



The Specification of 3188 Full Function Main Board

RK3188 全功能主板规格书

Product Type(产品型号):

M183-V2.0



Electrical Specification

History

| REV. 版本 | Description 说明 | Date 日期 | Drafter 拟制 | Checked 审核 | Approved 批准 |
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Content(目录)

| | |
|---|----|
| 1.General Description(概述)..... | 1 |
| 2. Hardware Context (硬件配置)..... | 2 |
| 3. Product Function(产品功能)..... | 3 |
| 3.1 Local Operating Function(本地操作功能)..... | 3 |
| 3.2 Background release system function(后台发布系统功能)..... | 3 |
| 4.Product Photograph(产品外观图)..... | 4 |
| 5.Configuration & General Precautions(使用注意事项)..... | 5 |
| 6.Feature(特性)..... | 6 |
| 7. PCB Dimension(结构尺寸图)..... | 9 |
| 8. Interface Definition(接口定义)..... | 10 |
| 9.Environmental Characteristics(环境特性要求)..... | 14 |
| 9.1 Temperature(环境温度)..... | 14 |
| 9.2 Humidity(环境湿度)..... | 14 |
| 9.3 Altitude(海拔高度)..... | 14 |
| 9.4 High Temperature & Storage(高温负荷与存储)..... | 14 |
| 9.5 Low Temperature & Storage(低温负荷与存储)..... | 14 |
| 9.6 Humidity & Temperature Test(潮热试验)..... | 14 |



1.General Description(概述)

M183 is a 3188 full function main board, using Rockchip RK3188 quad-core chip program, which is configured for 4-core A9 CPU, 1.6GHZ frequency and 32-bit processing bits, Mali-400 / 600MHz GPU, 1GB /2GB DDR and 8GB/128G eMMC, with powerful audio and video processing capabilities, 1080P @ 60Hz LVDS output, 2.4G WIFI and Bluetooth 4.0 module capabilities . 6 USB ports and 4 serial ports can extend more peripherals. The 4G module can support 7 Band networks.

M183 全功能安卓主板，采用瑞芯微 RK3188 四核芯片方案，其配置为 4 核 A9 CPU，1.6GHZ 主频和 32 位处理位数，Mali-400/600MHz GPU，2G/4GB DDR 和 8G/128GB eMMC，其具有强大的音视频处理能力，支持 1080P@60Hz LVDS 输出，可支持 2.4 G WIFI 和蓝牙 4.0 模块功能。6 个 USB 口，4 个串口，能扩展更多的外设设备。4G 模组能支持 7 段全网通网络。



2. Hardware Context (硬件配置)

| 硬件配置 | |
|---------------|--|
| 板卡配置 | CPU: 4 核 Cortex-A9; 主频最高达 1.6GHz |
| | GPU: Mali-400 |
| 工作电压 | 12V |
| LVDS EDP 驱屏电压 | 3.3V、5V、12V 可选 |
| RJ45 | RJ45*1 |
| USB | USB*6 |
| DC5.0 | DC5.0 |
| DDR3 | 1G/2 G |
| eMMC | 8G/16G/32G/64G/128G |
| WIFI | 2.4GHz+ BT4.0 |
| 功放及耳机输出/MIC | 2*8W/8Ω 数字功放及耳机输出, MIC 输入 |
| RTC | RTC 计时功能 |
| RS232 | 4 路 RS232 或 TTL |
| 4G | 4G 7 模, 华为 移远 等支持 |
| GPS | G-BLOX |
| TF | 最高支持 64G |
| CAMERA | USB 最高支持 800W 像素 |
| TP 触摸屏 | 提供 I2C 接口 (可以支持多点电阻触摸, 多点电容触摸) 支持 USB 多点红外触摸, 多点声波触摸, 多点电容触摸。 |
| SATA 硬盘 | 可扩展外接硬盘 500G 1T 2T |



