Banana Pi BPI-M2 ZERO

Contents

Introduction

The Banana Pi M2 Zero is an ultra compact single board computer which measures only 60mm*30mm. Its external interfaces are the same as the Raspberry Pi Zero W, and it will fit almost all cases and accessories for the Zero W. It uses the quad-core Cortex A7 Allwinner H2+ processor, with 512MB RAM. It's ideal for light-weight systems and space-limited applications. Like other members of the Banana Pi family, it supports both Linux and Android operating systems.

Overview zero with Allwinner H2+ chip

Overview zero with Allwinner H3 chip

BPI-M2 zero VS Raspberry pi Zero W

Banana Pi BPI-P2 Zero with Allwinner H2+ chip

BPI-4.0 OEM&ODM Successful case H3 for Network
security information analysis instrument

Banana Pi BPI-M2 Zero

Allwinner H2+
Quad-core Cortex-A7
512MB DDR3 SDRAM
WiFi & Bluetooth onboard
Mini HDMI

Key Features
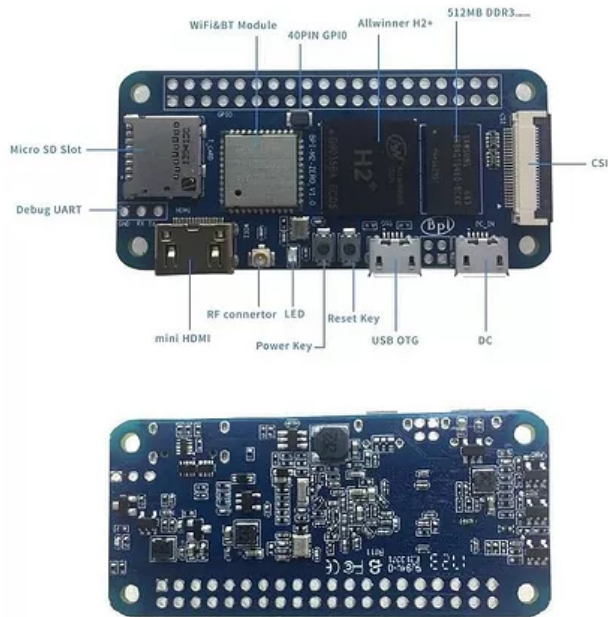
- CPU: Allwinner H2+, Quad-core Cortex-A7.

- 512MB DDR 3 SDRAM.
- WiFi (AP6212) & Bluetooth onboard.
- Mini HDMI.
- 40 Pin Raspberry Pi-compatible GPIO, including UART, SPI, I2C, etc.

Getting Start

Quick strart your BPI-M2 zero : Quick Start Banana pi SBC
How to development : Getting Start with M2 Zero
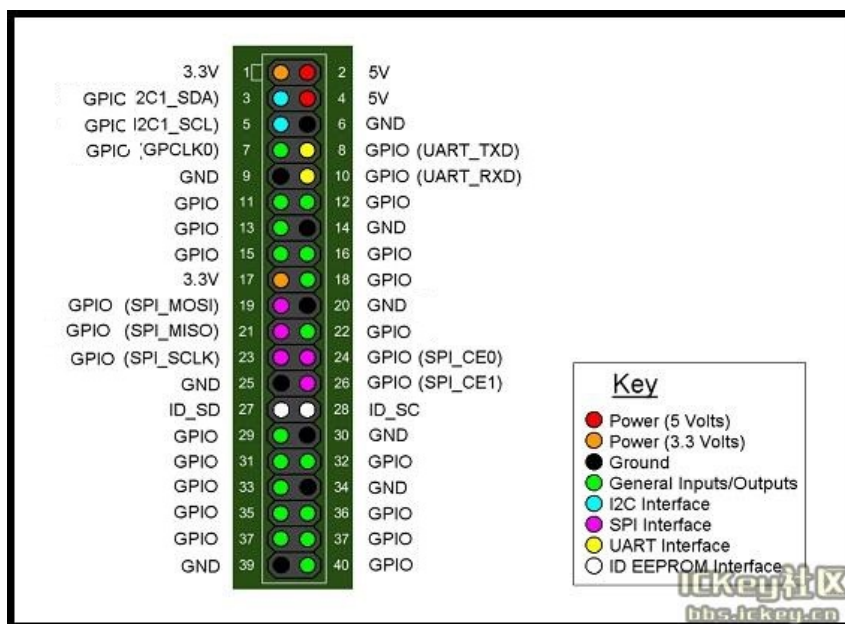
Hardware

