

<b>Doc Title</b>	pcDunio User Guide	<b>Number</b>	WMSBB121219
		<b>Version</b>	0.1

# pcDuino OS Installation Guide

**Copyright © 2013 pcDuino**

<b>Doc Title</b>	pcDunio User Guide	<b>Number</b>	WMSBB121219
		<b>Version</b>	0.1

## **HISTORY**

<b>Version</b>	<b>Date</b>	<b>Description</b>	<b>Author</b>
0.1	3/08/2012	Initial specification draft	Lifeng Zhao

pcDuino Confidential

<b>Doc Title</b>	pcDunio User Guide	<b>Number</b>	WMSBB121219
		<b>Version</b>	0.1

# **INDEX**

1.	Overview .....	4
2.	Required hardware for all samples in this user guide.....	5
3.	Required Software in this user guide .....	7
4.	Install Ubuntu or Android on pcDuino .....	8

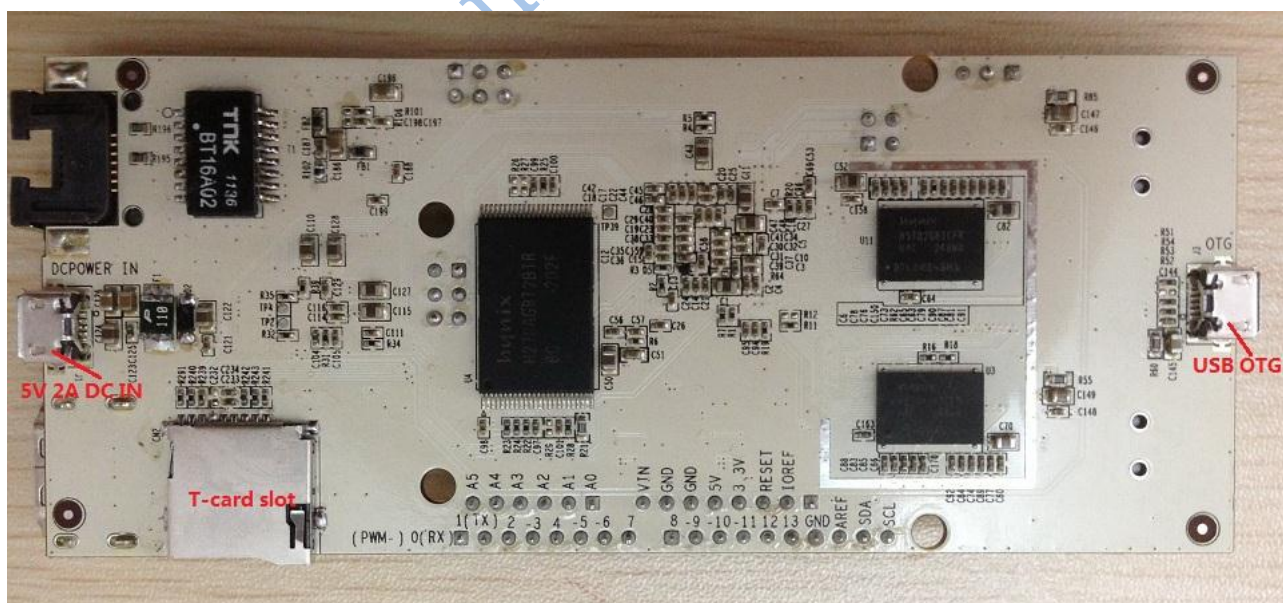
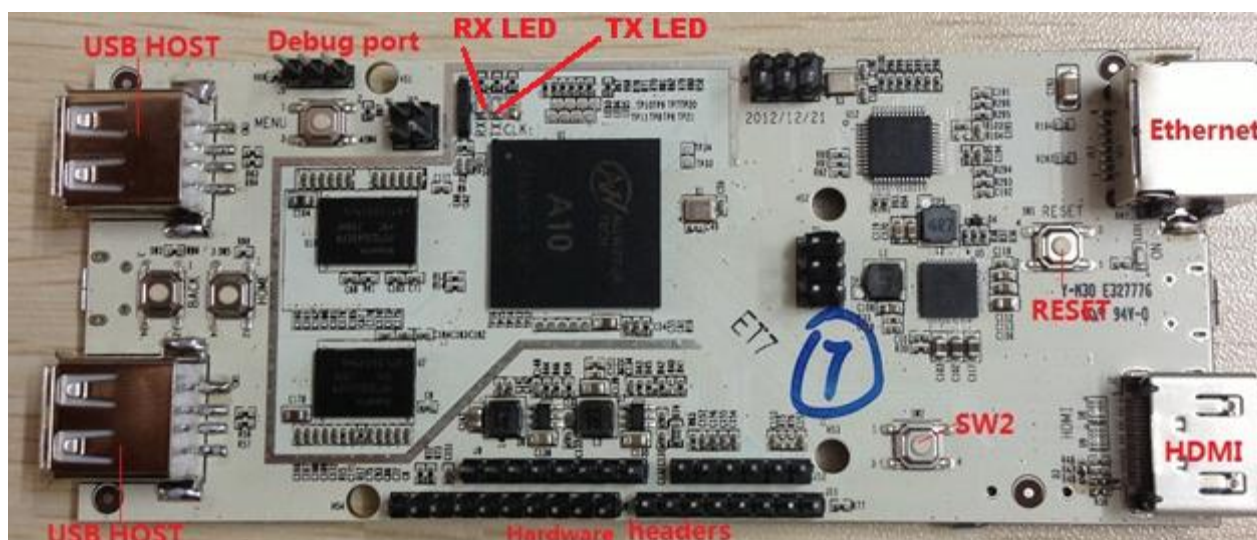
pcDuino Confidential