3. Product Function(产品功能)

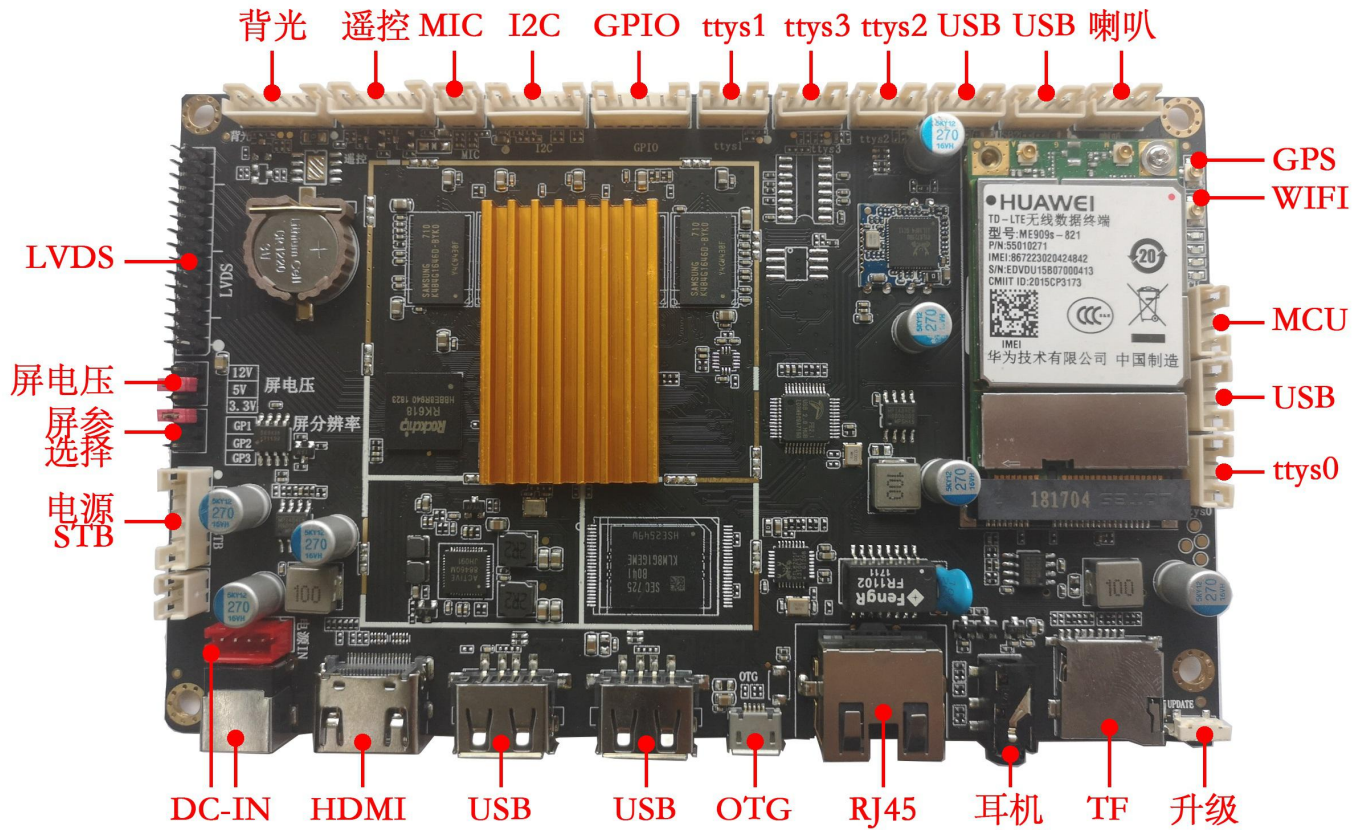
| | |
|--------|---|
| 操作系统 | Google Android 4.4 5.1 |
| 基本软件功能 | 网页浏览、网络聊天、电子邮件、电子书、资源管理器 |
| 音效模式 | 时钟、闹钟、计算器、录音 |
| 语言支持 | 多国语言 |
| 录音 | 支持 MP3、WMA 格式录音 |
| 工具 | Calendar |
| | Alarm Clock |
| | 计算器 |
| | 便条纸 |
| | 天气+时钟 |
| | 录音 |
| 文书处理 | EPUB, WORD, EXCEL, POWERPOINT, PDF, TXT |
| 电子书 | PDF/TXT/CHM/DOC/EXCEL/EPUB/RTF/FB2 |
| 日程 | 日历 |
| 输入法 | 标准 Andriod 键盘，可选第三方输入法（中文、韩文、日文等） |
| 网络 | Browser -ChromeLite |
| | GOOGLE Market |
| | Email |
| | Gmail |
| | Google talk |
| 系统管理 | APK 安装器 |
| | 原生态 Android 系统，开放 root 权限，可进行产品定制开发 |
| | 实时远程监控，系统崩溃自恢复，7*24 小时无人值守 |
| | System setting |
| | Google Maps |
| | Global time |



4. Product Photograph(产品外观图)

The pictures are for reference only, please in kind prevail.

