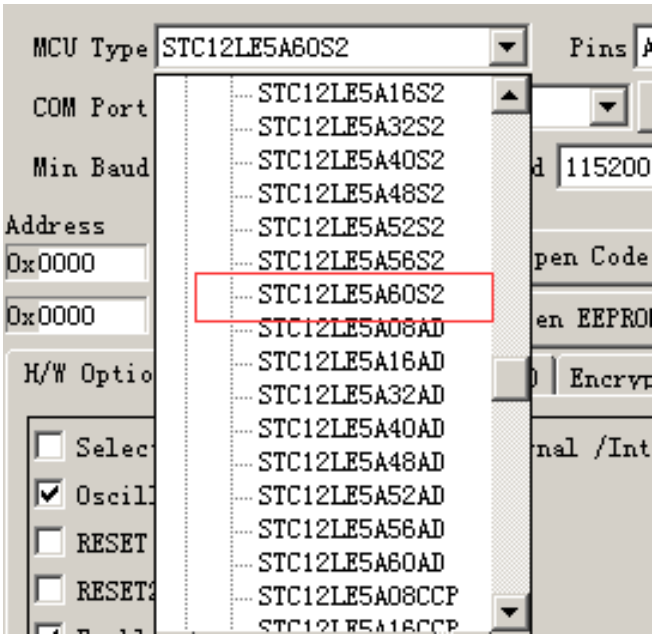
7-3 Connecting the 8051 development board to computer by USB Cable and you should find the new port USB-SERIAL CH340 in Computer-System Properties-Device Manager as below image shows and remember the COM number that would be used in Step7-4.

7-4 Install STC 8051 Microcontroller ISP(In System Programming)Software
http://www.buydisplay.com/download/software/STC-ISP-V4.86-NOT-SETUP-ENGLISH.zip

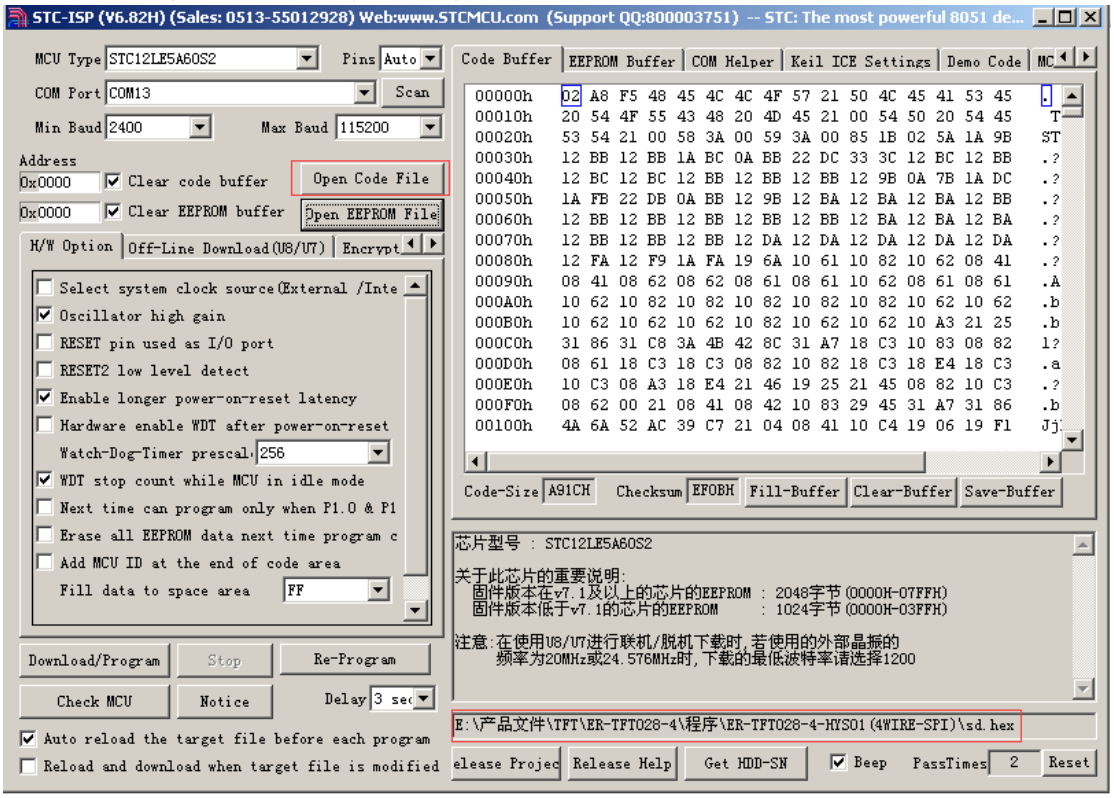
7-5 Open ISP and Select COM Port that should be the same with the step 7-2 you see from Device Manager.



