KD240 BIST

Field Application Engineer
Adaptive and Embedded Computing Group (AECG)

AMD
together we advance_

Revision History

Date	Version	Description
02/16/24	1.0	Initial version for flow introduction.

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1. 先從以下網站安裝 KD240 的 Ubuntu 22.04

[Install Ubuntu on AMD | Ubuntu]

CHOOSE A BOARD

- Kria™ K24 SOMs
- Kria™ K26 SOMs
- Zynq™ UltraScale+™ MPSoC Development Boards
- Versal™ Adaptive SoC Evaluation Kit

Kria™ K24 SOMs (KD240)

Ubuntu Server 22.04

The version of optimised Ubuntu Server 22.04 is beta for now, the certified version is coming soon.

Works on:

- AMD Kria™ KD240 Drives Starter Kit

Please check the AMD Kria™ Wiki for the platform's latest boot firmware, technical documentation, and the Ubuntu for AMD-Xilinx Devices Wiki for known issues and limitations.

Download 22.04

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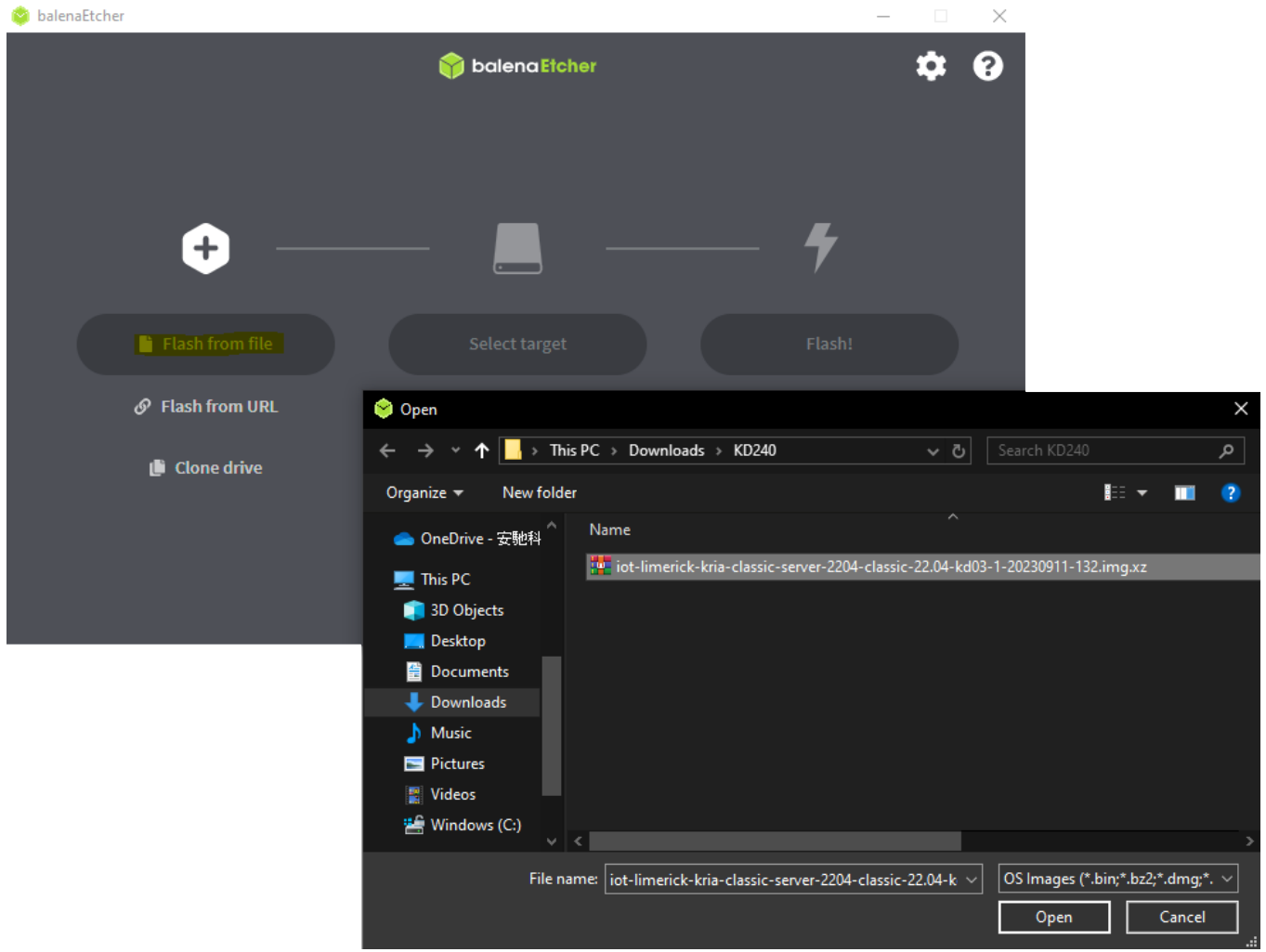
2. 使用 balenaEtcher 燒錄到 SD Card 內

