PICO-G350A

Software manual

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Chapter 1 – Flash Yocto OS image

1.1 How to flash Yocto OS image

1. Preparing another host PC with Linux Ubuntu operation system

1-1. Install ubuntu on host PC:

https://releases.ubuntu.com/focal/?_ga=2.170737764.570845450.1694411246-2081697117.1694411246

```
gbt@gbt-MEHLEAS-SI:~$ lsb_release -a
No LSB modules are available.
Distributor ID: Ubuntu
Description:    Ubuntu 22.04.4 LTS
Release:        22.04
Codename:       jammy
```

1-2. Setup Tool Environment :

https://mediatek.gitlab.io/aiot/doc/aiot-dev-guide/master/sw/yocto/get-started/env-setup/flash-env-linux.html

Type Commands as below:

```
> sudo apt update
> sudo add-apt-repository ppa:git-core/ppa
> sudo apt-get install git -y
```

```
gbt@gbt-MEHLEAS-SI:~$ git --version
git version 2.43.2
```

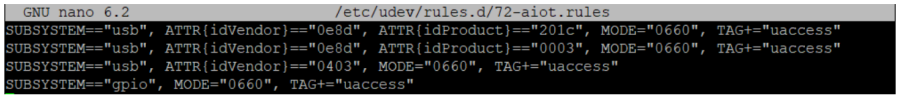
```
> sudo apt-get install python3 python3-pip -y
> sudo apt-get install android-tools-adb android-tools-fastboot -y
```

```
gbt@gbt-MEHLEAS-SI:~$ pip --version
pip 23.3.2 from /home/gbt/.local/lib/python3.10/site-packages/pip (python 3.10)
```

In order for your host machine to be able to talk to the board through USB without needing root privileges, you need to create a udev rules that will grant user access to your device:

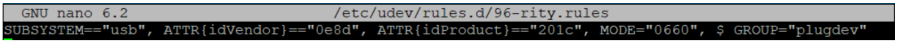
```
> echo -n 'SUBSYSTEM=="usb", ATTR{idVendor}=="0e8d", ATTR{idProduct}=="201c", MODE="0660", TAG+="uaccess"
```

```
SUBSYSTEM=="usb", ATTR{idVendor}=="0e8d", ATTR{idProduct}=="0003",
MODE="0660", TAG+="uaccess"
SUBSYSTEM=="usb", ATTR{idVendor}=="0403", MODE="0660", TAG+="uaccess"
SUBSYSTEM=="gpio", MODE="0660", TAG+="uaccess"
' | sudo tee /etc/udev/rules.d/72-aiot.rules
```



Also, add new udev rule and add your user account to plugdev group if you plan to use adb to connect to the board:

```
> echo 'SUBSYSTEM=="usb", ATTR{idVendor}=="0e8d", ATTR{idProduct}=="201c",
MODE="0660", $
GROUP="plugdev"' | sudo tee -a /etc/udev/rules.d/96-rity.rules
> sudo udevadm control --reload-rules
> sudo udevadm trigger
```



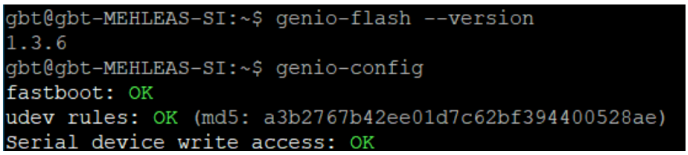

```
> sudo pip3 install -U genio-tools -y
```

```
> sudo usermod -a -G plugdev $USER
> sudo usermod -a -G dialout $USER
```

```
> sudo reboot now
```

