

# AIB-IMX6

BOX System with Freescale i.MX6

## Quick Reference Guide

2<sup>nd</sup> Ed – 19 September, 2018

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## FCC Statement



THIS DEVICE COMPLIES WITH PART 15 FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS:

- (1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE.
- (2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRE OPERATION.

THIS EQUIPMENT HAS BEEN TESTED AND FOUND TO COMPLY WITH THE LIMITS FOR A CLASS "A" DIGITAL DEVICE, PURSUANT TO PART 15 OF THE FCC RULES.

THESE LIMITS ARE DESIGNED TO PROVIDE REASONABLE PROTECTION AGAINST HARMFUL INTERFERENCE WHEN THE EQUIPMENT IS OPERATED IN A COMMERCIAL ENVIRONMENT. THIS EQUIPMENT GENERATES, USES, AND CAN RADIATE RADIO FREQUENCY ENERGY AND, IF NOT INSTALLED AND USED IN ACCORDANCE WITH THE INSTRUCTION MANUAL, MAY CAUSE HARMFUL INTERFERENCE TO RADIO COMMUNICATIONS.

OPERATION OF THIS EQUIPMENT IN A RESIDENTIAL AREA IS LIKELY TO CAUSE HARMFUL INTERFERENCE IN WHICH CASE THE USER WILL BE REQUIRED TO CORRECT THE INTERFERENCE AT HIS OWN EXPENSE.

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# 1. Getting Started

## 1.1 Safety Precautions

### Warning!



Always completely disconnect the power cord from your chassis whenever you work with the hardware. Do not make connections while the power is on. Sensitive electronic components can be damaged by sudden power surges. Only experienced electronics personnel should open the PC chassis.

### Caution!



Always ground yourself to remove any static charge before touching the CPU card. Modern electronic devices are very sensitive to static electric charges. As a safety precaution, use a grounding wrist strap at all times. Place all electronic components in a static-dissipative surface or static-shielded bag when they are not in the chassis.

## 1.2 Packing List

- 1 x AIB-IMX6
- 2 x Mounting Bracket
- 4 x Wall mount Screw
- 2 x mini PCIe Screw
- 1 x 60W Power Adapter (12V/5A)
- 1 x Power cord



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If any of the above items is damaged or missing, contact your retailer.

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## 1.3 System Specifications

