

# H3 主板产品规格书

## H3 Mainboard Specification

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# 修改记录 Changelog

1.0.0	2020-12-06	中英文合并版本。Chinese and English merged version.
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## 1 产品概述 Product Overview

H3 主板基于瑞芯微 RK3288 高性能四核应用处理器平台，RK3288 主芯片集成四核 Cortex-A17 和 Mali-T764 高性能四核 GPU，主频最高可达 1.8GHz，具备超强的计算性能、2D/3D 图形处理能力和全高清视频编解码能力，完美支持 4Kx2K@60fps 超清解码和 4Kx2K HDMI 超清输出。

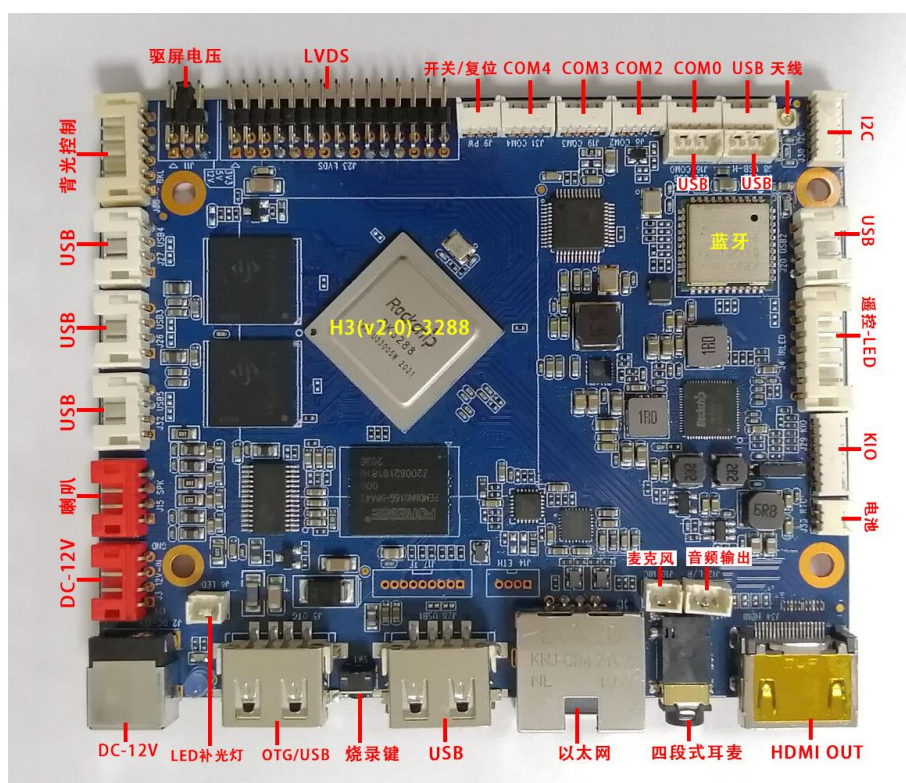
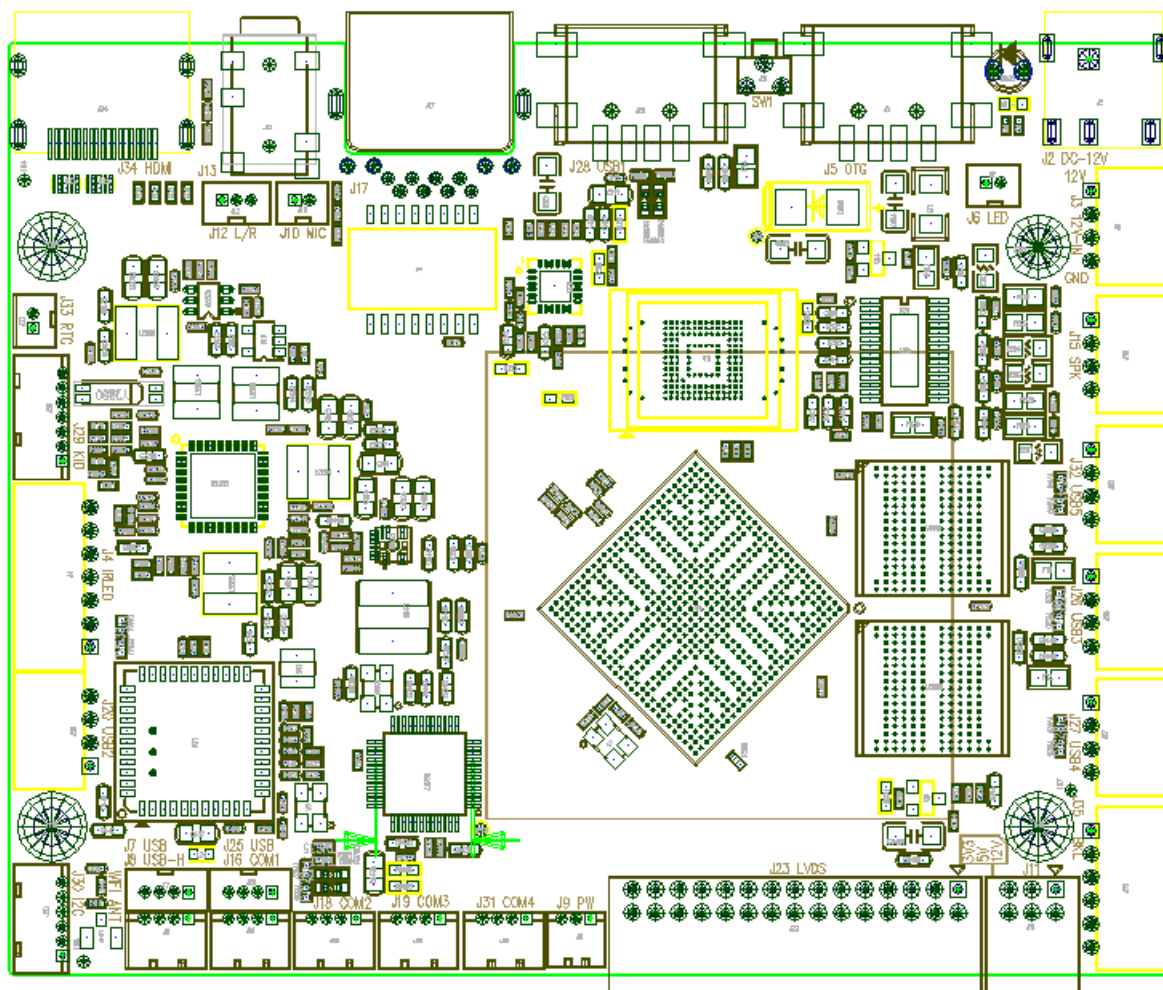
H3 mainboard is based on Rockchip RK3288 high-performance application processor platform. RK3288 SOC chip integrates Cortex-A17 quad-core and Mali-T764 quad-core GPU, clocked at up to 1.6GHz, with superior computing performance, 2D/3D graphics processing capabilities and Full HD video codec capabilities. It perfectly supports 4Kx2K@60fps decoding and 4Kx2K HDMI output.

