SinoVoip Co.,Limited
BPI-D1

User Manual 2.0
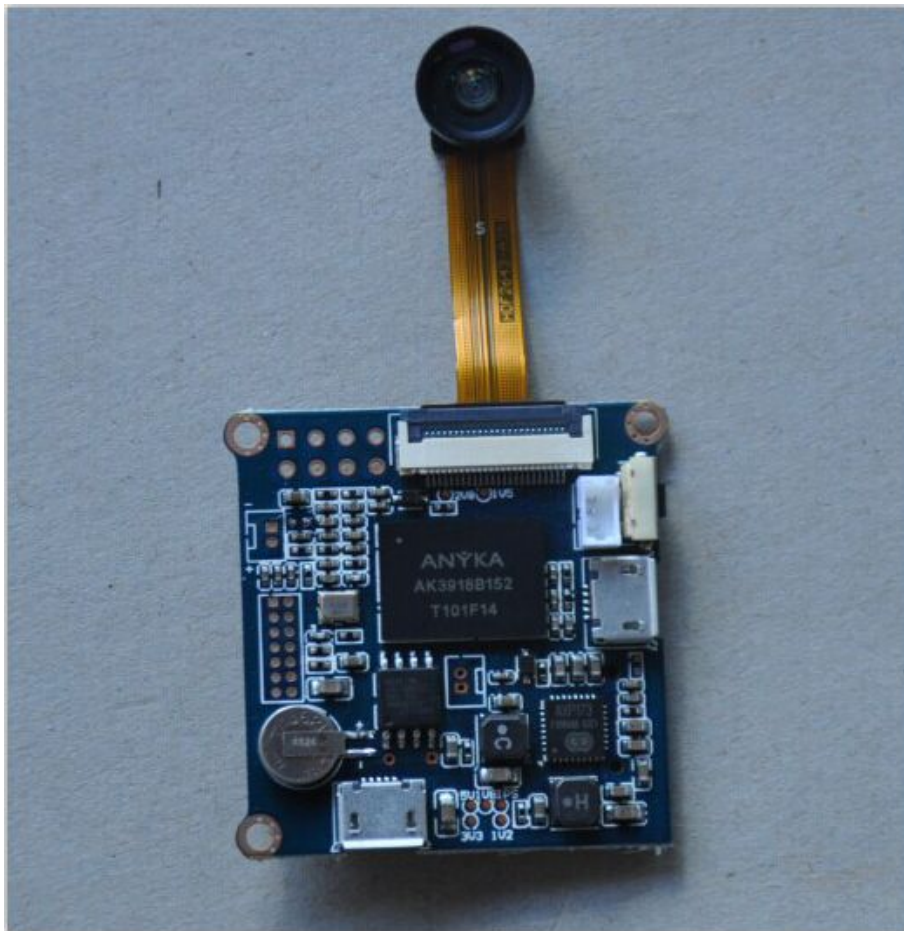
Table of Contents

Product Introduction

The BPI-D1 is the smallest open-source development board around, with a built-in HD mini camera. At 38mm (w) x38mm (l) and weighing in at 10g, it's much smaller and lighter than any mini-cam or camera board out there. It allows you to create and customize your own mini-cam and can be a valuable part of any cool hardware you are working on. The BPI-D1 prides itself on providing high-resolution image quality: Both video and photos are captured at 1280x720p with a video capture rate of 30 fps.

The BPI-D1 is designed specifically to give you all the multimedia tools you need in one small package. Simply connect to an external battery source (with your desired power capacity), and the BPI-D1 does the rest: there's a HD mini-cam, audio sensor, microphone, CPU, GPIO, WiFi, and more - you name it, the BPI-D1 has it.

Specification

| Hardware Specification	
Product Size	PCB 38x38mm
CPU	400MHz ARM926EJ 32Bits RISC Core
RAM	64MB DDR2
Flash	16MB SPI-FLASH
Storage	Micro SD Card Seat ,supportable for 8G,16G, 32G TF cards
CMOS	CMOS Image Sensor SoC30FPS@720P, Visible light with 940 nm two-way infrared lens filter, with infrared night vision function
Lens	M7*P0.35 EFL=3.0mm/F.NO=2.8/View Angle=60°
Video	It achieves H.264 hardware encoding at 1280x720p_30fps. 32G TF card can store 120 hours of video data
Audio	MP3/WMA/AAC
WIFI	USB WIFI (OPTION):WiFi module can be switch between the AP and the SLAVE mode, easy to configure the WiFi module; BPI-D1 support WPS mode
RTC	RTC circuit, and supporting OSD
PM	Support Li-ion Charging with Built-in AXP173 power management chip
MIC	Embedded electrets microphone
Power Consumption	Recording: 5V-200mA; WiFi On: 5V-350mA; continuously record 720P video or audio data for 24hour when a mobile power of 10000mAH is available.
GPIO	1UART/2GPIO；2PWM/2GPIO；I2C；Audio Line IN；HP Audio Out L；HP Audio Out R；1SPI Interface
UART	Independent UART debugging interface
USB	USB programmatic interface/ OTG device (WiFi module/USB drive)
DC IN	Micro-USB single +5V power input
Battery	3.7V Li-ion socket
OS	Running on Linux3.4.35, Kernel Operation system that makes secondary development possible

