ZC681 模块参考程序

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本文档提供了一个使用 ZC681 模块的参考程序，程序使用 8051 汇编编写，仅用于参考.

```
  ORG 0000H
            LJMP    Begin
  ORG 0200H
Begin:      MOV     SP,#070H
            MOV     IE,#080H
            MOV     SCON,#070H
            MOV     TMOD,#021H
            MOV     TCON,#001H
            MOV     TH1,#0FDH
            MOV     TL1,#0FDH
            MOV     IP,#011H
            MOV     PCON,#000H
            SETB    TR1
            LCALL   TIME
            MOV     0F6H,#087H
            MOV     0F6H,#059H
            MOV     0BFH,#010H
            MOV     0F6H,#000H

            MOV     DPTR,#08001H ;STACON=0EH
            MOV     A,#00EH
            MOVX    @DPTR,A
            MOV     00EH,#0C8H
            LCALL   TIME
            MOV     R7,#026H
            LCALL   Request  ; 寻卡
            CJNE    R2,#000H,Begin
            LCALL   AntiCollision; 防重叠
            CJNE    R2,#000H,Begin
            MOV     037H,008H
            MOV     038H,009H
            MOV     039H,00AH
            MOV     03AH,00BH
            MOV     03BH,00CH
            LCALL   SelectTag     ;选卡
            CJNE    R2,#000H,00306H
            LCALL   SKEY          ;送传输密钥和 KEY
            MOV     R7,#000H
            MOV     R6,#001H
            LCALL   Authentication   ; 认证操作
            CJNE    R2,#000H,00306H
            MOV     R7,#004H
```

```
        MOV     R4,#050H
        LCALL   READ
        CJNE    R2,#000H,00306H
        MOV     050H,037H
        MOV     051H,038H
        MOV     052H,039H
        MOV     053H,03AH
        MOV     R0,#050H
        MOV     R7,#004H
        LCALL   RS232
        MOV     R7,#00AH
        LJMP    00306H

ORG   039CH
DATA   BD,DE,6F,37,83,83
ORG   03A2H
DATA   14,8A,C5,E2,28,28
ORG   03A8H
DATA    7D,3E,9F,4F 95,95
ORG   03AEH
DATA    AD,D6,6B,35,C8,C8
ORG   03B4H
DATA    DF,EF,77,BB,E4,E4
ORG   03BAH
DATA    09,84,42,21,BC,BC
ORG   03C0H
DATA    5F,AF,D7,EB A5,A5
ORG   03C6H
DATA    29,14,8A,C5,9F,9F
ORG   03CCH
DATA    FA,FD,FE,7F,FF,FF
ORG   03D2H
DATA    A0,A1,A2,A3,A4,A5
ORG   03D8H
DATA    A0,A1,A2,A3,A4,A5
DATA    A0,A1,A2,A3,A4,A5
DATA    A0,A1,A2,A3,A4,A5
DATA    A0,A1,A2,A3,A4,A5
DATA    A0,A1,A2,A3,A4,A5
DATA    A0,A1,A2,A3,A4,A5
DATA    A0,A1,A2,A3,A4,A5
DATA    A0,A1,A2,A3,A4,A5
ORG 041FH
DATA    00,01,02,03,04,05,06,07
```

```
DATA    08,09,0A,0B,0C,0D,0E,0F
DATA    30,31,32,33,34,35,36,37
DATA    38,39,41,42,43,44
DATA    45,46,0E,10,11,12
DATA    14,15,16,18,19,1A


;存传输密钥和密码(9bit)
CSKEY:      MOV     R7,#000H
            MOV     R6,#000H
            MOV     DPTR,#0039CH
            MOV     R0,#006H
            MOV     R1,#020H
            LCALL   DRAM
            MOV     DPTR,#003D2H
            MOV     R0,#006H
            LCALL   DRAM
            LCALL   SKEYMCM
            MOV     A,R2
            JNZ     CSKEY
CSKEY1: MOV     R6,#001H
            MOV     DPTR,#003A2H
            MOV     R0,#006H
            MOV     R1,#020H
            LCALL   DRAM
            MOV     DPTR,#003D8H
            MOV     R0,#006H
            LCALL   DRAM
            LCALL   SKEYMCM
            MOV     A,R2
            JNZ     CSKEY1
CSKEY2: MOV     R6,#002H
            MOV     DPTR,#003A8H
            MOV     R0,#006H
            MOV     R1,#020H
            LCALL   DRAM
            MOV     DPTR,#003DEH
            MOV     R0,#006H
            LCALL   DRAM
            LCALL   SKEYMCM
            MOV     A,R2
            JNZ     CSKEY2
CSKEY3: MOV     R6,#003H
            MOV     DPTR,#003AEH
```

```
                MOV     R0,#006H
                MOV     R1,#020H
                LCALL   DRAM
                MOV     DPTR,#003E4H
                MOV     R0,#006H
                LCALL   DRAM
                LCALL   SKEYMCM
                MOV     A,R2
                JNZ     CSKEY3
