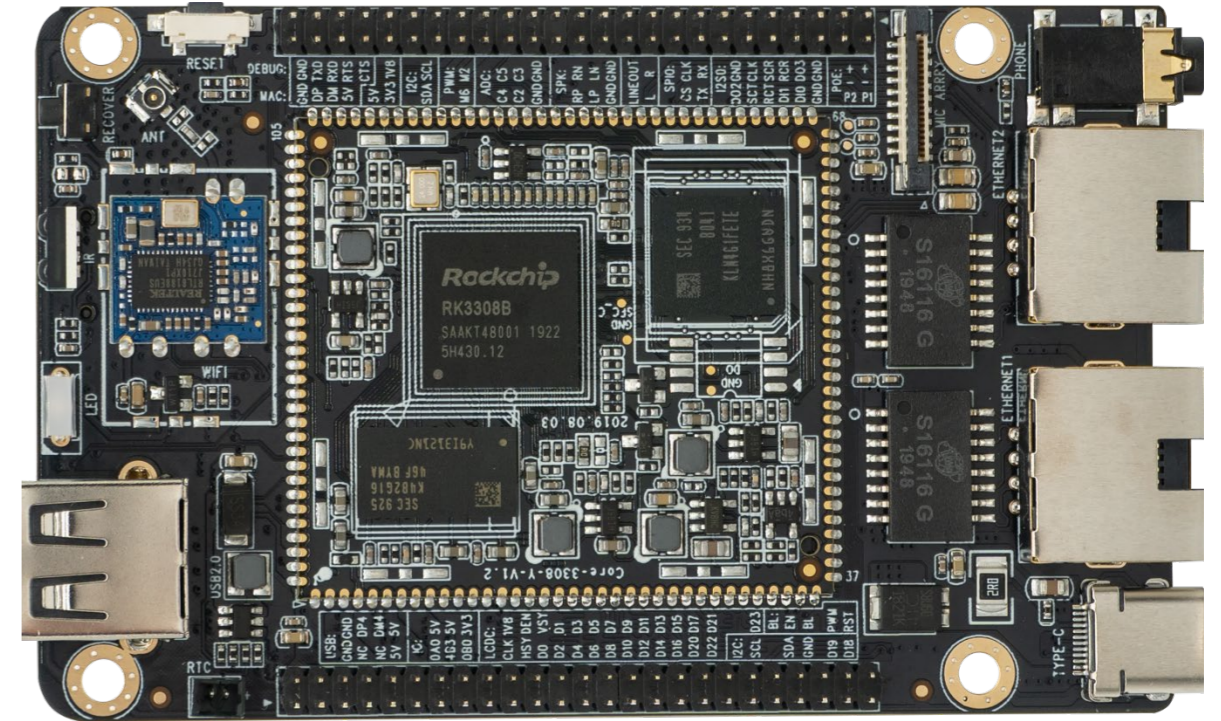