HW/SW User Guide

EISC-GANG II User's Guide

Advanced Digital, Inc.

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The EISC GANG II Programmer is a programmer for the adStar microcontroller that can program the internal flash and internal OTP. The EISC GANG II Programmer is provided with an expansion board that implements the interconnections between the EISC GAN II Programmer and multiple target devices.

The gang programmer allow up to eight devices to be programmed simultaneously.

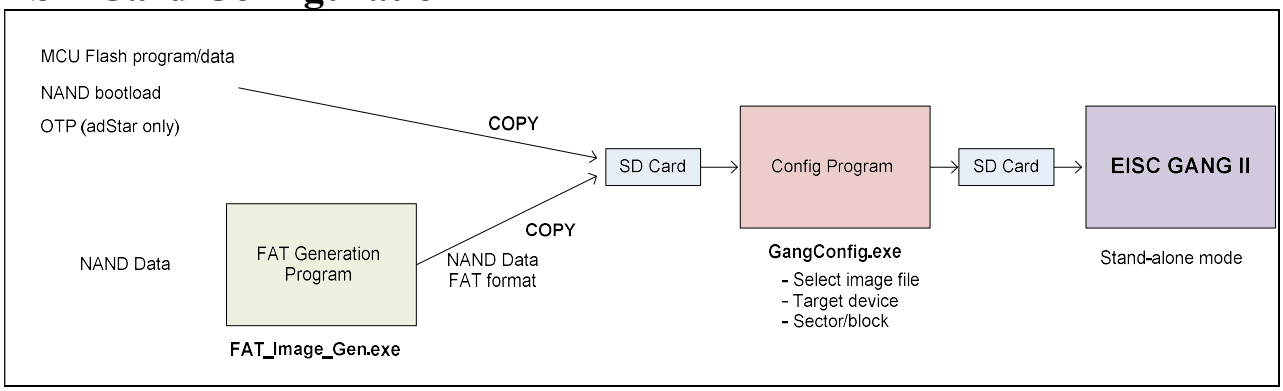
The configuration setup and program data can be performed through an SD card.
After preparing the SD card, programming can be started by only pressing the RUN button.

Features

The EISC GANG II features include:

- Stand-alone programming mode of operation
- Programming the internal flash of the adStar microcontroller unit.
- Programming the NAND flash unit
- Status LEDs for each target devices
-

1 SD Card ~~Configuration~~



Programming the target devices using the SD card.

1. Prepare the image file(program, NAND bootload, OTP data).
2. Copy image file to the SD Card on the PC's window program.

1.1 Run Configuration Program

"EISC GANG Configurator (Gang Config.exe)" is a program for setting the sector number or a block number to be stored in the target chip.
Save the configuration file to the SD card.