图片仅供参考, 请以实物为准。





5.Configuration & General Precautions(使用注意事项)

- For safety issue, please keep the board at least 8.0mm away from metal parts of the advertising machine .

基于安全考虑，请在安装时确保板卡与其他金属材料保持 8.0mm 以上的距离。

- A ESD shield bag is offered to protect the board from electrostatic or magnetic shock , please take care of ESD at anytime.

本产品采用防静电包装，请在任何时候注意静电防护。

- The brightness of panel is influenced greatly by temperature, you should measure it after power on 10~30 minutes.

因屏的亮度易受温度影响，请在开机 10~30 分钟后再测量。

- Keep the board surface clean. Check the appearance of the board if there is any defective parts, such as dilapidated, weighty nick, etc.

保持产品表面整洁。检查产品外观是否有明显品质不良存在，如：破损，严重划痕等。

- Keep the board away from conductor when it is working.

请确保板卡工作时远离导体。

- Don't press, distort or disassemble the board.

请勿强压、扭曲或拆解板卡。

- Clean the board with soft dry cloth when it's dirty.

如果板卡脏了，请用干布擦拭。

- Don't switch on the power supply before panel is correctly connected.

通电前请确保屏线连接正确。



6.Feature(特性)

| | | | |
|---------------------------------|--------------------------------------|--|----------------|
| Chipset (主芯片) | RK3188 | | |
| Target Market (目标市场) | China and overseas area (中国及海外区域) | | |
| OSD Language (OSD 语言) | Multilingual (多国语言) | | |
| Panel (屏) | Panel Type (屏类型) | LCD/LED | |
| | Panel Interface (驱屏接口) | Single/Dual 6bit/8bit LVDS (单/双 8 位 LVDS 接口) | |
| | Max Resolution (最大分辨率) | LVD S | 1920*1080@60Hz |
| Audio Output (音频输出) | Frequency Response (频率响应) | 100Hz~15K Hz @±12dB(1KHz, -12dB reference signal) | |
| | Max Output Power (最大输出功率) | 2×8W(8Ω)THD+N<10%@1KHz (Supply Voltage: 12V, Audio input: 0.5 Vrms) (供电电压: 12V, 音频输入: 0.5Vrms) | |
| Power (电源) | Requirement (工作电压) | 12V | |
| | Panel Power (驱屏电压) | 3.3V, 5V, 12V 可选 | |
| | Power Management (电源管理) | Standby Power Consumption <0.3W(Board Only) (板卡待机功耗小于 0.3W) | |
| KEY FUNCTION (按键功能) | POWER | | |