Hardware interfaces

Hardware spec

HardWare Specification of Banana pi BPI-P2 Zero VS BPI-M2 zero VS Raspberry Pi Zero W			
Module	Banana Pi BPI-P2 Zero	Banana Pi BPI-M2 Zero	Raspberry Pi Zero W
CPU	H2+ Quad-core Cortex-A7 H265/HEVC 1080P	H2+ Quad-core Cortex-A7 H265/HEVC 1080P	Broadcom BCM2835 32 Bit 1 GHz ARM1176JZF-S single-core
GPU	Mali400MP2 GPU @600MHz,Supports OpenGL ES 2.0	Mali400MP2 GPU @600MHz,Supports OpenGL ES 2.0	VideoCore IV
Memory \ (SDRAM\)	512M DDR3(shared with GPU)	512M DDR3(shared with GPU)	512 MB DDR2
Onboard Storage	TF card \(Max. 64GB\)	TF card \(Max. 64GB\)	TF card \(Max. 64GB\)
Onboard Network	100M LAN	NOPE (but can extension with PIN define)	NOPE
PoE power	PoE function support	NOPE	NOPE
Onboard flash	8G eMMC	NOPE	NOPE
Onboard WIFI	SDIO AP6212（option AP6181、AP6335）	SDIO AP6212（option AP6181、AP6335）	802.11n wireless, Bluetooth 4.1
Video decoding	1080p@60fps,H.264 Video encoding 1080p@30fps,H.264	1080p@60fps,H.264 Video encoding 1080p@30fps,H.264	1080p30 H.264/MPEG-4 AVC high-profile decoder and encoder
Video input	A CSI input connector Camera	A CSI input connector Camera	CSI camera connector
Video Outputs	mini HDMI 1.4,1080P@30fps, DHCP	mini HDMI 1.4,1080P@30fps, DHCP	Mini HDMI and USB On-The-Go ports
Audio Output	Mini HDMI	Mini HDMI	Mini HDMI
Power Source	Micro USB with 5V/2A or PoE power	Micro USB with 5V/2A	5V/2A
USB 2.0 Ports	one USB 2.0 OTG	one USB 2.0 OTG	one USB 2.0 OTG
Buttons	Power Button, Reset Button	Power Button, Reset Button	Composite video and reset headers
Low-level peripherals	40 Pins Header,compatible with Raspberry Pi 3	40 Pins Header,compatible with Raspberry Pi 3	40 PIN
uart GPIO\(1x3\) pin	UART, ground	UART, ground	UART
LED	Power led & Status led	Power led & Status led	Power Status LED
IR	N/A	N/A	N/A
Supported OS	android linux	android linx	Linux
Product size	65mm X 52.5mm	65mm × 30mm	65mm x 30mm
Weight	30g	15g	9g

GPIO PIN define

Banana Pi BPI-M2 zero has a 40-pin GPIO header that matches that of the Model Raspberry Pi 3. Following is the Banana Pi GPIO Pinout:

40 PIN GPIO of Banana pi BPI-M2 zero			
GPIO Pin Name	Default Function	Function2：GPIO	Function3
CON2-P01	VCC-3V3		
CON2-P02	VCC-5V		
CON2-P03	TWI0-SDA	PA12-EINT12	
CON2-P04	VCC-5V		
CON2-P05	TWI0-SCK	PA11-EINT11	
CON2-P06	GND		
CON2-P07	PWM1	PA6-EINT6	
CON2-P08	UART3-TX	PA13-EINT13	SPI1-CS
CON2-P09	GND		
CON2-P10	UART3-RX	PA14-EINT14	SPI1-CLK
CON2-P11	UART2-RX	PA1-EINT1	
CON2-P12	UART3-CTS	PA16-EINT16	SPI1-MISO
CON2-P13	UART2-TX	PA0-EINT0	
CON2-P14	GND		
CON2-P15	UART2-CTS	PA3-EINT3	
CON2-P16	UART3-RTS	PA15-EINT15	SPI1-MOSI
CON2-P17	VCC-3V3		
CON2-P18	PC4	PC4	
CON2-P19	SPI0-MOSI	PC0	
CON2-P20	GND		
CON2-P21	SPI0-MISO	PC1	
CON2-P22	UART2-RTS	PA2-EINT2	
CON2-P23	SPI0-CLK	PC2	
CON2-P24	SPI0-CS	PC3	
CON2-P25	GND		
CON2-P26	PC7	PC7	
CON2-P27	TWI1-SDA	PA19-EINT19	
CON2-P28	TWI1-SCK	PA18-EINT18	
CON2-P29	PA7-EINT7	PA7-EINT7	
CON2-P30	GND		
CON2-P31	PA8-EINT8	PA8-EINT8	
CON2-P32	PL2-S-EINT2	PL2-S-EINT2	
CON2-P33	PA9-EINT9	PA9-EINT9	
CON2-P34	GND		
CON2-P35	PA10-EINT10	PA10-EINT10	
CON2-P36	PL4-S-EINT4	PL4-S-EINT4	
CON2-P37	PA17-EINT17	PA17-EINT17	SPDIF-OUT
CON2-P38	PA21-EINT21	PA21-EINT21	
CON2-P39	GND		
CON2-P40	PA20-EINT20	PA20-EINT20	

