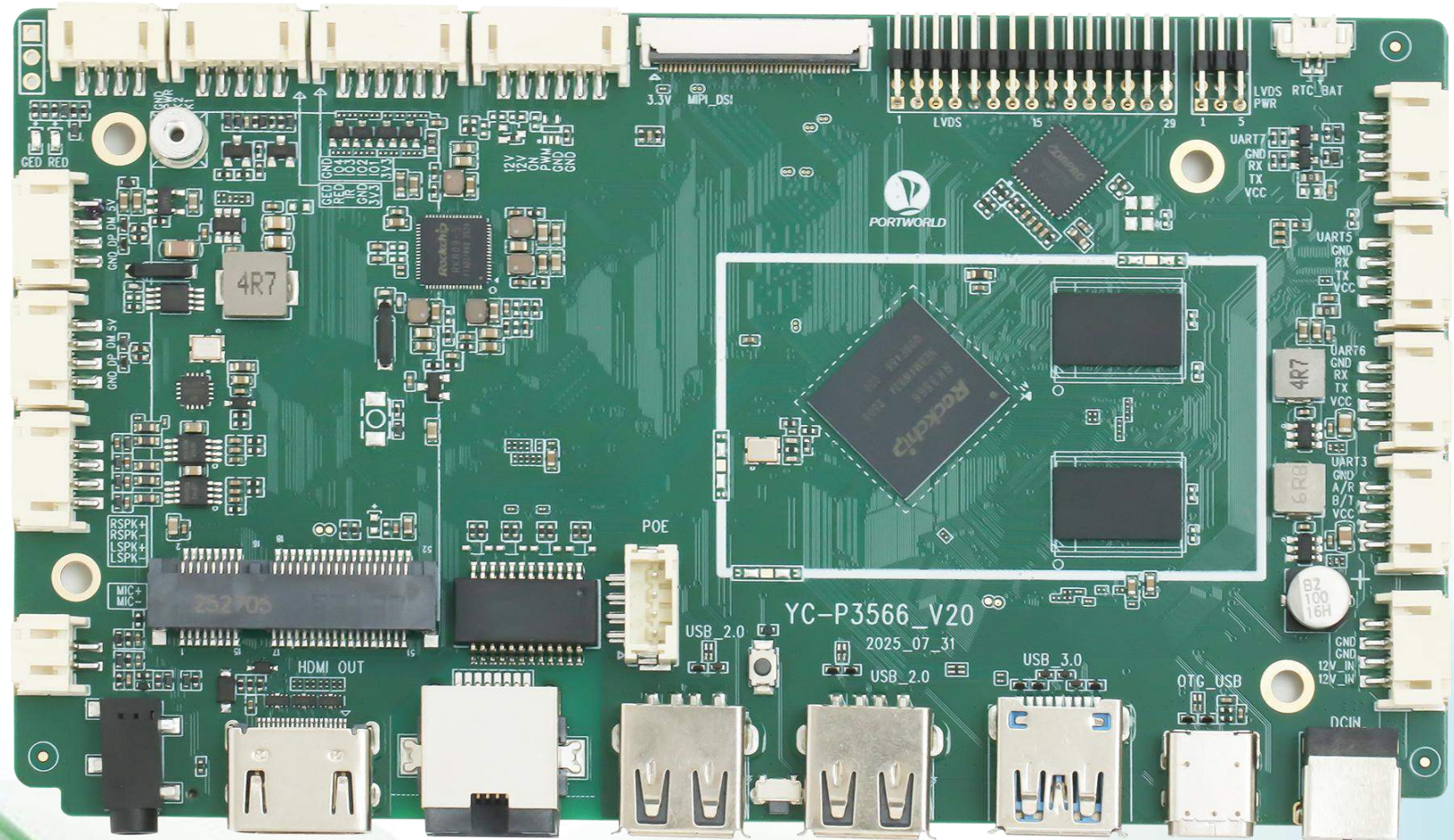




# **RK3566-P3566**

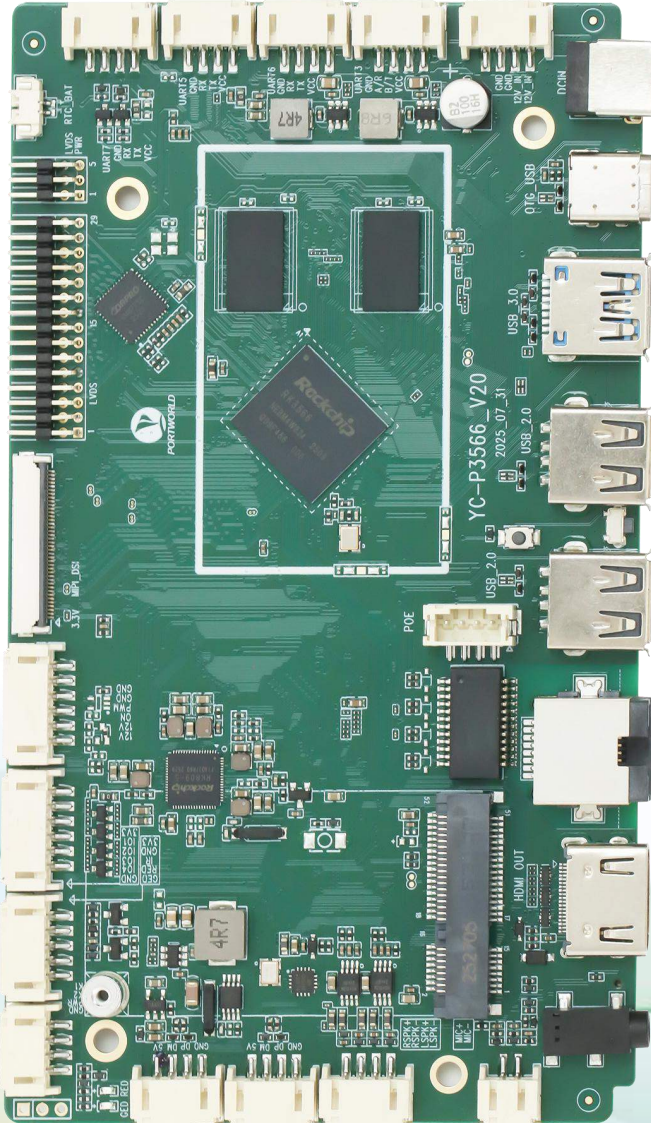
## **AD player Mainboard**



V1.0 2025-10-11

PORTWORLD

## Product features



### Quad-core 64 bit RK3566 processor

Quad-core 64-bit Cortex-A55 processor  
Up to 1.8GHz frequency  
Advanced 22nm process technology, low power consumption and high performance



### Integrated GPU、VPU 、NPU

Support OpenGL ES3.2/2.0/1.1, Vulkan1.1 ;  
4K@60fps H.265/H.264/VP9 Video Decode  
1080P@100fps H.265/H.264 Video Decode



### Support multiple systems

Android、Ubuntu、Buildroot、Debian OS etc



### Rich Peripheral Expansion Interfaces

Including MIPI-CSI、MIPI DSI、USB3.0、USB2.0、I2C、UART, enable direct control and expansion with external devices.



