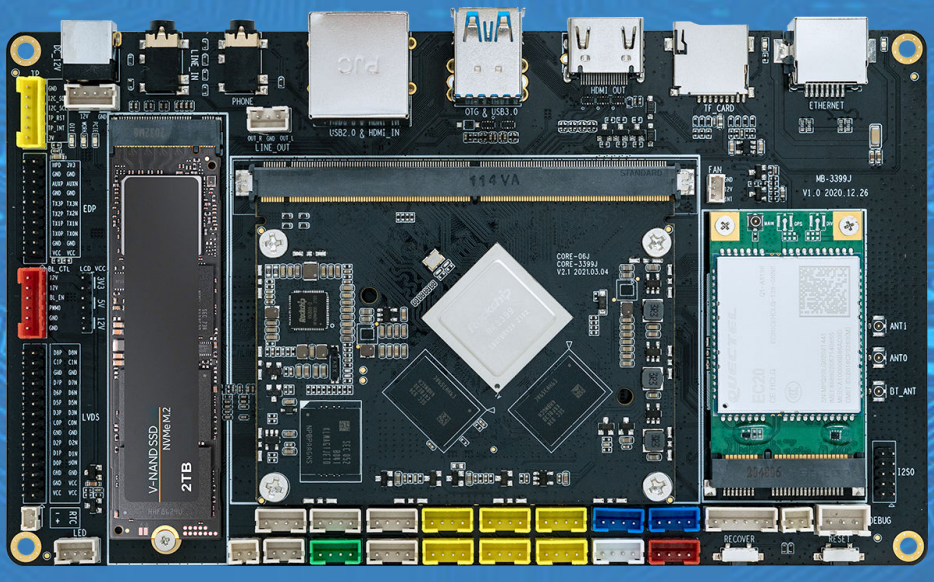
# AIO-3399J

## Six-Core 64-Bit industrial Mainboard

V1.3




T-CHIP INTELLIGENCE TECHNOLOGY CO.,LTD.

www.t-firefly.com

# Update History

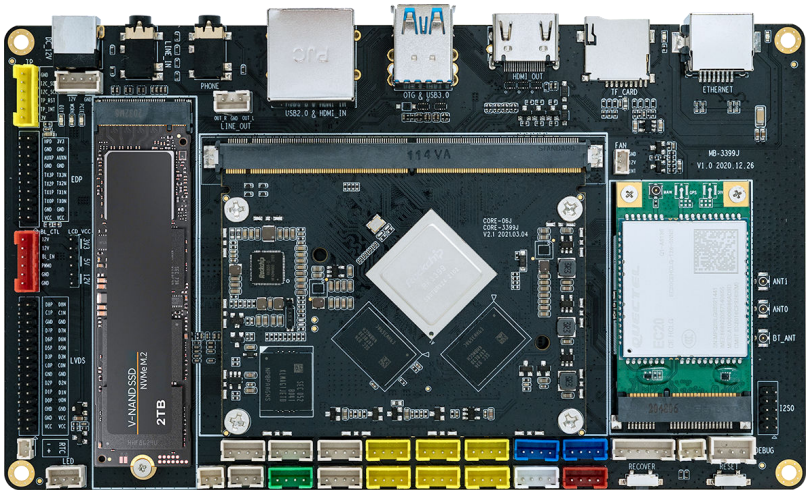
| Version | Date | Details |
| --- | --- | --- |
| V1.0 | 2017-09-29 | Initial version |
| V1.1 | 2017-12-22 | Updated interface markings and PCB Size |
| V1.2 | 2018-08-24 | Add housing |
| V1.3 | 2020-07-21 | Core-3399J V2，Update interface description |

# Directory


1. Overview.....3
2. Specificationd.....4
3. Size.....5
4. Interface description.....6
5 Interface definitions 7
1、(J2) DC_IN 4 PIN 2.0 pitch interface.....7
2、(J44) LINE-OUT 3 PIN 2.0 pitch interface.....7
3、(J25) FAN 3 PIN 1.25 pitch interface.....7
4、((J27) MINI PCIE 3G/4G.....7
5、(J34) I2S0 10 PIN Dual 2.0 pitch interface 8
6、(J26)DEBUG 3 PIN 2.54 pitch interface.....8
7、(J7)POWER KEY 2 PIN 2.0 pitch interface.....8
8、(J18)SPI2 6 PIN 2.0 pitch interface.....8
9、(J5) RS232 4 PIN 2.0 pitch interface.....9
10、(J6) RS485 4 PIN 2.0 pitch interface 9
11、(J108) UART1 4 PIN 2.0 pitch interface.....9
12、(J107) UART2 4 PIN 2.0 pitch interface.....9
13、(J12) USB-HUB3 4 PIN 2.0 pitch interface.....9
14、(J13) USB-HUB4 4 PIN 2.0 pitch interface.....9
15、(J10) USB HUB1 4 PIN 2.0 pitch interface.....10
16、(J11) USB-HUB2 4 PIN 2.0 pitch interface.....10
17、(J105) USB-HUB5 4 PIN 2.0 pitch interface.....10
18、(J104) USB-HUB6 4 PIN 2.0 pitch interface.....10
19、(J109) KEY 4 PIN 2.0 pitch interface.....10
20、(J47) I2C4 4 PIN 2.0 pitch interface.....10
21、(J17) SPEAKER 4 PIN 2.0 pitch interface.....11
22、(J41) PWR_3V3 4 PIN 2.0 pitch interface.....11
23、(J42) PWR_5V0 4 PIN 2.0 pitch interface.....11
24、(J43) IR Receiver 4 PIN 2.0 pitch interface.....11
25、(J14) MIC 2 PIN 2.0 pitch interface.....11
26、(J102) LED 3 PIN 2.0 pitch interface.....11
27、(J3) RTC 2 PIN 1.25 pitch interface.....12
28、(CON40) LVDS 双排 30 PIN 2.0 pitch interface.....12
29、(J45) BL_CTL 6 PIN 2.0 pitch interface(GPIO) .....12
30、(J101) LCD_VCC 6 PIN 2.0 pitch interface.....12
31、(JP1)EDP Dual 20 PIN 2.0 pitch interface(GPIO) .....13
32、(J24) TP 6 PIN 2.0 pitch interface.....13
6. About US .....14

# Overview

Using RK3399 Six-Core ( A72x2+A53x4 ) 64-Bit CPU, up to 1.8Ghz , integrated Quad-Core Mali-T864 GPU. Onboard M.2 PCIe, 4G LTE interface, multiple display interface and serial port. Support the Android/Linux/Ubuntu system and open source code for the second development. It can be quickly applied to a variety of industries.