6.1 USB MULTIMEDIA PLAYBACK FORMAT (USB 多媒体播放支持格式列表)

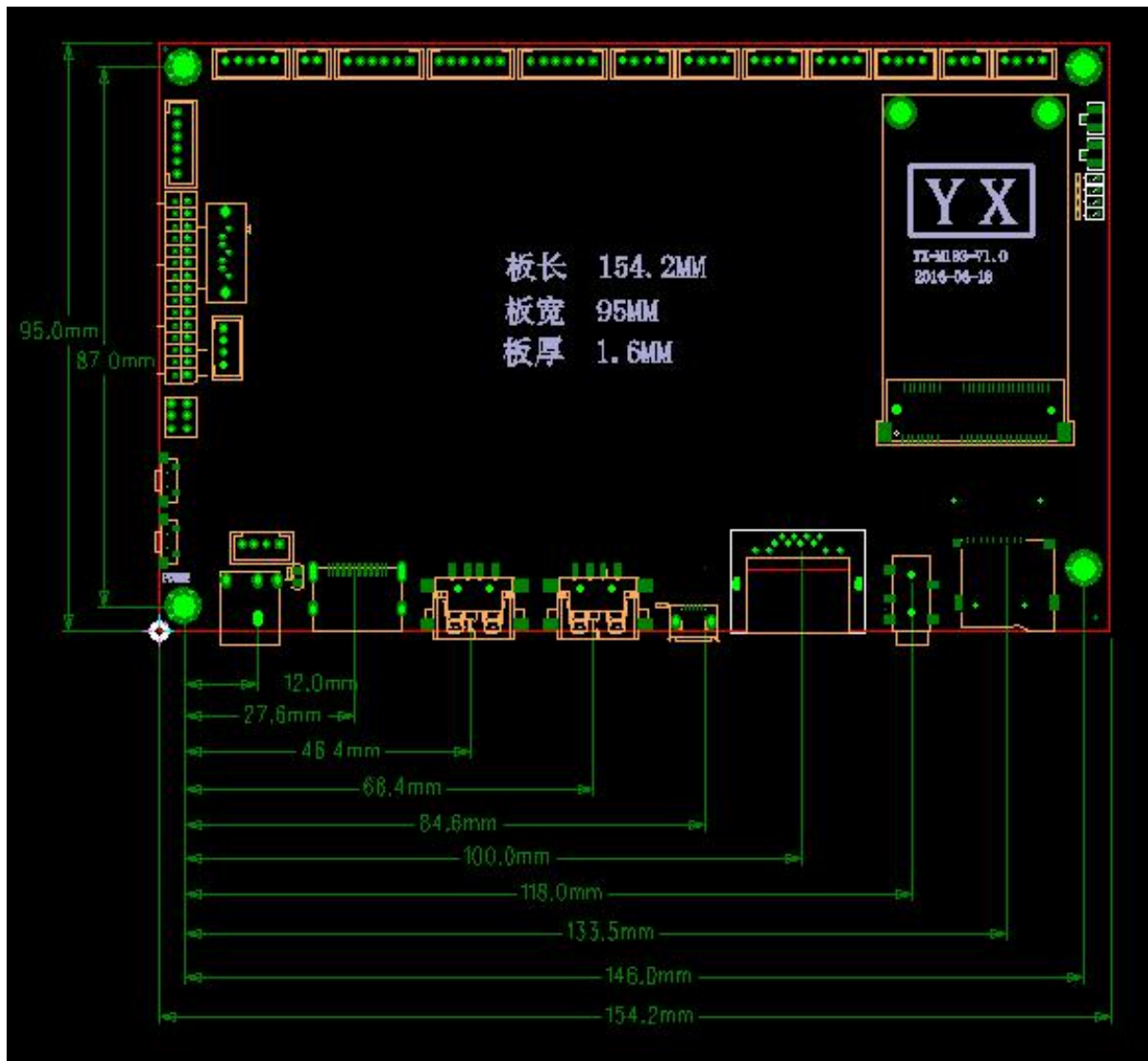
| Media (媒体) | File Ext. (扩展名) | Codec(编解码器) | Remark(备注) |
|------------|-----------------|----------------|--|
| Video | / | MPEG-1/2 | (1) Image Size:48X48pixels to 1920X1088pixels; (2) Max Frame Rate: 30fps; (3) Maximum Bit Rate:80Mbps; (4) Support Field Coding. |
| | / | MPEG-4 | (1) Image Size:48X48pixels to 1920X1088pixels; (2) Max Frame Rate: 30fps; (3) Maximum Bit Rate:38.4Mbps; (4) Not Support MS MPEG4 v1/v2/v3 and GMC. |
| | / | DivX3/4/5/6 | (1) Image Size:48X48pixels to 1920X1088pixels; (2) Max Frame Rate: 30fps; (3) Maximum Bit Rate:38.4Mbps; (4) Not Support Data Partitioning and GMC. |
| | / | H.264 | (1) Image Size:48X48pixels to 4096X2304pixels; (2) Max Frame Rate: 30fps; (3) Maximum Bit Rate:100Mbps; Support Field Coding,MBAFF and CABAC coding 4K video (4) only. |
| | / | H.264 MVC | (1) Image Size:48X48pixels to 1920X1088pixels; (2) Max Frame Rate: 60fps; (3) Maximum Bit Rate:38.4Mbps; (4) Support Stereo High Profile only. |
| | / | H.265/HEVC | (1) Image Size:64x64pixels to 4096x2304pixels; (2) Max Frame Rate: 60fps; (3) Maximum Bit Rate:100Mbps; (4) Support Main Profile & Main10 Profile, 10-bit color decoding, Tile & Slice; |
| | / | VP8 | (1) Image Size:48X48pixels to 1920X1088pixels; (2) Max Frame Rate: 30fps; (3) Maximum Bit Rate:38.4Mbps. |
| | / | VC-1 | (1) Image Size:48X48pixels to 1920X1088pixels; (2) Max Frame Rate: 30fps; (3) Maximum Bit Rate:45Mbps. |
| | / | H2.63 | (1) Image Size:SQCIF(128x96), QCIF(176x144), CIF(352x288), 4CIF(704x576); (2) Max Frame Rate: 30fps; (3) Maximum Bit Rate:38.4Mbps; (4) Not support H.263+. |
| | / | SORENSEN SPARK | (1) Image Size:48X48pixels to 1920X1088pixels; (2) Max Frame Rate: 30fps; (3) Maximum Bit Rate:38.4Mbps. |
| | / | VP6 | (1) Image Size:48X48pixels to 1920X1088pixels; (2) Max Frame Rate: 30fps; (3) Maximum Bit Rate:38.4Mbps. |
| | / | MOTION JPEG | (1) Image Size:48X48pixels to 1920X1088pixels; (2) Max Frame Rate: 30fps; |



