

GigaDevice MCU Team	Version	14 Pages
	English V 1.0	
	Name : GigaDevice All-In-One Programmer User Manual	

GigaDevice All-In-One Programmer User Manual

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1. Introduction

1.1 Function description

GD32 All-In-One Programmer is a tool for the user to operate the flash or configure Giga Device MCUs through one of the available serial peripherals (USART, USB, I2C, etc.).

With GD32 All-In-One Programmer, user can download the application program to the internal flash memory or secure chip and so on.

The software also supports multi-serial ISP downloads to improve programming efficiency during the mass production stage of the product.

1.2 Purpose

In order to reduce software switching caused by different downloading methods, GD32 All-In-One Programmer was developed.

The software makes the downloading process more friendly and convenient. Users can operate flash and GD32 MCUs by clicking on the UI interface.

The multi-serial ISP download function greatly improves the efficiency of batch downloading programs.

1.3 Operating environment

Operating system: win7/win10 64 bit

Processor: i3-9100 3.6GHz

Screen resolution: not less than 962*699

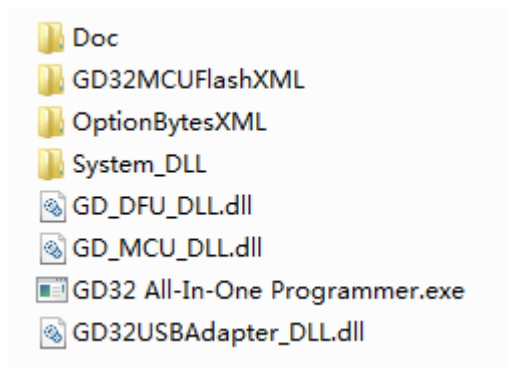
1.4 Jargon and Contraction

- **USART** : Universal Synchronous Asynchronous Receiver Transmitter. It is a full-duplex synchronous/asynchronous serial transceiver module, the interface is a highly flexible serial communication equipment.

- **I2C** : Inter-integrated circuit. It provides an I2C interface which is an industry standard two-line serial interface for communication. I2C bus uses two serial lines: a serial data line, SDA, and a serial clock line, SCL.
- **USB** : Universal Serial Bus (USB) connects more than computers and peripherals. It has the power to connect you with a whole new world of PC experiences.
- **DFU** : Device firmware upgrade, which means users can download codes without removes MCU from the PCB.

1.5 Package composition

The Package contains the following files and folders:



The Doc folder: Include the software user manual.

The GD32MCUFlashXML folder: Include the XML files of each series MCU.

The OptionBytesXML folder: Include the XML files of each series MCU.

Exe file: Software running file.

2. Running

This software is running on PC and compatible computers, and on platforms of WINDOWS.

There's no need to setup the software, the only thing you need to do is to click the icon to operate the software.

3. Using Details

The main window has three tabs, which can be switched through the tab item in the upper left corner. The single serial port tab can realize multiple connection, flash operation, option byte

configuration, etc. The multi-serial tab can download programs to multiple devices at the same time to improve programming efficiency. The CMDTest tab can detect download process commands.