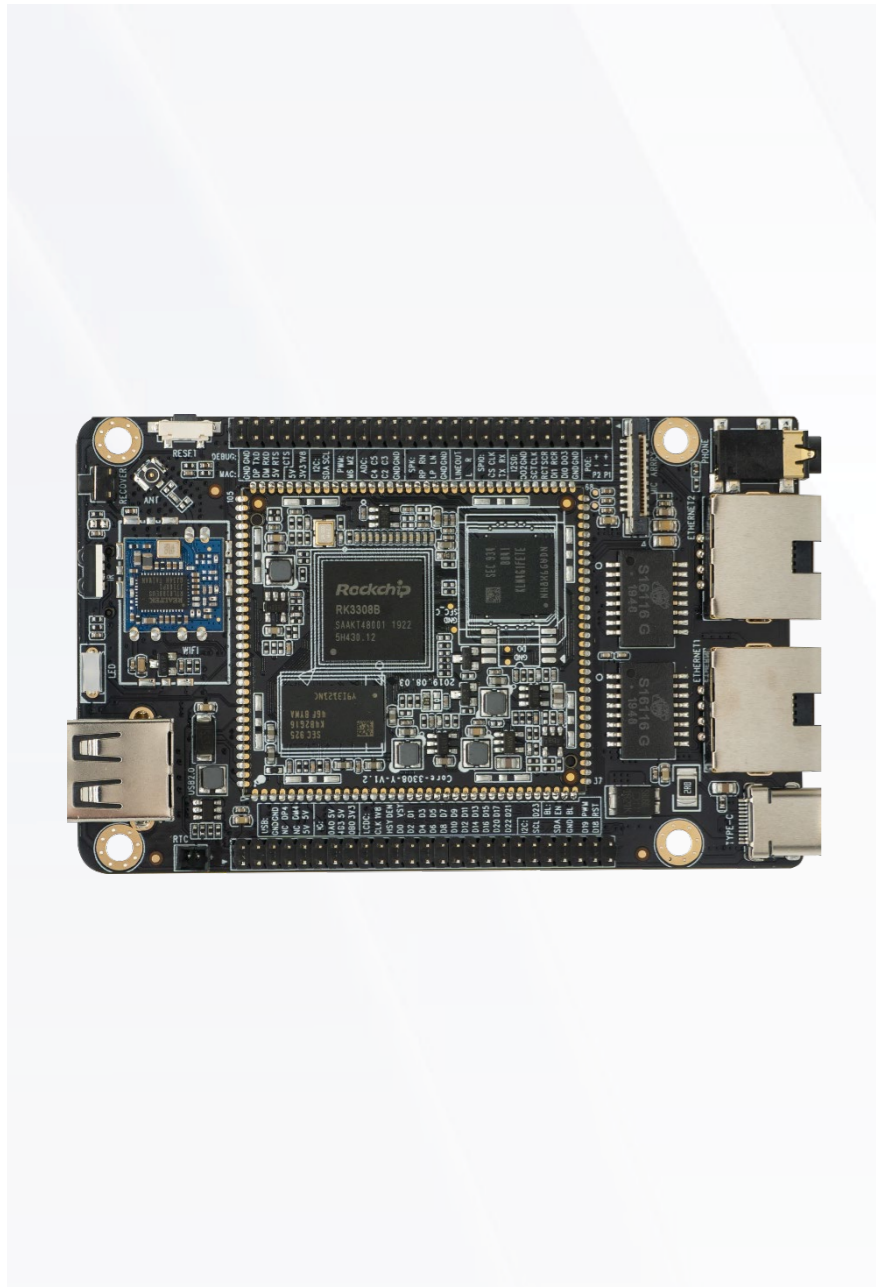# ROC-RK3308B-CC Plus