System	
Mother Board	<ul style="list-style-type: none"> <li>RSC-IMX61</li> </ul>
CPU	<ul style="list-style-type: none"> <li>Freescale i.MX6 Cortex-A9 DL or Quad CPU</li> </ul>
CPU Cooler (Type)	<ul style="list-style-type: none"> <li>Passive cooling</li> </ul>
Memory	<ul style="list-style-type: none"> <li>1GB DDR3 (Optional 2GB)</li> </ul>
Power Supply	<ul style="list-style-type: none"> <li>12~26V DC input, typical 12V DC brownout detection</li> <li>Optional Powered LAN (IEEE 802.3at)</li> </ul>
Adapter	<ul style="list-style-type: none"> <li>AC/DC adapter 12V</li> </ul>
Wireless LAN	<ul style="list-style-type: none"> <li>Optional mPCIe WIFI (RTL8188 with USB interface)</li> </ul>
Operating System	<ul style="list-style-type: none"> <li>Android 4.4.2 or 6.0 X &amp; Linux</li> </ul>
Expansion Card	<ul style="list-style-type: none"> <li>mPCIe WIFI module (TBD)</li> </ul>
SATA	<ul style="list-style-type: none"> <li>Optional SATA connector &amp; Power(5V)</li> </ul>
I/R Extender (Optional)	<ul style="list-style-type: none"> <li>I/R Extender interface(Jack), co-layout with onboard I/R sensor (38kHz Vishay receiver module with an I/R frequency of 940nm. Supports NEC control codes and pairing)</li> </ul>
Watchdog/RTC	<ul style="list-style-type: none"> <li>I2C RTC ISL1208</li> </ul>
Battery for RTC	<ul style="list-style-type: none"> <li>CR2032 x 1</li> </ul>
Audio codec	<ul style="list-style-type: none"> <li>Optional Audio codec WM8962</li> </ul>
Storage	
Solid State Drive	<ul style="list-style-type: none"> <li>eMMC 4GB</li> </ul>
SDXC	<ul style="list-style-type: none"> <li>Micro SD socket x 1</li> </ul>
Panel	
LCD Control Board	<ul style="list-style-type: none"> <li>Optional dual channel 24bit LVDS interface</li> </ul>
B/L Inverter/Converter	<ul style="list-style-type: none"> <li>Optional LED driver control (12V,GND,ENBKL,PWM,5V)</li> </ul>
External I/O	
Serial Port	<ul style="list-style-type: none"> <li>D-Sub9 debug x1</li> </ul>
USB Port	<ul style="list-style-type: none"> <li>USB2.0 Type A x 2 (Double deck)</li> </ul>
Video Port	<ul style="list-style-type: none"> <li>HDMI with screw lock</li> </ul>
LAN Port	<ul style="list-style-type: none"> <li>10/100/1000 LAN RJ45 x 1, Optional Powered LAN support (IEEE 802.3at)</li> </ul>
Wireless LAN Antenna	<ul style="list-style-type: none"> <li>Optional WIFI antenna x 1</li> </ul>
Switch	<ul style="list-style-type: none"> <li>Hidden reset button x 1</li> </ul>
Indicator Light	<ul style="list-style-type: none"> <li>Power LED x 1, WIFI Status LED x 1</li> </ul>
External I/R(Optional)	<ul style="list-style-type: none"> <li>Jack for I/R extender cable, co-design with on-board I/R sensor</li> </ul>
Internal I/O	
USB Port	<ul style="list-style-type: none"> <li>USB2.0 x 1 (wafer)</li> </ul>

