Introduction
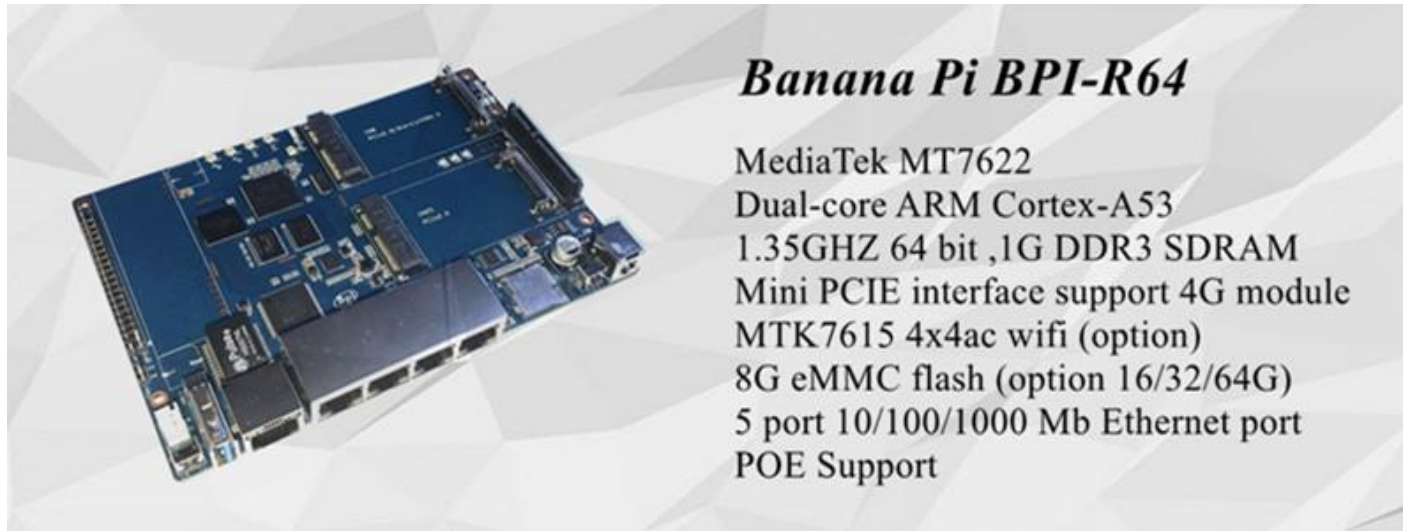
The Banana Pi R64 is a router based development board, which can run on a variety of open source operating systems including OpenWrt,Linux. It has 4 Gigabit LAN ports, 1 Gigabit WAN, and AC wifi AP function. use 64 bit chip design

Note: this board doesn't have HDMI interface

MTK MT7622

Highly integrated 4x4 802.11n and Bluetooth 5.0 platform with dedicated Network Accelerator MediaTek MT7622 is the world's first with 4x4n 802.11n/Bluetooth 5.0 system-on-chip designed and built for premium networking devices across several applications including routers/repeaters, home automation gateways, wireless audio, and wireless storage. The highly versatile chipset provides a single platform for popular 4X4 dual-band and tri-band routers/repeaters, providing maximum flexibility for manufacturers looking to build top-tier networking devices. The platform pairs high performance and extensively integrated functionality with a cost-effective approach.

The MT7622 contains MediaTek's Adaptive Network technology that allows for easy setup, network self-healing, roaming, band steering, Smart quality of service, advanced security and more. For audio and voice control applications, essential audio interfaces such as I2S, TDM and S/PDIF are included. And for Home Automation Gateways there is a rich array of slow I/O in addition to the integrated Wi-Fi, Bluetooth and Zigbee co-existence.

Powered by a 64-bit dual-core ARM Cortex-A53 processor clocked at 1.35GHz, the MT7622 provides a host of advanced connectivity options like SGMII/RGMII, PCIe, and USB, and 4X4 802.11n FEM integration. Extending the platform with 802.11ac to meet additional markets is simply done via MT7615 SoC.