7-6 Select MCU part number that should be the same with your purchased one.
(Refer to 4.2 Electrical Specification)

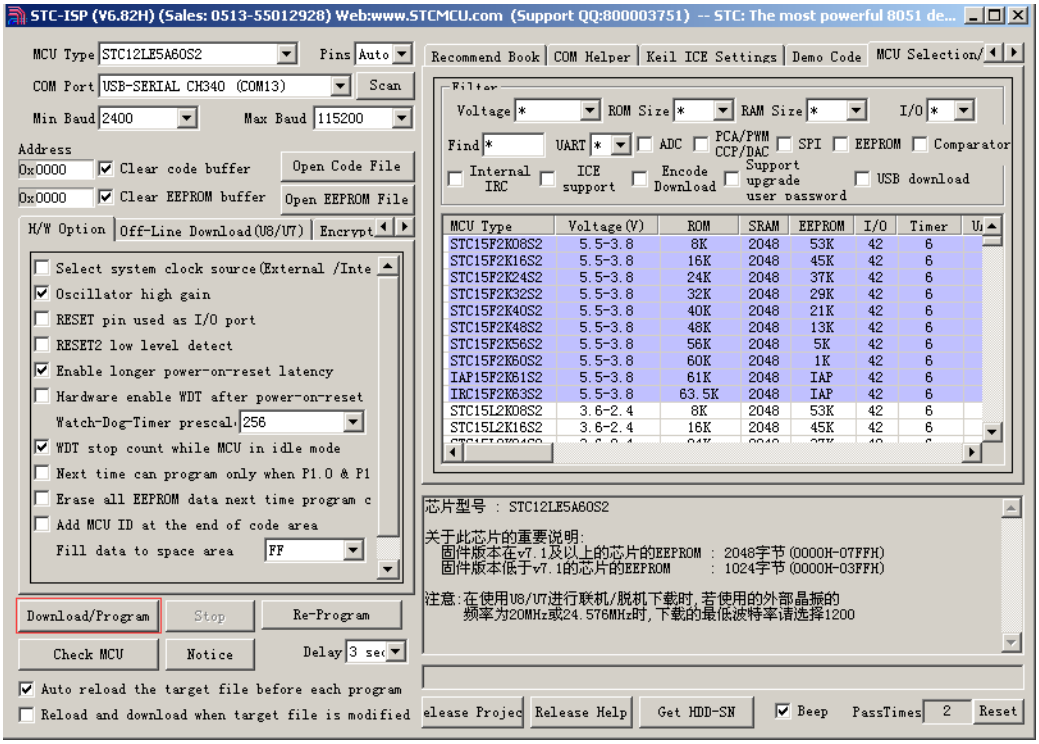



