

Introduction

Banana Pi M3 is a super charged single board computer with an Octa-core processor and 2GB of RAM. Along side the elite processing unit, it features Gigabit Ethernet, 2 USB, SATA, WiFi, Bluetooth, and HDMI connection. It can run on a variety of operating systems including Android, Lubuntu, Ubuntu, Debian, and Raspbian.

Being a brother of the power hungry M2, the M3 does not want to rest while his brother goes to acquire two more cores. The M3 secretly mastered the powerful art of Octa-core to best even the M2. Unlike his careless brother, the M3 did not lose his SATA port.

Banana Pi is an open platform device, it is for anyone who wants to play and build with developer technology instead of simply using consumer technology. Backed by our community, starting a project and building servers is fun and rewarding. We welcome all companies, DIYers, and tech loving people within our community! Together, we can make a difference, we can discover our passions, inspire others, and build a practical project.



Overview: Allwinner A83T



Overview: front



Overview: back

BPI-M3

- *A83T ARM® Cortex™-A7 Octa-Core*
- *2GB LPDDR3 SDRAM/ eMMC On Board*
- *40Pins GPIO Header*
- *10/100/1000 Ethernet Out*
- *WiFi/Bluetooth 4.0 Module On Board*
- *SATA2.0 Supported*
- *Android Raspberry Pi and Linux etc. OS*

Key Features

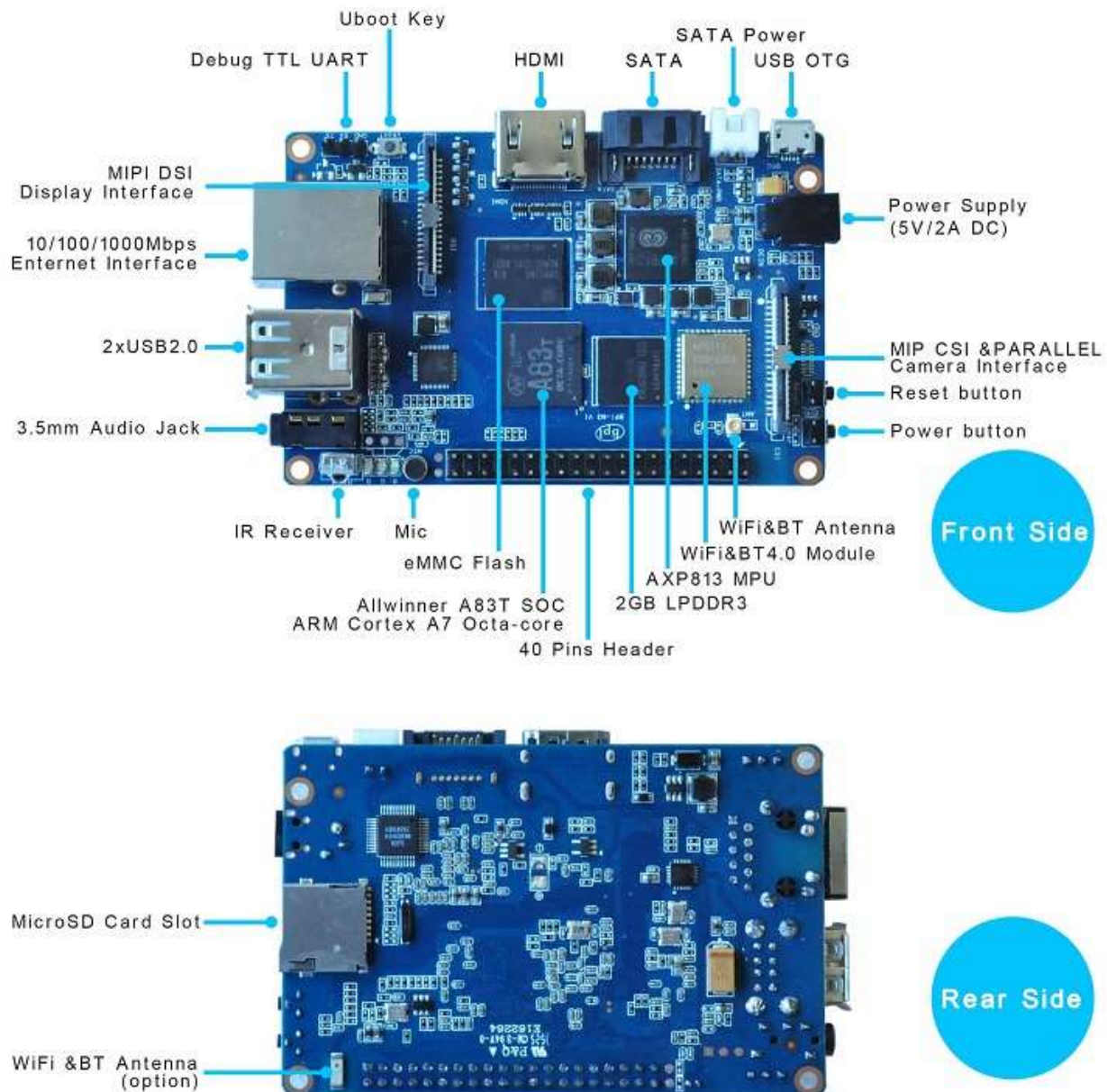
- Allwinner A83T Octa-core 1.8GHz Powerful CPU.
- 2 GB LPDDR3 memory.
- 8 GB eMMC storage.
- HDMI out
- IR control
- WiFi & Bluetooth onboard.
- MIPI DSI ingerface
- CSI camera interface