此款主板专门针对**超薄**应用进行严格选材和设计，紧凑的尺寸和丰富的接口方便其集成到整机中，为最终的产品带来流畅的体验和超强的性能，可应用于数字标牌、触摸互动、消费电子、娱乐系统等行业。

This mainboard is specially designed for **ultra-thin** applications with strict material selection and design. The compact size and rich interface facilitate its integration into the complete machine, bringing a smooth experience and superior performance to the final product. It can be applied to digital signage, touch interactive, consumer electronics, entertainment systems and other industries.

H3 主板 V2.0 最新接口示意图如下所示。

H3 mainboard V2.0 actual interface diagram as shown below.



## 2 规格清单 Specification List

H3 的系统功能和接口特性如下表所示。H3's system functions and interface features are shown in the following table.

功能&接口 Function&Interface	详细描述 Detailed Description
<b>CPU</b>	RK3288 Cortex-A17 四核, 最高主频 1.8GHz RK3288 Cortex-A17 quad-core, up to 1.8GHz
<b>DDR</b>	LPDDR-III 2GB (4GB 可选) LPDDR-III 2GB (4GB optional)
<b>存储·Storage</b>	默认标配 16GB EMMC NAND 芯片, 可扩展至最大 128GB The default comes with an 16GB EMMC NAND chip that can scale up to 128GB
<b>LVDS</b>	30 针行业标准双路 LVDS 接口, 支持 VESA/JEITA 格式, 最高支持 1080P 输出 30-pin industry-standard dual LVDS supporting VESA/JEITA format up to 1080P output
<b>HDMI 输出 HDMI Output</b>	HDMI 2.0 标准显示接口, 最高支持 4K 输出 HDMI 2.0 standard display interface supports up to 4K output
<b>MPI-DSI 输出 MIPI-DSI Output</b>	31 针行业标准 FPC MIPI 屏接口, 可扩展 MIPI 显示输出 31-Pin common MIPI DSI interface for extended MIPI panel sub-board
<b>耳机/麦克·HP/Mic</b>	支持美标 4 段耳麦一体 3.5mm 插座 (左-右-地-麦克) Support CTIA 4-pole HP/Mic socket (Left-Right-GND-Mic)
<b>线路输出·Line Output</b>	支持标准左右声道线路输出 (排针接口) Support standard left and right channel line output (pin header)
<b>功放输出 Amplifier output</b>	8 欧·6W 双路音频功放输出 8 Ohm 6W Dual Audio Amplifier Output
<b>MIC 输入 MIC Input</b>	差分 MIC 输入 (排针接口) Differential MIC input (pin header)
<b>USB 2.0 接口 USB 2.0 Interface</b>	2 个外置横插接口 (单层插座, 其中一个为 OTG 口), 7 个内置排针 (其中一个 CPU 直通 USB) 2 horizontal connectors (Single Socket, one is for OTG), 7 pin headers (one is CPU original USB)
<b>串口 Serial Port</b>	4 个 TTL/RS-232 兼容内置 4 TTL/RS-232 compatible
<b>TF 卡 Micro SD Card</b>	自弹式 TF 卡插座, 最高支持 128GB TF 卡 Self-elastic micro SD card socket, up to 128GB capacity
<b>摄像头 Camera</b>	支持 200 万像素以内 USB 摄像头 Support USB camera within 2 million pixels
<b>WiFi</b>	内置高性能 SDIO 接口 WiFi 模块, 支持 IEEE 802.11 b/g/n Built-in high performance SDIO interface WiFi module, support IEEE 802.11 b/g/n
<b>蓝牙 Bluetooth</b>	内置高性能串口接口 BT 模块 (选配), 支持 V2.1+EDR/BT v3.0/BT v3.0+HS/BT v4.0

