

User Manual

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G32R5xx Tool User Manual

Version: V1.1

1 Introduction

Due to the chip characteristics of the G32R5xx series MCU, some generated files require data-stream setup before certain examples. For example, the data stream of flashapi_ex2_uart_kernel (this example belongs to the SDK **extension package**; see *G32R5xx SDK Extension Package Examples User Manual*). “geehy_tool” helps you generate the required data-stream format so the program can run correctly.

Please read this document before using “geehy_tool”. Tool operating environment:

- Windows 10/11

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2 Instructions for Use of Geehy_Bin

2.1 Commands Supported by Geehy_Bin.exe

- -h: Display help information.
- -v: Display detailed log information.
- -boot: Convert all segments into bootable form.
- -uart8: Specify UART format, 8-bit mode.
- -spi8: Specify SPI format, 8-bit mode.
- -lospcp=value: Specify the initial value of the lospcp register.
- -spibrr=value: Specify the initial value of the spibrr register.
- -i2c8: Specify I2C format, 8-bit mode.
- -i2cpsc=value: Specify the initial value of the i2cpsc register.
- -i2cclkh=value: Specify the initial value of the i2cclkh register.
- -i2cckl=value: Specify the initial value of the i2cckl register.
- -pc=value: Specify the PC value.
- -a: Select ASCII hexadecimal.
- -o: Specify the output file.
- -m: Select the primary secure boot mode.
- -e: Select the extended secure boot mode.
- -me: Select both primary and extended secure boot modes.
- -mesta=: If primary and extended boot modes are selected, specify the start address of the extended boot.
- -melen=: If primary and extended secure boot modes are selected, specify the Flash length of the extended secure boot.
- --cmac=file: Specify the txt file that stores the CMAC key.
- xxx.cmd: Specify the CMD file that stores the CMAC calculation start address, checked Flash length, and fill value.
- -tag=value: Specify the start address for placing the tag value.
- -load=value: Specify the start address for downloading the file.
- --load_image: Select to generate a BIN file.

- --image: Select to generate a TXT file.

2.2 Use Examples

This section introduces common Geehy_Bin.exe command operations. The examples show how to convert binary files to different formats, configure boot parameters, and enable secure boot modes. Use them as a baseline and adapt as needed.

2.2.1 UART_Example

This section shows how to convert files to UART 8-bit mode. Each example sets a different PC value and outputs ASCII hexadecimal format.

- Convert flashapi_ex2_uart_kernel_CPU0_RAM.bin into bootable UART 8-bit mode, set the initial PC to 0x00000000, output ASCII hexadecimal, and save to flashapi_ex2_uart_kernel_CPU0_RAM.txt.

```
Geehy_Bin.exe -boot -uart8 -pc=0x00000000 -a -o flashapi_ex2_uart_kernel_CPU0_RAM.txt  
flashapi_ex2_uart_kernel_CPU0_RAM.bin
```

- Similar to the previous command, but set the initial PC to 0x08000000 and output flashapi_ex2_uart_kernel_BANK0_LDFU.txt.

```
Geehy_Bin.exe -boot -uart8 -pc=0x08000000 -a -o flashapi_ex2_uart_kernel_BANK0_LDFU.txt  
flashapi_ex2_uart_kernel
```

- Similar to the previous two, but set the initial PC to 0x08020000 and output flashapi_ex2_uart_kernel_BANK1_LDFU.txt.

```
Geehy_Bin.exe -boot -uart8 -pc=0x08020000 -a -o flashapi_ex2_uart_kernel_BANK1_LDFU.txt  
flashapi_ex2_uart_kernel_BANK1_LDFU.bin
```

2.2.2 SPI_Example

Convert project.bin to bootable SPI 8-bit mode, lospcp=2, spibrr=127, initial PC=0x08000000, ASCII hexadecimal output to project.txt.

```
Geehy_Bin.exe -boot -spi8 -lospcp=0x02 -spibrr=0x7F -pc=0x08000000 -a project.bin -o  
project.txt
```

