班级Class应用电子31981姓名Name孙亚川学号ID3080198117

项目名称＿低频RFID识读卡号项目（RDM6300模块）

Low Frequency RFID Reader Project

**一、实验目的 Purposes**

1. 了解 ID 卡的基本原理；

2. 熟悉 125K读卡模块的使用方法。

**二、实验设备 Modules**

1. Arduino Uno开发板一块；

2. RFID 125K模块（RDM6300）一个；

3. 低频ID卡一个

**三、实验要求 Tasks**

1. 要求：了解 ID 卡的基本原理；

2. 实现功能：利用Serial Monitor，测试 ID卡的读取；

3. 实验现象：刷卡后，Serial Monitor显示ID卡的十进制卡号。

**四、实验原理 Principle**

1、ID 卡简介

ID 卡全称为身份识别卡（Identification Card），是一种不可写入的感应卡，含固定的编号，主要有台湾SYRIS 的EM格式、美国HID、MOTOROLA 等各类 ID 卡。ID 卡与磁卡一样，都仅仅使用了“卡的号码”而已，卡内除了卡号外，无任何保密功能，其“卡号”是公开、裸露的。所以说 ID 卡就是“感应式磁卡”。ISO 标准 ID卡的规格为：85.6x54x0.80±0.04mm（高/宽/厚） ，市场上也存在一些厚、薄卡或异型卡。

2、ID 卡的工作原理

系统由卡、读卡器和后台控制器组成。工作过程如下：

* 读卡器将载波信号经天线向外发送，载波频率为 125KHZ（THRC12） ；
* ID 卡进入读卡器的工作区域后， 由卡中电感线圈和电容组成的谐振回路接收读卡器发射的载波信号，卡中芯片的射频接口模块由此信号产生出电源电压、复位信号及系统时钟，使芯片“激活” ；
* 芯片读取控制模块将存储器中的数据经调相编码后调制在载波上经卡内天线回送给读卡器；
* 读卡器对接收到的卡回送信号进行解调、解码后送至后台计算机；

**五、实验内容 Content**

1. Program Design

In the design software to design the circuit, the circuit diagram is as follows:

图示, 示意图

描述已自动生成

Figure1 General circuit design diagram

2. Hardware Design

**(1)Arduino UNO R3**

Arduino is a convenient, flexible and easy-to-use open source electronic prototyping platform , which is a microcontroller with a complete set of development software. The hardware is based on the Atmel AVR microcontroller, including the processor, RAM, EEPROM, and analog and digital I/O interfaces. The software includes the Arduino IDE development environment and burn-in program. arduino has a low price, can support third-party hardware, peripherals and class libraries, etc., can be more convenient and fast to expand their own projects.

电子零件

低可信度描述已自动生成

Figure2 Arduino R3 Physical picture

**(2)RDM6300**

RDM6300RDM6300 is a card reader module for 125KHz ID cards, used to read EM4100 compatible ID card information, consisting of a C8051F330 and a LM358D dual op-amp Note: EM4100, 4200 cards are read-only, duplicate cards, is to set the T5577/5557/5567/EM4305 card to EM4100 format ID card.

蓝色的电子设备

中度可信度描述已自动生成

Figure3 RDM6300 Physical picture

许多不同颜色的地图

描述已自动生成

Figure4 RDM6300 Principle diagram

**(3)ID Card**

**3.** **Programming**

|  |  |
| --- | --- |
| 1  2  3  4  5  6  7  8  9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30 | #include <SoftwareSerial.h>  #include <RDM6300.h>  SoftwareSerial RFID(6, 8); // RX and TX  int Led=13;  uint8\_t Payload[6]; // used for read comparisons  RDM6300 RDM6300(Payload);  void setup()  {  pinMode(Led, OUTPUT);  RFID.begin(9600); // start serial to RFID reader  Serial.begin(9600); // start serial to PC  }  void loop()  {  while (RFID.available() > 0)  {  digitalWrite(Led, HIGH);  uint8\_t c = RFID.read();  //Serial.print(c,HEX);  if (RDM6300.decode(c)) {  for (int i=0; i < 5; i++){  Serial.print(Payload[i], HEX);  Serial.print(" ");  }  Serial.println();  }  }  digitalWrite(Led, LOW);  delay(100);  } |

Figure4 Cord

**小结 Conclusion**

A large number of searches were referenced in this design, so we also encountered some difficulties when summarizing, such as how to show the framework of the entire large circuit diagram, and secondly, we also needed to better understand the meaning of the schematic and code, so this experiment was also very rewarding.