功能&接口 Function&Interface	详细描述 Detailed Description
	Built-in high performance UART interface BT module (optional) with support for V2.1+EDR/BT v3.0/BT v3.0+HS/BT v4.0
<b>以太网口</b> Ethernet	10/100M 自适应以太网 RJ45 网口 10/100M Adaptive Ethernet RJ45 connector
<b>背光控制</b> Backlight Control	行业标准液晶屏背光控制接口，支持背光开关和亮度调节 Industry standard LCD backlight control header, support for backlight switch and brightness adjustment
<b>红外遥控</b> Infrared RC	标准红外遥控接收头和红外接收排针接口 Standard infrared remote control receiver and infrared receiver pin header
<b>GPIO 信号</b> GPIO Signals	5 路 GPIO 信号，可扩展 GPIO 按键和/或 3.3V 输入/输出 5-way GPIO signals for such as GPIO buttons and/or 3.3V digital input/output
<b>I2C 总线</b> I2C Bus	I2C 排针接口，可扩展 I2C 电容屏等 I2C pin header for I2C capacitive screen and etc
<b>实时时钟</b> Real Time Clock	超低功耗 RTC 电路（外接 CR1220 纽扣电池），并可支持定时开关机 Ultra-low-power RTC circuit (CR1220 battery) with timer and alarm functionalities
<b>指示灯</b> LED Indicator	绿色工作指示灯 Green LED indicator for running
<b>按键</b> Buttons	烧录键（RECOVERY）和电源键 Recovery mode button and power switch button
<b>PW/复位</b> PW/Reset	一键开关机和复位信号排针插座 One-key power switch and reset pin header
<b>电源输入</b> DC Input	支持 9~15V 宽电压直流电源输入 Supports 9~15V wide voltage DC power input
<b>环境要求</b> Ambient Requirement	工作温度 0°~70°，工作湿度 0%~95%（不结露） Working temperature 0°~70°，working humidity 0%~95% (non-condensing)
<b>物理尺寸</b> Physical Size	长*宽*高（100mm*80mm*9mm），PCB 正面高度 7mm Length*Width*Height (100mm*80mm*9mm), PCB top side height 7mm
<b>安卓系统</b> Android Version	支持安卓 5.1/6.0/7.1/8.1，推荐安卓 7.1 Support Android 5.1/6.0/7.1/8.1, Recommended Android 7.1



### 3 接口定义 Interface definition

#### 3.1 J1 TF 卡座 TF Card Jack

【J1】TF 卡座 (标准插座)。 [J1] TF Card Jack (Standard jack).

#### 3.2 J2 DC-12V 插座 DC-12V Socket

【J2】DC-12V 电源插座, 内正外负, 内芯直径 2.0mm, 外圈孔径 5.5mm。 [J2] DC-12V power socket, positive outer and negative inner, inner pin diameter 2.0mm, outer ring diameter 5.5mm.

#### 3.3 J3 DC-12V 输入接口 DC-12V Input Header

【J3】DC-12V 输入接口 (单排 2.0mm-方孔为 1 脚)。 [J3] DC-12V Input Header (SIP 2.0mm-Square pad is pin 1).

Pin#	Definition	Note
1	12V	直流电源输入 (9~15V) DC Power Input (9~15V)
2	12V	直流电源输入 (9~15V) DC Power Input (9~15V)
3	GND	电源地 Power Ground
4	GND	电源地 Power Ground

#### 3.4 J4 遥控-LED 接口 Remote Control & LED Header

【J4】遥控-LED 接口 (单排 2.0mm-方孔为 1 脚)。 [J4] Remote Control & LED Header (SIP 2.0mm-Square pad is pin 1).

Pin#	Definition	Note
1	5VS	5V Standby 供电输出 Power output 5V standby
2	GND	数字地 Digital Ground
3	IR	5V 电平红外遥控输入信号 5V level Irda remote control input singal
4	IO	3.3V 电平 GPIO 输入信号 3.3V level GPIO input signal
5	GREEN	运行指示灯信号 (外接绿灯) Running indicator for external green LED
6	5VS	5V Standby 供电输出 Power output supply 5V standby
7	RED	待机指示灯信号 (外接红灯) Standby indicator for external red LED

### 3.5 J5 USB OTG 插座 USB OTG Jack

【J5】USB OTG 插座（标准 Type A 横插插座）。[J5] USB OTG Jack (Standard Type-A jack).

**注意：此接口上电瞬间默认为固件烧录口，可连接 PC 电脑进行软件烧录；进入安卓后可通过软件设置为 USB ADB 调试口或者普通 USB Host 接口。**

### 3.6 J6 LED 补光开关 LED Power Switch

【J6】LED 补光电源 12V（单排 1.25mm-方孔为 1 脚）。[J6] LED Power Switch (SIP 1.25mm-Square pad is pin 1).