CSKEY4:  MOV    R6,#004H
                MOV     DPTR,#003B4H
                MOV     R0,#006H
                MOV     R1,#020H
                LCALL   DRAM
                MOV     DPTR,#003EAH
                MOV     R0,#006H
                LCALL   DRAM
                LCALL   SKEYMCM
                MOV     A,R2
                JNZ     CSKEY4
CSKEY5:  MOV    R6,#005H
                MOV     DPTR,#003BAH
                MOV     R0,#006H
                MOV     R1,#020H
                LCALL   DRAM
                MOV     DPTR,#003F0H
                MOV     R0,#006H
                LCALL   DRAM
                LCALL   SKEYMCM
                MOV     A,R2
                JNZ     CSKEY5
 CSKEY6:        MOV     R6,#006H
                MOV     DPTR,#003C0H
                MOV     R0,#006H
                MOV     R1,#020H
                LCALL   DRAM
                MOV     DPTR,#003F6H
                MOV     R0,#006H
                LCALL   DRAM
                LCALL   SKEYMCM
                MOV     A,R2
                JNZ     CSKEY6
CSKEY7:  MOV    R6,#007H
                MOV     DPTR,#003C6H
```

```
                MOV     R0,#006H
                MOV     R1,#020H
                LCALL   DRAM
                MOV     DPTR,#003FCH
                MOV     R0,#006H
                LCALL   DRAM
                LCALL   SKEYMCM
                MOV     A,R2
                JNZ     CSKEY7
CSKEY8: MOV     R6,#008H
                MOV     DPTR,#003CCH
                MOV     R0,#006H
                MOV     R1,#020H
                LCALL   DRAM
                MOV     DPTR,#00402H
                MOV     R0,#006H
                LCALL   DRAM
                LCALL   SKEYMCM
                MOV     A,R2
                JNZ     CSKEY8
                RET


;读内存子程序
DRAM:           CLR     A
                MOVC    A,@A+DPTR
                MOV     @R1,A
                INC     R1
                INC     DPTR
                DJNZ    R0,DRAM
                RET

;写
 WRITE: MOV     DPTR,#08003H:
                MOV     A,#010H
                MOVX    @DPTR,A
                MOV     DPTR,#08004H
                MOV     A,#004H
                MOVX    @DPTR,A
                MOV     DPTR,#08000H
                MOV     A,#0A0H
                MOVX    @DPTR,A
                MOV     A,R7
                MOVX    @DPTR,A
```

```
                MOV     DPTR,#08006H
                MOV     A,#00AH
                MOVX    @DPTR,A
WRITE1:  MOV    DPTR,#08001H
                MOVX    A,@DPTR
                JNB     ACC.7,WRITE1
                MOV     R3,A
                MOV     DPTR,#08006H
                MOV     A,#000H
                MOVX    @DPTR,A
                MOV     A,R3
                JNB     ACC.6,WRITE2
                MOV     R2,#001H
                LJMP    WRITEF
WRITE2:  JNB    ACC.3,WRITE3
                MOV     R2,#00BH
                LJMP    WRITEF
WRITE3:  MOV    DPTR,#08000H
                MOVX    A,@DPTR
                ANL     A,#00BH
                CJNE    A,#00AH,WRITE4
                LJMP    WRITE7
WRITE4:  JNZ    WRITE5
                MOV     R2,#00AH
                LJMP    WRITEF
WRITE5:  DEC    ACC
                JNZ     WRITE6
                MOV     R2,#00FH
                LJMP    WRITEF
WRITE6:  MOV    R2,#006H
                LJMP    WRITEF
WRITE7:  MOV    DPTR,#08003H
                MOV     A,#080H
                MOVX    @DPTR,A
                MOV     DPTR,#08004H
                MOV     A,#004H
                MOVX    @DPTR,A
                MOV     R1,#050H
WRITE8:  MOV    DPTR,#08000H
                MOV     A,@R1
                MOVX    @DPTR,A
                INC     R1
                CJNE    R1,#060H,WRITE8
                MOV     DPTR,#08006H
```

```
            MOV     A,#010H