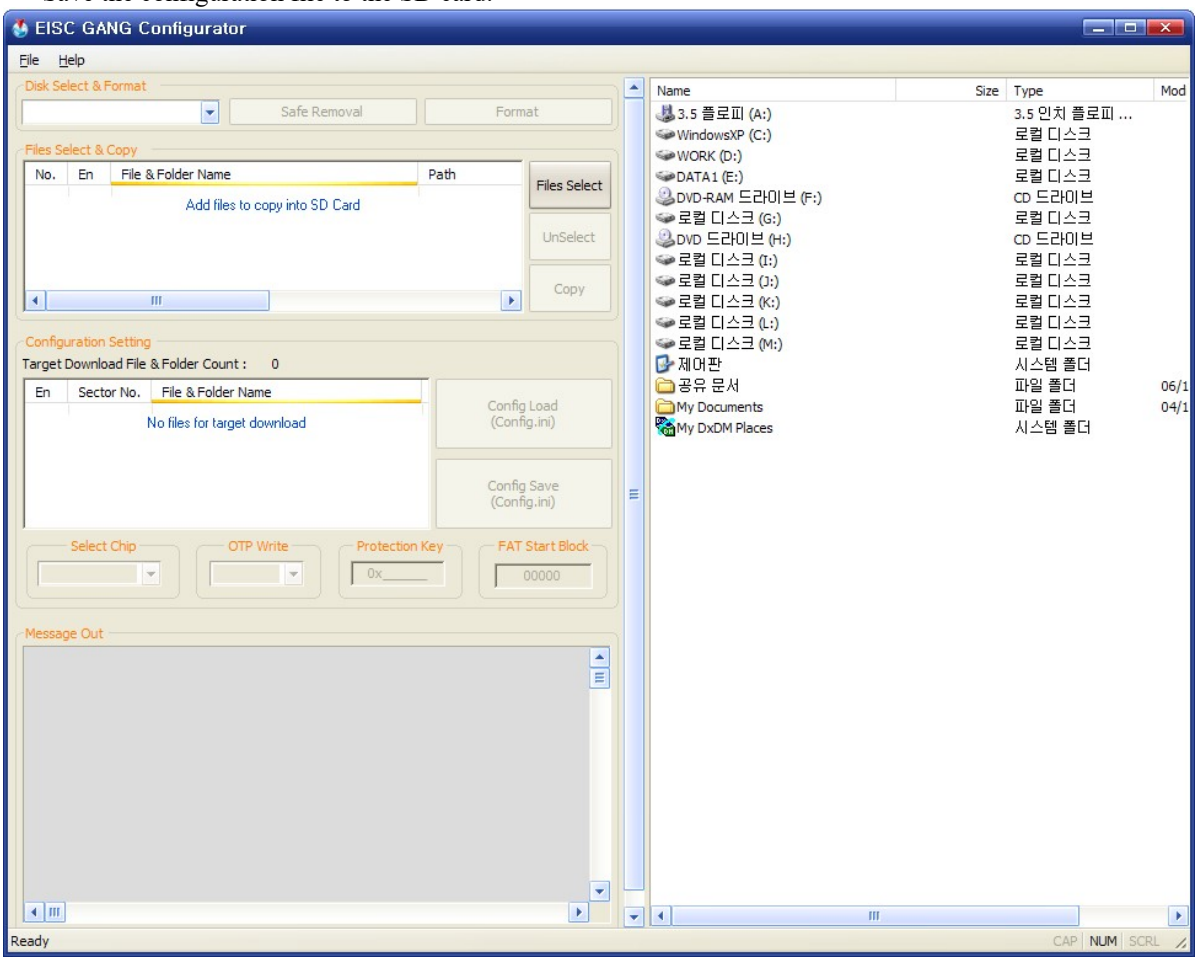


Figure 1 EISC GANG Configurator Program

1.2 Copy files to the SD card

Connect the PC to the SD Card and select the SD card.

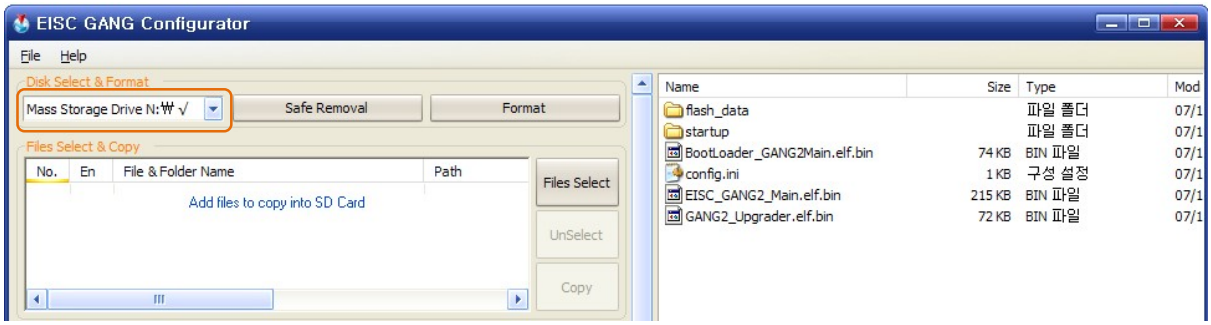


Figure 2 Removable disk (for GANG Writer SD Card) Select

If you do not have a SD card is formatted, click the "Format" button to format.

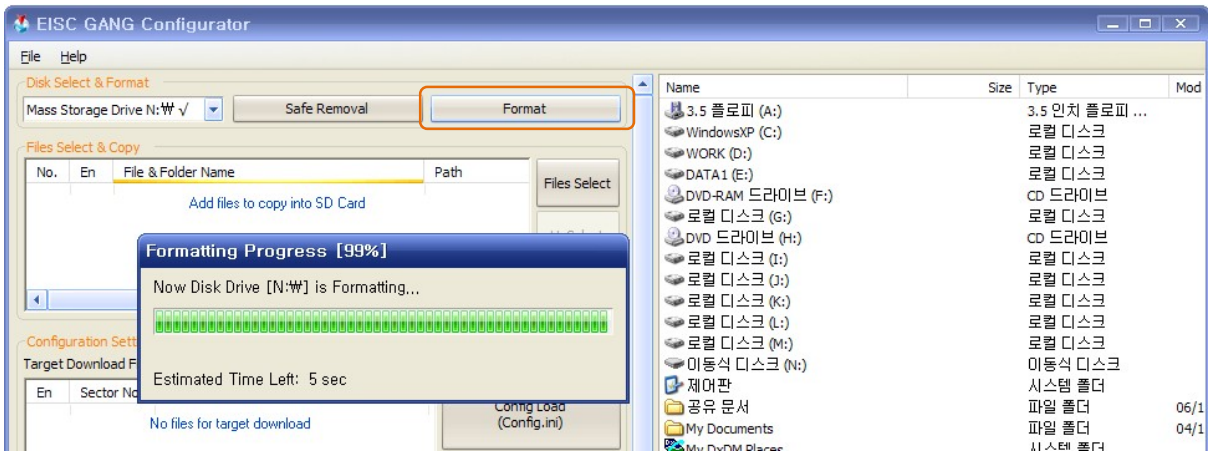


Figure 3 Removable Disk Format

After formatting, you must select the files you want to copy Write to Chip.

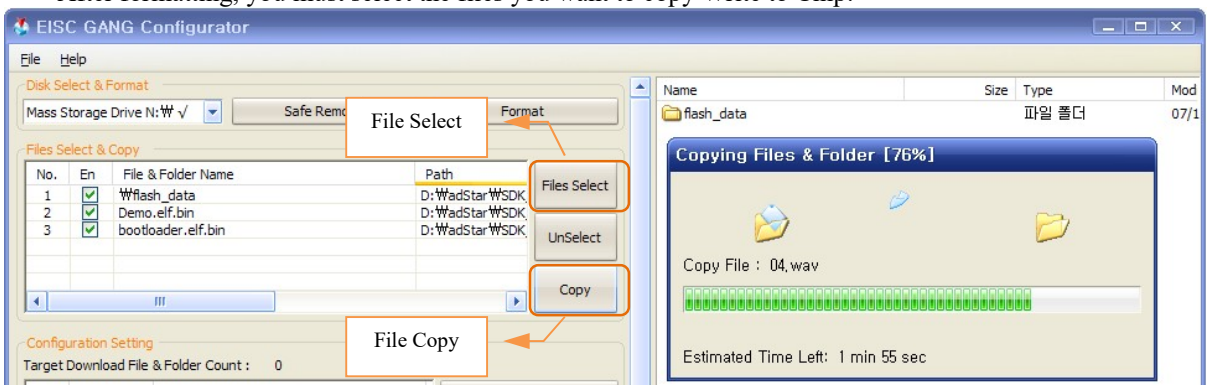


Figure 4 Select and copy files

1.3 Save settings to the SD Card

1.3.1 Select image files on the SD Card

Click the "Config Load" button shown in Figure 5 to check the files that are stored on the SD Card.