Doc Title	pcDunio User Guide	Number	WMSBB121219
		Version	0.1

## 1. Overview

This guide gives the detailed instructions on how to reinstall the operating system to the on board flash storage of pcDuino. Ubuntu is pre-installed in pcDuino's on board flash at production. But there are times that you want to upgrade the pre-installed Ubuntu or install the new Android OS to pcDuino.

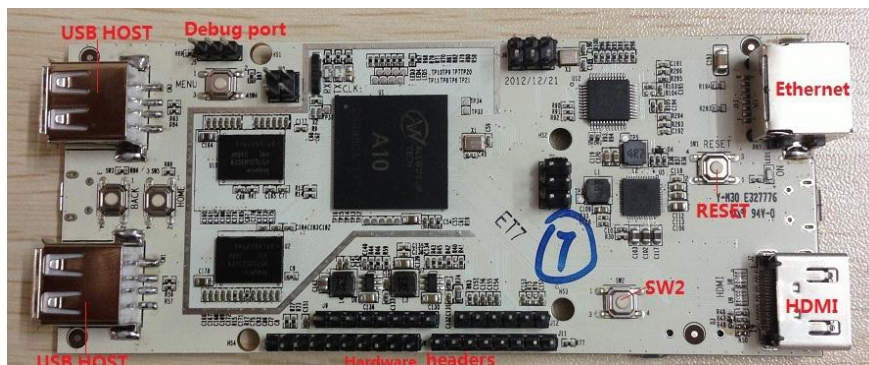
The following are top and bottom views for pcDuino



Doc Title	pcDunio User Guide	Number	WMSBB121219
		Version	0.1

## 2. Required hardware for all samples in this user guide

pcDuino board



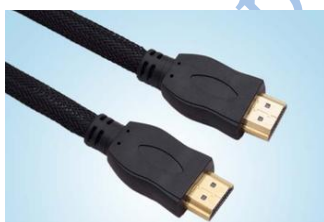
micro-USB port power adaptor ( 5V, 2000mA)



Display with HDMI port



HDMI cable



USB keyboard (must)

USB Hub and USB mouse (optional but strongly recommended )

<b>Doc Title</b>	pcDunio User Guide	<b>Number</b>	WMSBB121219
		<b>Version</b>	0.1



micro-SD card and card reader

**Note:**

Before run the following samples, Connect pcDuino with the devices correctly:

USB host port => USB hub => keyboard & mouse

HDMI port => HDMI cable => HDMI display

pcDuino Confidential

Doc Title	pcDunio User Guide	Number	WMSBB121219
		Version	0.1

### 3. Required Software in this user guide

**PhonixCard:** a free tool which can create the production card. You can download the tool from internet and read the user manual.

Note: before using a micro-SD card to create the production card, please backup all the files on this card. After installation, you can use PhonixCard to recover the micro-SD card for normal use.

**LiveSuit:** a free tool which can upgrade firmware by USB device. To use this tool, you must install two USB drivers. You can download the tool and drivers from internet and read the user manual.

Note: LiveSuit is not very stable on Windows Vista or Windows 7, and it does not work well on 64 bits CPU. So this tool is not recommended. Please use **PhonixCard** for production and firmware upgrade as your first choice.

**Hyper terminal:** with the hyper-terminal tool, you can type the command in the linux shell of the device when the device is connected to the PC with USB serial cable. SecureCRT is the recommended tool.

pcDuino Confidential

<b>Doc Title</b>	pcDunio User Guide	<b>Number</b>	WMSBB121219
		<b>Version</b>	0.1

## 4. Install Ubuntu or Android on pcDuino

The installation procedure is different for Ubuntu and Android. So please follow the instructions below carefully.

