

ER-DBT013-2-CTP

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	Aug-25-2025

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1. ORDERING INFORMATION

1.1 Order Number

Part Number(Order Number)	Description
ER-DBT013-2-CTP	8051 Microcontroller Development Board & Kit

1.2 What's included in the package

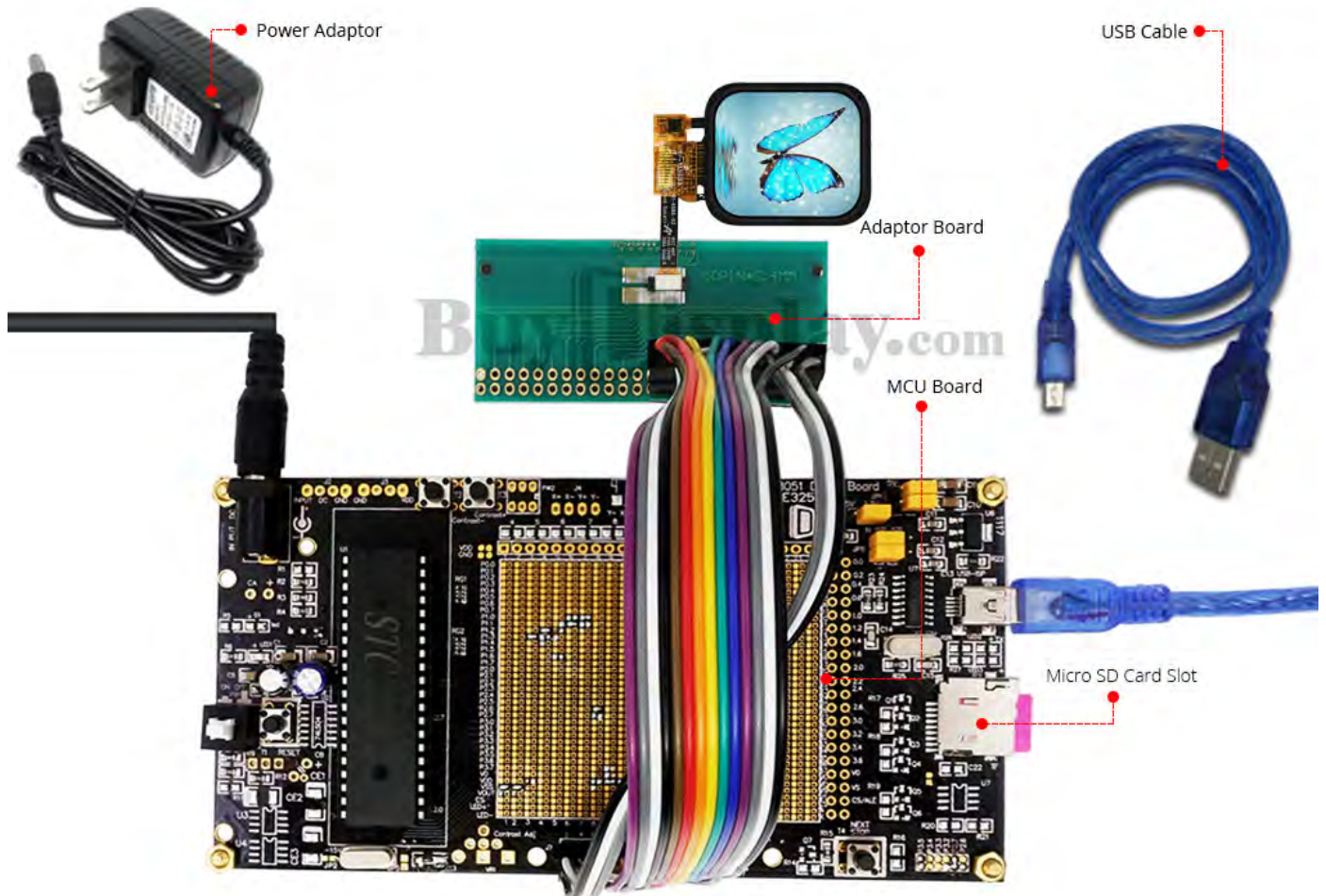
No	Standard Accessory Name	Quantity
1	MCU Board	1
2	Adaptor Board	1
3	Power Adaptor (12V/2A)	1
4	USB Cable	1
5	Micro SD Memory Card Loaded with Images	1

1.3 Compatible with following displays:

Part Number(Order Number)	Description
ER-TFT013-2+ER-TPC013-2	1.3" IPS TFT LCD 240x240 Pixels Display with Capacitive touch Panel

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.