Getting Start

- How to burn image to BPI-M3 and begin [Quick Start Banana pi SBC](#)
- How to development [Getting Start with M3](#)

Hardware

Hardware interfact

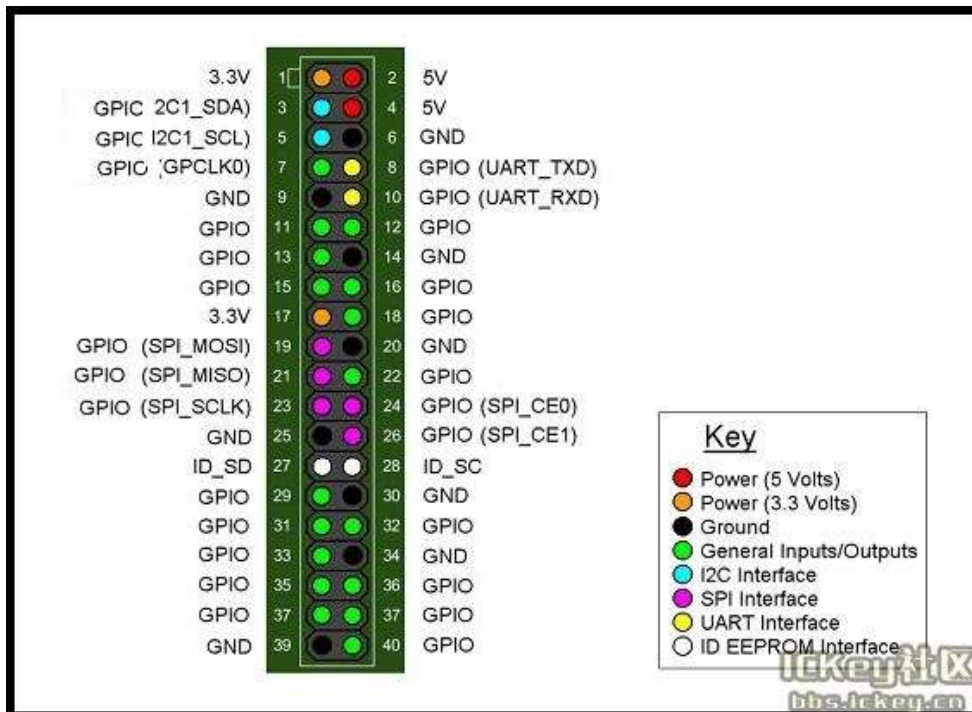


Hardware spec

Banana Pi BPI-M3	
CPU	Allwinner A83T ARM Cortex-A7 Octa-Core 1.8 GHz, 512KB L1 cache and 1MB L2 cache
GPU	PowerVR SGX544MP1 Comply with OpenGL ES 2.0 OpenCL 1x, DX9_3
Memory	2 GB LPDDR3 (shared with GPU)
Storage	On Board 8GB eMMC Flash, Micro SD-Card slot, SATA 2.0 Port (USB-to-SATA bridge)
Network	10/100/1000 Mbit/s Ethernet (Realtek RTL8211E/D) + Wi-Fi 802.11 b/g/n (AP6212) + Bluetooth BT4.0
Video Input(s)	A CSI input connector allows for the connection of a designed camera module
Video Output(s)	HDMI 1.4 (Type A Full), MIPI Display Serial Interface (DSI) for raw LCD Panel
Audio Input(s)	On board microphone
Audio Output(s)	3.5mm jack and HDMI
USB ports	USB 2.0 PORT (x2), USB OTG (x1)
Remote	IR Receiver (x1)
GPIO	40 Pin Header : GPIO (x28) and Power (+5V, +3.3V and GND). Some of I/O Pin can be used for specific functions as UART, I2C, SPI or PWM
Switches	Reset, Power and U-boot
LED	Power Status and 8P8C
Power Source	5 volt @2A via DC Power and/or Micro USB (OTG)
Size & Weight	92x60mm, 48g
OS	Android and Linux