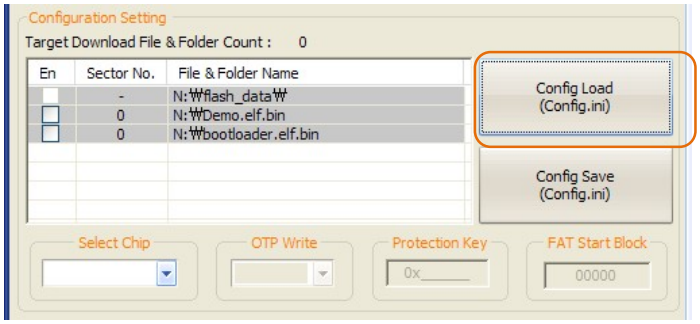


Figure 5 Config Load Run

① Select a target device.
② Select a file to be programmed into the SD card
③ Select the desired sector / block number to where be programmed.

Following these steps creates configuration information that can program target devices using the SD Card used on the ESIC GANG II.

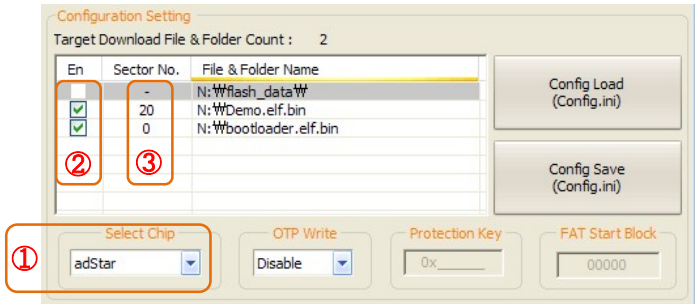


Figure 6 Config setting – Select Chip, Select File, Sector Number

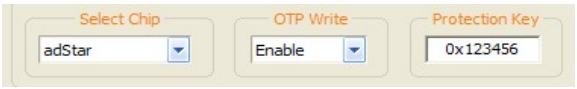


Figure 7 Config setting – OTP Write, Protection Key(adStar only)

✓ OTP
If adStar, by the OTP Write Enable Figure 7, as can input Protection Key.
Protection should be aware that once you Write can not be changed, you will remember the Key value.

✓CANTUS 128 configuration

The internal flash sector size of CANTUS512 is 4KBytes.
If you do not use a bootloader, set sector nujmber to "0".
If you are using a bootloader, refer to bootloader main.c for the Sector number setting.

```
// CANTUS 128A
app_loaded_offset = 32*1024;  // Sector Address 0x8000
```

Therefore, application should be set to "8" block.

✓CANTUS 512 configuration

The internal flash sector size of CANTUS512 is 64 KBytes.
If you do not use a bootloader, set sector nujmber to "0".
If you are using a bootloader, refer to bootloader main.c for the Sector number setting.

```
// CANTUS 512
app_loaded_offset = 64*1024;  // Sector Address 0x10000
```

Therefore, application should be set to "1" block.

✓adStar D, adStar L, adLuna, serial flash configuration

adStar, adStar-L, adLuna write sector by sector.
The sector size of the internal flash of adStar D, adStar L, and adLuna is 4KByte.
If you do not use a bootloader, set sector nujmber to "0".
If you are using a bootloader, refer to bootloader main.c for the Sector number setting.

```
#define FLASH_APP_OFFSET   (1024*4*20)      // download address 0x14000
```

Since the offset address is 1024 * 4 * 20, the sector number can be set to "20".

✓NAND Image configuration

When the target device is the NAND Flash, it is necessary to generate the FAT image by using the "FAT_Image_Gen.exe"
Chapter 2 explains how to create image files on the FAT Image Generator.

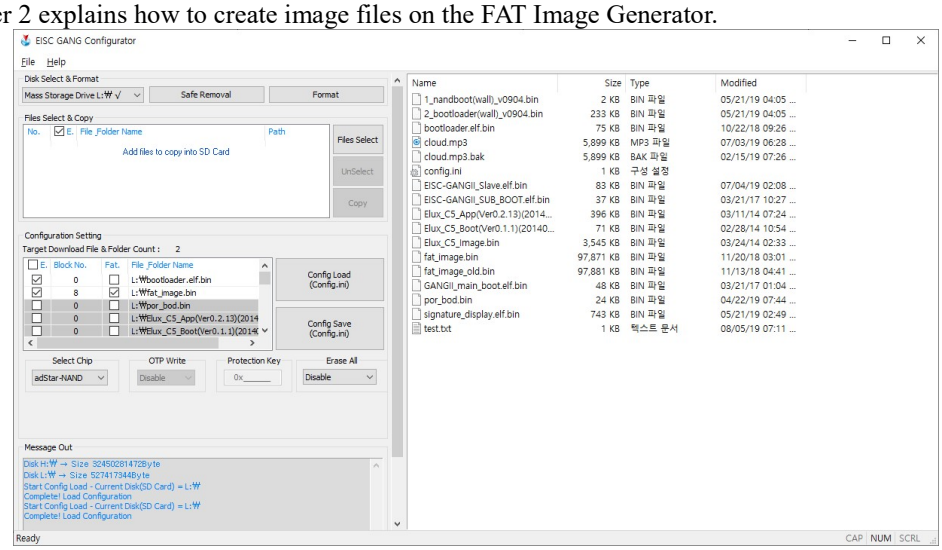
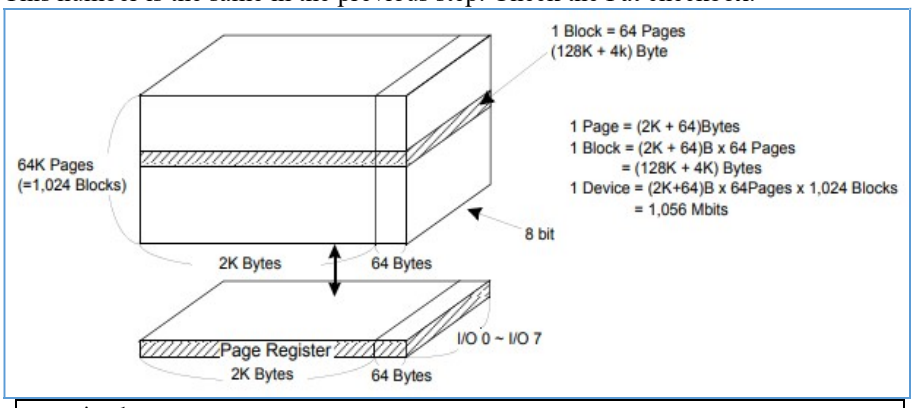