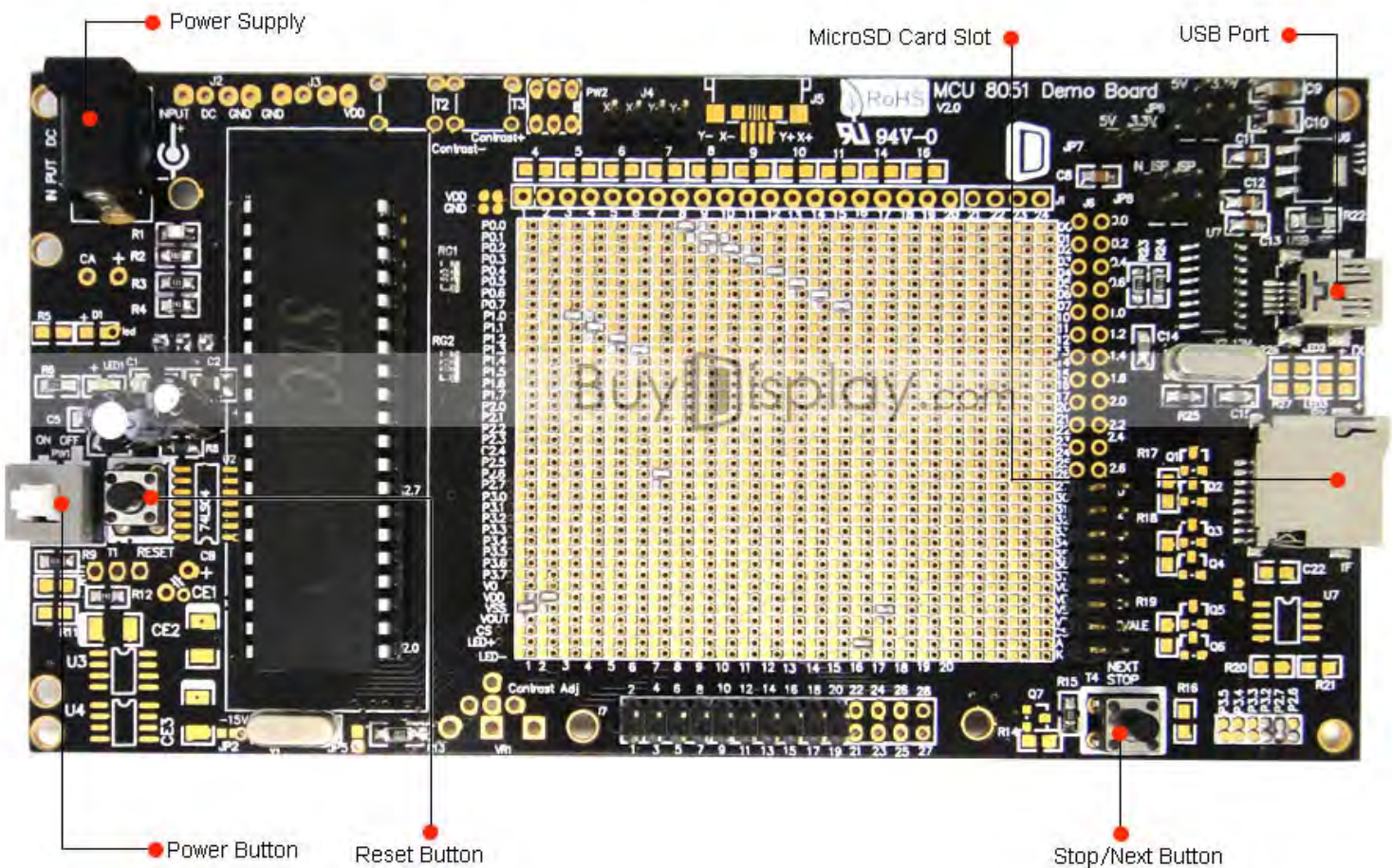
2-2 Press the power button to run the demonstration program.