## AIB-IMX6

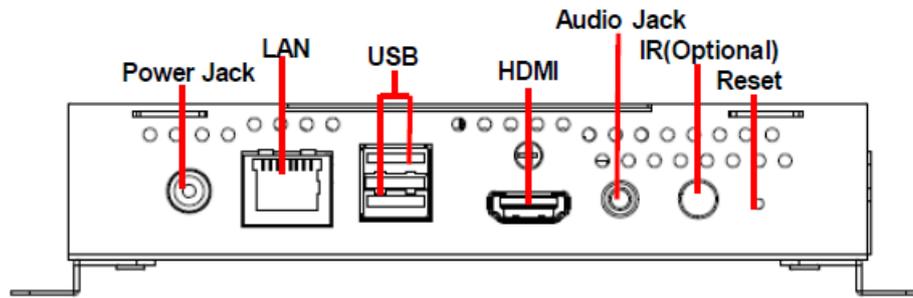
<b>USB OTG</b>	<ul style="list-style-type: none"> <li>• USB OTG x 1 (Mini USB connector)</li> </ul>
<b>DIO</b>	<ul style="list-style-type: none"> <li>• Optional 2 x 5 GPIO connector x 1 (10bit, wafer)</li> </ul>
<b>LVDS</b>	<ul style="list-style-type: none"> <li>• LVDS 24bit x 2 (DF13-40DP-1.25)</li> </ul>
<b>B/L Inverter/Converter</b>	<ul style="list-style-type: none"> <li>• Optional LED driver control (12V, GND, ENBK, PWM, 5 V)</li> </ul>
<b>Audio Port</b>	<ul style="list-style-type: none"> <li>• Optional Line out (Audio Jack), speaker out &amp; MIC in (wafer)</li> </ul>
<b>Expansion Slots</b>	<ul style="list-style-type: none"> <li>• mPCIe socket x 1 (with PCIe &amp; USB2.0 signal)</li> <li>• SD socket x 1</li> </ul>
<b>I2C</b>	<ul style="list-style-type: none"> <li>• Optional I2C interface (wafer) (VCC, I2C-Data, I2C-CLK, INT, GND)</li> </ul>
<b>SATA</b>	<ul style="list-style-type: none"> <li>• Optional SATA connector &amp; SATA Power, or maybe mSATA connector. (depend on layout design)</li> </ul>
<b>Battery</b>	<ul style="list-style-type: none"> <li>• Battery connector for RTC</li> </ul>
<b>CAN</b>	<ul style="list-style-type: none"> <li>• CAN connector</li> </ul>
<b>Mechanical</b>	
<b>Power Type</b>	<ul style="list-style-type: none"> <li>• 12 ~ 26V DC input, typical 12V input With brownout detection</li> </ul>
<b>Power Connector Type</b>	<ul style="list-style-type: none"> <li>• 2.5mm DC Jack</li> </ul>
<b>Dimension</b>	<ul style="list-style-type: none"> <li>• 146.05(mm) x 101.6(mm) x 18.7(mm)</li> </ul>
<b>Access Window</b>	<ul style="list-style-type: none"> <li>• Access window for SD socket &amp; mini-USB</li> </ul>
<b>Weight</b>	<ul style="list-style-type: none"> <li>• 1.5KG</li> </ul>
<b>Color</b>	<ul style="list-style-type: none"> <li>• Black</li> </ul>
<b>Fanless</b>	<ul style="list-style-type: none"> <li>• Yes, with screw hole or hooker to fix heatsink on PCB</li> </ul>
<b>Others</b>	<ul style="list-style-type: none"> <li>• Mount plate for VESA, just like ASUS Eeebox</li> </ul>
<b>Reliability</b>	
<b>EMI Test</b>	<ul style="list-style-type: none"> <li>• CE/FCC Class B</li> </ul>
<b>Safety</b>	<ul style="list-style-type: none"> <li>• As Avalue standard</li> </ul>
<b>Vibration Test</b>	<ul style="list-style-type: none"> <li>• As Avalue standard</li> </ul>
<b>Mechanical Shock Test</b>	<ul style="list-style-type: none"> <li>• As Avalue standard</li> </ul>
<b>Drop Test</b>	<ul style="list-style-type: none"> <li>• As Avalue standard</li> </ul>
<b>Operating Temperature</b>	<ul style="list-style-type: none"> <li>• -40 ~ 70 degree</li> </ul>
<b>Operating Humidity</b>	<ul style="list-style-type: none"> <li>• 0 ~ 90%</li> </ul>
<b>Storage Temperature</b>	<ul style="list-style-type: none"> <li>• -40 ~ 85 degree</li> </ul>



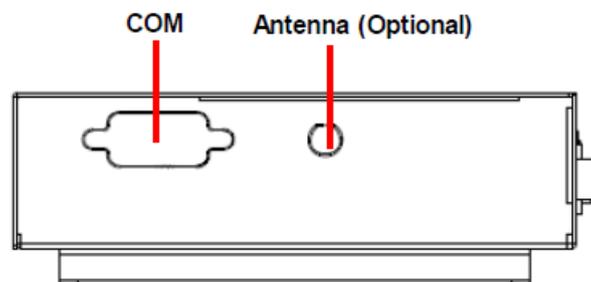
**Note:** Specifications are subject to change without notice.

