

# Pre-built OS Image Installation Guide

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***TechNexion***

# Contents

1. Supported Products.....	1
2. Download Pre-Built OS image.....	2
3. Make eMMC installer.....	2
4. Set up boot mode to run installer image on target board.....	5
4.1 Platforms based on i.MX6Solo/DualLite/Dual/Quad/QuadPlus/SoloX.....	5
4.1.1 EDM1-CF-IMX6 with FAIRY/GOBLIN/ELF.....	5
4.1.2 TC-07x0.....	6
4.1.3 PICO-IMX6_DWARF.....	7
4.1.4 PICO-IMX6_HOBBIT.....	8
4.1.5 PICO-IMX6_NYMPH.....	9
4.1.6 TEK3-IMX6/TEP-IMX6.....	10
4.2 Platforms based on i.MX6UL.....	11
4.2.1 PICO-IMX6UL-EMMC_DWARF.....	11
4.2.2 PICO-IMX6UL-EMMC_HOBBIT.....	12
4.2.3 PICO-IMX6UL-EMMC_PI.....	13
4.2.4 PICO-IMX6UL-NAND_DWARF.....	14
4.2.5 PICO-IMX6UL-NAND_HOBBIT.....	15
4.3 Platforms based on i.MX7D.....	16
4.3.1 PICO-IMX7D_DWARF.....	16
4.3.2 PICO-IMX7D_HOBBIT.....	17
4.3.3 PICO-IMX7D_NYMPH.....	18
4.3.4 PICO-IMX7D_PI.....	19
5. Resistive touch calibration.....	20
6. Use USB-OTG intaller tool to program eMMC.....	22
6.1 Run USB-OTG installer on Windows host.....	22
6.2 Run USB-OTG installer on Linux host.....	23

## **1. Supported Products**

These are the systems covered in this guide:

System-on-Modules:

- EDM1-CF-IMX6
- EDM1-CF-IMX6P
- EDM1-CF-IMX6QP
- EDM1-CF-IMX6SX
- EDM2-CF-IMX6
- PICO-IMX6
- PICO-IMX6POP
- PICO-IMX6UL-EMMC
- PICO-IMX6UL-NAND
- PICO-IMX7D

Carrier Boards:

- EDM1-FAIRY
- EDM1-GOBLIN
- EDM2-ELF
- PICO-DWARF
- PICO-HOBBIT
- PICO-NYMPH
- PICO-PI

Systems:

- TEK3-IMX6
- TEP-IMX6
- TC-07x0

## 2. Download Pre-Built OS image

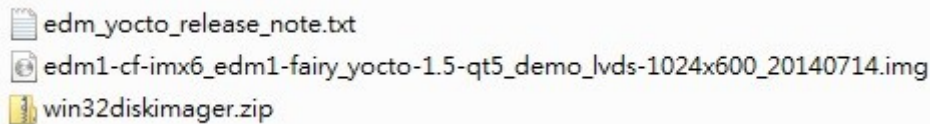
Please visit TechNexion download page:

[ftp://ftp.technexion.net/demo\\_software](ftp://ftp.technexion.net/demo_software)

Choose the product you have. There are prebuilt images for different OS, e.g. Android, Ubuntu, or Yocto with different displays as primary.

## 3. Make eMMC installer

Unzip the file you download.



There are three files:

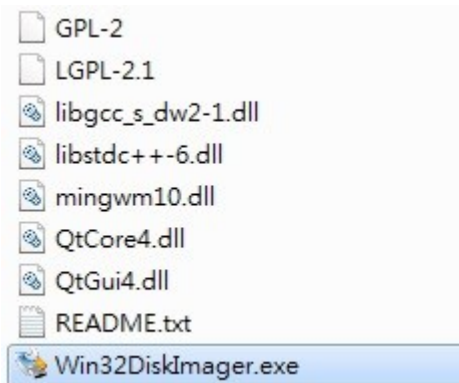
edm\_yocto\_release\_note.txt

edm1-cf-imx6\_edm1-fairy\_yocto-1.5-qt5\_demo\_lvds-1024x600\_2014xxxx.img

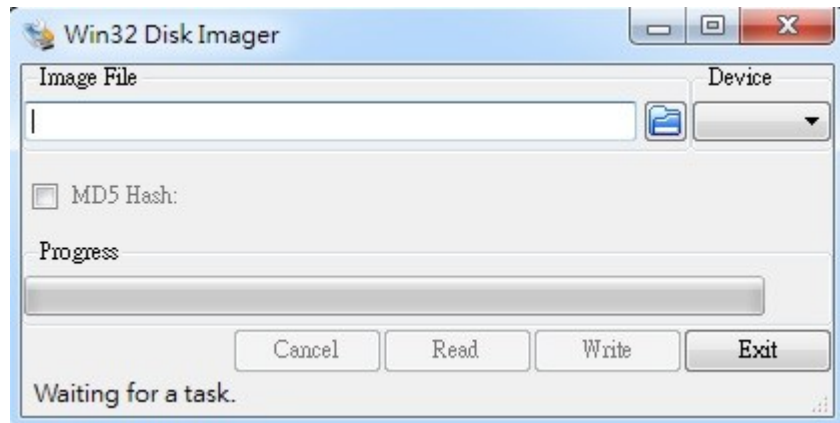
win32diskimager.zip

### If your PC runs Windows OS:

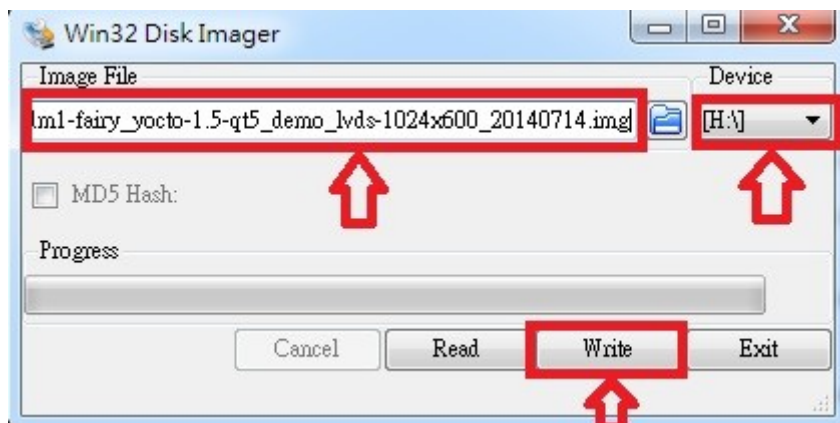
Please unzip win32diskimager.zip:



Execute **Win32DiskImager.exe**.