7-7 Open target ",hex" file by clicking open code file

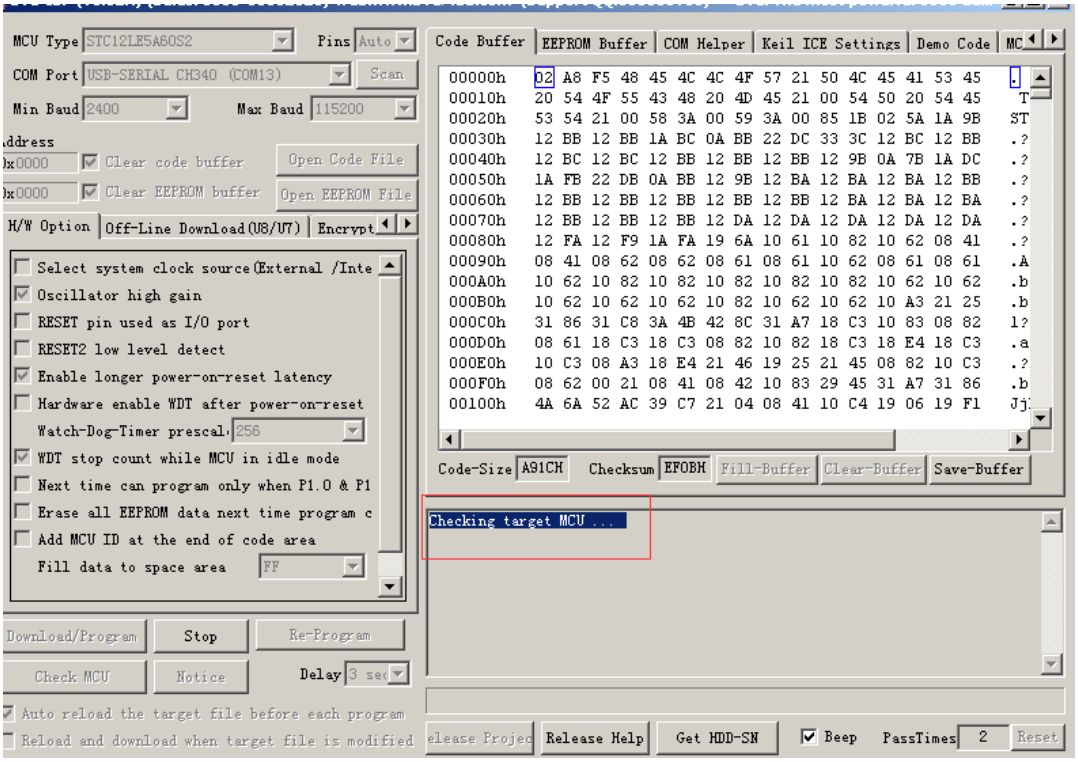


7-8 Programming