### Steps to update the Linux Kernel and Ubuntu image with micro-SD card

The complete installation of the Ubuntu OS needs install both Linux kernel and Ubuntu image. The process is separated into two steps. The first step is to update Linux kernel and the second is to install Ubuntu.

#### Step 1: Install Linux kernel

##### a) Download the Linux kernel and Ubuntu image files for pcDuino

The download page is:

[http://www.pcduno.com/?page\\_id=14](http://www.pcduno.com/?page_id=14)

Find the Ubuntu link in this page and download it. Unzip it and get two files like these:

- a10\_kernel\_xxx.img
- Ubuntu.zip

The first file is used in kernel upgrade, and the second one is used to update Ubuntu in step 2.

##### b) Download the Phonenix Card software

The download page is:

[http://www.pcduno.com/?page\\_id=14](http://www.pcduno.com/?page_id=14)

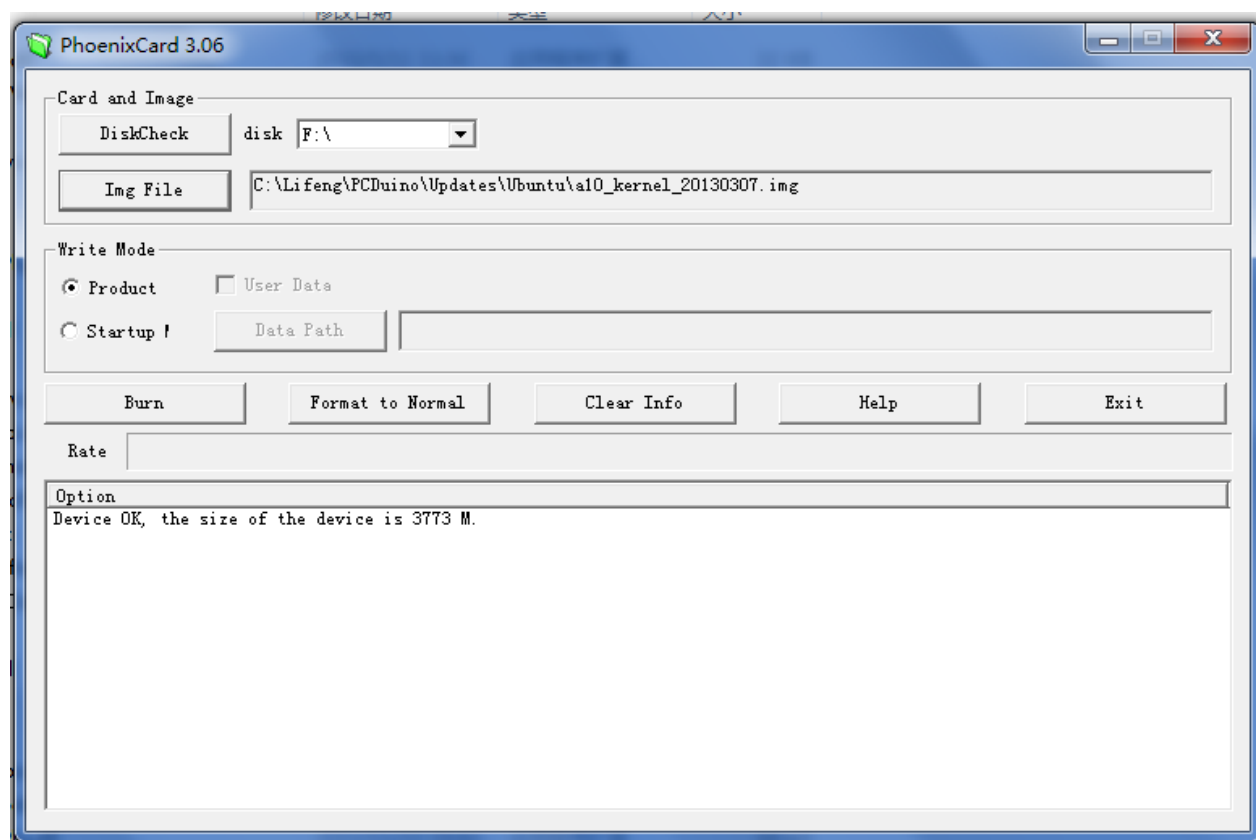
Find the "Phonenix Card" link under Tools in this page and download it. Unzip it to a new folder with default name PhoenixCardV306\_20120302.