[Setting up the SD Card Image (xilinx.com)]



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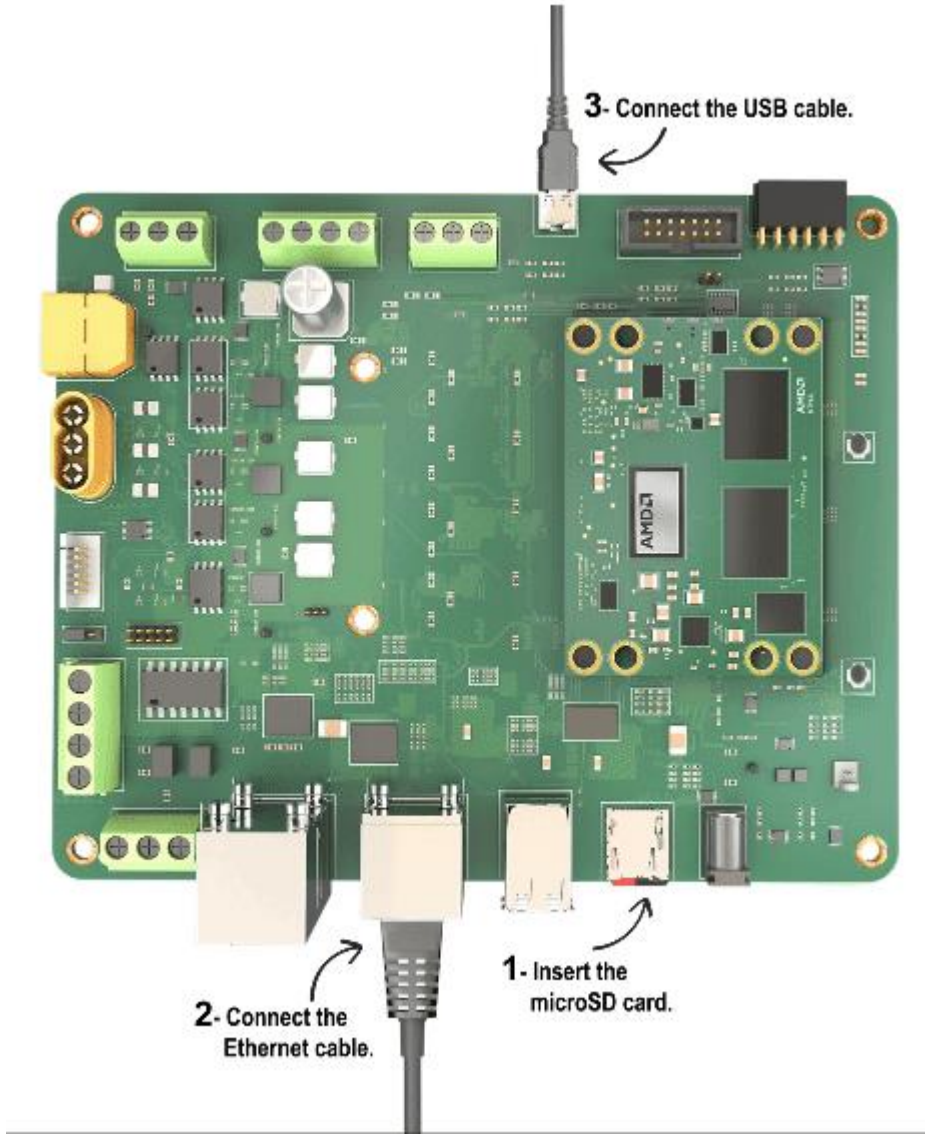
3. 依照下面方式插入到 KD240 的 SD Card 槽中