The MT7622 introduces several best-in-class features such as Bluetooth 5.0 and a dedicated Network Accelerator engine with the MediaTek Wi-Fi Warp Accelerator, storage accelerator (SATA 3.0/eSATA Gen2) and HNAT HQoS calculations are offloaded from the CPU, lowering overall power-use and freeing up resources to avoid any potential slow-downs.

The advantage of the MediaTek Wi-Fi Warp Accelerator is two-fold. Firstly it connects the Gigabit+ class 802.11ac networking through to the Gigabit switch/WAN connection via multi-Gigabit internal pathways, ensuring no bottleneck. Secondly, its specialized design not only offloads the CPU from many-user throughput and QoS calculations, it does so at lower power. The result is the MediaTek Wi-Fi Warp Accelerator maintains a sustained high-performance when even supporting multiple, simultaneous heavy users.

Integrated Bluetooth allows for a direct, local wireless connection via App for easy configuration of the router/Wi-Fi settings. The latest Bluetooth 5.0 quadruples range and doubles speed versus previous 4.x technologies, allowing new and innovative possibilities.

Key Features

- MediaTek MT7622,1.35GHZ 64 bit dual-core ARM Cortex-A53
- 1G DDR3 SDRAM
- Mini PCIE interface support 4G module
- built-in 4x4n 802.11n/Bluetooth 5.0 system-on-chip
- MTK7615 4x4ac wifi (option)
- support 1 SATA interface
- MicroSD slot supports up to 256GB expansion
- 8G eMMC flash (option 16/32/64G)
- 5 port 10/100/1000 Mb Ethernet port
- (1) USB 3.0
- Slow I/O:ADC, Audio Amplifier, GPIO, I2C, I2S, IR, PMIC I/F, PWM, RTC, SPI, UART
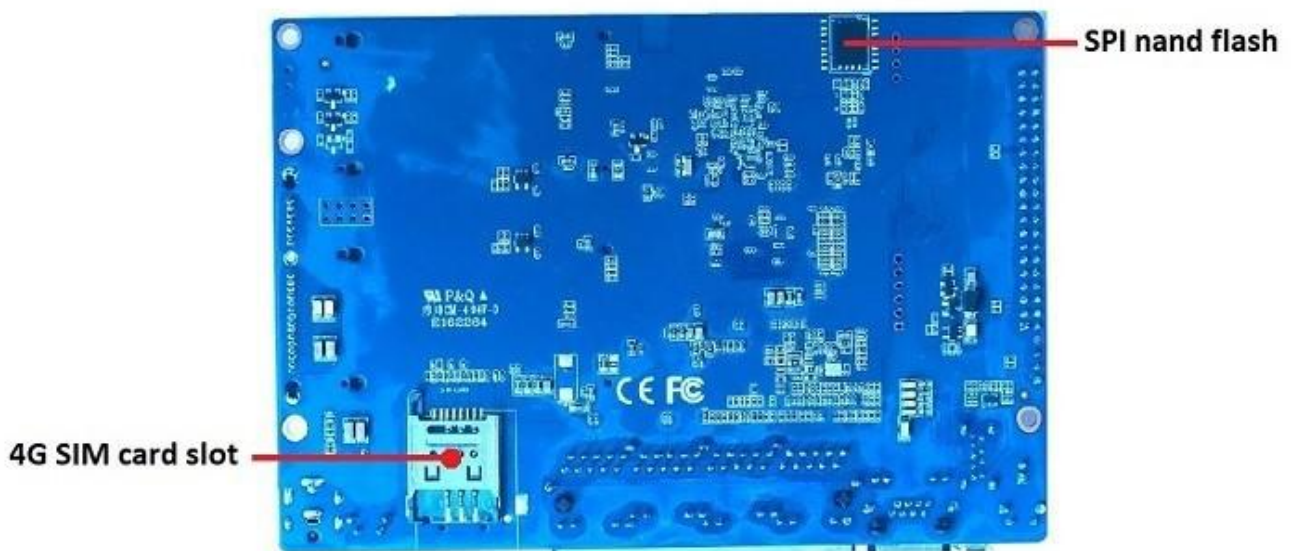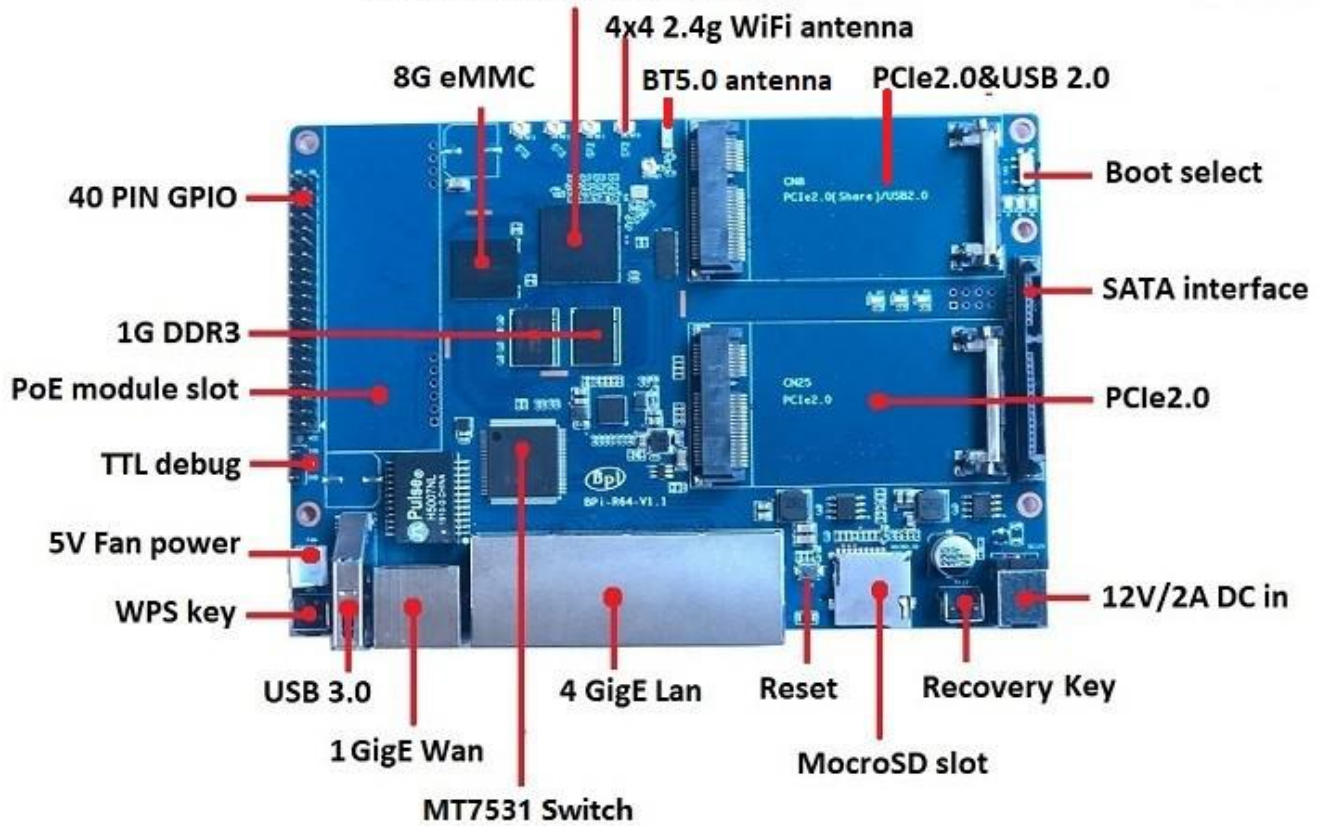- POE function support

Getting Start

Read more for development :[Getting Started with R64](#)

