Nano PC User's Manual

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1 Introduction

Nano PC Board

The Nano PC board is a Cortex-A9 embedded processing board that uses the Samsung Exynos4412 Quad-Core System On Chip (SOC).

The Exynos4412 integrates the Mali-400 MP GPU graphic engine with hardware support for 3D and can drive video playing on screens up to 1080P. These features make it easily and widely used in MID development, Android notepads, auto electronic devices, industrial applications, GPS systems and multimedia systems.

1.1 Nano PC Board

The Nano PC standard version integrates 1G DDR3 RAM and 4G eMMC flash memory.

1.1.1 Nano PC Hardware Feature

CPU	
	• Samsung Quad-Core Exynos 4412, based on Cortex-A9, 1.5GHz
	• Integrated ARM Mali-400 Dual-Core GPU
	• Elegent 2D/3D graphic accelaration
	• Up to 1080p@30fps hard decoded video playing, support MPEG4, H.263, H.264 etc
	• Up to 1080p@30fps hard decoded (Mpeg-2/VC1) video input
DDR3 RAM	• 1G
	• 32bit data bus, single channels
	• 400 M Hz
FLASH	• eMMC Flash: 4GB
LCD	• LCD interface : 40Pin, 0.5mm spacing, compatible with Mini2440/Tiny4412/Mini210S LCD, supports one wire precise touching
	• HDMI high definition interface (Type A)
	• LCDs supported from 3.5" to 12.1" , HD
Network	• 10/100M Ethernet interface(RJ45) using DM9621
Standard Configuration	• 1 x microUSB Slave-2.0
	• 1 x 3.5mm stereotype audio output
	• 1 x USB Host 2.0
	• 1 x 5V power input
On Board Hardware Resource	• 1 x backup battery for on board real time clock
	• 2 x LED
	• 2 x User button
	• 1 x Reset button
	• 1 x Encryption chip(AT88SC0104C-SH)
	• 1 x Fuse(2A)

External Resource	4 x TTL 2 x GPIO 1 x CMOS camera interface 1 x MIPI camera interface 1 x Digital sensor
Power	5V
PCB Dimension	- Eight layered board - Dimension: 100 x 60 (mm)
OS	- Android 4.0/4.2 - Ubuntu-1204 - Linux + Qt/Embedded-4.8.5

2 Get Started

We provide various OS image files. Users can flash those files to the board via an SD card. We will guide you through these steps in this chapter.

## 2.1 Burning Superboot to SD Card

In order to boot from an SD card, you need to burn BIOS to it. FriendlyARM offers a flashing utility: SD-Flasher.exe which can burn our Bootloader (Superboot4412.bin) to an SD card.

We tested the following steps on Windows7

Note: users complained that some notebook's integrated SD card reader cannot work properly with card burning or reading. So far we haven't encountered this issue and we suggest that you should try a common card reader in this case.

Our SD-Flasher.exe formats a 130M space for the bootloader therefore an SD card whose memory is less than 256M cannot work and we recommend using one whose memory is at least 4G