Figure 8 Config Setting – Select NAND Flash

① In the Target Download File & Folder, select the desired file and enter the start block number on the NAND Flash and check the Enable.
② If the image file is NAND FAT, enter the number of the start block of the FAT in the FAST Start Block. This number is the same in the previous step. Check the Fat checkbox.




```
i = 1;
while( 1 )
{
    if( ( NandInfo.blocksize * i ) >= ( 1024 * 1024 ) )
      break;
    i++;
}
NandInfo.datastartblock = i;
```

③ NAND Flash writes in block units.
④ For example, a bock size of 1Gbit NAND Flash is 128KByte.
⑤ The data area is 1024 * 1024 = 1Mbyte.
⑥ FAT Start Block number is 128Kbyte * 8Block = 1MByte, so FAT Start Block Number becomes 8Block.
⑦ This area can be changed by the user. See nand_init () function in nandctrl.c.

Block number	Function area
8	FAT
1	Boot loader
0	Boot code

1.3.2 Save Configuration

When the Configuration Settings is complete, click the "Config Save" button to save the settings (config.ini).

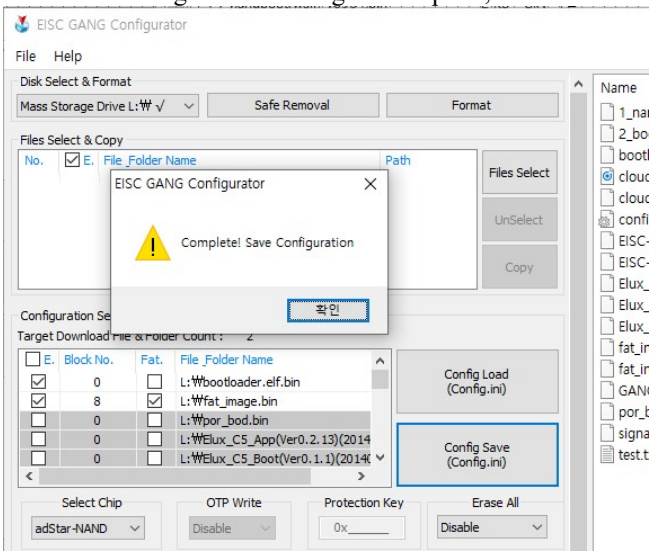


Figure 9 Config Save 실행

Click the Config Save button to save this configuration settings to the SD Card.
After saving the settings, the SD Card can be used to program the device on the EISC GANG II.
When the Config storage is complete, and remove the SD card

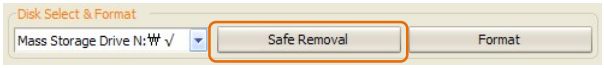


Figure 10 Removable Disk Safe to Remove

2 FAT Image Gen User's Guide

2.1 How to Use Summary

① Create Image to create a file for the directory.
② Copy the file created in the directory.
③ Enter the generated file name.
④ Set the size of the NAND flash to be stored.
⑤ Click Make to generate the image.

2.2 Directory creation and copying files

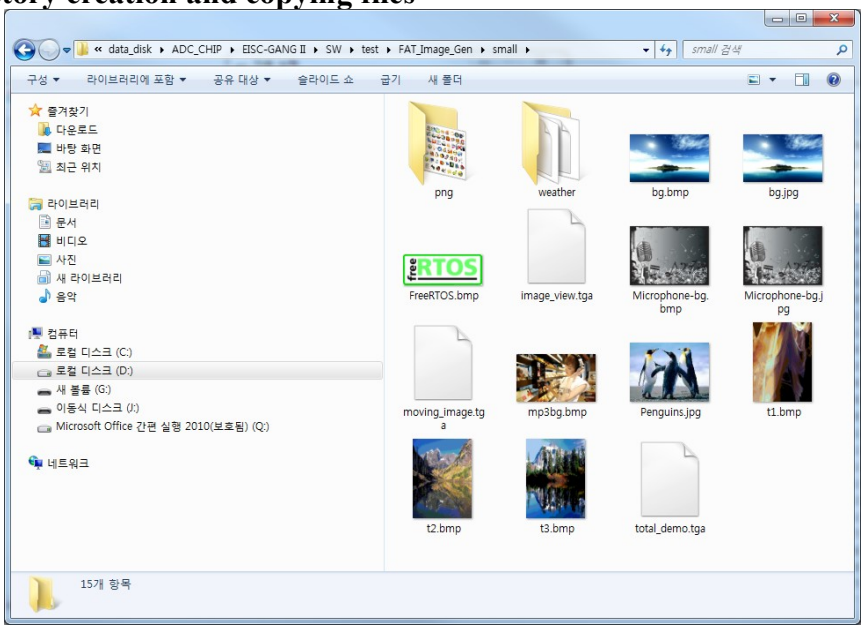


Figure 11 Directory Create

2.3 FAT_Image_Gen Setting

Run the "FAT_Image_Gen.exe".