### Built-in powerful 1 TOPS NPU

Mixed precision (INT4/INT8/INT16)  
Compatible with TensorFlow/MXNet/PyTorch



### Wide Range of Applications

Widely applied in scenarios such as Audio and video entertainment consoles, smart NVRs, cloud terminals, IoT gateways, industrial control, edge computing, facial recognition gates, and in-vehicle central control systems



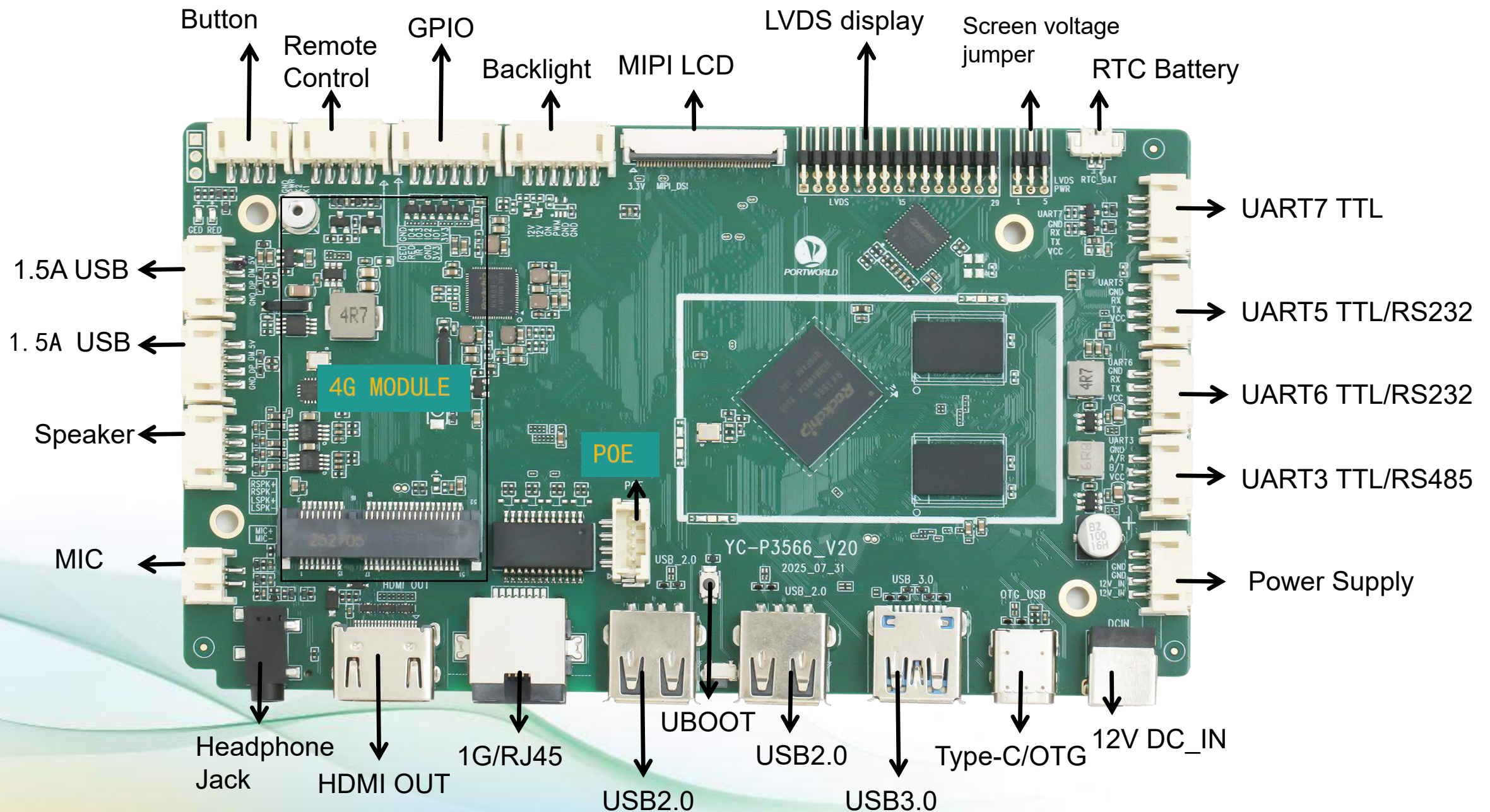
### Open Resources & Customization

Provide full software development SDK, documentation, code samples, technical materials, and development tutorials, enabling users to perform deep customization.

