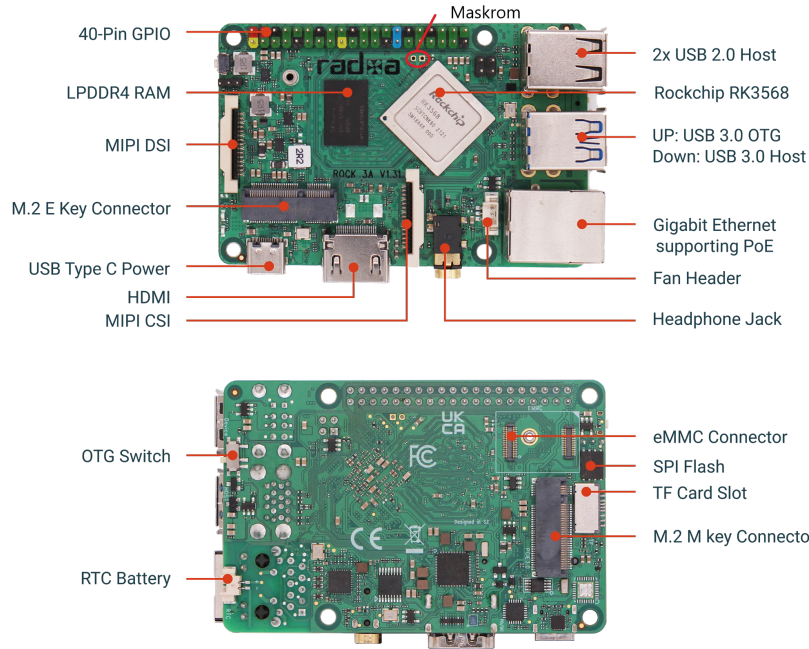


# Hardware interface description

## Interface overview



## Power

Support QC 3.0/2.0 adapter, 9V/2A, 12V/1.5A

## Debug Serial Port

## Ethernet Port

## 40 PIN GPIO Header

### GPIO voltage

Voltage Range

Type	Voltage	Tolerance
GPIO	3.3V	3.63V
ADC	1.8V	1.98V

### GPIO interface

ROCK 3A provides a 40pin GPIO socket, which is compatible with most sensor applications on the market.

Tip: Actual compatibility is subject to actual usage.

v1.3+ v1.2

GPIO number	Function4	Function3	Function2	Function1	Pin#	Pin#	Function1	Function2	Function3	Function4	GPIO number
				+3.3V	1	2	+5.0V				
32	CAN1_RX_M0	UART3_RX_M0	I2C3_SDA_M0	GPIO1_A0	3	4	+5.0V				
33	CAN1_TX_M0	UART3_TX_M0	I2C3_SCL_M0	GPIO1_A1	5	6	GND				
13		PWM1_M1	I2C2_SCL_M0	GPIO0_B5	7	8	GPIO0_D1	UART2_TX_M0			25
				GND	9	10	GPIO0_D0	UART2_RX_M0			24
116		UART7_TX_M1	PWM14_M0	GIO3_C4	11	12	GPIO3_A3				99
117		UART7_RX_M1	PWM15_IR_M0	GPIO3_C5	13	14	GND				
16		UART0_RX	PWM1_M0	GIO0_C0	15	16	GPIO0_B6	I2C2_SDA_M0	PWM2_M1		105
				+3.3V	17	18	GPIO3_B2	UART4_TX_M1	PWM9_M0		106
147	CAN1_TX_M1	SPI3_MOSI_M1	PWM15_IR_M1	GPIO4_C3	19	20	GND				
149	UART9_TX_M1	SPI3_MISO_M1	PWM12_M1	GPO4_C5	21	22	GPIO0_C1	PWM2_M0	UART0_TX		113
146	CAN1_RX_M1	SPI3_CLK_M1	PWM14_M1	GIO4_C2	23	24	GPIO4_C6	PWM13_M1	SPI3_CS0_M1	UART9_RX_M1	150
				GND	25	26	GPIO4_D1	SPI3_CS1_M1			
12	USB_DP	CAN0_RX_M0	I2C1_SDA	GIO0_B4	27	28	GPIO0_B3	I2C1_SCL	CAN0_TX_M0	USB_DM	139
95			UART8_TX_M1	GPIO2_D7	29	30	GND				
96			UART8_RX_M1	GPIO3_A0	31	32	GPIO3_C2	UART5_TX_M1			114
115		UART5_RX_M1	SPI1_CLK_M1	GPIO3_C3	33	34	GND				
100				GPIO3_A4	35	36	GPIO3_A2				103
				SARADC_VIN5	37	38	GPIO3_A6				102
				GND	39	40	GPIO3_A5				101

### More details about 40-pin Header In V1.3+

- Pins marked with color orange are designed for debug console.
- PWM: x7, PWM1 / PWM2 / PWM9 / PWM12 / PWM13 / PWM14 / PWM15
- SPI: x1, SPI3
- I2C: x3, I2C1 / I2C2 / I2C3
- UART: x6, UART0 / UART3 / UART5 / UART7 / UART8 / UART9
- ADC: x1, SARADC\_VIN5
- CAN: x2, CAN0 / CAN1
- USB 2.0: x1, USB\_DP(PIN#27) + USB\_DM(PIN#28)
  - When we select this USB function, you need to modify the hardware like this:
  - -> Remove R90526 R90527
  - -> Add R90536 R90537

### USB Function Configuration on 40-Pin

On the ROCK 3A's 40-Pin interface, the following pins can be configured for USB 2.0:

- USB2\_CON\_DM: Pin number 28, resistor location R90537.
- USB3\_CON\_DP: Pin number 27, resistor location R90536.

By default, Pin-27 can be configured in software for functions such as GPIO0\_B4 (see 40-Pin Pinout), while the USB3\_CON\_DP signal is not activated on the hardware. Pin-28 can be configured in software for functions such as GPIO0\_B3 (see 40-Pin Pinout), and the USB2\_CON\_DM signal is also not activated on the hardware. To change these pins to USB functions, please follow the steps below to modify the reserved resistors:

- **Remove the 0-ohm resistors at R90526 and R90527.**
- **Solder 0-ohm resistors at R90537 and R90536.**



TIP

The schematic and resistor locations can be viewed and downloaded from the hardware documentation. [Hardware Documentation Download](#)

 [OPERATION NOTE]

This procedure requires soldering skills, and it is recommended that it be performed by an experienced technician.

## **Bluetooth**

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