GPIO PIN define

Banana Pi BPI-M3 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 define of Banana pi BPI-M3			
GPIO Pin Name	Default Function	Function2: GPIO	Function3
CON1-P01	VCC-3V3		
CON1-P02	DCIN		

CON1-P03	TWI2-SDA	PH5-EINT5	
CON1-P04	DCIN		
CON1-P05	TWI2-SCK	PH4-EINT4	
CON1-P06	GND		
CON1-P07	S-PWM	PL10-S-EINT10	
CON1-P08	UART2-TX	PB0-EINT0	
CON1-P09	GND		
CON1-P10	UART2-RX	PB1-EINT1	
CON1-P11	PC4 PC4		
CON1-P12	UART2-CTS	PB3-EINT3	
CON1-P13	PC7	PC7	
CON1-P14	GND		
CON1-P15	PC17	PC17	
CON1-P16	UART2-RTS	PB2-EINT2	
CON1-P17	VCC-3V3		
CON1-P18	PL8-ENT8	PL8-S-ENT8	
CON1-P19	SPI0_MOSI	PC0	
CON1-P20	GND		
CON1-P21	SPI0_MISO	PC1	
CON1-P22	PL9-EINT9	PL9-S-EINT9	
CON1-P23	SPI0_CLK	PC2	
CON1-P24	SPI0_CS	PC3	
CON1-P25	GND		
CON1-P26	PH10-ENT10	PH10-ENT10	
CON1-P27	TWI1-SDA	PH3-EINT3	
CON1-P28	TWI1-SCK	PH2-EINT2	
CON1-P29	PC18	PC18	
CON1-P30	GND		
CON1-P31	I2S1-BCLK	PG10-EINT10	UART3-TX
CON1-P32	I2S1-DIN	PG13-EINT13	UART3-CTS
CON1-P33	I2S1-LRCK	PG11-EINT11	UART3-RX
CON1-P34	GND		
CON1-P35	I2S1-DOOUT	PG12-EINT12	UART3-RTS
CON1-P36	PE5	PE5	
CON1-P37	PE4	PE4	
CON1-P38	OWA-DOOUT	PE18	
CON1-P39	GND		
CON1-P40	PE19	PE19	

CSI Camera Connector specification:

The CSI Camera Connector is a 40-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".