Hardware

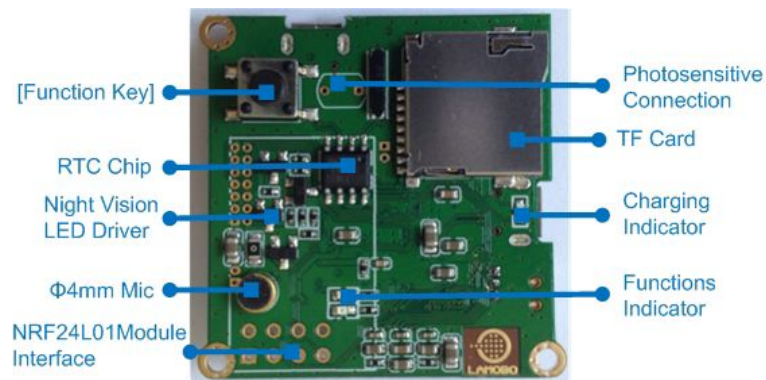• **Product Image**
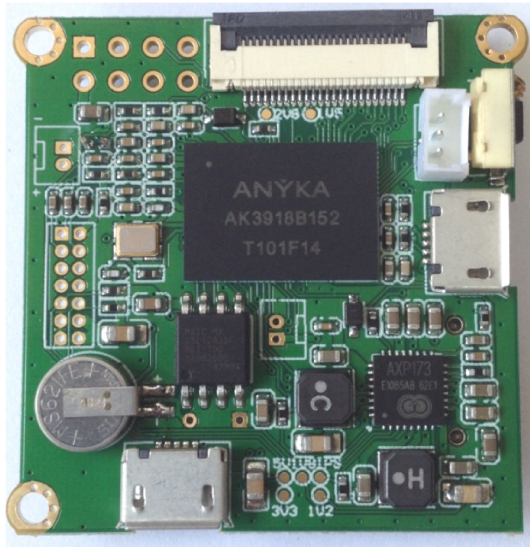
(Figure 1-Front)
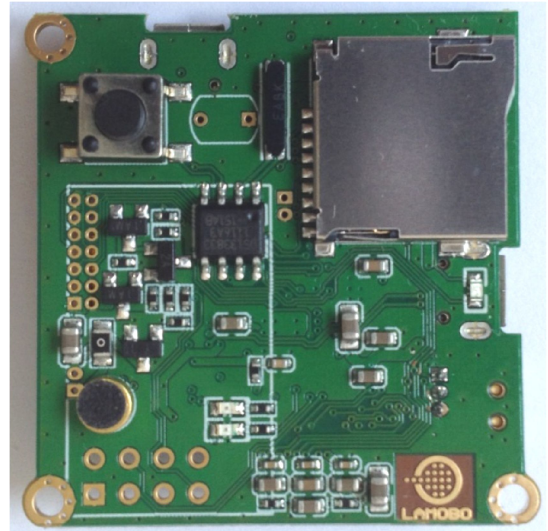
(Figure 2-Back)
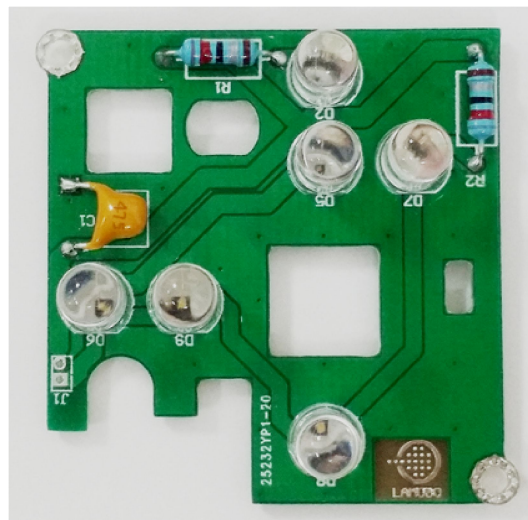
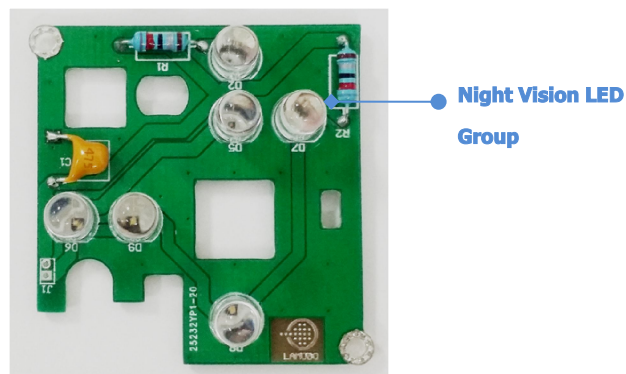**(Figure 3-Night Vision Module)**

