iMX.6 Processor Series

EC21 / NSD21 / SBC21

Firmware Download

Application Note

Release Notes

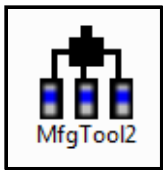
Version	Release Date	Notes
1.0	October 7, 2013	Initial release
2.0	October 25, 2013	Merge Android and Ubuntu to one file
2.1	November 5, 2013	Modify P.16
3.0	December 17, 2013	Modify u-boot args, add FAQ
3.1	February 13, 2014	Double mark “SD card”
3.2	March 21, 2014	Double mark OTG/power connection
4.0	March 28, 2014	Add Solo 1GB DDR Remove Ubuntu re- calibrate
4.1	May 23, 2014	Modify P.5 (Solo for 1GB)
5.0	July 7, 2014	Add D200, Ubuntu calibrate
5.1	July 29, 2014	Modify P.7

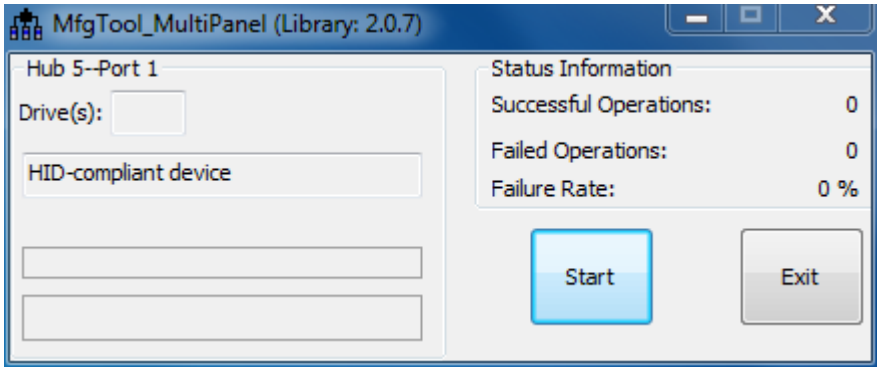
Table of Contents

1. Software Utility

If you want to update the operating system, before getting the new image you need to have the uploading tool first. The tool we use is called **MfgTool2**.

1. Decompress the utility package as a folder in <Mfgtools>, and you will find **MfgTool2.exe** in <Mfgtools>\.





2. Download New Image

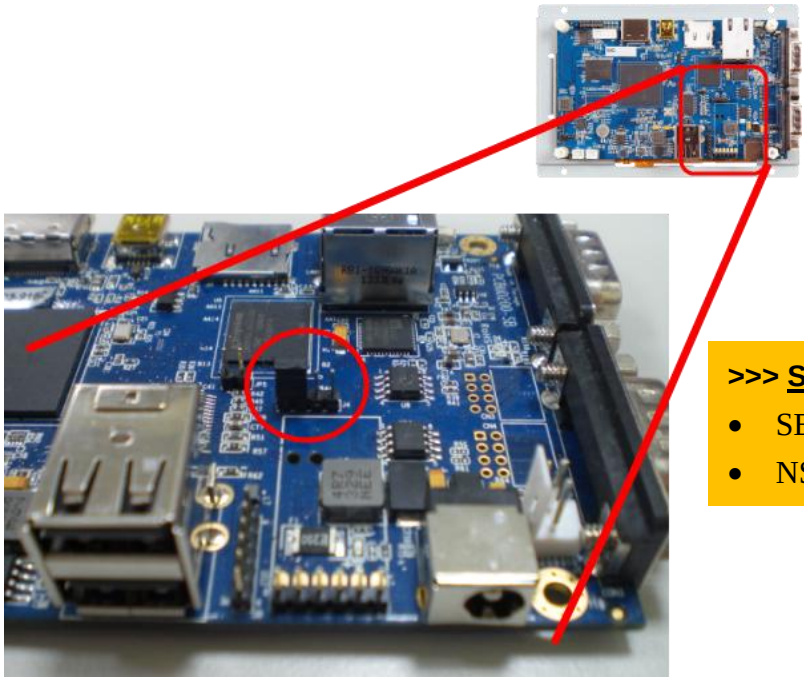
Applicable products:

OS – **Android / Ubuntu**

CPU – **Quad- / Dual- / Solo-core**

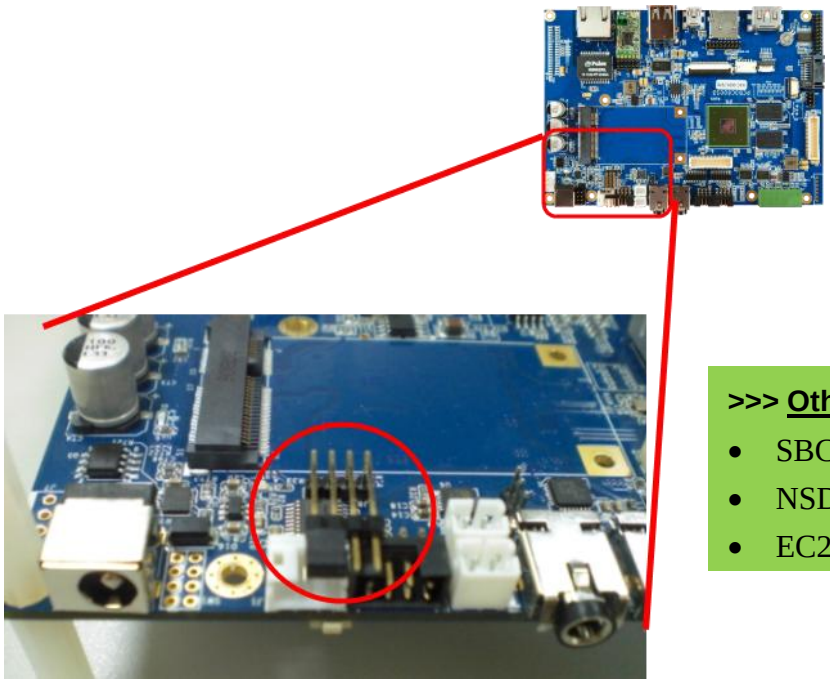
DDR size – **1GB, 2GB RAM (Quad & Dual) / 1GB RAM (Solo)**