CSI camera GPIO of Banana pi BPI-M3		
CSI Pin Name	Default Function	Function2: GPIO
CN7-P01	IPSOUT	
CN7-P02	AFVCC	
CN7-P03	IPSOUT	
CN7-P04	IOVDD	
CN7-P05	GND	
CN7-P06	GND	
CN7-P07	CSI2-D3N	
CN7-P08	AVDD-CSI	
CN7-P09	CSI2-D3P	

CN7-P10	DVDD-CSI-R	
CN7-P11	GND	
CN7-P12	NC	
CN7-P13	CSI2-D2N	
CN7-P14	CSI-RST-R	PE16
CN7-P15	CSI2-D2P	
CN7-P16	CSI-STBY-R	PE17
CN7-P17	GND	
CN7-P18	CSI-PCLK	PE0
CN7-P19	CSI2-CKN	
CN7-P20	CSI-MCLK	PE1
CN7-P21	CSI2-CKP	
CN7-P22	CSI-HSYNC	PE2
CN7-P23	GND	
CN7-P24	CSI-VSYNC	PE3
CN7-P25	CSI2-D1N	
CN7-P26	CSI-D9	PE13
CN7-P27	CSI2-D1P	
CN7-P28	CSI-D8	PE12
CN7-P29	GND	
CN7-P30	CSI-D7	PE11
CN7-P31	CSI2-D0N	
CN7-P32	CSI-D6	PE10
CN7-P33	CSI2-D0P	
CN7-P34	CSI-D5	PE9
CN7-P35	GND	
CN7-P36	CSI-D4	PE8
CN7-P37	CSI-SCK	PE14
CN7-P38	CSI-D3	PE7
CN7-P39	CSI-SDA	PE15
CN7-P40	CSI-D2	PE6

Display specification

MIPI DSI (Display Serial Interface):

The display Connector is a 40-pin FPC connector which can connect external LCD panel (MIPI DSI) and touch screen (I2C) module as well. The pin definitions of this connector are shown as below. This is marked on the Banana Pi board as "DSI".

MIPI DSI PIN define of Banana pi BPI-M3		
DSI Pin Name	Default Function	Function2: GPIO
CN6-P01	VCC-MIPI	
CN6-P02	IPSOUT	
CN6-P03	VCC-MIPI	
CN6-P04	IPSOUT	
CN6-P05	GND	
CN6-P06	IPSOUT	
CN6-P07	GND	
CN6-P08	IPSOUT	
CN6-P09	NC	
CN6-P10	GND	
CN6-P11	NC	
CN6-P12	DSI-D0N	
CN6-P13	NC	
CN6-P14	DSI-D0P	
CN6-P15	NC	
CN6-P16	GND	

CN6-P17	TWI0-SDA	PH1-EINT1
CN6-P18	DSI-D1N	
CN6-P19	TWI0-SCK	PH0-EINT0
CN6-P20	DSI-D1P	
CN6-P21	TP-INT	PL7-S-EINT7
CN6-P22	GND	
CN6-P23	TP-RST	PL6-S-EINT6
CN6-P24	DSI-CKN	
CN6-P25	GND	
CN6-P26	DSI-CKP	
CN6-P27	LCD-BL-EN	PD29
CN6-P28	GND	
CN6-P29	LCD-RST	PD26
CN6-P30	DSI-D2N	
CN6-P31	LCD-PWR-EN	PD27
CN6-P32	DSI-D2P	
CN6-P33	GND	
CN6-P34	GND	
CN6-P35	LCD-PWM	PD28
CN6-P36	DSI-D3N	
CN6-P37	GND	
CN6-P38	DSI-D3P	
CN6-P39	AP-RESET#	
CN6-P40	GND	

UART specification:

The header CON4 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.