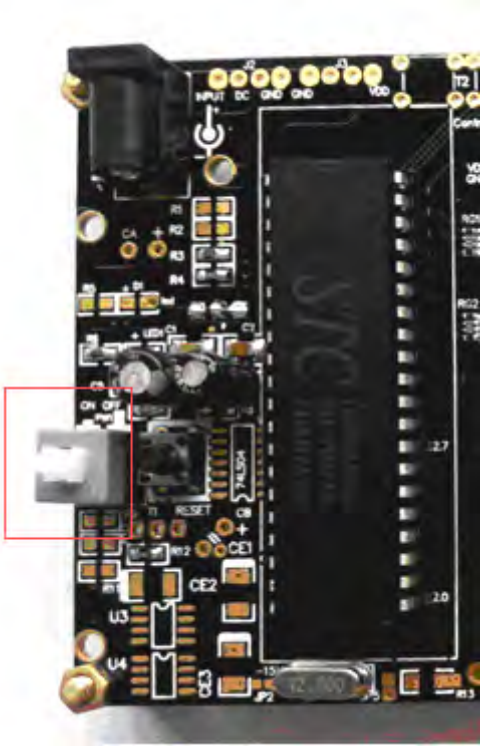
7-8-1 Click Download/Program



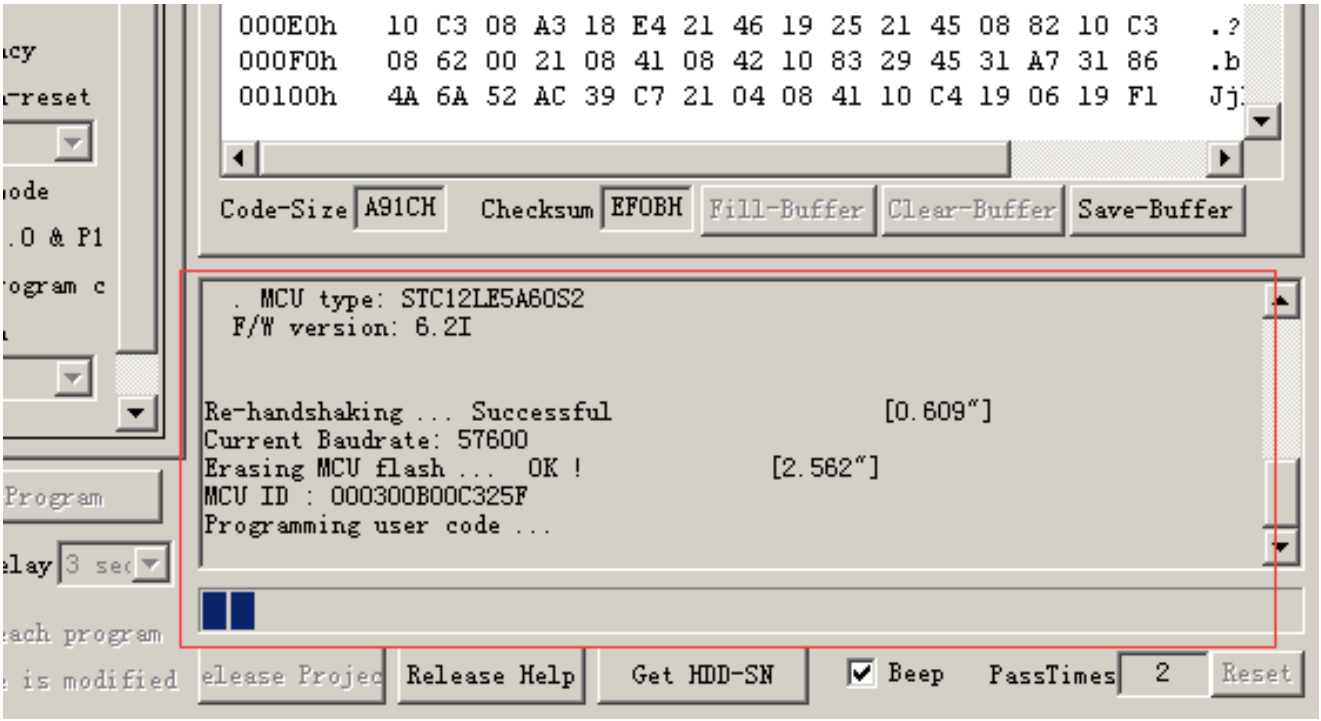

7-8-2 Then you will see ”Checking target MCU….”