Pin#	Definition	Note
1	GND	电源地 Power Ground
2	12V	12V 可开关控制电源输出 12V Switch Power Output

### 3.7 J7 USB 2.0 接口 USB 2.0 Host Header

【J7】USB 2.0 接口（单排 2.0mm-方孔为 1 脚）。[J7] USB 2.0 Host Header (SIP 2.0mm-Square pad is pin 1)

Pin#	Definition	Note
1	GND	数字地 Digital Ground
2	DP	USB 差分数据+ USB Differential Data+
3	DM	USB 差分数据- USB Differential Data-
4	5V	5V 输出 Power output 5V

### 3.8 J8 USB 2.0 接口 USB 2.0 Host Header

【J8】USB 2.0 接口（单排 1.25mm-方孔为 1 脚）。[J8] USB 2.0 Host Header (SIP 1.25mm-Square pad is pin 1)

Pin#	Definition	Note
1	GND	数字地 Digital Ground
2	DP	USB 差分数据+ USB Differential Data+
3	DM	USB 差分数据- USB Differential Data-
4	5V	5V 输出 Power output 5V

**注意：此接口为 CPU 内部直通 USB 口，摄像头等高速设备建议使用此独立接口。**

### 3.9 J9 开关和复位接口 Power Switch & Reset Header

【J9】开关和复位接口（单排 1.25mm-方孔为 1 脚）。[J9] Power switch & reset Header (SIP 1.25mm-Square pad is pin 1).

Pin#	Definition	Note
1	PW	一键开关机/开关屏信号 Power on/off and screen on/off signal
2	GND	数字地 Digital Ground
3	RES	硬件复位信号 Hardware reset signal

### 3.10 J10 麦克风接口 Mic Input Header

【J10】麦克风接口（单排 1.25mm-方孔为 1 脚）。[J10] Audio inut header (SIP 1.25mm-Square pad is pin 1).

Pin#	Definition	Note
1	GND	音频地 Audio Ground
2	MIC	单声道麦克风输入 Mono microphone input

### 3.11 J11 LVDS 电压接口 LVDS Voltage Header

【J11】LVDS 驱屏跳线接口（双排 2.0mm-方孔为 1 脚）。1 和 2 脚跳线帽短接则 J23 的 VLCD 为 12V, 3 和 4 脚跳线帽短接则 J23 的 VLCD 为 5V, 5 和 6 脚跳线帽短接则 J23 的 VLCD 为 3.3V。请根据实际使用的液晶屏的逻辑电压调整跳线帽位置，注意不要跳错位置否则会造成液晶屏和主板电路的损坏。

[J11] LVDS Voltage Header (DIP 2.0mm-Square pad is pin 1). If pin 1 and 2 are jumper shorted, the VLCD of J23 is 12V. If pin 3 and 4 are jumper shorted, the VLCD of J23 is 5V. If pin 5 and 6 are jumper shorted, the VLCD of J23 is 3.3V. Please adjust the jumper position according to the actual logic voltage of the LCD screen. Be careful not to jumper to the wrong position or it may damage the LCD screen and the motherboard circuit.

### 3.12 J12 音频线路输出 Audio Line Output

【J12】音频线路输出（单排 1.25mm-方孔为 1 脚）。[J12] Audio Line Output (SIP 1.25mm-Square pad is pin 1).

Pin#	Definition	Note
------	------------	------

1	AL	立体声输出左声道 Stereo output left channel
2	GND	音频地 Audio Ground
3	AR	立体声输出右声道 Stereo output right channel

### 3.13 J13 四段式耳麦插座 4-Pole HP/Mic Jack

【J13】四段式 3.5mm 耳机/麦克风插座 (CTIA 美标定义-如下图), 信号和 J15/J20 一致, 支持耳机插入喇叭静音。 [J13] 4-Pole 3.5mm Headphone&Micphone Jack (CTIA Standard jack). It is the same signals with J15/J20. It support insert dection for speaker mute.



### 3.14 J15 喇叭接口 Speaker Header

【J15】喇叭接口 (单排 2.0mm-方孔为 1 脚)。 [J15] Speaker Header (SIP 2.0mm-Square pad is pin 1).

Pin#	Definition	Note
1	OUTP_R	喇叭右声道+ Speaker right channel +
2	OUTN_R	喇叭右声道- Speaker right channel -
3	OUTN_L	喇叭左声道- Speaker left channel -
4	OUTP_L	喇叭左声道+ Speaker left channel +

### 3.15 J16 数据串口 1 Data Serial Port 1

【J16】内置串口 1 (单排 1.25mm-方孔为 1 脚), 默认为 TTL 3.3V 电平且可配置为 RS-232 电平 (焊接 U9022 则为 RS-232 电平); **对应的软件编程设备节点为 ttyS1**。 [J16] Built-in Serial Port 1 (SIP 1.25mm-Square pad is pin 1). The output level is TTL 3.3V by default and it could be setup to RS-232 if required (RS-232 if U9022 mounted). **The related software device node name is ttyS1.**

Pin#	Definition	Note
1	GND	数字地 Digital Ground
2	RX	数据接收 (TTL 或 RS-232电平) Data receive (TTL or RS-232 level)
3	TX	数据发送 (TTL 或 RS-232电平) Data transmit (TTL or RS-232 level)
4	VCC	电源输出 (默认3.3V, 可选5V) Power output (Default 3.3V, 5V option)

### 3.16 J17 以太网 RJ45 插座 Ethernet RJ45 Jack

【J17】以太网 RJ45 插座 (标准插座)。 [J17] Ethernet RJ45 Jack (Standard jack).

