ElectroDragon Wiki

EL125 HDK

Contents

Power supply

- Power supply: ideally use 5V battery, or linear 3-end LDO, e.g. HT7350
- If use power bank or AC-DC power unit, will influence the transmission performance
- Use 1000UF capacitor on power input end + - will greatly improve the transmission performance
- The use of DC-DC, switching power supply or antenna in the metal will significantly affect the reader distance

AC-DC

- If you must use 220V AC power supply, you can use the transformer class linear power supply, plus electrolysis and resistance filter, you can achieve the desired results.
- Better use linear AC-DC plug 9V, then 7805 LDO to 5V, add 2*1000uf capacitors can get pure power supply

Info

- About 25mA, 5V power supply
- antenna induction - 700uH
- default resonance capacitance - C8 2.2nF/250V
- If use multiple modules together with one power supply, serial connect 1N5822 for each module

接线说明，模块 1 和 2 焊接天线。
8 是电源负极，9 是电源正极，8 和 9 之间并联一个 1000uf 电解电容（注意电容有极性）
模块 3 脚接模块 9，选择 ASCII 输出模式。
模块 5 脚是 TX 输出接 PL2303 小板的 RX。
模块 8 脚接 PL2303 小板 GND，9 脚接 PL2303 小板的 USB 5V 电源脚

Pin Definition

1. 1 antenna 1 **MUST CONNECT**
2. 2 antenna 2 **MUST CONNECT**

3. 3 high-level election serial port, low-level selection of Wigan, **THIS MUST SELECT**
4. 4 buzzer output, no card low, a card output 2.7k square wave
5. 5 Serial TX output or Wigan 26 data D1
6. 6 Wigan 26 data D0
7. 7 reset terminal, active low to repeat reading
8. 8 ground **MUST CONNECT**
9. 9 power supply **MUST CONNECT**

Usage

- On board LED indicator will blink when card detect
- Add buzzer or speaker on pin 4 and 9 end will hear sound when detect card.

Output Hex data

- Serial output on pin5 TX, output mode pin3 select to high, 9600, 8N1
- 02 start code (fixed)
- 10-bit ASCII card number, low-order data first. High post
- Checksum checksum, all XOR operations for the 10-bit ACSII code HEX format
- 10-bit ASCII format for the 2-bit card manufacturer code +8 bit hexadecimal card number (low first)
- 03 end code (fixed)
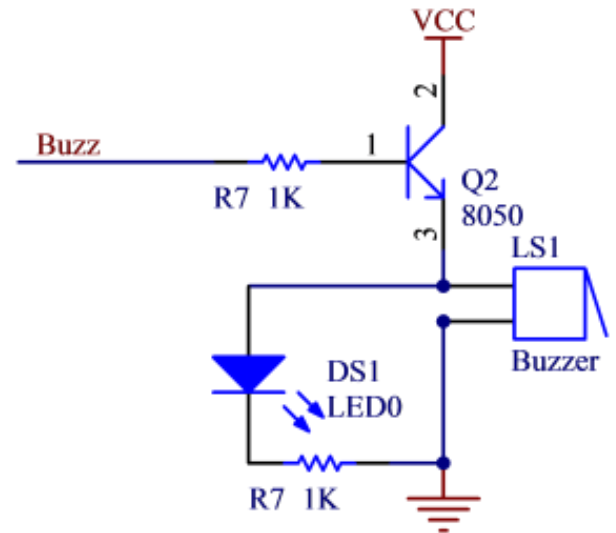
| 02 | 10 ASCII Data Characters | Checksum | 03 |

Examples

- Hex to ASCII use this site (https://www.rapidtables.com/convert/number/hex-to-ascii.html)

| Decimal	Card Number ASCII format	Module output (HEX format)	Disassemble	Sum Code
0004857831	07 00 4A 1F E7	02 30 37 30 30 34 41 31 46 45 37 B5 03	Start Code 02 - Card Code 30 37 30 30 34 41 31 46 45 37 - Sum Code B5 - End Code 03	07 XoR 00 XoR 4A XoR 1F XoR E7 = B5
0004800710	07 00 49 40 C6	02 30 37 30 30 34 39 34 30 43 36 C8 03	Start Code 02 - Card Code 30 37 30 30 34 39 34 30 43 36 - Sum Code C8 - End Code 03	07 XoR 00 XoR 49 XoR 40 XoR C6 = C8
	62E3086CED	02 36 32 45 33 30 38 36 43 45 44 08 03	~ 36H, 32H, 45H, 33H, 30H, 38H, 36H, 43H, 45H, 44H ~	(62H) XOR (E3H) XOR (08H) XOR (6CH) XOR (EDH) = 08H