Step1: launch the SD-Flasher.exe in your shipped CD (under "\tools\"). Note: this program should be run as "administrator"
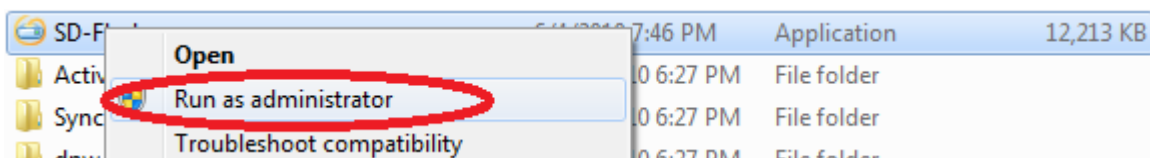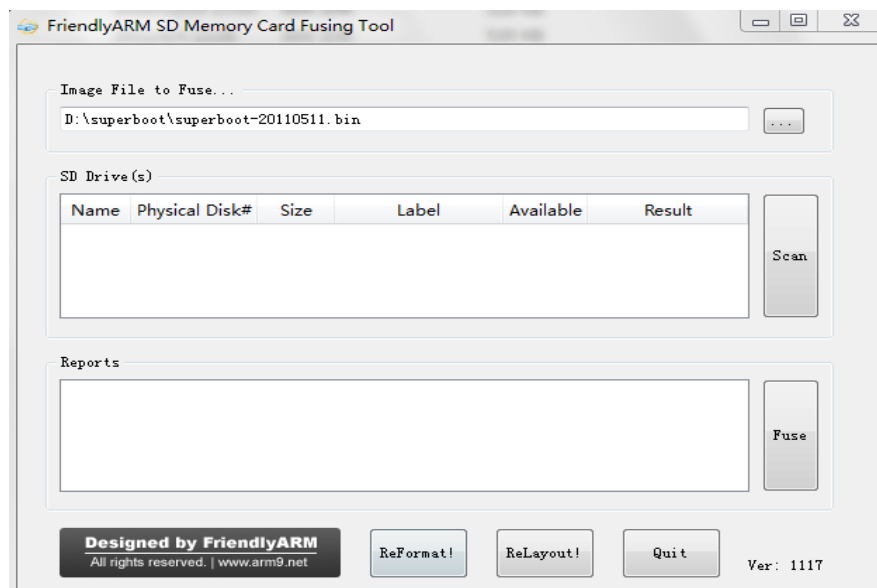

When the utility is launched a message box will pop up "Select your Machine…",