### 3.17 J18 数据串口 2 Data Serial Port 2

【J18】内置串口 2 (单排 1.25mm-方孔为 1 脚) ,默认为 TTL 3.3V 电平且可配置为 RS-232 电平 (焊接 U9022 则为 RS-232 电平); **对应的软件编程设备节点为 ttyS2**。 [J18] Built-in Serial Port 2 (SIP 1.25mm-Square pad is pin 1). The output level is TTL 3.3V by default and it could be setup to RS-232 if required (RS-232 if U9022 mounted). **The related software device node name is ttyS2.**

Pin#	Definition	Note
1	GND	数字地 Digital Ground
2	RX	数据接收 (TTL 或 RS-232电平) Data receive (TTL or RS-232 level)
3	TX	数据发送 (TTL 或 RS-232电平) Data transmit (TTL or RS-232 level)
4	VCC	电源输出 (默认3.3V, 可选5V) Power output (Default 3.3V, 5V option)

**注意:** 内置串口 2 为系统调试信息输出口, 如果作为数据串口使用, 则请联系供应商获取定制版本软件; 在上电的前 5 秒此串口会输出启动信息 (上位机或下位机需要处理数据容错)。 Note: If you need to use the built-in serial port 2 as a data serial port, please contact the supplier to obtain the customized software; this serial port will output the startup information in the first 5 seconds of power on (the upper or lower machine should handle this kind of data fault tolerance).

### 3.18 J19 数据串口 3 Data Serial Port 3

【J19】内置串口 3 (单排 1.25mm-方孔为 1 脚) ,默认为 TTL 3.3V 电平且可配置为 RS-232 电平 (焊接 U9023 则为 RS-232 电平); **对应的软件编程设备节点为 ttyS3**。 [J19] Built-in Serial Port 3 (SIP 1.25mm-Square pad is pin 1). The output level is TTL 3.3V by default and it could be setup to RS-232 if required (RS-232 if U9023 mounted). **The related software device node name is ttyS3.**

Pin#	Definition	Note
1	GND	数字地 Digital Ground
2	RX	数据接收 (TTL 或 RS-232电平) Data receive (TTL or RS-232 level)
3	TX	数据发送 (TTL 或 RS-232电平) Data transmit (TTL or RS-232 level)
4	VCC	电源输出 (默认3.3V, 可选5V) Power output (Default 3.3V, 5V option)

### 3.19 J20 USB 2.0 接口 USB 2.0 Host Header

【J20】USB 2.0 接口 (单排 2.0mm-方孔为 1 脚)。[J20] USB 2.0 Host Header (SIP 2.0mm-Square pad is pin 1)

Pin#	Definition	Note
1	GND	数字地 Digital Ground
2	DP	USB 差分数据+ USB Differential Data+
3	DM	USB 差分数据- USB Differential Data-
4	5V	5V 输出 Power output 5V

### 3.20 J23 LVDS 接口 LVDS Header

【J23】双路 LVDS 接口 (双排 2.0mm-方孔为 1 脚)。[J23] Dual LVDS header [DIP 2.0mm-Square pad is pin 1].

Pin#	Definition	Pin#	Definition
1	VLCD	2	VLCD
3	VLCD	4	GND
5	GND	6	GND
7	RX00-	8	RX00+
9	RX01-	10	RX01+
11	RX02-	12	RX02+
13	GND	14	GND
15	RX0C-	16	RX0C+
17	RX03-	18	RX03+
19	RXE0-	20	RXE0+
21	RXE1-	22	RXE1+
23	RXE2-	24	RXE2+
25	GND	26	GND
27	RXEC-	28	RXEC+
29	RXE3-	30	RXE3+

### 3.21 J24 MIPI 输出接口 MIPI Output Header

【J24】MIPI 屏 FPC 接口 (FPC-0.3mm 31-Pin 下接触)。[J24] MIPI Panel FPC Connector (FPC-0.3mm 31-Pin Bottom Contact).

Pin#	Definition	Note
1	LED+	LED 阳极 LED Anode

2	LED+	LED 阳极 LED Anode
3	LED+	LED 阳极 LED Anode
4	NC	未连接 Not Connected
5	LED-	LED 阴极 LED Cathode
6	LED-	LED 阴极 LED Cathode
7	LED-	LED 阴极 LED Cathode
8	LED-	LED 阴极 LED Cathode
9	GND	数字地 Digital Ground
10	GND	数字地 Digital Ground
11	MIPI_D2P	+MIPI 差分数据输出 +MIPI differential lane2
12	MIPI_D2N	-MIPI 差分数据输出 -MIPI differential lane2
13	GND	数字地 Digital Ground
14	MIPI_D1P	+MIPI 差分数据输出 +MIPI differential lane1
15	MIPI_D1N	-MIPI 差分数据输出 -MIPI differential lane1
16	GND	数字地 Digital Ground
17	MIPI_CKP	+MIPI 差分时钟输出 +MIPI differential clock output
18	MIPI_CKN	-MIPI 差分时钟输出 -MIPI differential clock output
19	GND	数字地 Digital Ground
20	MIPI_D0P	+MIPI 差分数据输出 +MIPI differential lane0
21	MIPI_D0N	-MIPI 差分数据输出 -MIPI differential lane0
22	GND	数字地 Digital Ground
23	MIPI_D3P	+MIPI 差分数据输出 +MIPI differential lane3
24	MIPI_D3N	-MIPI 差分数据输出 -MIPI differential lane3
25	GND	数字地 Digital Ground
26	VDD-1V8	供电输出1.8V Power Supply 1.8V (默认不连接, 需加焊 R9232 0R)
27	RESET	复位信号 (1.8V 电平) Reset Signal in 1.8V
28	GND	数字地 Digital Ground
29	VDD-1V8	供电输出1.8V Power Supply 1.8V
30	VDD-3V3	供电输出3.3V Power Supply 3.3V
31	VDD-3V3	供电输出3.3V Power Supply 3.3V