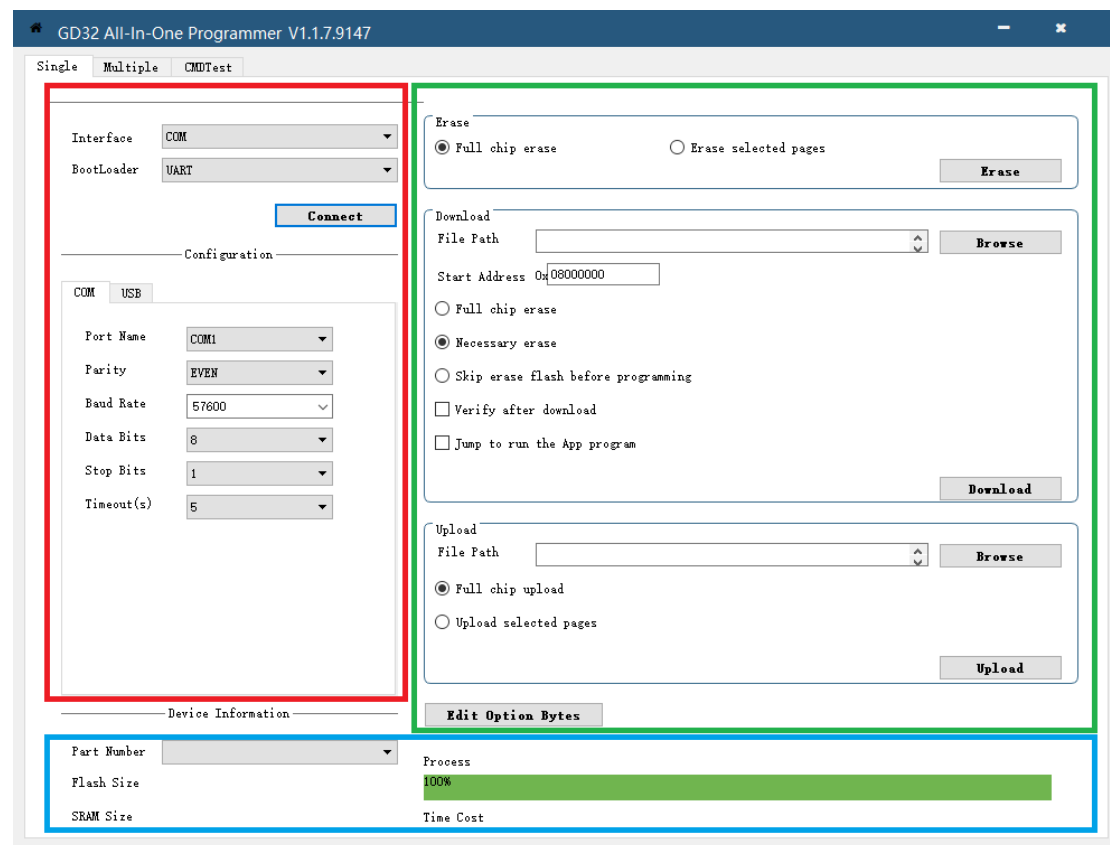
3.1 Single serial port tab

The single serial port tab layout consists of three parts: connection setting, operation setting and information display.

Connection setting(red): Download method type selection and download setting configuration.

Operation setting(green): It provides erasing, downloading, uploading and option byte editing functions.

Information display(blue): Display chip information and operation process and progress.