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

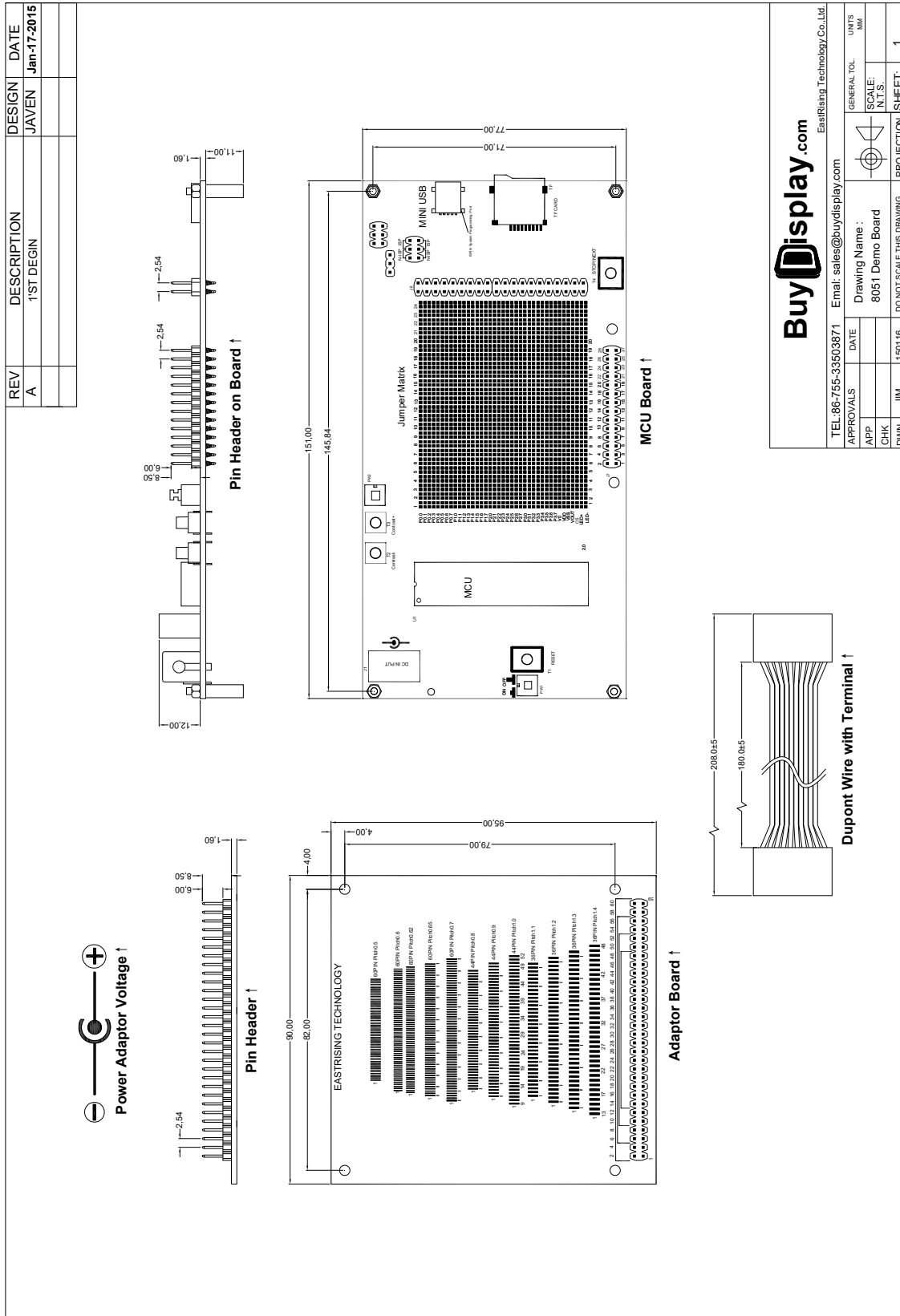
4.1 Mechanical Specification

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



BuyDisplay.com
EastRising Technology Co., Ltd.

TEL: 86-755-33503871 Email: sales@buydisplay.com

APPROVALS: DATE: GENERAL TOL: UNITS: MM

APP: CHK: DWN: JIM: 150116 DO NOT SCALE THIS DRAWING. PROJECTION: SHEET: 1

Drawing Name: 8051 Demo Board

SCALE: N.T.S.