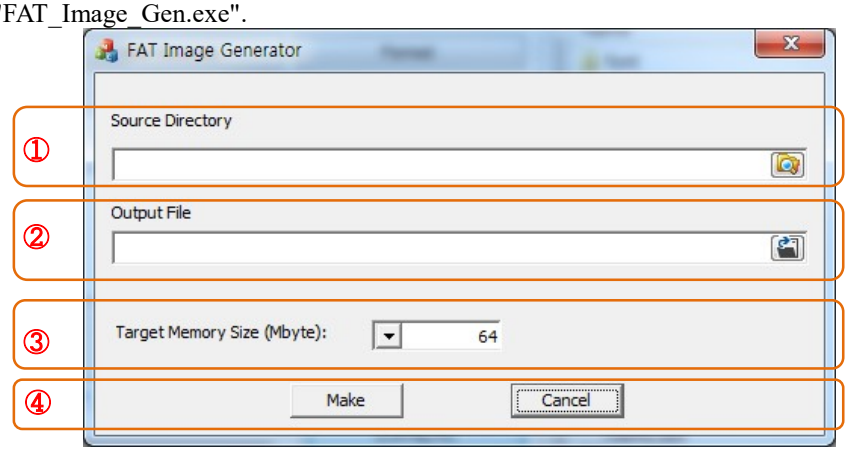


Figure 12 FAT_Image_Gen Run

①Click the file to open the Source Directory, select the directory to create a FAT Image.

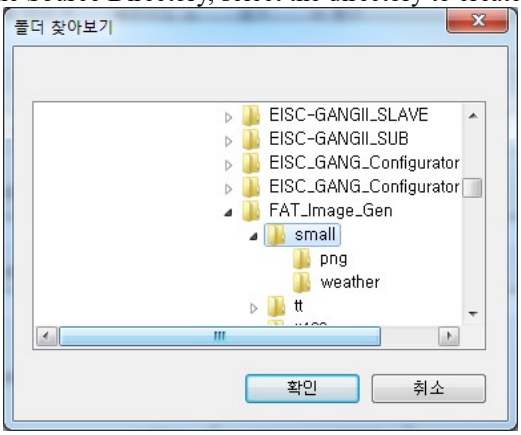


Figure 13 Source Directory Selection

②"Select the Output File Set the directory and file name to save the FAT Image.

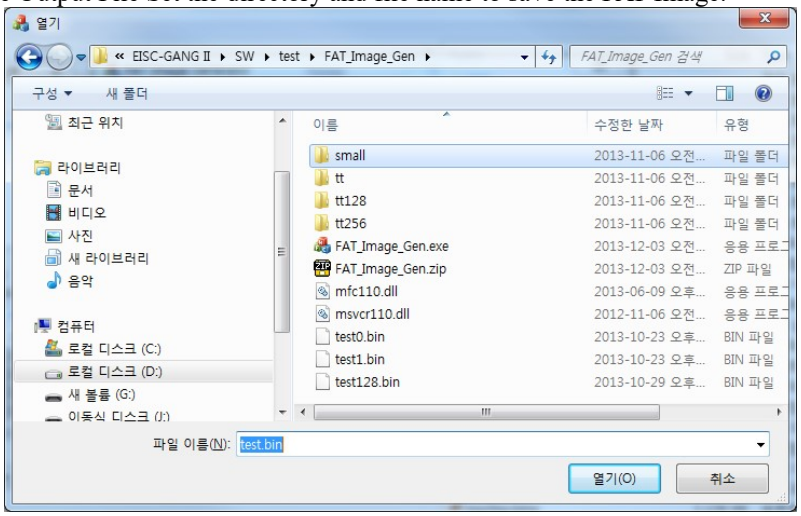


Figure 14 Output directory and output file name putting

Enter the name of the file to be stored in the file name(for example, test.bin in Figure 14)
The only note the location of the FAT Image files should be generated by setting the Source Directory.
That is, you must choose a different directory.

③"Target Memory Size (Mbyte):" is an area to set the size of the NAND Flash.
If one 1Gbit set to 1Gbit / 8 = 128.

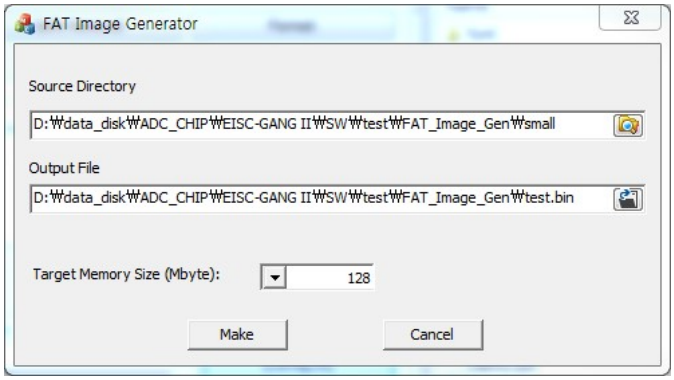
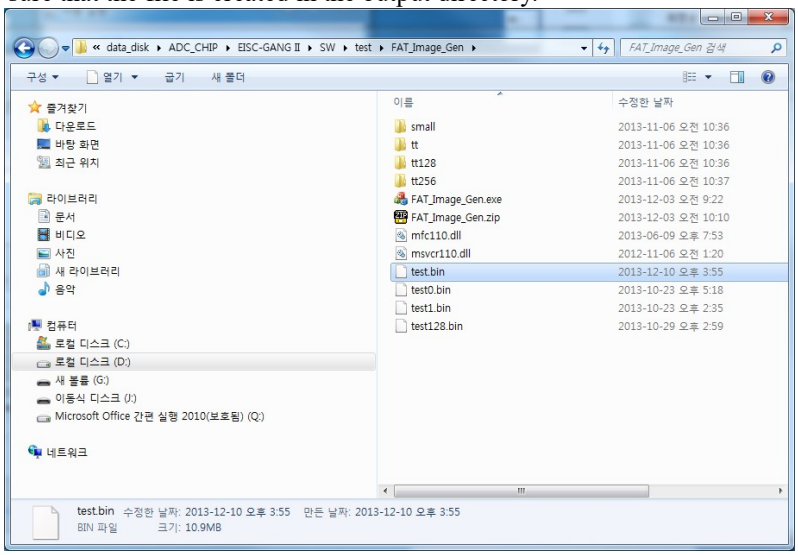