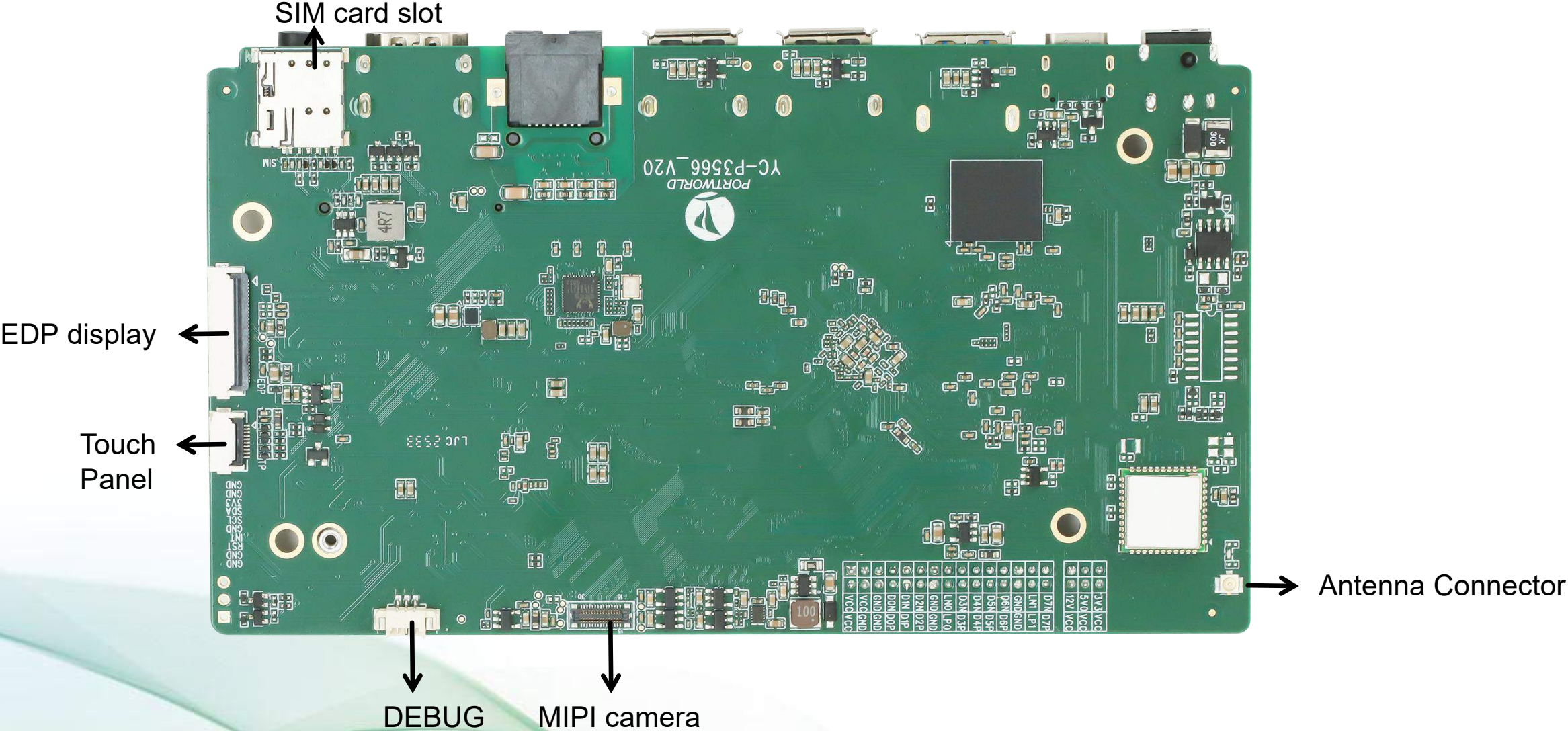
Specifications

| Specification    |                      |                                                                                                                                                                                                                                                                            |
|------------------|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Basic Parameters | SOC                  | RockChip RK3566                                                                                                                                                                                                                                                            |
|                  | CPU                  | Quad core 64bit Cortex-A55 processor, 22nm advanced process, max frequency 1.8GHz                                                                                                                                                                                          |
|                  | GPU                  | ARM G52 2EE Graphic processor, Support OpenGL ES 1.1/2.0/3.2, OpenCL 2.0, Vulkan 1.1 , embedded high performance 2D acceleration hardware                                                                                                                                  |
|                  | NPU                  | Integrated RKNN NPU AI accelerator, 1Tops@INT8 performance, supports one-click conversion of Caffe/TensorFlow/TFLite/ONNX/PyTorch/Keras/Darknet architecture models                                                                                                        |
|                  | Decoding Parameters  | Video decode: 4K@60fps H.265/H.264/VP9、1080P@60fps VC-1, VP8, MPEG-1/2/4<br>Video Decode: 1080P@100fps H.265、1080P@60fps H.264                                                                                                                                             |
|                  | ISP                  | Support 8M ISP                                                                                                                                                                                                                                                             |
|                  | Memory               | DDR4 (4GB/8GB option) Default: 2G                                                                                                                                                                                                                                          |
|                  | Storage              | eMMC (16GB/32GB/64GB/128GB/256GB option) Default: 32G                                                                                                                                                                                                                      |
|                  | Power                | 9-12.0V (5.5mm × 2.1mm)                                                                                                                                                                                                                                                    |
|                  | System               | Android13、Ubuntu、Buildroot、Debian                                                                                                                                                                                                                                          |
|                  | Dimension            | 85mm × 150mm                                                                                                                                                                                                                                                               |
|                  | Power Consumption    | Typical power consumption: 2.5W(12V/208mA), maximum power consumption: 5.4W(12V/450mA), sleep power consumption: 0.03W(12V/8mA)                                                                                                                                            |
|                  | Environment          | Operating temperature: -10° C to 60° C, storage temperature: -20° C to 70° C, operating humidity: 10% to 90% RH (non-condensing)                                                                                                                                           |
| Interface        | Ethernet             | 1 x 1000Mbps Ethernet (RJ45) (PoE) (2.4GHz single-band WiFi6, 802.11b/g/n/ax protocols, Bluetooth 5.4)<br>Expandable 4G LTE (Mini PCIe))                                                                                                                                   |
|                  | Camera               | 1 × MIPI-CSI DPHY (1 × 4lanes)                                                                                                                                                                                                                                             |
|                  | Display              | 1 × EDP(1 × 2lanes)、1 × HDMI 2.0 、1 × MIPI-DSI DPHY、dual 8-bit LVDS 1920X1080 output                                                                                                                                                                                       |
|                  | Watchdog             | software watchdog                                                                                                                                                                                                                                                          |
|                  | USB                  | 4 x USB 2.0 host, 1 x USB 3.0, 1 ↑Type-C_OTG/HOST                                                                                                                                                                                                                          |
|                  | Expansion Interfaces | 4 x TTL (RS485/RS232 optional, default 3xTTL + 1x RS485)<br>1 x remote control, 1 x red light, 1 x green light<br>Speaker interface, supports up to 2 x 4Ω 3W dual-channel speakers<br>1 x 3.5mm audio jack<br>4 x general-purpose GPIO ports<br>1 x touchscreen interface |

