# HDL662S 调试板

## HDL 662s debug board
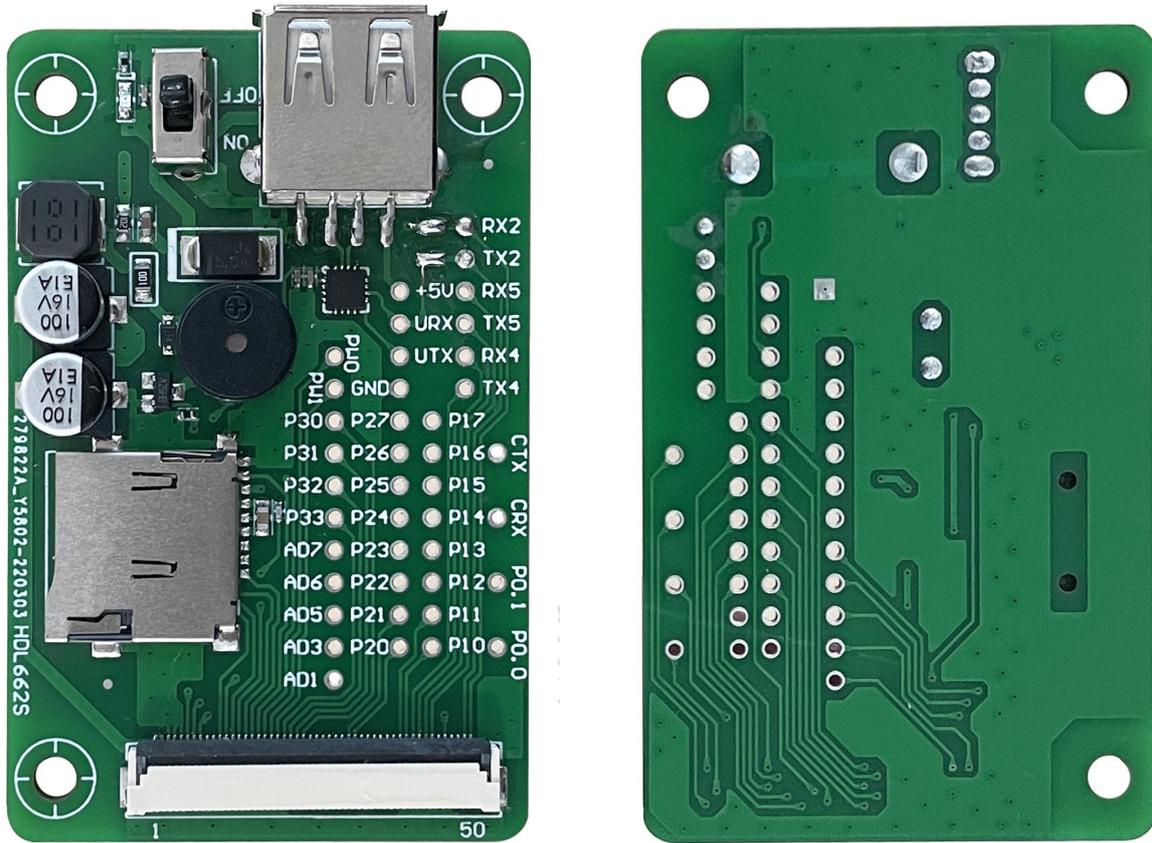


## 修订记录 Record of Revision

| 版本号 Ver | 日期 Revise Date | 描述 Content | 编辑人 Editor |
|---|---|---|---|
| 00 | 2021-11-11 | 首次发布 First Edition | 郑运佳 |
| 01 | 2022-03-28 | 添加电源开关 Add power switch | 郑运佳 |

- 简介 **Introduction**

    HDL662S 是针对于 F 系列 COF 屏设计的调试转接板。引出用户 CPU 核的 22 个 IO 口、3 路 UART 接口、1 路 CAN 接口、5 路 AD 接口、2 路 PWM 接口。支持 USB 供电和通讯，USB 默认为串口 2 通讯、支持串口 4 和串口 5 通讯。支持 SD 卡下载更新所有配置文件。

    HDL662S is a commissioning adapter board designed for F series COF screen.　It can lead to 22 IOs, 3 UARTs, 1 CAN, 5 ADs, and 2 PWMs from T5L and supports USB power supply and communication. Its USB defaults to serial port 2 communication and supports serial port 4 and serial port 5 communication. You can download and update all configuration files by SD card.