### 3.22 J25 USB 2.0 接口 USB 2.0 Host Header

【J25】USB 2.0 接口 (单排 1.25mm-方孔为 1 脚)。[J25] USB 2.0 Host Header (SIP 1.25mm-Square pad is pin 1)

Pin#	Definition	Note
1	GND	数字地 Digital Ground
2	DP	USB 差分数据+ USB Differential Data+
3	DM	USB 差分数据- USB Differential Data-
4	5V	5V 输出 Power output 5V

### 3.23 J26 USB 2.0 接口 USB 2.0 Host Header

【J26】USB 2.0 接口 (单排 2.0mm-方孔为 1 脚)。[J26] USB 2.0 Host Header (SIP 2.0mm-Square pad is pin 1)

Pin#	Definition	Note
1	GND	数字地 Digital Ground
2	DP	USB 差分数据+ USB Differential Data+
3	DM	USB 差分数据- USB Differential Data-
4	5V	5V 输出 Power output 5V

### 3.24 J27 USB 2.0 接口 USB 2.0 Host Header

【J27】USB 2.0 接口 (单排 2.0mm-方孔为 1 脚)。[J27] USB 2.0 Host Header (SIP 2.0mm-Square pad is pin 1)

Pin#	Definition	Note
1	GND	数字地 Digital Ground
2	DP	USB 差分数据+ USB Differential Data+
3	DM	USB 差分数据- USB Differential Data-
4	5V	5V 输出 Power output 5V

### 3.25 J28 USB 2.0 插座 USB 2.0 Type A

【J28】USB 2.0 横插标准 Type A 插座 (标准插座)。[J28] USB 2.0 Horizontal Type A Jack (Standard jack).

### 3.26 J29 按键和开关接口 Keypad and Switch Header

【J29】KIO 按键接口 (单排 1.25mm-方孔为 1 脚)。[J29] KIO Keypad Header (SIP 1.25mm-Square pad is pin 1).

Pin#	Definition	Note
1	3V0	3.3V 供电输出 Power output supply 3.3V
2	K1	按键1 (GPIO 编号260) K1 (Regular GPIO option)
3	K2	按键2 (GPIO 编号261) K2 (Regular GPIO option)
4	K3	按键3 (GPIO 编号263) K3 (Regular GPIO option)
5	K4	按键4 (GPIO 编号264) K4 (Regular GPIO optiol)
6	K5	按键5 (GPIO 编号265) K5 (Regular GPIO option)



7	GND	数字地 Digital Ground
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注意：所有 KIO 信号均可以通过单独的软件版本调整为常规 GPIO 使用（电平均为 3.3V）；默认情况下 K1 音量+/K2 音量-/K3 待机/K4 退出/K5 主屏。Note: All KIO signals can be adjusted to regular GPIO via a separated software version (level is 3.3V); by default K1 Volume+/K2 Volume-/K3 Standby/K4 Exit/K5 Home.

### 3.27 J30 I2C 总线接口 I2C Bus Header

【J30】I2C 总线接口（单排 1.25mm-方孔为 1 脚）。[J30] I2C Bus Header (SIP 1.25mm-Square pad is pin 1).

Pin#	Definition	Note
1	GND	数字地 Digital Ground
2	INT	中断输入 (3.3V 电平) Interrupt input (3.3V level)
3	SDA	I2C 总线数据信号 I2C Bus data
4	SCL	I2C 总线时钟信号 I2C Bus clock signal
5	RST	复位输出 (3.3V 电平) Mainboard reset output (3.3V level)
6	3V3	3.3V 供电输出 Power output supply 3.3V

### 3.28 J31 数据串口 4 Data Serial Port 4

【J31】内置串口 4（单排 1.25mm-方孔为 1 脚），默认为 TTL 3.3V 电平且可配置为 RS-232 电平（焊接 U9023 则为 RS-232 电平）；对应的软件编程设备节点为 **ttyS4**。[J31] Built-in Serial Port 4 (SIP 1.25mm-Square pad is pin 1). The output level is TTL 3.3V by default and it could be setup to RS-232 if required (RS-232 if U9023 mounted). **The related software device node name is ttyS4.**

Pin#	Definition	Note
1	GND	数字地 Digital Ground
2	RX	数据接收 (TTL 或 RS-232电平) Data receive (TTL or RS-232 level)
3	TX	数据发送 (TTL 或 RS-232电平) Data transmit (TTL or RS-232 level)
4	VCC	电源输出 (默认3.3V, 可选5V) Power output (Default 3.3V, 5V option)

### 3.29 J32 USB 2.0 接口 USB 2.0 Host Header

【J32】USB 2.0 接口（单排 2.0mm-方孔为 1 脚）。[J32] USB 2.0 Host Header (SIP 2.0mm-Square pad is pin 1)

Pin#	Definition	Note
1	GND	数字地 Digital Ground
2	DP	USB 差分数据+ USB Differential Data+
3	DM	USB 差分数据- USB Differential Data-
4	5V	5V 输出 Power output 5V

### 3.30 J34 HDMI 插座 HDMI Jack

【J34】HDMI 插座 (标准插座)。[J34] HDMI Jack (Standard jack).