            MOVX    @DPTR,A             ;TOC=2ms
WRITE9: MOV     DPTR,#08001H
            MOVX    A,@DPTR
            JNB     ACC.7,WRITE9
            MOV     R3,A
            MOV     DPTR,#08006H
            MOV     A,#000H
            MOVX    @DPTR,A
            MOV     A,R3
            ANL     A,#028H
            JZ      WRITEA
            MOV     R2,#00FH
            LJMP    WRITEF
WRITEA: MOV     DPTR,#08006H
            MOV     A,#05FH
            MOVX    @DPTR,A
WRITEB: MOV     DPTR,#08001H
            MOVX    A,@DPTR
            JNB     ACC.7,WRITEB
            MOV     R3,A
            MOV     DPTR,#08006H
            MOV     A,#000H
            MOVX    @DPTR,A
            MOV     A,R3
            JNB     ACC.6,WRITEC
            MOV     R2,#001H
            LJMP    WRITEF
WRITEC: JNB     ACC.3,005E2H
            MOV     R2,#00BH
            LJMP    WRITEF
            MOV     DPTR,#08000H
            MOVX    A,@DPTR
            ANL     A,#00BH
            CJNE    A,#00AH,WRITED
            LJMP    WRITEE
WRITED: MOV     R2,#006H
            LJMP    WRITEF
WRITEE: MOV     R2,#000H
WRITEF: RET

;减值
Decrement: MOV     DPTR,#08003H
            MOV     A,#010H
```

```
                MOVX    @DPTR,A
                MOV     DPTR,#08004H
                MOV     A,#004H
                MOVX    @DPTR,A
                MOV     DPTR,#08000H
                MOV     A,#0C0H
                MOVX    @DPTR,A
                MOV     A,R7
                MOVX    @DPTR,A
                MOV     DPTR,#08006H
                MOV     A,#00AH
                MOVX    @DPTR,A
Decre1:  MOV    DPTR,#08001H
                MOVX    A,@DPTR
                JNB     ACC.7,Decre1
                MOV     R3,A
                MOV     DPTR,#08006H
                MOV     A,#000H
                MOVX    @DPTR,A
                MOV     A,R3
                JNB     ACC.6,Decre2
                MOV     R2,#001H
                LJMP    DecreA
Decre2:  JNB    ACC.3,Decre3
                MOV     R2,#00BH
                LJMP    DecreA
Decre3:  MOV    DPTR,#08000H
                MOVX    A,@DPTR
                ANL     A,#00BH
                CJNE    A,#00AH,Decre4
 0638   020647  LJMP    Decre5
Decre4:  JNZ    Decre6
                MOV     R2,#00AH
                LJMP    DecreA
Decre6:  MOV    R2,#011H
                LJMP    DecreA
Decre5:  MOV    DPTR,#08003H
                MOV     A,#020H
                MOVX    @DPTR,A
                MOV     DPTR,#08004H
                MOV     A,#004H
                MOVX    @DPTR,A
                MOV     DPTR,#08006H
                MOV     A,#00AH
```

```
            MOVX    @DPTR,A
            MOV     R1,#050H
            MOV     DPTR,#08000H
            MOV     A,@R1
            MOVX    @DPTR,A
            INC     R1
            CJNE    R1,#054H,0065BH
Decre7: MOV     DPTR,#08001H
            MOVX    A,@DPTR
            JNB     ACC.7,Decre7
            MOV     R3,A
            MOV     DPTR,#08006H
            MOV     A,#000H
            MOVX    @DPTR,A
            MOV     A,R3
            JB      ACC.6,Decre8
            MOV     DPTR,#08000H
            MOVX    A,@DPTR
            ANL     A,#00FH
            CJNE    A,#004H,Decre9
            MOV     R2,#003H
            LJMP    DecreA
Decre9: MOV     R2,#011H
            LJMP    DecreA
Decre8: MOV     R2,#000H
DecreA: RET


;增值
Increment:  MOV     DPTR,#08003H
            MOV     A,#010H
            MOVX    @DPTR,A
            MOV     DPTR,#08004H
            MOV     A,#004H
            MOVX    @DPTR,A
            MOV     DPTR,#08000H
            MOV     A,#0C1H
            MOVX    @DPTR,A
            MOV     A,R7
            MOVX    @DPTR,A
            MOV     DPTR,#08006H
            MOV     A,#00AH
            MOVX    @DPTR,A
Incre1: MOV     DPTR,#08001H