## A New Generation of Six-Core 64-Bit Processor

AIO-3399J uses the newest ARM Cortex-A72 architecture, six core 64 bit CPU,.The frequency up to 1.8GHz. Compared with Cortex-A57, the processing performance is 100%, The speed is faster, and the performance is stronger.

## Compatible with All Mainstream Display

Support LVDS/eDP/MIPI/HDMI interface, Support 5-100 inch displays, can drive the mainstream display screen.

## Precise and Reliable Process

4mil immersion gold process, core board finger anti-corrosion, 7x24 hours stable working , 4 stud fixed, solid and reliable

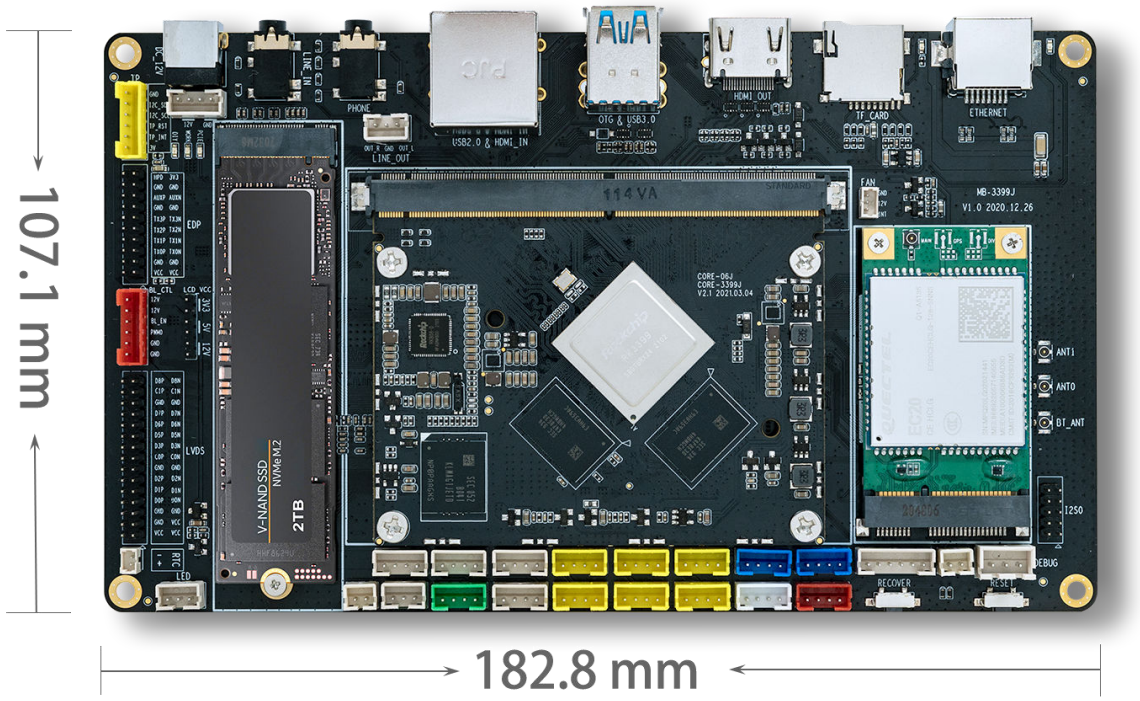
## Open Source

Supporting the source code, tutorials, technical information and development tools can be downloaded from the website, development, learning, industry applications become more simple and convenient.