Figure 15 NAND Flash Memory size Setting

④ If you Click the "Make" is generated Image.

Figure 16 Image creation completed

Test.bin can be sure that the file is created in the output directory.



Finally copy the generated image file to the sd card.

3 STAND-ALONE OPERATION

This chapter explains how to use the EISC Gang II to copy the contents of the SD Card into a set of MCUs and NAND flashes.

The only required for stand-alone operation is the SD Card that contains the image files and configuration information.

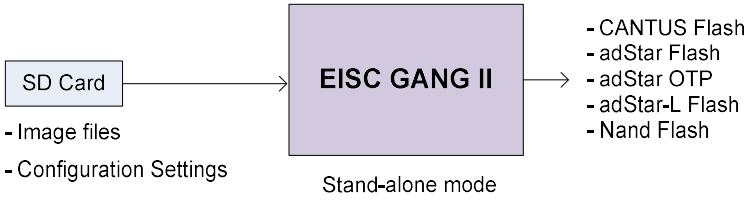
3.1 Prerequisites

Hardware Installation

To install the EISC GANG II Programmer hardware:

Attach the expansion board to the connector on the EISC Gang II Programmer.

An external power supply is required to power the EISC Gang II Programmer.



Make sure GANG Writer equipment and configuration items are all ready.

Make sure the power switch of the GANG Writer is OFF and connect the power cable.

If you do not have to SD Card Configuration Settings, see "Chapter 1" and the config setting.

EISC GANG Configurator - to run the Gang Config.exe) must first set the Configuration (see Chapter 1).

Figure 17 GANG Writer Components

3.2 Power ON

ON the power switch located on the front and a power-GANG Programmer.

***Remove the USB cable before the power switch ON.**

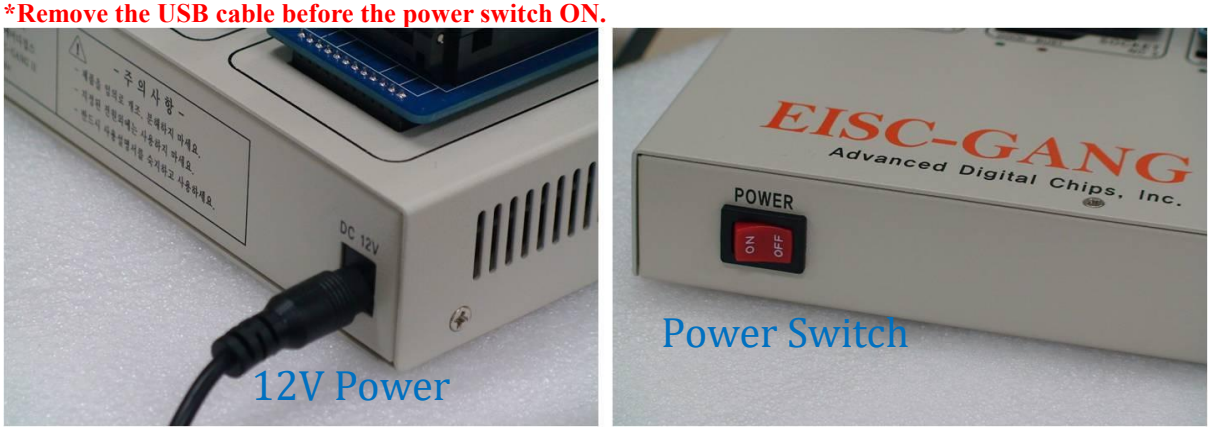


Figure 18 Connect the power adapter and power switch

3.3 Chip mounting and Write file

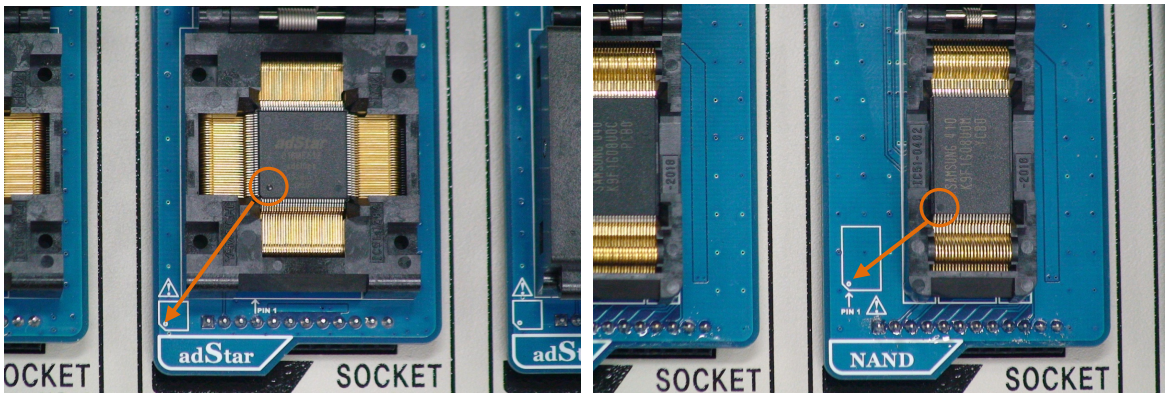


Figure 19 MCU and NAND Flash mounting

The EISC GANG II provides connectivity for up to eight devices using the expansion board
The target devices should be mounted on the socket of the corresponding expansion board as shown in Figure 19.