```

```
            MOVX    A,@DPTR
            JNB     ACC.7,Incre1
            MOV     R3,A
            MOV     DPTR,#08006H
            MOV     A,#000H
            MOVX    @DPTR,A
            MOV     A,R3
            JNB     ACC.6,Incre2
            MOV     R2,#001H
            LJMP    Incre9
Incre2:     JNB     ACC.3,Incre3
            MOV     R2,#00BH
            LJMP    Incre9
Incre3:     MOV     DPTR,#08000H
            MOVX    A,@DPTR
            ANL     A,#00BH
            CJNE    A,#00AH,Incre4
            LJMP    Incre5
Incre4:     JNZ     Incre6
            MOV     R2,#00AH
            LJMP    Incre9
Incre6:     MOV     R2,#010H
            LJMP    Incre9
Incre5:     MOV     DPTR,#08003H
            MOV     A,#020H
            MOVX    @DPTR,A
            MOV     DPTR,#08004H
            MOV     A,#004H
            MOVX    @DPTR,A
            MOV     DPTR,#08006H
            MOV     A,#00AH
            MOVX    @DPTR,A
            MOV     R1,#020H
            MOV     DPTR,#08000H
            MOV     A,@R1
            MOVX    @DPTR,A
            INC     R1
            CJNE    R1,#024H,006F1H
Incre6:     MOV     DPTR,#08001H
            MOVX    A,@DPTR
            JNB     ACC.7,Incre6
            MOV     R3,A
            MOV     DPTR,#08006H
            MOV     A,#000H
```

```
            MOVX    @DPTR,A
            MOV     A,R3
            JB      ACC.6,Incre7
            MOV     DPTR,#08000H
            MOVX    A,@DPTR
            ANL     A,#00FH
            CJNE    A,#004H,Incre8
            MOV     R2,#003H
            LJMP    Incre9
Incre8:  MOV    R2,#010H
            LJMP    Incre9
Incre7:  MOV    R2,#000H
Incre9:  RET


;传送
Transfer:   MOV     DPTR,#08003H
            MOV     A,#010H
            MOVX    @DPTR,A
            MOV     DPTR,#08004H
            MOV     A,#004H
            MOVX    @DPTR,A
            MOV     DPTR,#08000H
            MOV     A,#0B0H
            MOVX    @DPTR,A
            MOV     A,R7
            MOVX    @DPTR,A
            MOV     DPTR,#08006H
            MOV     A,#010H
            MOVX    @DPTR,A
Trans1:  MOV    DPTR,#08001H
            MOVX    A,@DPTR
            JNB     ACC.7,Trans1
            MOV     R3,A
            MOV     DPTR,#08006H
            MOV     A,#000H
            MOVX    @DPTR,A
            MOV     A,R3
            ANL     A,#028H
            JZ      Trans2
            MOV     R2,#00EH
            LJMP    Trans8
Trans2:  MOV    DPTR,#08006H
            MOV     A,#05FH
```

```
            MOVX    @DPTR,A
Trans3:  MOV     DPTR,#08001H
            MOVX    A,@DPTR
            JNB     ACC.7,Trans3
            MOV     R3,A
            MOV     DPTR,#08006H
            MOV     A,#000H
            MOVX    @DPTR,A
            MOV     A,R3
            JNB     ACC.6,Trans4
            MOV     R2,#001H
            LJMP    Trans8
Trans4:  JNB     ACC.3,Trans5
            MOV     R2,#00BH
            LJMP    Trans8
Trans5:  MOV     DPTR,#08000H
            MOVX    A,@DPTR
            ANL     A,#00FH
            CJNE    A,#00AH,Trans6
            LJMP    Trans7
Trans6:  MOV     R2,#006H
            LJMP    Trans8
Trans7:  MOV     R2,#000H
Trans8:  RET


;寻卡
Request:    MOV     DPTR,#08001H
            MOV     A,#08CH
            MOVX    @DPTR,A       ; STACON=8C
            MOV     DPTR,#08005H
            MOV     A,#00EH
            MOVX    @DPTR,A       ; BAUDRATE=0E
            MOV     DPTR,#08002H  ; CR=0
            MOV     A,#0C0H       ; PR=1
            MOVX    @DPTR,A       ; CE=0
            MOV     DPTR,#08007H
            MOV     A,#0C6H
            MOVX    @DPTR,A       ; MODE=C6
            MOV     DPTR,#08001H
            MOV     A,#00CH
            MOVX    @DPTR,A       ; STACON=0C
            MOV     DPTR,#0800EH
            MOV     A,#002H
```

```
