

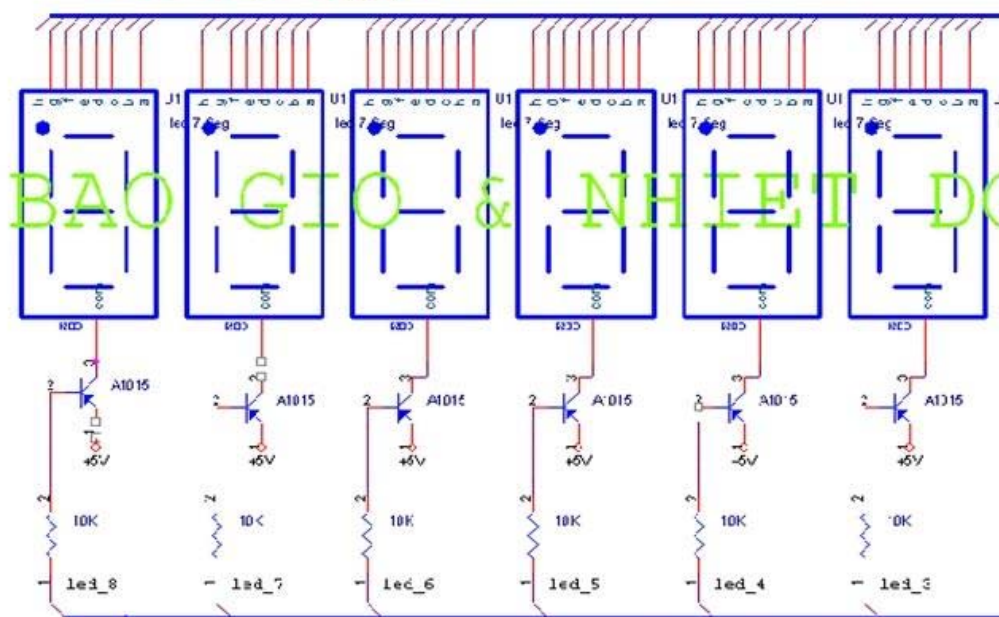
Nguyenvanbientbd47@gmail.com

CẢM BIẾN NHIỆT ĐỘ VI XỬ LÝ GIAO TIẾP ADC0809 & LM35

Mình sẽ giới thiệu với các bạn mạch đo cảm biến nhiệt độ dùng AT89C51 và ADC0809

Mạch nguyên lí:

Sơ Đồ Mạch Nguyên Lí



PORT1--CHON LED

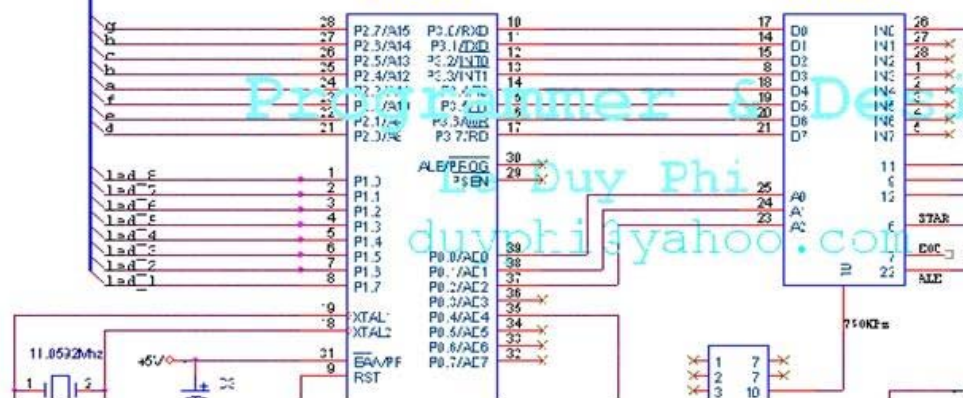
nguyenvanbientbd47@gmail.com

PORT2--XUAI DATA

PORT1--CHON LED

AT89C51

ADC0809



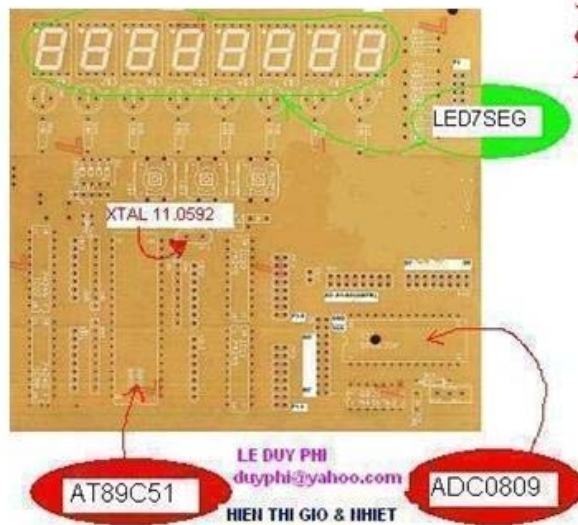
Nguyenvanbientbd47@gmail.com

Sơ Đồ mạch
thật

nguyenvanbientbd47@gmail.com

CẢM BIẾN NHIỆT ĐỘ VI XỬ LÝ GIAO TIẾP ADC0809 & LM35

ơ đồ ậ



Sơ Đồ mạch cảm biến nhiệt
độ dùng ngôn ngữ lập trình
ASPL cho chip AT89C51

LED hiển thị



Mã Chương trình nạp vào cho Chip AT89C51

```
R0 : DEM 10S HTHI GIO- 3 S HIEN THI TEMPRATURE
;R1
;R2 : BIEN DEM 0--100 <=> 1S
;R3
;R4
;R5 : BIEN CAP NHAT TEM VALUE AFTER 100 TIMES
;R6
;R7 : DELAY
```

```
;-----  
;12H--13H--14H--15H--16H--17H  
;CH DCH CP DVP CG DVG  
;-----  
;20H-----21H--22H--23H---24H  
; HUNDER 2 7 * C  
;-----  
;--CO CHO BIET BAO GIO HOAC NHIET DO  
;FL_HOR_TEM =0 : BAO GIO  
;FL_HOR_TEM =1 : BAO NHIET DO  
;-----  
FL_HOR_TEM BIT 24H.0  
;-----  
ORG 0000H  
SJMP MAIN  
;-----NGAT DO TIMER  
ORG 0BH  
LJMP NGAT_TIMER0  
;-----VAO PRO MAIN  
MAIN:  
MOV SP,#30H ; NHAP DIA CHI BAT DAU CHUONG TRINH  
;KHOI DONG SAU KHI BAT NGUON "TURN ON POWER"  
;-----  
; vung Ram luu tru: hh:mm:ss  
;-----  
MOV 12H,#00H  
MOV 13H,#00H  
MOV 14H,#00H  
MOV 15H,#00H  
MOV 16H,#00H  
MOV 17H,#00H  
;-----  
; vung Ram luu tru Temprature :27*C  
;-----  
MOV 20h,#00h  
MOV 21h,#00h  
MOV 22h,#00h  
MOV 23h,#00h  
;-----  
; THIET LAP MAC DINH FL_HOR_TEM=0 LA HIEN THI GIO  
;-----  
CLR FL_HOR_TEM ;FL_HOR_TEM=0  
;-----LAY TEM LAN DAU TIEN-----  
CALL CON_ADC  
MOV R5,#0  
MOV IE,#10000010B ;KHOI TAO NGAT CHO PHEP
```

```
;--- INT1_T0_INT0
MOV TMOD,#11H
MOV TL0,#LOW(-9216) ;XTAL11.0592 =>Tclk = 12/11.0592 = 1,08507uS
MOV TH0,#HIGH(-9216) ; 9216x(100lan)x[Thoigianmay(12/11.0592)]=1s OK!chinh
xac 99.99%
SETB TR0
LAP:
CALL HIEN_THI
CALL TEST_PHIM
CALL KIEM_TRA1S
SJMP LAP
,*****
HIEN_THI:
JNB FL_HOR_TEM,HIEN_THI_GIO ;IF FL_HOR_TEM=0 THEN "HIEN THI GIO"
LJMP HIEN_THI_TEM ;ELSE FL_HOR_TEM=1 THEN "HIEN THI NHIET DO"
HIEN_THI_GIO:
;----HIEN THI DATA LEN CAC LED-----
MOV DPTR,#BANG_MA_LED
;LED1
MOV P0,#11111110B
MOV A,17H
MOVC A,@A+DPTR
MOV P2,A
LCALL DELAY1
mov p2,#0ffh; Chong nhieu
;LED2
MOV P0,#11111101B
MOV A,16H
MOVC A,@A+DPTR
MOV P2,A
LCALL DELAY1
mov p2,#0ffh ; Chong Nhieu
;LED3
MOV P0,#11111011B
