

Ubuntu 15.10/16.04 LTS
For MZBSWIP User Guide
GIGABYTE Software

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0. General Information

0.1. Issue Control

This document was edited with **Microsoft Word, Version 2010**. The graphic drawings are originally sketched in **Microsoft PowerPoint Version 2010**.

0.2. Record of Changes

Table 0-1. Record of Changes

Issue	Date	Authors	Reason for Changes
0.1	2016/02/23	Brian, Lu	First version.
0.2	2016/02/24	Brian, Lu	Add illustrate about install driver
0.3	2016/02/25	Brian, Lu	Add illustrate about I2C tools
0.4	2016/02/26	Brian, Lu	Modify figure1 that show incorrect screen
0.5	2016/02/26	Brian, Lu	Add more illustrate about I2C tools
0.6	2016/03/01	Brian, Lu	Add illustrate about test for driver
0.7	2016/03/01	Brian, Lu	Modify chapter 0 illustrate
0.8	2016/03/08	Brian, Lu	Modify install Ubuntu, HSUART and I2C tools illustrate
0.9	2016/03/24	Chris Wu	Add 4.5 kernel install and modify HSUART test.
0.10	2016/06/22	XY Hou	Play 4K video with gstreamer vaapi & install eth driver r8168
0.11	2016/06/23	XY Hou	To get HDMI audio working when playing 4K video
0.12	2016/07/06	XY Hou	Support Ubuntu 16.04 LTS

0.3. References

NO	Document title

0.4. Acronyms

1. Install Ubuntu

1.1. Prepare devices and software

1. USB stick
2. Image to USB tool – Win32DiskImager
3. Ubuntu 15.10
4. Download Kernel 4.5 (DEBs):
linux-headers-4.5.0-xxx-_all.deb
linux-headers-4.5.0-xxx-generic_4.5.0-xxx_amd64.deb
linux-image-4.5.0-xxx-generic_4.5.0-xxx_amd64.deb
<http://kernel.ubuntu.com/~kernel-ppa/mainline/v4.5-wily/>
5. Graphics Installer 1.4.0 for Ubuntu* 15.10, 64-bit
<https://01.org/zh/linuxgraphics/downloads?langredirect=1>

1.2. Create a bootable USB stick on Windows

Open the Win32 Disk Imager with Windows OS and as follow figure1.

Step1: select your USB device

Step2: Find “ubuntu-15.10-desktop-amd64.iso” file where you download.

Step3: Click “Write” button

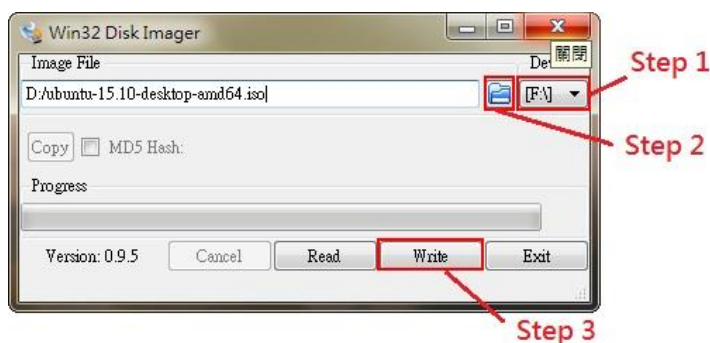


Figure1

1.3. Power on MZBSWIP and setting

1. Insert your USB stick to machine before you power on the machine.
2. Power on your machine and press “Delete” to enter BOIS setup.
3. Make sure your BIOS version is **F1**.
4. After select “Save and Exit” option, select “Restore Defaults” to use defaults setting. See figure2.
5. Select “Advanced” option and “OS selection” to set Linux System. See figure3 and figure4.
6. Select “Chipset” option and set “LPSS DMA #1 (D30:F0)” and “LPSS I2C #1 (D24:F1)” option for **ACPI Mode**. See figure5.