| | | | |
|--|----------------------|--|---|
| | | | (3) Maximum Bit Rate:38.4Mbps. |
| Audio | .mp1 .mp2 .mp3 | MPEG1/2/2.5 Audio Layer1/2/3 | (1) Sample Rate:8K~48KHz; (2) Bit Rate: 8K~320Kbps,CBR AND VBR; (3) Channel: 2. |
| | .wma | WMA Version 4,4.1,7,8,9, wma pro | (1) Bit Rate: 8K~48Kbps; (2) Sample Rate:8K~320Kbps; (3) Channel:2; (4) Remark: Non-support WMA Pro,lossless and MBR. |
| | .wav | MS-ADPCM, IMA- ADPCM, PCM | (1) Sample Rate: 8K~48KHz; (2) Bit Rate: n.a; (3) Channel: 2; (4) Remark: Support 4bit MS-ADPCM, IMA-ADPCM. |
| | .ape | APE Ver. 3.95, 3.97, 3.98, 3.99 normal and fast | (1) Sample Rate: 8K~48KHz (2) Bit Rate: n.a (3) Channel: 2 |
| | .ogg .oga | Q1~Q10 | (1) Sample Rate: 8K~48KHz (2) Bit Rate: n.a (3) Channel: 2 |
| | .flac | Compress Level 0~8 | (1) Sample Rate: 8K~48KHz (2) Bit Rate: n.a (3) Channel: 2 |
| | .m4a .aac | MAIN, ADIF ,ATDS Header AAC-LC and AAC-HE | (1) Sample Rate: 8K~48KHz (2) Bit Rate: n.a (3) Channel: 5.1 |
| Photo | .jpg/ .jpeg | JPEG | (1) Image Size:48X48pixels to 8176 X8176pixels; (2) Not support Non-interleaced Scan; (3) Software support SRGB JPEG; (4) Software support Adobe RGB JPEG. |
| | .bmp | BMP | No Restriction |
| | .gif | GIF | No Restriction |
| | .png | PNG | No Restriction |
| Note: | | | |
| 1.Licenses involved in specifications above are supposed to be obtained by customers themselves, eg:AC3 、 AAC、 DTSand DivX. 以上规格涉及 License 部分需要客户自己获取, 比如: AC3、 AAC、 DTS 及 DIXV。 | | | |
| 2.MP4 can't support GMC. MP4 不支持 GMC。 | | | |



7. PCB Dimension(结构尺寸图)





8. Interface Definition(接口定义)

注：方形焊盘定义为 NO.1，通用性板卡的插座定义按照插座开口向内，从左向右开始计数(客户订制型板卡除外)