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Single Multiple CMDTest

Interface COM

BootLoader UART

Connect

Configuration

COM USB

Port Name COM1

Parity EVEN

Baud Rate 57600

Data Bits 8

Stop Bits 1

Timeout(s) 5

Erase

☒ Full chip erase ☐ Erase selected pages

Erase

Download

File Path

Browse

Start Address 0x08000000

☐ Full chip erase ☒ Necessary erase

☐ Skip erase flash before programming

☐ Verify after download

☐ Jump to run the App program

Download

Upload

File Path

Browse

☒ Full chip upload ☐ Upload selected pages

Upload

Edit Option Bytes

Device Information

Part Number

Flash Size

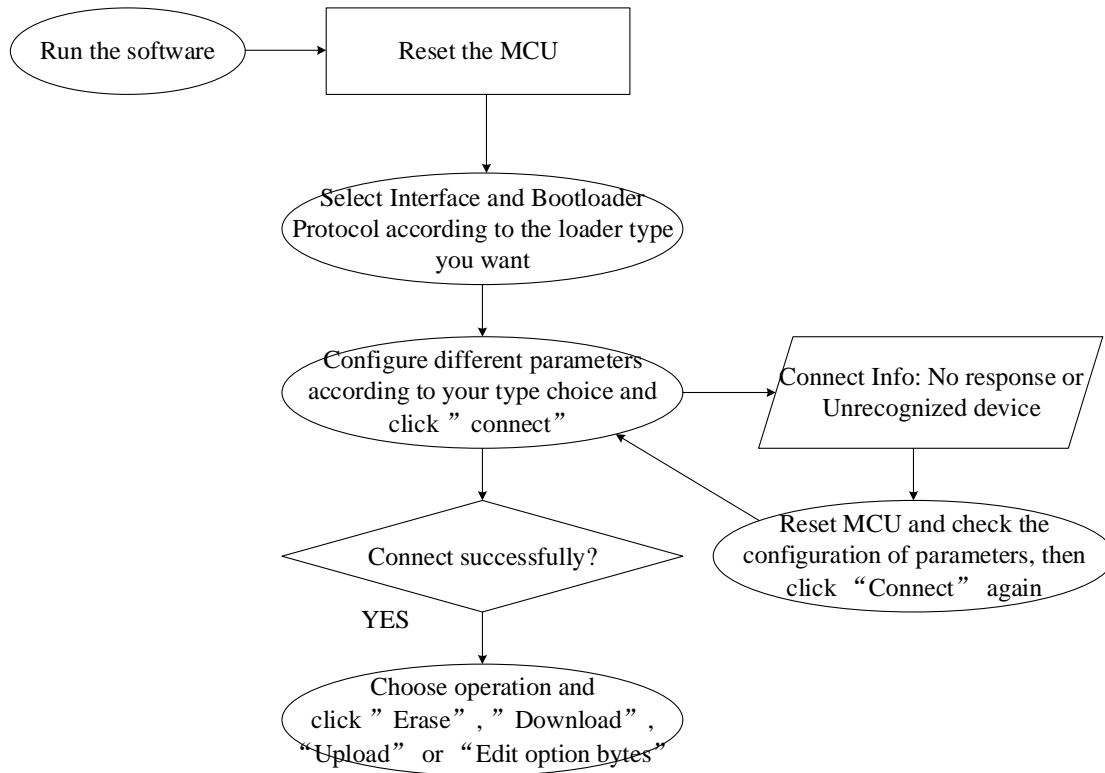
SRAM Size

Process

100%

Time Cost

3.1.1 Flowchart of Operation



3.1.2 Download Type Selection

It provides different interface options, such as "COM", "USB". It also provides different bootloader protocol options accordingly, such as "USART", "I2C" and "DFU". User should to select the connection type according to need first. Then configure different parameters in different tab according to the interface choice.

Interface: COM
BootLoader: UART
Connect

Configuration

COM USB

Port Name: COM1
Parity: EVEN
Baud Rate: 57600
Data Bits: 8
Stop Bits: 1
Timeout(s): 5

3.1.3 Readout Protection status

The figure below shows the readout protection status after connect, user needs to click “Remove Protection” first if the MCU is set readout protection, then wait for MCU removing protection to do the next.