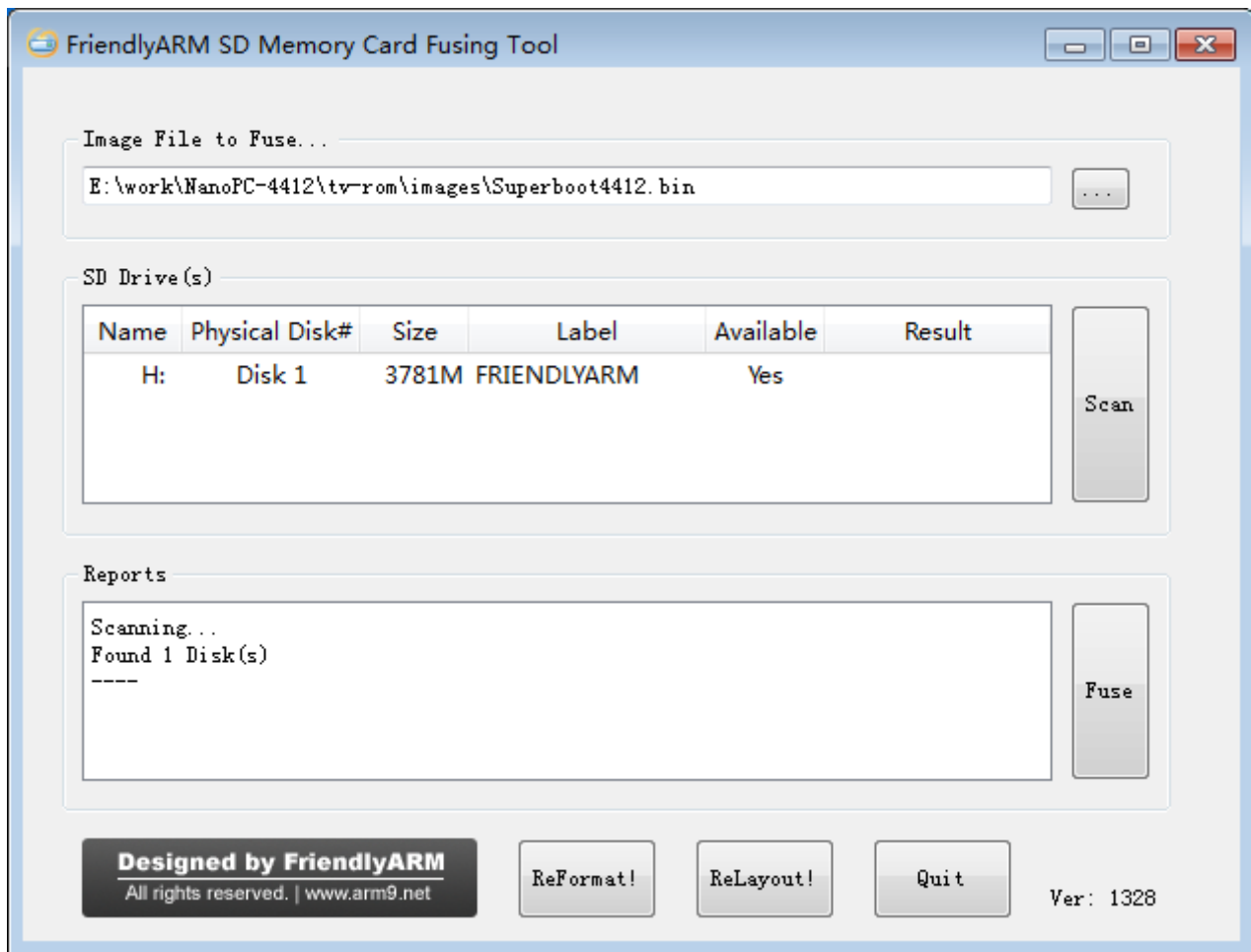
please select "Mini4412/Tiny4412":
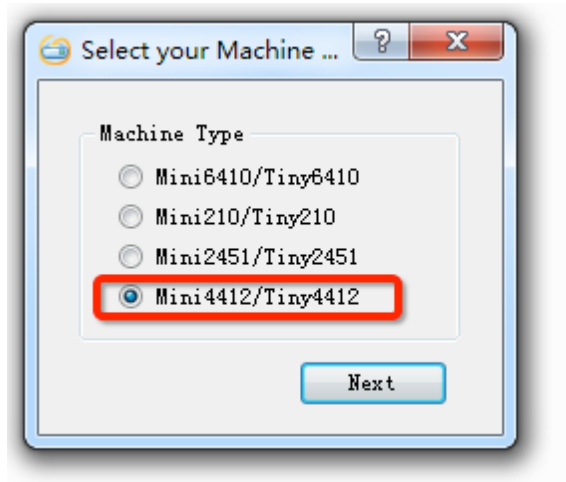
Below is the dialog you will see after it is started. Note: the "ReLayout" is enabled and we will format the SD card with this function.
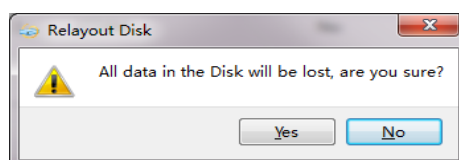