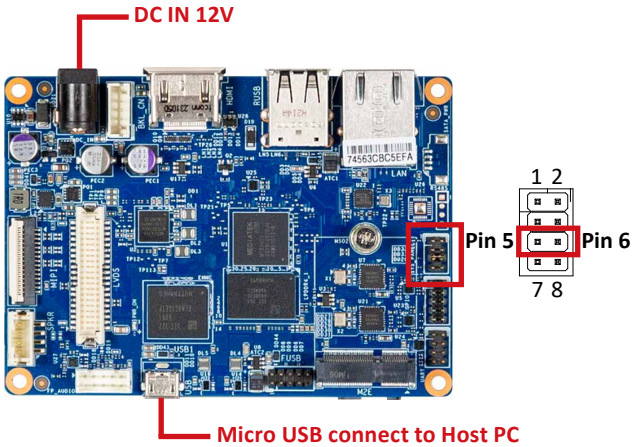
After re-login, please check your installation with genio-config :

```
> genio-flash --version
> genio-config
```



2. Connect PICO-G350A to host PC

- Short pin5 & pin6 of System panel header (Location : SYS_PANEL) for into program mode
- by Micro USB cable
- Plug in DC_IN 12V power input



3. Flash image (For Linux system of Host PC)

Change working folder to the image directory before running the genio-flash.

```
gbt@gbt-MEHLEAS-SI:~$ cd project/genio-350-evk
gbt@gbt-MEHLEAS-SI:~/project/genio-350-evk$ ls
bl2.cap
bl2.img
bl31.bin
bl31.elf
bl31.ld
bl31-mt8365.bin
bl31-mt8365.elf
bootassets.vfat
boot-genio-350-evk-2022.10+gitAUTOINC+33ce75ab6d-r0.script
boot-genio-350-evk.script
boot.script
capsule.vfat
devicetree
fip.bin
fip.cap
fip-mt8365.bin
fitImage
```

- Make sure pin5 & pin6 of System panel header (Location : SYS_PANEL) short as program mode.
- Run genio-flash

```
gbt@gbt-MEHLEAS-SI:~/project/genio-350-evk$ genio-flash
AIoT Tools: v1.3.6
Yocto Image:
        name:     Rity Demo Image (rity-demo-image)
        distro:   Rity Demo Layer 23.1-release (rity-demo)
        codename: kirkstone
        machine:  genio-350-evk
        overlays: ['video.dtbo', 'gpu-mali.dtbo']

WARNING:aiot:No 'ftdi-cbus' device found
WARNING:aiot:Unable to find and reset the board. Possible causes are:
1. This is not a Genio 350/700 EVK, nor a Pumpkin board.
2. The board port UART0 is not connected.
3. The UART0 port is being opened by another tool, such as TeraTerm on Windows.
You can now manually reset the board into DOWNLOAD mode.

INFO:aiot:Continue flashing...
```

Plug in AC power (Make sure everything must be ready before power on)

```
INFO:aiot:Continue flashing...
Looking for MediaTek SoC matching USB device 0e8d:0003
Opening /dev/ttyACM0 using baudate=115200
Connected to MediaTek MT8168 SoC
Sending bootstrap to address: 0x201000
Jumping to bootstrap at address 0x201000 in AArch64 mode
erasing mmc0
< waiting for any device >
Erasing 'mmc0'                                  (bootloader) request sz: 0x1d
2000000, real erase len: 0x0
OKAY [  0.309s]
Finished. Total time: 0.313s
erasing mmc0boot0
Erasing 'mmc0boot0'                             (bootloader) request sz: 0x40
0000, real erase len: 0x400000
OKAY [  0.005s]
Finished. Total time: 0.009s
erasing mmc0boot1
Erasing 'mmc0boot1'                             (bootloader) request sz: 0x40
0000, real erase len: 0x400000
OKAY [  0.004s]
Finished. Total time: 0.008s
flashing mmc0=rity-demo-image-genio-350-evk.wic.img
Sending sparse 'mmc0' 1/10 (262140 KB)          OKAY [  6.791s]
```