2.2.3 I2C_Example

Convert project.bin to bootable I2C 8-bit mode, i2cpsc=4, i2cclkh=45, i2cckl=45, initial PC=0x08000000, ASCII hexadecimal output to project.txt.

```
Geehy_Bin.exe -boot -i2c8 -i2cpsc=0x04 -i2cclkh=0x2d -i2cckl=0x2d -pc=0x08000000 -a  
project.bin -o project.txt
```

2.2.4 Secure_Example

The following examples cover secure boot modes. Commands can encrypt files with a CMAC key and select txt or bin output. They show primary and extended secure boot scenarios, plus tag and download start-address settings.

- Use test_major.cmd to specify the CMAC calculation start address and related parameters. Select primary secure boot, generate txt, process user.bin with the CMAC key in key.txt, place the tag at 0x08000008, and output test_major_cmac.txt.

```
Geehy_Bin.exe test_major.cmd -m --image --cmac=key.txt user.bin -tag=0x08000008 -o  
test_major_cmac.txt
```

- Similar to the previous command, but generate bin format and save to test_major_cmac.bin.

```
Geehy_Bin.exe test_major.cmd -m --load_image --cmac=key.txt user.bin -tag=0x08000008 -o  
test_major_cmac.bin
```

- Use extended secure boot, generate txt, and use the CMAC key in key.txt. Process user.bin, place the tag at 0x08003000, download from 0x08000000, and output test_extend_cmac.txt.

```
Geehy_Bin.exe test_extend.cmd -e --image --cmac=key.txt user.bin -tag=0x08003000 -  
load=0x08000000 -o test_extend_cmac.txt
```

- Similar to the previous command, but generate bin format and save to test_extend_cmac.bin.

```
Geehy_Bin.exe test_extend.cmd -e --load_image --cmac=key.txt user.bin -tag=0x08003000 -  
load=0x08000000 -o test_extend_cmac.bin
```

3 Geehy_Serial_flash_Programmer

This chapter introduces Geehy_Serial_flash_Programmer.exe and related commands. The tool programs devices over a serial port.

3.1 Commands Supported by Geehy_Serial_flash_Programmer.exe

- -d <device>: Loaded device name. Example: r501.
- -k <file>: Flash kernel file name. The file must be in UART boot format.
- -a <file>: Download file name. The file must be in UART boot format.
- -p COM<num>: Set the COM port used for communication.
- -b <num>: Set the COM port baud rate.
- -? or -h: Display help information.
- -q: Quiet mode. Disable output to stdout.
- -w: Wait for a key press before exiting.
- -v: Enable verbose output.

Note: -d, -k, and -p are required parameters. If the baud rate is omitted, communication uses 9600 baud.

3.2 Use Examples

Under G32R5xx_SDK\utilities\geehy_tool there are two host-tool variants.

Geehy_Serial_flash_Programmer.exe works with the MCU BOOTROM and does not burn application programs. Geehy_Serial_flash_Programmer_appln.exe works with the uart_flash_kernel program. Examples below show how to set the device, kernel file, download file, COM port, and baud rate.

- Program device r501 with Geehy_Serial_flash_Programmer.exe. Set the flash kernel and download file names, use COM11, and set baud rate 38400.

```
Geehy_Serial_flash_Programmer.exe -d r501 -k flashapi_ex2_uart_kernel_CPU0_RAM.txt -a  
LED1_0x0800C000.txt -p COM11 -b 38400
```

```
Geehy_Serial_flash_Programmer_appln.exe -d r501 -k flashapi_ex2_uart_kernel_CPU0_RAM.txt -a  
LED2_0x0800C000.txt -p COM11 -b 38400
```

4 Revision

Table 1 Document revision

Date	Version	Change history
2025.1	1.0	● Initial release
2026.8	1.1	● Listed applicable products as G32R501 and G32R502.

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