Uart debug pin of Banana pi BPI-M3		
CON2 Pin Name	Default Function	GPIO
CON2 P03	UART0-TXD	PB9
CON2 P02	UART0-RXD	PB10
CON2 P01	GND	

Software

Android

- How to burn android image to eMMC under windows : https://bananapi.gitbooks.io/bpi-m3/content/en/how_to_burn_android_image_to_emmc.html
- BPI-M3 How to control GPIO on Android : <https://bananapi.gitbooks.io/bpi-m3/content/en/howtocontrolgpioonandroid.html>

Linux

- How to burn Linux image to eMMC : <https://bananapi.gitbooks.io/bpi-m3/content/en/howtoburnlinuximagetoemmc.html>
- GPU for kernel 3.4 : <https://bananapi.gitbooks.io/bpi-m3/content/en/gpuforkernel34.html>
- How to rotate display screen : <https://bananapi.gitbooks.io/bpi-m3/content/en/howtorotatedisplayscreen.html>
- how to use fatload uEnv.txt & script.bin & kernel uImage : https://bananapi.gitbooks.io/bpi-m3/content/en/howtousefatloaduenvtxtscriptbinkernel_ui.html

Opnewrt

TinaLinux

Development

Basic Development

- How to setup docker env. to build github source code
- How to compile BPI-M3-bsp kernel on BPI-M3
- BPI-M3 BSP Cross Compile teach
- BPI-M3 fix rootmydevice issue for Security Alert

Resources

Source code

- BPI-M3 android 5.1 source code : https://drive.google.com/open?id=0B_YnvHgh2rwaGhleUE0eERTZU0
- BPI-M3 Linux BSP code : <https://github.com/BPI-SINOVOIP/BPI-M3-bsp>

Documents

- BPI-M3 schematic diagram : <https://drive.google.com/folderview?id=0B4PAo2nW2KfnfVqbjJGTFITTd1b1o1OUxDNk5ackVDM0RNUjBpZ0FQU19SbDk1MngzZWM&usp=sharing&tid=0B4PAo2nW2Kfndjh6SW9MS2xKSWs>
- BPI-M3 DXF file : <https://drive.google.com/file/d/0B4PAo2nW2KfnNm54VjBIUXhXekU/view>
- BPI-M3 3D design file : <https://drive.google.com/file/d/0B4PAo2nW2KfnYXVGWXBURDFSeTA/view>
- A83T chip Datasheet V1.4 : <https://drive.google.com/file/d/0B4PAo2nW2KfnM2VqeTR3SXpGdVE/view?usp=sharing>
- Allwinner A83T chip User_Manual V1.5.1 : <https://drive.google.com/file/d/0B4PAo2nW2KfnRjIqAU9uR0J0eIE/view?usp=sharing>
- android 5.0 development document (chinese) : <https://drive.google.com/file/d/0B4PAo2nW2KfnekpvMnINZ2p6NWs/view?usp=sharing>
- allwinner chip online datasheet and documents : <http://dl.linux-sunxi.org/>
- linux-sunxi wiki : http://linux-sunxi.org/Banana_Pi_M3
- BPI-M3 quality guarantee
 - BPI-M3 WIFI Lab test report : <https://bananapi.gitbooks.io/bpi-m3/content/en/bpi-m3wifilabtest.html>
 - BPI-M3 Validation test report : <https://bananapi.gitbooks.io/bpi-m3/content/en/bpi-m3validationtest.html>
 - BPI-M3 CE,FCC RoHS Certification : <http://forum.banana-pi.org/t/bpi-m3-ce-fcc-rohs-certification/984>

Image Release

Android 5.1.1 V5

- 2018-06-05 update
- HDMI-Version
 - Google Drive : https://drive.google.com/open?id=1mLXOAH_LPT-uqtwWvgvJXw4Vo95tFr_z
 - Baidu Cloud : <https://pan.baidu.com/s/1byqwqzz9SOIWHYfOabXKNw>
- LCD-Version
 - Google Drive : https://drive.google.com/open?id=1DAxQlws0eAVPAm0riH5HXc8M36SH_-sC
 - Baidu Cloud : https://pan.baidu.com/s/19I7a6Z75FuZb_f9Ls0fN5w
- 2017-05-11 update
- HDMI-Version
 - Google Drive : https://drive.google.com/open?id=0B_YnvHgh2rwcXkxczImOWxWV00
 - Baidu Cloud : <https://pan.baidu.com/s/1pKF3Ggj>
 - MD5: d7b7abf3443a49fb0f178ccf2f6e82d0
- LCD-Version
 - Google Drive : https://drive.google.com/open?id=0B_YnvHgh2rwcSkM5NHFYVdlakk
 - Baidu Cloud : <https://pan.baidu.com/s/1mi2YOeG>
 - MD5: b27dd45ac5fd1fd3b02db8ffd92c2871
- forum pthread : <http://forum.banana-pi.org/t/bpi-m3-new-image-android-5-1-version-v5-2017-05-11/3241>