Quad-core 64-bit open source Mainboard

V1.0 2024-2-22

T-CHIP INTELLIGENCE TECHNOLOGY

Firefly

Product features

RK3308B dedicated IoT processors

Rockchip RK3308B dedicated IoT processor, based on ARM quad-core 64-bit Cortex-A35 core, with a frequency of 1.3GHz, integrated high-performance Codec and Hardware VAD, and directly supports up to 8 channels of analog MIC array + mining.

Powerful on-screen application capabilities

It has powerful display driving capabilities, supports RGB/MCU displays such as 4-inch/7-inch, and can support up to 1280×720 resolution.

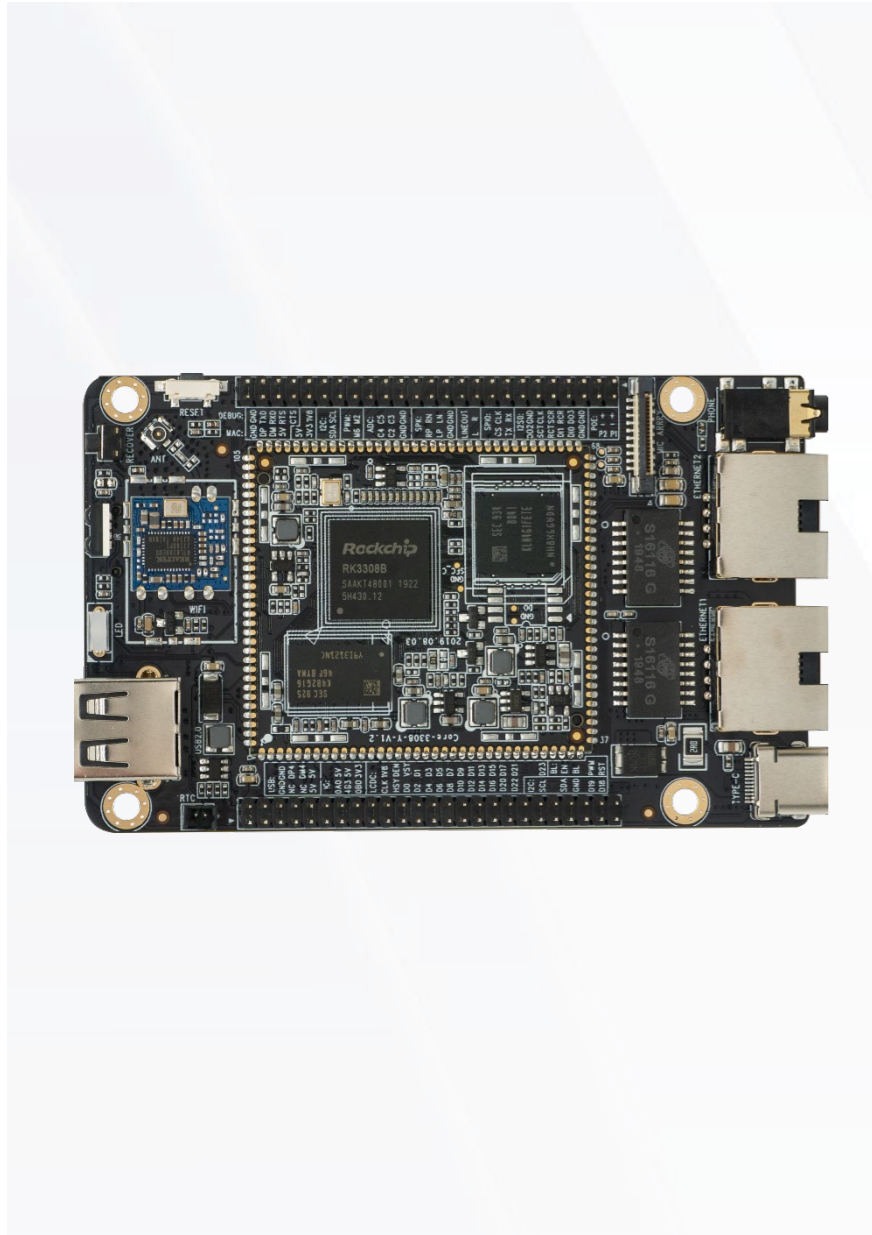### Configure the far-field microphone array board

The configurable far-field microphone array board includes 4 digital/analog microphones, supports keyword wake-up, echo noise cancellation, voice activation detection, and sound source localization, greatly improving the precision and accuracy of speech recognition.

Voice calls, interconnection

It is not limited by the transmission distance, as long as there is a network connection, you can keep the call, and can realize the functions of sensitive word filtering and automatic saving of call recording.
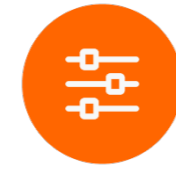
Product features

Sweeping robot, intelligent integration

It can be connected to external lidar sensors, ultrasonic sensors, infrared sensors, Hall sensors and other components to achieve precise positioning, automatic obstacle avoidance, fall prevention, intelligent path planning, intelligent alarm, automatic recharge detection and other functions.

Supports a wide range of IOT systems and services

It supports Buildroot (Linux/QT) embedded system, ROS (Robot os) robot system, and supports a variety of voice systems and services such as iFLYTEK and Amazon Alexa

Abundant peripheral expansion interfaces

It has PWM×3, I2C×3, UART×3, SPI×1, I2S ×1, ADC×4, LineOut and other expansion interfaces to meet the needs of various application scenarios