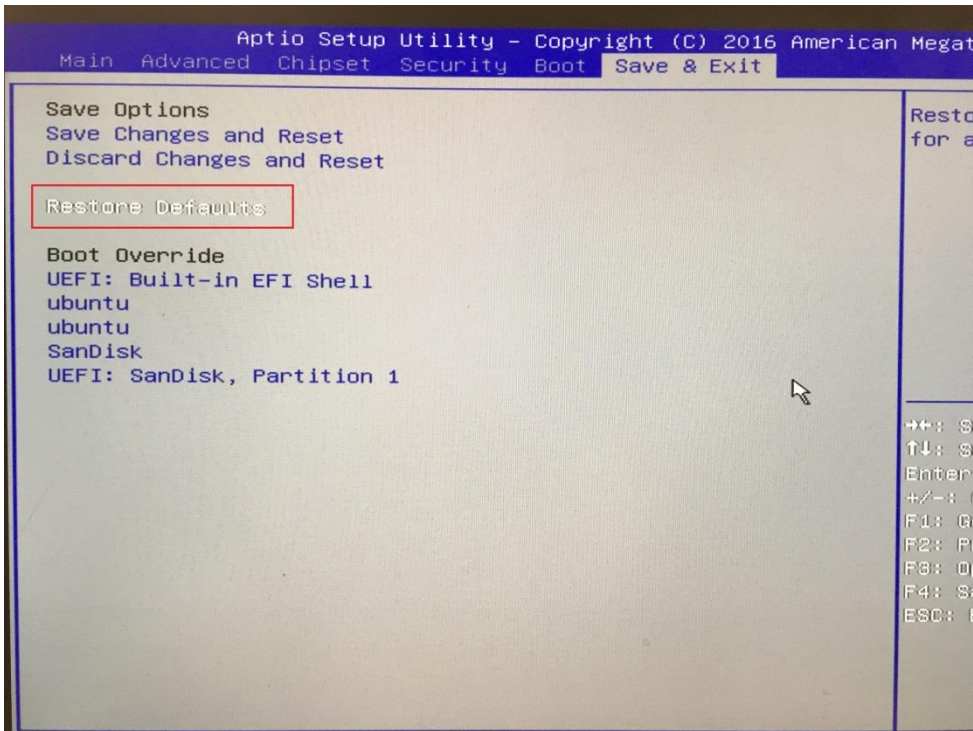


Figure2

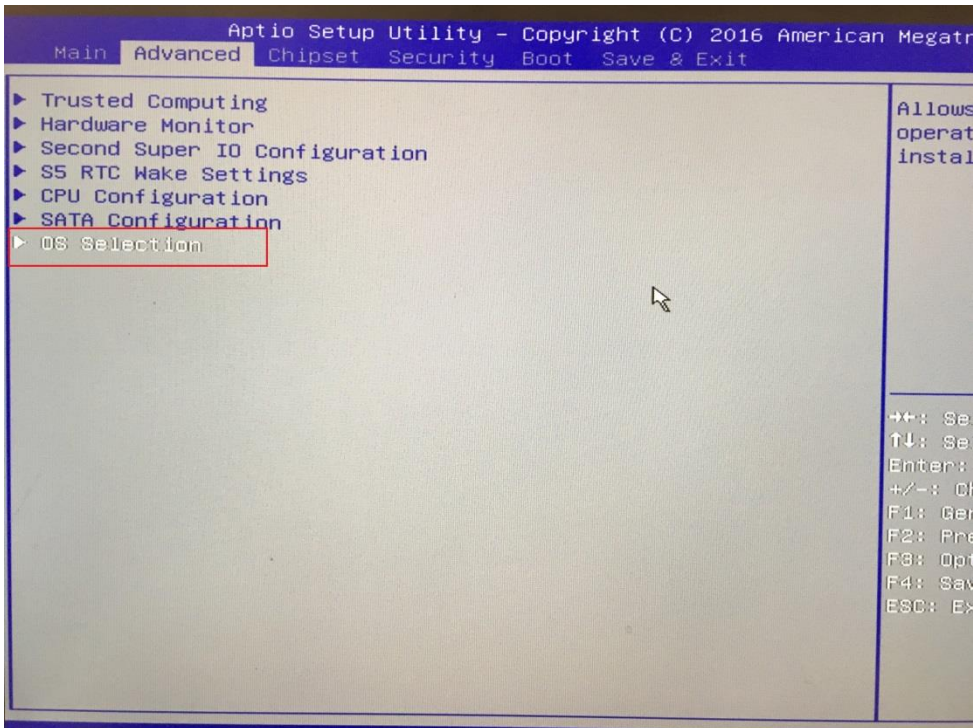


Figure3

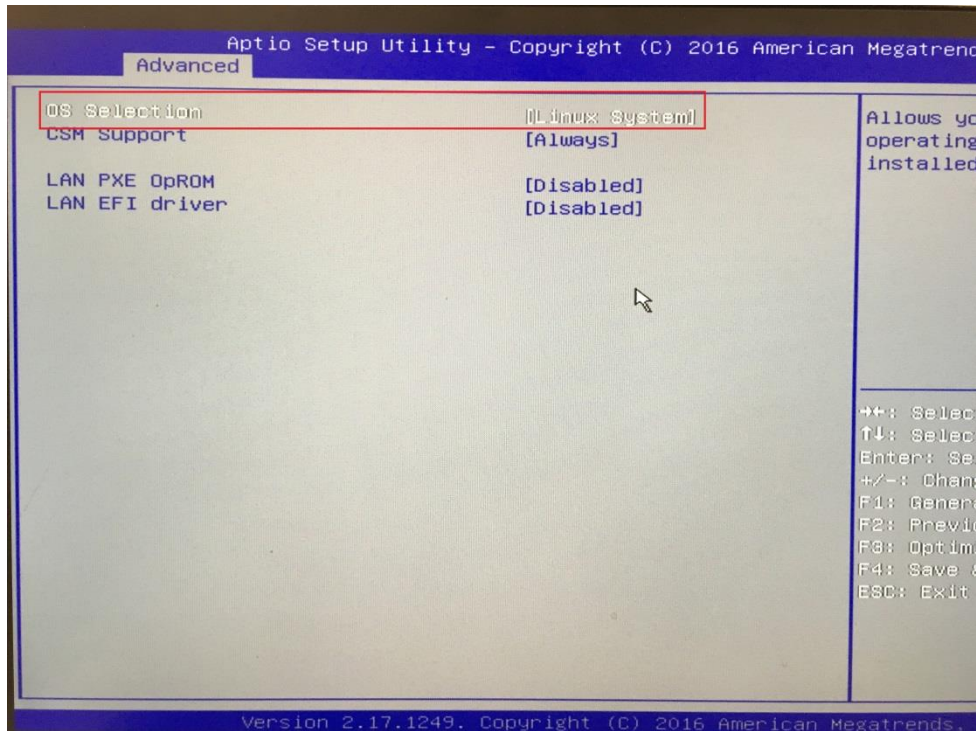


Figure4

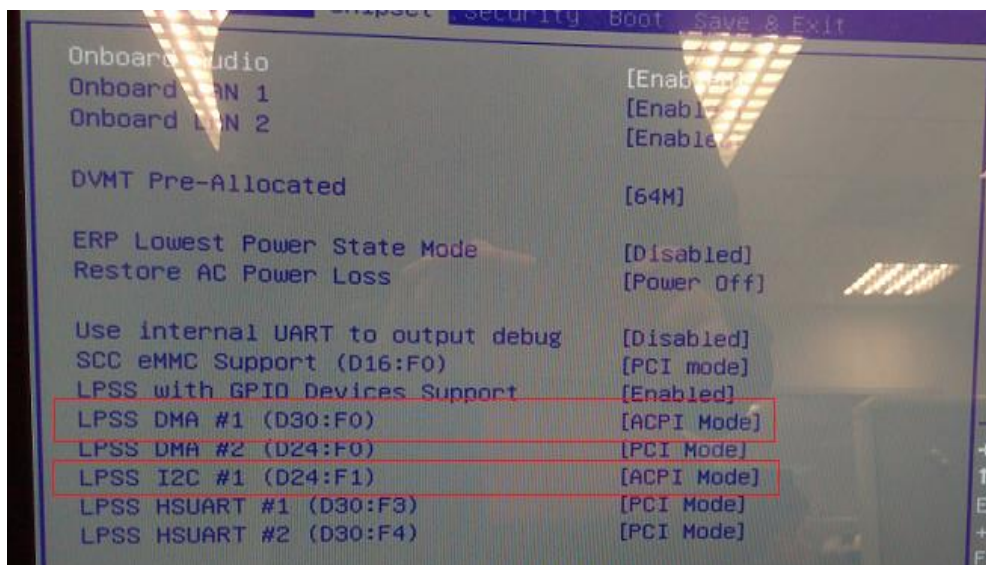


Figure 5

1.4. Boot from USB device

1. After save and exit BIOS setup, press **F12** to boot from USB device and select **UEFI : <your USB stick, Partition 1>** option. See figure6.
2. Then you can see the install menu and select "Install Ubuntu" option. You will see figure7 screen after you select "Install Ubuntu". Select "continue" to start installing.
3. After you start installing Ubuntu, you will see figure8 screen and select "**Erase disk and install Ubuntu**" to install.