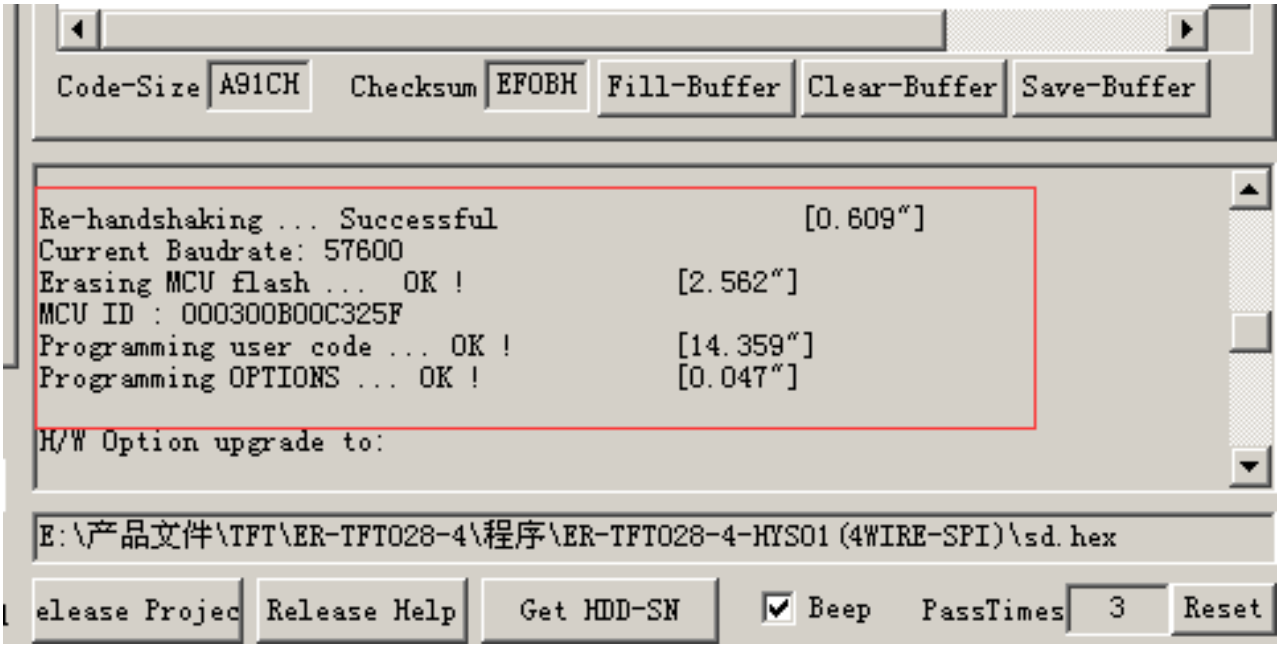
7-8-3 Power on the development board by pressing the white power button



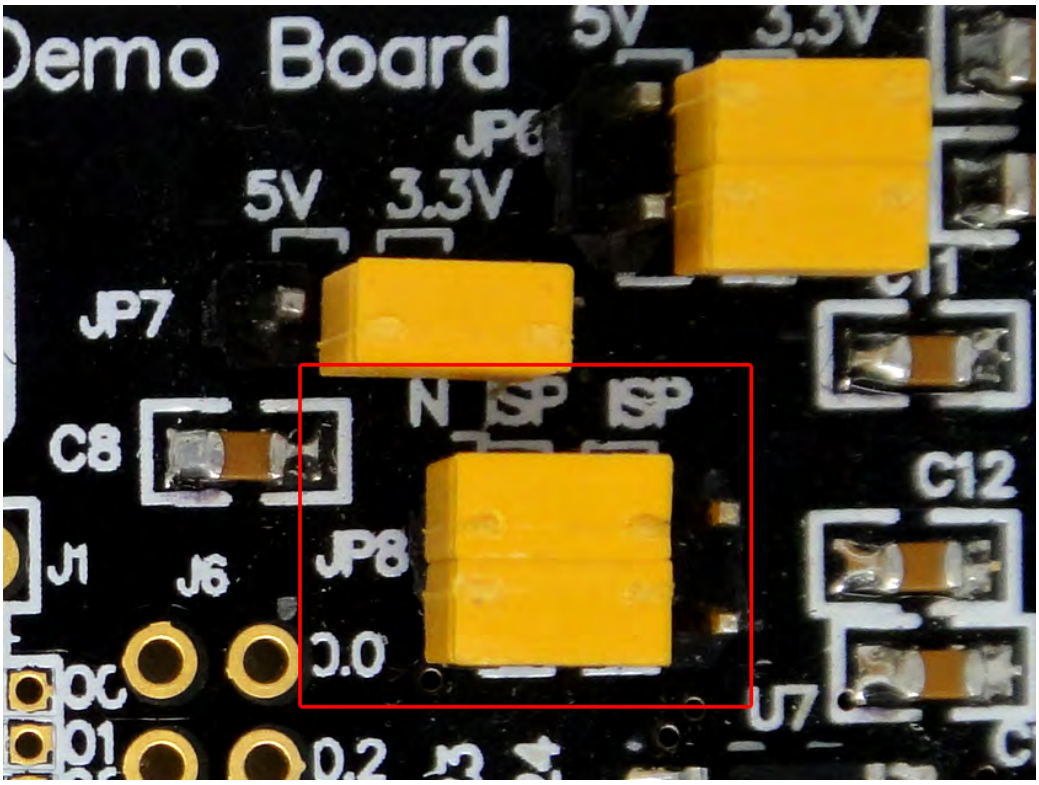
7-8-4 Now you could see the process of programming