1. First, remove the jumpers as shown below.



>>> SBC2000/NSD2105

- SBC2000
- NSD2105



>>> Other 2100 series

- SBC2100
- NSD2107/10/15/22
- EC2107/10

2. Modify the file <Mfgtools>**cfg.ini**.

- You will need to download twice for 2 different parts: the bootloader and the Android system.
- Download **Android bootloader** for **1GB RAM (Quad & Dual)**:

```
[LIST]
name = c600 u-boot
```

- Download **Android bootloader** for **2GB RAM (Quad & Dual)**:

```
[LIST]
name = c6002G u-boot
```

- Download **Android bootloader** for **1GB RAM (Solo)**:

```
[LIST]
name = c6001G u-boot
```

- Download **Ubuntu 12.04** for **1GB RAM (Quad & Dual)**:

```
[LIST]
name = Ubuntu 12.04 1g
```

- Download **Ubuntu 12.04** for **2GB RAM (Quad & Dual)**:

```
[LIST]
name = Ubuntu 12.04 2g
```

- Download **Ubuntu 12.04** for **1GB RAM (Solo)**:

```
[LIST]
name = Ubuntu 12.04 s1g
```

Notes:

- If you want to boot from microSD card, put the microSD card in the slot. However, if you want to boot from eMMC, **do not** plug in the microSD card.
- Once you modify the **<Mfgtools>\cfg.ini** file, you **must** close MfgTool.exe and restart the program before using.

3. Put image files in the following path:

- **Android image** for **1GB RAM (Quad & Dual)**:

<Mfgtools>\Profiles\MX6**Q** Linux Update\OS Firmware\files\sabrelite**android**

- **Android image** for **2GB RAM (Quad & Dual)**:

<Mfgtools>\Profiles\MX6**Q** Linux Update\OS Firmware\files\sabrelite**android_2g**

- **Android image** for **1GB RAM (Solo)**:

<Mfgtools>\Profiles\MX6**DL** Linux Update\OS Firmware\files\sabrelite**android**

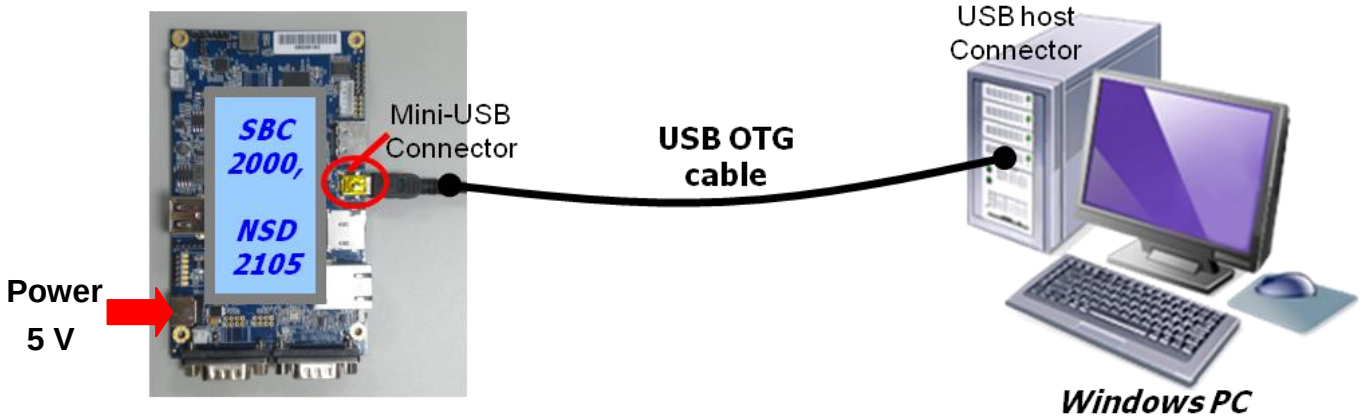
- **Ubuntu image** for **1GB / 2GB RAM (Quad & Dual)**:

<Mfgtools>\Profiles\MX6**Q** Linux Update\OS Firmware\files\sabrelite**ubuntu**

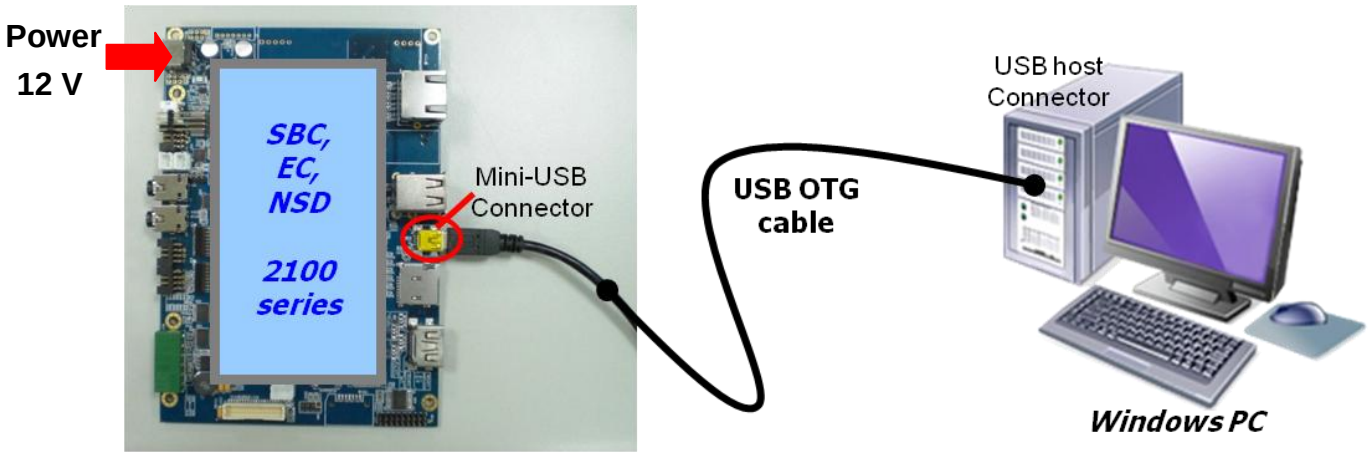
- **Ubuntu image** for **1GB RAM (Solo)**:

<Mfgtools>\Profiles\MX6**DL** Linux Update\OS Firmware\files\sabrelite**ubuntu**

4. Power on device first and then connect the OTG cable to the PC.

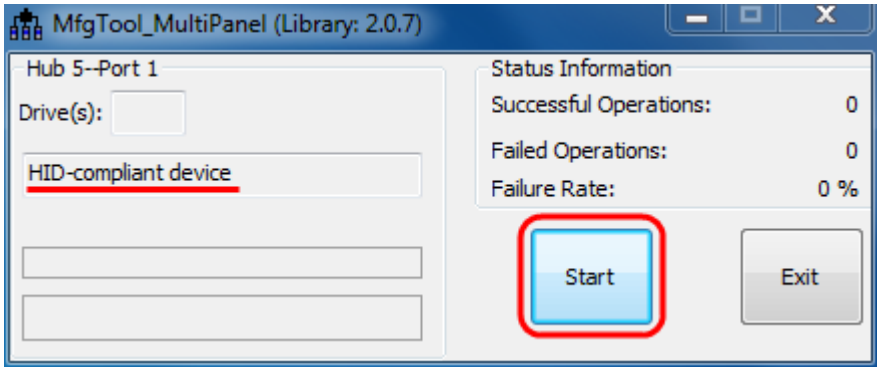


For SBC2000/NSD2105

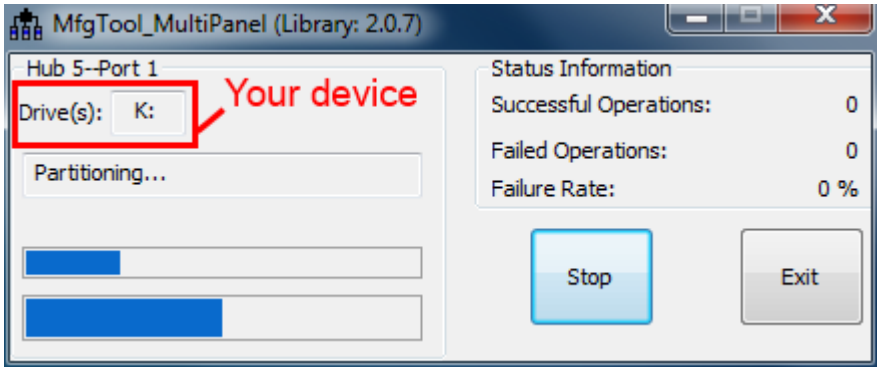


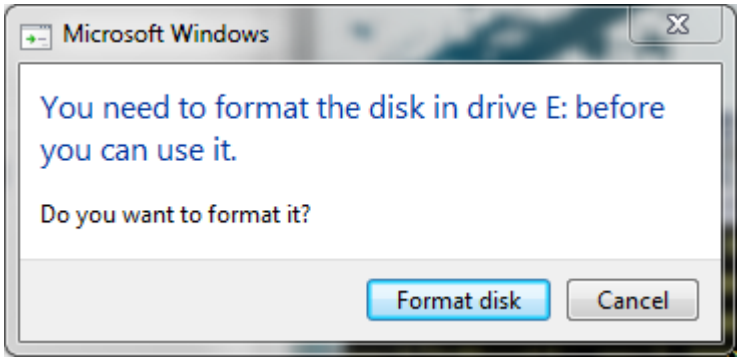
For Other 2100 series

5. Then start MfgTool2.exe. When the device is connected and detected (appears as below), click **Start**. ****Remind again: Don't plug in the microSD card if you want to boot from eMMC when you start downloading.**

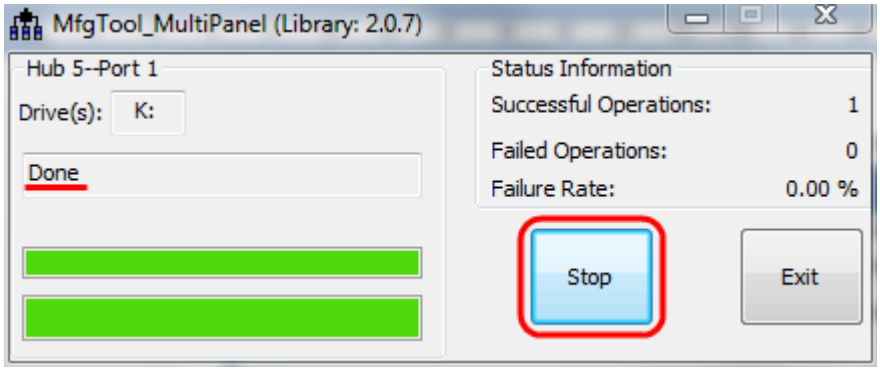


6. Downloading will now start. If it asks you to format the disk, select ***Cancel***.

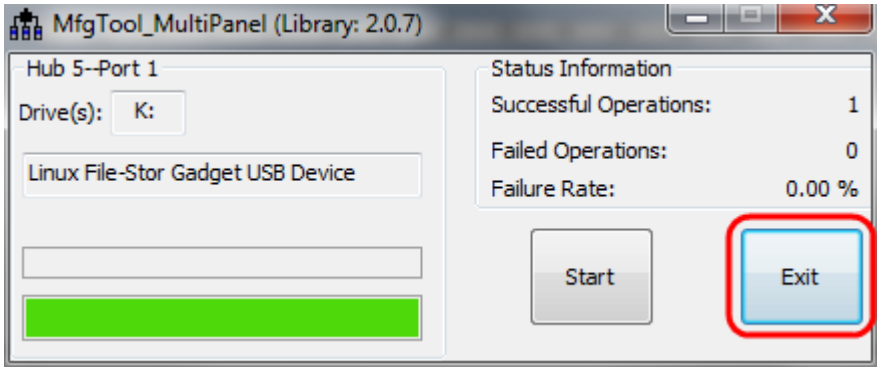




7. When it is complete, the tool will show *Done*. Click **Stop**.



8. Click **Exit** to close the program.



9. If you use Ubuntu, please skip this part and go to step 11. If you use Android, open the file <Mfgtools>**cfg.ini** again and modify as shown below:

- Download the **Android OS** for **1GB RAM (Quad & Dual)**:

```
[LIST]
name = System Only JellyBean
```

- Download the **Android OS** for **2GB RAM (Quad & Dual)**:

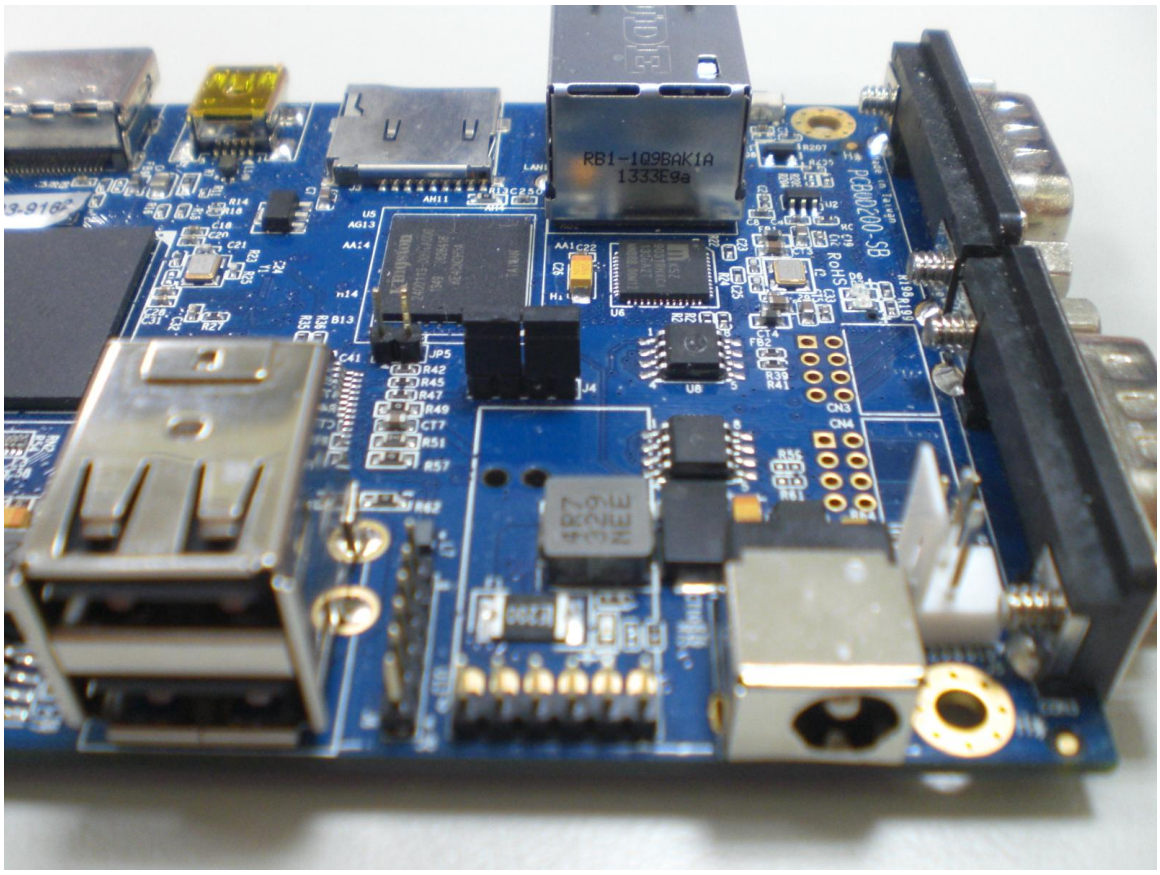
```
[LIST]
name = System2G Only JellyBean
```

- Download the **Android OS** for **1GB RAM (Solo)**:

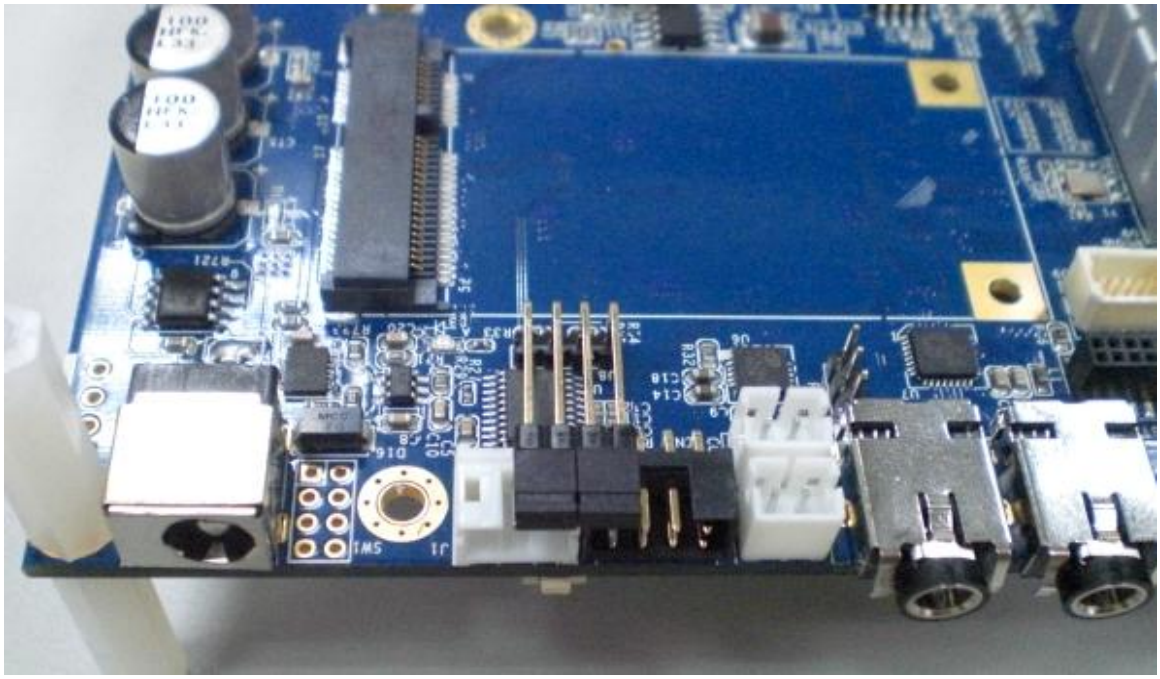
```
[LIST]
name = System1G Only JellyBean
```