Ubuntu

- 2018-05-31 update ubuntu 16.04 mate desktop
 - HDMI verison baidu cloud : https://pan.baidu.com/s/1UDktbDgGtXpbqIZn_Tl1Tg
- 2017-07-13 update ubuntu 16.04 mate desktop
- Image Link:
 - HDMI version Google Drive:https://drive.google.com/file/d/0B_YnvHgh2rwjRThoaHliWVVyZGM/view?usp=sharing
 - HDMI verison baidu cloud : <http://pan.baidu.com/s/1nu6hJs9>
 - Forum pthread: <http://forum.banana-pi.org/t/banana-pi-bpi-m3-new-image-ubuntu-16-04-mate-desktop-beta-bpi-m3-ov8865-sd-emmc-2017-07-13/3542>
 - LCD 7 verison Google Drive:https://drive.google.com/file/d/0B_YnvHgh2rwjVldzUENFQXpiTHc/view?usp=sharing
 - LCD 7 version baidu cloud : <http://pan.baidu.com/s/1o8Uc4Y2>
 - Forum pthread : <http://forum.banana-pi.org/t/banana-pi-bpi-m3-new-image-ubuntu-16-04-mate-desktop-beta-bpi-m3-lcd7-ov8865-sd-emmc-img-2017-7-13/3543>
 - LCD 5 Version Google Drive:https://drive.google.com/file/d/0B_YnvHgh2rwjUlpIVjB6LVVmMGc/view?usp=sharing
 - LCD 5 Version baidu cloud : <http://pan.baidu.com/s/1hsIJyG>
 - Forum thread:<http://forum.banana-pi.org/t/banana-pi-bpi-m3-new-image-ubuntu-16-04-mate-desktop-beta-bpi-m3-lcd5-ov8865-sd-emmc-img-2017-7-13/3544>

Rasbian

- 2018-5-28 update : Raspbian 8.0 V1.1
 - Image Link:
 - Google Drive:<https://drive.google.com/open?id=1DSZru8UQRikl6plmLZlt1DmySVozy0FA>
 - baidu cloud : https://pan.baidu.com/s/1Pz_6btHxj6F9w_6aw90Dww
 - Forum thread:
 - <http://forum.banana-pi.org/t/banana-pi-bpi-m3-new-image-release-raspbian-jessie-8-0-2018-5-28-v1-1/5847>

FreeBSD

FreeBSD on Allwinner (sunxi) systems for banana pi

Banana pi as the official partner of Allwinner , must banana pi product use Allwinner chip design . such as A20/A31S/H3/H2+/A64/A83T , and FreeBSD have support many Allwinner . so easy to use on banana pi board.

- Allwinner A20 (sun7i), a dual-core Cortex-A7 BPI-M1/BPI-M1+/BPI-R1
- Allwinner A31 and A31s (sun6i), a quad-core Cortex-A7 BPI-M2
- Allwinner A64 (sun50i), a quad-core Cortex-A53 BPI-M64
- Allwinner A83T (sun8i), an octa-core Cortex-A7 BPI-M3
- Allwinner H3 (sun8i), a quad-core Cortex-A7 BPI-M2+/BPI-M2+ EDU/

<https://wiki.freebsd.org/FreeBSD/arm/Allwinner>

Simplenas

- simplenas image : <https://simplenas.com/download/other/banana-m3>

Lakka TV

- Banana Pi M2+ with H3 chip
- Banana Pi M3 with A83T chip
- BPI-M1 and BPI-M1+ use A20 chip
- more about this : <https://bananapi.gitbooks.io/bpi-m3/content/en/lakkatv.html>