            MOVX    @DPTR,A         ; RCODE=02
            MOV     DPTR,#08003H
            MOV     A,#007H
            MOVX    @DPTR,A         ; BCNTS=1BIT
            MOV     DPTR,#08004H
            MOV     A,#010H
            MOVX    @DPTR,A         ; BCNTR=2BIT
            MOV     DPTR,#08000H
            MOV     A,R7
            MOVX    @DPTR,A         ; Request std
            MOV     DPTR,#08006H
            MOV     A,#00AH
            MOVX    @DPTR,A         ; TOC=1ms
Request1 : MOV     DPTR,#08001H
            MOVX    A,@DPTR
            JNB     ACC.7,Request1;DV=1
            MOV     R3,A
            MOV     DPTR,#08006H
            MOV     A,#000H
            MOVX    @DPTR,A         ; TOC=0ms
            MOV     A,R3
            JNB     ACC.6,Request2    ; TE=0
            MOV     R2,#001H
            LJMP    Request3
Request2: MOV     00EH,#00AH
            LCALL   TIME
            JNB     ACC.3,Request4 ;CRC 正确
            MOV     R2,#00BH
            LJMP    Request3
Request4: MOV     DPTR,#08000H
            MOVX    A,@DPTR
            MOV     R4,A
            MOVX    A,@DPTR
            MOV     R5,A            ;卡返回 2 字节
            MOV     R2,#000H
Request3: RET

;防重叠
AntiCollision:MOV     DPTR,#08003H
            MOV     A,#010H
            MOVX    @DPTR,A         ; 传送 2 字节
            MOV     DPTR,#08001H
            MOV     A,#00DH
            MOVX    @DPTR,A         ; 启动防重叠
```

```
            MOV     00EH,#001H
            LCALL   TIME
            MOV     DPTR,#08000H
            MOV     A,#093H   ;
            MOVX    @DPTR,A         ; 防重叠命令
            MOV     DPTR,#08000H
            MOV     A,#020H
            MOVX    @DPTR,A         ; 防重叠命令
            MOV     DPTR,#08006H
            MOV     A,#00AH   ;
            MOVX    @DPTR,A         ; TOC=1ms
Anti1:      MOV     DPTR,#08001H
            MOVX    A,@DPTR         ; 取状态字
            JNB     ACC.7,Anti1   ;DV=1
            MOV     R3,A
            MOV     DPTR,#08006H
            MOV     A,#000H
            MOVX    @DPTR,A         ; TOC=0ms
            MOV     A,R3
            JNB     ACC.6,Anti2   ;TE=0
            MOV     R2,#001H
            LJMP    Anti3
Anti2:      JNB     ACC.3,Anti4 ;CRCE=0
            MOV     00EH,#00AH
            LCALL   TIME
            MOV     R2,#00BH
            LJMP    Anti3
Anti4:      MOV     R2,#000H      ;认证正确
            MOV     DPTR,#08000H
            MOV     A,@DPTR       ;返回卡号
            MOV     008H,A
            MOV     00DH,A
            MOVX    A,@DPTR
            MOV     009H,A
            XRL     00DH,A
            MOVX    A,@DPTR
            MOV     00AH,A
            XRL     00DH,A
            MOVX    A,@DPTR
MOV     00BH,A
            XRL     00DH,A
            MOVX    A,@DPTR
            MOV     00CH,A
            XRL     A,00DH        ;卡号异或为 0
```

```
            JZ      Anti3
            MOV     R2,#008H
Anti3:      RET


;选择卡片
SelectTag: MOV      DPTR,#08002H
            MOV     A,#0F0H
            MOVX    @DPTR,A         ;PR=1,CE=1,CR=1
            MOV     DPTR,#08003H
            MOV     A,#038H
            MOVX    @DPTR,A         ;传送 7bit
            MOV     DPTR,#08004H
            MOV     A,#008H
            MOVX    @DPTR,A         ;接受 1bit
            MOV     DPTR,#08000H
            MOV     A,#093H
            MOVX    @DPTR,A
            MOV     A,#070H
            MOVX    @DPTR,A         ; 选择卡片命令
            MOV     A,037H
            MOVX    @DPTR,A
            MOV     A,038H
            MOVX    @DPTR,A
            MOV     A,039H
            MOVX    @DPTR,A
            MOV     A,03AH
            MOVX    @DPTR,A
            MOV     A,03BH
            MOVX    @DPTR,A         ;卡号发回卡片
            MOV     DPTR,#08006H
            MOV     A,#00AH
            MOVX    @DPTR,A         ;TOC=1ms