## 1.4 System Overview

### 1.4.1 Rear View



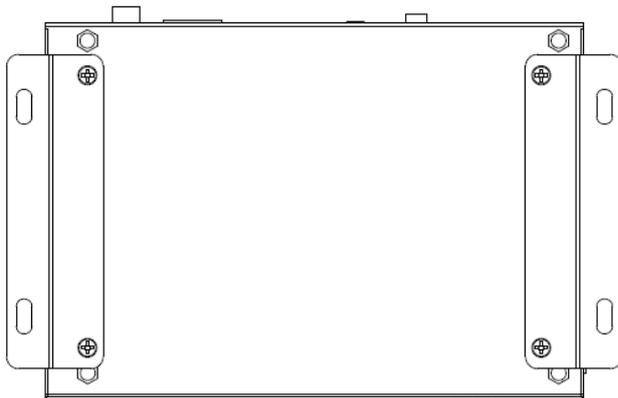
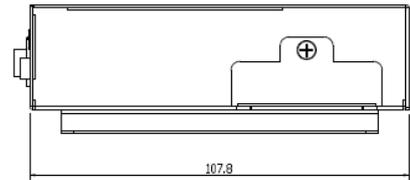
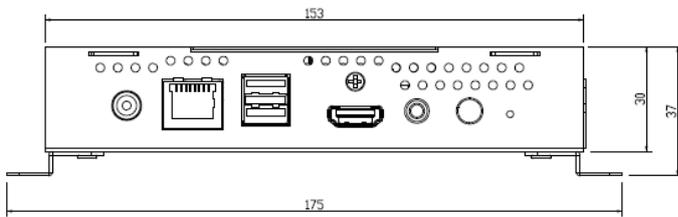
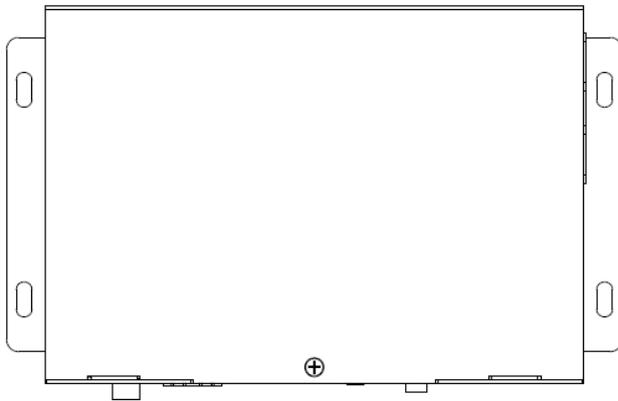
### 1.4.2 Right View



### Connectors

Label	Function	Note
IR	IR connector (Optional)	
Audio Jack	Audio Jack	
HDMI	HDMI connector	
USB	2 X USB2.0 connector	
COM	Serial port connector	D-sub 9-pin, male
LAN	RJ-45 Ethernet	
Antenna	Antenna Mounting (Optional)	
Reset	Reset button	
Power Jack	Power-in connector	

## 1.5 System Dimensions



(Unit: mm)

## 2. Build and install Android image

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## AIB-IMX6

Here you can find instruction to setup development environment for Android source code for RSC-IMX61 and the way to install it on eMMC. With this guideline, user will be able to setup the system easily and test all the functions with the system.

### 2.1 Setup Build Environment

Please following command below to install OpenJDK7 on Ubuntu 16.04.

```
# sudo add-apt-repository ppa:openjdk-r/ppa
# sudo apt-get update
# sudo apt-get install openjdk-7-jdk
```

Open /etc/profile.

```
# sudo gedit /etc/profile
```

Enter below in the end of file.

```
export JAVA_HOME=/usr/lib/jvm/java-7-openjdk-amd64
export JRE_HOME=${JAVA_HOME}/jre
export CLASSPATH=.:${JAVA_HOME}/lib:${JRE_HOME}/lib
export PATH=${JAVA_HOME}/bin:$PATH
```

```
# source /etc/profile
```

Please refer to hyperlink below to setup development environment

[Initializing a Build Environment](#)

### 2.2 Download source code and MFG tool

Please connect to Avalue FAE([jerry\\_lee@avalue.com.tw](mailto:jerry_lee@avalue.com.tw))

## 2.3 Compiler Android Source code

Please follow the instructions below to compile Android source code.

```
# cd FSL-Android
```

```
# ./run.sh -j4
```