CSI Camera Connector specification:

The CSI Camera Connector is a 24-pin FPC connector which can connect external camera module with proper signal pin mappings. The pin definitions of the CSI interface are shown as below. This is marked on the Banana Pi board as "CSI".

24 PIN CSI Camera connector of Banana pi BPI-M2 Zero		
CSI Pin Name	Default Function	Function2：GPIO
CN3-P01	NC	
CN3-P02	GND	
CN3-P03	CSI0-SDA	PE13
CN3-P04	CSI0-AVDD	
CN3-P05	CSI0-SCK	PE12
CN3-P06	CSI0-Reset	PE14
CN3-P07	CSI0-VSYNC	PE3
CN3-P08	CSI0-PWDN	PE15
CN3-P09	CSI0-HSYNC	PE2
CN3-P10	CSI0-DVDD	
CN3-P11	CSI0-DOVDD	
CN3-P12	CSI0-D7	PE11
CN3-P13	CSI0-MCLK	PE1
CN3-P14	CSI0-D6	PE10
CN3-P15	GND	
CN3-P16	CSI0-D5	PE9
CN3-P17	CSI0-PCLK	PE0
CN3-P18	CSI0-D4	PE8
CN3-P19	CSI0-D0	PE4
CN3-P20	CSI0-D3	PE7
CN3-P21	CSI0-D1	PE5
CN3-P22	CSI0-D2	PE6
CN3-P23	GND	
CN3-P24	CSI0-DOVDD	

UART specification:

The jumper CON3 is the UART interface. For developers of Banana Pi, this is an easy way to get the UART console output to check the system status and log message.
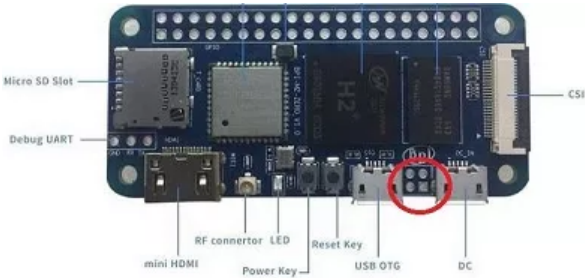
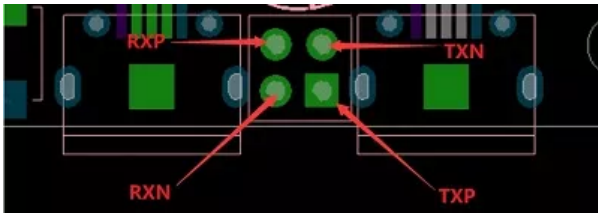| jumper CON3 of Banana pi BPI-M2 Zero		
CON3 Pin Name	Default Function	GPIO
CON3 P03	UART0-TXD	PA4
CON3 P02	UART0-RXD	PA5
CON3 P01	GND	

Development

Basic Development

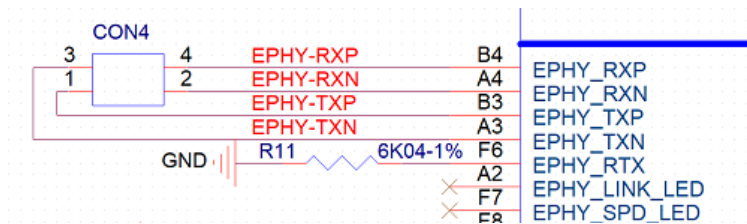### how to use zero 10/100 Ethernet

BPI-M2 zero not RJ45 interface ,but it support 100M network with PIN define.