# Specification

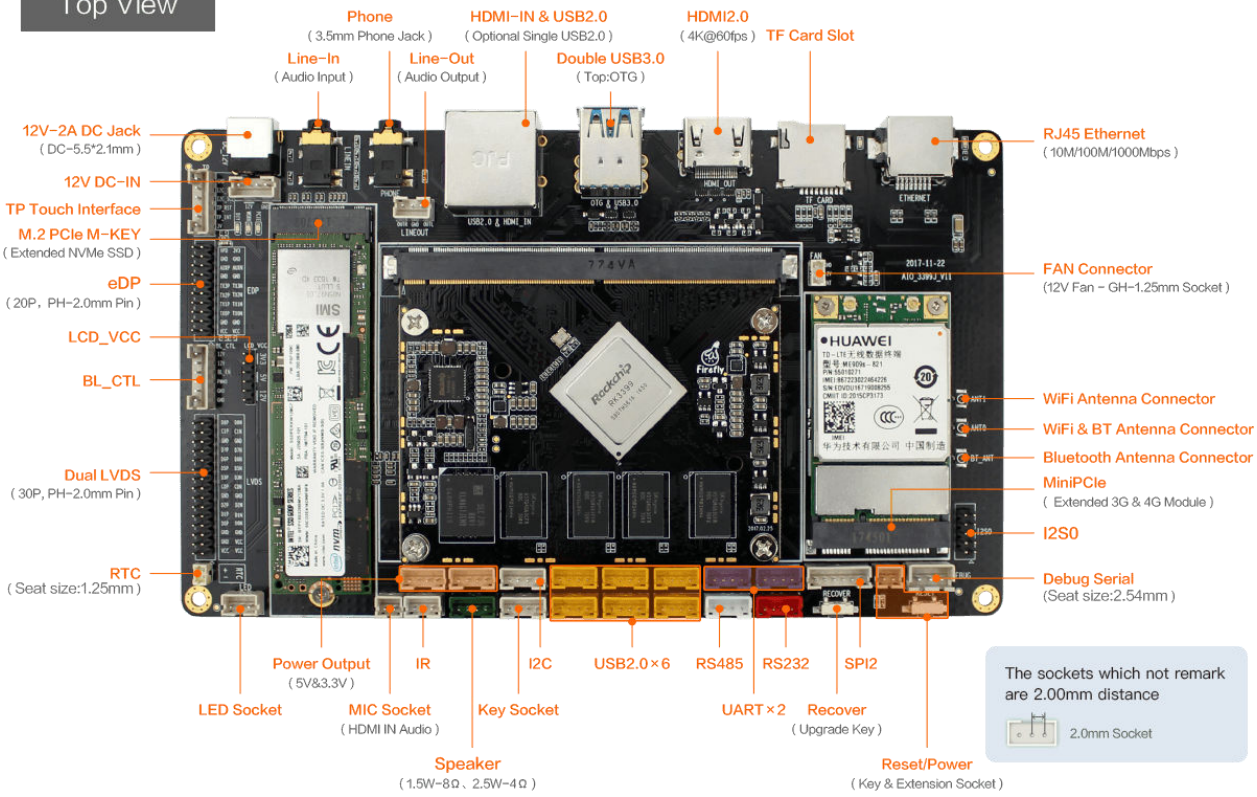
| | |
|---|---|
| **CPU** | Rockchip RK3399 ( 28nm HKMG Process ) , up to 1.8GHz<br>Six-Core ARM 64-bit processor(2×Cortex-A72 + 4×Cortex-A53)<br><br>ARM Mali-T860 MP4 Quad-Core GPU<br>Support OpenGL ES1.1/2.0/3.0/3.1, OpenCL and DirectX 11, Support AFBC<br><br>Support 4K VP9 and 4K 10bits H265/H264 video decoding, up to 60fps<br>1080P multi-format video decoding (MVC, mpeg-1/2/4, VP8)<br>1080P video encoding, which supports h.264, VP8 format |
| RAM | Dual-Channel DDR3 ( 1GB/2GB/4GB Optional ) |
| Storage | High-Speed eMMC 5.1 ( 8GB/16GB/32GB/128GB Optional )<br>Support MicroSD (TF) Card<br>PCIE M.2 NGFF ( M-KEY ) , for extend NVMe SSD |
| Wireless | 2.4GHz/5GHz Dual-band WiFi ( Support 802.11a/b/g/n/ac protocol, 2x2 MIMO )<br>Bluetooth 4.1 ( Support BLE )<br><br>3G/4G LTE (Mini-PCIe ) Module ( Ooptional )<br>Support WCDMA, EVDO, 4G full netcom |
| Ethernet | 10/100/1000Mbps ( RJ45) |
| Display | Video Output Interface:<br>1 x HDMI 2.0，up to 4K@60fps , support HDCP 1.4/2.2<br>1 x HDMI-IN，support 1080P@60fps input<br><br>Screen Interface（Support dual display）:<br>1 x Dual-Channel MIPI-DSI，up to 2560x1600@60fps<br>1 x Dual-Channel LVDS，support 1920x1200（24bit）@60fps<br>1 x eDP 1.3 ( 4 lanes with 10.8Gbps ) |
| Audio | 1 x HDMI audio output<br>1 x MIC audio input<br>1 x Analog audio (via 3.5mm Combo Audio Jack for audio input and ouput)<br>1 x Line-in for audio input<br>1 x Line-out (socket) for audio output<br>1 x SPDIF interface for audio output<br>1 x Double -Speakers, (support left and right output, built-in double 4Ω/2.7W, 8Ω/1.6W PA )<br>1 x I2S, supports 8 channels |
| Camera | 2 x MIPI-CSI Camera interface,<br>( built-in Dual-ISP, Maximum 13Mpixel or dual 8Mpixel ) |
| PCIe | 1 x Mini PCIe，for LTE 4G<br>1 x PCIe M.2（M-Key），for extend NVMe SSD |
| SIM | 1 x SIM Slot，for Mini-PCIe 4G LTE module |
| USB | 1 x USB2.0 HOST，2 x USB3.0 HOST，6 x USB2.0 Socket |
| Serial | 1 x RS232 ，2 x TTL Serial，1 x RS485 |
| IR | 1 x IR Receiver，support remote control |
| RTC | 1 x RTC，Onboard battery socket（supports rtc wake up） |
| Key | 1 x Reset Key，1 x Recover Key |
| Interface | SPI、I2C、ADC、GPIO、Key，and power input and output interface |
| Power | DC12V - 2A ( via DC 5.5*2.1mm Jack or 2.54mm Socket ) |
| OS | Android 7.1、Android 6.0、Ubuntu 16.04、u-boot |
| Programming | Support C、C++、Kotlin、Java、Shell、Pyhon etc. |
| Upgrade | Support TF-Card upgrade, USB upgrade |
| Size | 182.8mm x 107.1mm |
| High Limit | 19mm（Top），2.5mm（Bottom） |
| Screw Hole | Φ 3mm |
| PCB Parameters | Motherboard (4-layer design),<br>Core Board (8-layer design), 1.6mm (thickness), Immersion Gold Technology |