10. Repeat steps 5 to 8.
11. **Turn off the device** power and then **remove the OTG cable**.

12. After completion, return the jumpers as shown below.



For SBC2000/NSD2105



For Other 2100 series

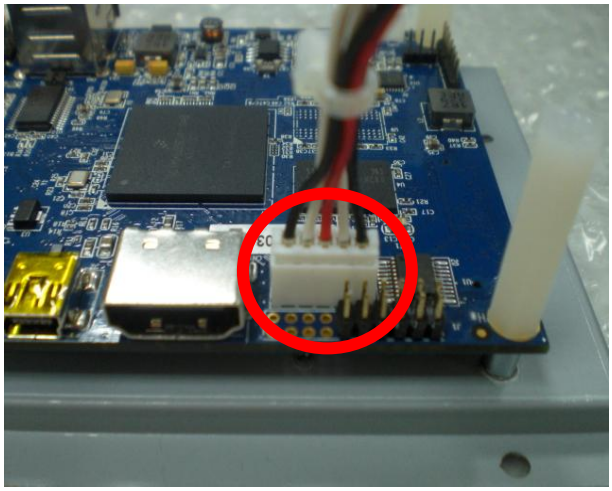
3. FAQ

3.1 Setting Your Output

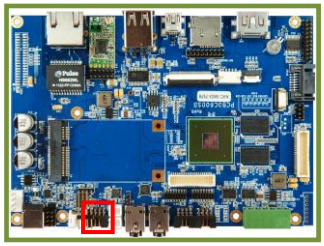
If you want to change your output display, please follow the below steps.

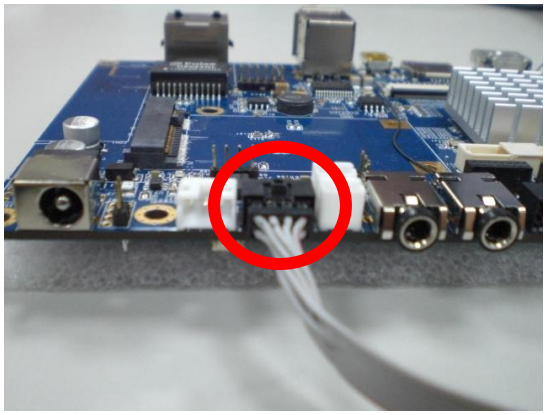
You can refer the Quick Start Guide for more detail.

First, connect to debug port and run the hyper terminal on PC.