Wide range of application scenarios

It is widely used in scenarios such as IoT IoT, intelligent voice interaction, and audio input/output processing.
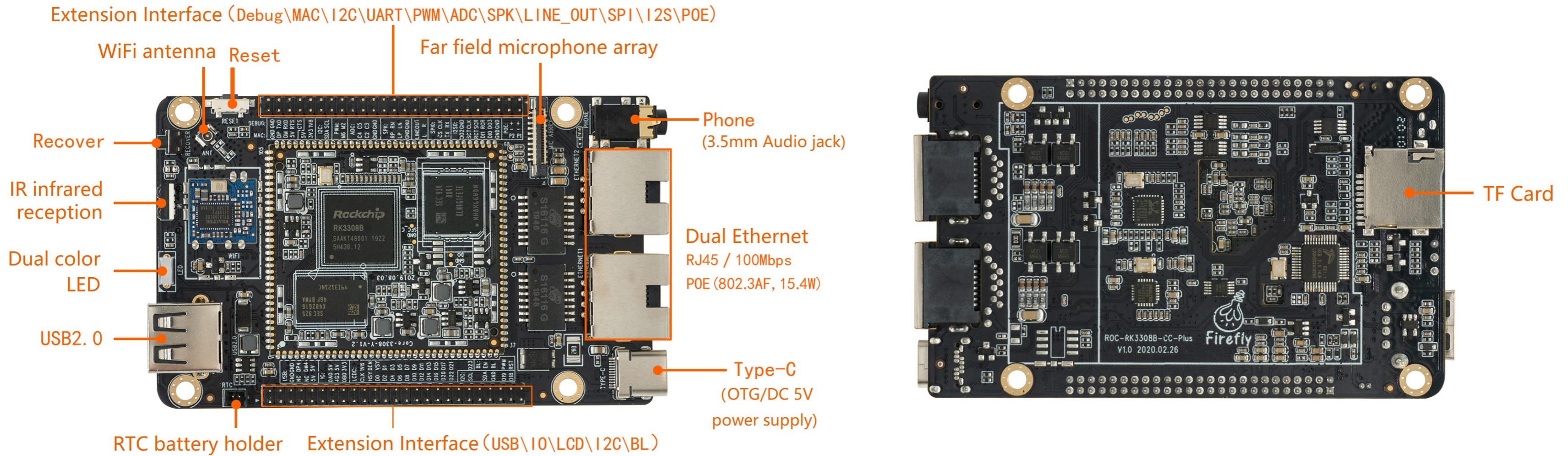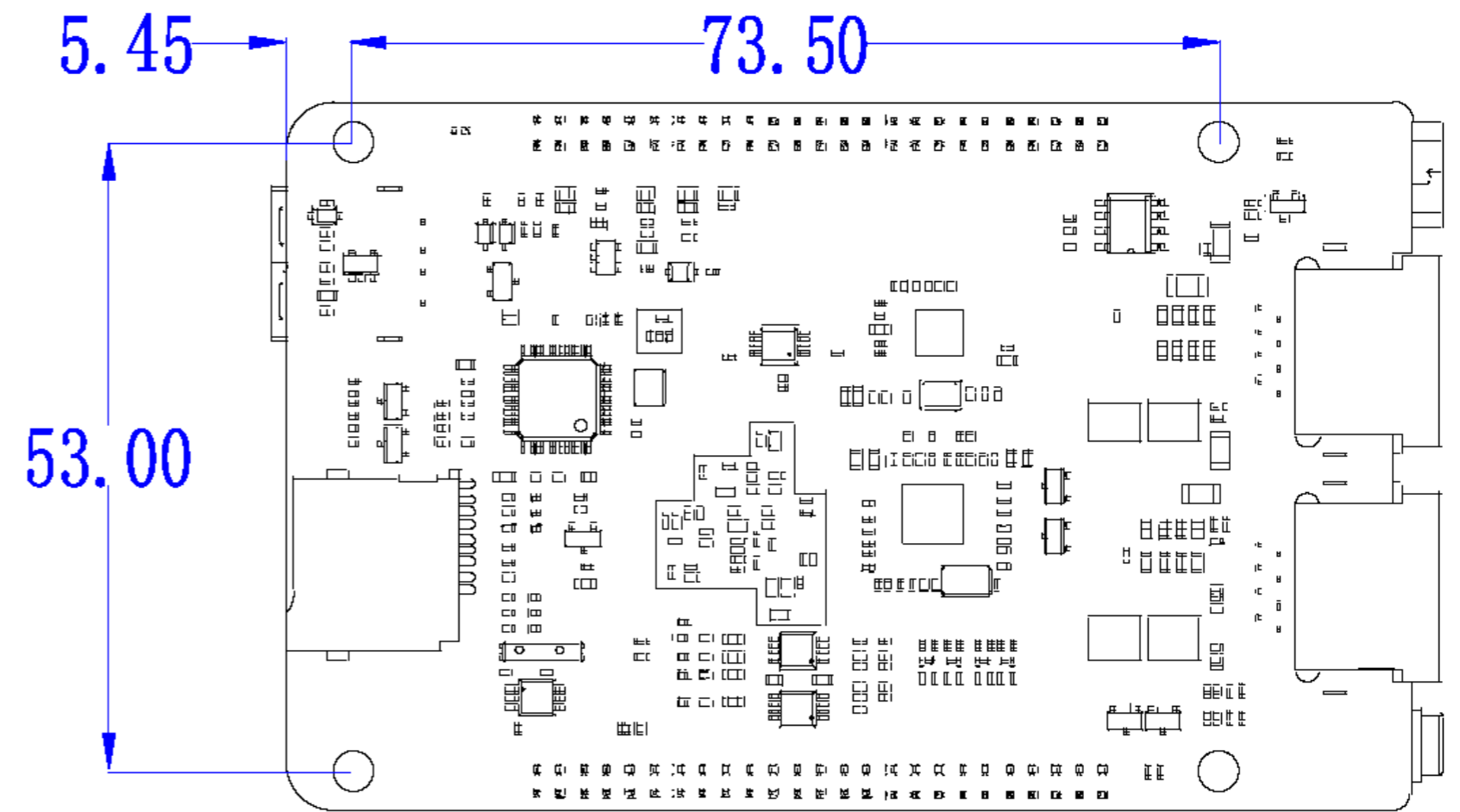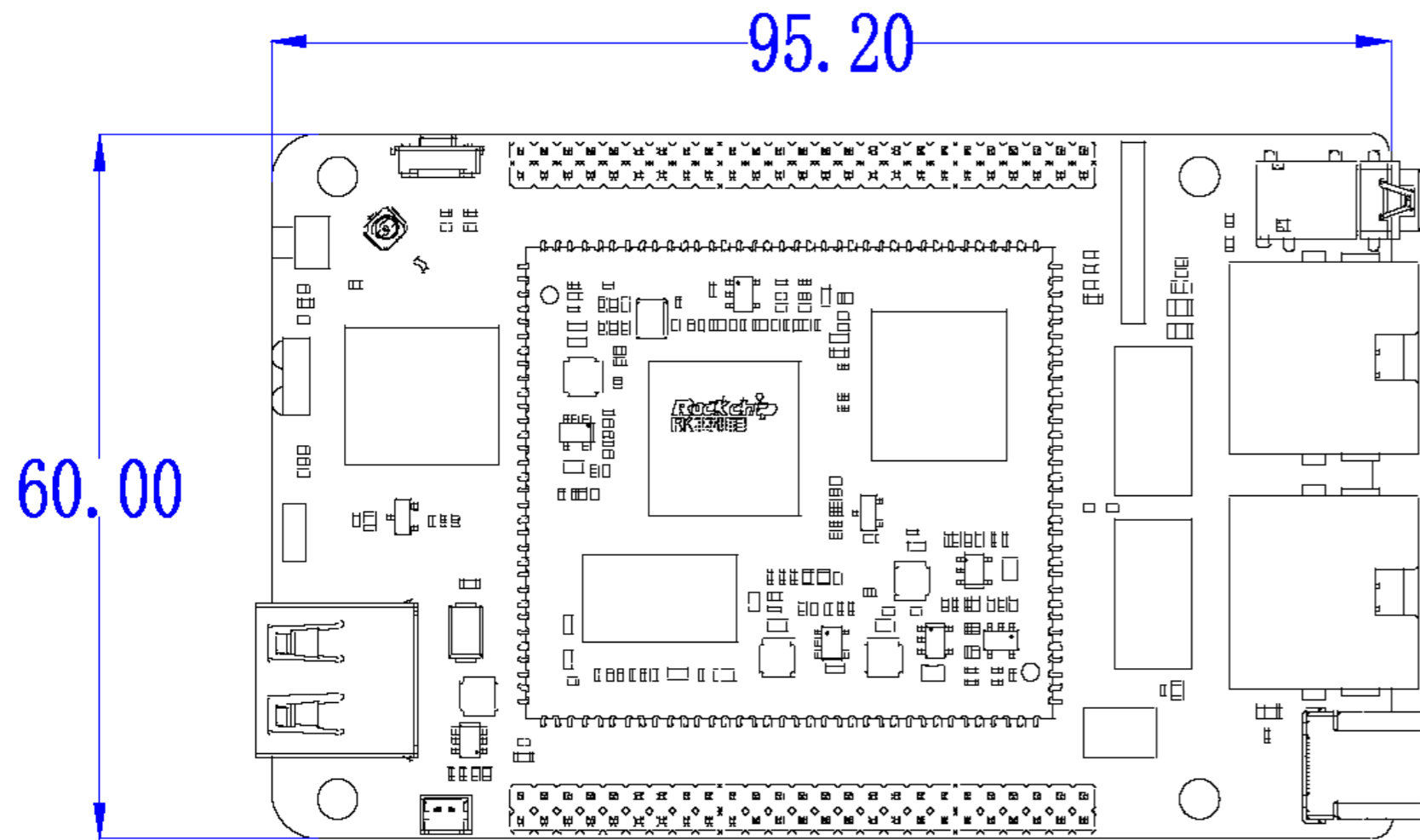
Specifications