# Size

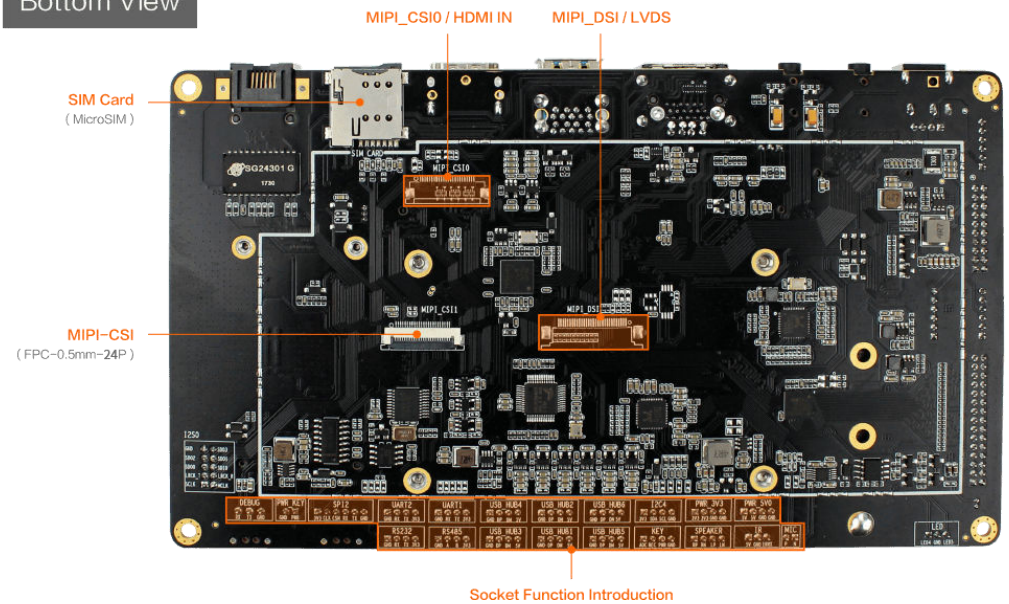

107.1 mm
182.8 mm
V-NAND SSD
NVMe M.2
2TB
114VA
MB-3399J
V1.0 2020.12.26
OTG & USB3.0
USB2.0 & HDMI_IN
HDMI_OUT
ETHERNET
TF_CARD
PHONE
LINE_OUT
LINE_IN
EDP
LVDS
I2S0
DEBUG
RECOVER
RESET
ANT1
ANT0
BT_ANT

# Interface

## Top View

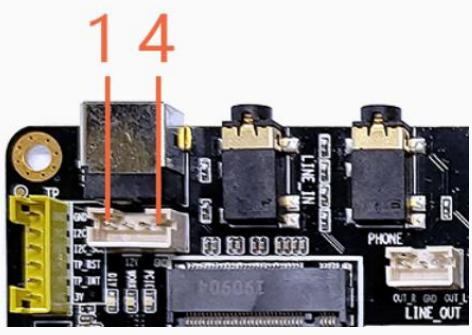



## Bottom View



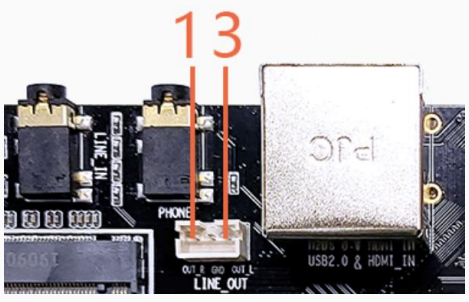
# 5. Interface Definition

## 1、(J2) DC_IN 4 PIN 2.0 Pitch Interface



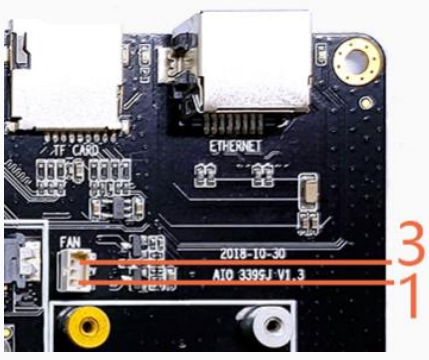

| NO. | Definition | Power/V | NO. | Definition | Power/V |
|---|---|---|---|---|---|
| 1 | DC_12V | 12 | 3 | GND | |
| 2 | DC_12V | 12 | 4 | GND | |

## 2、(J44) LINE-OUT 3 PIN 2.0 Pitch Interface



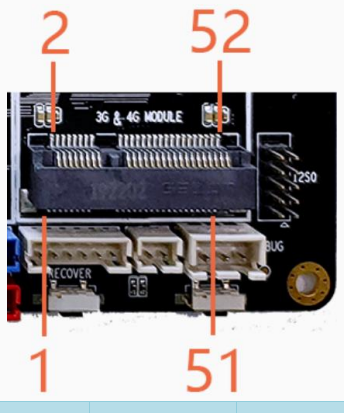

| NO. | Definition | Power/V | NO. | Definition | Power/V |
|---|---|---|---|---|---|
| 1 | LINE_OUT_R | 3.0 | 3 | LINE_OUT_L | 3.0 |
| 2 | GND | | | | |

## 3、(J25) FAN 3 PIN 1.25 Pitch Interface




| NO. | Definition | Power/V | NO. | Definition | Power/V |
|---|---|---|---|---|---|
| 1 | FAN_INT | 12 | 3 | GND | |
| 2 | FAN_12V | 12 | | | |

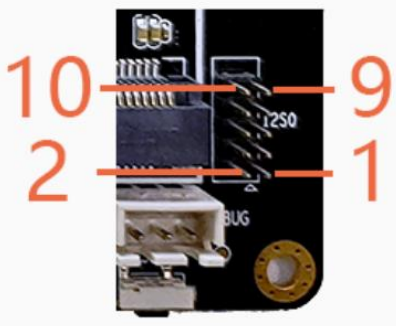
## 4、((J27) MINI PCIE-3G/4G




| NO. | Definition | Power/V | NO. | Definition | Power/V |
|---|---|---|---|---|---|
| 1 | NC | | 2 | VCC3V8_3G | 3.8 |
| 3 | NC | | 4 | GND | |
| 5 | NC | | 6 | NC | |
| 7 | NC | | 8 | UIM_PWR | 1.8 |
| 9 | GND | | 10 | UIM_DAT | 1.8 |
| 11 | NC | | 12 | UIM_CLK | 1.8 |
| 13 | NC | | 14 | UIM_RST | 1.8 |
| 15 | GND | | 16 | NC | |
| 17 | NC | | 18 | GND | |
| 19 | NC | | 20 | NC | |
| 21 | GND | | 22 | PE_RST | 3.3 |
| 23 | NC | | 24 | NC | |
| 25 | NC | | 26 | GND | |
| 27 | GND | | 28 | NC | |
| 29 | GND | | 30 | NC | |
| 31 | NC | | 32 | NC | |