•
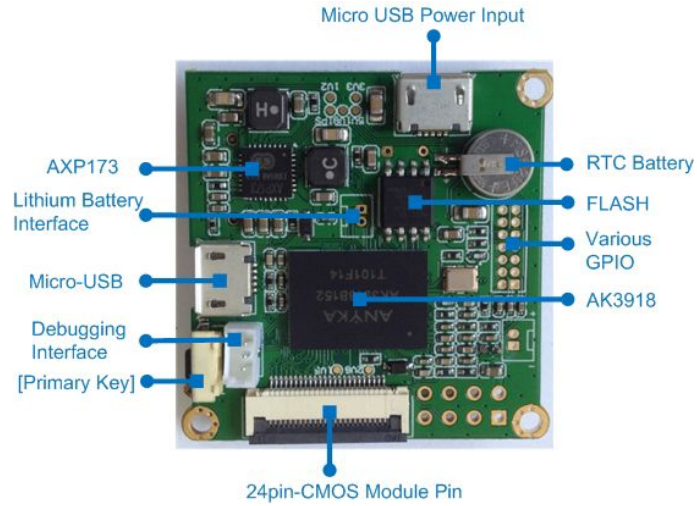
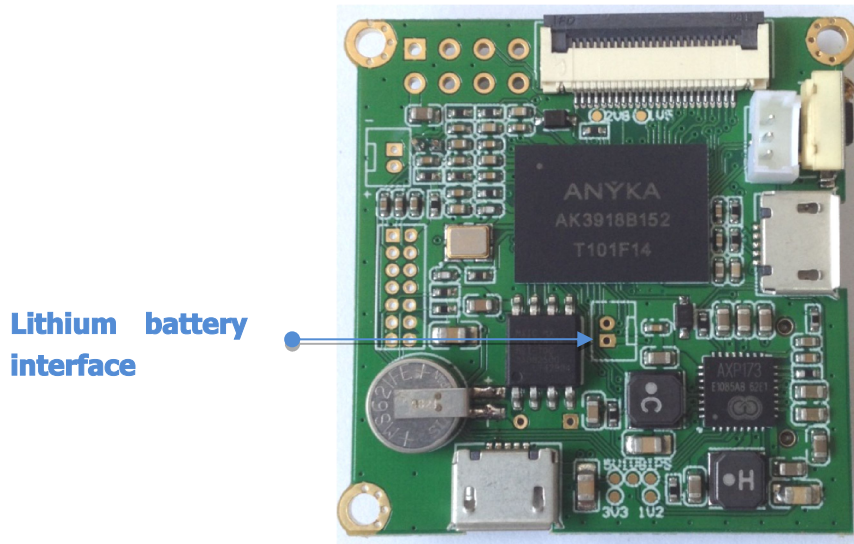· **Interface:**

(Figure 4-Front Interfaces)

(Figure 5-Back Interfaces)

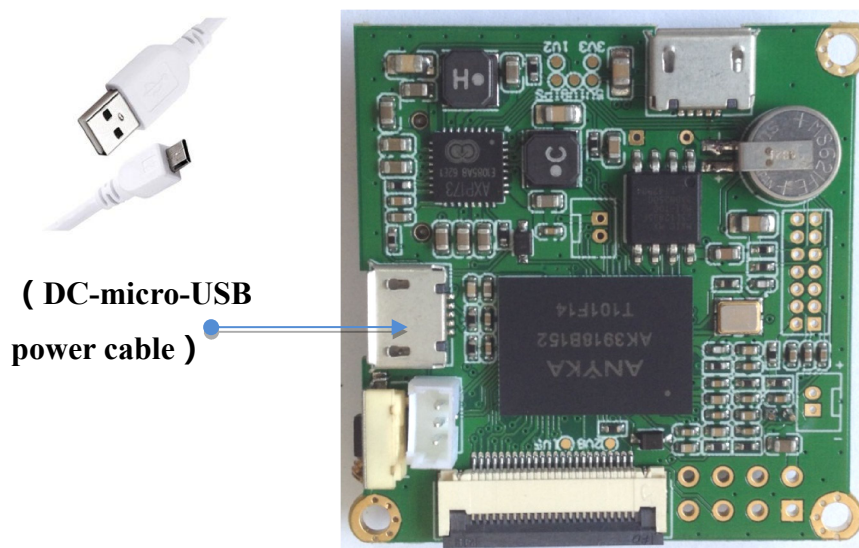**(Figure 6-Night Vision Module Interfaces)**

Power Supply

Battery mode: Built-in lithium battery power supply independently.

(Figure 7)

External power supply mode: DC-micro-USB power cable at the same time for charging the BPI-D1 built-in lithium battery.