##### c) Write Linux Kernel to TF card

- i. Plug your micro-SD card to your PC, run "PhoenixCard.exe". You will see something like this:

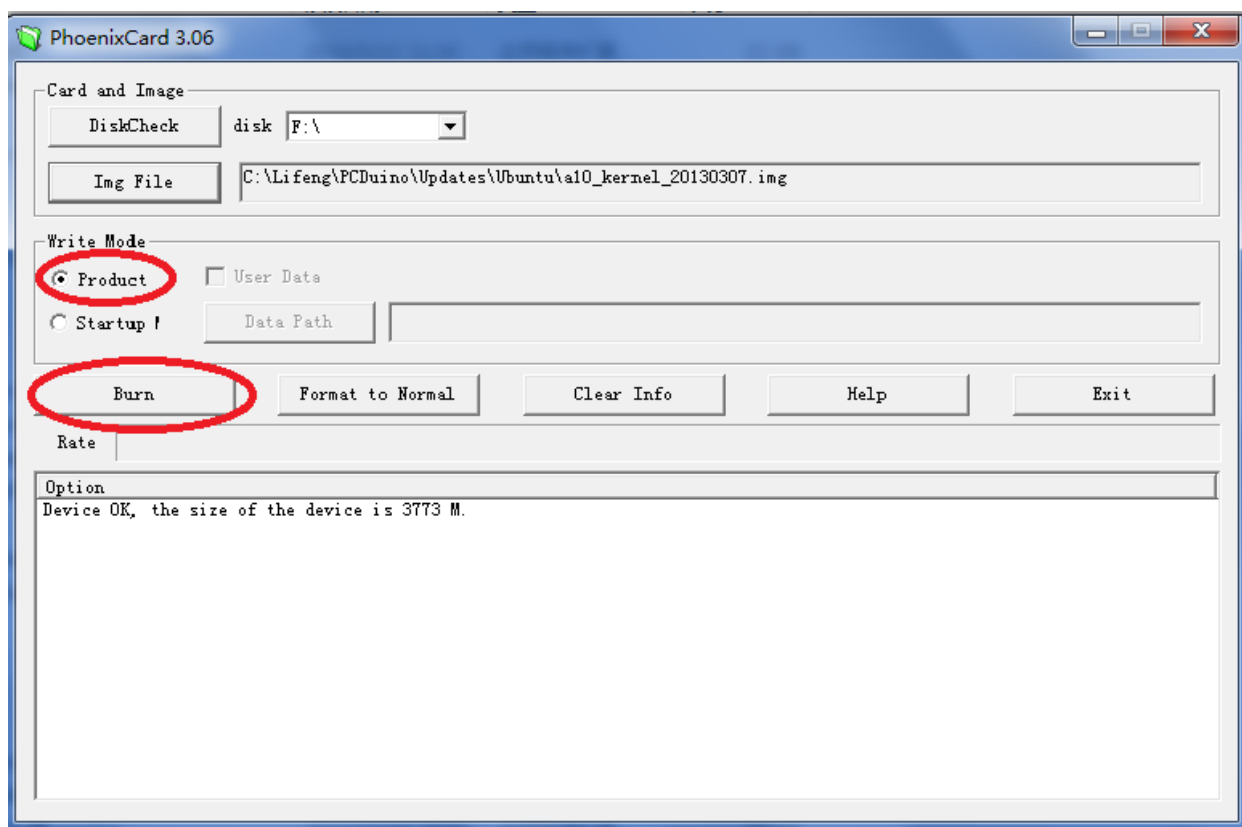


Doc Title	pcDunio User Guide	Number	WMSBB121219
		Version	0.1



- ii. Choose the Linux kernel image file al0\_kernel\_xxx.img that you've downloaded and write it to micro-SD card

Doc Title	pcDunio User Guide	Number	WMSBB121219
		Version	0.1



After a few minutes, the TF card is ready to use to burn the kernel to the flash in pcDuino.