All targets are properly installed in the sockets and press the run button to start to programming.

The run button enables to start the operation of the gang programmer.
The LCD display also shows ERASING and WRITING steps.

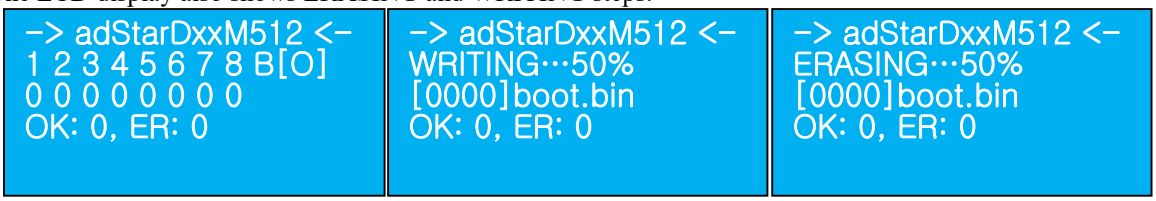


Figure 20 File Write Run

Two color LEDs indicate for each target device the operational pass of fail.
When the gang programmer is running, the green LEDs will flash for each device.

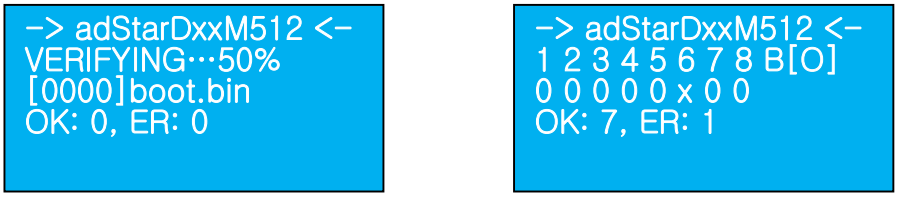


Figure 21 Verify and Write Complete

When the programming is completed, the Greed LEDs will turn on to indicate that the corresponding target device pass the operation successfully.

If the gang programmer detects an error for some device, the Red LEDs will turn on to indicate that the corresponding target device fail to complete the operation.

The LCD also displays the status of the programming result.

The LCD display also shows the total numbers of failure or success shown in Figure 21.

By replacing the devices mounted in the socket repeat the process can be continuously Device Write operation.

3.4 Options for the GANG Programmer

GANG Programmer has the following options:

- Buzzer On/Off
- All Erase for the target device
- OTP Used
- SD Card file read: Display only

To run the add-in (before pressing the RUN button state) Write target ready, press the ESC button

The following is the menu for the selected add-ons as shown in Figure 23 appears in the LCD window.

Write readiness to return to the target, press the ESC button.

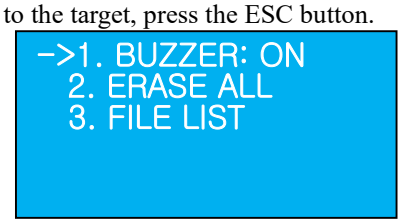


Figure 22 Add-ons menu GANG Writer

3.5 Buzzer On/Off

The Buzzer sets the On / Off.

When the writing is complete, you can verify completion buzzer to sound.

Press the Enter button in the current cursor to the Buzzer on / off.

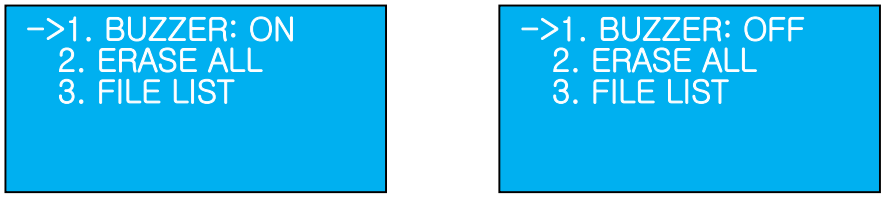


Figure 23 Configuration information that is set

3.6 Chip All Erase

All Erase function is a function that is used to delete all the memory region of the device.

If the target MCU devices are all clear the internal Flash memory.

If you select "All Erase" 2 times in the Extras menu in Figure 24 pops up a question about whether to erase all memory, as shown in the following figure.

At this time, pressing the ENTER button erases all the memory area of the target. To switch back to the Add-ons menu, press the ESC button.

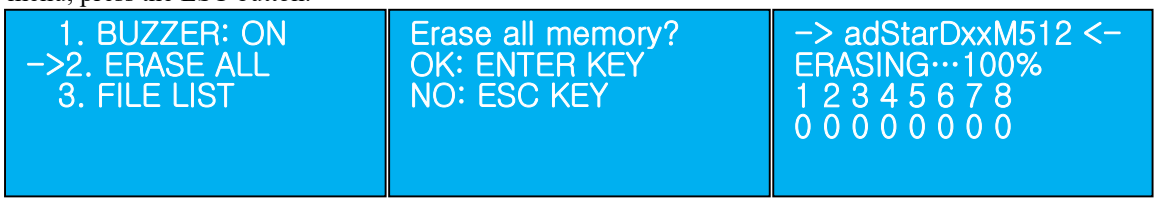


Figure 24 ALL Erase execution and completion

3.7 OTP whether to use (adStar only)

If the OTP is used only adStar, if you use the OTP marked "OTP used" and do not use the display as "OTP Not used".