(Figure 8)

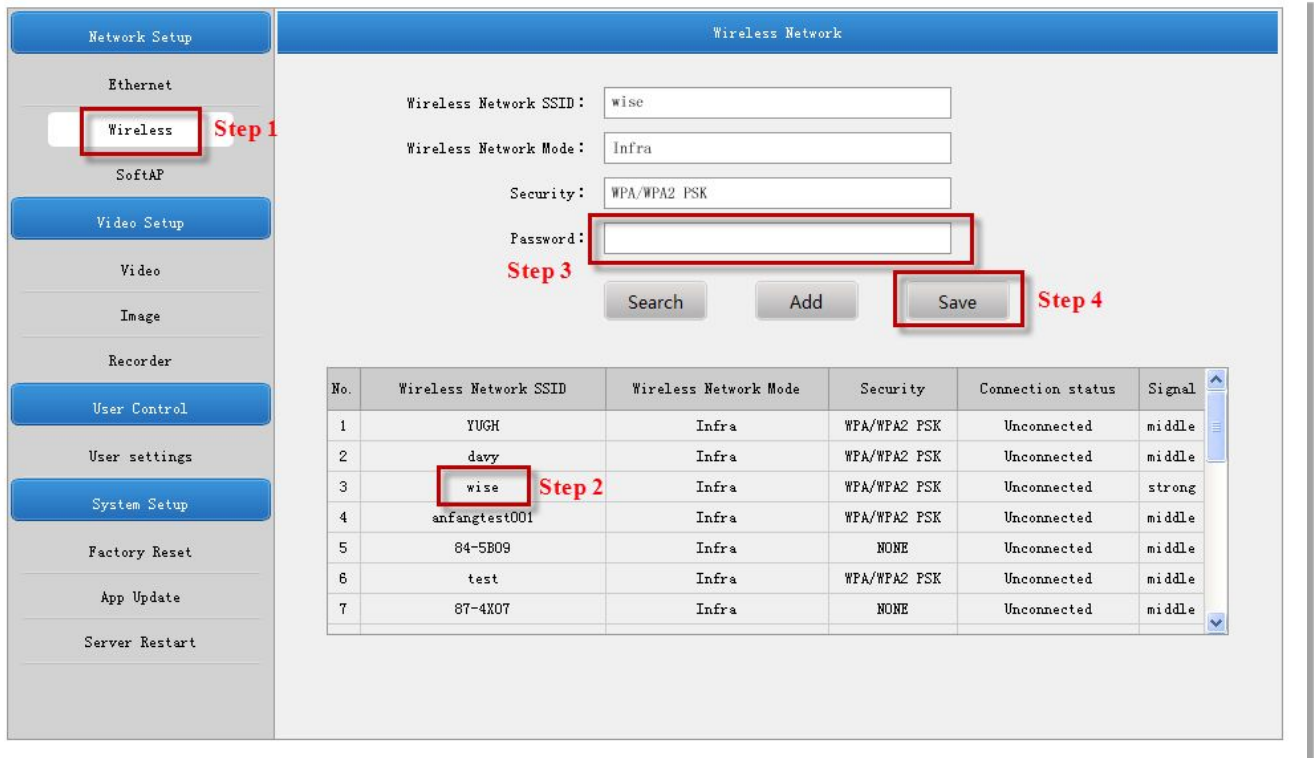# Use Method

1. How to record a video

In a fully charged or connecting micro - power USB cable, BPI-D1 will automatically start the default set of video application. Start recording the video and sound and generate file storage to TF card. Recorded 30 minutes to automatically generate and save for a video file. Click the "function key " button, then manually stop recording the current task and generate a complete video file, start the next record files after 10 seconds.

2. How to connect to the AP

Connect to the specified AP

The USB-WiFi module is connected to the USB interface of OTG. Press the BPI-D1 "primary key" button, green LED will keep long bright after flashing about 8 seconds; it means BPI-D1 work in AP mode.

1) Connect any mobile devices (e.g. Smartphone, tablet or computer) to the WiFi connection **"SSID= XXX_D1_A39XXX"** and enter the default password "**12345678**".

2) In Internet Explorer, enter the FTP address "ftp://192.168.0.1". **(user name: admin, password: admin)**

3) Click "Ethernet", select one of the available WiFi. The SSID parameter will be displayed in the above, click password blank and enter the known password, then click the "save". After flashing on the screen, four parameters in the form disappeared that the connection is successful.

4) Click on the (39) Boot/WPS button, BPI-D1 switches to slave mode; you will see LED flashes from fast into slow, which has been connected to the specified WiFi-AP.

(Figure 9)

3. View Real-time Video

View in range of LAN

At present, viewing real-time video can be achieved in the LAN through VLC player or MX Player. If the two players installed on your PCs or mobile devices, it could be view via network stream. To do this:

【**Notes**】: Just take the case of VLC player.

① Install VLC player on your PCs or mobile devices.

② Connect any mobile devices (e.g. Smartphone, tablet or computer) to the WiFi connection "SSID= XXX_D1_A39XXX" and enter the default password "12345678".

