



**MaaXBoard Mini**

**Android Software**

**Development Guide**

**V1.0**

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## Regulatory Compliance:

- ◆ MaaXBoard Mini single board computer has passed the CE, FCC & SRRC certification.

## Revision History

Version	Note	Author	Release Date
V1.0	Initial version	Sandy	20200326

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# Chapter 1 Build Environment Setup

## 1.1 Setup Build Environment

To setup the build environment need:

- ◆ Hardware: At least 300GB of disk space and 8GB of RAM
- ◆ Software: Ubuntu 64bit OS, 18.04 LTS version or later LTS version (Ubuntu Desktop or Ubuntu Server version). You could also run the Ubuntu 64 bit OS on virtual machine.

The following packages are required for the development environment. The required packages can be installed using the bash script below:

```
sudo apt install git-core gnupg flex bison gperf build-essential zip
sudo apt install curl zlib1g-dev gcc-multilib g++-multilib libc6-dev-i386
sudo apt install lib32ncurses5-dev x11proto-core-dev libx11-dev lib32z-dev
sudo apt install ccache libgl1-mesa-dev libxml2-utils xsltproc unzip
sudo apt install uuid uuid-dev liblz-dev liblz02-2 liblz02-dev lzop
sudo apt install u-boot-tools mtd-utils android-tools-fsutils
sudo apt install openjdk-8-jdk gdisk
sudo apt install device-tree-compiler
sudo apt install m4 libz-dev
```

Note: You may need to run **sudo apt update** first if the installation failed or can't find specific packages.

For other installation package that may need, refer to Android source code website:

<https://source.android.com/setup/build/requirements>.

After the installation, check the version of JAVA, if the version is not 1.8.0 or higher, update it.

```
java -version
openjdk version "1.8.0_242"
OpenJDK Runtime Environment (build 1.8.0_242-8u242-b08-0ubuntu3~18.04-b08)
OpenJDK 64-Bit Server VM (build 25.242-b08, mixed mode)
```

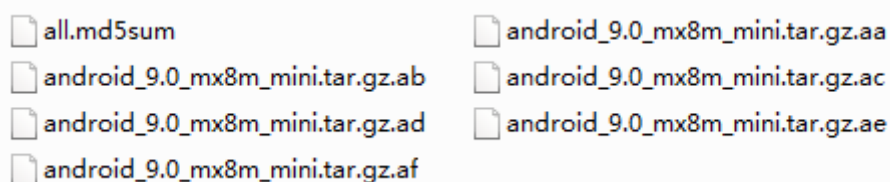
Set Git account info, change the "Your name" and "Your [mail@company.com](mailto:mail@company.com)" to your actual name and e-mail.

```
git config --global user.name "Your name"
git config --global user.email "Your mail@company.com"
```

## Chapter 2 Get Source Code

Embest provide an entire Android source code package, please visit [www.embest-tech.com](http://www.embest-tech.com) or connect FAE.

The source code package is divided into smaller files like following, copy the files to develop folder to combine them, then extract it.



all.md5sum	android_9.0_mx8m_mini.tar.gz.aa
android_9.0_mx8m_mini.tar.gz.ab	android_9.0_mx8m_mini.tar.gz.ac
android_9.0_mx8m_mini.tar.gz.ad	android_9.0_mx8m_mini.tar.gz.ae
android_9.0_mx8m_mini.tar.gz.af	

Execute the following instructions:

```
cat android_9.0_mx8m_mini.tar.gz.a* > android_9.0_mx8m_mini.tar.gz
tar -zxvf android_9.0_mx8m_mini.tar.gz
```

## Chapter 3 Compile Android Image

Go to android\_9.0\_mx8m\_mini path, execute the following instructions:

```
embest@Embest-tech:~/android_9.0_mx8m_mini$ source build/envsetup.sh
embest@Embest-tech:~/android_9.0_mx8m_mini$ lunch maaxboard_mini-userdebug
embest@Embest-tech:~/android_9.0_mx8m_mini$ make -j16 2>&1 | tee build-log.txt
```

## Chapter 4 Burn the Image

The default version of MaaXBoard Mini support SD Card.