**d) Burn the OS image to internal flash from micro-SD card**

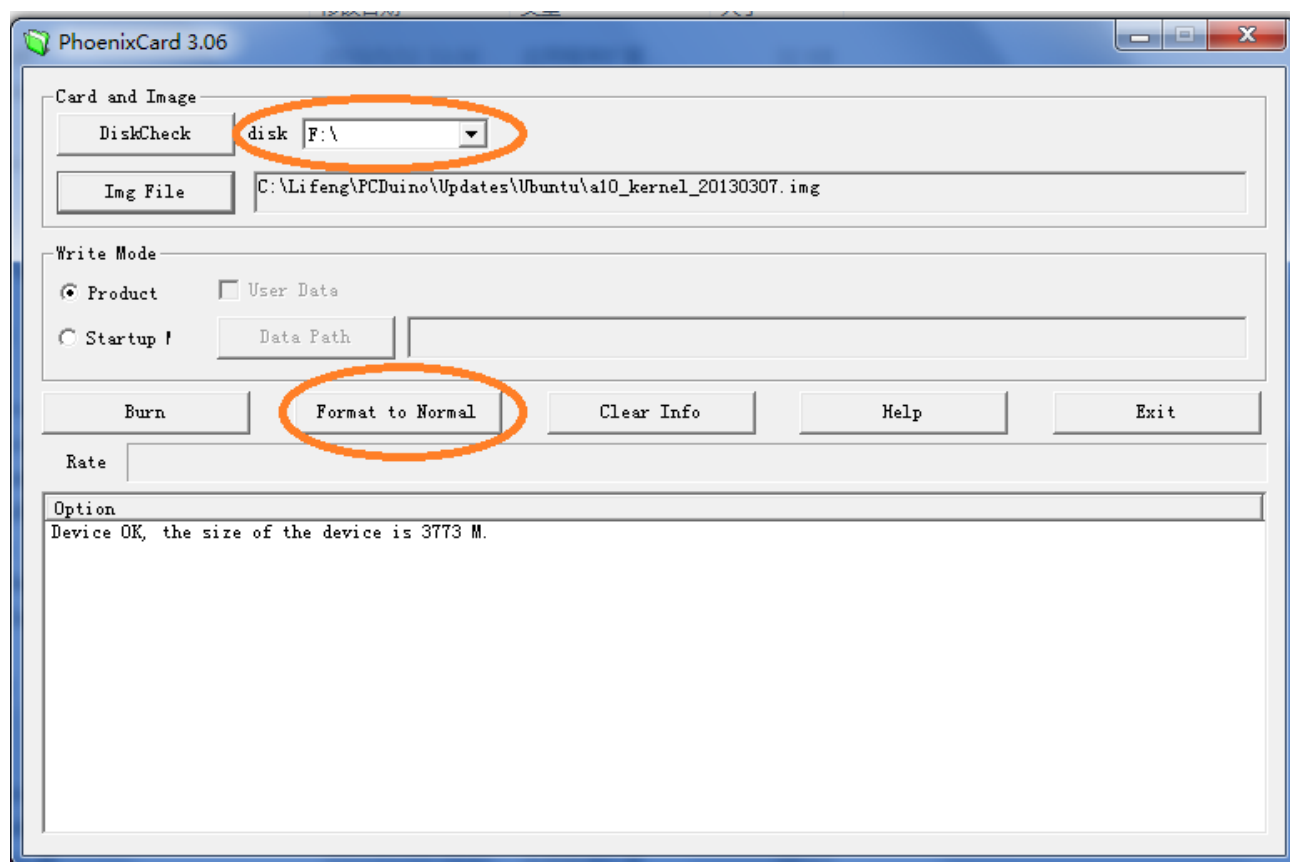
- Plug the micro-SD card to the pcDuino, power on the board, and then wait for **one** minute
- When see the RX LED stays on, and the TX LED is blinking, the kernel is updated successfully. Eject the TF card and reset the device

**e) Restore the micro-SD card created in step 1, c)**

The micro-SD card is specially created in step 1, c) to allow it to be recognized by the ROMBOOT of the board. To avoid the unexpected update of the kernel, use the PhoenixCard to restore it to normal and clean card

- Plug your micro-SD card to your PC, run PhoenixCard.exe.
- Select the micro-SD card in the disk scroll window, and choose "Format to Normal" to restore the card.

Doc Title	pcDunio User Guide	Number	WMSBB121219
		Version	0.1



## Step 2: Install Ubuntu

### a) Unzip the Ubuntu.zip file obtained in Step 1, a)

Unzip it to get three files like these:

- Update.sh: shell script for Ubuntu update
- Ubuntu\_xxx.img: image file for Ubuntu
- \*.tgz (released on March 2013) or \*.fex (released on Feb. 2013) file depending on the version that you are using

### b) Copy the three files unzipped in Step 2 , a) to micro-SD card or USB flash disk

### c) Burn the Ubuntu to internal flash

Plug the micro-SD card or USB flash disk to pcDuino and power on the device. If the TX LED starts to blink fast and RX LED always stays on, it indicates the Ubuntu is being burned to internal flash. Wait until both TX LED and RX LED blink slowly. It indicates that the Ubuntu is burned to internal flash successfully. Otherwise, if both TX LED and RX LED blink very fast, the Ubuntu is failed to burn to flash. If so, please make sure that you have all three files unzipped in step 2, a) in your disk and redo this step. This step usually takes around 10 minutes so be patient.