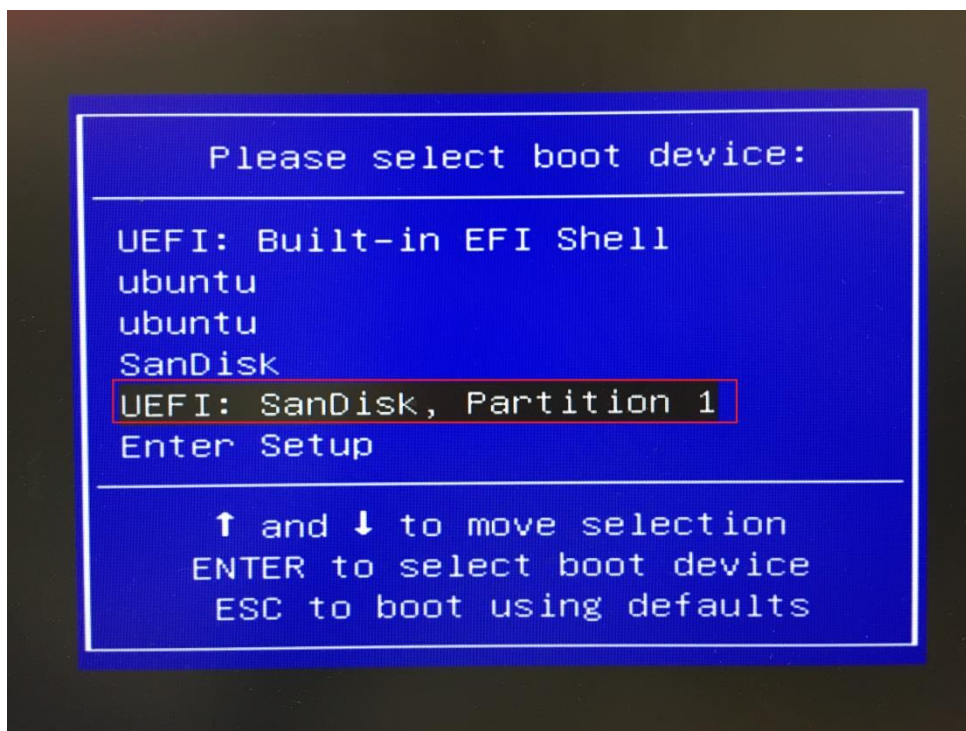


Figure 6

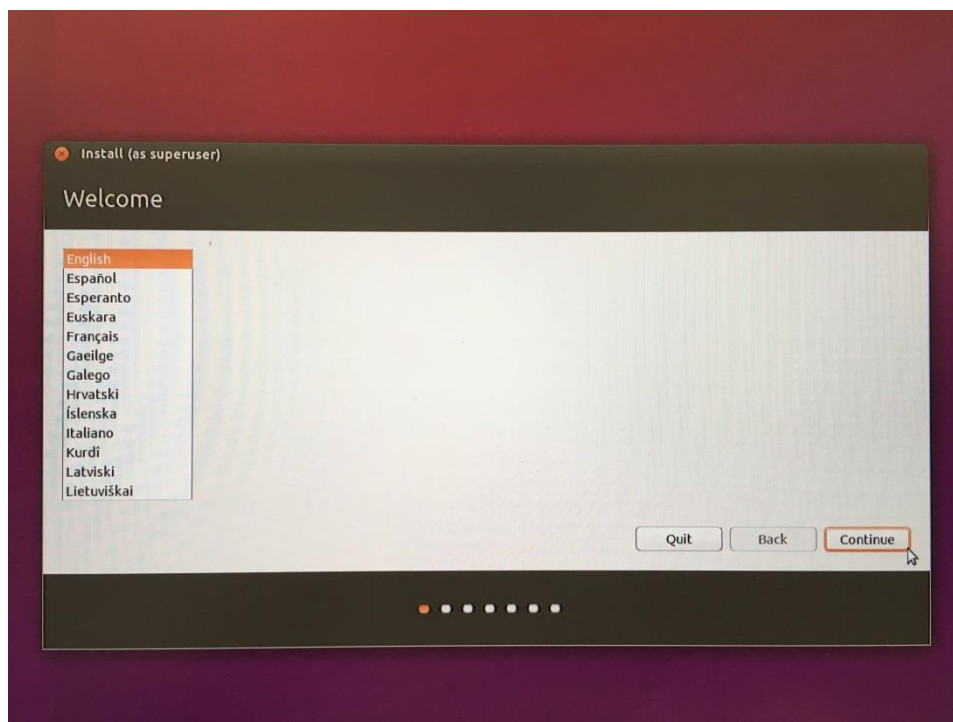


Figure7

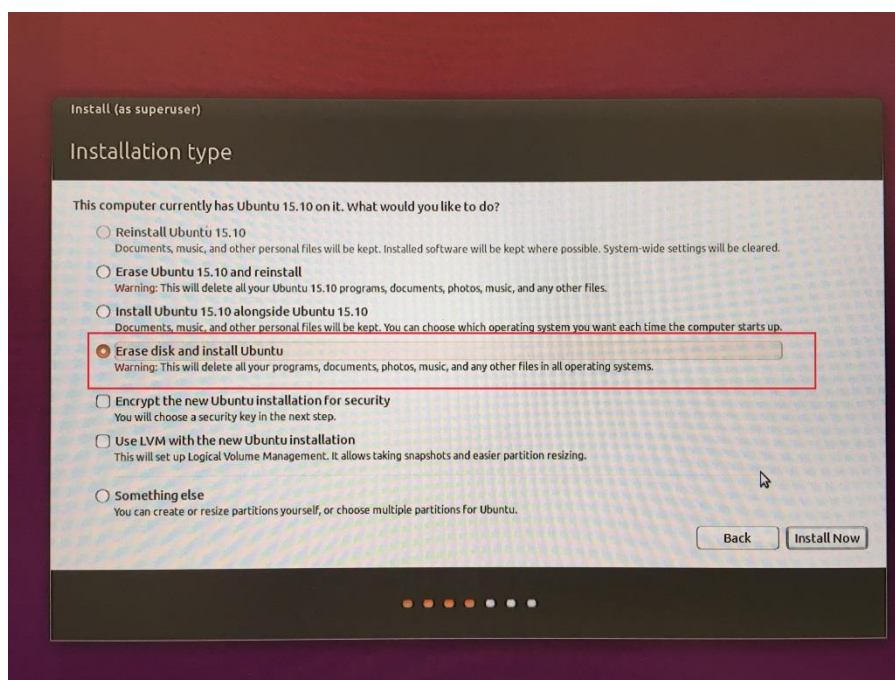


Figure8

1.5. Upgrade to Linux kernel 4.5 in Ubuntu (recommend to fix kernel issue)

1. Download packages from <http://kernel.ubuntu.com/~kernel-ppa/mainline/v4.5-wily/> and store under /tmp directory.

```
linux-headers-4.5.0-xxx-_all.deb
linux-headers-4.5.0-xxx-generic_4.5.0-xxx_amd64.deb
linux-image-4.5.0-xxx-generic_4.5.0-xxx_amd64.deb
```

2. Open a terminal.
3. For command line:

```
cd /tmp/
sudo dpkg -i *.deb
```

2. Install driver

2.1. SD card driver

1. If your Ubuntu kernel is 4.4, you don't need install SD card driver, please skip it.
2. Download the SD card driver package from gigabyte website.
3. Extract the package where you download

```
$ cd < path >
$ tar zxvf realtek-cr-scsi-1.4.4.tar.gz
```