- 电性能参数 **Voltage & Current**

| 参数 Item | 测试条件 Conditions | 最小值 Min | 典型值 Typ | 最大值 Max | 单位 Unit |
|---|---|---|---|---|---|
| 工作电压 Power Voltage | - | - | 5.0 | - | V |
| 推荐工作电源：5V 1A 的直流稳压电源 Recommended power supply: 5V 1A DC | | | | | |

- 工作环境和可靠性参数 **Reliability Test**

| 参数 Item | 测试条件 Conditions | 最小值 Min | 典型值 Typ | 最大值 Max | 单位 Unit |
|---|---|---|---|---|---|
| 工作温度 Working Temperature | 5V 电压下，湿度 60% 60%RH at 5V voltage | -20 | 25 | 70 | ℃ |
| 储存温度 Storage Temperature | - | -20 | 25 | 70 | ℃ |
| 工作湿度 Working Humidity | 25℃ | 10% | 60% | 90% | RH |

- 接口性能参数 **Interface**

| 用户接口方式 Socket | FCC50Pin_0.5mm |
|---|---|
| USB 接口 | 有 YES |
| SD 卡接口 Slot | 有 YES |

- 物理尺寸 **Dimension**

| 尺寸 Dimension | |
|---|---|
| 外形尺寸 Dimension | 63.50(W) ×40.64(H) × 8.60(T) mm |
| 净重量 Net Weight | 20g |

- **50Pin 座子接口定义　Interface Terminals**

| PIN<br>序号 | Definition<br>定义 | I/O | Functional Description<br>功能描述 |
|---|---|---|---|
| 1 | +5V | I | 供电输入，DC3.6-5.5V。<br>Power supply, DC3.6-5.5V. |
| 2 | +5V | I | |
| 3 | GND | GND | GND |
| 4 | GND | GND | |
| 5 | GND | GND | |
| 6 | AD7 | I | 5 路 ADC 输入，3.3V 电源做为参考，12bit 分辨率，输入电压范围 0-3.3V。除 AD6 外，其余数据通过 UART3 实时发送给 OS 核，采样速度为 16KHz。AD1 和 AD5 并联，AD3 和 AD7 并联使用，可以等效成两路 32KHz 采样 AD。AD1、AD3、AD5、AD7 并联在一起使用，可以等效成一路 64KHz 采样 AD；对数据做 1024 次累加后再除以 64，过采样获得 1 路 64Hz 16bit 的 AD 值。 |
| 7 | AD6 | I | |
| 8 | AD5 | I | |
| 9 | AD3 | I | |
| 10 | AD2 | I | 5 input ADCs. 12-bit resolution in case of 3.3V power supply. 0-3.3V input voltage. Except for AD6, the rest data is sent to OS core via UART3 in real time with 16KHz sampling rate. AD1 and AD5 can be used in parallel, and AD3 and AD7 can be used in parallel, which equals to two 32KHz sampling AD. AD1, AD3, AD5, AD7 can be used in parallel, which equals to a 64KHz sampling AD; the data is summed 1024 times and then divided by 64 to obtain a 64Hz 16bit AD value by oversampling. |
| 11 | +3.3 | O | 3.3V 输出，最大负载 150mA。<br>3.3V output, maximum load of 150mA. |
| 12 | SPK | O | 外接 MOSFET 驱动蜂鸣器或扬声器，外部要 10K 下拉到 GND 确保上电是低电平。<br>External MOSFET to drive buzzer or speaker. The external 10K resistor should be pulled down to the ground to ensure that power-on is low level. |
| 13 | SD_CD | IO | SD/SDHC 接口，SD_CK 在靠近 SD 卡接口的地方对 GND 接一个 22pF 电容。<br>SD/SDHC interface,The SD_CK connects a 22pF capacitor to GND near the SD card interface. |
| 14 | SD_CK | O | |
| 15 | SD_D3 | IO | |
| 16 | SD_D2 | IO | |
| 17 | SD_D1 | IO | |
| 18 | SD_D0 | IO | |
| 19 | PWM0 | O | 2 路 16bit PWM 输出，外部要10K 下拉到GND 确保上电是低电平。OS 核可以通过 UART3 来实时控制。<br>2 16-bit PWM output. The external 10K resistor should be pulled down to the ground to ensure that power-on is low level.<br>The OS core can be controlled in real time via UART3. |
| 20 | PWM1 | O | |
| 21 | P3.3 | IO | 如果使用RX8130 或SD2058 I2C RTC，连接在这两个IO 上。SCL 接P3.2，SDA 接P3.3 并10K 上拉到3.3V。<br>If using RX8130 or SD2058 I2C RTC to connect to both IOs, SCL should be connected to P3.2,and SDA connected to P3.3 in parallel with 10K resistor pull-up to 3.3V. |
| 22 | P3.2 | IO | |
| 23 | P3.1/EX1 | IO | 可同时作为外部中断 1 输入，支持低电平或下跳沿中断两种模式。<br>It can be used as an external interrupt 1 input at the same time, and supports both low voltage level or trailing edge interrupt modes. |
| 24 | P3.0/EX0 | IO | 可同时作为外部中断 0 输入，支持低电平或下跳沿中断两种模式。<br>It can be used as an external interrupt 0 input at the same time, and supports both low voltage level or trailing edge interrupt modes. |
| 25 | P2.7 | IO | IO 口 IO interface |
| 26 | P2.6 | IO | IO 口 IO interface |
| 27 | P2.5 | IO | IO 口 IO interface |
| 28 | P2.4 | IO | IO 口　IO interface |
| 29 | P2.3 | IO | IO 口　IO interface |
| 30 | P2.2 | IO | IO 口　IO interface |
| 31 | P2.1 | IO | IO 口　IO interface |
| 32 | P2.0 | IO | IO 口　IO interface |