Frank wiki : http://fw-web.de/dokuwiki/doku.php?id=en:bpi-r64:start

Hardware interface

MediaTek MT7622
1.35GHZ 64 bit dual-core ARM Cortex-A53

4x4 2.4g WiFi antenna

8G eMMC

BT5.0 antenna   PCIe2.0&USB 2.0

40 PIN GPIO

CN8
PCIe2.0(Share)/USB2.0

Boot select

SATA interface

1G DDR3

PoE module slot

CN25
PCIe2.0

PCIe2.0

TTL debug

Pulse
H5007NL

BPi
BPi-R64-V1.1

5V Fan power

12V/2A DC in

WPS key

USB 3.0   4 GigE Lan   Reset   Recovery Key

1 GigE Wan   MocroSD slot

MT7531 Switch

SPI nand flash

4G SIM card slot

the inner and outer diameter of the power plug adapter
datasheet:https://drive.google.com/file/d/1k3AWmYOs2XE7lnRxCyytZu0Vpq_Bzcu_/view?usp=sharing
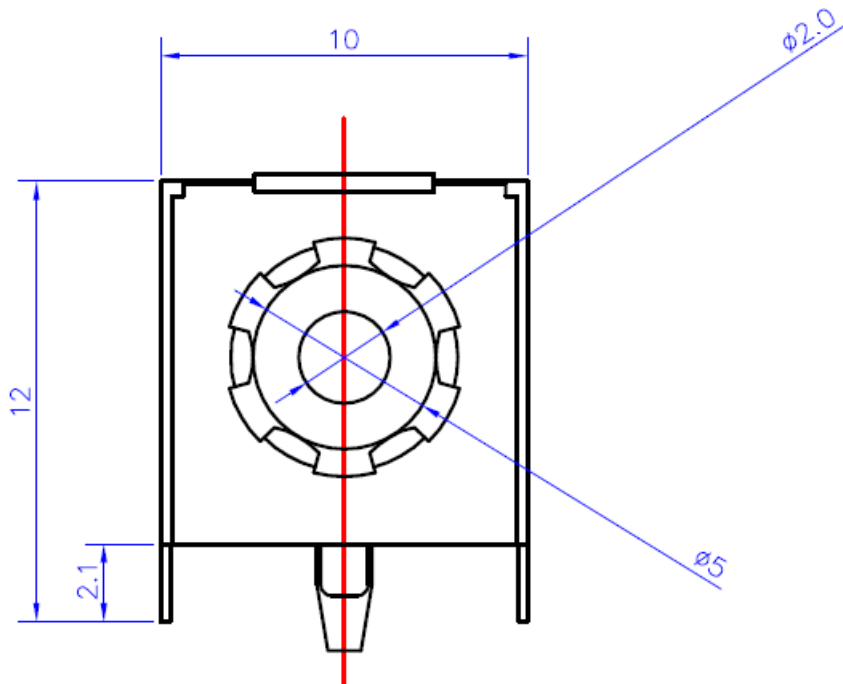
Hardware spec

HardWare Specification of Banana pi BPI-R64	
CPU	MediaTek MT7622,1.35GHZ 64 bit dual-core ARM Cortex-A53
SDRAM	1 GB DDR3
SATA	support 1 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	5 10/100/1000Mbps Ethernet
Wifi	built-in 4x4n 802.11n (800Mbps) sysem-on-chip and MTK7615 4x4ac wifi Module (1733Mbps) (option)
Bluetooth	Bluetooth 5.0 system-on-chip

On board Storage	MicroSD \(TF\) card,8GB eMMC onboard
mini PCIE	1 mini pcie interface for 4G
USB	1 USB 3.0 host
Buttons	Reset button
Leds	Power status Led and RJ45 Led
IR	PIN define with GPIO
DC Power	12V/2A with DC in
POE	support POE module interface,can add POE module
Sizes	148 mm × 100.5mm same as Banana Pi BPI-R3 and Banana Pi BPI-R2