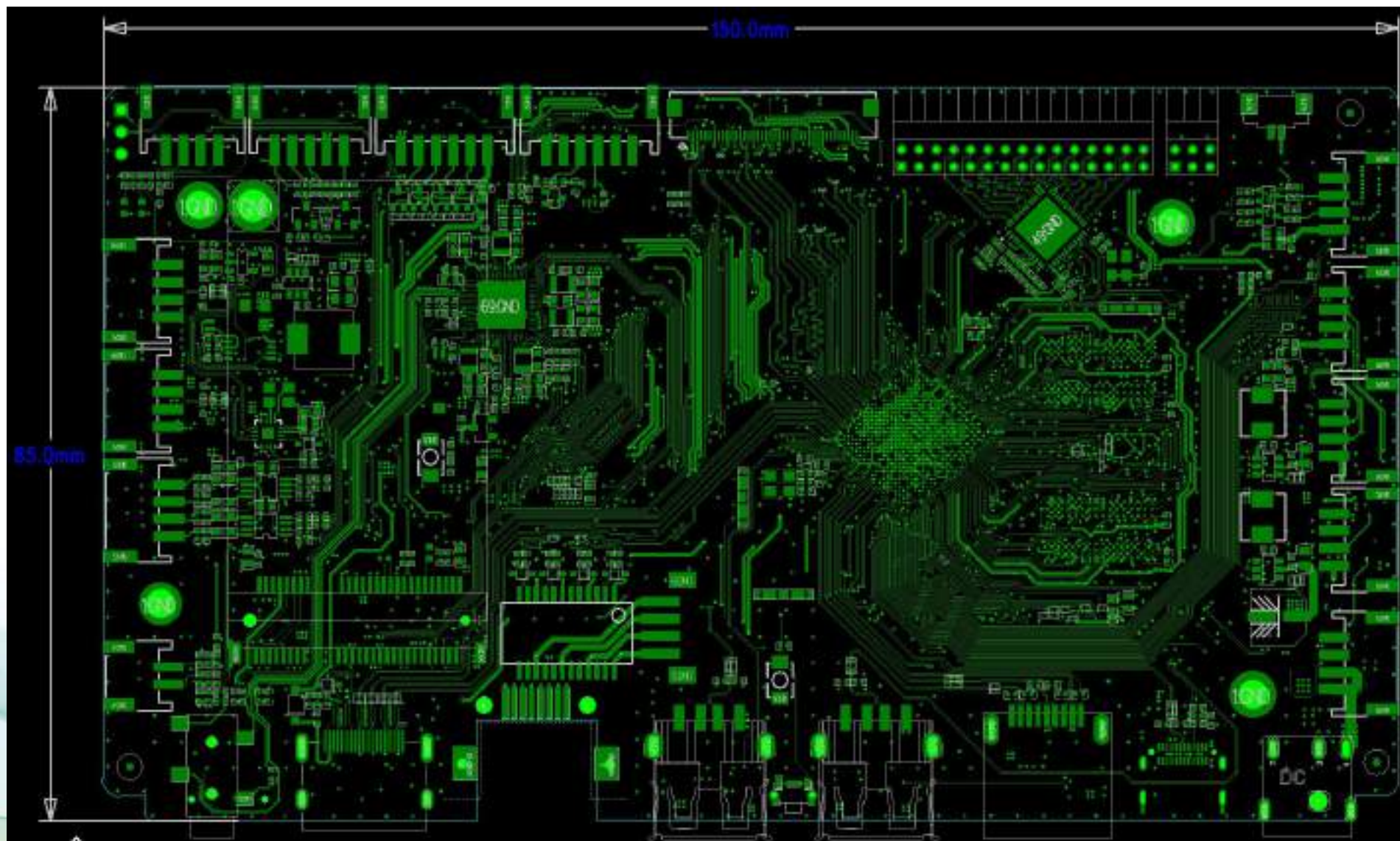
## Interface description



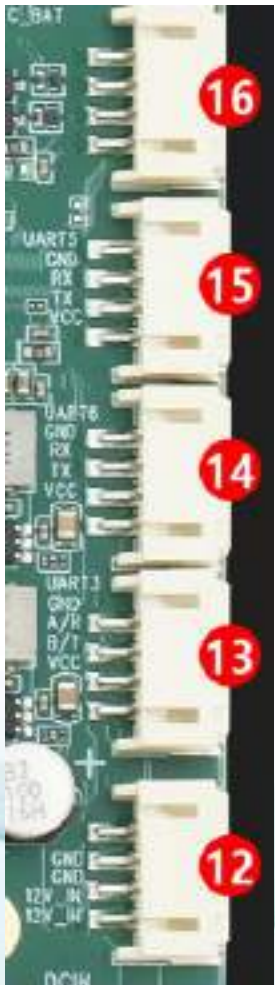
Interface description



## Dimension



Interface definition



12、 Power Supply Interface (2.0mm\*4P)

| Appearance | Number | Definition | Description        |
|------------|--------|------------|--------------------|
|            | 1      | 12V        | Power Positive (+) |
|            | 2      | 12V        | Power Positive (+) |
|            | 3      | GND        | Ground             |
|            | 4      | GND        | Ground             |