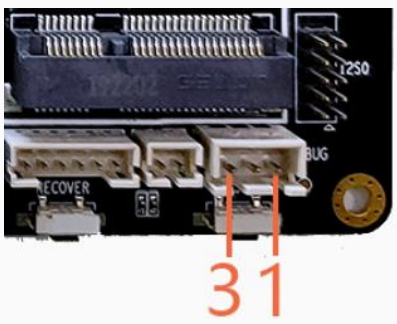
| | | | | | |
|---|---|---|---|---|---|
| 33 | NC | | 34 | GND | |
| 35 | GND | | 36 | HOST0_DM | 3.3 |
| 37 | GND | | 38 | HOST0_DP | 3.3 |
| 39 | VCC3V8_3G | 3.8 | 40 | GND | |
| 41 | VCC3V8_3G | 3.8 | 42 | NC | |
| 43 | GND | | 44 | NC | |
| 45 | NC | | 46 | NC | |
| 47 | NC | | 48 | NC | |
| 49 | NC | | 50 | GND | |
| 51 | NC | | 52 | VCC3V8_3G | 3.8 |

## 5、(J34) I2S0 10 PIN Dual 2.0 Pitch Interface



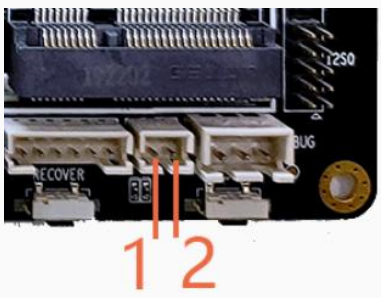

| NO. | Definition | Power/V | NO. | Definition | Power/V |
|---|---|---|---|---|---|
| 1 | I2S0_SCLK | 1.8 | 2 | I2S0_CLK | 1.8 |
| 3 | I2S0_LRCK_TX | 1.8 | 4 | I2S0_LRCK_RX | 1.8 |
| 5 | I2S0_SDO0 | 1.8 | 6 | I2S0_SDI0 | 1.8 |
| 7 | I2S0_SDO2 | 1.8 | 8 | I2S0_SDO1 | 1.8 |
| 9 | GND | | 10 | I2S0_SDO3 | 1.8 |

## 6、(J26)DEBUG 3 PIN 2.54 Pitch Interface




| NO. | Definition | Power/V | NO. | Definition | Power/V |
|---|---|---|---|---|---|
| 1 | UART2_RXD | 3.0 | 3 | GND | |
| 2 | UART2_TXD | 3.0 | | | |

## 7、(J7)POWER KEY 2 PIN 2.0 Pitch Interface

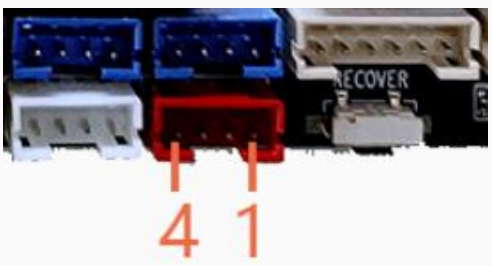



| NO. | Definition | Power/V | NO. | Definition | Power/V |
|---|---|---|---|---|---|
| 1 | PWR | 5.0 | 2 | GND | |

## 8、(J18)SPI2 6 PIN 2.0 Pitch Interface


| NO. | Definition | Power/V | NO. | Definition | Power/V |
|---|---|---|---|---|---|
| 1 | VCC3V3_SYS | 3.3 | 4 | GPIO2_B1/SPI2_RXD | 1.8 |
| 2 | GPIO2_B3/SPI2_CLK | 1.8 | 5 | GPIO2_B2/SPI2_TXD | 1.8 |
| 3 | GPIO2_B4/SPI2_CSN0 | 1.8 | 6 | GND | |

### 9、(J5) RS232 4 PIN 2.0 Pitch Interface

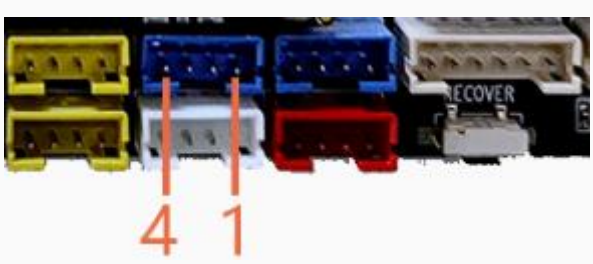



| NO. | Definition | Power/V | NO. | Definition | Power/V |
|---|---|---|---|---|---|
| 1 | GND | | 3 | RS232_TX | 3.3 |
| 2 | RS232_RX | 3.3 | 4 | VCC3V3_UART | 3.3 |

### 10、(J6) RS485 4 PIN 2.0 Pitch Interface

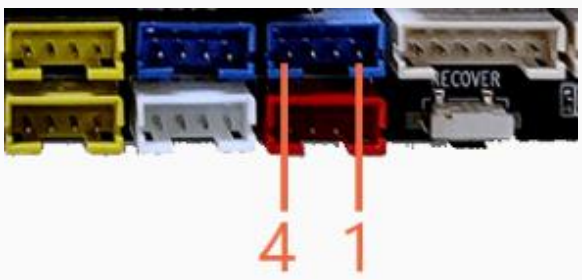

| NO. | Definition | Power/V | NO. | Definition | Power/V |
|---|---|---|---|---|---|
| 1 | GND | | 3 | RS485_B | 3.3 |
| 2 | RS485_A | 3.3 | 4 | VCC3V3_UART | 3.3 |