Step2: click on [...] to select your bootloader file

Step3: insert a FAT32 SD card into your host's SD card socket (you can also use a USB card reader to connect to a PC), backup your data in the card and click on "Scan", all recognized SD cards will be listed.

Step4: click on "ReLayout", the following dialog will pop up prompting you that the data in your card will be lost. Just click on "Yes"

After formatting is done you will be directed back to the main menu. Click on "Scan", you will see that a "FriendlyARM" section available.

Step5: click on "Fuse"， Superboot will be safely burned into the SD card. You can burn

this card in WindowsXP without worrying about its FAT32 data being lost or damaged.
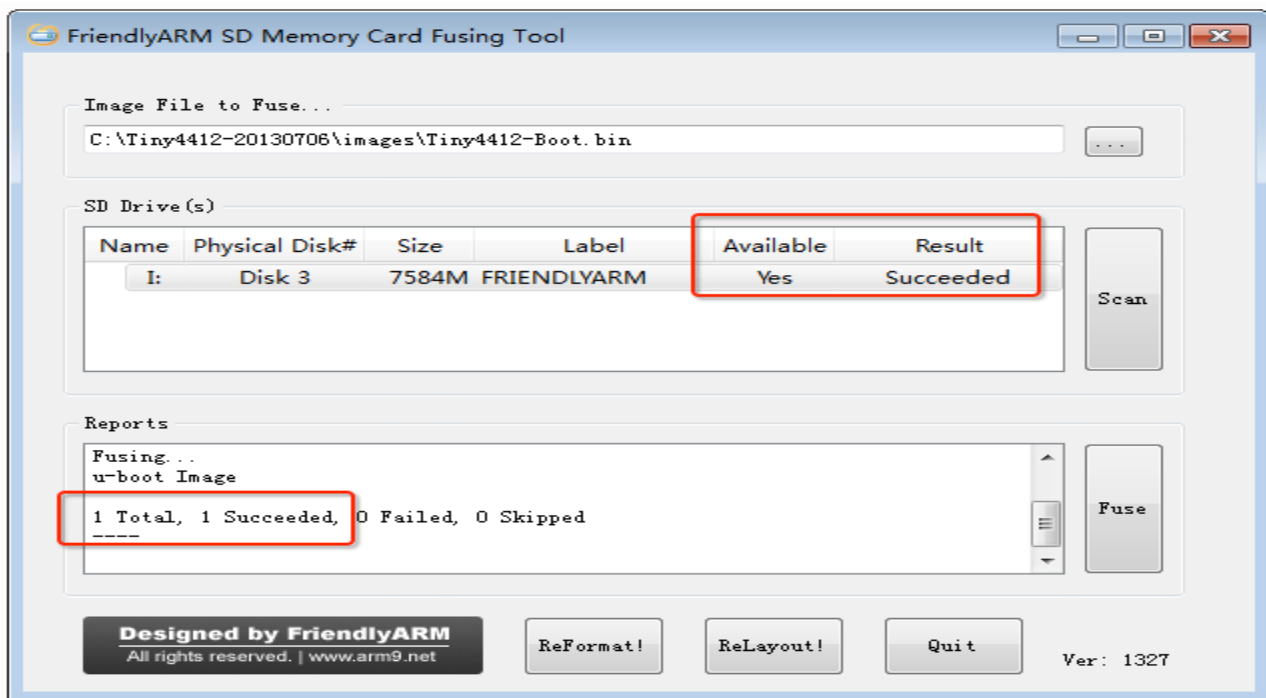
2.2 Flash Mi-Box to Nano PC

The Mi-Box system is a customized Android system dedicated for TV or HDTV

output. It can be used as a multi-media platform for TV-Box, Android advertisement

machines, LCD touch machines etc.

It supports AirPlay, HDMI output, various HDMI resolutions, HDMI zoom out/in,

USB WiFi, USB touch screen etc.

2.2.1 Steps to Flash Mi-Box to Nano PC

Step 1: Please download the image files from http://pan.baidu.com/s/1jGDiAAa.

After the download you will get a tiny4412-tv-images-20140103.7z file. Please uncompress it you will get a "tv-rom" directory.

Step 2: Copy the image files to SD card.

Under the "tv-rom" there is an "images" directory. Please copy the whole "images" directory to the root directory of your SD card.