③ Open VLC player and click " "and open network stream.
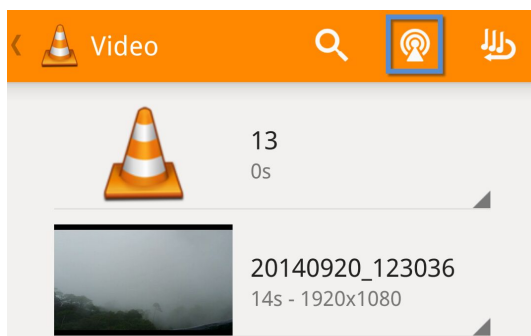
④ Enter the AP of BPI-D1"rtsp://192.168.0.1", click "open" and view the real-time video.

[Reminder]: Real-time video may be delay, which related to the network
transmission.

4. How to view files

Option ①：Remove the SD card from the board and insert it into the SD card reader
of a computer.

Option ②：Battery mode, using micro-USB data cable to connect the BPI-D1 and
PC. PC client can access the contents of TF card through the data cable, while
charging the lithium battery.

[Reminder]: Micro-USB interface supports USB flash disk connected through USB
female port of OTG cable, Support directly copy files from the TF
card to the external USB drive.

Option ③： Connect PC or mobile devices to the SSID access point
named"XXX_D1_A39XXX", and access files at the FTP address ftp://192.168.0.1.

[Reminder]: Support IE, Chrome, Opera, Safari or Firefox browser login FTP to
view or download. If you need play the video you will need to install player
support for H.264 or MJPEG decoding format.

5. How to set

Record Parameters Settings

When BPI-D1 power is ON, video recording will start automatically according to the default set. If you want to set the BPI-D1 video parameters, you can refer to the following steps:

1. Switch on the WiFi and switch to the AP mode（The LED light will remain steady）. Connect any mobile devices (e.g. Smartphone, tablet or computer) to the WiFi, connection "**SSID=   "XXX_D1_A39XXX**" and enter the FTP address "ftp://192.168.0.1".
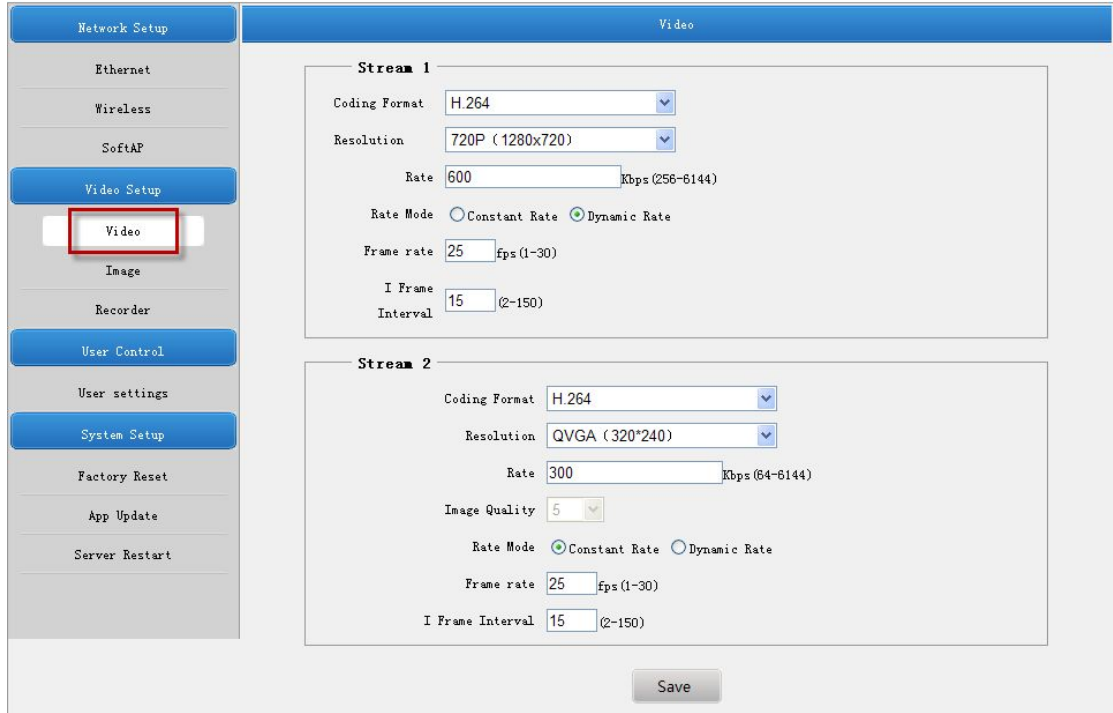
    [Reminder]: User Name: admin; **Password:** admin

2. Click the "Video Settings" or "Record Settings" can adjust the record parameters.

    [Reminder]:   After   saving   the   changed   settings   ，
                all setup are validated only after manually re-open after switching off the device.