Frequency match

- On board C8 resonance capacitor is 2.2NF, default 97x97 antenna induction is 700UH, matched frequency is 125K
- If replace the atenna, please replace the C8 capacitor
- equation please see on side

- After change of C8, wait a few minutes after temperature down

Failure And Ideal Setup

$$f \approx \frac{1}{2\pi\sqrt{LC}}$$

- Use 3x AAA pure battery ! Otherwise follow the power options above.
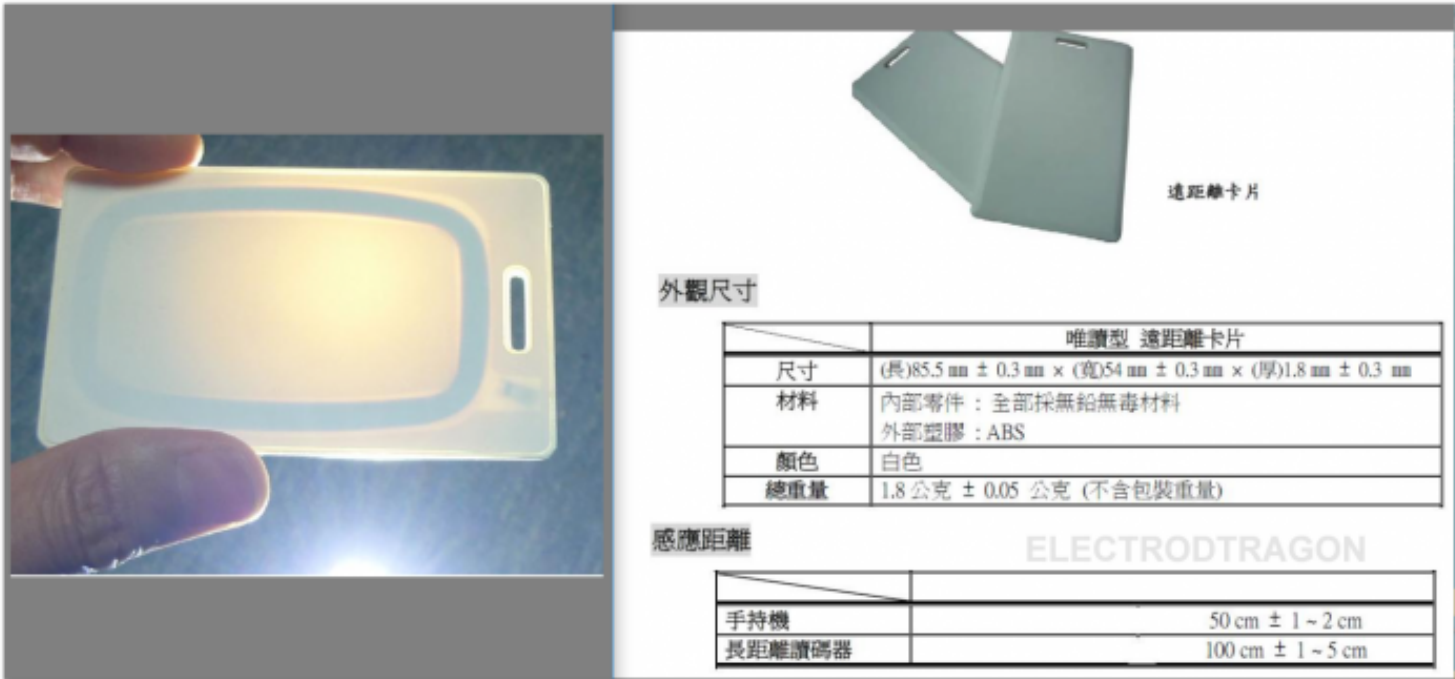
Use linear power supply
- Stay away from any other electronics, better in open outdoor area
- Make sure use **good quality card**, thin card normal get 20cm, thick card can reach best 40cm. (right side card sensing distance is up to 50CM). **The card inside antenna size is the bigger the better.**
- Added the capacitor 1000uf which included package

The failure checklist

1. 1 card coil is too small
2. 2 coil resonance did not tune well
3. 3 card quality not work, the card coil is too small, the card chip is not good
4. 4 power is not pure, the power is not a large electrolytic filter, the power supply has other loads
5. 5 near DC-DC inductor or switching power supply or other unknown radio frequency interference
6. 6 near the metal impact (can be used to reduce the impact of metal materials)