Doc Title	pcDunio User Guide	Number	WMSBB121219
		Version	0.1

## Steps to update the Android image with micro-SD card (RECOMMEND)

### 1. Download the Android operating system for pcDuino

The download link is:

[http://www.pcduno.com/?page\\_id=14](http://www.pcduno.com/?page_id=14)

Find the link for Android image, download it and get one file with .img extension.

### 2. Download the Phonenix Card software

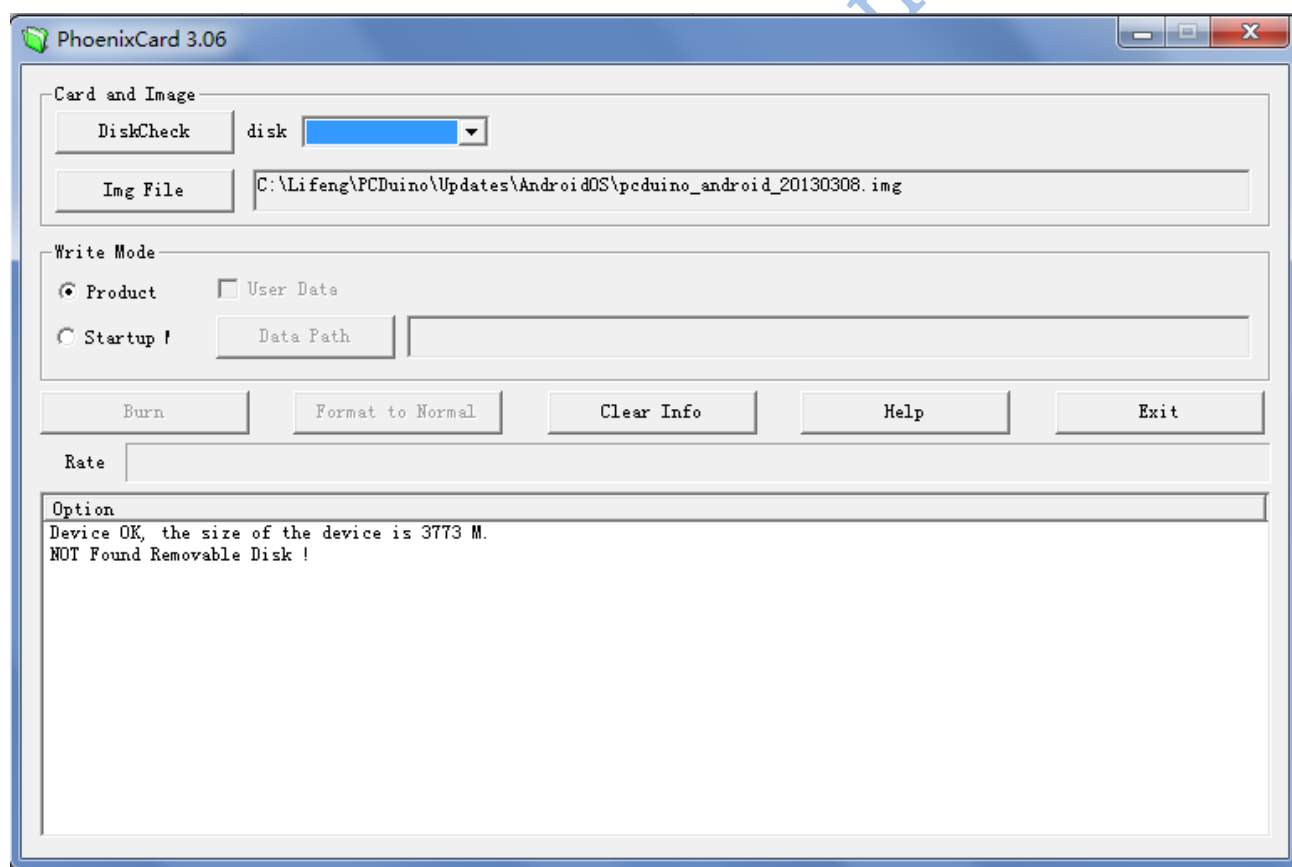
The download page is:

[http://www.pcduno.com/?page\\_id=14](http://www.pcduno.com/?page_id=14)

Find the “Phonenix Card” link under Tools in this page and download it. Unzip it to a new folder with default name PhoenixCardV306\_20120302.