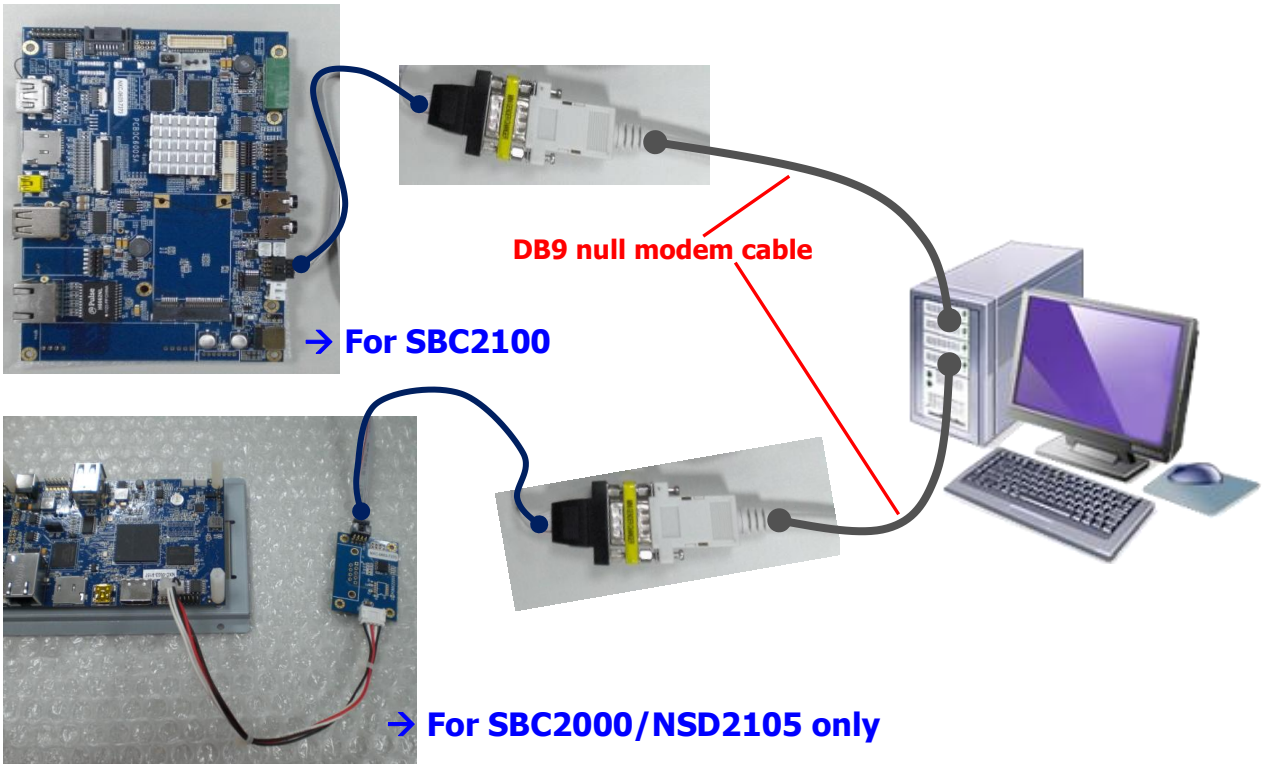
For SBC2000/NSD2105



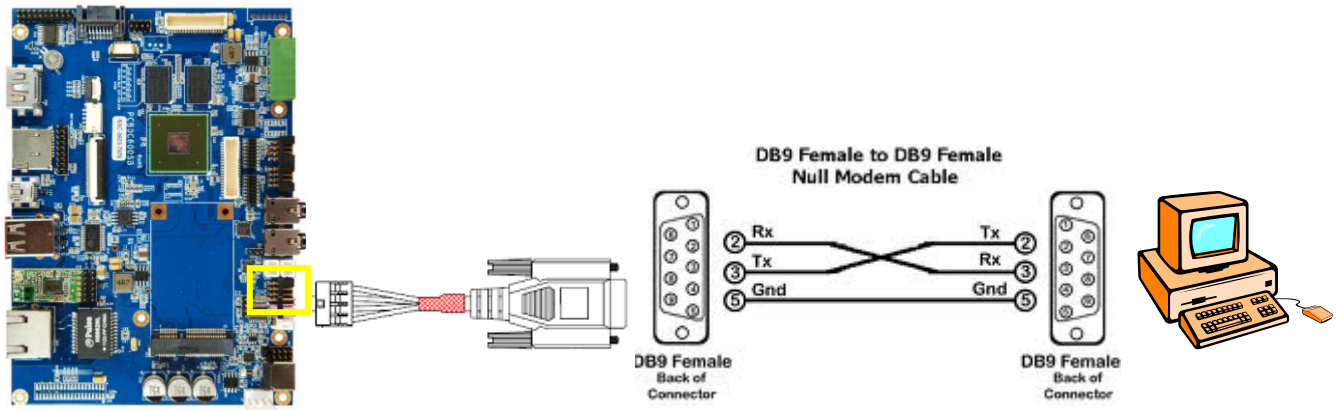


For Other 2100 series

Connect to PC



Console/Debug Port Connection Diagram



UART1 is dedicated as the debug port. UART1 default settings are ***Baud Rate 115200, 8 data bits, no parity, 1 stop bit and no flow control***.

A DB9 **null modem cable** (or adapter) is required when you want to connect UART1 to a PC with terminal emulation software such as TeraTerm.

Changing the output display setting is through the U-boot environment.
Then power up the board and you will see a message from the debug port as shown below. Quickly hit **Enter** within **3** seconds.

```
        Hit any key to stop autoboot:   3
// hit Enter
        > printenv
```

Find the variable **"panel"** and modify its value for changing the output:

```
        > setenv panel 'string value'
```

The **string value** depends on what output you want (PS. There is different between Android and Ubuntu):

- **HDMI (1920 x 1080)**

```
// Android -
'video=mxcfb0:dev=hdmi,1920x1080M@60,if=RGB24,bpp=32 video=mxcfb1:off cea'
// Ubuntu -
'video=mxcfb0:dev=hdmi,1920x1080M@60,if=RGB24 video=mxcfb1:off'
```

- **7" LCD-PT (800 x 480, with RTP)**

```
// Android -
'video=mxcfb0:dev=lcd,LCD-WVGA,if=RGB24,bpp=32 video=mxcfb1:off'
// Ubuntu -
'video=mxcfb0:dev=lcd,LCD-WVGA,if=RGB24 video=mxcfb1:off tsdev'
```

- **7" LCD-AWT (800 x 480, with RTP)**

```
// Android -
'video=mxcfb0:dev=lcd,AWT-WVGA,if=RGB24,bpp=32 video=mxcfb1:off'
// Ubuntu -
'video=mxcfb0:dev=lcd,SEIKO-WVGA,if=RGB24 video=mxcfb1:off tsdev'
```

★ For other LCD / LVDS panels we support, please contact to our sales in order to get right string value.

Finally, don't forget to save the environment. Then reset the power or type in **boot** to start.

```
> saveenv
Saving Environment to SPI Flash...
Erasing SPI flash...Writing to SPI flash.....SUCCESS

Done
> boot
```

Note:

- If your OS is *Android* and the display is a *resistive touch panel* (RTP), you should calibrate the touch when used for the first time. Refer to the next section **Calibrating the Touchscreen in Android** for more details.

3.2 Calibrating the Touchscreen in Android

Turn on the device, and notice that the console message shows '**adb_open**'. Quickly input **stop** and then type **ts_calibrator** command.

```
adb_bind_config
adb_open
# stop
//now the system will stop and the display stays at the penguin icon
# ts_calibrator
//now there will be a white '┼' at left, it is a calibration point
```

When the calibration point **'┼'** shows, please quickly and accurately touch the cross on panel. Be careful that this calibrator comes with a timeout function. If no input is received in a set amount of time, it will shut off. Should this happen, type in the command **ts_calibrator** again.

After touching several crosses, there will appear a green and red small square. Touch and hold the left green one. This is to accurately confirm the results from the calibration. All blue crosses should be within the green square. If they are not, then press the red one. The calibrator will let you run the calibration process again.