Specifications		
Basic Specifications	SOC	RK3308B (28nm process)
	CPU	Quad-core 64-bit ARM Cortex-A35, frequency up to 1.3GHz
	RAM	DDR3 (128MB ~ 512MB optional)
	Storage	eMMC: Support 4G/8G/16G/32G/64G/128G optional NandFlash: Supports 128MB and 256MB SPI Flash: Supports 16MB ~512 MB Support MicroSD (TF) Card Slot extensions
	Power	5.0V (voltage tolerance ± 5%)
	System	Supports Buildroot, Linux + Mini GUI/QT and ROS (Robot Operating System) operating systems.Support iFLYTEK, Amazon Alexa and other voice systems and services
	Size	95.2mm × 60.0 mm
	Power consumption	Normal: 1.1W(5.0V/220mA)，Max: 2W (5.0V/400mA)
	Environment	Operating Temperature: -20℃- 60℃ Storage Temperature: -20℃- 70℃ Operating Humidity: 10% ~ 90%RH(non-condensing)
Interface Specifications	Ethernet	Dual RJ45 Ethernet ports (100M bps)
	WiFi	Support 2.4GHz WiFi, support 802.11/b/g/n protocol
	Display	Support RGB/MCU display (up to 720P resolution)
	Audio	Built-in audio CODEC with 8 ADCs Integrates high-performance Codec and Hardware VAD, and directly supports up to 8-channel MIC array + mining Support digital audio interface (8CH I2S/TDM x 2, 8CH PDM, 2CH I2S/PCM)
	USB	USB 2.0 × 1, Type-C × 1(OTG), USB2.0 × 1 (Led by pin header)
	Debug	Debug × 1 (Led by pin header)
	Extended interfaces	PWM × 3, I2C × 3, UART × 3, SPI × 1, I2S × 1, ADC × 4, LineOut
	Microphone array	The configurable far-field microphone array board includes 4 digital/analog microphones, supports keyword wake-up, echo noise cancellation, VAD (Voice Activation Detection), and sound source localization, greatly improving the precision and accuracy of speech recognition

Interface description

Extension Interface（Debug\MAC\I2C\UART\PWM\ADC\SPK\LINE_OUT\SPI\I2S\POE）

WiFi antenna　Reset

Far field microphone array

Recover

IR infrared reception

Dual color LED

USB2.0

Phone
(3.5mm Audio jack)

Dual Ethernet
RJ45 / 100Mbps
POE (802.3AF, 15.4W)