13、 UART3 or RS485 (2.0mm\*4P)

| Appearance | Number | Definition | Description        |
|------------|--------|------------|--------------------|
|            | 1      | VCC_3V3    | Power Positive (+) |
|            | 2      | TX/B       | Transmit /485_B    |
|            | 3      | RX/A       | Receive /485_A     |
|            | 4      | GND        | Power Negative (-) |

14、 UART6 or RS232 (2.0mm\*4P)

| Appearance | Number | Definition | Description        |
|------------|--------|------------|--------------------|
|            | 1      | VCC_3V3    | Power Positive (+) |
|            | 2      | TX         | Transmit           |
|            | 3      | RX         | Receive            |
|            | 4      | GND        | Power Negative (-) |

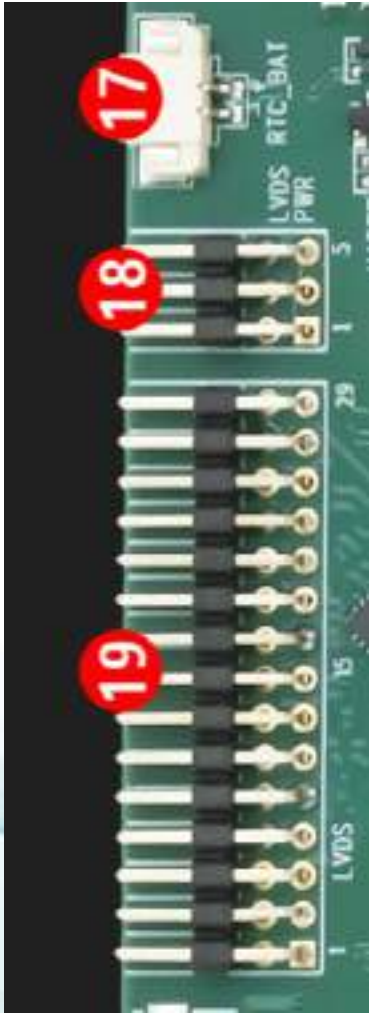
15、 UART5 or RS232 (2.0mm\*4P)

| Appearance | Number | Definition | Description        |
|------------|--------|------------|--------------------|
|            | 1      | VCC_3V3    | Power Positive (+) |
|            | 2      | TX         | Transmit           |
|            | 3      | RX         | Receive            |
|            | 4      | GND        | Power Negative (-) |

16、 UART7 (2mm\*4P)

| Appearance | Number | Definition | Description        |
|------------|--------|------------|--------------------|
|            | 1      | VCC_3V3    | Power Positive (+) |
|            | 2      | TX         | Transmit           |
|            | 3      | RX         | Receive            |
|            | 4      | GND        | Power Negative (-) |

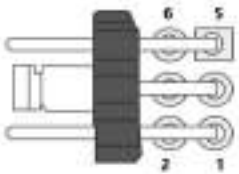
Interface definition



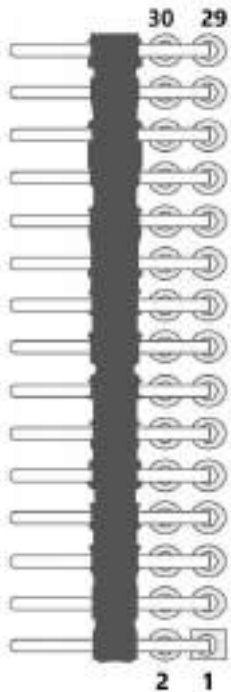
17、RTC Battery Connector (1.25mm\*2P)

| Appearance                                                                        | Number | Definition | Description        |
|-----------------------------------------------------------------------------------|--------|------------|--------------------|
|  | 1      | BAT+       | Battery positive + |
|                                                                                   | 2      | BAT-       | Battery negative-  |

18、LVDS Screen Power Jumper(6PIN\*2.0mm Right Angle)

| Appearance                                                                        | Number | Definition | Description     |
|-----------------------------------------------------------------------------------|--------|------------|-----------------|
|  | 1      | 12V        | Powered by 12V  |
|                                                                                   | 2      | VCC_LCD    | Screen voltage  |
|                                                                                   | 3      | 5V         | Powered by 12V  |
|                                                                                   | 4      | VCC_LCD    | Screen voltage  |
|                                                                                   | 5      | 3.3V       | Powered by 3.3V |
|                                                                                   | 6      | VCC_LCD    | Screen voltage  |