Interface: COM
BootLoader: UART
Remove Protection Disconnect

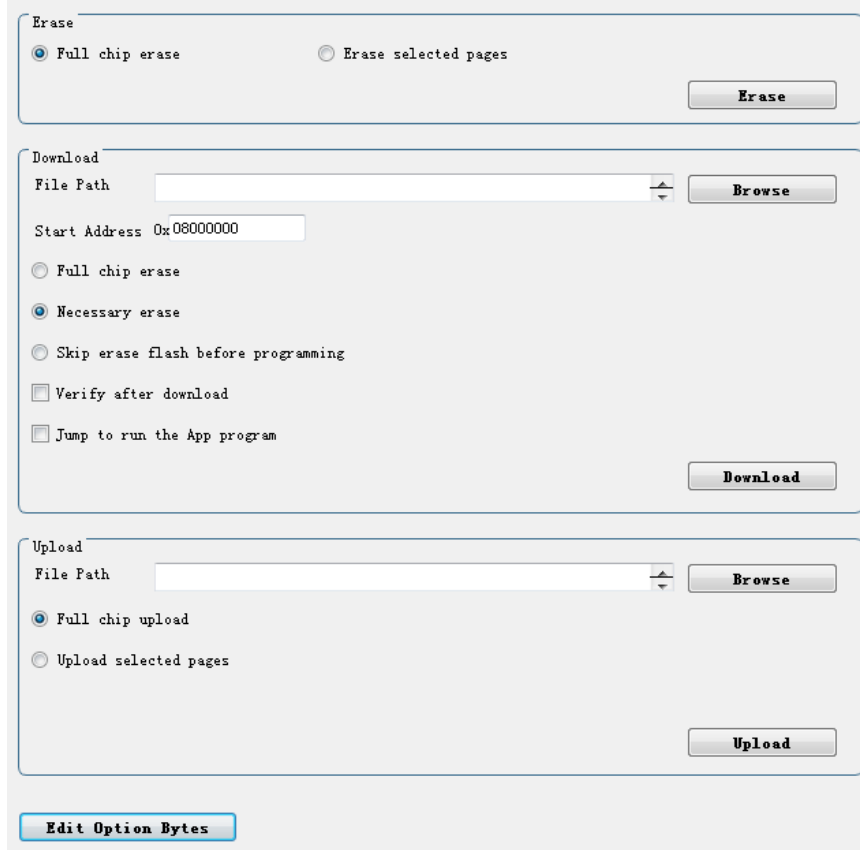
Configuration

COM USB

Port Name: COM3
Parity: EVEN
Baud Rate: 57600
Data Bits: 8
Stop Bits: 1
Timeout(s): 5

3.1.4 Operation Selection

It provides operation options includes download, upload from flash and edit option bytes.



Option “Erase ” allow user to erase full chip or erase selected pages, if “Erase selected pages” was selected ,it will show a “Select pages” dialog as shown in the following figure, then user can choose the pages to erase.

Option “Download ” allow user to download bin or hex file to MCU. User can choose “Erase necessary page” or “Erase all pages”, “Verify after download” whether or not.

Option “Upload” allow user to read full chip or selected pages data from MCU and save as a bin or hex file. If “Upload selected pages” was selected, it will show a “Select pages” dialog as shown in the following figure, then user can choose the pages to read.

Option “Edit option bytes” allow user to configure option bytes.

Select Pages					
Page Name	Start Address	End Address	Page Size	W	R
<input type="checkbox"/> Page0	0x8000000	0x80007FF	0x 800(2K)		
<input type="checkbox"/> Page1	0x8000800	0x8000FFF	0x 800(2K)		
<input type="checkbox"/> Page2	0x8001000	0x80017FF	0x 800(2K)		
<input type="checkbox"/> Page3	0x8001800	0x8001FFF	0x 800(2K)		
<input type="checkbox"/> Page4	0x8002000	0x80027FF	0x 800(2K)		
<input type="checkbox"/> Page5	0x8002800	0x8002FFF	0x 800(2K)		
<input type="checkbox"/> Page6	0x8003000	0x80037FF	0x 800(2K)		
<input type="checkbox"/> Page7	0x8003800	0x8003FFF	0x 800(2K)		
<input type="checkbox"/> Page8	0x8004000	0x80047FF	0x 800(2K)		
<input type="checkbox"/> Page9	0x8004800	0x8004FFF	0x 800(2K)		
<input type="checkbox"/> Page10	0x8005000	0x80057FF	0x 800(2K)		
<input type="checkbox"/> Page11	0x8005800	0x8005FFF	0x 800(2K)		

3.1.5 Configure Option Bytes

This page allow user to configure option bytes with UI. User can check or edit the Value.

OptionBytes		
Name	Value	Description
OptionBytes 0x1FFFF800		
SPC	0xA5	Option byte security protection value
SPC_N	0x5A	
USER	0xFF	
BB	<input checked="" type="checkbox"/>	Boot configuration
nRST_STDBY	<input checked="" type="checkbox"/>	Generate a reset instead of entering standby mode
nRST_DPSLP	<input checked="" type="checkbox"/>	Generate a reset instead of entering Deep-sleep mode
nWDG_HW	<input checked="" type="checkbox"/>	Hardware free watchdog
USER_N	0x00	
DATA[7:0]	0xFF	
DATA_N[7:0]	0x00	
DATA[15:8]	0xFF	
DATA_N[15:8]	0x00	
WP[7:0]	0xFF	
WP[7]	<input checked="" type="checkbox"/>	0x08007000~0x08007FFF
WP[6]	<input checked="" type="checkbox"/>	0x08006000~0x08006FFF
WP[5]	<input checked="" type="checkbox"/>	0x08005000~0x08005FFF
WP[4]	<input checked="" type="checkbox"/>	0x08004000~0x08004FFF