Step 3 Flash Nano PC

Insert the SD card to your Nano PC and remove the jumper indicated in the picture below. This will boot the board from the SD card. Then power on the board and it will be flashed with the Mi-Box image
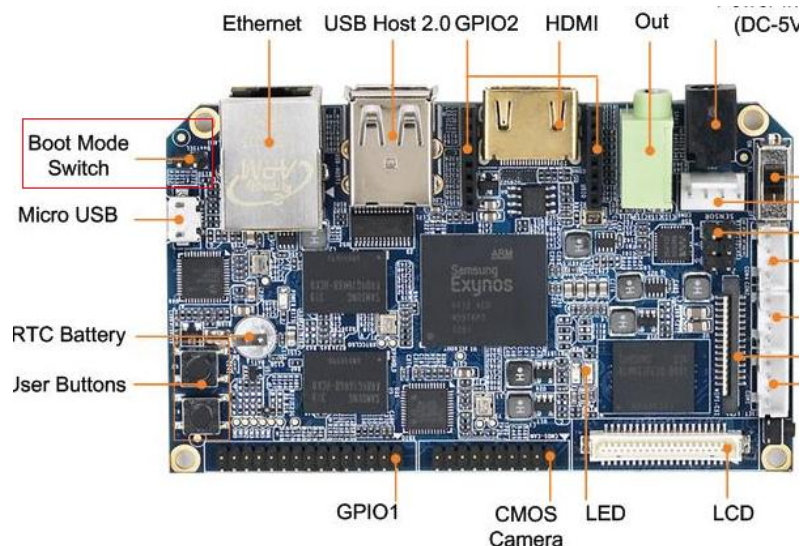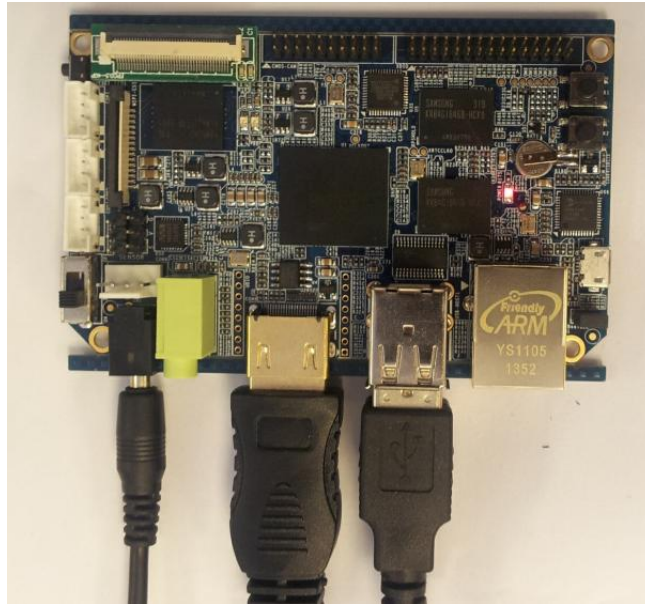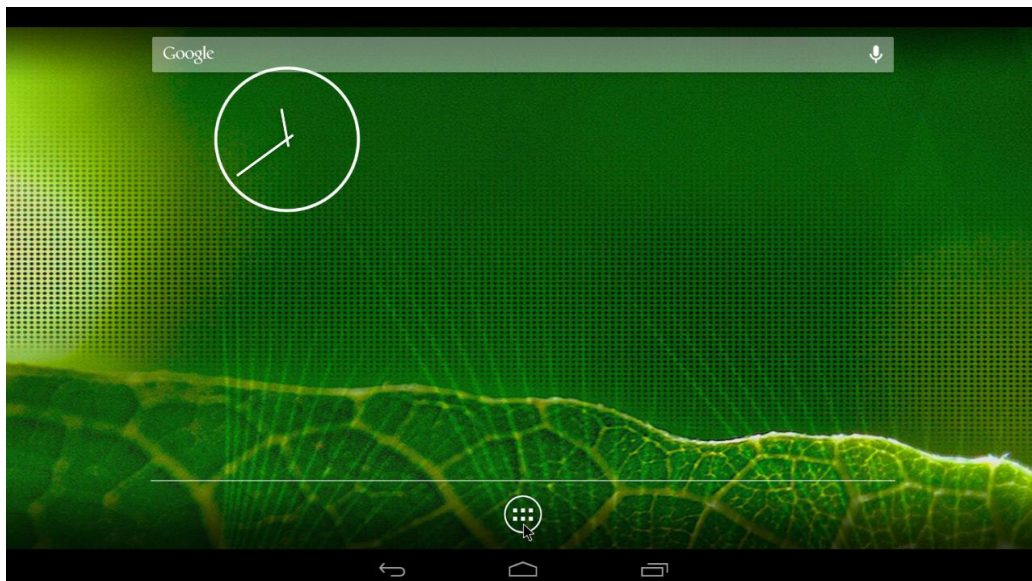
2.2.2 HDMI Output

We can connect a Nano PC to an HDMI TV. Here are the steps:

Step 1: Please connect the Nano PC to a TV via HDMI

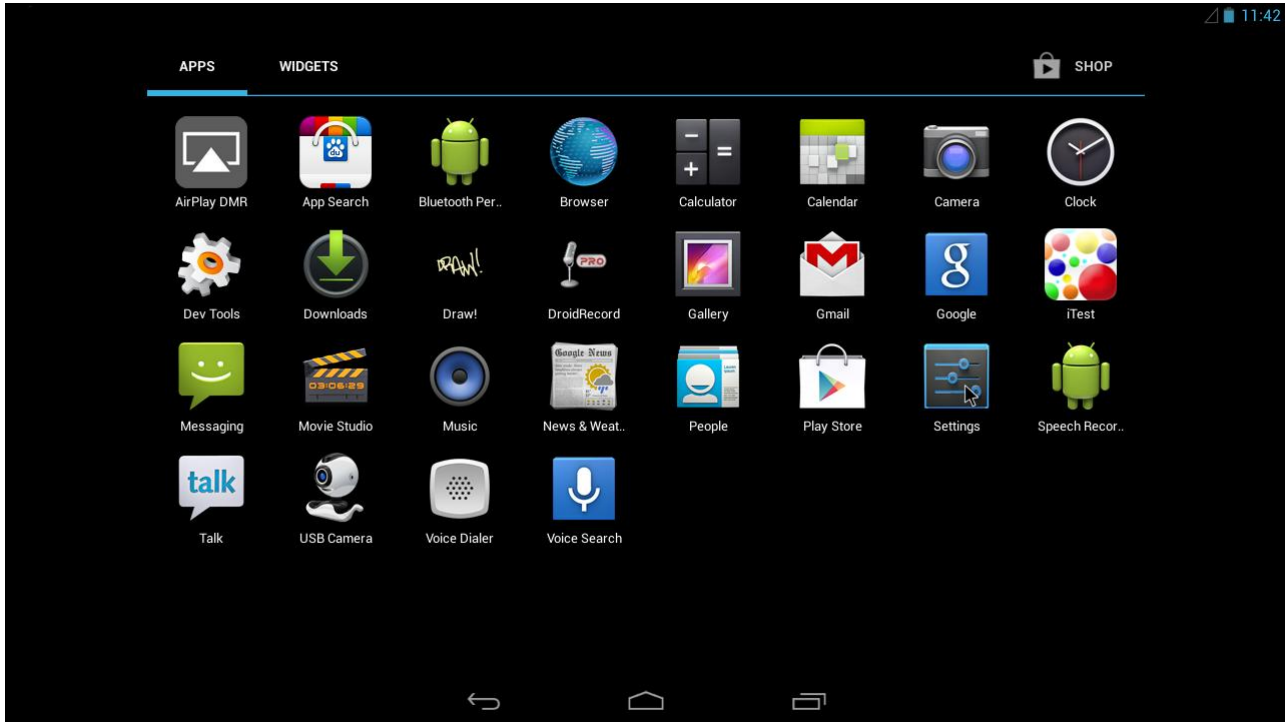Step 2: Please hook up a USB mouse and keyboard

Step 3: Power on the Nano PC with the boot option being "EMMC"(hook up

the boot option jumper)

Step 4: Set up HDMI Resolution

The default resolution is 1080P. You can change it in "Settings"

Click on "Display"

Click on HDMI

Click on "Resolution"