Type-C
(OTG/DC 5V
power supply)

TF Card

RTC battery holder　　Extension Interface（USB\IO\LCD\I2C\BL）

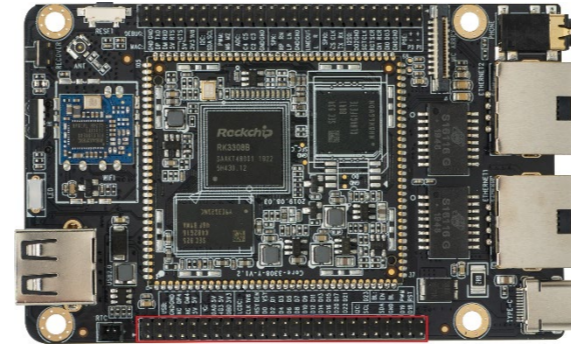# Dimension

Interface Definition

1、LCD PANEL Dual-row 50PIN 2.0-pitch expansion connector (GPIO)

NO.	Definition	NO.	Definition
1	GND	2	GND
3	NC	4	HOST_DP4
5	NC	6	HOST_DM4
7	VCC5V0_HOST1 (USB 5.0V Output)	8	VCC5V0_HOST1 (USB 5.0V Output)
9	GPIO0_A0/SDIO_INTN	10	VCC5V0_SYS (5.0V Output)
11	GPIO4_B3	12	VCC5V0_SYS (5.0V Output)
13	GPIO0_B0	14	VCC_IO (3.3V Output)
15	GPIO1_A0/LCDC_DCLK	16	VCC_1V8 (1.8V Output)
17	GPIO1_A1/LCDC_HSYNC	18	GPIO1_A3/LCDC_DEN/I2S1_8CH_SCLK_TX_M0
19	GPIO1_A4/LCDC_D0/I2S1_8CH_SCLK_RX_M0/PDM_8CH_CLK_M0	20	GPIO1_A2/LCDC_VSYNC/I2S1_8CH_MCLK_M0
21	GPIO1_A6/LCDC_D2/I2S1_8CH_LRCK_RX_M0	22	GPIO1_A5/LCDC_D1/I2S1_8CH_LRCK_TX_M0
23	GPIO1_B0/LCDC_D4/I2S1_8CH_SDO1_SDI3_M0/PDM_8CH_SDI3_M0	24	GPIO1_A7/LCDC_D3/I2S1_8CH_SDO0_M0
25	GPIO1_B2/LCDC_D6/I2S1_8CH_SDO3_SDI1_M0/PDM_8CH_SDI1_M0	26	GPIO1_B1/LCDC_D5/I2S1_8CH_SDO2_SDI2_M0/PDM_8CH_SDI2_M0
27	GPIO1_B4/LCDC_D8/I2S1_8CH_MCLK_M1/MAC_CLK	28	GPIO1_B3/LCDC_D7/I2S1_8CH_SDI0_M0/PDM_8CH_SDI0_M0
29	GPIO1_B6/LCDC_D10/I2S1_8CH_SCLK_RX_M1/PDM_8CH_CLK_M1/MAC_MDIO	30	GPIO1_B5/LCDC_D9/I2S1_8CH_SCLK_TX_M1/MAC_MDC