program done:

```
flashing mmc0=rity-demo-image-genio-350-evk.wic.img
Sending sparse 'mmc0' 1/10 (262140 KB)             OKAY [  6.791s]
Writing 'mmc0'                                     OKAY [  8.693s]
Sending sparse 'mmc0' 2/10 (262140 KB)             OKAY [  6.873s]
Writing 'mmc0'                                     OKAY [  9.569s]
Sending sparse 'mmc0' 3/10 (262140 KB)             OKAY [  6.871s]
Writing 'mmc0'                                     OKAY [  8.630s]
Sending sparse 'mmc0' 4/10 (262140 KB)             OKAY [  6.837s]
Writing 'mmc0'                                     OKAY [  8.621s]
Sending sparse 'mmc0' 5/10 (262140 KB)             OKAY [  6.855s]
Writing 'mmc0'                                     OKAY [  8.668s]
Sending sparse 'mmc0' 6/10 (262140 KB)             OKAY [  6.815s]
Writing 'mmc0'                                     OKAY [  8.632s]
Sending sparse 'mmc0' 7/10 (262140 KB)             OKAY [  6.818s]
Writing 'mmc0'                                     OKAY [  8.623s]
Sending sparse 'mmc0' 8/10 (262140 KB)             OKAY [  6.770s]
Writing 'mmc0'                                     OKAY [  8.673s]
Sending sparse 'mmc0' 9/10 (262140 KB)             OKAY [  6.810s]
Writing 'mmc0'                                     OKAY [  8.622s]
Sending sparse 'mmc0' 10/10 (106200 KB)            OKAY [  2.775s]
Writing 'mmc0'                                     OKAY [  3.501s]
Finished. Total time: 146.512s
flashing mmc0boot0=bl2.img
Sending 'mmc0boot0' (136 KB)                       OKAY [  0.006s]
Writing 'mmc0boot0'                                OKAY [  0.011s]
Finished. Total time: 0.071s
flashing mmc0boot1=u-boot-env.bin
Sending 'mmc0boot1' (4 KB)                         OKAY [  0.002s]
Writing 'mmc0boot1'                                OKAY [  0.005s]
Finished. Total time: 0.013s
Rebooting                                          OKAY [  0.002s]
Finished. Total time: 0.052s
```

4. Flash image (For Windows system of Host PC)

The Windows tool environment can only be used for flashing the board and connecting to the board. For detailed settings and tools, please refer to I350_ Windows_Setuptool.zip.

4-1. Confirm that Genio-tools can be used on Windows PC :
> genio-flash --version
The version should be greater than 1.2.
> genio-config

```
C:\Windows\system32>genio-flash --version
1.4

C:\Windows\system32>genio-config
fastboot: OK
```

Change working folder to the image directory before running the aiot-flash.

```
C:\Users\liann.wu.GC>D:

D:\>cd genio-350-evk

D:\genio-350-evk>dir
 磁碟區 D 中的磁碟是 DATA
 磁碟區序號:  4819-A8A4

 D:\genio-350-evk 的目錄

2024/03/08  下午 01:55    <DIR>          .
2024/03/08  下午 01:55    <DIR>          ..
2024/02/23  下午 05:48           140,884 bl2.cap
2024/02/23  下午 05:48           139,512 bl2.img
2024/02/23  下午 05:48            75,886 bl31-mt8365.bin
2024/02/23  下午 05:48           138,840 bl31-mt8365.elf
2024/02/23  下午 05:48            75,886 bl31.bin
2024/02/23  下午 05:48           138,840 bl31.elf
2024/02/23  下午 05:48             3,503 bl31.ld
```

- Make sure pin5 & pin6 of System panel header (Location : SYS_PANEL) short as program mode.
- Run genio-flash

```
D:\genio-350-evk>genio-flash
Genio Tools: v1.4
Yocto Image:
        name:     Rity Demo Image (rity-demo-image)
        distro:   Rity Demo Layer 23.1-release (rity-demo)
        codename: kirkstone
        machine:  genio-350-evk
        overlays: ['gpu-mali.dtbo', 'video.dtbo']

WARNING:aiot:Cannot find any FTDI device
WARNING:aiot:Unable to find and reset the board. Possible causes are:
1. This is not a Genio 350/700 EVK, nor a Pumpkin board.
2. The board port UART0 is not connected.
3. The UART0 port is being opened by another tool, such as TeraTerm on Windows.
You can now manually reset the board into DOWNLOAD mode.

INFO:aiot:Continue flashing...
Looking for MediaTek SoC matching USB device 0e8d:0003
```