### 11、(J108) UART1 4 PIN 2.0 Pitch Interface



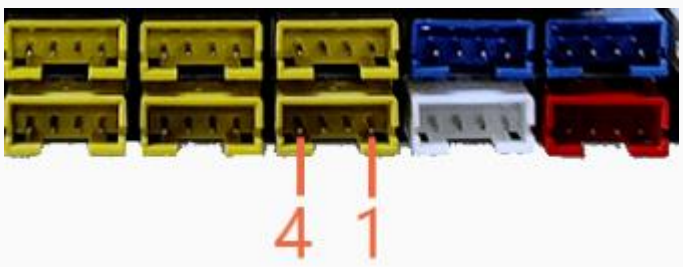

| NO. | Definition | Power/V | NO. | Definition | Power/V |
|---|---|---|---|---|---|
| 1 | GND | | 3 | RXD | 3.3 |
| 2 | RXD | 3.3 | 4 | VCC3V3_UART | 3.3 |

### 12、(J107) UART2 4 PIN 2.0 Pitch Interface



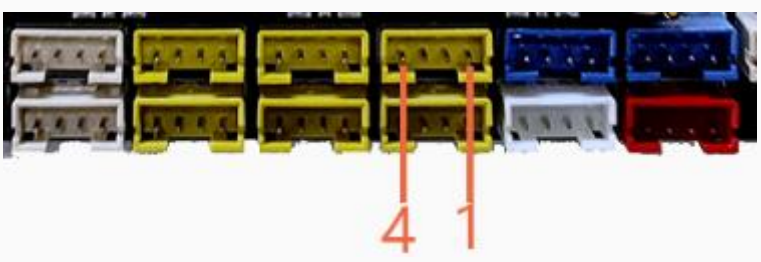

| NO. | Definition | Power/V | NO. | Definition | Power/V |
|---|---|---|---|---|---|
| 1 | GND | | 3 | TX_C | 3.3 |
| 2 | RX_C | 3.3 | 4 | VCC3V3_UART | 3.3 |

### 13、(J12) USB-HUB3 4 PIN 2.0 Pitch Interface



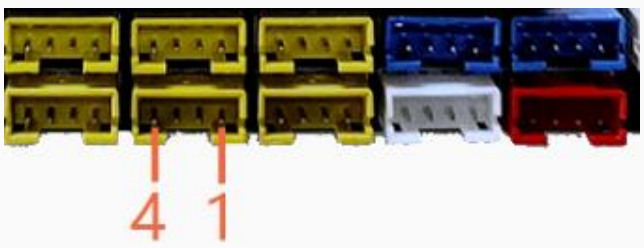

| NO. | Definition | Power/V | NO. | Definition | Power/V |
|---|---|---|---|---|---|
| 1 | GND | | 3 | HUB_DM3 | 3.3 |
| 2 | HUB_DP3 | 3.3 | 4 | VCC5V0_HOST3 | 5.0 |

### 14、(J13) USB-HUB4 4 PIN 2.0 Pitch Interface



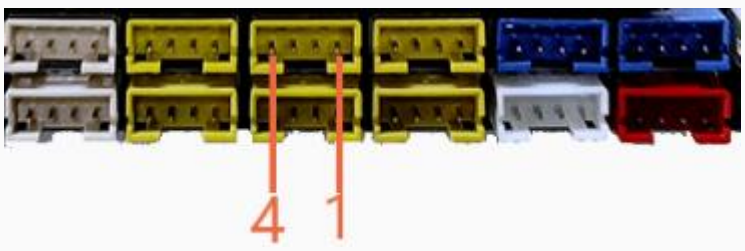

| NO. | Definition | Power/V | NO. | Definition | Power/V |
|---|---|---|---|---|---|
| 1 | GND | | 3 | HUB_DM4 | 3.3 |
| 2 | HUB_DP4 | 3.3 | 4 | VCC5V0_HOST4 | 5.0 |

### 15、(J10) USB-HUB1 4 PIN 2.0 Pitch Interface




| NO. | Definition | Power/V | NO. | Definition | Power/V |
|---|---|---|---|---|---|
| 1 | GND | | 3 | HUB_DM1 | 3.3 |
| 2 | HUB_DP1 | 3.3 | 4 | VCC5V0_HOST1 | 5.0 |

### 16、(J11) USB-HUB2 4 PIN 2.0 Pitch Interface




| NO. | Definition | Power/V | NO. | Definition | Power/V |
|---|---|---|---|---|---|
| 1 | GND | | 3 | HUB_DM2 | 3.3 |
| 2 | HUB_DP2 | 3.3 | 4 | VCC5V0_HOST2 | 5.0 |

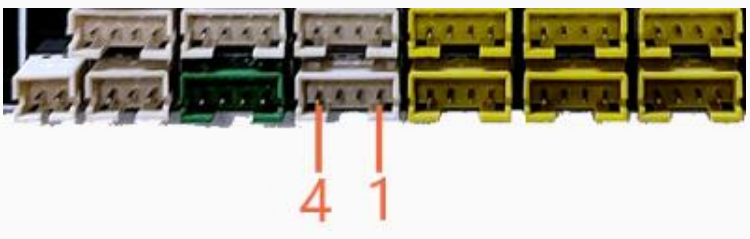
### 17、(J105) USB-HUB5 4 PIN 2.0 Pitch Interface


| NO. | Definition | Power/V | NO. | Definition | Power/V |
|---|---|---|---|---|---|
| 1 | GND | | 3 | HUB_DM5 | 3.3 |
| 2 | HUB_DP5 | 3.3 | 4 | VCC5V0_HOST5 | 5.0 |

### 18、(J104) USB-HUB6 4 PIN 2.0 Pitch Interface

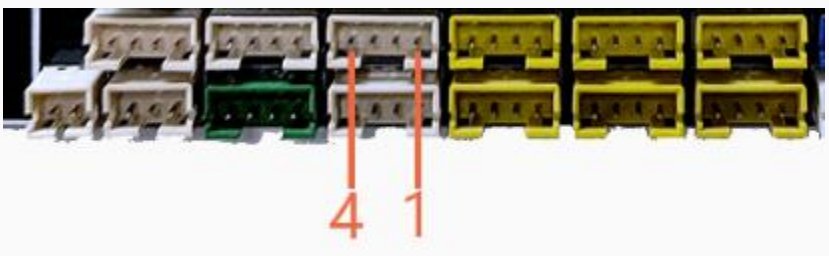

| NO. | Definition | Power/V | NO. | Definition | Power/V |
|---|---|---|---|---|---|
| 1 | GND | | 3 | HUB_DM6 | 3.3 |
| 2 | HUB_DP6 | 3.3 | 4 | VCC5V0_HOST6 | 5.0 |