Interface Definition

31	GPIO1_C0/LCDC_D12/I2S1_8CH_LRCK_RX_M1/MAC_RXDV	32	GPIO1_B7/LCDC_D11/I2S1_8CH_LRCK_TX_M1/MAC_RXER
33	GPIO1_C2/LCDC_D14/I2S1_8CH_SDO1_SDI3_M1/PDM_8CH_SDI3_M1/MAC_TXD0	34	GPIO1_C1/LCDC_D13/I2S1_8CH_SDO0_M1/MAC_TXEN
35	GPIO1_C4/LCDC_D16/I2S1_8CH_SDO3_SDI1_M1/PDM_8CH_SDI1_M1/MAC_RXD0	36	GPIO1_C3/LCDC_D15/I2S1_8CH_SDO2_SDI2_M1/PDM_8CH_SDI2_M1/MAC_TXD1
37	GPIO2_B1/I2S0_8CH_SDO0/SPI1_CSN0_M1/LCDC_D20	38	GPIO1_C5/LCDC_D17/I2S1_8CH_SDI0_M1/PDM_8CH_SDI0_M1/MAC_RXD1
39	GPIO2_B7/I2S0_8CH_SDI2/PDM_8CH_SDI2_M2/LC DC_D22	40	GPIO2_B2/I2S0_8CH_SDO1/PWM8/LCDC_D21
41	GPIO1_D1/UART1_TX/I2C0_SCL/SPI2_CSN0	42	GPIO2_C0/I2S0_8CH_SDI3/PDM_8CH_SDI3_M2/LCDC_D23/PWM11
43	GPIO1_D0/UART1_RX/I2C 0_SDA/SPI2_CLK	44	GPIO0_A4/TEST_CLKOUT/(LCD_EN)
45	GND	46	GPIO4_C0/I2S0_2CH_SDI/(LCD_BL_EN)
47	GPIO1_C7/UART1_RTSN/UART2_TX_M0/SPI2_MOSI/JTAG_TMS/LCDC_D19	48	GPIO0_B6/PWM1
49	GPIO1_C6/UART1_CTSN/UART2_RX_M0/SPI2_MISO/JTAG_TCK/OWIRE_M1/LCDC_D18	50	GPIO0_C4/(LCD_Reset)

2、I2S/GPIO Dual-row 50PIN 2.0 pitch expansion interface (GPIO)

NO.	Definition	NO.	Definition
1	P1+	2	P1-
3	P2+	4	P2-
5	GND	6	GND

Interface Definition

7	GPIO2_B4/I2S0_8CH_SDO3/PWM10	8	GPIO2_B5/I2S0_8CH_SDI0/PDM_8CH_SDI0_M2
9	GPIO2_B0/I2S0_8CH_LRCK_RX/PWM7	10	GPIO2_B6/I2S0_8CH_SDI1/PDM_8CH_SDI1_M2
11	GPIO2_A6/I2S0_8CH_SCLK_RX/PDM_8CH_CLK_S_M2	12	GPIO2_A7/I2S0_8CH_LRCK_TX/SPI1_CLK_M1
13	GPIO2_A4/I2S0_8CH_MCLK/PDM_8CH_CLK_M_M2/SPI1_MISO_M1	14	GPIO2_A5/I2S0_8CH_SCLK_TX/SPI1_MOSI_M1
15	GND	16	GPIO2_B3/I2S0_8CH_SDO2/PWM9
17	GPIO2_A0/UART0_RX/SPI0_MISO/I2C3_SDA_M2	18	GPIO2_A1/UART0_TX/SPI0_MOSI/I2C3_SCL_M2
19	GPIO2_A2/UART0_CTSN/SPI0_CLK/I2C2_SDA/OWIRE_M2	20	GPIO2_A3/UART0_RTSN/SPI0_CSN0/I2C2_SCL
21	CODEC_LINEOUT_R	22	CODEC_LINEOUT_L
23	GND	24	GND
25	SPEAKER_L_N	26	SPEAKER_L_P
27	SPEAKER_R_N	28	SPEAKER_R_P
29	GND	30	GND
31	ADC_IN3	32	ADC_IN2
33	ADC_IN5	34	ADC_IN4
35	GPIO0_B7/PWM2/I2C3_SDA_M0	36	GPIO0_C2/SPDIF_RX/PWM6/UART3_TX_M1
37	GPIO3_B5/FLASH_CSN0/I2C3_SCL_M1/SPI1_CSN0/UART3_TX	38	GPIO3_B4/FLASH_RDY/I2C3_SDA_M1/SPI1_MOSI/UART3_RX
39	VCC_1V8 (1.8V Output)	40	VCC_IO (3.3V Output)
41	GPIO4_A6/UART4_CTSN	42	VCC5V0_SYS (5.0V Output)
43	GPIO4_A7/UART4_RTSN	44	USB5V (USB 5.0V Input for mac addr. wirte)
45	GPIO4_B0/UART4_RX	46	USB_DM_MAC
47	GPIO4_B1/UART4_TX	48	USB_DP_MAC
49	GND	50	GND

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