Apply

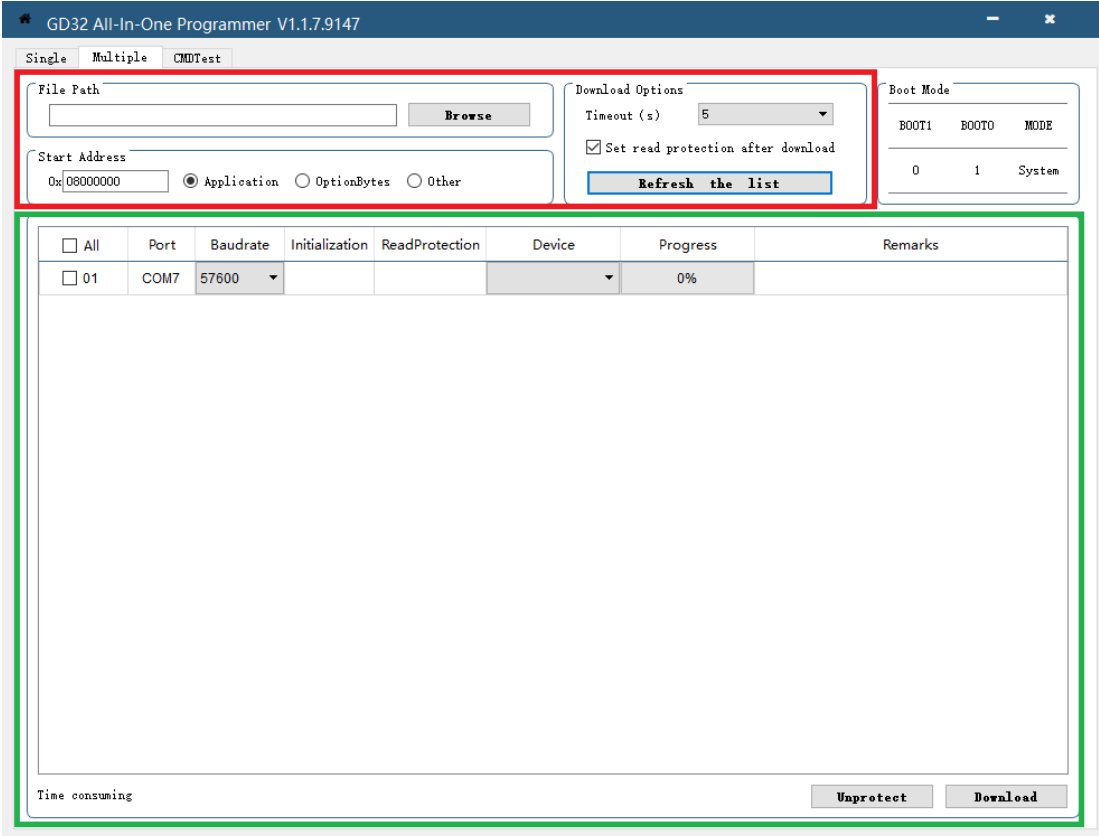
Cancel

3.2 Multiple serial port tab

The Multiple serial port tab layout consists of two parts: download options and device list.

Download options(red): path selection for downloading files, start address selection, timeout setting, read protection settings and list refresh function.

Device list(green): display all enabled serial devices and information.



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Single Multiple CMDTest

Download Options (Red Box):

File Path: **Browse**

Start Address: ☒ Application ☐ OptionBytes ☐ Other

Download Options: Timeout (s) ☒ Set read protection after download **Refresh the list**

Boot Mode:

BOOT1	BOOT0	MODE
0	1	System

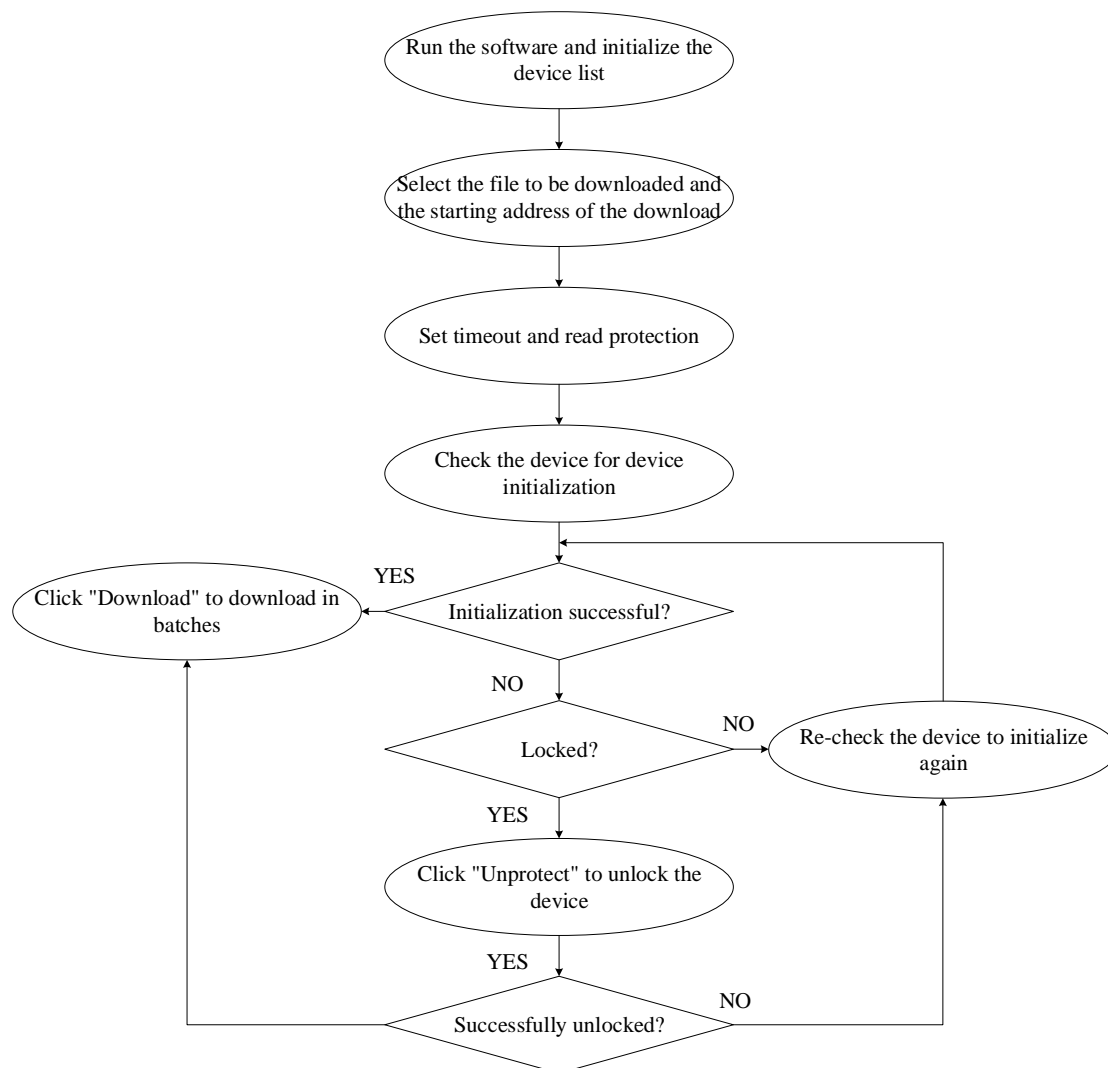
Device List (Green Box):

<input type="checkbox"/> All	Port	Baudrate	Initialization	ReadProtection	Device	Progress	Remarks
<input type="checkbox"/> 01	COM7	57600				0%	