### 19、(J109) KEY 4 PIN 2.0 Pitch Interface




| NO. | Definition | Power/V | NO. | Definition | Power/V |
|---|---|---|---|---|---|
| 1 | ADC_IN0 | 1.8 | 3 | PWR_ON | 5.0 |
| 2 | RECOVER_KEY | 1.8 | 4 | GND | |

### 20、(J47) I2C4 4 PIN 2.0 Pitch Interface




| NO. | Definition | Power/V | NO. | Definition | Power/V |
|---|---|---|---|---|---|
| 1 | VCC3V3_SYS | 3.3 | 3 | I2C4_SCL | 3.0 |
| 2 | I2C4_SDA | 3.0 | 4 | GND | |

### 21、(J17) SPEAKER 4 PIN 2.0 Pitch Interface


| NO. | Definition | Power/V | NO. | Definition | Power/V |
|---|---|---|---|---|---|
| 1 | SPK_RN | 10W@8Ω | 3 | SPK_LN | 10W@8Ω |
| 2 | SPK_RP | | 4 | SPK_LP | |

### 22、(J41) PWR_3V3 4 PIN 2.0 Pitch Interface


| NO. | Definition | Power/V | NO. | Definition | Power/V |
|---|---|---|---|---|---|
| 1 | VCC3V3_SYS | 3.3 | 3 | GND | |
| 2 | VCC3V3_SYS | 3.3 | 4 | GND | |

### 23、(J42) PWR_5V0 4 PIN 2.0 Pitch Interface


| NO. | Definition | Power/V | NO. | Definition | Power/V |
|---|---|---|---|---|---|
| 1 | VCC_SYS | 5.0 | 3 | GND | |
| 2 | VCC_SYS | 5.0 | 4 | GND | |

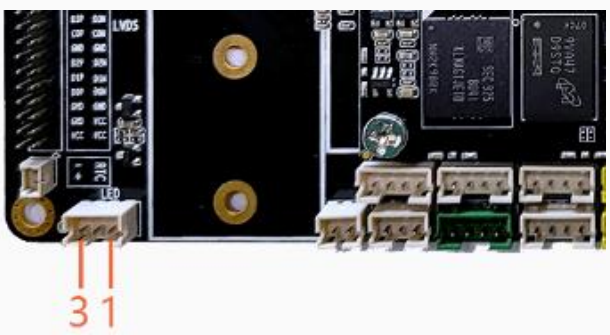
### 24、(J43) IR Receiver 4 PIN 2.0 Pitch Interface


| NO. | Definition | Power/V | NO. | Definition | Power/V |
|---|---|---|---|---|---|
| 1 | IR_VCC | 5.0 | 3 | IR_INT | 1.8 |
| 2 | GND | | | | |

### 25、(J14) MIC 2 PIN 2.0 Pitch Interface


| NO. | Definition | Power/V | NO. | Definition | Power/V |
|---|---|---|---|---|---|
| 1 | MIC_IN1N | 3.0 | 2 | MIC_IN1P | 3.0 |

### 26、(J102) LED 3 PIN 2.0 Pitch Interface

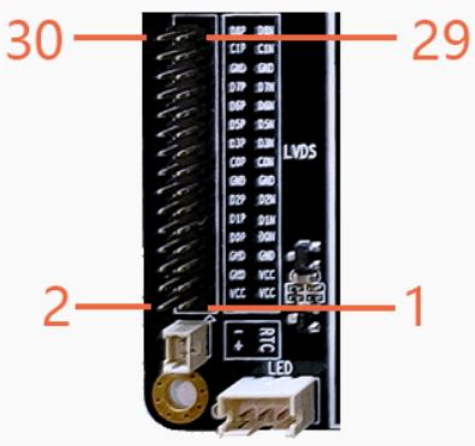



| NO. | Definition | Power/V | NO. | Definition | Power/V |
|---|---|---|---|---|---|
| 1 | LED4 | 3.3 | 3 | LED5 | 3.3 |
| 2 | GND | | | | |

### 27、(J3) RTC 2 PIN 1.25 Pitch Interface


| NO. | Definition | Power/V | NO. | Definition | Power/V |
|---|---|---|---|---|---|
| 1 | GND | | 2 | VCC_RTC | 3.3~5.0 |

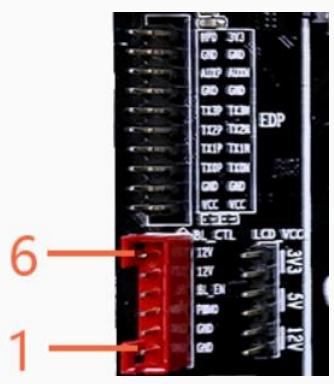
### 28、(CON40) LVDS Dual 30 PIN 2.0 Pitch Interface