MOV A,15H
MOVC A,@A+DPTR
ANL A,#10111111B
MOV P2,A
LCALL DELAY1
mov p2,#0ffh ;Chong Nhieu
;LED4
MOV P0,#11110111B
MOV A,14H
MOVC A,@A+DPTR
MOV P2,A
LCALL DELAY1
```

```
mov p2,#0ffh ;Chong Nhieu
;LED5
MOV P0,#11101111B
MOV A,13H
MOVC A,@A+DPTR
ANL A,#10111111B
MOV P2,A
LCALL DELAY1
mov p2,#0ffh ;Chong Nhieu
;LED6
MOV P0,#11101111B
MOV A,12H
;KIEM TRA -DE TAT MO LED CH
CJNE A,#0,MOLED_CH ; Neu CH khac 0 thi Nhay den MOLED_CH
; Neu CH la 0 thi tat led CH
MOV P2,#0ffh ; Xoa Led CH khi no la so:"0"
LCALL DELAY1
MOV P2,#0ffh ;Chong Nhieu
LJMP THOAT_HIEN THI
;---- MOLED_CH-----
MOLED_CH:
MOVC A,@A+DPTR
MOV P2,A
LCALL DELAY1
MOV P2,#0FFH ;Chong Nhieu
LJMP THOAT_HIEN THI
;=====
HIEN_THI_TEM:
;-----HIEN THI NHIET DO-----
;---BEFOR DISPLAY VALUE TEMPRATURE WE MUST CONVECTER ANALOG
TO DISGITAL-----
INC R5
PUSH ACC
MOV A,R5
CJNE A,#100,CHUA_CAP_NHAT
;----CAP NHAT LAI TEM VALUE-----
CALL CON_ADC
MOV R5,#0
CHUA_CAP_NHAT:
POP ACC
;-----
; ghcbaFed
; : 10000000B
; : 11110000B ;CHU C
; : 01100011B ;SO 0 NHO
MOV P0,#11111110B
```

```
MOV P2,#11110000B ;CHU C
LCALL DELAY1
mov p2,#0ffh; Chong nhieu
LCALL DELAY1
MOV P0,#11111101B
MOV P2,#01100011B ;SO 0 NHO
LCALL DELAY1
mov p2,#0ffh; Chong nhieu
LCALL DELAY1
;-----HIENTHI GIA TRIN TEM-----
MOV P0,#11111011B
MOV A,22H
MOVC A,@A+DPTR
MOV P2,A
LCALL DELAY1
mov p2,#0ffh ; Chong Nhieu
LCALL DELAY1
MOV P0,#11110111B
MOV A,21H
MOVC A,@A+DPTR
MOV P2,A
LCALL DELAY1
mov p2,#0ffh ;Chong Nhieu
LCALL DELAY1
MOV P0,#11101111B
MOV A,20H
CJNE A,#00,HIENTHI_TEM_100
LJMP THOAT_HIENTHI
HIENTHI_TEM_100:
MOVC A,@A+DPTR
MOV P2,A
LCALL DELAY1
mov p2,#0ffh ;Chong Nhieu
LCALL DELAY1
THOAT_HIENTHI:
RET
,*****
KIEM_TRA1S:
;----KIEM TRA XEM DU 1s CHUA ?-----
CJNE R2,#100,KET_THUC
MOV R2,#00H
;-----PROCESS TEMPRATURE-----
INC R0
CJNE R0,#10,R0_BY_13 ; IF R0<>10 THEN JUMPER TO TEST IT BY 13 ?
SETB FL_HOR_TEM ; ELSE R0=10 THEN SET FLAG=1 FOR HTHI TEMPRATURE
```

```
LJMP CONT_UPDATE_NO_HT ; TIEP TUC CAP NHAT NHUNG KHONG HIEN
THI GIA TRI GIO
R0_BY_13:
CJNE R0,#13,CONT_UPDATE_NO_HT ; IF R0=13 THAT MEAN IS "TEMPRATURE
DISPLAY IN 3S"
CLR FL_HOR_TEM ; AFTER 3S IT WILL RE_DISPLAY VALUE OF HOUR
; SO WE MUST RESET VALUE OF FLAG = 0
MOV R0,#0
;-----
CONT_UPDATE_NO_HT:
INC 17H
MOV A,17H
CJNE A,#10,KET_THUC
MOV 17H,#00
INC 16H
MOV A,16H