Now you can select the resolution you prefer

2.2.3 Network Connection

By default after you connect the Nano PC to Ethernet you will be able to

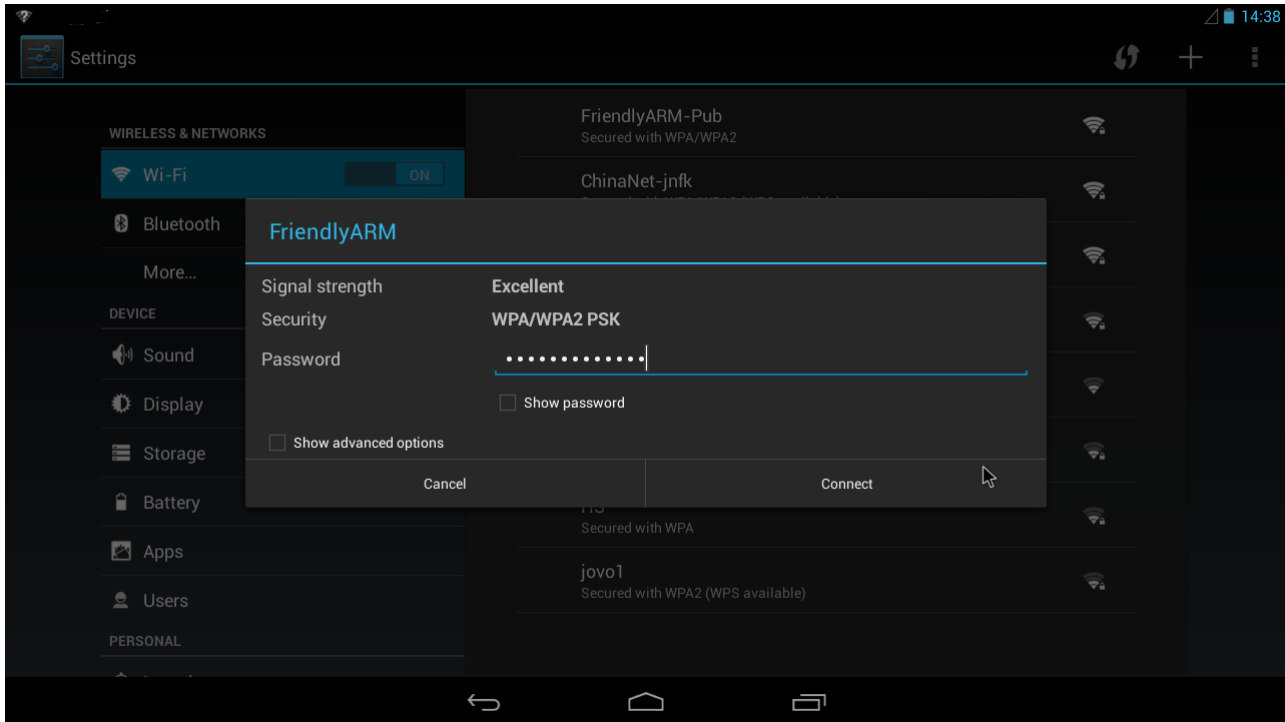surf the internet without any additional configurations
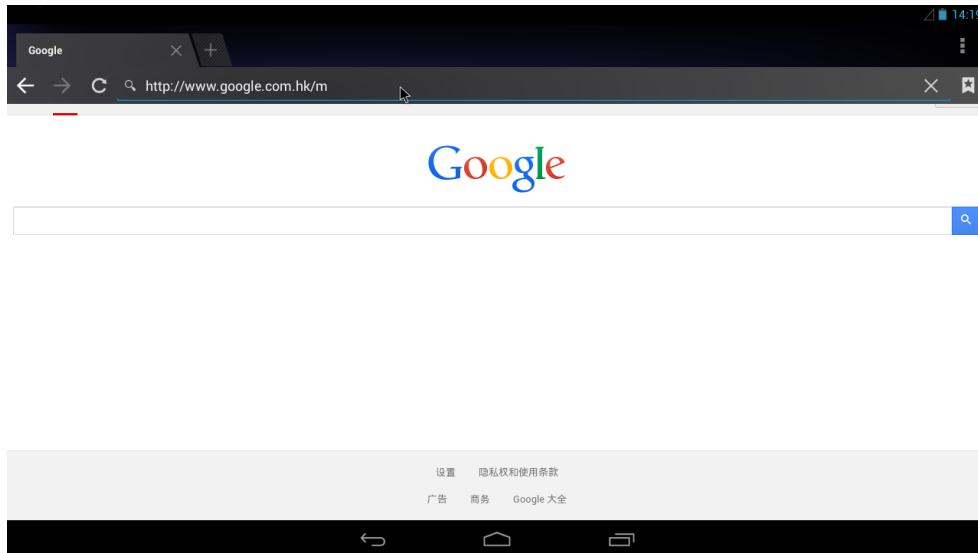
You can connect the Nano PC to WiFi as well following the steps below:

Step 1: Plug a USB WiFi dongle

Step 2: Go to "Settings -> WiFi"

Step 3: Select a source, type the password and click on "Connect"

