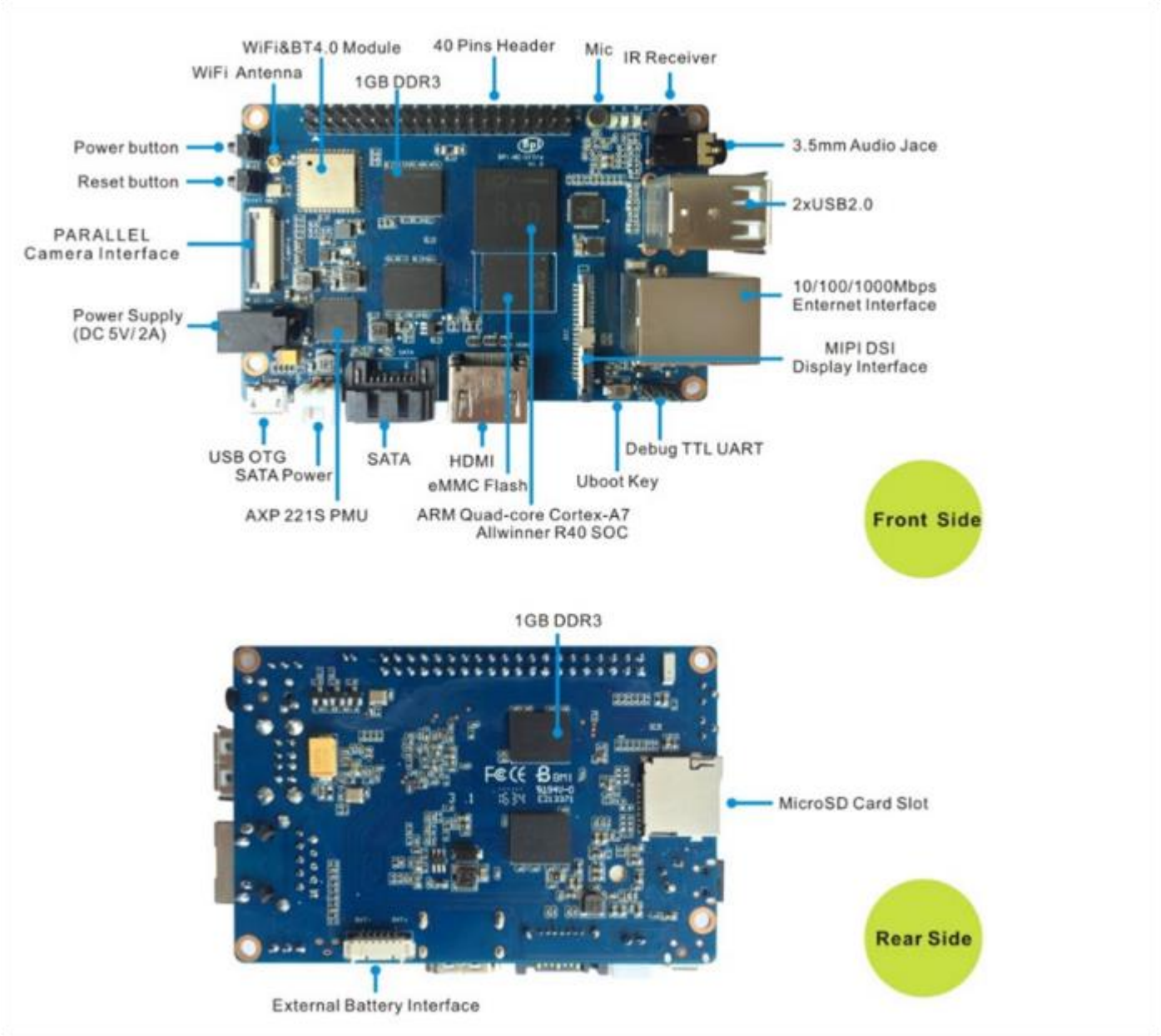
Banana pi BPI-M2 Ultra



Hardware spec

HardWare Specification of Banana pi BPI-M2 Ultra	
Soc	Allwinner R40/V40
CPU	quad-core cortex -A7,the most power efficient CPU core ARM's ever development
GPU	dual-core MALI-400 MP2 and runs at 500MHz, capable of 1.1 Gpixel/s throughput. Graphics capabilities are slightly higher than the original Xbox's level of performance. The GPU provides OpenGL ES 2.0, hardware-accelerated OpenVG, 1080p45 H.264 high-profile encode and de-code.

SDRAM	2 GB DDR3 with 733MHz\(shared with GPU\)
SATA	suppoort SATA interface
GPIO	40 Pins Header, 28×GPIO, some of which can be used for specific functions including UART, I2C, SPI, PWM, I2S.
On board Network	10/100/1000Mbps Ethernet \(Realtek RTL8211E/D\)
Wifi Module	WiFi 802.11 b/g/n \(AP 6212 module on board\)
Bluetooth	BT4.0
On board Storage	MicroSD \(TF\) card,8GB eMMC onboard
Display	4-lane MIPI DSI display,or RGB panel or LVDS panel,TV-out on HDMI V1.4
Video	Multi-format FHD video decoding, including Mpeg1/2, Mpeg4, H.263, H.264, etc H.264 decode up to 1080P60,support video encodeing:High-deinition\(HD\)H.264 video encoder is up to 1080P@45fps
Audio outputs	HDMI, analog audio \(via 3.5 mm TRRS jack\)
Camera	A CSI input connector Camera:Supports 8-bit YUV422 CMOS sensor interface,Supports CCIR656 protocol for NTSC and PAL,Supports 5M pixel camera sensor ,Supports video cap-ture solution up to 1080p@30fps
Audio input	On board microphone
USB	2 USB 2.0 host, 1 USB 2.0 OTG
Buttons	Reset button, Power button, U-boot button
Leds	Power status Led and RJ45 Led