4. Install driver

```
$ cd < path >/realtek-cr-scsi-1.4.4
$ make
$ sudo make install
```

Install driver do not mean driver is running, if you install successfully, then you can load the

module to enjoy the driver by insert rts-cr-core.ko and rts-cr-host.ko. It is easy to load driver by following command.

```
$ sudo modprobe rts-cr-core
$ sudo modprobe rts-cr-host
```

If you want to uninstall this driver, just use the command below:

```
$ cd < path >/realtek-cr-scsi-1.4.4
$ sudo make uninstall
```

2.2. GPIO driver

1. If you need to use GPIO driver, please contact our FAE to get driver.
2. Extract the package where you download.

```
$ cd < path >
$ tar zxvf gpiodrv.tar.gz
```

3. Install driver

```
$ cd < path >/gpiodrv
$ make
$ sudo insmod gpiodrv.ko
```

4. Please reference sisa library to use driver.

2.3. Ethernet driver

1. Extract the package

```
$ tar jxvf 0005-r8168-8.042.00.tar.bz2
```

2. Build and install driver

```
$ cd r8168-8.042.00
$ sudo sh autorun.sh
```

2.4. Intel graphics installer (recommend)

Install unofficial Intel graphic driver to have video HW decode or 3D Open-GL support on Ubuntu, but we are sorry about not to provide any support from open source project.

1. Download Graphics Installer 1.4.0 for Ubuntu* 15.10, 64-bit.deb from <https://01.org/zh/linuxgraphics/downloads?langredirect=1> and store under /tmp directory.
2. For command line:

```
cd /tmp/
sudo dpkg -i intel-linux-graphics-installer_1.4.0-0intel1_amd64.deb
```

3. Tools

3.1. I2C

If your CPU is N3700, i2c device is **i2c-9**. N3710 displays **i2c-8**.

1. Install I2C tools

```
$ sudo apt-get update
$ sudo apt-get install i2c-tools
```

2. Find I2C device.

```
$ sudo i2cdetect -l
```

3. Scan an I2C bus for devices.

```
$ sudo i2cdetect -y -r 9
```

4. Examine registers visible through the I2C bus

```
$ sudo i2cdump -f -y 9 0x56
```

5. set registers visible through the I2C bus

```
$ sudo i2cset -f -y 9 0x56 0x00 0x00
```

3.2. Gstreamer vaapi

1. Installing gstreamer1.0-vaapi package

```
$ sudo apt-get update
$ sudo apt-get install gstreamer1.0-vaapi
```

2. Installing gst-plugins-bad package

```
$ sudo apt-get install ubuntu-restricted-extras
```

3. Playback 4K video

```
$ sudo gst-launch-1.0 filesrc location=< video path > ! qtdemux name=d d. ! queue !
h264parse ! vaapicodec ! vaapisink d. ! queue ! avdec_aac ! audioconvert ! alsasink
```