PIN define:

schematic diagram:

test

Zero power with GPIO 5V input

BPI-M2 Zero 40 PIN GPIO have support 5V input , so you can use 5V input PIN to power zero board .

Resources

Documents

- schematic diagram: https://drive.google.com/file/d/0B4PAo2nW2KfnMW5sVkxWSW9qa28/view?usp=sharing
- DXF file :https://drive.google.com/file/d/0B4PAo2nW2KfnZGcycVk2bWhmWjA/view?usp=sharing
- CE FCC RoHS : BPI-M2 zero CE,FCC,RoHS (http://forum.banana-pi.org/t/bpi-m2-zero-ce-fcc-rohs-certification/4613)
- Allwinner documents:
    - allwinner H3 chip doc baidu link: https://pan.baidu.com/s/1qTULll2CR02d0Hw9itq1rw
    - Allwinner H2+ chip doc baidu link: https://pan.baidu.com/s/1TGMYr3rhizfhlg5hl6hLyg
- Banana Pi M2 Zero - Review and compare to RPI Zero:https://www.youtube.com/watch?v=CaXi1qbOvYk
- Banana Pi M2 Zero - Unboxing, Caratteristiche e Test (CPU, Gimp, WiFi, USB, Burntest)：https://www.youtube.com/watch?v=rioWNzPXBnM
- A Review of the Banana Pi M2 Zero Running openHAB : https://community.openhab.org/t/a-review-of-the-banana-pi-m2-zero-running-openhab/37652
- Banana Pi BPI-M2 Zero with OpenCV : https://bluexmas.tistory.com/category/OS/Banana%20Pi%20%EF%BC%8FBPI-Bit?page=2

Source code

- Android 4.4 source code

    download link: https://drive.google.com/open?id=0B_YnvHgh2rwjdWNEQzg1UDl1bUE

forum thread: http://forum.banana-pi.org/t/bpi-m2-android-4-4-source-code-download-link/3159

- Linux source code

    kernel 3.4 source code : https://github.com/BPI-SINOVOIP/BPI-M2Z-bsp

- BPI-M2 Zero Mainline linux kernel 4.19.0 (experimental)

    https://github.com/avafinger/bananapi-zero-ubuntu-base-minimal#whats-new-with-this-image-v5-experimental

- BPI-M2 zero Ubuntu 19.10 Eoan Ermine Mainline Kernel 5.3.5

    https://github.com/avafinger/bananapi-zero-ubuntu-base-minimal

Image Release

Android 4.4

2018-07-09 update Android 4.4

    Google Drive: https://drive.google.com/file/d/1fAwnXuJI9C8aAfVrD3gM0mIgPKQGWFBY
    Baidu Drive : https://pan.baidu.com/s/1zaUoVBK39AxZw6ou5bDv2g
    Forum pthread:
    http://forum.banana-pi.org/t/bananapi-bpi-m2z-h2-new-image-android4-4-release-2018-07-09/6223

2017-11-12 update Android 4.4

    Google Drive: https://drive.google.com/open?id=1TywrMLLxqJj23ql2jyzLruZw18V_XwX3
    Baidu Drive : https://pan.baidu.com/s/1c2pTXUo
    MD5: 67a5953dac47f3ca7a2628e1422a36e2
    Forum pthread:
    http://forum.banana-pi.org/t/bpi-m2-zero-new-image-android-4-4-version-v1/4384

Armbian

- Image Link:
    - Debian Jessie http://www.mediafire.com/file/rd58jqjp1vyx61e/Armbian_5.41_Bananapim2zero_Debian_jessie_default_3.4.113.img.zip
    - Ubuntu Xenial
    http://www.mediafire.com/file/lblc0l0c41c3cj8/Armbian_5.41_Bananapim2zero_Ubuntu_xenial_default_3.4.113_desktop.img.zip

- Forum thread:
    - http://forum.banana-pi.org/t/bpi-m2-zero-armbian-5-41-3-4-113-debian-jessie-ubuntu-xenial/5485