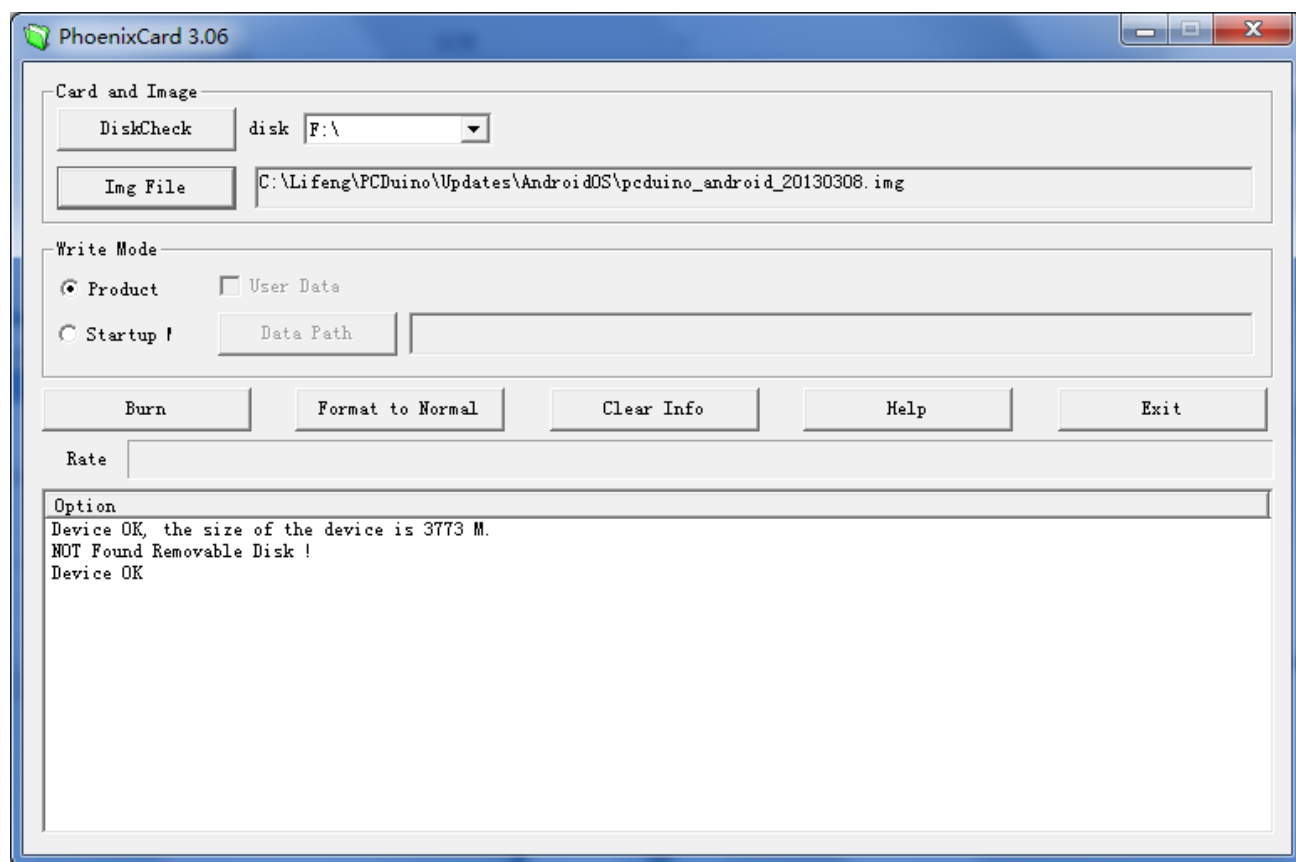
### 3. Write pcDuino Android image to micro-SD card

(a) Plug your micro-SD card to your PC, run “PhoenixCard.exe”. You will see something like this:



Doc Title	pcDunio User Guide	Number	WMSBB121219
		Version	0.1

- (b) Choose the Android image file pcduino\_Android\_ xxx.img that you've downloaded and write it to the micro-SD card



After a few minutes, the micro-SD card is ready to use.

#### 4. Burn the OS image to internal flash from micro-SD card

- Plug the micro-SD card to the pcDuino and then power on the board. Wait for about **four** minutes
- Eject the micro-SD card and reset the device