Select1:    MOV     DPTR,#08001H
            MOVX    A,@DPTR         ; 取状态字
            JNB     ACC.7,Select1;DV=1
            MOV     R3,A
            MOV     DPTR,#08006H
            MOV     A,#000H
            MOVX    @DPTR,A         ;TOC=0
            MOV     A,R3
            JNB     ACC.6, Select2    ;TE=0
            MOV     R2,#001H
            LJMP    Select3
```

```
Select2:    JNB     ACC.3,Select4     ;BE=0
            MOV     R2,#00BH
            MOV     00EH,#00AH
            LCALL   TIME
            LJMP    Select3
Select4:    JNB     ACC.5,Select5     ;PE=0
            MOV     R2,#005H
            LJMP    Select3
Select5:    JNB     ACC.4,Select6     ;CRCE=0
            MOV     R2,#002H
            LJMP    Select3
Select6:    MOV     R2,#000H
            MOV     DPTR,#08000H
            MOVX    A,@DPTR
            MOV     R6,A              ;返回卡 SIZE
Select3:    RET

;认证操作
Authentication:MOV    A,R7
            JNB     ACC.2,0094AH
            MOV     R5,#061H ;Auth_1b
            MOV     A,R6
            ORL     A,#040H
            MOV     R6,A
            LJMP    Authen1
            MOV     R5,#060H ;Auth_1a
Authen1:    MOV     DPTR,#08003H
            MOV     A,#010H
            MOVX    @DPTR,A   ;送 2bit
            MOV     DPTR,#0800BH
            MOV     A,R7
            ANL     A,#003H
            ORL     A,#080H
            MOVX    @DPTR,A   ;认证 KS1,KS0=00
            MOV     DPTR,#0800CH
            MOV     A,R6
            ORL     A,#080H
            MOVX    @DPTR,A   ; ADDR=01,KEYA
            MOV     DPTR,#08006H
            MOV     A,#00AH
            MOVX    @DPTR,A   ;TOC=1ms
            MOV     DPTR,#08000H
            MOV     A,R5
            MOVX    @DPTR,A   ; Auth_1a
```

```
            MOV     A,R6
            RL      A
            RL      A          ;
            MOVX    @DPTR,A    ;A=40H
Authen2:    MOV     DPTR,#08001H
            MOVX    A,@DPTR
            JNB     ACC.7,Authen2     ;DV=1
            MOV     R3,A
            MOV     DPTR,#08006H
            MOV     A,#000H
            MOVX    @DPTR,A    ;TOC=0
            MOV     A,R3
            JNB     ACC.6,  Authen3         ;TE=0
            MOV     R2,#001H
            LJMP    Authen7
Authen3:    JNB     ACC.2,  Authen4         ;AE=0
            MOV     R2,#004H
            LJMP    Authen7
Authen4:    JNB     ACC.5,  Authen5         ;PE=0
            MOV     R2,#005H
            LJMP    Authen7
Authen5:    JNB     ACC.3,  Authen6         ;BE=0
            MOV     00EH,#00AH
            LCALL   TIME
            MOV     DPTR,#08000H
            MOVX    A,@DPTR         ;读卡返回
            ANL     A,#00AH
            MOV     R2,#00BH
            JNZ     Authen7         ;卡返回=0AH
            MOV     R2,#004H
            LJMP    Authen7
Authen6:    MOV     R2,#000H
Authen7:    RET

;读
READ:       MOV     DPTR,#08003H
            MOV     A,#010H
            MOVX    @DPTR,A         ;送 2bit
            MOV     DPTR,#08004H
            MOV     A,#080H
            MOVX    @DPTR,A         ;收 16bit
            MOV     DPTR,#08000H
            MOV     A,#030H
            MOVX    @DPTR,A         ;读命令
```

```
        MOV     A,R7            ;R7=04
        MOVX    @DPTR,A         ;ADD=扇区 1,Block0
        MOV     DPTR,#08006H
        MOV     A,#00AH
        MOVX    @DPTR,A         ;1ms
READA:  MOV     DPTR,#08001H
        MOVX    A,@DPTR
        JNB     ACC.7,READA     ;DV=1
        MOV     R3,A
        MOV     DPTR,#08006H
        MOV     A,#000H
        MOVX    @DPTR,A         ;TOC=0
        MOV     A,R3
        JNB     ACC.6,READB     ;TE=0
        MOV     R2,#001H
        LJMP    READ1
READB:  JNB     ACC.3,READ2     ;BE=0
        MOV     00EH,#028H
        LCALL   TIME
        MOV     DPTR,#08000H
        MOVX    A,@DPTR
        ANL     A,#00BH         ;返回=0B?