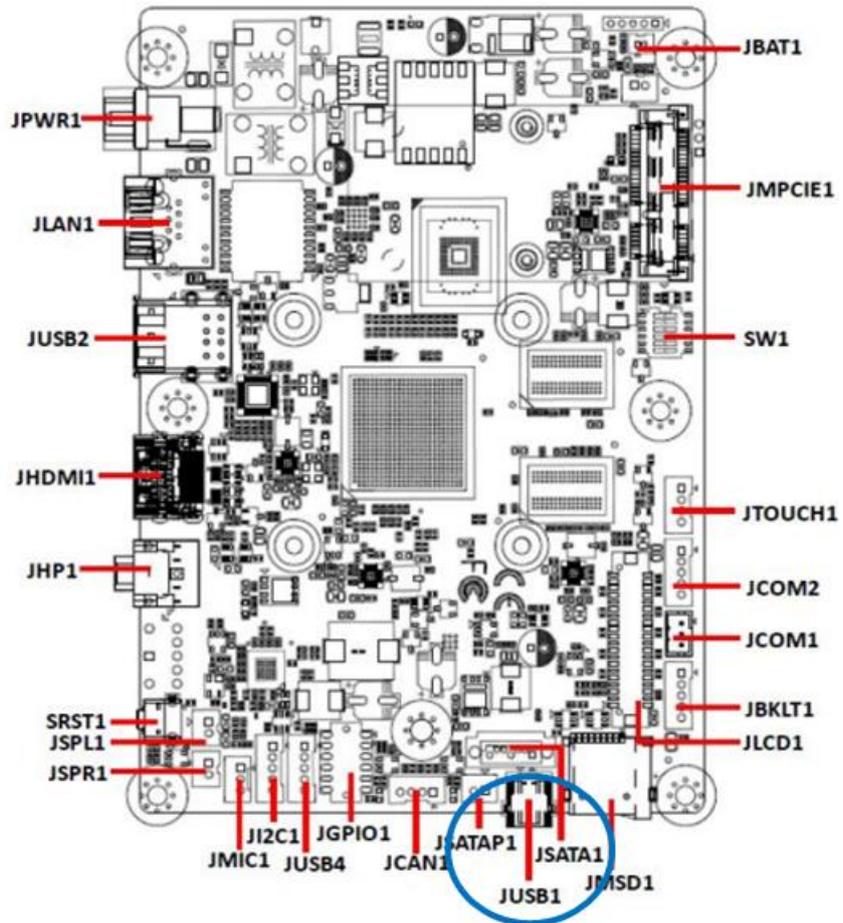
You can find all image files in path FSL-Android/out/target/product/imx6

Image File	Description
boot-imx6dl.img	Kernel image file for Dual Lite
boot-imx6q.img	Kernel image file for Quad core
recovery-imx6dl.img	Recovery image file for Dual Lite
recovery-imx6q.img	Recovery image file for Quad core
system.img	System image file
recovery.img	Recovery image file
u-boot-imx6dl.imx	Bootloader for 1G Dual Lite
u-boot-imx6dl2g.imx	Bootloader for 2 G Dual Lite
u-boot-imx6q.imx	Bootloader for Quad core

Please copy all of them to path RSC-IMX61-6.0.1\Image\RSC-IMX6\android\6.0.1\Factory

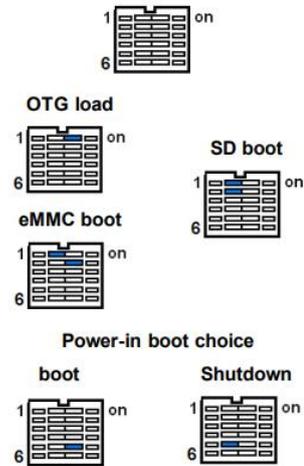
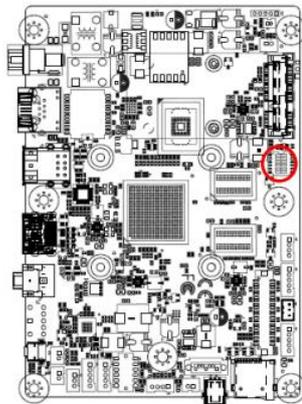
## 2.4 Install Android image into eMMC