7-8-5 Progarmming Finished




8 Please move the jumpers on JP8 from ISP to N_ISP as below image shows.



# 8. CARE AND HANDLING PRECAUTIONS

The kit is sold with a module mounted on it. If you attempt to modify the board to work with other modules, the warranty is void. For optimum operation of the module and demonstration board and to prolong their life, please follow the precautions below.

8.1 ESD (Electro-Static Discharge)

The circuitry is industry standard CMOS logic and susceptible to ESD damage. Please use industry standard antistatic precautions as you would for any other PCB such as expansion cards or motherboards.

8.2 Avoid Shock,Impact,Torque and Tension

◇ Do not expose the module to strong mechanical shock, impact, torque, and tension.
◇ Do not drop, toss, bend, or twist the module.
◇ Do not place weight or pressure on the module.

8.3 LCD&OLED Display Glass

◇ The exposed surface of the LCD "glass" is actually a polarizer laminated on top of the glass.To protect the soft plastic polarizer from damage, the module ships with a protective film over the polarizer. Please peel off the protective film slowly. Peeling off the protective film abruptly may generate static electricity.

◇ The polarizer is made out of soft plastic and is easily scratched or damaged. When handling the module, avoid touching the polarizer. Finger oils are difficult to remove.

◇ If the LCD panel breaks, be careful not to get the liquid crystal fluid in your mouth or eyes. If the liquid crystal fluid touches your skin, clothes, or work surface, wash it off immediately using soap and plenty of water.

◇ Be very careful when you clean the polarizer. Do not clean the polarizer with liquids. Do not wipe the polarizer with any type of cloth or swab (for example, Q-tips). Use the removable protective film to remove smudges (for example, fingerprints) and any foreign matter. If you no longer have the protective film, use standard transparent office tape . If the polarizer is dusty, you may carefully blow it off with clean, dry, oil-free compressed air.

8.4 Operation

◇ Use only the included AC adapter to power the board.

◇ Observe the operating temperature limitations: from -20°C minimum to +70°C maximum with minimal fluctuations. Operation outside of these limits may shorten the life and/or harm the display.

- ☐ At lower temperatures of this range, response time is delayed.
- ☐ At higher temperatures of this range, display becomes dark. (You may need to adjust the contrast.)

◇ Operate away from dust, moisture, and direct sunlight.

8.5 Storage and Recycling

- ◇ Store in an ESD-approved container away from dust, moisture, and direct sunlight.
- ◇ Observe the storage temperature limitations: from -30°C minimum to +80°C maximum with minimal fluctuations. Rapid temperature changes can cause moisture to form, resulting in permanent damage.
- ◇ Do not allow weight to be placed on the modules while they are in storage.
- ◇ Please recycle your outdated displays at an approved facility.