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>

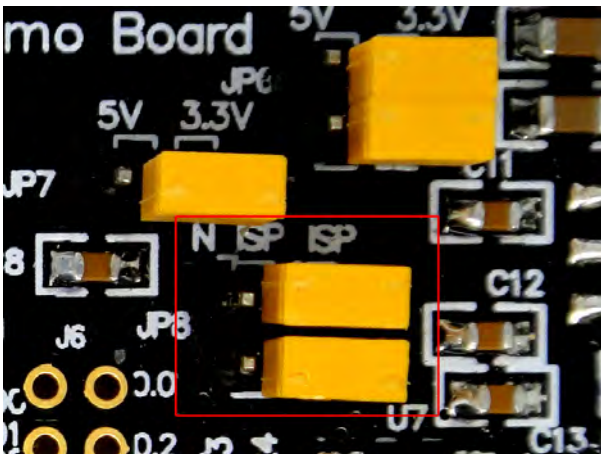
7. METHODS FOR USING IN SYSTEM PROGRAMMING

7-1 Hardware Preparation

7-1-1 Please power off the development board,

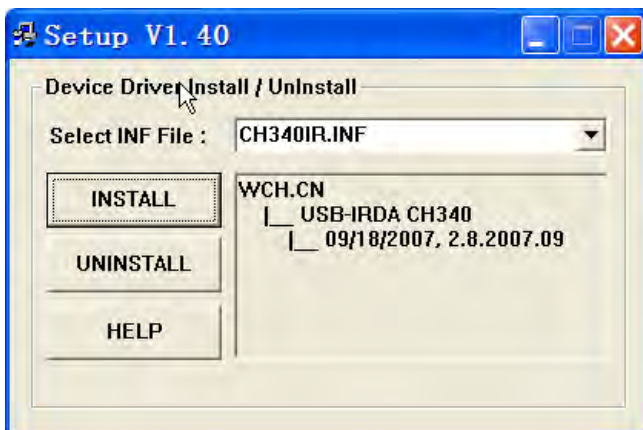
7-1-2 No power supply is connecting with 8051 development board,

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>



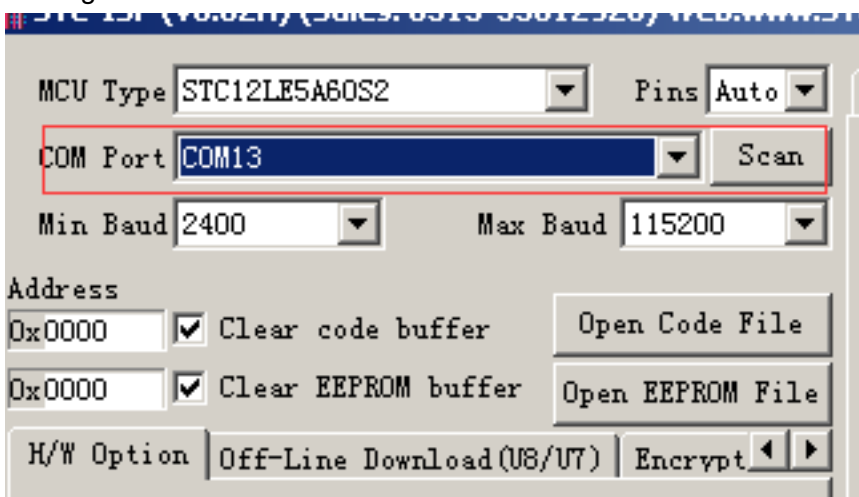
7-3 Connecting the 8051 development board to computer by USB Cable and you should find the new port USB-SERIAL CH340 in Computer-System Properties-Device Manager as below image shows and remember the COM number that would be used in Step7-4.



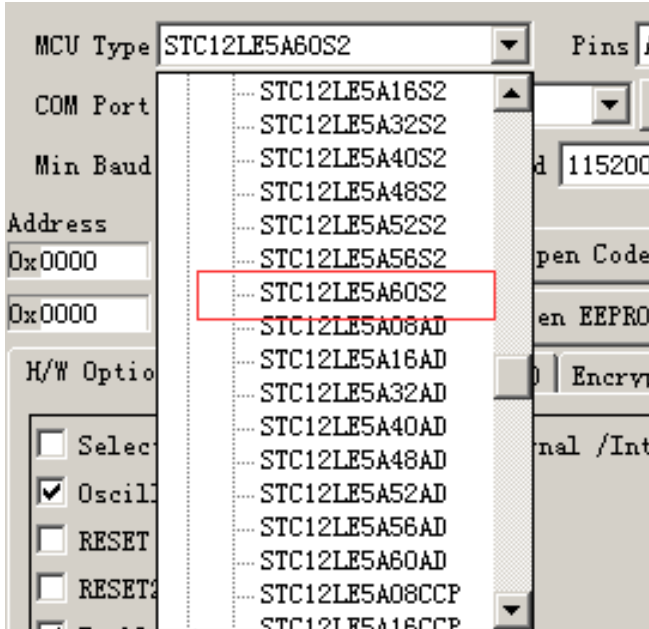
7-4 Install STC 8051 Microcontroller ISP(In System Programming)Software