19、MIPI\_LCD display(30PIN\*2.0mm Right Angle)

| Appearance                                                                           | Number | Definition | Description  |
|--------------------------------------------------------------------------------------|--------|------------|--------------|
|  | 1      | VCC        | Power Supply |
|                                                                                      | 2      | VCC        | Power Supply |
|                                                                                      | 3      | VCC        | Power Supply |
|                                                                                      | 4      | GND        | Ground       |
|                                                                                      | 5      | GND        | Ground       |
|                                                                                      | 6      | GND        | Ground       |
|                                                                                      | 7      | D0N        | LVDS Signal  |
|                                                                                      | 8      | D0P        | LVDS Signal  |
|                                                                                      | 9      | D1N        | LVDS Signal  |
|                                                                                      | 10     | D1P        | LVDS Signal  |
|                                                                                      | 11     | D2N        | LVDS Signal  |
|                                                                                      | 12     | D2P        | LVDS Signal  |
|                                                                                      | 13     | GND        | Ground       |
|                                                                                      | 14     | GND        | Ground       |
|                                                                                      | 15     | CLK0N      | LVDS Signal  |
|                                                                                      | 16     | CLK0P      | LVDS Signal  |
|                                                                                      | 17     | D3N        | LVDS Signal  |
|                                                                                      | 18     | D3P        | LVDS Signal  |
|                                                                                      | 19     | D5N        | LVDS Signal  |
|                                                                                      | 20     | D5P        | LVDS Signal  |
|                                                                                      | 21     | D6N        | LVDS Signal  |
|                                                                                      | 22     | D6P        | LVDS Signal  |
|                                                                                      | 23     | D7N        | LVDS Signal  |
|                                                                                      | 24     | D7P        | LVDS Signal  |
|                                                                                      | 25     | GND        | Ground       |
|                                                                                      | 26     | GND        | Ground       |
|                                                                                      | 27     | CLK1N      | LVDS Signal  |
|                                                                                      | 28     | CLK1P      | LVDS Signal  |
|                                                                                      | 29     | D8N        | LVDS Signal  |
|                                                                                      | 30     | D8P        | LVDS Signal  |

Interface definition



20、MIPI\_LCD display(FPC0.5\*40P)

| Appearance | Number | Definition   | Description        |
|------------|--------|--------------|--------------------|
|            | 1      | NC           | /                  |
|            | 2      | VDD_LCD      | 3.3V power supply  |
|            | 3      | VDD_LCD      | 3.3V power supply  |
|            | 4      | NC           | /                  |
|            | 5      | MIPI_RST     | Reset (Level 1.8V) |
|            | 6      | NC           | /                  |
|            | 7      | GND          | Ground             |
|            | 8      | MIPI_TX0N    | MIPI signal        |
|            | 9      | MIPI_TX0P    | MIPI signal        |
|            | 10     | GND          |                    |
|            | 11     | MIPI_TX1N    | MIPI signal        |
|            | 12     | MIPI_TX1P    | MIPI signal        |
|            | 13     | GND          |                    |
|            | 14     | MIPI_TX_CLKN | MIPI signal        |
|            | 15     | MIPI_TX_CLKP | MIPI signal        |
|            | 16     | GND          |                    |
|            | 17     | MIPI_TX2N    | MIPI signal        |
|            | 18     | MIPI_TX2P    | MIPI signal        |
|            | 19     | GND          |                    |
|            | 20     | MIPI_TX3N    | MIPI signal        |
|            | 21     | MIPI_TX3P    | MIPI signal        |
|            | 22     | GND          | Ground             |
|            | 23     | NC           | /                  |
|            | 24     | NC           | /                  |
|            | 25     | GND          | /Ground            |
|            | 26     | NC           | /                  |
|            | 27     | NC           | /                  |
|            | 28     | NC           | /                  |
|            | 29     | VCC_LCD18    | 1.8V power supply  |
|            | 30     | GND          | Ground             |
|            | 31     | LED-         | Backlight negative |
|            | 32     | LED-         | Backlight negative |
|            | 33     | NC           | /                  |
|            | 34     | NC           | /                  |
|            | 35     | AVEE         | -5.6V              |
|            | 36     | NC           | /                  |
|            | 37     | NC           | /                  |
|            | 38     | AVDD         | +5.6V              |
|            | 39     | LED+         | Backlight positive |
|            | 40     | LED+         | Backlight positive |

21、LVDS backlight interface (2mm\*6P)

| Appearance | Number | Definition | Description                     |
|------------|--------|------------|---------------------------------|
|            | 1      | GND        | Ground                          |
|            | 2      | GND        | Ground                          |
|            | 3      | PWM        | Backlight Brightness Adjustment |
|            | 4      | EN         | Backlight on/off control        |
|            | 5      | 12V        | Screen backlight power supply   |
|            | 6      | 12V        | Screen backlight power supply   |

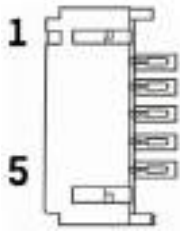
22、GPIO interface (2mm\*6P)

| Appearance | Number | Definition | Description    |
|------------|--------|------------|----------------|
|            | 1      | VCC_3V3    | Power Positive |
|            | 2      | IO1        | IO port 1      |
|            | 3      | IO2        | IO port 2      |
|            | 4      | IO3        | IO port 3      |
|            | 5      | IO4        | IO port 4      |
|            | 6      | GND        | Ground         |

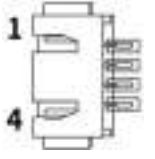
Interface definition



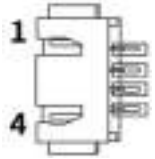
23、Remote control interface (2.0mm\*5P)

| Appearance                                                                        | Number | Definition | Description           |
|-----------------------------------------------------------------------------------|--------|------------|-----------------------|
|  | 1      | VCC        | Powered by 3.3V       |
|                                                                                   | 2      | GND        | Ground                |
|                                                                                   | 3      | IR         | remote control        |
|                                                                                   | 4      | RED        | Red indicator light   |
|                                                                                   | 5      | GED        | Green indicator light |