8.1 CON3 :POWER CONNECTOR(4PIN/2.0) (电源输入插座)

| NO.(引脚) | Symbol(定义) | Description(描述) |
|---------|------------|--------------------------|
| 1 | 12V | 12V POWER IN (电源 12V 输入) |
| 2 | 12V | 12V POWER IN (电源 12V 输入) |
| 3 | GND | Ground(地) |
| 4 | GND | Ground(地) |

8.2 CON5 :POWER CONNECTOR(6PIN/2.0) (电源输入插座)

| NO.(引脚) | Symbol(定义) | Description(描述) |
|---------|------------|--------------------------|
| 1 | 12V | 12V POWER IN (电源 12V 输入) |
| 2 | 12V | 12V POWER IN (电源 12V 输入) |
| 3 | GND | Ground(地) |
| 4 | GND | Ground(地) |
| 5 | 5VSTB | 5V FOR STB |
| 6 | STB CTL | STB 开关信号 |

8.3 JP2 :Panel select (6PIN/2.0) (屏选择) 备注 1

| NO.(引脚) | Symbol(定义) | Description(描述) |
|---------|------------|-----------------|
| 1 | GND | Ground(地) |
| 2 | S1 | S1 INPUT(S1 输入) |
| 3 | GND | Ground(地) |
| 4 | GND | Ground(地) |
| 5 | S2 | S2 INPUT(S1 输入) |
| 6 | S3 | S3 INPUT(S1 输入) |

备注 1：对于可跳选屏参固件，请参考如下选择跳帽方式：

| lcd 跳线选选择方法 (183) | | | |
|-------------------|----|----|-----------------------|
| S3 | S2 | S1 | (1 表示插跳线帽, 0 表示不插跳线帽) |
| 0 | 0 | 0 | lvds1366x768 6bit |
| 0 | 0 | 1 | lvds1280X800 8bit |
| 0 | 1 | 0 | lvds1366x768 8bit |
| 0 | 1 | 1 | lvds 1024x600 6bit |
| 1 | 0 | 0 | lvds 1920x1080 8bit |
| 1 | 0 | 1 | lvds 1024x768 6bit |
| 1 | 1 | 0 | lvds 1280x800 6bit |
| 1 | 1 | 1 | lvds 1440x1200 6bit |



8.4 JP1 :Panel POWER select (6PIN/2.0) (屏电压选择)

| NO.(引脚) | Symbol(定义) | Description(描述) |
|---------|------------|---------------------|
| 1 | GND | Ground(地) |
| 2 | 3.3V | 3.3V INPUT(3.3V 输入) |
| 3 | GND | Ground(地) |
| 4 | 5V | 5V INPUT(5V 输入) |
| 5 | GND | Ground(地) |
| 6 | 12V | 12V INPUT(12V 输入) |

8.5 CON1 : LVDS Connector (30PIN/2.0)(LVDS 驱屏接口)

| NO.(引脚) | Symbol(定义) | Description(描述) |
|---------|------------|-------------------------|
| 1 | VCC | Power Supply for Panel |
| 2 | VCC | Power Supply for Panel |
| 3 | VCC | Power Supply for Panel |
| 4 | GND | Ground(地) |
| 5 | GND | Ground(地) |
| 6 | GND | Ground(地) |
| 7 | RXE0- | LVDS EVEN 0- Signal |
| 8 | RXE0+ | LVDS EVEN 0+ Signal |
| 9 | RXE1- | LVDS EVEN 1- Signal |
| 10 | RXE1+ | LVDS EVEN 1+ Signal |
| 11 | RXE2- | LVDS EVEN 2- Signal |
| 12 | RXE2+ | LVDS EVEN 2+ Signal |
| 13 | GND | Ground(地) |
| 14 | GND | Ground(地) |
| 15 | RXEC- | LVDS EVEN Clock- Signal |
| 16 | RXEC+ | LVDS EVEN Clock+ Signal |
| 17 | RXE3- | LVDS EVEN 3- Signal |
| 18 | RXE3+ | LVDS EVEN 3+ Signal |
| 19 | RX00- | LVDS ODD 0- Signal |
| 20 | RX00+ | LVDS ODD 0+ Signal |
| 21 | RX01- | LVDS ODD 1- Signal |
| 22 | RX01+ | LVDS ODD 1+ Signal |
| 23 | RX02- | LVDS ODD 2- Signal |
| 24 | RX02+ | LVDS ODD 2+ Signal |
| 25 | GND | Ground(地) |
| 26 | GND | Ground(地) |
| 27 | RXEC- | LVDS ODD Clock- Signal |
| 28 | RXEC+ | LVDS ODD Clock+ Signal |