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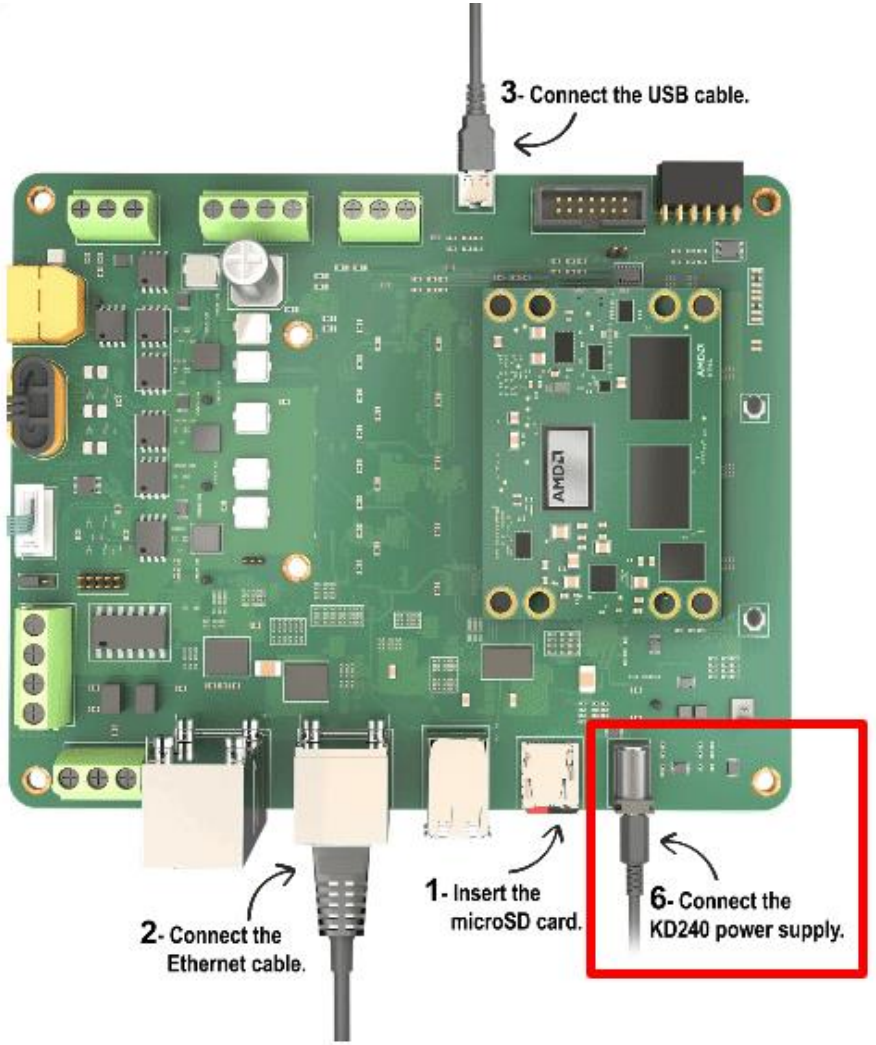
4. 上電並透過 MobaXtern 與 KD240 透過 UART 溝通




```
2. COM17 (USB Serial Port (COM1
kria login: ubuntu
Password:
You are required to change your password immediately (administrator enforced).
Changing password for ubuntu.
Current password:
New password:
Retype new password:
Welcome to Ubuntu 22.04.3 LTS (GNU/Linux 5.15.0-9002-xilinx-zynqmp aarch64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/advantage

  System information as of Thu Dec 21 05:15:06 UTC 2023

  System load:  0.11962890625     Processes:             122
  Usage of /:   6.2% of 28.21GB   Users logged in:       0
  Memory usage: 10%               IPv4 address for eth0: 10.8.3.232
  Swap usage:   0%

Expanded Security Maintenance for Applications is not enabled.

1 update can be applied immediately.
To see these additional updates run: apt list --upgradable

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status


The list of available updates is more than a week old.
To check for new updates run: sudo apt update


The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
```