<http://www.buydisplay.com/download/software/STC-ISP-V4.86-NOT-SETUP-ENGLISH.zip>

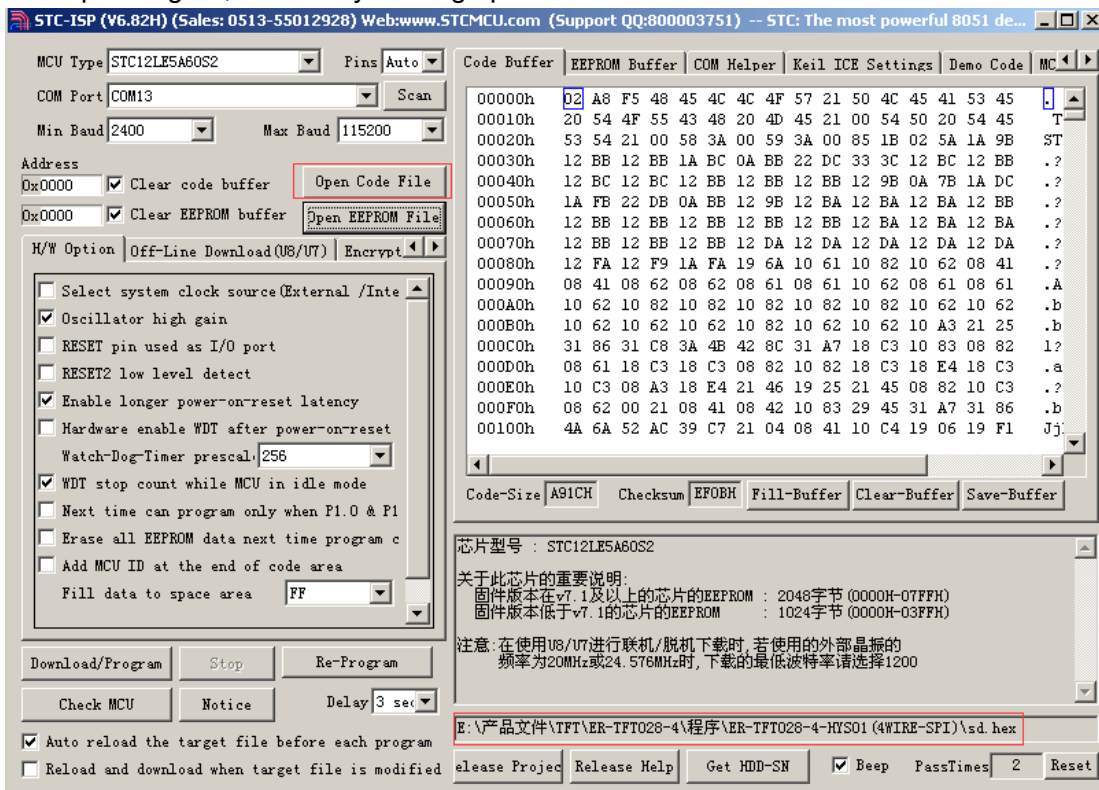
7-5 Open ISP and Select COM Port that should be the same with the step 7-2 you see from Device Manager.