        MOV     R7,A
        MOV     DPTR,#08001H
        MOVX    A,@DPTR
        JB      ACC.7,READ3     ;DV=1
        MOV     A,R7
        JNZ     READ3
        MOV     R2,#00AH
        LJMP    READ9
READ3:  MOV     R2,#012H
        LJMP    READ9
READ2:  JNB     ACC.5,READ4     ;PE=0
        MOV     R2,#005H
        LJMP    READ9
READ4:  JNB     ACC.4,READ5     ;CRCE=0
        MOV     R2,#002H
        LJMP    READ9
READ5:  MOV     A,R4            ;R4=50
        MOV     R1,A            ;存放读数据地址
        MOV     R5,#010H        ;计数器=16
        MOV     DPTR,#08000H
READ6:  MOVX    A,@DPTR
        MOV     @R1,A           ;  存放 50H-8FH
```

```
                INC     R1
                DJNZ    R5,READ6
                MOV     A,R4
                MOV     R1,A
                MOV     R5,#010H
READ7:          MOV     DPTR,#08000H
                MOVX    A,@DPTR
                XRL     A,@R1
                JNZ     READ8
                INC     R1
                DJNZ    R5,READ7
                MOV     R2,#000H
                LJMP    READ9
READ8:          MOV     R2,#00CH
                MOV     DPTR,#00000H
READ9:          RET



; 停机
HALT:           MOV     DPTR,#08003H
                MOV     A,#010H
                MOVX    @DPTR,A
                MOV     DPTR,#08004H
                MOV     A,#004H
                MOVX    @DPTR,A
                MOV     DPTR,#08000H
                MOV     A,#050H
                MOVX    @DPTR,A
                MOV     DPTR,#08000H
                MOV     A,#000H
                MOVX    @DPTR,A
                MOV     DPTR,#08006H
                MOV     A,#00AH
                MOVX    @DPTR,A
                MOV     DPTR,#08001H
HALT1:          MOVX    A,@DPTR
                JNB     ACC.7,HALT1
                MOV     R3,A
                MOV     DPTR,#08006H
                MOV     A,#000H
                MOVX    @DPTR,A
                MOV     A,R3
```

```
            JNB     ACC.6,HALT2
            MOV     R2,#000H
            LJMP    HALT3
HALT2:  MOV     R2,#006H
HALT3:  RET


;定时
TIME:       MOV     00FH,#015H
TIME1:      DJNZ    00FH,TIME1
            DJNZ    00EH,TIME
            RET


;传输密钥和 KEY 送 MCM
SKEYMCM:    MOV     DPTR,#0800BH
            MOV     A,R7
            CLR     ACC.2
            MOVX    @DPTR,A         ;KEYSTACON=0
            MOV     DPTR,#0800CH
            MOV     A,R7
            JNB     ACC.2,  SKEYMCM1
            MOV     A,#040H
            LJMP    00A9EH
SKEYMCM1:   CLR     A
            ORL     A,R6            ;KEYA
            MOVX    @DPTR,A         ;ADDR=1
            MOV     DPTR,#0800AH
            MOV     R1,#010H
SKEYMCM2:   MOV     A,@R1           ; KEYDATA=
            MOVX    @DPTR,A         ;14,8A,C5,E2,28,28
            INC     R1              ; A0,A1,A2,A3,A4,A5
            CJNE    R1,#01CH,SKEYMCM2
            MOV     R2,#000H
            MOV     DPTR,#08001H
            MOVX    A,@DPTR         ;取状态字
            JNB     ACC.2,00AB6H    ;AE=0
            MOV     R2,#004H
            RET


; 重储
RESTORE:    MOV     DPTR,#08003H
            MOV     A,#010H
```

```
                MOVX    @DPTR,A
                MOV     DPTR,#08004H
                MOV     A,#004H
                MOVX    @DPTR,A
                MOV     DPTR,#08000H
                MOV     A,#0C2H
                MOVX    @DPTR,A
                MOV     A,R7
                MOVX    @DPTR,A
                MOV     DPTR,#08006H
                MOV     A,#00AH
                MOVX    @DPTR,A