Video Settings

"Video" related to the format of the final recorded and resolution, devices support the two coding formats which are H.264 and MJPEG; relevant parameters can be set manually according to the required. After setting，click "Save".
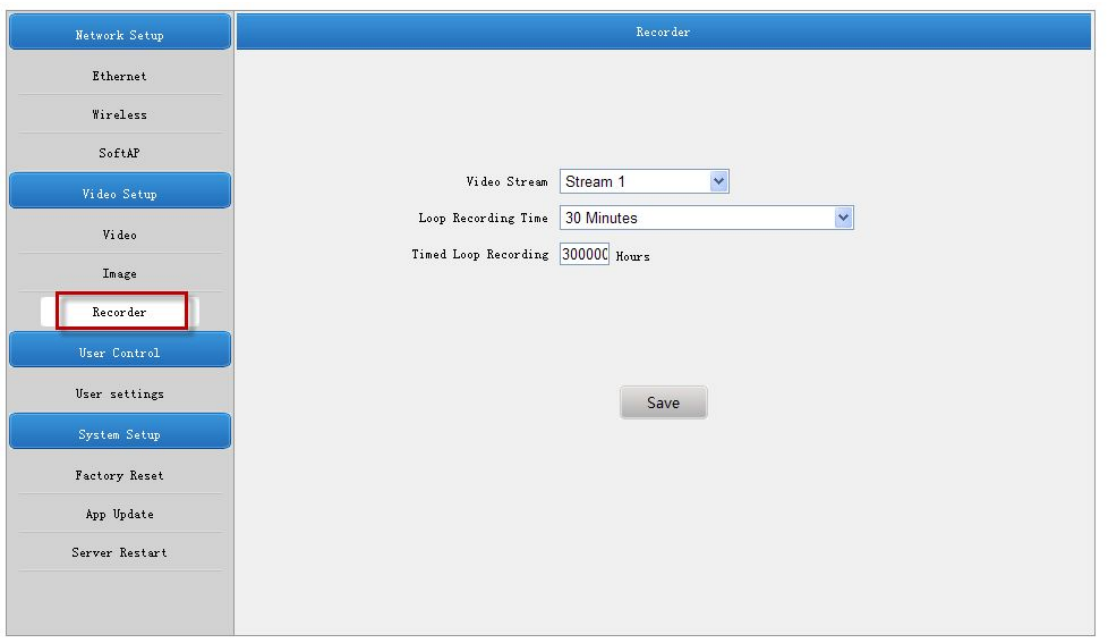

(Figure 10)

Record Settings

"Record "related to recording save time, the number of video files and the size of video files, devices support the two coding formats, setting Loop Recording Time and Timed Loop Recording; relevant parameters can be set manually according to the required. After setting，click "Save".

Video Stream: Choose the two streams in the "Video" which are H.264 and MJPEG.

Loop Recording Time: Finish a video and save a file according to setting recording time.

Timed Loop Recording: Start recording according to Loop Recording Time setting after switch on the device，beyond the setting time automatically stop recording.

(Figure 11)

[Reminder]: Video resolution depends on choosing a different video stream, and the generated video file size will be different.

Relevant Information

WiFi LED at work

BPI-D1 "function key" button, click open WiFi AP mode, and then click close. "Green LED "will flash for about 8 seconds:

LED Status	Description
Light	WiFi work in AP mode, you can search the AP SSID. (for example, XXX**_D1_A39XXX**)
Flash	WiFi work in slave mode, it will automatically connect the AP that set the parameters before.

WiFi ON/OFF Energy Consumption

WiFi ON/OFF to save the power consumption, the two statuses generally as follows:

1. WiFi OFF, BPI-D1 is recording and saved to TF card, current 5V power is about 250mA.
2. WiFi ON, BPI-D1 is recording and saved to TF card, at the same time BPI-D1 connected to the network through WiFi，current 5V power is about 350mA.
3. It can be used to predict 500mah lithium batteries can maintain BPI-D1 work 1 to 2 hours.

Program the Firmware

Important Notes before You Start:

1. You must use the compatible version of the firmware programingsoftware with source codes.
2. The software works on Windows XP Service Pack 3 and newer versions.
3. The software file path is located at: **/lamobo.dev/tool/burntool** in the code directory
4. Before programming the firmware, please make sure to copy and paste the3compiled files **"zImage," "root.sqsh4," and "root.jffs2"** to the root directory.