PoE support

we design PoE function for BPI-R64 ,so easy to add PoE module to support PoE function,PoE modue can support IEEE 802.3bt PoE standard ,Max support 12V/3A to power BPI-R64
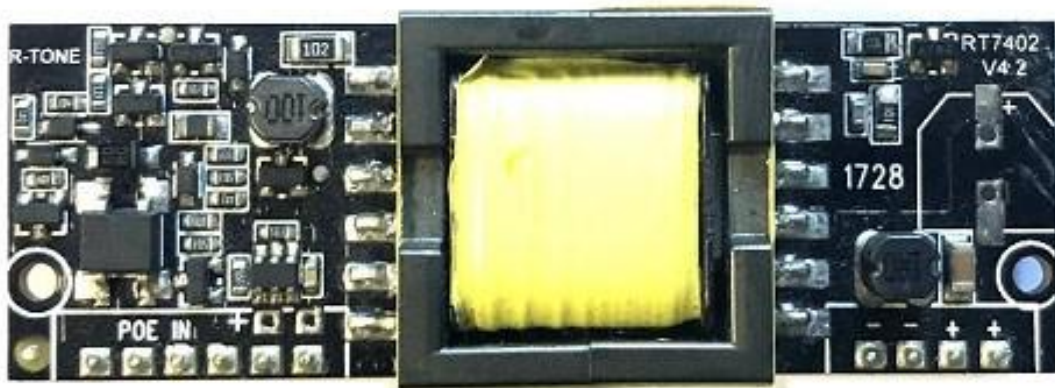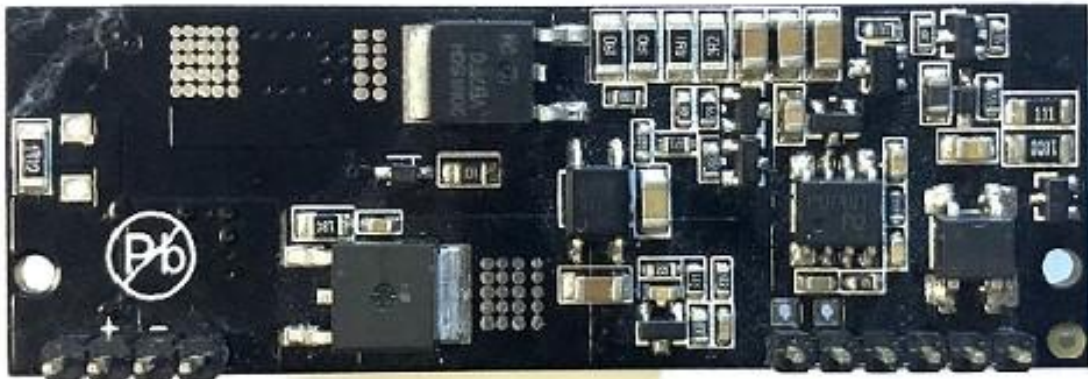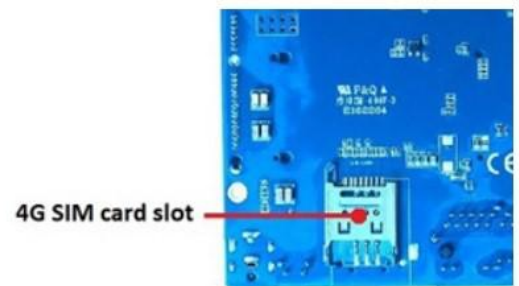

more PoE module spec

[BPI-7402 IEEE 802.3at PoE module](#)

4G support

1, use pcie interface standard module ,and use SIM card slot onboard

2,use 4G extend module via USB port

- USB 4G module : http://wiki.banana-pi.org/4G_module_via_USB

BPI-MT7615 802.11 ac wifi 4x4 dual-band

we have design a MT7615 802.11 ac wifi module ,can use on BPI-R64

MT7615 is a highly integrated Wi-Fi single chip which support 1733 Mbps PHY rate,It fully compies with IEEE 802.11ac and IEEE802.11 a/b/n standards,offering feature-rich wireless connecivity at high stand-ards,and delivering reliable,cost-effective throughput from and extended distance.

BPI-MT7615 802.11 ac wifi 4x4 dual-band module

BPI-R64 + MT7615 function test

BPI-R64 GPIO Pin define