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

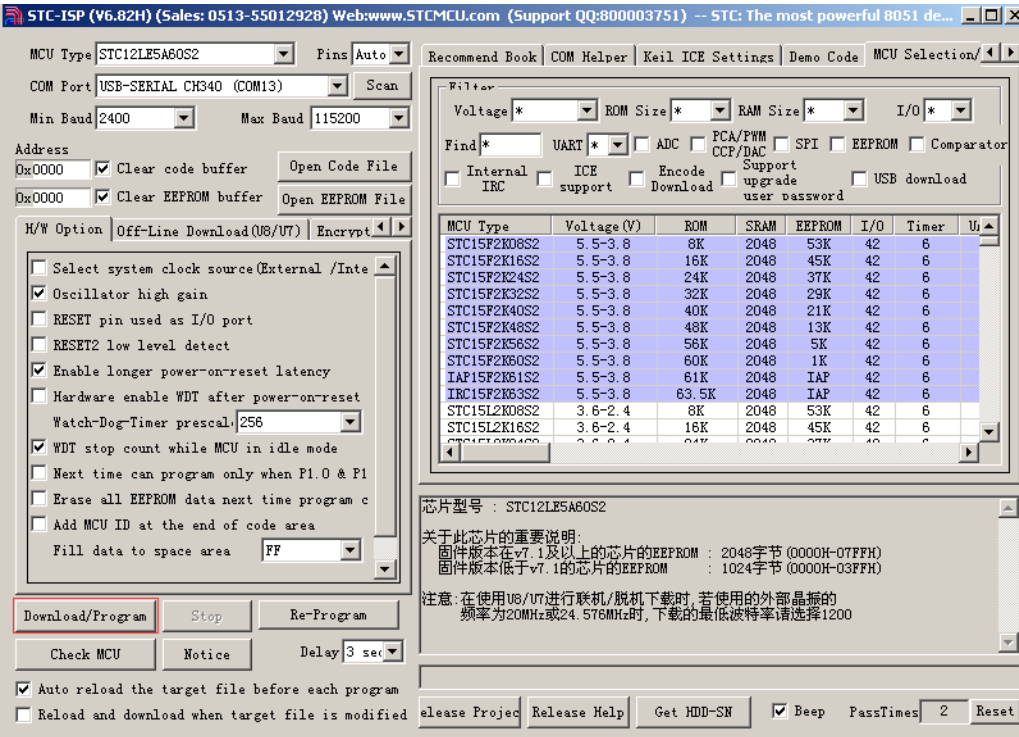


7-7 Open target “.hex” file by clicking open code file



7-8 Programming

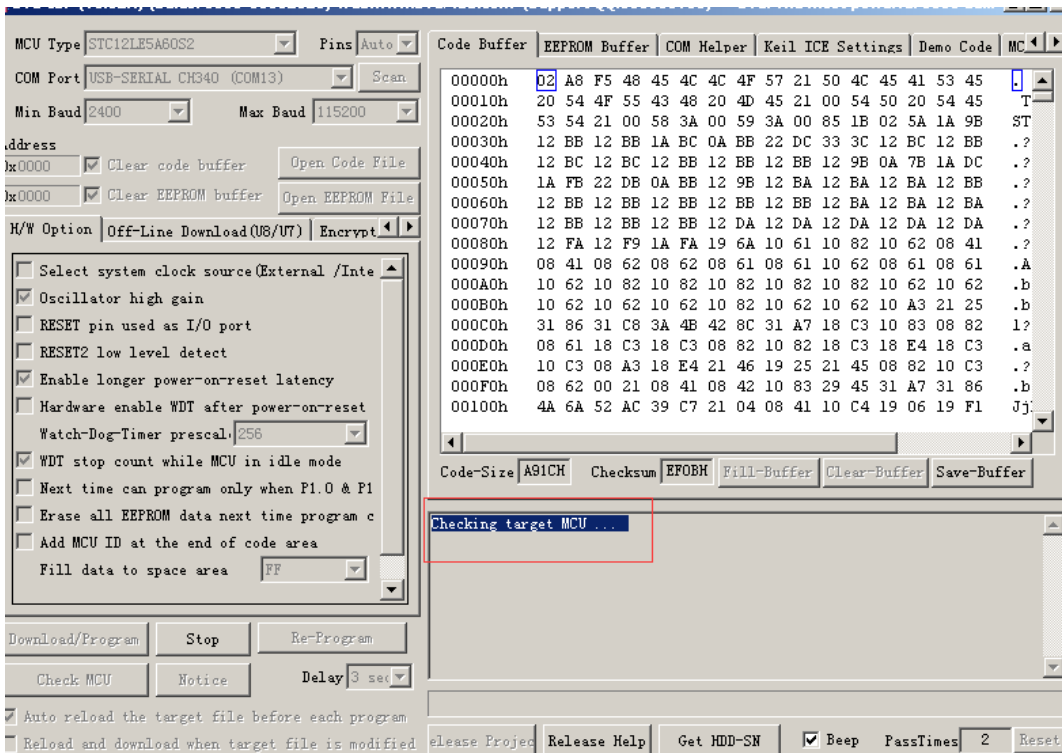
7-8-1 Click Download/Program



The screenshot shows the STC-ISP software interface. The 'Download/Program' button is highlighted with a red box. The interface includes various settings for MCU Type (STC12LE5A60S2), COM Port (USB-SERIAL CH340), and baud rates. A table of MCU options is visible, and the 'Download/Program' button is located at the bottom left of the main settings area.

MCU Type	Voltage (V)	ROM	SRAM	EEPROM	I/O	Timer
STC15F2K06S2	5.5-3.8	8K	2048	53K	42	6
STC15F2K16S2	5.5-3.8	16K	2048	45K	42	6
STC15F2K24S2	5.5-3.8	24K	2048	37K	42	6
STC15F2K32S2	5.5-3.8	32K	2048	29K	42	6
STC15F2K40S2	5.5-3.8	40K	2048	21K	42	6