4. If no sound when playing 4K video, please go to "System Settings". See Figure9.

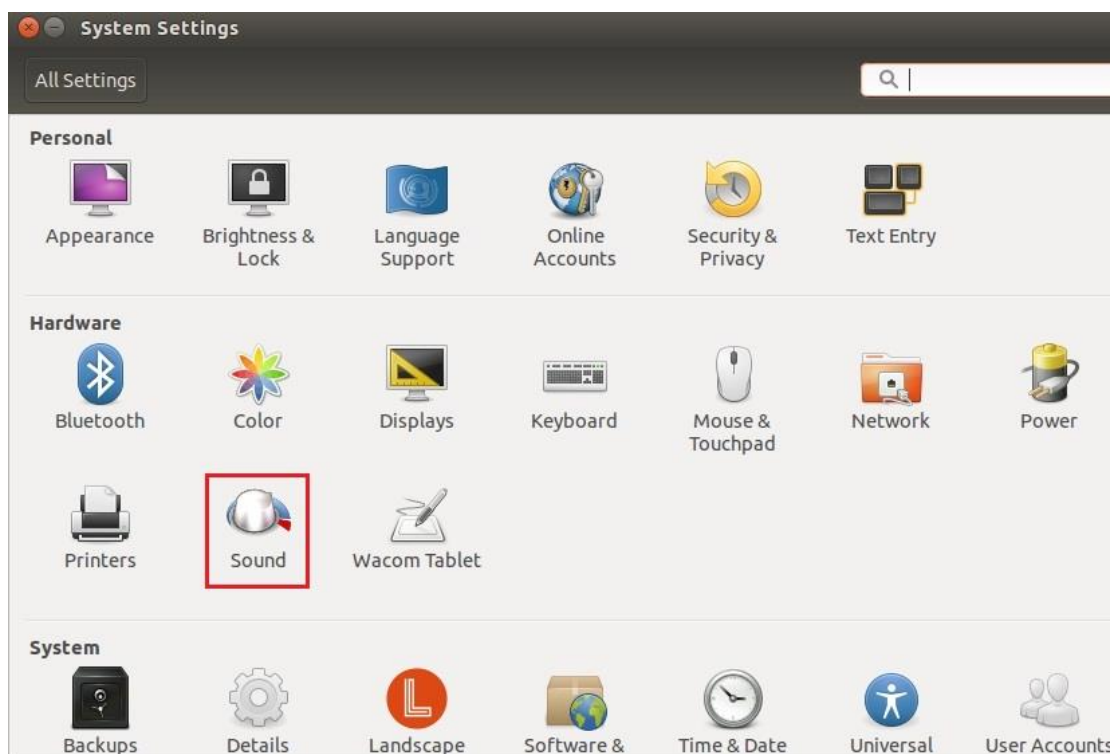


Figure9

Then select the HDMI in the "Play sound through". See Figure10.

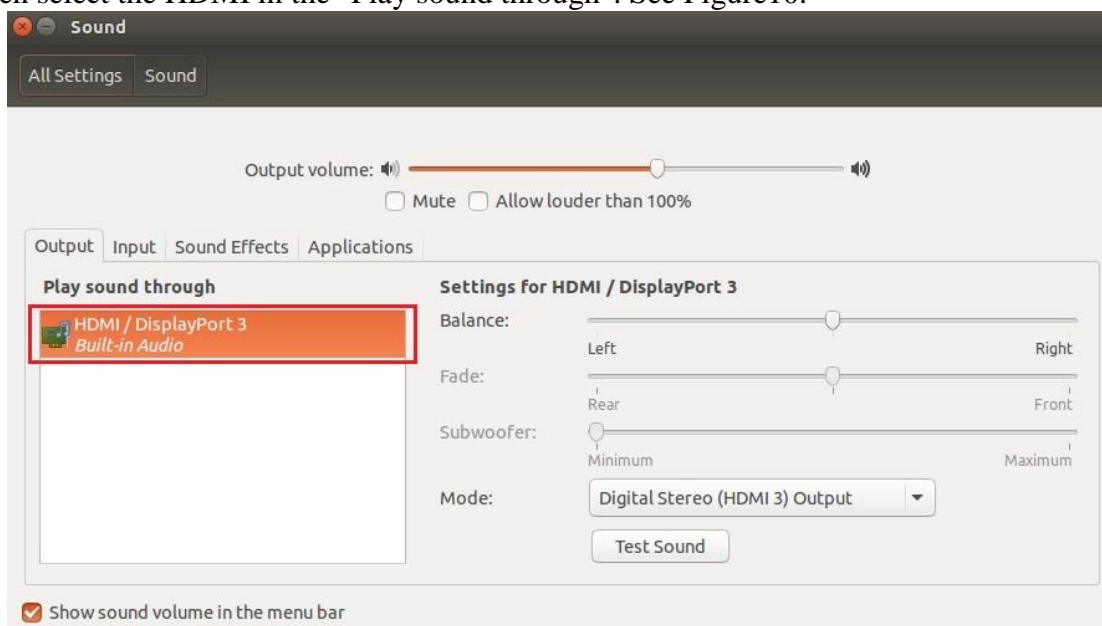


Figure10

4. Test

4.1. GPIO

1. Change file permission.

```
$ sudo chmod 777 /sys/kernel/gpio_*
```

2. Choose the register you want to control

```
$ echo "0xFED8C400" > /sys/kernel/gpiodrv/gpio_pin
```

You can choose register as below

0xFED8C400	0xFED8C408
0xFED8C410	0xFED8C418
0xFED8C420	0xFED8C428
0xFED8C438	0xFED8C440
0xFED85400	0xFED85410
0xFED85430	