IR	onboard IR receiver
DC Power	5V/2A with DC port
battery	3.7V lithium battery power support
Sizes	85mmX56mm,same size as raspberry pi 3
Weight	40g

GPIO PIN define

Banana Pi BPI-M2 Ultra 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 Ultra			
GPIO Pin Name	Default Function	Function2：GPIO	Function3
CON1-P01	VCC-3V3		
CON1-P02	DCIN		
CON1-P03	TWI2-SDA	PB21	PWM5
CON1-P04	DCIN		
CON1-P05	TWI2-SCK	PB20	PWM4
CON1-P06	GND		
CON1-P07	PB3	PB3	PWM1
CON1-P08	UART2-TX	PI18	SPI1_MOSI
CON1-P09	GND		

CON1-P10	UART2-RX	PI19	SPI1_MISO
CON1-P11	UART7-TX	PI20	PWM2
CON1-P12	UART2-CTS	PI17	SPI1_CLK
CON1-P13	UART7-RX	PI21	PWM3
CON1-P14	GND		
CON1-P15	PH25	PH25	CSI1-FIELD
CON1-P16	UART2-RTS	PI16	SPI1_CS0
CON1-P17	VCC-3V3		
CON1-P18	PH26	PH26	CSI1-HSYNC
CON1-P19	SPI0_MOSI	PC0	
CON1-P20	GND		
CON1-P21	SPI0_MISO	PC1	
CON1-P22	PH27	PH27	CSI1-VSYNC
CON1-P23	SPI0_CLK	PC2	
CON1-P24	SPI0_CS	PC23	
CON1-P25	GND		
CON1-P26	PH24	PH24	CSI1-PCLK

CON1-P27	TWI3-SDA	PI1	
CON1-P28	TWI3-SCK	PI0	
CON1-P29	PH0	PH0	CSI1-D0
CON1-P30	GND		
CON1-P31	PH1	PH1	CSI1-D1
CON1-P32	PD20	PD20	CSI1-MCLK
CON1-P33	PH2	PH2	CSI1-D2
CON1-P34	GND		
CON1-P35	PH3	PH3	CSI1-D3
CON1-P36	UART5-RX	PH7	CSI1-D7
CON1-P37	UART4-TX	PH4	CSI1-D4
CON1-P38	UART5-TX	PH6	CSI1-D6
CON1-P39	GND		
CON1-P40	UART4-RX	PH5	CSI1-D5

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 “Camera”.

CSi Camera connector GPIO of Banana pi BPI-M2 Ultra

CSI Pin Name	Default Function	Function2：GPIO
CN5-P01	NC	
CN5-P02	GND	
CN5-P03	CSI0-SDA	PI3
CN5-P04	CSI0-AVDD	
CN5-P05	CSI0-SCK	PI2
CN5-P06	CSI0-Reset	PI7
CN5-P07	CSI0-VSYNC	PE3
CN5-P08	CSI0-PWDN	PI6
CN5-P09	CSI0-HSYNC	PE2
CN5-P10	CSI0-DVDD	
CN5-P11	CSI0-DOVDD	
CN5-P12	CSI0-D7	PE11
CN5-P13	CSI0-MCLK	PE1
CN5-P14	CSI0-D6	PE10
CN5-P15	GND	
CN5-P16	CSI0-D5	PE9

CN5-P17	CSI0-PCLK	PE0
CN5-P18	CSI0-D4	PE8
CN5-P19	CSI0-D0	PE4
CN5-P20	CSI0-D3	PE7
CN5-P21	CSI0-D1	PE5
CN5-P22	CSI0-D2	PE6
CN5-P23	GND	
CN5-P24	CSI0-AFVCC	

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”.

40 PIN GPIO of Banana pi BPI-M2 Ultra		
DSI Pin Name	Default Function	Function2：GPIO
CN6-P01	VCC-3V3	
CN6-P02	IPSOUT	
CN6-P03	VCC-3V3	
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	PB19
CN6-P18	DSI-D1N	
CN6-P19	TWI0-SCK	PB18
CN6-P20	DSI-D1P	
CN6-P21	CTP-INT	PI10
CN6-P22	GND	

CN6-P23	CTP-RST	PI11
CN6-P24	DSI-CKN	
CN6-P25	GND	
CN6-P26	DSI-CKP	
CN6-P27	LCD-BL-EN	PH16
CN6-P28	GND	
CN6-P29	LCD-RST	PH17
CN6-P30	DSI-D2N	
CN6-P31	LCD-PWR-EN	PH18
CN6-P32	DSI-D2P	
CN6-P33	GND	
CN6-P34	GND	
CN6-P35	LCD-PWM	PB2
CN6-P36	DSI-D3N	
CN6-P37	GND	
CN6-P38	DSI-D3P	
CN6-P39	NC	

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.

CON4 Uart GPIO of Banana pi BPI-M2 Ultra		
CON2 Pin Name	Default Function	GPIO
CON2 P03	UART0-TXD	
CON2 P02	UART0-RXD	
CON2 P01	GND	