| | | |
|----|-------|--------------------|
| 29 | RX03- | LVDS ODD 3- Signal |
| 30 | RX03+ | LVDS ODD 3+ Signal |

8.6 CON8 :INVERTER CONNECTOR(6PIN/2.0) (背光 ADJ 插座)

| NO.(引脚) | Symbol(定义) | Description(描述) |
|---------|------------|-----------------------------------|
| 1 | +12V | +12V Power Supply(+12V 供电) |
| 2 | +12V | +12V Power Supply(+12V 供电) |
| 3 | BLON | Backlight On/Off Controll(背光开关控制) |
| 4 | ADJ | Brightness Adjust(亮度调节) |
| 5 | GND | Ground(地) |
| 6 | GND | Ground(地) |

8.7 CON4 :LED &IR CONNECTOR(6PIN/2.0) (LED &遥控插座)

| NO.(引脚) | Symbol(定义) | Description(描述) |
|---------|------------|------------------------------|
| 1 | Power key | Powerkey (电源键) |
| 2 | LED-G | LED-G (绿色指示灯) |
| 3 | LED-R | LED-R(红色指示灯) |
| 4 | IRQ | IRQ(中断) |
| 5 | GND | Ground(地) |
| 6 | 3V3 | +3.3V Power Supply(+3.3V 供电) |

8.8 MIC1 :MIC CONNECTOR(2PIN/2.0)(麦克风插座)

| NO.(引脚) | Symbol(定义) | Description(描述) |
|---------|------------|-----------------|
| 1 | MIC-P | MIC-P (麦克风 正) |
| 2 | MIC-N | MIC-PN (麦克风 负) |

8.9 J21 :IIC CONNECTOR(6PIN/2.0)(IIC 插座)

| NO.(引脚) | Symbol(定义) | Description(描述) |
|---------|------------|------------------------------|
| 1 | SCL | SCL(时钟) |
| 2 | SDA | SDA(数据) |
| 3 | GND | Ground(地) |
| 4 | IRQ | IRQ(中断) |
| 5 | Reset | RESET(复位) |
| 6 | 3V3 | +3.3V Power Supply(+3.3V 供电) |



8.10 CON6 : GPIO&ADC (6PIN/2.0)(GPIO&ADC 插座)

| NO.(引脚) | Symbol(定义) | Description(描述) |
|---------|------------|-----------------------------|
| 1 | 3.3V/5V | Power Supply(3.3V/5V 可选 供电) |
| 2 | GPIO1 | GPIO1 |
| 3 | GPIO2 | GPIO2 |
| 4 | GPIO3 | GPIO3 |
| 5 | ADC | ADC |
| 6 | GND | Ground(地) |

8.11 CON9 : TTY51 CONNECTION(4PIN/2.0)(串口接口)

| NO.(引脚) | Symbol(定义) | Description(描述) |
|---------|------------|--|
| 1 | 3V3/5V | Power Supply(+3.3V/5V 电源供电) |
| 2 | RX | TTL-Serial Data Receiver (TTL 数据接收) |
| 3 | TX | TTL-Serial Data Transmitter (TTL 数据传输) |
| 4 | GND | Ground(地) |

8.12 CON13 : TTY53 CONNECTION(4PIN/2.0)(串口接口)

| NO.(引脚) | Symbol(定义) | Description(描述) |
|---------|------------|--|
| 1 | 3V3/5V | Power Supply(+3.3V/5V 电源供电) |
| 2 | RX | TTL-Serial Data Receiver (TTL 数据接收) |
| 3 | TX | TTL-Serial Data Transmitter (TTL 数据传输) |
| 4 | GND | Ground(地) |