The OTP OTP If the Key "123456",: the display to "Key 3.OTP 123456" (OTP Key is the value stored in the SD Card).

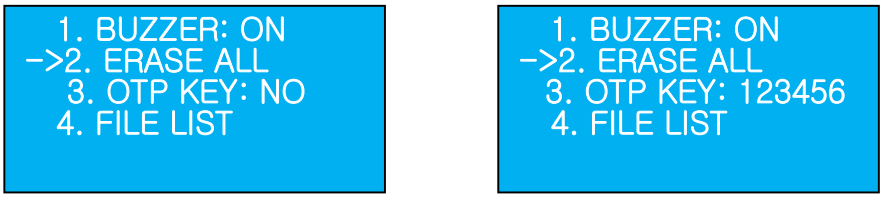


Figure 25 OTP Use

3.8 View the list of files to Writing

If you select "4.Read file list" shows the file list to a target writig from SD Card.

[000] -> represents a sector / block number to lighting.

The [FAT] shows that the file selected in nand flash Copy that to the FAT area.

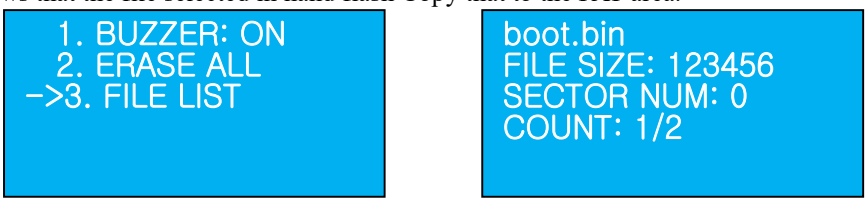


Figure 26 File list(adStar,CANTUS)

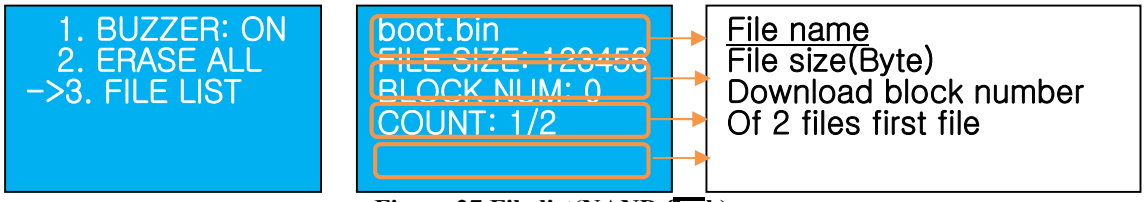


Figure 27 File list(NAND flash)

4 FIRMWARE UPDATE

4.1 GANG Writer to run the "Program Update" mode.

To enter the FIRMWARE UPDATE mode, press and hold the ENTER button when turning on the EISC GANG II power switch.

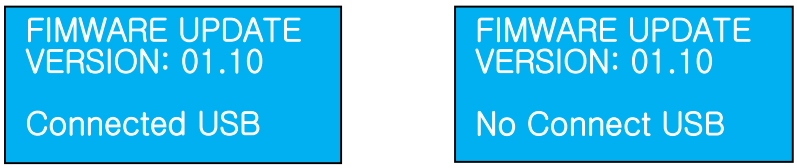


Figure 28 Firmware Update

Connect the GANG programmer to PC USB port using a USB A-B cable.
The status of the USB connection is diplayed on the LCD shown in Figure 28.

4.2 Installing the USB driver

In a process of the firmware update the USB driver is necessary to control the EISC GANG II. If you do not install the usb driver, please install the usb driver provided.

4.3 GANG Writer Firmware Upgrade Run

Run the update program is provided "Gang Upgrader.exe".

Figure 29 Run the upgrade program. (GangUpgrader.exe)

When you click the "Update" button the Firmware update will start.

Figure 30 Upgrade in progress

When complete, pop-up message box will appear as shown in the following figure.

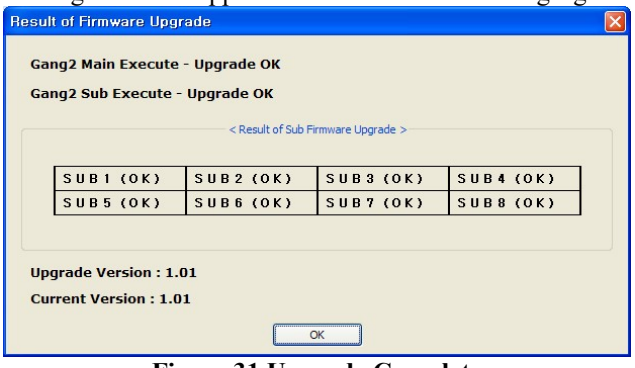


Figure 31 Upgrade Complete

If any problems occur during the update of EISC GANG II firmware, turn OFF the EISC GANG II and turn ON it. RE-update it.
If that still fails, contact the provider.

5 Write Speed

No	Device	Speed(Kbyte/SEC)	
1	CANTUS	10K	Erase(O) Write(O) Verify(O)
2	adStar	56K	Erase(O) Write(O) Verify(O)
3	NAND Flash	650K	Erase(O) Write(O) Verify(O)
4	adStar L	52K	Erase(O) Write(O) Verify(O)
5	adLuna	75K	Erase(O) Write(O) Verify(O)
6	Serial Flash	118K	Erase(O) Write(O) Verify(O)