STC15F2K48S2	5.5-3.8	48K	2048	13K	42	6
STC15F2K56S2	5.5-3.8	56K	2048	5K	42	6
STC15F2K60S2	5.5-3.8	60K	2048	1K	42	6
IAP15F2K61S2	5.5-3.8	61K	2048	IAP	42	6
IRC15F2K63S2	5.5-3.8	63.5K	2048	IAP	42	6
STC15L2K06S2	3.6-2.4	8K	2048	53K	42	6
STC15L2K16S2	3.6-2.4	16K	2048	45K	42	6
STC15L2K24S2	3.6-2.4	24K	2048	37K	42	6
STC15L2K32S2	3.6-2.4	32K	2048	29K	42	6
STC15L2K40S2	3.6-2.4	40K	2048	21K	42	6
STC15L2K48S2	3.6-2.4	48K	2048	13K	42	6
STC15L2K56S2	3.6-2.4	56K	2048	5K	42	6
STC15L2K60S2	3.6-2.4	60K	2048	1K	42	6

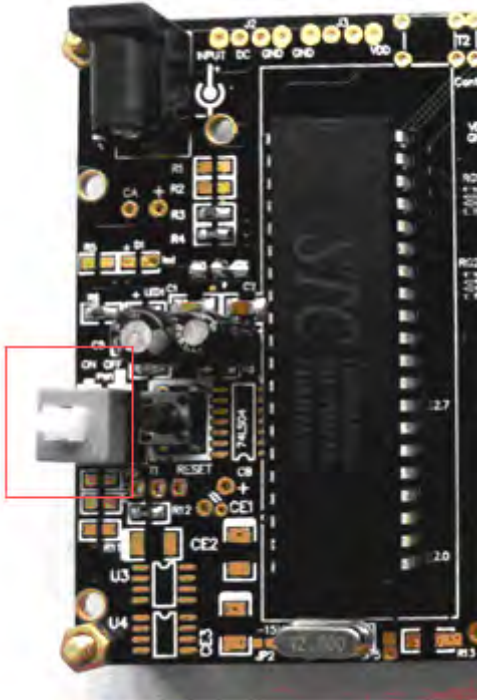
7-8-2 Then you will see "Checking target MCU...."



The screenshot shows the STC-ISP software interface with the 'Checking target MCU....' status message highlighted in red. The interface displays a memory dump table and various settings. The 'Checking target MCU....' message is located at the bottom of the main settings area.