Time consuming

Unprotect **Download**

3.2.1 Flowchart of Operation



3.2.2 Device initialization

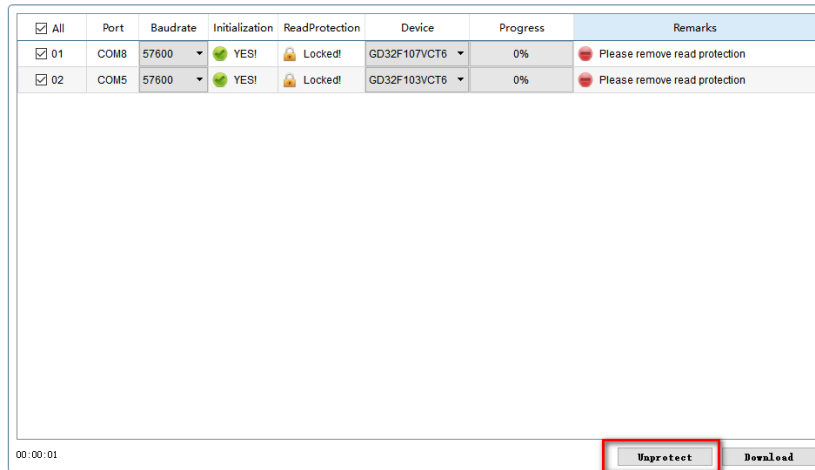
A single device can be initialized by checking the checkbox in front of the device, and all devices can be initialized by checking the "ALL" checkbox in the header.

<input type="checkbox"/> All	Port	Baudrate	Initialization	ReadProtection	Device	Progress	Remarks
<input checked="" type="checkbox"/> 01	COM8	57600 ▾	YES!	Unlocked!	GD32F107VCT6 ▾	0%	Device initialization is successful
<input type="checkbox"/> 02	COM5	57600 ▾			▾	0%	

<input checked="" type="checkbox"/> All	Port	Baudrate	Initialization	ReadProtection	Device	Progress	Remarks
<input checked="" type="checkbox"/> 01	COM8	57600 ▾	YES!	Unlocked!	GD32F107VCT6 ▾	0%	Device initialization is successful
<input checked="" type="checkbox"/> 02	COM5	57600 ▾	YES!	Unlocked!	GD32F103VCT6 ▾	0%	Device initialization is successful

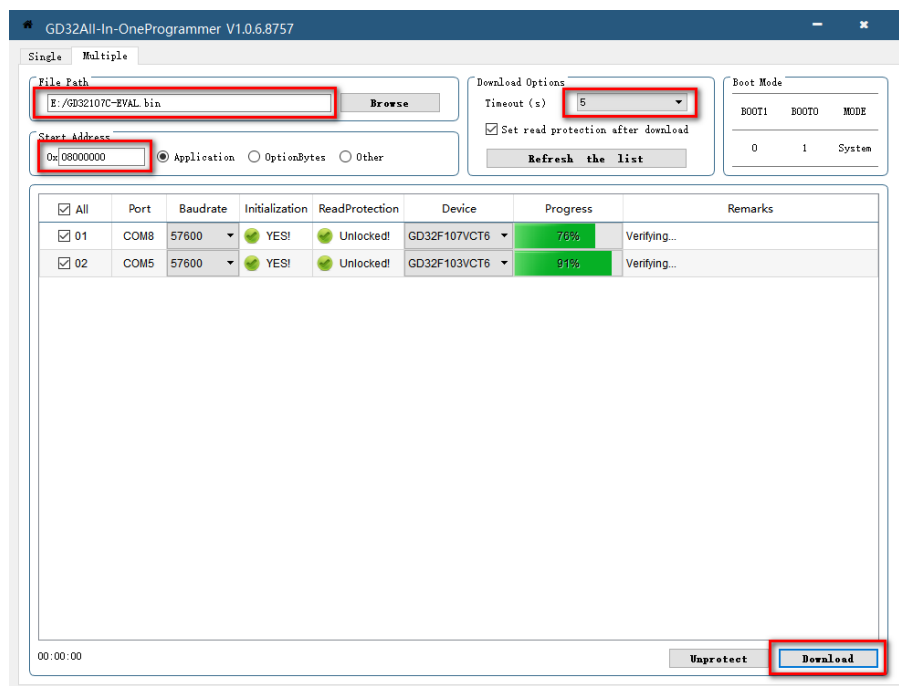
3.2.3 Device unprotected

The user can click "Unprotect" to remove the read protection and write protection of the device. After unlocking, the software will automatically initialize the device.



3.2.4 Program download

After the device is initialized successfully, click "Download" to download the program, and the device list will update the download process information in real time. Note that you must select the download file path and download start address before downloading. It is recommended to set the timeout to 5s to ensure the download is successful.