2.2.4 Volumn Control

You can turn up or down the volumn by pressing "K1" or "K2". Pressing "K1" turns
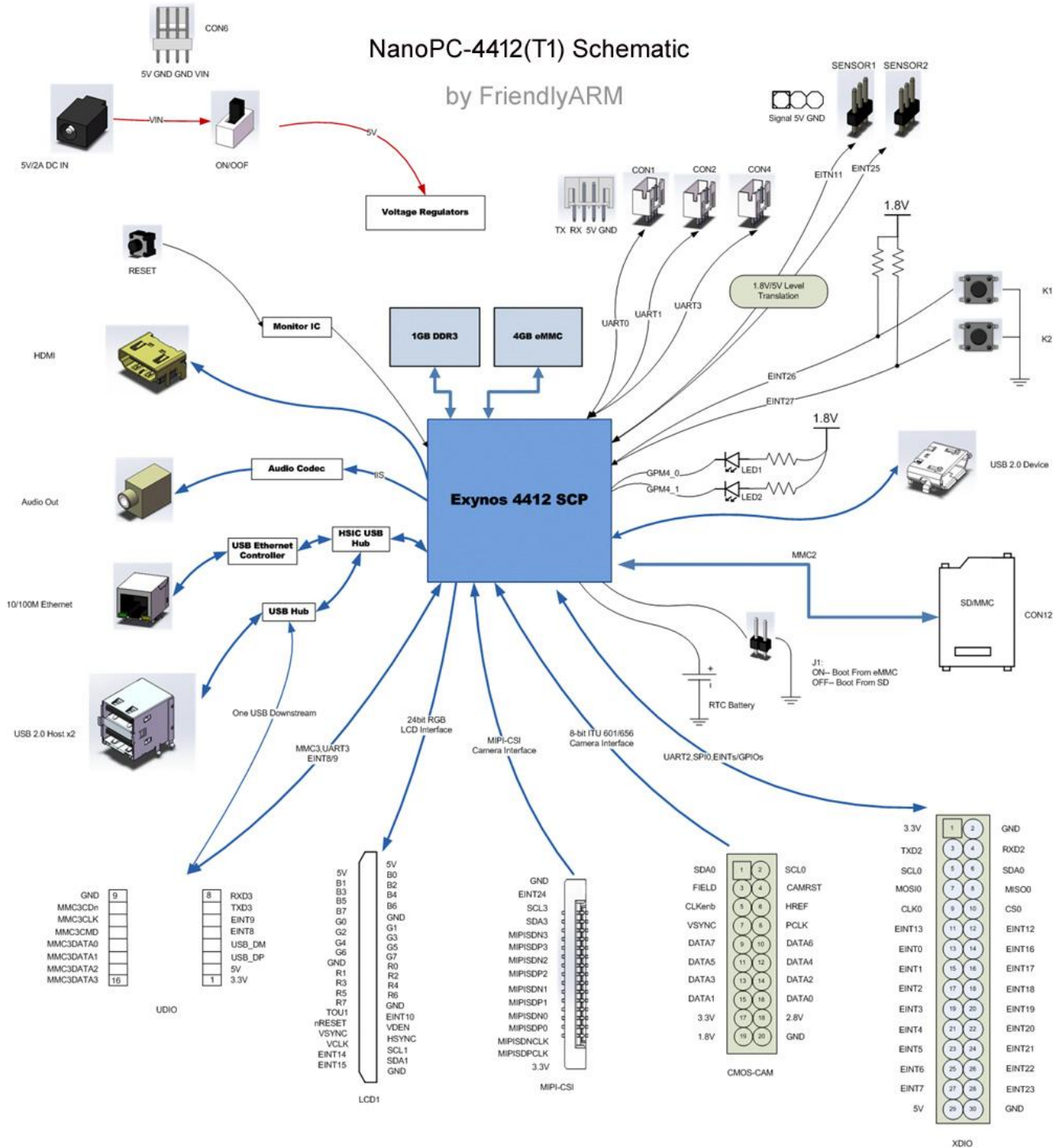
up the volumn and pressing "K2" turns it down

3 Community and Support

- Official site: http://www.arm9.net/nanopc-t1.asp

- Chinese site:http://www.arm9home.net

- English site:http://www.friendlyarm.net

- Email: tan_friendlyarm@sina.com

Appendix I Nano PC Schematic

NanoPC-4412(T1) Schematic

by FriendlyARM