   (**Note:** The complied files are saved at: **/lamobo.dev/output**)

5,image download and forum: http://www.bananapi.com

How to Program the Firmware

1. Battery mode, press and hold the "primary key" 5 seconds off BPI-D1 power. Before the PC inserts BPI-D1 micro - USB programming cable, double-click firm programming tools icon, runs the burn tool. Holding down the "function key" and the micro - USB programming cable connecting to the PC, the module enters the programming mode. At this time BPI-D1 LED no instructions. If there is no lithium battery, you do not need to connect the micro USB power cable.
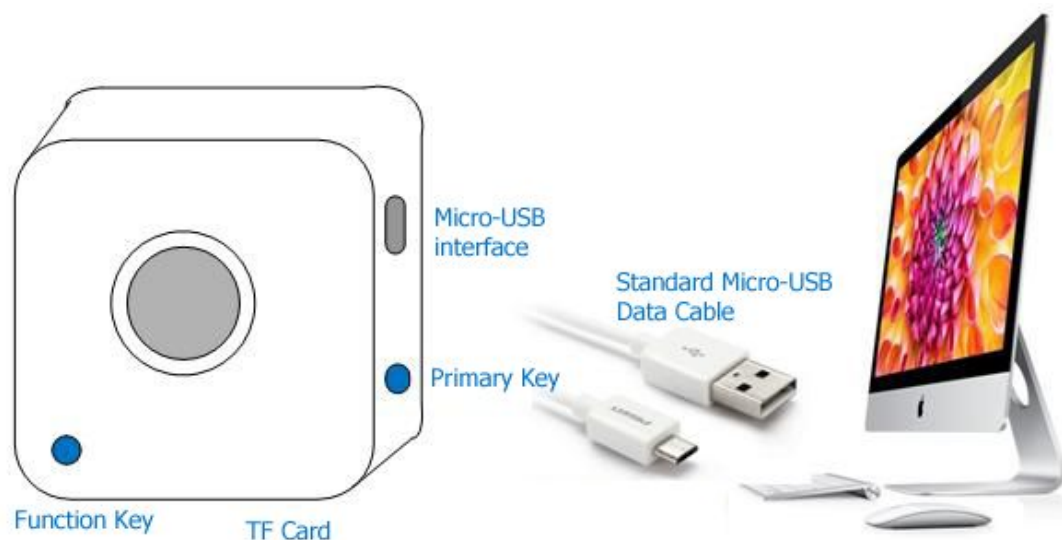
(Figure 12)

2. After the PC inserts BPI-D1 micro - USB programming cable, the firm programming tools will detect the launch of the application. Once connected, a yellow status bar will appear next to the device in the window, and the status will show "Ready" (please recheck and repeat the steps above if no response). Press the "Start" button on the top to start the firm programming automatically.
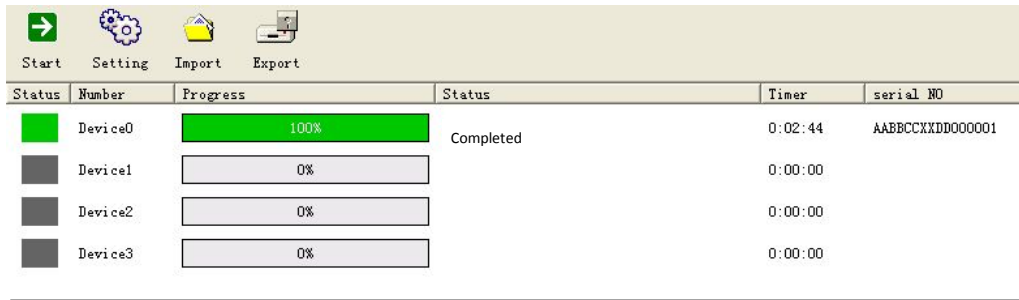

(Figure 13)

3. Burning completed, micro-USB data cable disconnected with PC.

Status Descriptions

The status, progress and elapsed time will appear in the programming window.

[Successful]

Once the status and progress bar turn green, the progress bar reaches 100%, and the status reads "Completed, "the firmware has been programmed successfully.
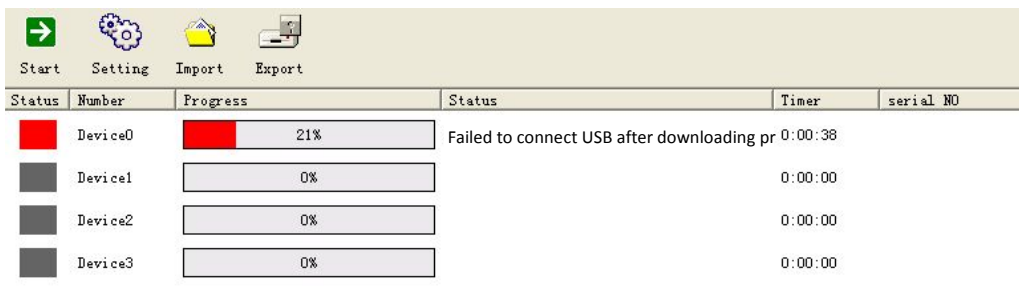

(Figure 14-Programing Successful)

[Unsuccessful]

When the status and progress bar turn red, the status area will display one of several error messages, indicating an unsuccessful programming attempt.