### 3.31 J35 背光控制接口 Backlight Control Header

【J35】背光控制接口 (单排 2.0mm-方孔为 1 脚)。[J35] Backlight Control Header (SIP 2.0mm-Square pad is pin 1).

Pin#	Definition	Note
1	12V	If the current exceeds 2A, external 12V is recommended
2	12V	如果电流超过2A 则建议外接12V 供电
3	EN	默认输出5V The default output is 5V
4	ADJ	3.3V 方波 (1KHz 频率) 3.3V square wave (1KHz Freq.)
5	GND	电源地 Power Ground
6	GND	电源地 Power Ground

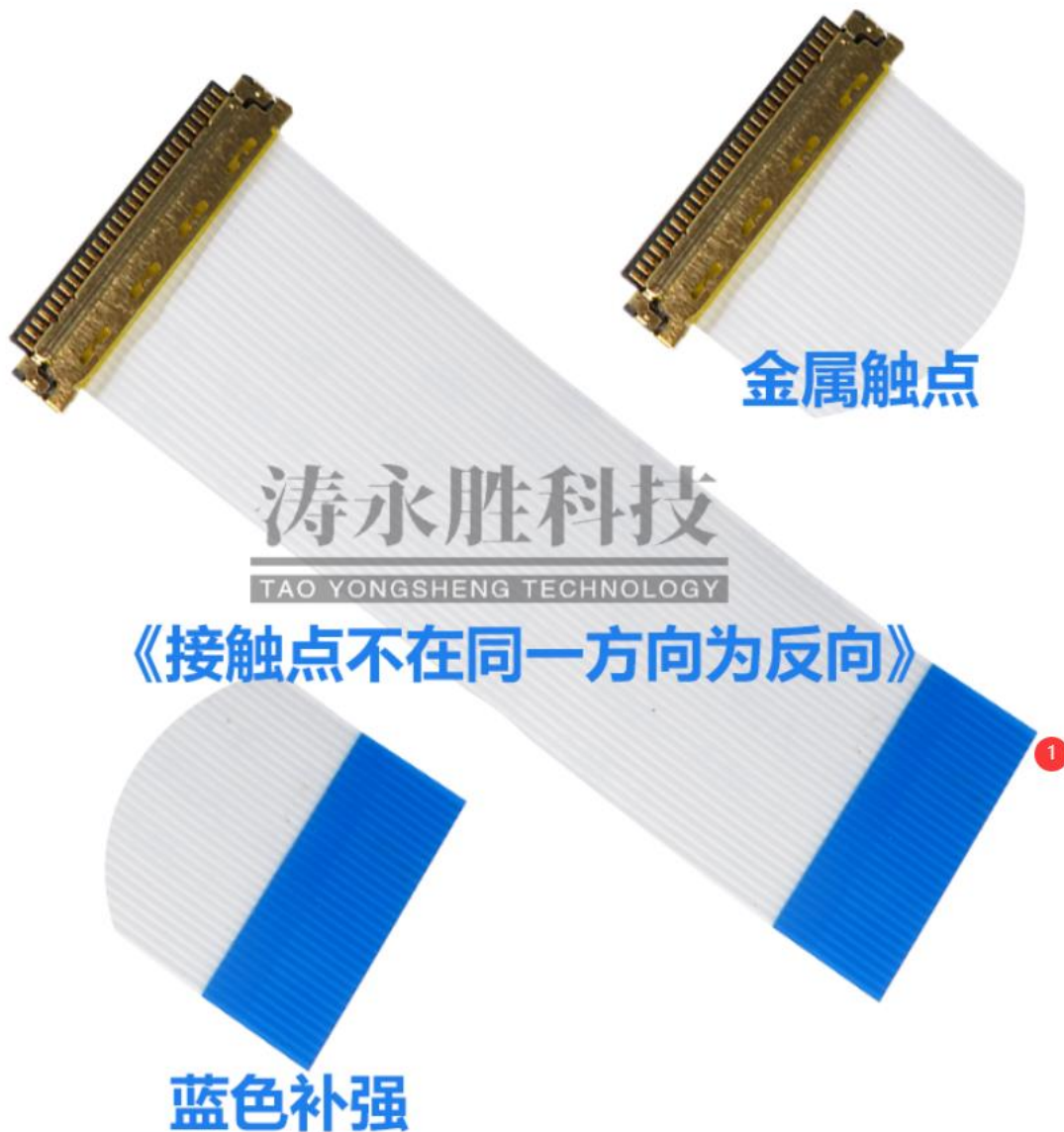
### 3.32 J36 eDP 输出 FPC 接口 eDP Output FPC Header

【J36】eDP 屏 FPC 接口 (FPC-0.35m 30-Pin 下接触)。[J36] eDP Panel FPC Connector (FPC-0.5mm 30-Pin Bottom Contact).