### 4.1 Generate Entire System Image

After the compilation, the output files will be generated under the path:

android\_9.0\_mx8m\_mini/out/target/product/maaxboard\_mini. Files used in burning are listed in following table:

Image file	Description
u-boot-imx8mm-ddr4.imx	Bootloader for MaaXBoard Mini
boot.img	Boot image for MaaXBoard Mini
system.img	System Boot image for MaaXBoard Mini
vendor.img	Vendor image for MaaXBoard Mini
partition-table-7GB.img	GPT table image for 8 GB SD card and eMMC
partition-table-default.img	GPT table image for 16 GB SD card
partition-table-28GB.img	GPT table image for 32 GB SD card
dtbo-imx8mm.img	Device Tree image for MaaXBoard Mini to support MIPI panel output.
vbmata-imx8mm.img	Android Verify Boot metadata image for MaaXBoard Mini to support MIPI panel output.

Copy above image files and the bash script generate\_android9.0\_image.sh to the same folder in Ubuntu. Open terminal, run the following command to view the help of script.

```
./generate_android9.0_image.sh -h
```

1. To generate 8G SD card image, support MIPI-DSI screen

```
sudo ./generate_andoid9.0_image.sh -c 7 -mipi
```

2. To generate 16G SD card image, support MIPI-DSI screen

```
sudo ./generate_andoid9.0_image.sh -c 14 -mipi
```

3. To generate other type of image, refer to the help of script.

When the execution finished, it will generate an entire system image:

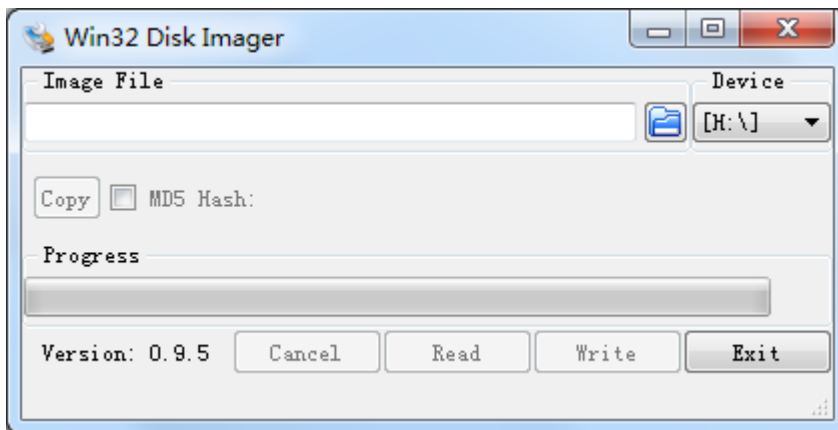
android\_rel\_imx8m\_mipi\_YYYY\_MM\_DD.img (YYYY\_MM\_DD is the date of generate)

Copy this file to Windows, then use Win32 Disk Imager to burn it into SD card. (Refer to User manual).