Prepare a microSD card. Insert this microSD card into the card reader of PC.



Choose microSD under “Device”.

Select “**edm1-cf-imx6\_edm1-fairy\_yocto-X.X-qt5\_demo\_lvds-1024x600\_201YMMDD.img**” as “Image File”.

Then, press “Write”. **Win32DiskImager** will flash yocto installer image into microSD card.

**If your PC runs Ubuntu OS:**

Prepare a microSD card. Insert this microSD card into the card reader of PC.

Use 'dd' command to flash yocto installer image into microSD card.

```
$ sudo dd if=edm1-cf-imx6_edm1-fairy_yocto-1.5-qt5_demo_lvds-1024x600_2014xxxx.img of=/dev/sd<partition> bs=1M && sync
```

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Or

Use “imageWriter” tool.

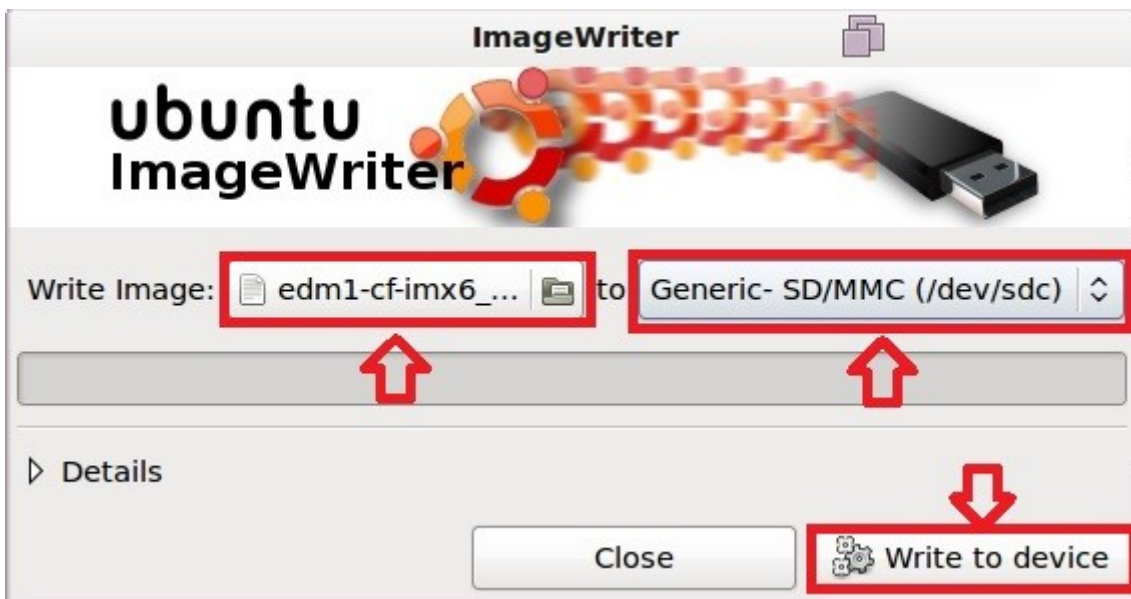
<https://apps.ubuntu.com/cat/applications/precise/usb-imagewriter/>

Install “imageWriter”:

```
sudo apt-get install usb-imagewriter
```

Execute “imageWriter”:

```
sudo imagewriter
```



Choose microSD you insert as “Device”.

Select “`edm1-cf-imx6_edm1-fairy_yocto-1.5-qt5_demo_lvds-1024x600_2014xxxx.img`” as “Write Image”.

Then, press “Write to device”. **imagewriter** will flash Yocto installer image into microSD card.

## 4. Set up boot mode to run installer image on target board

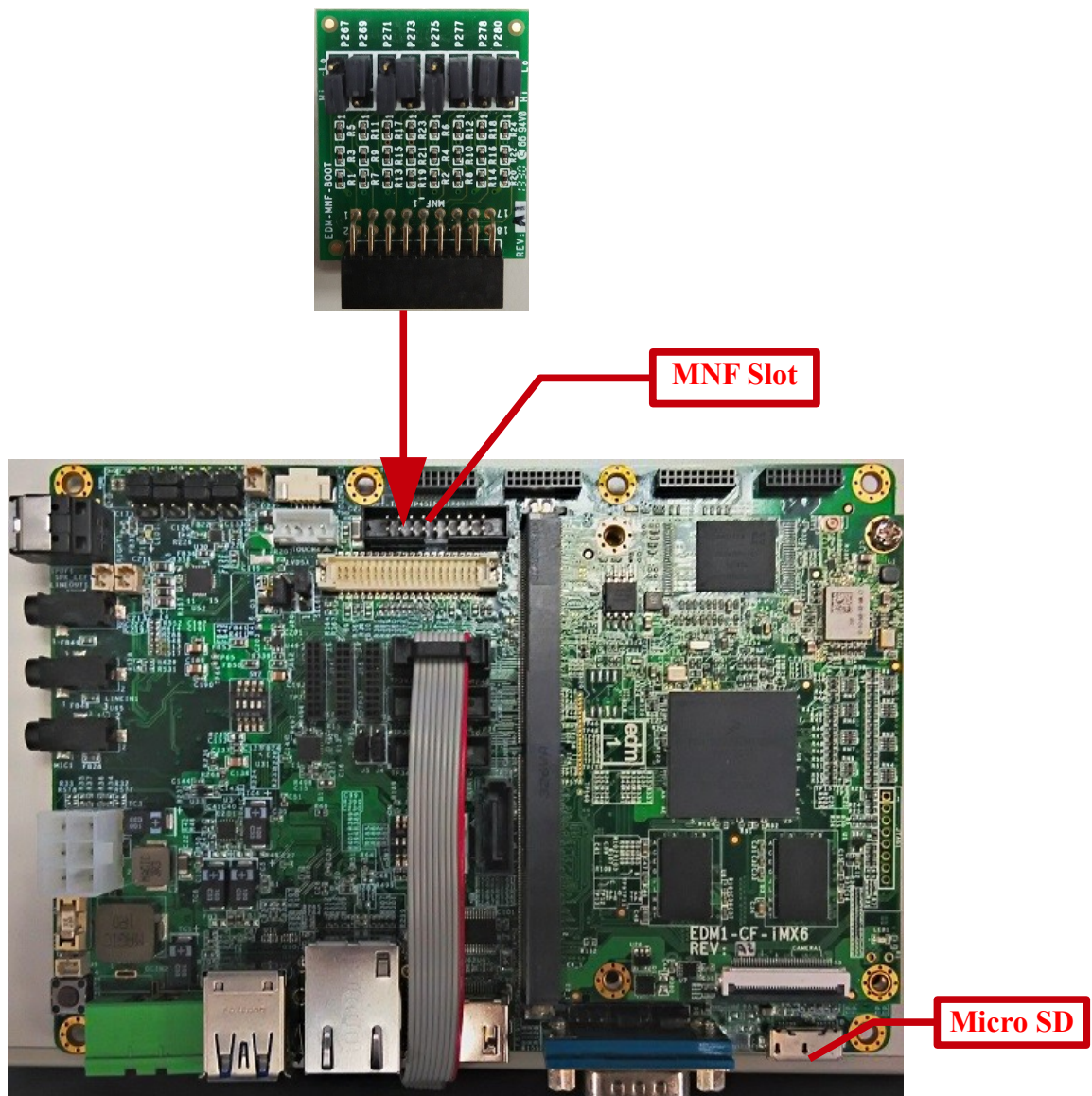
Switch the boot mode to boot from SD card of baseboard to run the installer image. The installer image will install OS image into the eMMC on CPU module.