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6. 登入帳號與密碼皆為 ubuntu，第一次輸入密碼後會叫你改成自己的密碼
7. 登入後一定要先進行以下指令

sudo snap install xlnx-config --classic --channel=2.x

sudo xlnx-config.sysinit

這條指令相當於作了以下的事情:

sudo add-apt-repository ppa:xilinx-apps

sudo add-apt-repository ppa:ubuntu-xilinx/sdk

sudo apt update

sudo apt upgrade

sudo apt search xlnx-firmware-kd240 ---> 尋找 BIST 的 firmware

也可以用 sudo apt search bist 尋找

sudo apt install xlnx-firmware-kd240-bist

sudo xmutil unloadapp

sudo xmutil loadapp kd240-bist

sudo apt-get install docker.io

docker pull xilinx/kria-bist:2023.1

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8. Docker 啟動！

```
sudo docker run \
--env=DISPLAY \
--env=XDG_SESSION_TYPE \
--net=host \
--privileged \
--volume=/home/ubuntu/.Xauthority:/root/.Xauthority:rw \
-v /tmp:/tmp \
-v /dev:/dev \
-v /sys:/sys \
-v /etc/vart.conf:/etc/vart.conf \
-v /lib/firmware/xilinx:/lib/firmware/xilinx \
-v /run:/run \
-it xilinx/kria-bist:2023.1 bash
```

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9. cd /opt/xilinx/kria-bist/tests
10. pytest-3 --board kd240
11. Result 如下:

測試成功項

```
----------------------------------------
Start of test
Operation Mode: MotorOpMode.kModeOff
Measuring motor ADC voltage feedback for ElectricalData.kDCLink ...
Average measured motor voltage: 24.11V
Motor voltage ADC feedback test successful in 'OFF' mode
Test passed
End of test
PASSED
motor/test_bist_motor.py::test_motor[dc_link_curr_adc_fb_test]
----------------------------------------------------------------
```

測試失敗項

```
----------------------------------------
Start of test
Please set the BIST_REMOTE_HOST_IP environment variable.
Test failed
End of test
FAILED
eth/test_bist_eth.py::test_eth[ethernet3_perf]
----------------------------------------------------------------
```

測試總結

```
=========================================================================================== short test summary info ============================================
FAILED can/test_bist_can.py::test_can[can_bus_send] - assert False
FAILED can/test_bist_can.py::test_can[can_bus_receive] - assert False
FAILED disk/test_bist_disk.py::test_disk[usb1_read_performance] - assert False
FAILED disk/test_bist_disk.py::test_disk[usb1_write_performance] - assert False
FAILED disk/test_bist_disk.py::test_disk[usb2_read_performance] - assert False
FAILED disk/test_bist_disk.py::test_disk[usb2_write_performance] - assert False
FAILED eth/test_bist_eth.py::test_eth[ethernet1_ping] - assert False
FAILED eth/test_bist_eth.py::test_eth[ethernet1_perf] - assert False
FAILED eth/test_bist_eth.py::test_eth[ethernet2_ping] - assert False
FAILED eth/test_bist_eth.py::test_eth[ethernet2_perf] - assert False
FAILED eth/test_bist_eth.py::test_eth[ethernet3_ping] - assert False
FAILED eth/test_bist_eth.py::test_eth[ethernet3_perf] - assert False
FAILED pwm/test_bist_pwm.py::test_pwm[fan] - assert False
FAILED tty/test_bist_tty.py::test_tty[rs485_temp_humidity_sensor_read] - AssertionError: assert False
========================================================================== 14 failed, 26 passed, 2 skipped in 145.11s (0:02:25) ===
```


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