Plug in AC power (Make sure everything must be ready before power on)

```
Opening COM4 using baudrate=115200
Connected to MediaTek SoC: hw_code[0x8168]
Sending bootstrap to address: 0x201000
Jumping to bootstrap at address 0x201000 in AArch64 mode
erasing mmc0
< waiting for any device >
Erasing 'mmc0'                                  (bootloader) request sz: 0x1d2000000, real erase len: 0x0
OKAY [  0.260s]
Finished. Total time: 0.265s
erasing mmc0boot0
Erasing 'mmc0boot0'                             (bootloader) request sz: 0x400000, real erase len: 0x400000
OKAY [  0.005s]
Finished. Total time: 0.010s
erasing mmc0boot1
Erasing 'mmc0boot1'                             (bootloader) request sz: 0x400000, real erase len: 0x400000
OKAY [  0.005s]
Finished. Total time: 0.010s
flashing mmc0=rity-demo-image-genio-350-evk.wic.img
Sending sparse 'mmc0' 1/10 (262140 KB)
```

program done:

```
flashing mmc0=rity-demo-image-genio-350-evk.wic.img
Sending sparse 'mmc0' 1/10 (262140 KB)            OKAY [  6.526s]
Writing 'mmc0'                                    OKAY [  8.692s]
Sending sparse 'mmc0' 2/10 (262140 KB)            OKAY [  6.567s]
Writing 'mmc0'                                    OKAY [  9.548s]
Sending sparse 'mmc0' 3/10 (262140 KB)            OKAY [  6.630s]
Writing 'mmc0'                                    OKAY [  8.642s]
Sending sparse 'mmc0' 4/10 (262140 KB)            OKAY [  7.133s]
Writing 'mmc0'                                    OKAY [  8.625s]
Sending sparse 'mmc0' 5/10 (262140 KB)            OKAY [  6.533s]
Writing 'mmc0'                                    OKAY [  8.662s]
Sending sparse 'mmc0' 6/10 (262140 KB)            OKAY [  6.524s]
Writing 'mmc0'                                    OKAY [  8.635s]
Sending sparse 'mmc0' 7/10 (262140 KB)            OKAY [  6.498s]
Writing 'mmc0'                                    OKAY [  8.623s]
Sending sparse 'mmc0' 8/10 (262140 KB)            OKAY [  6.729s]
Writing 'mmc0'                                    OKAY [  8.674s]
Sending sparse 'mmc0' 9/10 (262140 KB)            OKAY [  6.482s]
Writing 'mmc0'                                    OKAY [  8.622s]
Sending sparse 'mmc0' 10/10 (106200 KB)           OKAY [  2.620s]
Writing 'mmc0'                                    OKAY [  3.503s]
Finished. Total time: 144.516s
flashing mmc0boot0=bl2.img
Warning: skip copying mmc0boot0 image avb footer (mmc0boot0 partition size: 0, mmc0boot0 image size: 139512).
Sending 'mmc0boot0' (136 KB)                      OKAY [  0.006s]
Writing 'mmc0boot0'                               OKAY [  0.011s]
Finished. Total time: 0.033s
flashing mmc0bootl=u-boot-env.bin
Warning: skip copying mmc0bootl image avb footer (mmc0bootl partition size: 0, mmc0bootl image size: 4096).
Sending 'mmc0bootl' (4 KB)                        OKAY [  0.001s]
Writing 'mmc0bootl'                               OKAY [  0.005s]
Finished. Total time: 0.024s
Rebooting                                         OKAY [  0.002s]
Finished. Total time: 0.003s
```