Pin#	Definition	Note
1	NC	未连接 Not Connected
2	GND	数字地 Digital Ground
3	EDP_TX1N	TX1-差分数据输出 TX1- differential output
4	EDP_TX1P	TX1+差分数据输出 TX1+ differential output
5	GND	数字地 Digital Ground
6	EDP_TX0N	TX0-差分数据输出 TX0- differential output
7	EDP_TX0P	TX0+差分数据输出 TX0+ differential output
8	GND	数字地 Digital Ground
9	EDP_AUXP	AUX+差分辅助通道 AUX+ differential channel
10	EDP_AUXN	AUX-差分辅助通道 AUX- differential channel
11	GND	数字地 Digital Ground

12	LCD_VCC	逻辑电源 (3.3V 或5V) Logic Power (3.3V or 5V)
13	LCD_VCC	逻辑电源 (3.3V 或5V) Logic Power (3.3V or 5V)
14	NC	未连接 Not Connected
15	GND	数字地 Digital Ground
16	GND	数字地 Digital Ground
17	NC	未连接 Not Connected
18	BL_GND	背光 LED 地 Backlight LED Ground
19	BL_GND	背光 LED 地 Backlight LED Ground
20	BL_GND	背光 LED 地 Backlight LED Ground
21	BL_GND	背光 LED 地 Backlight LED Ground
22	BL_EN	背光使能 Backlight Enable
23	BL_PWM	背光亮度 PWM Backlight Brightness PWM
24	NC	未连接 Not Connected
25	NC	未连接 Not Connected
26	BL_POWER	背光电源 (12V) Backlight Power (12V)
27	BL_POWER	背光电源 (12V) Backlight Power (12V)
28	BL_POWER	背光电源 (12V) Backlight Power (12V)
29	BL_POWER	背光电源 (12V) Backlight Power (12V)
30	NC	未连接 Not Connected

**说明：eDP 屏线可参考如下图片，常规的 eDP 屏均可使用反向的转接排线，具体请根据屏的手册确定。**



### 3.33 SW1 烧录模式按键 Recovery Mode Button

【SW1】直插烧录小按键, 先按住且保持然后上电约 3 秒后松开则进入烧录模式。 [SW1] On-board recovery mode button. First press and then hold for about 3-second while power on will enter the recovery mode.

## 4 物理尺寸 Physical Size

PCB 大小为 100mm\*80mm, 固定孔直径 3.0mm, 相应的物理尺寸参数如下图所示。如需详细尺寸信息请咨询厂家获取 DXF 档文件。

The PCB size is 100mm\*80mm and the fixing hole diameter is 3.0mm. The corresponding physical size parameters are shown in the figure below. For detailed size information, please consult the manufacturer for DXF file.

## 5 注意事项 Precautions

H3 主板组装和使用时请注意以下关键事项：Please note the following key points when using the H3 mainboard:

1. 本产品相对湿度：10%~90%，无凝露。Relative humidity of this product: 10% to 90%, no condensation.
2. 本产品工作温度：0°~70°。The working temperature of this product: 0°~70°.
3. 本产品存储温度：-40°~70°。This storage temperature of this product: -40 ° ~ 70 °.
4. 整机装配和运输过程中需做防静电处理。Anti-static treatment is required during assembly and transportation of this product.
5. 本板接口连接线缆不可过长，否则可能会影响信号质量。The board interface connection cable must not be too long. Otherwise, the signal quality may be affected.
6. 整机装配时严禁使板子受到扭曲或重压而变形。Never allow the board to be distorted or heavily stressed during assembly.
7. 严禁裸板与其他外设之间发生短路。Do not short circuit between mainboard and other peripherals.
8. 外接 LVDS 或 eDP 液晶屏时，注意驱屏电压和电流是否符合要求，且注意屏线插座 1 脚方向。When connecting to external LVDS or eDP LCD screen, pay attention to whether the screen voltage and current meet the requirements, and pay attention to the screen connector pin-1 direction.
9. 外接 LVDS 或 eDP 液晶屏时，注意背光电压和电流是否符合要求。**液晶屏背光功率在 20w 以上则建议使用单独的电源板进行背光供电。**When connecting to external LVDS or eDP LCD screen, pay attention to whether the backlight voltage and current meet the requirements.
10. 外接接口（USB、GPIO、串口、I2C、HDMI 等）外接设备时，注意外设的 IO 电平和电流是否符合要求。**使用主板接插件上的电源管脚给外设供电时，常规电源脚电流严禁超过 100mA、USB 电源脚电流严禁超过 500mA。**串口连接外设时还需要电平匹配（3.3V TTL 电平、RS-232 电平和 RS-485 电平）。When connecting to peripherals using USB, GPIO, Serial, I2C, HDMI, etc., pay attention to whether the IO voltage level and current of the peripheral meet the requirements. When using the power pin on these connectors to supply

power to the external circuit, the regular power pin must not exceed 100mA, and the USB power pin must not exceed 500mA.

11. 主板输入电源请务必接入电源输入接口或插座, 并根据总外设评估整板电流是否符合要求; **严禁为了方便操作从背光插座接口直接给主板供电**。Please connect the power to the power input socket or connector, and evaluate whether the current of the whole board meets the requirements according to the total peripherals. It is strictly forbidden to directly supply power from the backlight connector.
12. 通信模块部分距离金属壳体至少 5 毫米, 避免信号受到干扰。The communication module should be mounted at least 5mm away from the metal housing to avoid signal interference.

## 6 软件指南 Software Guide

H3 主板内部串口和扩展串口软件端口号如下：

端口 Port	软件设备节点 Software Device Node
J16	/dev/ttyS1
J18	/dev/ttyS2
J19	/dev/ttyS3
J31	/dev/ttyS4