### 4.1 Platforms based on i.MX6Solo/DualLite/Dual/Quad/QuadPlus/SoloX

#### 4.1.1 EDM1-CF-IMX6 with FAIRY/GOBLIN/ELF

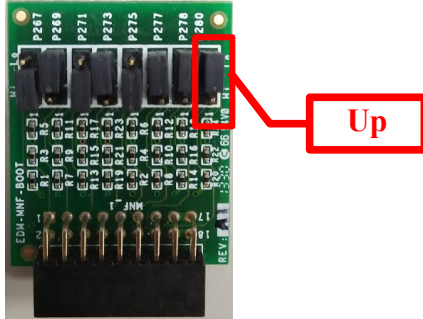
Plug “EDM-MNF-BOOT PCB” into MNF slot on EDM1-Fairy baseboard. It will cause EDM1-Fairy boot from external microSD card instead of eMMC. Then, insert MicroSD card with yocto installer image inside into EDM1-Fairy baseboard.

#### EDM-MNF-BOOT PCB

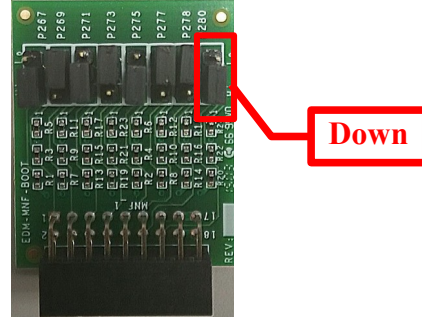


**Note:** The rightmost jumper of EDM-MNF-BOOT PCB is different on EDM1-CF-IMX6 and EDM1-CF-IMX6SX.

For EDM1-CF-IMX6



For EDM1-CF-IMX6SX



### 4.1.2 TC-07x0

Insert the SD card into the TC-07x0 system. Hold down “S1” and press “RST” button. (PS. Hold down “S1” button will switch the boot mode to SD card. Then press “RST”, the board will reboot from SD card.)



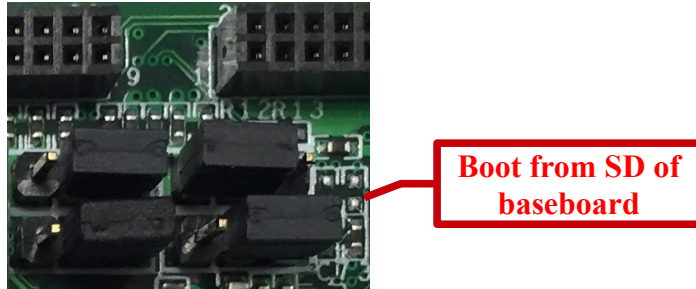
Then, power on your unit.



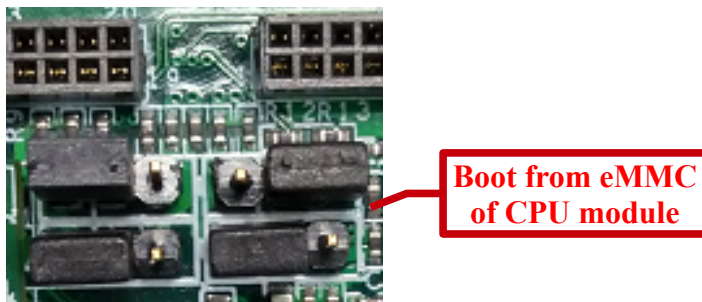


#### 4.1.4 PICO-IMX6\_HOBBIT

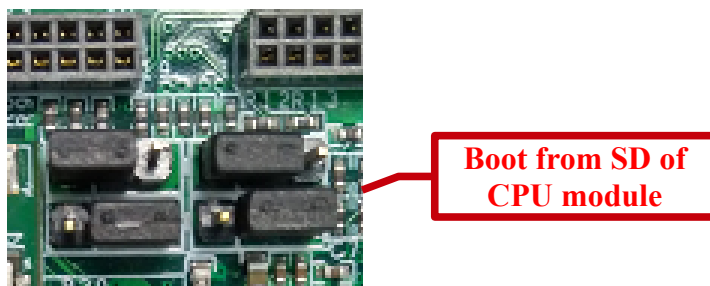
Install jumpers as below, and board will boot from SD card of baseboard:



Install jumpers as below, and board will boot from eMMC card of CPU module:

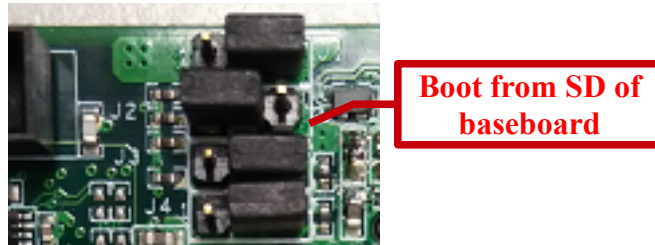


Install jumpers as below, and board will boot from SD card of CPU module:

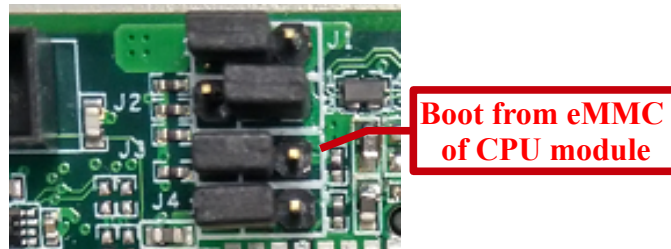


### 4.1.5 PICO-IMX6\_NYMPH

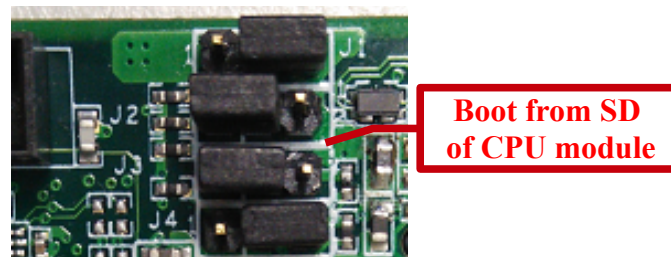
Install jumpers as below, and board will boot from SD card of baseboard:



Install jumpers as below, and board will boot from eMMC card of CPU module:



Install jumpers as below, and board will boot from SD card of CPU module:



#### 4.1.6 TEK3-IMX6/TEP-IMX6

Insert the SD card into the TEK3-IMX6. Hold down “S1” and press “RST” button.