8.13 CON12 : TTY52 CONNECTION(4PIN/2.0)(串口接口)

| NO.(引脚) | Symbol(定义) | Description(描述) |
|---------|------------|--|
| 1 | 3V3/5V | Power Supply(+3.3V/5V 电源供电) |
| 2 | RX | TTL-Serial Data Receiver (TTL 数据接收) |
| 3 | TX | TTL-Serial Data Transmitter (TTL 数据传输) |
| 4 | GND | Ground(地) |

8.14 J2 :EXT-USB CONNECTOR(4PIN/2.0)(USB 插座)



| NO.(引脚) | Symbol(定义) | Description(描述) |
|---------|------------|--------------------------|
| 1 | 5V | +5V Power Supply(+5V 供电) |
| 2 | DM | USB Data-(USB 数据-) |
| 3 | DP | USB Data+(USB 数据+) |
| 4 | GND | Ground(地) |





8.15 J4 :EXT-USB CONNECTOR(4PIN/2.0)(USB 插座)

| NO.(引脚) | Symbol(定义) | Description(描述) |
|---------|------------|--------------------------|
| 1 | 5V | +5V Power Supply(+5V 供电) |
| 2 | DM | USB Data-(USB 数据-) |
| 3 | DP | USB Data+(USB 数据+) |
| 4 | GND | Ground(地) |

8.16 CON7 :SPEAK CONNECTOR(4PIN/2.0)(喇叭插座)

| NO.(引脚) | Symbol(定义) | Description(描述) |
|---------|------------|-----------------|
| 1 | RP | RP (右声道正) |
| 2 | RN | RN (右声道负) |
| 3 | LP | LP (右声道正) |
| 4 | LN | LN (右声道负) |

8.17 J29 :MCU(4PIN/2.0)(喇叭插座)

| NO.(引脚) | Symbol(定义) | Description(描述) |
|---------|------------|--------------------------|
| 1 | 5V | +5V Power Supply(+5V 供电) |
| 2 | INT | INT |
| 3 | DAT | DAT |
| 4 | GND | Ground(地) |

8.18 J1 :EXT-USB CONNECTOR(4PIN/2.0)(USB 插座)

| NO.(引脚) | Symbol(定义) | Description(描述) |
|---------|------------|--------------------------|
| 1 | 5V | +5V Power Supply(+5V 供电) |
| 2 | DM | USB Data-(USB 数据-) |
| 3 | DP | USB Data+(USB 数据+) |
| 4 | GND | Ground(地) |

8.19 CON10 : TTYS0 CONNECTION(4PIN/2.0)(串口接口)

| NO.(引脚) | Symbol(定义) | Description(描述) |
|---------|------------|--|
| 1 | 3V3/5V | Power Supply(+3.3V/5V 电源供电) |
| 2 | RX | TTL-Serial Data Receiver (TTL 数据接收) |
| 3 | TX | TTL-Serial Data Transmitter (TTL 数据传输) |
| 4 | GND | Ground(地) |



9.Environmental Characteristics(环境特性要求)

9.1 Temperature (环境温度)

Operating: 0°C to +40°C

Store: -20°C to +70°C

9.2 Humidity(环境湿度)

Operating: 10% to 90% (non-condensing)

Store: 5% to 95% (non-condensing)

9.3 Altitude(海拔高度)

Operating: 10,000 ft.(max)

Store: 20,000ft.(max)

9.4 High Temperature & Storage(高温负荷与存储)

Test method & condition please refer to the description of GB2423.2 “Test Bd & Bb” 测试方法和测试条件参见 GB2423.2 “试验 Bd & Bb”之说明

9.5 Low Temperature & Storage(低温负荷与存储)

Test method & condition please refer to the description of GB2423.1 “Test Ad & Ab” 测试方法和测试条件参见 GB2423.1 “试验 Ad & Ab”之说明

9.6 Humidity & Temperature Test(潮热试验)

Test method & condition please refer to the description of GB2423.3 “Test Ca” & GB2423.22 “Test Nb” 测试方法和测试条件参见 GB2423.3 “试验 Ca” 和 GB2423.22 “试验 Nb”之说明