RetroPie

- RetroPie for Banana Pi M2 Zero v.1.2.1 beta

    mage Link : http://www.nintendont.it/download/nintendont-retropie-banana-pi-m2-zero-v-1-2-1-beta/
    Forum thread: http://forum.banana-pi.org/t/bpi-m2-zero-new-image-retropie-for-banana-pi-m2-zero-v-1-2-1-beta/4889

retrorangepi

- retrorangepi support BPI-M2+ BPI-M2 Zero : http://retrorangepi.download/download/index2.html

Raspbian

M2Z & P2Zero Raspbian 9.4

- Features Map http://wiki.banana-pi.org/M2Z_Image_Map#Raspbian_9.4

    HDMI-Version

        Google Drive : https://drive.google.com/open?id=14tsP-ctECFxFBsF7Lmuv_C-Bm7Xppl79
        Baidu Drive : https://pan.baidu.com/s/1gmg-qX235t5kpL1N9uHy5A (PinCode: 146j)
        Md5sum : 25aca018ee40a6df903e1f51b9d73327
        Forum pthread: http://forum.banana-pi.org/t/bananapi-bpi-m2z-bpi-p2-zero-h2-new-images-reapbian9-4-ubuntu16-04-
        release-2019-04-30/9166

2018-07-09

- Image Link:
    - Google Drive: https://drive.google.com/file/d/1XMVCWCWoWmhzL-c89rkqzZVE_k7xYCvd/view

- baidu Drive: https://pan.baidu.com/s/1ahXv3Hl7Dst7uBwz60pcrg 2
  - Forum thread:
    - http://forum.banana-pi.org/t/bananapi-bpi-m2z-h2-new-image-raspbian-ubuntu-release-2018-07-09/6221

Ubuntu

- BPI-M2 zero Ubuntu 19.10 Eoan Ermine Mainline Kernel 5.3.5

  https://github.com/avafinger/bananapi-zero-ubuntu-base-minimal/releases/tag/v2.4

- .2019-4-30 update BPI-M2 Zero & BPI-P2 Zero Ubuntu Server 16.04

  Features Map:http://wiki.banana-pi.org/M2Z_Image_Map#Kernel_3.4
  Image Links：

  > HDMI-Version
  > Google Drive : https://drive.google.com/open?id=1nTrali0w7GgcGatu-jxyJR-sF06rMN39
  > Baidu Drive : https://pan.baidu.com/s/100LiQcD7V2_AJ3EmYN8p0g (PinCode: q379)
  > Md5sum : f8aa74511677a0543d2af65115d7d0d0
  > Forum pthread: http://forum.banana-pi.org/t/bananapi-bpi-m2z-bpi-p2-zero-h2-new-images-reapbian9-4-ubuntu16-04-release-2019-04-30/9166

4.2018-4-30 update BPI-M2 Zero & P2Zero Ubuntu Desktop 16.04

  Features Map:http://wiki.banana-pi.org/M2Z_Image_Map#Kernel_3.4
  Image Links：

  > HDMI-Version
  > Google Drive : https://drive.google.com/open?id=14_qm7Nk3FIycIC95ghVyeFz2xEbKjuSx
  > Baidu Drive : https://pan.baidu.com/s/1LZmkxRnszlhfdLD0Ngg18g (PinCode: dqe1)
  > Md5sum : 25daaac1e678a5cc98259a82ea5ce53c
  > Forum pthread: http://forum.banana-pi.org/t/bananapi-bpi-m2z-bpi-p2-zero-h2-new-images-reapbian9-4-ubuntu16-04-release-2019-04-30/9166

- 2018-07-09 update

  Image Link:

  > Google Drive: https://drive.google.com/file/d/19WUVZGEeUaIXe5vPtGpsENvS61fPYmEi/view
  > baidu Drive: https://pan.baidu.com/s/1dg7okBYBkt_1U3saVqOMUw
  > Forum thread:http://forum.banana-pi.org/t/bananapi-bpi-m2z-h2-new-image-raspbian-ubuntu-release-2018-07-09/6221

- 2017-11-13 update

  Image Link:

  > Google Drive: https://drive.google.com/file/d/1Q4NxmO33RYtmECZ8BobW6DXzGWkvCs9F/view?usp=sharing
  > baidu Drive: http://pan.baidu.com/s/1gfvRUk7
  > Forum thread:http://forum.banana-pi.org/t/bpi-m2-zero-new-image-2017-11-13-ubuntu-16-04-mate-desktop-beta-bpi-m2z-sd-emmc-img/4172

FAQ

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