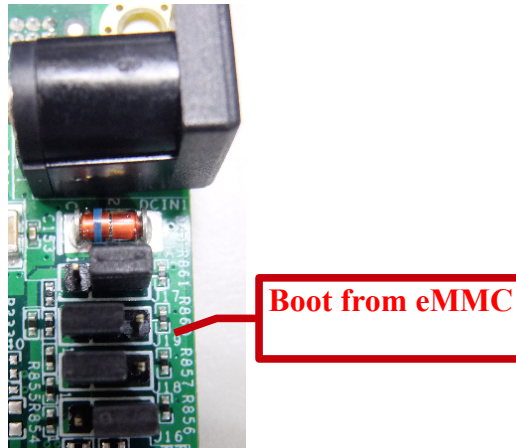
**(PS. Hold down “S1” button will switch the boot mode to boot from SD card. Then press “RST”, the board will reboot from SD card.)**



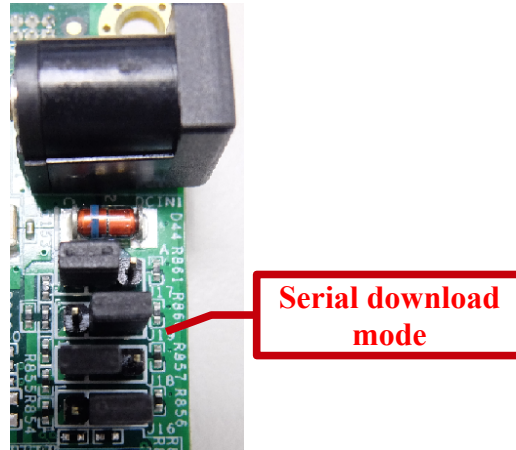
## 4.2 Platforms based on i.MX6UL

### 4.2.1 PICO-IMX6UL-EMMC\_DWARF

Install jumpers as below, and board will boot from SD card of baseboard:

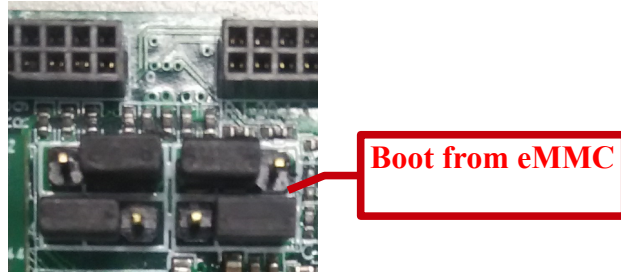


Install jumpers as below, and board will boot from NAND of CPU module:

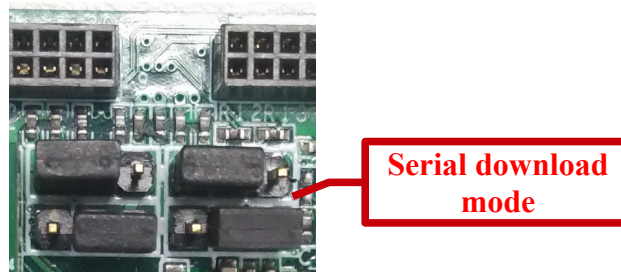


## 4.2.2 PICO-IMX6UL-EMMC\_HOBBIT

Install jumpers as below, and board will boot from eMMC of CPU module:

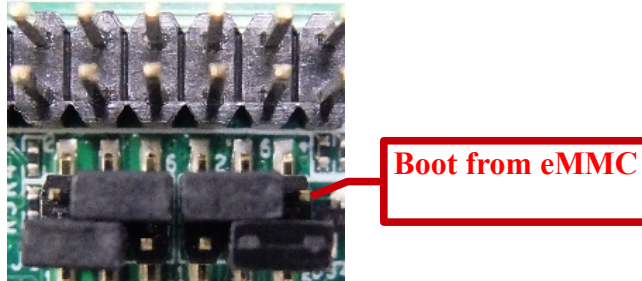


Install jumpers as below, and board will boot from serial boot loader:

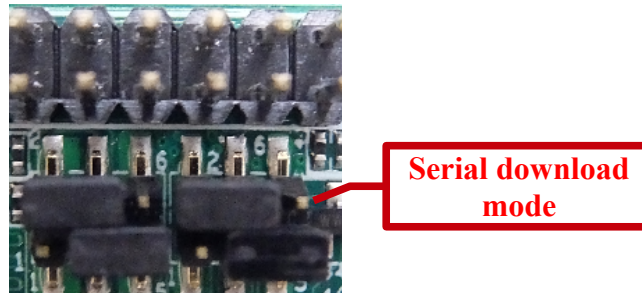


### 4.2.3 PICO-IMX6UL-EMMC\_PI

Install jumpers as below, and board will boot from eMMC of CPU module:

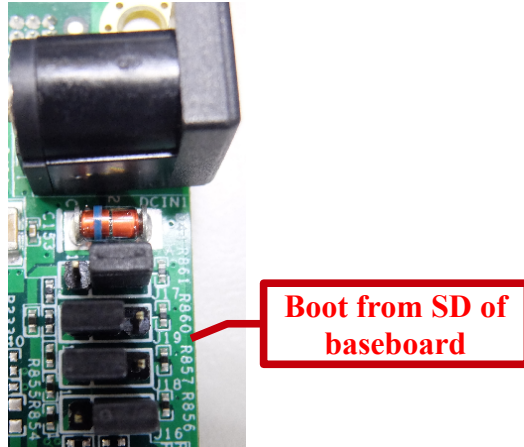


Install jumpers as below, and board will boot from serial boot loader:

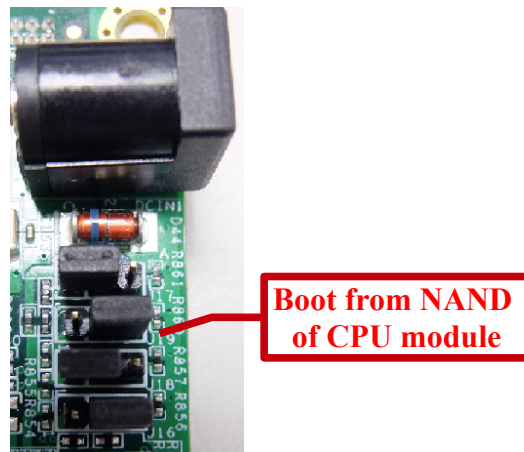


#### 4.2.4 PICO-IMX6UL-NAND\_DWARF

Install jumpers as below, and board will boot from SD card of baseboard:



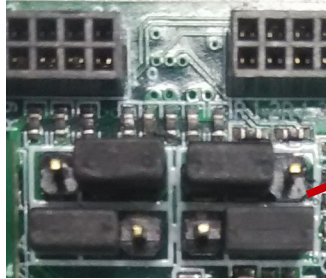
Install jumpers as below, and board will boot from NAND of CPU module:





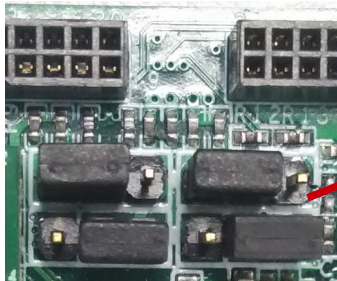
## 4.2.5 PICO-IMX6UL-NAND\_HOBBIT

Install jumpers as below, and board will boot from SD card of baseboard:



**Boot from SD of  
baseboard**

Install jumpers as below, and board will boot from NAND of CPU module:

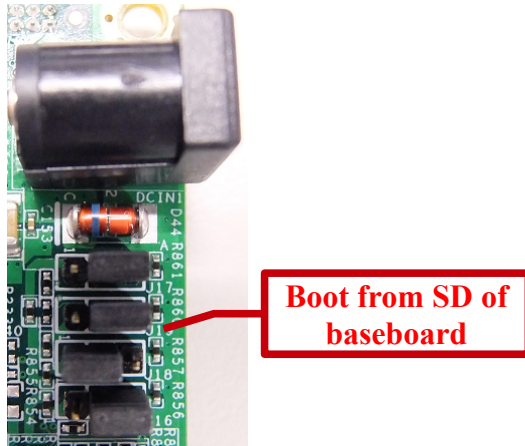


**Boot from NAND  
of CPU module**

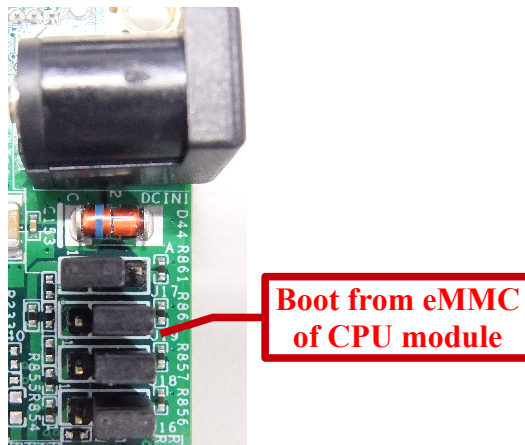
### 4.3 Platforms based on i.MX7D

#### 4.3.1 PICO-IMX7D\_DWARF

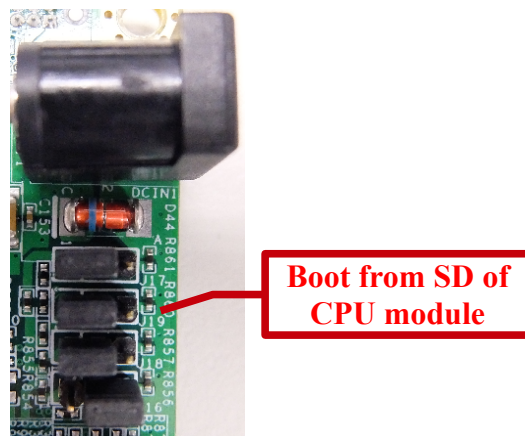
Install jumpers as below, and board will boot from SD card of baseboard:



Install jumpers as below, and board will boot from eMMC card of CPU module:

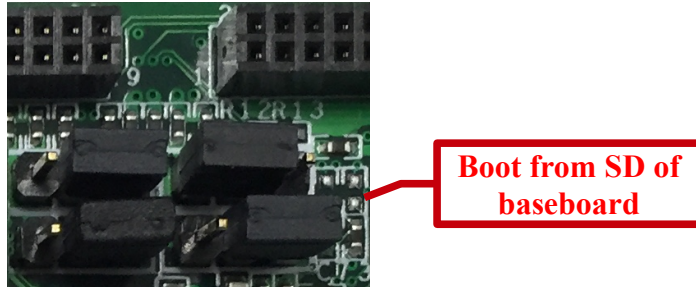


Install jumpers as below, and board will boot from SD card of CPU module:

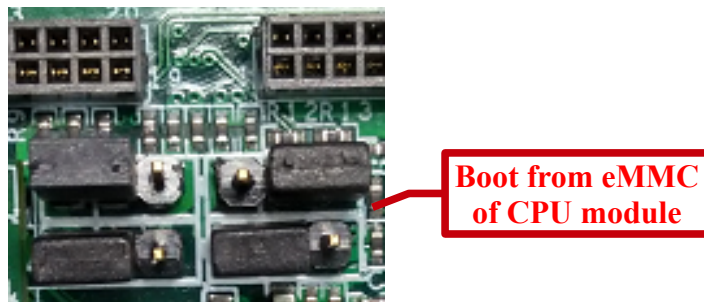


### 4.3.2 PICO-IMX7D\_HOBBIT

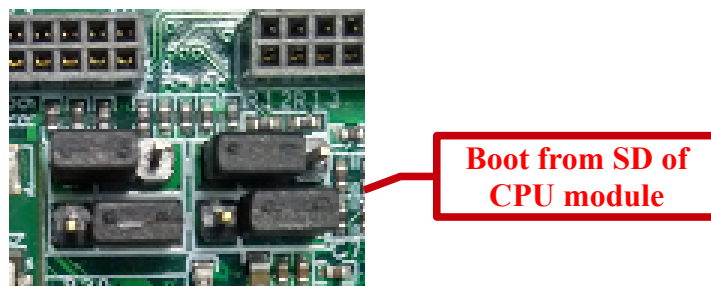
Install jumpers as below, and board will boot from SD card of baseboard:



Install jumpers as below, and board will boot from eMMC card of CPU module:

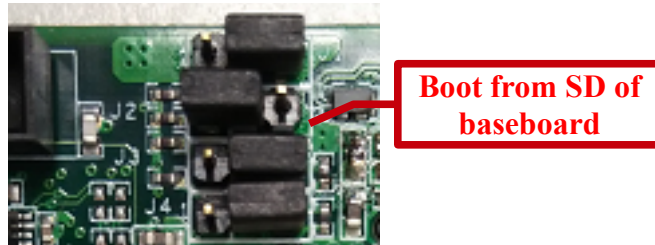


Install jumpers as below, and board will boot from SD card of CPU module:

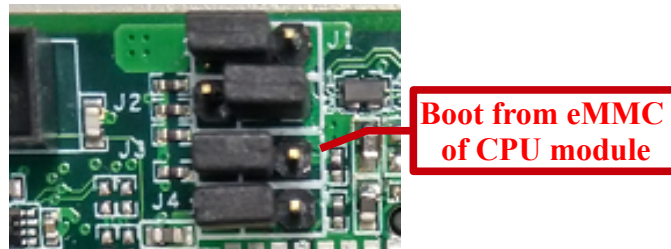


### 4.3.3 PICO-IMX7D\_NYMPH

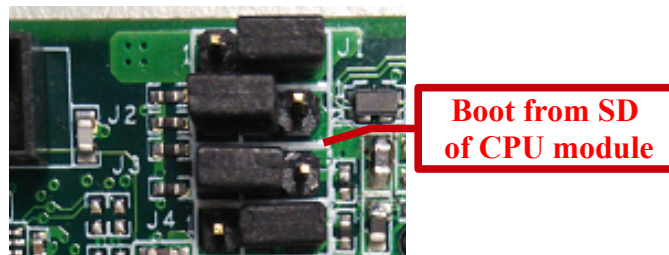
Install jumpers as below, and board will boot from SD card of baseboard:



Install jumpers as below, and board will boot from eMMC card of CPU module:

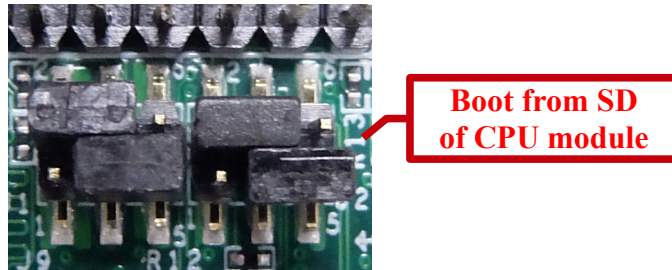


Install jumpers as below, and board will boot from SD card of CPU module:

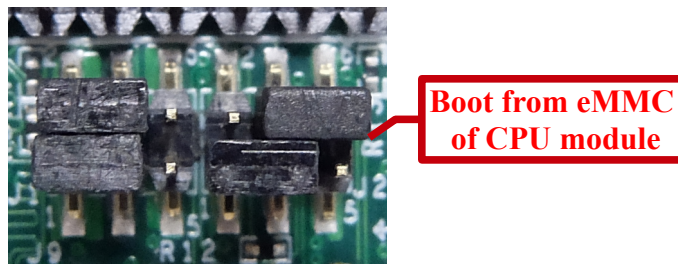


### 4.3.4 PICO-IMX7D\_PI

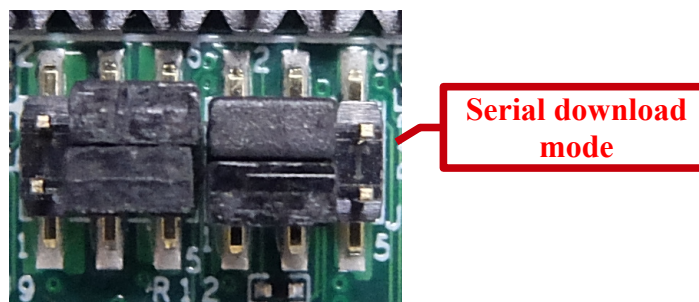
Install jumpers as below, and board will boot from SD card of CPU module:



Install jumpers as below, and board will boot from eMMC of CPU module:

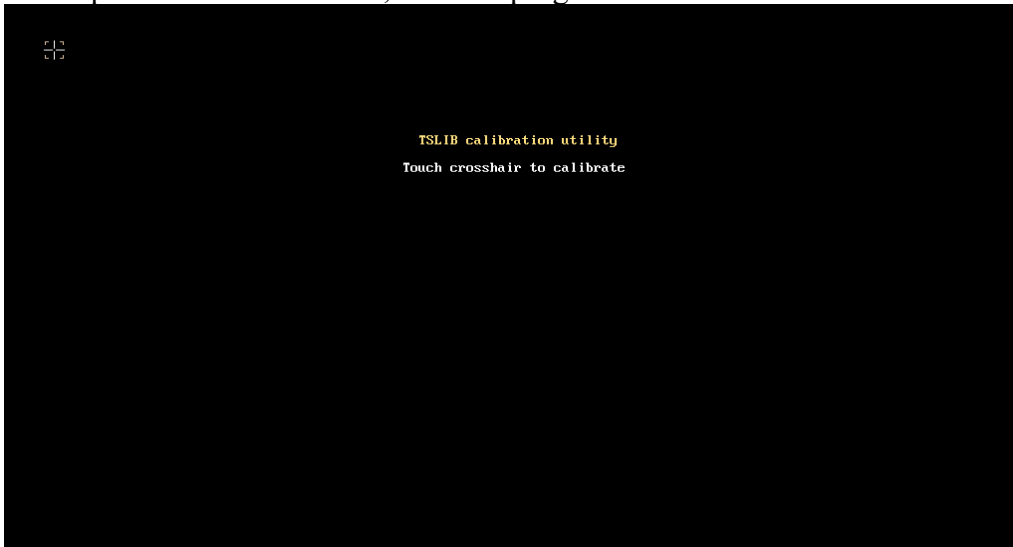


Install jumpers as below, and board will boot from serial boot loader:



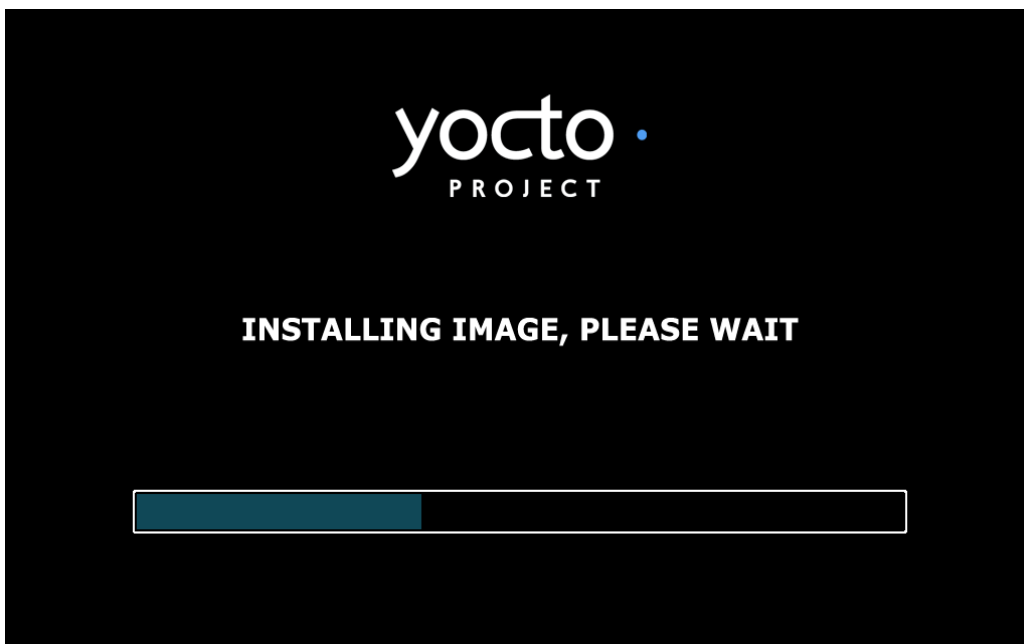
## 5. Resistive touch calibration

If the touch panel is resistive touch, installer program will enter into calibration mode first.

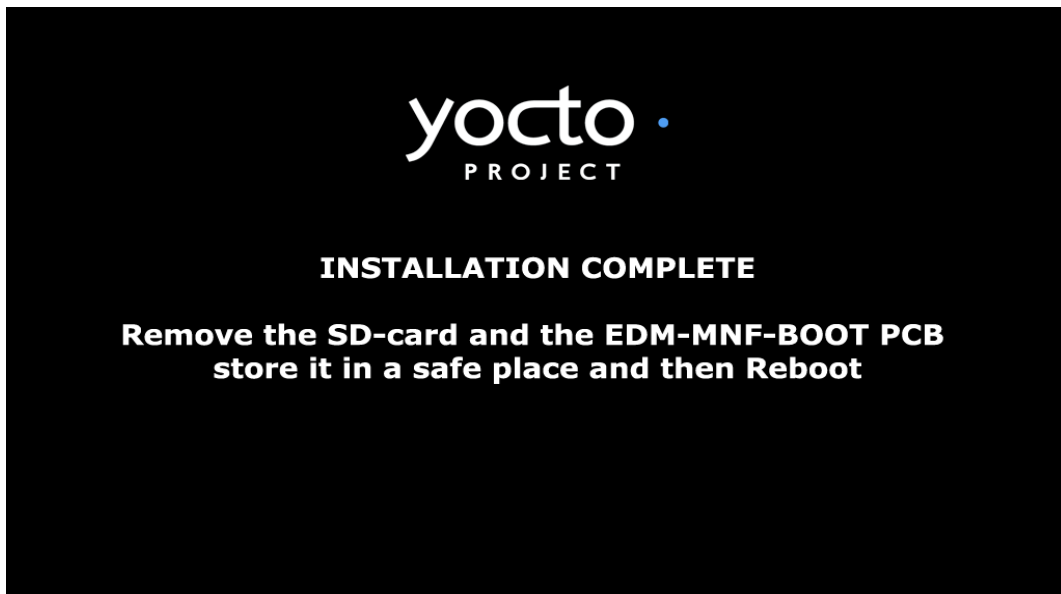


(Capacitive touch panels don't need to be calibrated.)

After calibration is done, the installer program will start to flash Yocto image to eMMC.



Wait until the installation completes.



**Please remove microSD card and switch boot mode to “boot from eMMC”.** Then, reboot the board.

**Note:**

For EDM1-FAIRY/EDM1-GOBLIN/EDM2-ELF, it needs to remove the “EDM-MNF-BOOT PCB” to switch boot mode to “boot from eMMC”.

For PICO-DWARF/PICO-HOBBIT/PICO-NYMPH/PICO-PI, it needs to adjust the boot jumpers to switch boot mode to “boot from eMMC”.

## 6. Use USB-OTG intaller tool to program eMMC

The method that we introduce in **Section 4. Set up boot mode to run installer image on target board** requires the target board with SD card slot. For some boards, there is no SD card slot. Then USB-OTG installer may be the another choice for you to program the target image into eMMC.

Download USB-OTG installer tool from TechNexion FTP:

[ftp://ftp.technexion.net/development\\_resources/development\\_tools/installer/pico-imx7-imx6ul-imx6ull\\_otg-installer\\_20170112.zip](ftp://ftp.technexion.net/development_resources/development_tools/installer/pico-imx7-imx6ul-imx6ull_otg-installer_20170112.zip)

The supported platforms are as follows:

- PICO-IMX6UL-EMMC
- PICO-IMX6ULL-EMMC
- PICO-IMX7-EMMC

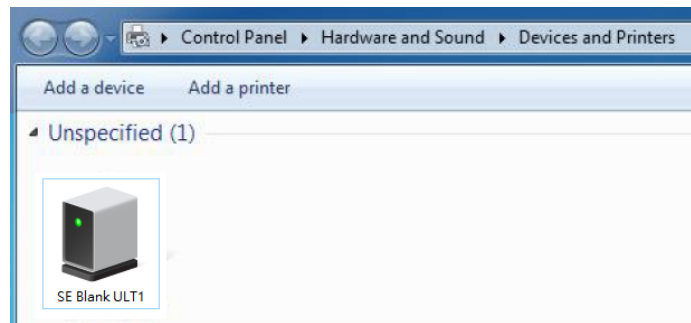
Installation from both Windows and Linux platforms are supported.

### 6.1 Run USB-OTG installer on Windows host

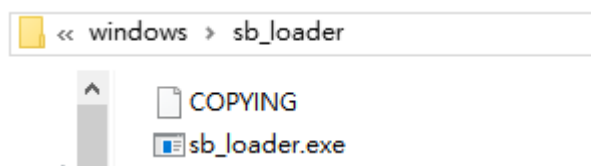
First attach a USB Type C peripheral cable to the board, and the other end to the host PC.