Address	Code-Size	Checksum	Fill-Buffer	Clear-Buffer	Save-Buffer											
000000h	02	A8	F5	48	45	4C	4C	4F	57	21	50	4C	45	41	53	45
00010h	20	54	4F	55	43	48	20	4D	45	21	00	54	50	20	54	45
00020h	53	54	21	00	58	3A	00	59	3A	00	85	1B	02	5A	1A	9B
00030h	12	BB	12	BB	1A	BC	0A	BB	22	DC	33	3C	12	BC	12	BB
00040h	12	BC	12	BC	12	BB	12	BB	12	BB	12	9B	0A	7B	1A	DC
00050h	1A	FB	22	DB	0A	BB	12	9B	12	BA	12	BA	12	BA	12	BB
00060h	12	BB	12	BB	12	BB	12	BB	12	BB	12	BA	12	BA	12	BA
00070h	12	BB	12	BB	12	BB	12	DA	12	DA	12	DA	12	DA	12	DA
00080h	12	FA	12	F9	1A	FA	19	6A	10	61	10	82	10	62	08	41
00090h	08	41	08	62	08	62	08	61	08	61	10	62	08	61	08	61
000A0h	10	62	10	82	10	82	10	82	10	82	10	82	10	62	10	62
000B0h	10	62	10	62	10	62	10	82	10	62	10	62	10	A3	21	25
000C0h	31	86	31	C8	3A	4B	42	8C	31	A7	18	C3	10	83	08	82
000D0h	08	61	18	C3	18	C3	08	82	10	82	18	C3	18	E4	18	C3
000E0h	10	C3	08	A3	18	E4	21	46	19	25	21	45	08	82	10	C3
000F0h	08	62	00	21	08	41	08	42	10	83	29	45	31	A7	31	86
00100h	4A	6A	52	AC	39	C7	21	04	08	41	10	C4	19	06	19	F1

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



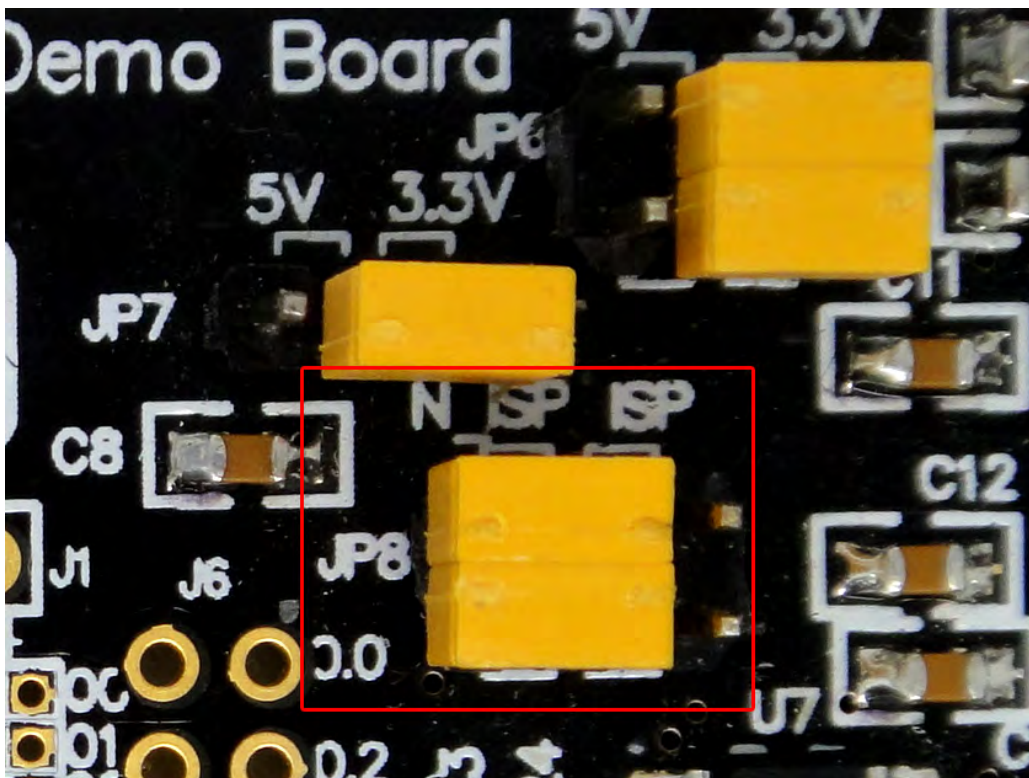
7-8-4 Now you could see the process of programming



7-8-5 Programming 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.

文件名: ER-DBT013-2-CTP_UserGuide
目录: D:\Documents
模板: C:\Users\Administrator\AppData\Roaming\Microsoft\Templates
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主题: ERC12864-1_Series_Manual
作者: EastRising
关键词: lcd display,lcd module,128x64 lcd display,128x64 lcd
 module,128x64 cog,cog,graphic module,128x64,12864,lcm
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上次打印时间: 2025-08-26 14:28:00
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