| 33 | P1.7 | IO | IO □ IO interface |
|----|------|-----|-------------------|
| 34 | P1.6 | IO | IO □ IO interface |
| 35 | P1.5 | IO | IO □ IO interface |
| 36 | P1.4 | IO | IO □ IO interface |
| 37 | P1.3 | IO | IO □ IO interface |
| 38 | P1.2 | IO | IO □ IO interface |
| 39 | P1.1 | IO | IO □ IO interface |
| 40 | P1.0 | IO | IO □ IO interface |
| 41 | UART4_TXD | O | 串口 4 UART4 |
| 42 | UART4_RXD | I | |
| 43 | UART5_TXD | O | 串口 5 UART5 |
| 44 | UART5_RXD | I | |
| 45 | P0.0 | IO | IO □ IO interface |
| 46 | P0.1 | IO | IO □ IO interface |
| 47 | CAN_TX | O | CAN 接口 CAN interface |
| 48 | CAN_RX | I | |
| 49 | UART2_TXD | O | 串口 2 UART2（OS 核的UART0 串口 UART0 serial port of OS core) |
| 50 | UART2_RXD | I | |

备注：不影响性能参数和使用的产品设计变更，恕不另行通知。
**Remark:There is no extra-notice if the product design changes that do not affect performance parameters and use.**

40.64±0.5
33.02
3.81
10.67
8.60
1.60
35.18
63.50±0.5
53.34
SMT_LN5901
HDL662S
Mini_SD
10K
1.8V
100nf
100nf
ERV9_5THR
FCC50_0.5
HDL662SV1 2021.10.20
1
50
20.03
R2.54
5.08
R3.30

| 型号 Model | | HDL662S | | | |
| --- | --- | --- | --- | --- | --- |
| 图纸 Drawing | A 4 | 绘制 Drawn | G.Y | 日期 Date | 2021.11.11 |
| 比例 Scale | 1:1 | 审核 Review | | 日期 Date | |
| 单位 Unit | MM | 批准 Approval | | 日期 Date | |

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1.尺寸定位基准为定位孔
Location hole is used as position reference.
2.未标注公差为+/-0.3mm
Unmarked Tolerance is +/-0.3mm
注：虚线标注为有效显示区域
Active area is marked in Dash lines