Finally, reset the power or type in **start** to continue system.

```
# start
```

3.3 Calibrating the Touchscreen in Ubuntu 12.04

For the Ubuntu 12.04 version, if you want to re-calibrate the touch accuracy, please kindly follow below steps to accomplish the calibration:

1. First, connected keyboard, mouse and Internet (Ethernet port).

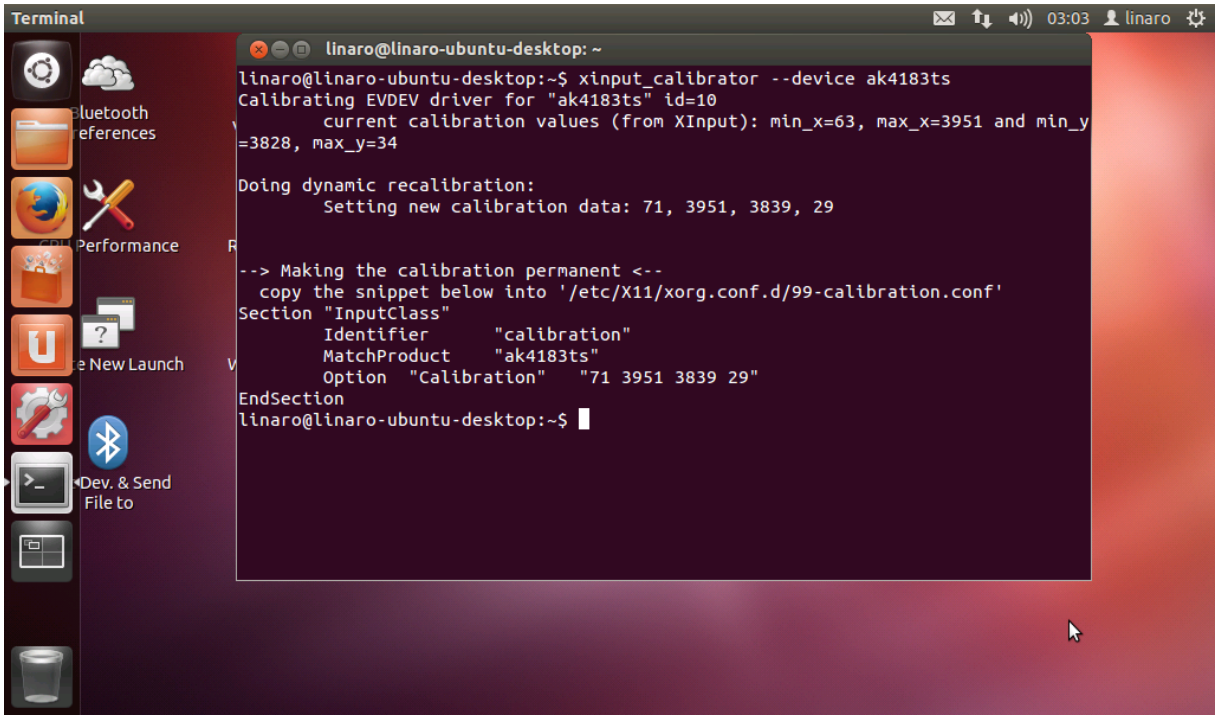
2. Open Ubuntu terminal window which on the left hand side shortcut list.

3. On the terminal window, please input below command line.
   ~$ **xinput_calibrator --device ak4183ts**

Note

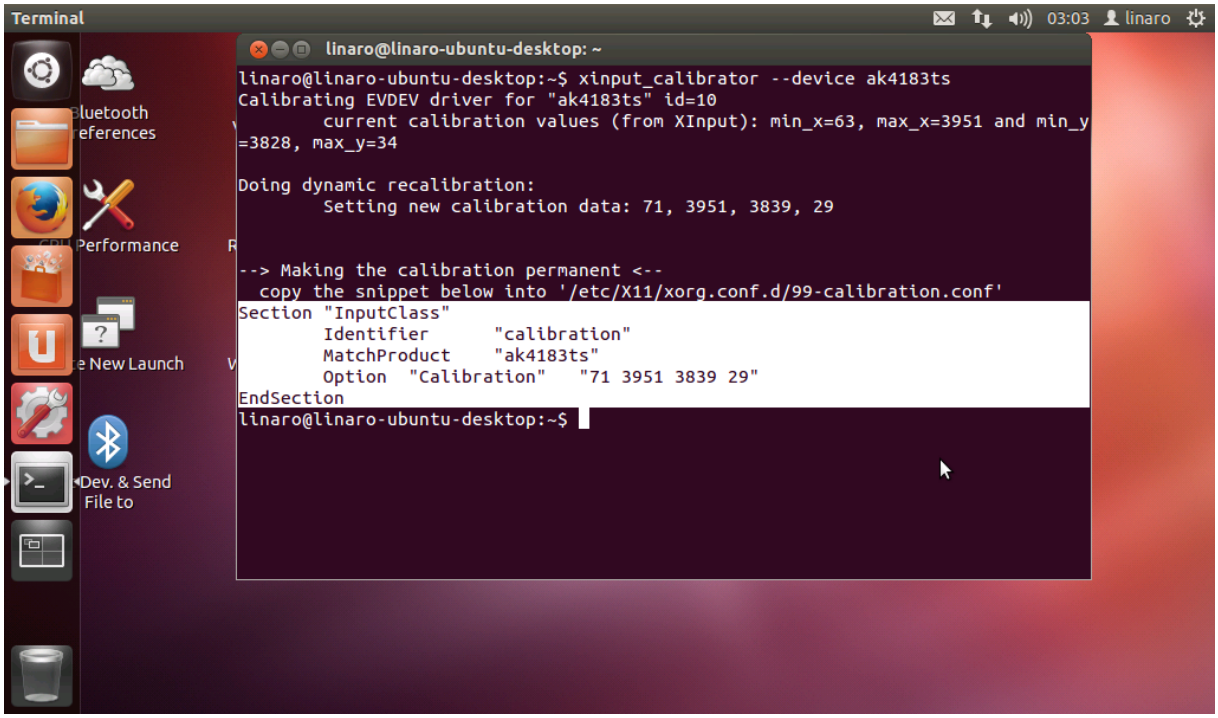
If you can't do [xinput_calibrator], please try to get the app first as following below step:
On the terminal screen, please input the command line which in red.
~$ **sudo apt-get install xinput-calibrator**
And input password: **linaro**

4. Now you can start calibrating. When calibration is successful, program will be closed automatically and showed some information.