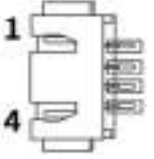
24、Button interface (2.0mm\*4P)

| Appearance                                                                         | Number | Definition | Description        |
|------------------------------------------------------------------------------------|--------|------------|--------------------|
|  | 1      | K1         | Reserved button K1 |
|                                                                                    | 2      | K2         | Reserved button K2 |
|                                                                                    | 3      | PWR        | Power off/on       |
|                                                                                    | 4      | GND        | Ground             |

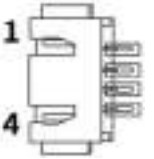
25、USB interface (2.0mm\*4P)

| Appearance                                                                          | Number | Definition | Description  |
|-------------------------------------------------------------------------------------|--------|------------|--------------|
|  | 1      | +5V        | Power supply |
|                                                                                     | 2      | D-         | DM           |
|                                                                                     | 3      | D+         | DP           |
|                                                                                     | 4      | GND        | Ground       |

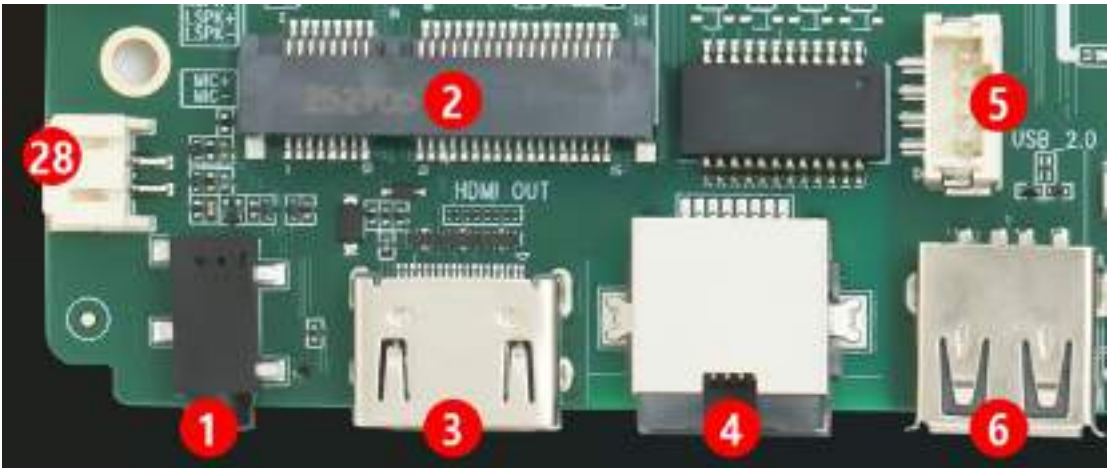
26、USB interface (2.0mm\*4P)

| Appearance                                                                          | Number | Definition | Description  |
|-------------------------------------------------------------------------------------|--------|------------|--------------|
|  | 1      | +5V        | Power supply |
|                                                                                     | 2      | D-         | DM           |
|                                                                                     | 3      | D+         | DP           |
|                                                                                     | 4      | GND        | Ground       |

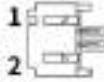
27、Speaker interface (2.0mm\*4P)

| Appearance                                                                          | Number | Definition | Description    |
|-------------------------------------------------------------------------------------|--------|------------|----------------|
|  | 1      | LPK-       | Left channel-  |
|                                                                                     | 2      | LPK+       | Left channel+  |
|                                                                                     | 3      | RPK-       | Right channel- |
|                                                                                     | 4      | RPK+       | Right channel+ |

# Interface definition



## 28、MIC (2.0mm\*4P)

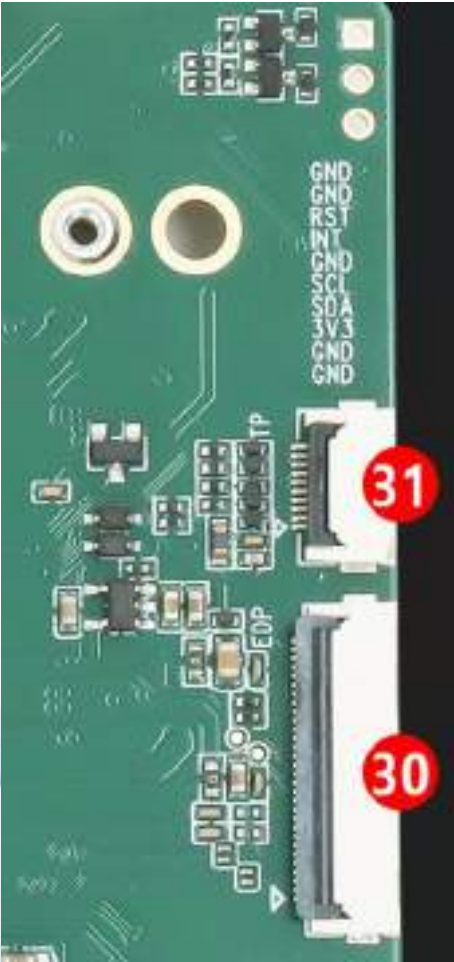
| Appearance                                                                          | Number | Definition | Description  |
|-------------------------------------------------------------------------------------|--------|------------|--------------|
|  | 1      | MICP+      | Mic positive |
|                                                                                     | 2      | MICN-      | Mic negative |

## 5、POE Power Supply (2.0mm\*4P)

| Appearance                                                                          | Number | Definition | Description          |
|-------------------------------------------------------------------------------------|--------|------------|----------------------|
|  | 1      | CT1        | Communication data 1 |
|                                                                                     | 2      | CT2        | Communication data 2 |
|                                                                                     | 3      | CT3        | Communication data 3 |
|                                                                                     | 4      | CT4        | Communication data 4 |