(Figure 15-Unsuccessful Programming)

If the operation is unsuccessful, please retry after adjusting the following settings:
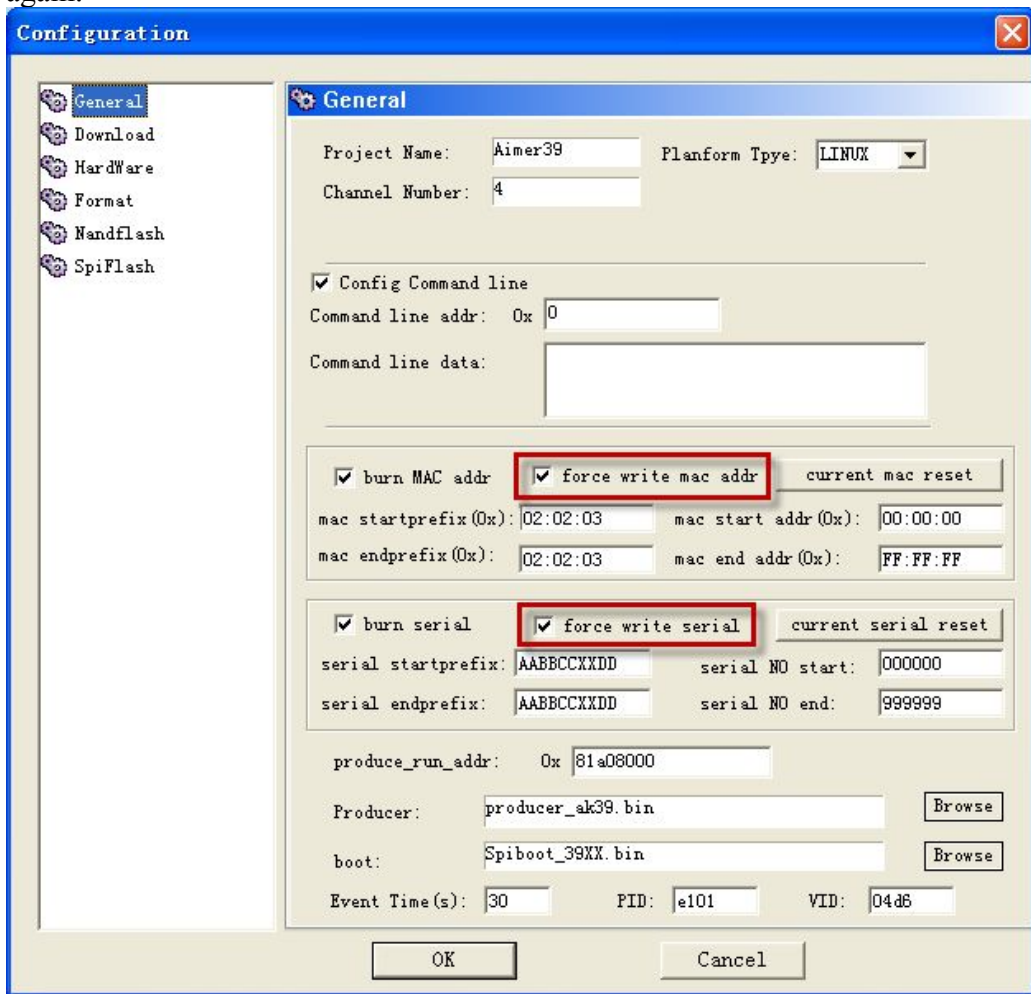
1. Click Settings, select "Researcher" as the User Name, leave the Password blank, and then select "OK".

(Figure 16)

2. Choose "General" on the left-side menu and check the two boxes "force write to the Mac address" and "force write serial number," and then select "OK."

3. Repeat steps 1-3 in the "How to Program the Firmware" and try again.

(Figure 17)

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for Development Boards & Kits - Other Processors *category:*

Click to view products by Sinovoip *manufacturer:*

Other Similar products are found below :

KIT_AURIX_TC233LP_TRB EVB-MEC1418MECC SPC56XVTOP-M ADZS-BF506F-EZLITE ADZS-SADA2-BRD 20-101-1252
T1023RDB-PC 20-101-1267 T1042D4RDB-PA ML610Q174 REFERENCE BOARD MPC574XG-MB BSC9132QDS C29XPCIE-RDB
KIT_TC1793_SK CC-ACC-18M433 P1010RDB-PB P1020RDB-PD P2020COME-DS-PB STM8S/32-D/RAIS T4240RDB-PB TRK-USB-
MPC5604B TWR-56F8200 CY3674 SPC58XXADPT176S MAX1464EVKIT TRK-MPC5606B RTE510Y470TGB00000R STM8128-
MCKIT MAXQ622-KIT# YRPBRL78G11 SPC58EEMU QB-R5F10JGC-TB YQB-R5F11BLE-TB SPC564A70AVB176
RTE5117GC0TGB00000R QB-R5F100LE-TB YR0K50571MS000BE YQB-R5F1057A-TB QB-R5F104PJ-TB CC-ACC-ETHMX
LFM34INTPQA SPC563M64A176S Y-BLDC-SK-RL78F14 P1021RDB-PC SPC58XCADPT176S RTE510MPG0TGB00000R
YRPBRX71M LFMAJ04PLT KITAURIXTC234LPSTRBTOBO1 OV-7604-C7-EVALUATION-BOARD