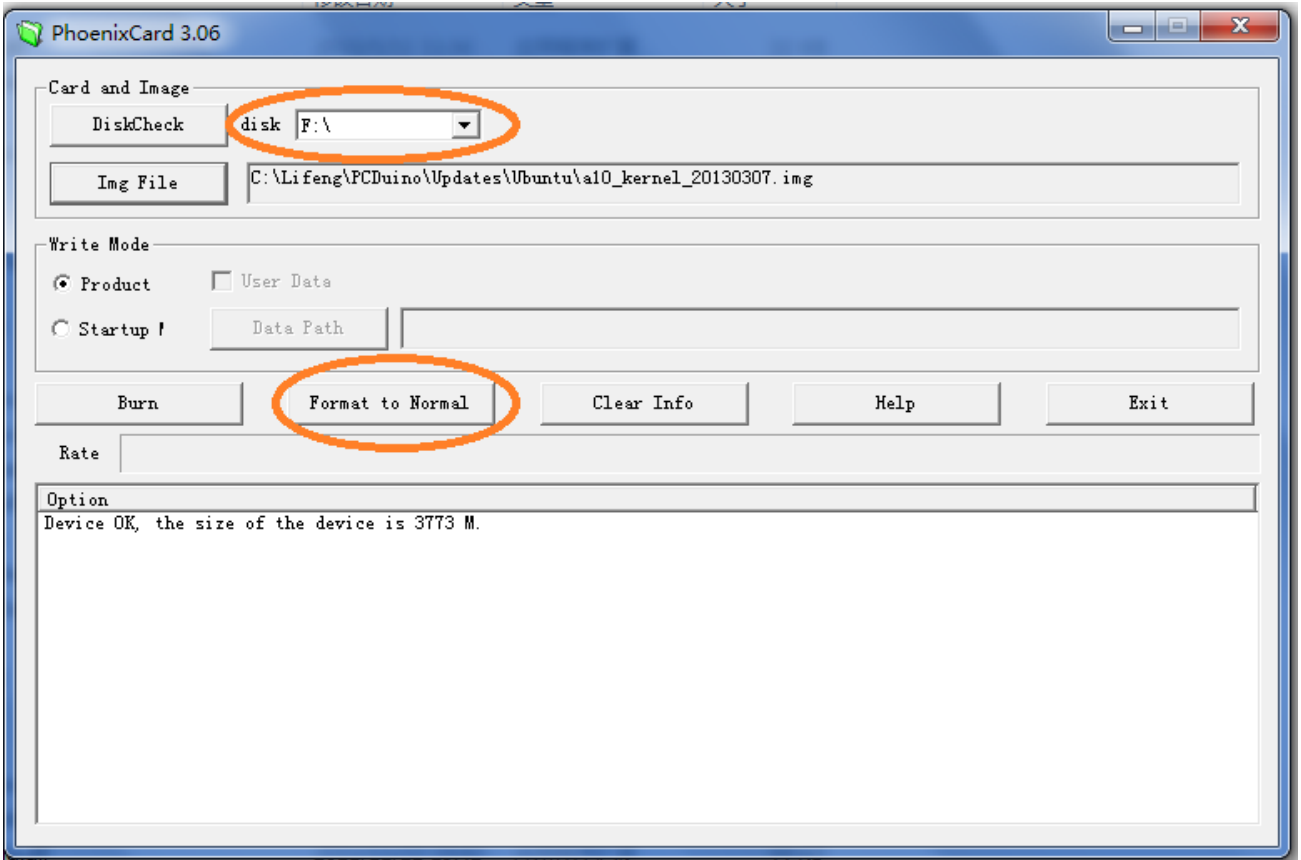
\* We have a catch in step (a). We don't have any LED to indicate when the boot image is burned completely unless you connect the hyperterminal to pcDuino, so please wait for four minutes patiently. Moreover, please eject the TF card before resetting the device. Otherwise, it will start to burn the OS image again if the TF card is inserted.

#### 5. Restore the micro-SD card created in step 3

The micro-SD card is specially created in step 3 to allow it to be recognized by the ROMBOOT of the board. To avoid the unexpected update of the Android OS, use the PhoenixCard to restore it to normal and clean card

- Plug your micro-SD card to your PC, run "PhoenixCard.exe".
- Select the micro-SD card in the disk scroll window, and choose "Format to Normal" to restore the card.

Doc Title	pcDunio User Guide	Number	WMSBB121219
		Version	0.1



<b>Doc Title</b>	pcDunio User Guide	<b>Number</b>	WMSBB121219
		<b>Version</b>	0.1

## Steps to update software from USB disk

Over time, we will have the bug fix or provide new features to pcDuino board. Most of the time, users do not need to update the whole operating system. Instead, we could add software patch to accomplish this. The procedure is simply like these:

1. Copy update package to USB disk (for example: update.sh, update.tgz )
2. Power on pcDuino board
3. Plugin the USB disk to USB host port
4. Open a terminal after login to Ubuntu
5. Run commands to update the package  

```
$ cd /media/*/
$ bash ./update.sh
```

### Note:

If the USB disk has more than one partition, enter the whole path which the partition including update package is mounted, for example “cd /media/Volumn”. If you don’t know which partition to choose, open “File Manager” to check it.

The name of update script (update.sh) and update package (update.tgz) may be different for the individual purpose.