1. Connect RSC-IMX61 to computer through **JUSB1** by mini USB.

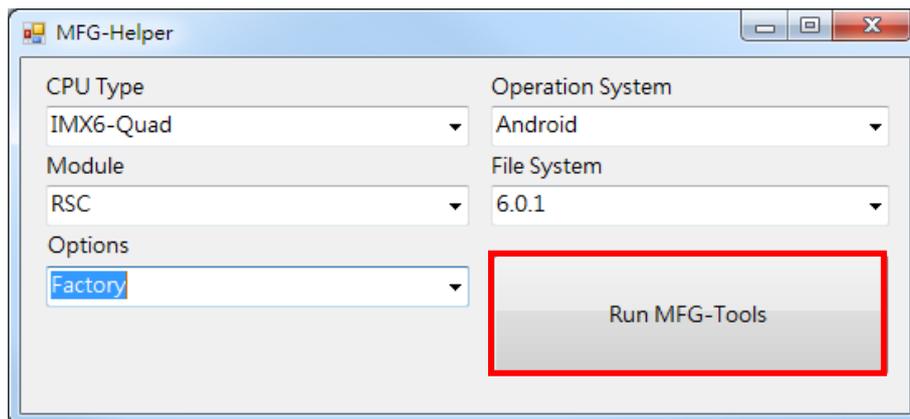


- Set the jumper to OTG mode.

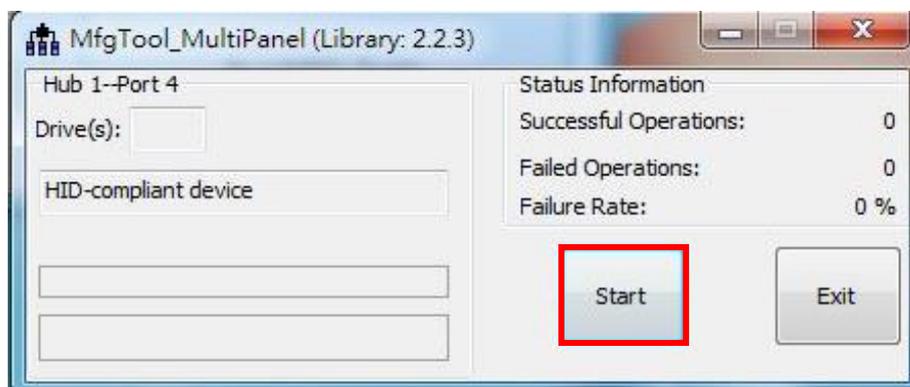
2.3.1 Boot set selector (SW1)



- Execute "MFG-Helper.exe".  
Select the items as the blow picture and click "Run MFG-Tools".

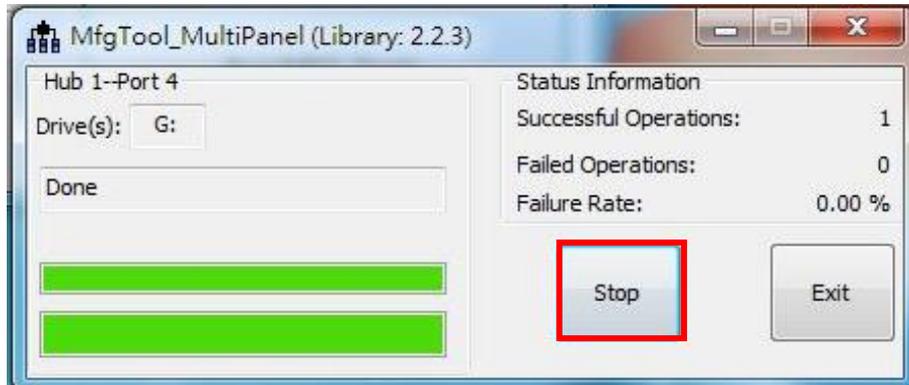


- When MFG tool show "HID-compliant device", click "Start" to start to flash image.



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- When it show “Done”, click “Stop” and “Exit” to finish.



- Turn off the power.
- Set the jumper to “eMMC boot” and power on to boot Android.