3. Control the gpio low and you can see the LED lights on.

```
$ echo "0" > /sys/kernel/gpiodrv/gpio_value
```

4. Control the gpio high and you can see the LED lights off.

```
$ echo "1" > /sys/kernel/gpiodrv/gpio_value
```

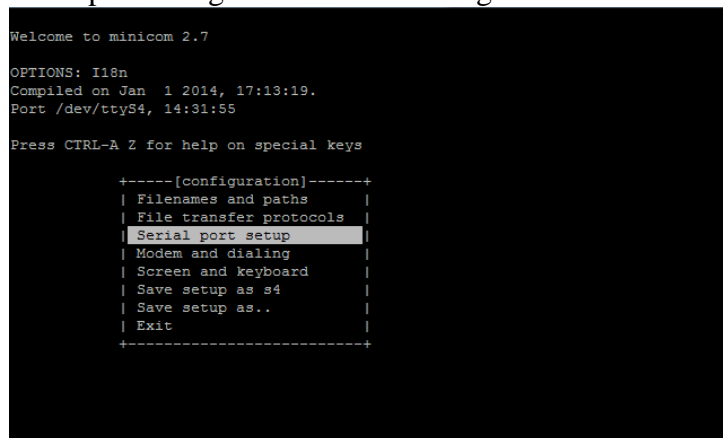
5. "0xFED85400", "0xFED85410" and "0xFED85430" are reversed. Control the gpio low LED lights off and Control the gpio high lights on.

4.2. HSUART

1. Make sure your console cable is connecting "**SERPO1**" with MZBSWIP and your PC.
2. Open terminal and run minicom on MZBSWIP.

```
$sudo minicom
```

and type CTRL+A O to open configure minicom. See figure 11.



```
Welcome to minicom 2.7

OPTIONS: I18n
Compiled on Jan  1 2014, 17:13:19.
Port /dev/ttyS4, 14:31:55

Press CTRL-A Z for help on special keys

+-----[configuration]-----+
| File names and paths         |
| File transfer protocols      |
| Serial port setup            |
| Modem and dialing            |
| Screen and keyboard          |
| Save setup as s4             |
| Save setup as..              |
| Exit                          |
+-----+
↑
```

Figure 11

3. Set **A-Serial Device** to **/dev/ttyS4** and **F-Set Hardware Flow Control** to **No**. See figure 12.

```

Welcome to minicom 2.7

OPTI+-----+
Comp| A -   Serial Device       : /dev/ttyS4
Port| B - Lockfile Location     : /var/lock
    | C -   Callin Program      :
Pres| D - Callout Program       :
    | E -   Bps/Par/Bits        : 115200 8N1
    | F - Hardware Flow Control : No
    | G - Software Flow Control : No
    |
    | Change which setting?
+-----+
    | Screen and keyboard |
    | Save setup as s4    |
    | Save setup as..    |
    | Exit                |
+-----+

CTRL-A Z for help | 115200 8N1 | NOR | Minicom 2.7 | VT102 | Offline | ttyS4

```

Figure 12

4. Save setup and give name to save your configuration. See figure 11, configuration saves as hsuart.

```

Welcome to minicom 2.7

OPTIONS: I18n
Compiled on Jan  1 2014, 17:13:19.
Port /dev/ttyS4, 14:31:55

Press CTRL-A Z for help on special keys

+-----[configuration]-----+
| File+-----+
| File |Give name to save this configuration? |
| Serial> hsuart |
| Modem+-----+
| Screen and keyboard |
| Save setup as s4    |
| Save setup as..    |
| Exit                |
+-----+

```

Figure 13

5. Type **CTRL+A Q** to close minicom.
 6. For terminal on MZBSWIP, run minicom again and load your configuration, hsuart.

\$sudo minicom hsuart

7. Type any word by minicom on MZBSWIP. You can use putty or other tools to connect com port on your PC and check HSUART is working.
 8. If your console cable is connecting **SERPO2**, you should back to step 3 and set Serial Device option to **/dev/ttyS5**