RESTORE1:       MOV     DPTR,#08001H
                MOVX    A,@DPTR
                JNB     ACC.7,RESTORE1
                MOV     R3,A
                MOV     DPTR,#08006H
                MOV     A,#000H
                MOVX    @DPTR,A
                MOV     A,R3
                JNB     ACC.6,RESTORE2
                MOV     R2,#001H
                LJMP    RESTOREB
RESTORE2:       JNB     ACC.3,RESTORE3
                MOV     R2,#00BH
                LJMP    RESTOREB
 RESTORE3:      MOV     DPTR,#08000H
                MOVX    A,@DPTR
                ANL     A,#00BH
                CJNE    A,#00AH,RESTORE4
                LJMP    RESTORE5
RESTORE4:       JNZ     RESTORE6
                MOV     R2,#00AH
                LJMP    RESTOREB
RESTORE6:       MOV     R2,#011H
                LJMP    RESTOREB
RESTORE5:       MOV     DPTR,#08003H
                MOV     A,#020H
                MOVX    @DPTR,A
                MOV     DPTR,#08004H
                MOV     A,#004H
                MOVX    @DPTR,A
                MOV     DPTR,#08006H
                MOV     A,#00AH
```

```
                MOVX    @DPTR,A
                CLR     A
                MOV     R1,#004H
RESTORE7:       MOV     DPTR,#08000H
                MOVX    @DPTR,A
                DJNZ    R1,RESTORE7
RESTORE8:       MOV     DPTR,#08001H
                MOVX    A,@DPTR
                JNB     ACC.7,RESTORE8
                MOV     R3,A
                MOV     DPTR,#08006H
                MOV     A,#000H
                MOVX    @DPTR,A
                MOV     A,R3
                JB      ACC.6,RESTORE9
                MOV     DPTR,#08000H
                MOVX    A,@DPTR
                ANL     A,#00FH
                CJNE    A,#004H,RESTOREA
                MOV     R2,#003H
                LJMP    RESTOREB
RESTOREA :      MOV     R2,#011H
                LJMP    RESTOREB
RESTORE9:       MOV     R2,#000H
RESTOREB:       RET


SKEY:           MOV     R7,#000H
                MOV     R6,#001H
                MOV     DPTR,#003A2H ; 取传输密钥
                MOV     R0,#006H        ;14,8A,C5,E2,28,28
                MOV     R1,#010H
                LCALL   DRAM            ;读内存子程序
                MOV     DPTR,#003D8H ;取 KEY A
                MOV     R0,#006H        ;A0,A1,A2,A3,A4,A5
                LCALL   DRAM
                LCALL   SKEYMCM   ;传输密钥和 KEY 送 MCM
                MOV     A,R2
                RET



RS232:          MOV     R6,#000H
```

```
        MOV     A,#002H
        CLR     ES
        CLR     TI
        MOV     SBUF,A
RSS1:   JNB     TI,RSS1
        CLR     TI
        LCALL   LASC
        MOV     A,R6
        ANL     A,#0F0H
        SWAP    A
        MOV     DPTR,#0041FH
        MOVC    A,@A+DPTR
         MOV     SBUF,A
RSS2:   JNB     TI,RSS2
        CLR     TI
        MOV     A,R6
        ANL     A,#00FH
        MOV     DPTR,#0041FH
        MOVC    A,@A+DPTR
        MOV     SBUF,A
RSS3:   JNB     TI,RSS3
        CLR     TI
        MOV     A,#003H
        MOV     SBUF,A
RSS4:   JNB     TI,RSS4
        CLR     TI
        SETB    ES
        RET


LASC:   MOV     A,@R0
        ANL     A,#0F0H
        SWAP    A
        MOV     DPTR,#0041FH
        MOVC    A,@A+DPTR
        MOV     SBUF,A
LASC1:  JNB     TI,LASC1
        CLR     TI
        MOV     A,@R0
        ANL     A,#00FH
        MOV     DPTR,#0041FH
        MOVC    A,@A+DPTR
        MOV     SBUF,A
LASC2:  JNB     TI,LASC2
```

```
CLR     TI
MOV     A,@R0
XRL     A,R6
XCH     A,R6
INC     R0
DJNZ    R7,LASC
RET
```