# Interface definition

Back



## 31、Touch Panel(FPC0.5\*10P)

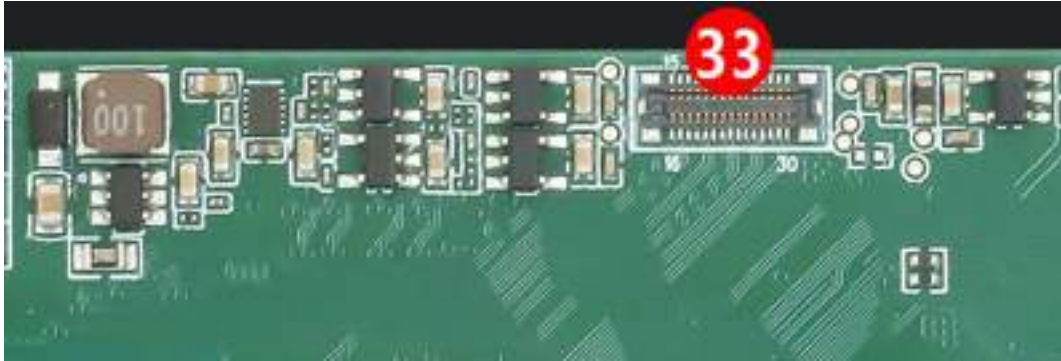
| Appearance | Number | Definition | Description     |
|------------|--------|------------|-----------------|
|            | 1      | GND        | Power Supply    |
|            | 2      | GND        | Power Supply    |
|            | 3      | VCC_TP     | Powered by 3.3V |
|            | 4      | SDA        | Data            |
|            | 5      | SCL        | Clock           |
|            | 6      | GND        | Ground          |
|            | 7      | TP_INT     | Input Interrupt |
|            | 8      | TP_RESET   | Reset           |
|            | 9      | GND        | Ground          |
|            | 10     | GND        | Ground          |

## 32、EDP display(FPC0.5\*30P)

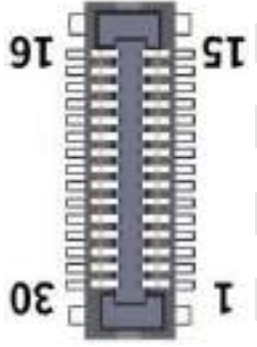
| Appearance | Number | Definition | Description     |
|------------|--------|------------|-----------------|
|            | 1      | /          | /               |
|            | 2      | GND        | Ground          |
|            | 3      | TX1N       | EDP Signal      |
|            | 4      | TX1P       | EDP Signal      |
|            | 5      | GND        | Ground          |
|            | 6      | TX0N       | EDP Signal      |
|            | 7      | TX0P       | EDP Signal      |
|            | 8      | GND        | Ground          |
|            | 9      | AUXP       | EDP Signal      |
|            | 10     | AUXN       | EDP Signal      |
|            | 11     | GND        | Ground          |
|            | 12     | VCC        | Powered by 3.3V |
|            | 13     | VCC        | Powered by 3.3V |
|            | 14     | /          | /               |
|            | 15     | GND        | Ground          |
|            | 16     | GND        | Ground          |
|            | 17     | /          | /               |
|            | 18     | GND        | Ground          |
|            | 19     | GND        | Ground          |
|            | 20     | GND        | Ground          |
|            | 21     | GND        | Ground          |
|            | 22     | EN         | EN Enable Pin   |
|            | 23     | ADJ        | PWM Control Pin |
|            | 24     | /          | /               |
|            | 25     | /          | /               |
|            | 26     | VDD        | Powered by 3.3V |
|            | 27     | VDD        | Powered by 3.3V |
|            | 28     | VDD        | Powered by 3.3V |
|            | 29     | VDD        | Powered by 3.3V |
|            | 30     | /          | /               |

# Interface definition

Back



## 34、MIPI Camera(0.4BTB 2\*15Pin)

| Appearance                                                                          | Number | Definition | Description     |
|-------------------------------------------------------------------------------------|--------|------------|-----------------|
|  | 1      | GND        | Ground          |
|                                                                                     | 2      | MIPI_MCLK  | MIPI Signal     |
|                                                                                     | 3      | GND        | Ground          |
|                                                                                     | 4      | MIPI_PDN1  | Enable Signal   |
|                                                                                     | 5      | MIPI_RST   | Reset data      |
|                                                                                     | 6      | SDA        | IIC data        |
|                                                                                     | 7      | SCL        | IIC clock       |
|                                                                                     | 8      | GND        | Ground          |
|                                                                                     | 9      | VCC_DVP    | Powered by 2.8V |
|                                                                                     | 10     | GND        | Ground          |
|                                                                                     | 11     | VCC        | Powered by 2.8V |
|                                                                                     | 12     | GND        | Ground          |
|                                                                                     | 13     | VCC        | Powered by 1.8V |
|                                                                                     | 14     | VCC        | Powered by 1.8V |
|                                                                                     | 15     | GND        | Ground          |
|                                                                                     | 16     | GND        | Ground          |
|                                                                                     | 17     | MIPI_D0N   | MIPI Signal     |
|                                                                                     | 18     | MIPI_D0P   | MIPI Signal     |
|                                                                                     | 19     | GND        | Ground          |
|                                                                                     | 20     | MIPI_D1N   | MIPI Signal     |
|                                                                                     | 21     | MIPI_D1P   | MIPI Signal     |
|                                                                                     | 22     | GND        | Ground          |
|                                                                                     | 23     | MIPI_CLKN  | MIPI Signal     |
|                                                                                     | 24     | MIPI_CLKP  | MIPI Signal     |
|                                                                                     | 25     | GND        | Ground          |
|                                                                                     | 26     | MIPI_D2N   | MIPI Signal     |
|                                                                                     | 27     | MIPI_D2P   | MIPI Signal     |
|                                                                                     | 28     | GND        | Ground          |
|                                                                                     | 29     | MIPI_D3N   | MIPI Signal     |
|                                                                                     | 30     | MIPI_D3P   | MIPI Signal     |



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