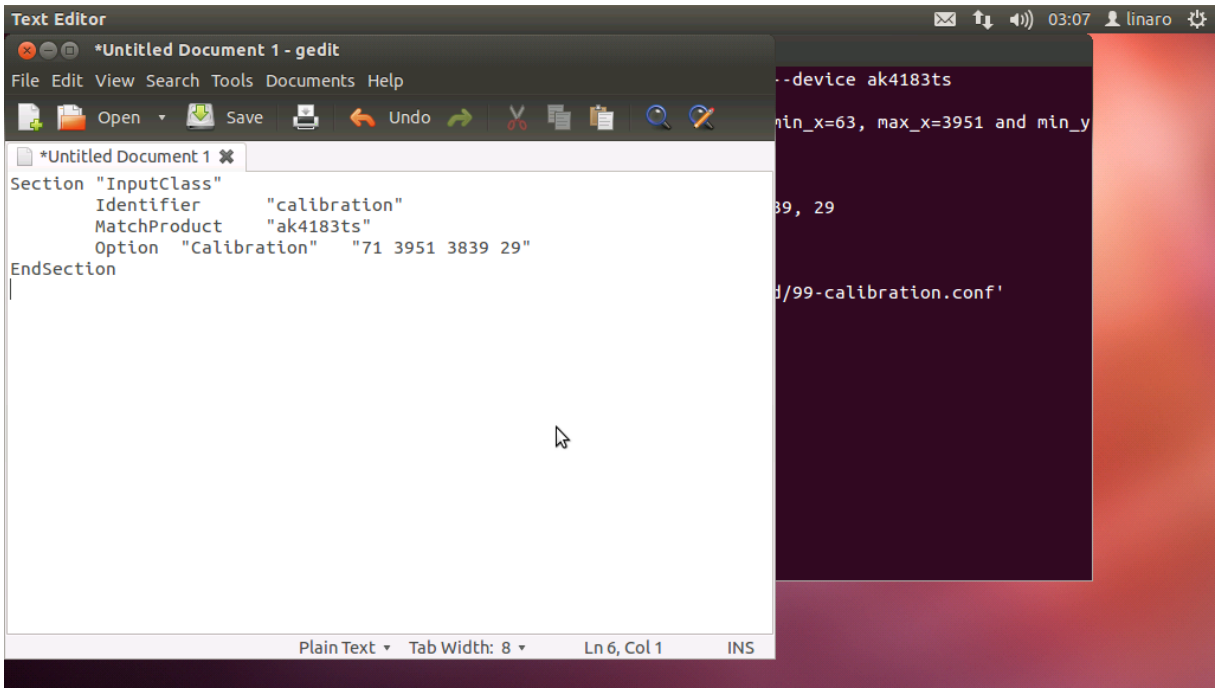
5. Now, test the touch function is functional or not. If not, please go to step 3 and calibrate again.

6. Copy the content between [**Section "InputClass"**] and [**EndSection**] (refer below picture in white block)

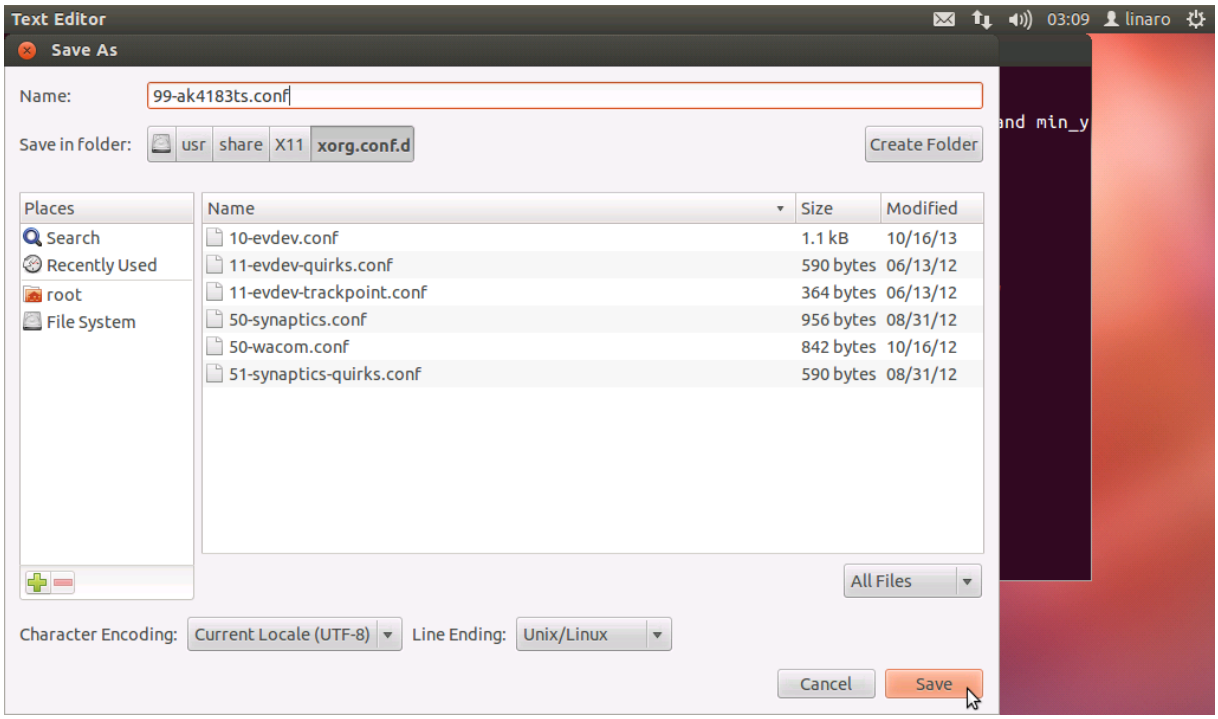


7. On terminal screen, please input
   ~$ **sudo gedit**
   And input password: **linaro**

8. Paste the content what you copied just now in the gedit.



9. Save the file under the path **`/usr/share/X11/xorg.conf.d/`**
   And named the file as **`99-ak4183ts.conf`**
   Then, close gedit.



10. Finally, reboot to check whether touch is correct or not.

3.4 Shutting Down the Device in Ubuntu

If you want to shutdown the device, it is best to follow the steps below before touching the power button.

Type in the command:

```
# poweroff
```

or

```
# shutdown -h now
```

When it shows the message **System halted**, you can now power off the device.

```
...
* Will now halt
System halted.
```