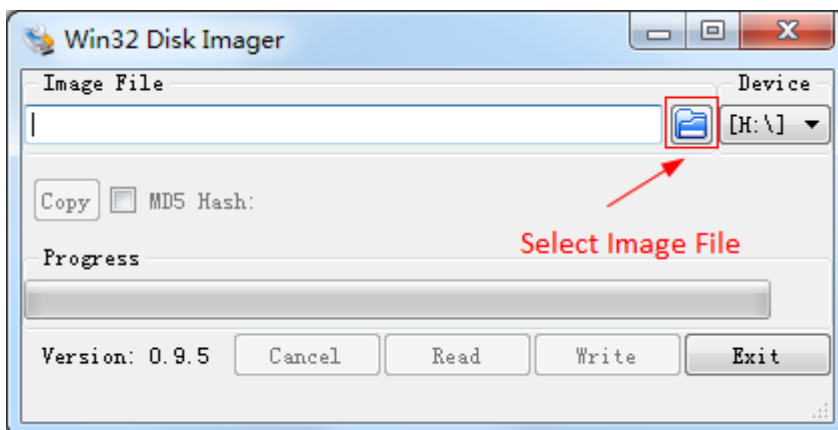
## 4.2 Read Entire Image

### 4.2.1 Read the Image from SD Card

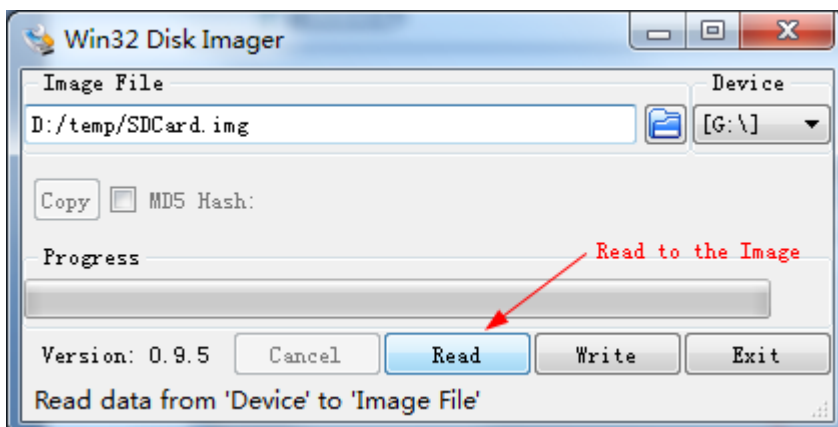
1. Connect the SD Card to Windows system, then run Win32 Disk Imager.



2. Select the destination of image file, such as: D:/temp/SDCard.img.



3. Click "Read" button to read the content of SD Card to img file.



When the progress finished successfully, you will get an entire SD Card Image.

## Chapter 5 Appendix

### 5.1 Hardware

For the detail hardware introduction, please refer to MaaXBoard Mini Hardware User Manual.

### 5.2 Software

MaaXBoard Mini support Linux Debian system and Android system, for the detail software introduction, please refer to related user manual.

#### ◆ Linux

- ◆ MaaXBoard Mini Linux Software Release Note
- ◆ MaaXBoard Mini Linux Software User Manual
- ◆ MaaXBoard Mini Linux Software Development Guide

#### ◆ Android

- ◆ MaaXBoard Mini Android Software Release Note
- ◆ MaaXBoard Mini Android Software User Manual
- ◆ MaaXBoard Mini Android Software Development Guide

### 5.3 Android Develop

- ◆ <https://android.googlesource.com/>
- ◆ <https://developer.android.com>

## Chapter 6 Technical Support and Warranty

### 6.1 Technical Support

Avnet Manufacturing Services provides its product with one-year free technical support including:

- ◆ Providing software and hardware resources related to the embedded products of Avnet Manufacturing Services;
- ◆ Helping customers properly compile and run the source code provided by Avnet Manufacturing Services;
- ◆ Providing technical support service if the embedded hardware products do not function properly under the circumstances that customers operate according to the instructions in the documents provided by Avnet Manufacturing Services;
- ◆ Helping customers troubleshoot the products.
- ◆ The following conditions will not be covered by our technical support service. We will take appropriate measures accordingly:
  - ◆ Customers encounter issues related to software or hardware during their development process;
  - ◆ Customers encounter issues caused by any unauthorized alter to the embedded operating system;
  - ◆ Customers encounter issues related to their own applications;
  - ◆ Customers encounter issues caused by any unauthorized alter to the source code provided by Avnet Manufacturing Services.

### 6.2 Warranty Conditions

- ◆ 12-month free warranty on the PCB under normal conditions of use since the sales of the product;
- ◆ The following conditions are not covered by free services; Avnet Manufacturing Services will charge accordingly:
  - ◆ Customers fail to provide valid purchase vouchers or the product identification tag is damaged, unreadable, altered or inconsistent with the products;
  - ◆ Not according to the user's manual operation causes damage to the product;
  - ◆ Products are damaged in appearance or function caused by natural disasters (flood, fire, earthquake, lightning strike or typhoon) or natural aging of components or other force majeure;
  - ◆ Products are damaged in appearance or function caused by power failure, external forces, water, animals or foreign materials;
  - ◆ Products malfunction caused by disassembly or alter of components by customers or, products disassembled or repaired by persons or organizations unauthorized by Avnet Manufacturing

Services, or altered in factory specifications, or configured or expanded with the components that are not provided or recognized by Avnet Manufacturing Services and the resulted damage in appearance or function;

- ◆ Product failures caused by the software or system installed by customers or inappropriate settings of software or computer viruses;
- ◆ Products purchased from unauthorized sales;
- ◆ Warranty (including verbal and written) that is not made by Avnet Manufacturing Services and not included in the scope of our warranty should be fulfilled by the party who committed. Avnet Manufacturing Services has no any responsibility.
- ◆ Within the period of warranty, the freight for sending products from customers to Avnet Manufacturing Services should be paid by customers; the freight from Avnet Manufacturing Services to customers should be paid by us. The freight in any direction occurs after warranty period should be paid by customers;
- ◆ Please contact technical support if there is any repair request.
- ⚠ **Avnet Manufacturing Services will not take any responsibility on the products sent back without the permission of the company.**

## Chapter 7 Contact Information

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