Then, Set the boot jumpers to serial download mode (please refer to **Section 4. Set up boot mode to run installer image on target board**).

Power up the board, and verify that a "SE Blank ULT1" device appears as below:



Extract the zip file of USB-OTG installer tool.





Run “sb\_loader.exe” via “cmd.exe”, and specify the boot image by different platform:

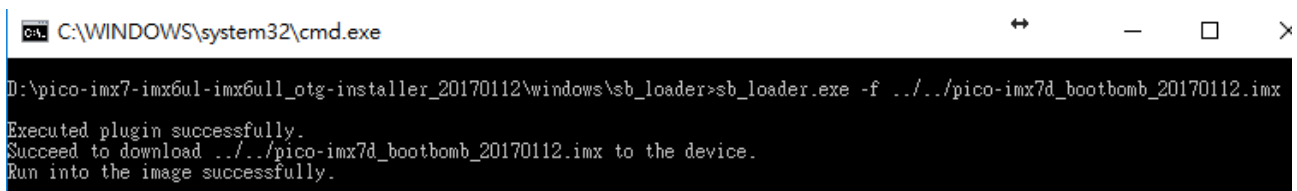
For PICO-IMX6UL-EMMC/PICO-IMX6ULL-EMMC:

```
$ sb_loader.exe -f ../pico-imx6ul_bootbomb_20160510.imx
```

For PICO-IMX7-EMMC:

```
$ sb_loader.exe -f ../pico-imx7d_bootbomb_20170112.imx
```

If the loader pushes the image to the board via USB-OTG cable successfully as below, the eMMC will be mounted as a mass storage device and appear under windows.



```
C:\WINDOWS\system32\cmd.exe
D:\pico-imx7-imx6ul-imx6ull_otg-installer_20170112\windows\sb_loader>sb_loader.exe -f ../pico-imx7d_bootbomb_20170112.imx
Executed plugin successfully.
Succeed to download ../pico-imx7d_bootbomb_20170112.imx to the device.
Run into the image successfully.
```

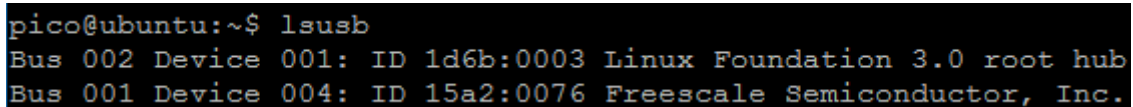
Then, use the WinDiskImager to flash target image into mass storage device(actually it's eMMC on the CPU module). Please refer to **Section 3. Make eMMC installer** to understand how to use WinDiskImager, but this time the device is eMMC, instead of SD card.

## 6.2 Run USB-OTG installer on Linux host

First attach a USB Type C peripheral cable to the board, and the other end to the host PC.

Then, Set the boot jumpers to serial download mode (please refer to **Section 4**. Set up boot mode to run installer image on target board in this document).

Power up the board, and verify that a "Freescale Semiconductor, Inc." device appears as below:



```
pico@ubuntu:~$ lsusb
Bus 002 Device 001: ID 1d6b:0003 Linux Foundation 3.0 root hub
Bus 001 Device 004: ID 15a2:0076 Freescale Semiconductor, Inc.
```

Extract the zip file of USB-OTG installer tool.

Run “imx\_usb” and specify the boot image by different platform:

For PICO-IMX6UL-EMMC/PICO-IMX6ULL-EMMC:

```
$ sudo ./imx_usb ../pico-imx6ul_bootbomb_20160510.imx
```

For PICO-IMX7-EMMC:

```
$ sudo ./imx_usb ../pico-imx7d_bootbomb_20170112.imx
```

If the loader pushes the image to the board via USB-OTG cable successfully as below, the eMMC will be mounted as a mass storage device.

```
pico@ubuntu:/media/sf_Test_image/pico-imx7-imx6ul-imx6ull_otg-installer_20170112/linux$ sudo ./imx_usb ../pico-imx7d_bootbomb_20170112.imx
[sudo] password for pico:
config file <./imx_usb.conf>
vid=0x066f pid=0x3780 file_name=mx23_usb_work.conf
vid=0x15a2 pid=0x004f file_name=mx28_usb_work.conf
vid=0x15a2 pid=0x0052 file_name=mx50_usb_work.conf
vid=0x15a2 pid=0x0054 file_name=mx6_usb_work.conf
vid=0x15a2 pid=0x0061 file_name=mx6_usb_work.conf
vid=0x15a2 pid=0x0063 file_name=mx6_usb_work.conf
vid=0x15a2 pid=0x0071 file_name=mx6_usb_work.conf
vid=0x15a2 pid=0x007d file_name=mx6_usb_work.conf
vid=0x15a2 pid=0x0080 file_name=mx6_usb_work.conf
vid=0x15a2 pid=0x0076 file_name=mx7_usb_work.conf
vid=0x15a2 pid=0x0041 file_name=mx51_usb_work.conf
vid=0x15a2 pid=0x004e file_name=mx53_usb_work.conf
vid=0x15a2 pid=0x006a file_name=vybrid_usb_work.conf
vid=0x066f pid=0x37ff file_name=linux_gadget.conf
config file <./mx7_usb_work.conf>
parse ./mx7_usb_work.conf
15a2:0076(mx7) bConfigurationValue =1
Interface 0 claimed
HAB security state: development mode (0x56787856)
== work item
filename ../pico-imx7d_bootbomb_20170112.imx
load_size 0 bytes
load_addr 0x00000000
dcd 1
clear_dcd 0
plug 1
jump_mode 2
jump_addr 0x00000000
== end work item
Setting boot_data_ptr to 0
```

The mass storage device appears as /dev/sde under linux:

The capacity of /dev/sde corresponds to the size of eMMC.

```
pico@ubuntu:/media/sf_Test_image/pico-imx7-imx6ul-imx6ull_otg-installer_20170112/linux$ lsblk
NAME        MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT
sda          8:0    0   25G  0 disk
├─ sda1      8:1    0  24.3G  0 part /
├─ sda2      8:2    0    1K  0 part
├─ sda5      8:5    0   765M  0 part [SWAP]
sdb          8:16   0  300G  0 disk
├─ sdb1      8:17   0  300G  0 part /home/pico/workspace
sdc          8:32   0   500G  0 disk
├─ sdc1      8:33   0   500G  0 part /home/pico/workspace2
sde          8:64   1   3.6G  0 disk
```

Then, it's easy to use "dd" command to flash target image into eMMC.

```
$ sudo dd if=image.img of=/dev/sdX bs=1M oflag=dsync
```