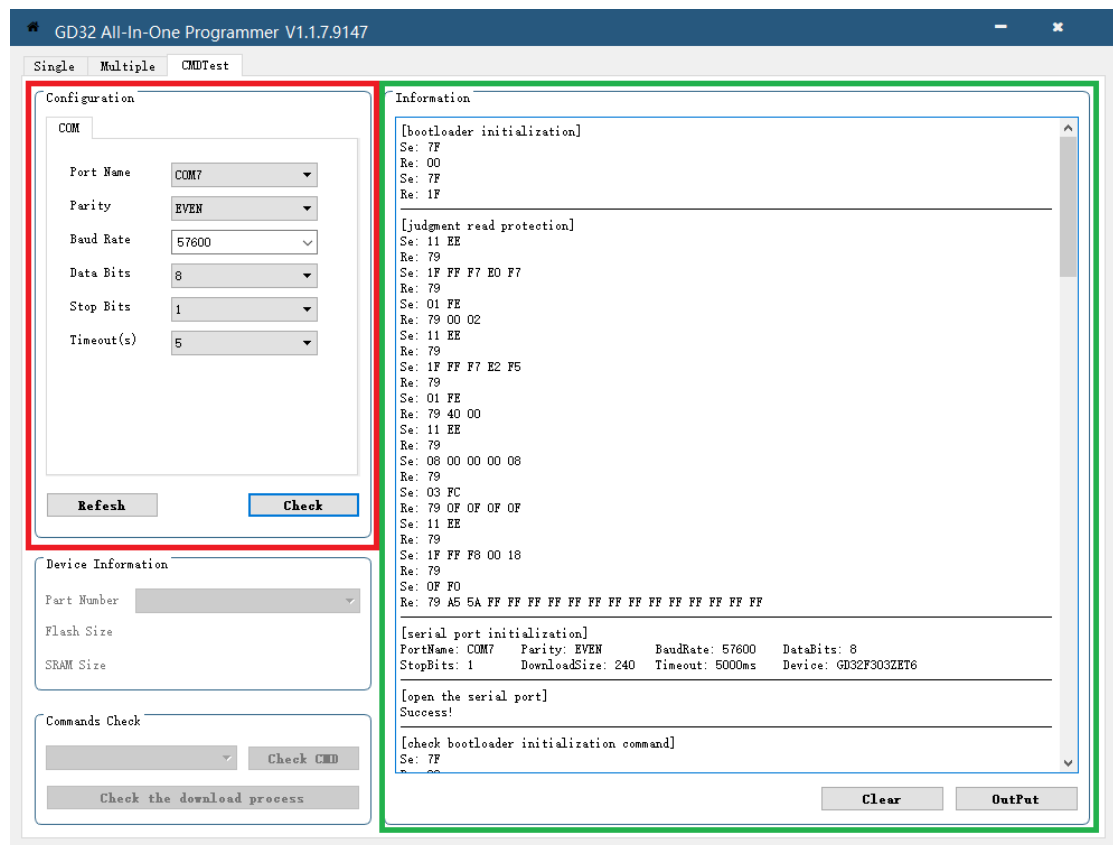


3.3 CMDTest tab

The CMDTest tab layout consists of two parts: device configuration and information display.

Device configuration(red): Realize connection with bootloader by configuring serial port information.

Information display(green): Test all commands during the download process and display the sending and receiving information.



Refresh: Refresh and display all detected serial ports.

Check: One-key query all commands and display process information, including operation process, sending and receiving data, and results.

Clear: Clear all content in the message box.

Output: Export all the content in the message box to a txt file and save it to the specified path.

4. Attentions

- When the software is connected to the device, the device needs to switch the BOOT working mode to System mode, that is, BOOT1=0, BOOT0=1.

- When the software is working, make sure that the serial port of the device is not occupied, or the software cannot initialize the device.
- Adding or removing devices requires refreshing the device list, otherwise the new device cannot be downloaded, or the software is displayed abnormally.

5. Update

Contact the developer.

6. Q&A

Q1 : Device initialization failed.

A1 : Try to check the checkbox again to reinitialize the device.

Q2 : The erasing and programming process failed, and the device displays unknown after re-initialization, or the display is normal but still cannot pass the erasing and programming process.

A2 : There is a high probability that the device communication is abnormal. You can try to reset the device and execute again.