*VCC_LCD 通过跳帽 J101 选择

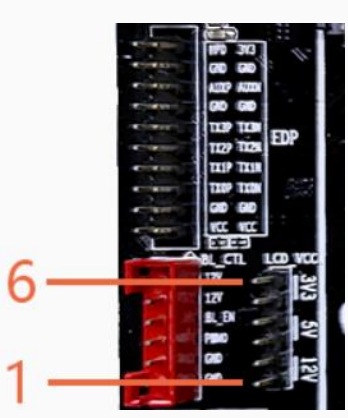
| NO. | Definition | Power/V | NO. | Definition | Power/V |
|---|---|---|---|---|---|
| 1 | VCC_LCD | 3.3V/5V/12VOptiona l* | 2 | VCC_LCD | 3.3V/5V/12VOptiona l* |
| 3 | VCC_LCD | 3.3V/5V/12VOptiona l* | 4 | GND | |
| 5 | GND | | 6 | GND | |
| 7 | LVDS_D0N | 3.3 | 8 | LVDS_D0P | 3.3 |
| 9 | LVDS_D1N | 3.3 | 10 | LVDS_D1P | 3.3 |
| 11 | LVDS_D2N | 3.3 | 12 | LVDS_D2P | 3.3 |
| 13 | GND | | 14 | GND | |
| 15 | LVDS_CLK0N | 3.3 | 16 | LVDS_CLK0P | 3.3 |
| 17 | LVDS_D3N | 3.3 | 18 | LVDS_D3P | 3.3 |
| 19 | LVDS_D5N | 3.3 | 20 | LVDS_D5P | 3.3 |
| 21 | LVDS_D6N | 3.3 | 22 | LVDS_D6P | 3.3 |
| 23 | LVDS_D7N | 3.3 | 24 | LVDS_D7P | 3.3 |
| 25 | GND | | 26 | GND | |
| 27 | LVDS_CLK1N | 3.3 | 28 | LVDS_CLK1P | 3.3 |
| 29 | LVDS_D8N | 3.3 | 30 | LVDS_D8P | 3.3 |

### 29、(J45) BL_CTL 6 PIN 2.0 Pitch Interface(GPIO)




| NO. | Definition | Power/V | NO. | Definition | Power/V |
|---|---|---|---|---|---|
| 1 | GND | | 4 | BL_EN | 3.0 |
| 2 | GND | | 5 | DC_12V | 12 |
| 3 | LCD_BL_PWM0 | 3.0 | 6 | DC_12V | 12 |

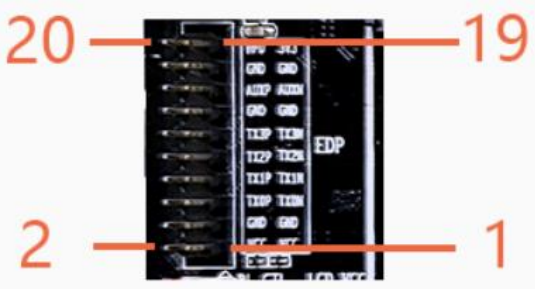
### 30、(J101) LCD_VCC 6 PIN 2.0 Pitch Interface




| NO. | Definition | Power/V | NO. | Definition | Power/V |
|---|---|---|---|---|---|
| 1 | DC_12V | 12V | 4 | VCC_LCD_S | 3.3V/5.0V/12VOptio |

| | | | | | |
|---|---|---|---|---|---|
| | | | | | nal |
| 2 | VCC_LCD_S | 3.3V/5.0V/12VOption al | 5 | VCC3V3_SYS_S3 | 3.3V |
| 3 | VCC_SYS | 5V | 6 | VCC_LCD_S | 3.3V/5.0V/12VOptio nal |

## 31、(JP1)EDP Dual 20 PIN 2.0 Pitch Interface(GPIO)




*VCC_LCD 通过跳帽 J101 选择

| NO. | Definition | Power/V | NO. | Definition | Power/V |
|---|---|---|---|---|---|
| 1 | VCC_LCD | 3.3V/5.0V/12VOptional | 2 | VCC_LCD | 3.3V/5.0V/12VOptio nal |
| 3 | GND | | 4 | GND | |
| 5 | EDP_TX0N | 1.8 | 6 | EDP_TX0P | 1.8 |
| 7 | EDP_TX1N | 1.8 | 8 | EDP_TX1P | 1.8 |
| 9 | EDP_TX2N | 1.8 | 10 | EDP_TX2P | 1.8 |
| 11 | EDP_TX3N | 1.8 | 12 | EDP_TX3P | 1.8 |
| 13 | GND | | 14 | GND | |
| 15 | EDP_AUXN | 1.8 | 16 | EDP_AUXP | 1.8 |
| 17 | GND | | 18 | GND | |
| 19 | VCC_3V0 | 3.0 | 20 | LCD_HPD | 3.0 |

## 32、(J24) TP 6 PIN 2.0 Pitch Interface


| NO. | Definition | Power/V | NO. | Definition | Power/V |
|---|---|---|---|---|---|
| 1 | VCC_3V0 | 3.0 | 2 | TP_INT | 3.0 |
| 3 | TP_RST | 3.0 | 4 | I2C4_SCL_TP | 3.0 |
| 5 | I2C4_SDA_TP | 3.0 | 6 | GND | |

# About US

T-Chip Intelligent Technology (Zhongshan) Co., Ltd. , established in 2005, has more than ten years of technological product research and development capabilities, and has nearly 100 patents and software copyrights. As a national high-tech enterprise, we focus on the research and development, production and sales of open source smart hardware, Internet of Things, and digital audio products, while also provide overall solutions with smart hardware products.

T-Chip is an IDH (Independent Design House) officially authorized by Rockchip in Fuzhou, and also a strategic partner of Rockchip, with a close cooperative relationship for more than 10 years.

Firefly is a brand established by T-Chip, with open source community and online store. Firefly products include core boards, mainboards, embedded computers, cluster servers, development kits and other products. Currently, we have more than 100,000 users, including more than 10,000 enterprise users such as Arm, Google, Baidu, Tencent and Alibaba.

Firefly team has more than 70 R&D members, with excellent research and development capabilities of schematic design, PCB layout, board mass production, embedded development, system development, application development and so on. We accelerate the research and development process for many technology entrepreneurs and start-ups, and provide professional technical services.

Make technology simpler, Make life smarter - is the idea of Firefly team. We hope that through Firefly's open source products and technical services, the research and development of various technological products will become efficient and simple, and intelligent technology can be integrated into life.

Firefly is committed to providing enterprise customers with long-term stable and reliable industrial products and services, and continuously creating value for customers.

**T-Chip Intelligent Technology Co., Ltd.**

Website：www.t-firefly.com

Tel：4001-511-533

P.C.：528400

Addr：Room 2101, Hongyu Building, #57 Zhongshan 4Rd, East District, Zhongshan, Guangdong, China.

**Business Communication**

E-mail：sales@t-firefly.com

**Shopping Mall**

t-firefly.taobao.com