CJNE A,#6,KET_THUC
MOV 16H,#00
INC 15H
MOV A,15H
CJNE A,#10,KET_THUC
MOV 15H,#00
INC 14H

MOV A,14H
CJNE A,#6,KET_THUC
MOV 14H,#00
INC 13H
MOV A,13H
CJNE A,#03,TANG_DVH_LEN_10
;--NEU LA 3 THI KTRA TIEP----
MOV A,12H
CJNE A,#01,KET_THUC ; DUNG DVH LA 3 VA CH KHONG LA 1 THI NHAY TOI
CP DE CP=0
MOV 12H,#00H
MOV 13H,#01H
LJMP KET_THUC
;----TANG DVH LEN 10 KHI NO KHONG PHAI LA S0 3-----
TANG_DVH_LEN_10:
CJNE A,#10,KET_THUC
MOV 13H,#00
INC 12H
KET_THUC:
RET
;*****
;----- DELAY-----
```

```
DELAY1:
MOV R7,#10H
DJNZ R7,$
RET
,*****
;
;CHUONG TRINH CON NGAT TIMER0
NGAT_TIMER0:
INC R2 ;tre 1us
MOV TL0,#LOW(-9216) ;XTAL11.0592 =>Tclk = 12/11.0592 = 1,08507uS
MOV TH0,#HIGH(-9216) ; 9216x(100lan)x[Thoigianmay(12/11.0592)]=1s OK!chinh
xac 99.99%
SETB TR0
RETI
,*****
;
TEST_PHIM:
JB P3.3,PHIM2
CALL NGAT_PHUT
LJMP THOAT_PHIM1
,*****
PHIM2:
JB P3.2,THOAT_TEST_PHIM
CALL NGAT_GIO
LJMP THOAT_PHIM2
;-----
THOAT_PHIM1:
TT_KT1:
JNB P3.3,HIEN_THI_T1
LJMP THOAT_TEST_PHIM
HIEN_THI_T1:
CALL HIEN_THI
LJMP TT_KT1
THOAT_PHIM2:
TT_KT2:
JNB P3.2,HIEN_THI_T2
LJMP THOAT_TEST_PHIM
HIEN_THI_T2:
CALL HIEN_THI
LJMP TT_KT2
THOAT_TEST_PHIM:
RET
,*****
;CHUONG TRINH CON NGAT INTO
NGAT_PHUT:
;---CAM BAO NHIET
CLR FL_HOR_TEM
```

```
MOV R0,#0
INC 15H
MOV A,15H
CJNE A,#10,THOAT1
MOV 15H,#0H
INC 14H
MOV A,14H
CJNE A,#6,THOAT1
MOV 14H,#0H
THOAT1:
RET
;CHUONG TRINH CON NGAT INT1
NGAT_GIO: CLR FL_HOR_TEM
;---CAM BAO NHIET
CLR FL_HOR_TEM
MOV R0,#0
INC 13H
MOV A,13H
CJNE A,#03,NGAT_11
MOV A,12H
CJNE A,#1,THOAT2
MOV 12H,#0H
MOV 13H,#1
LJMP THOAT2
NGAT_11:
CJNE A,#10,THOAT2
MOV 13H,#0
MOV 12H,#1
SJMP THOAT2
THOAT2:
RET
,*****
,
CON_ADC:
,*****
,
CHON_NGO_VAO:
CLR P3.4
CLR P3.5
CLR P3.6
BATDAU_ADC:
ACALL START
ACALL LAYDATA
ACALL CHUYEN_DOI
RET
;=====
;QUA TRINH BIEN DOI BAT DAU KHI CO CANH XUONG O TREN CHAN START
START:
```

Nguyenvanbientbd47@gmail.com

```
SETB P3.7
NOP
NOP
NOP CLR P3.7
;DOI 100US DE QUA TRINH BIEN DOI XONG
CALL DELAY120US
RET
;=====
LAYDATA:
MOV A,P1
RET
;=====
CHUYEN_DOI:
MOV B,#51
DIV AB
; -----LUU HANG TRAM-----
MOV 20H,A
MOV A,B
;CHIA TIEP
MOV B,#10
DIV AB
;-----LUU CHUC-----
MOV 21H,A
;-----LUU TRAM-----
MOV 22H,B
;
;20H = SE GIU GIA TRI HANG TRAM
;21H = SE GIU GIA TRI HANG CHUC
;22H = GIU GIA TRI HANG DON VI
;=====
RET
;*****
,
DELAY120US:
MOV TH1,#HIGH(-120)
MOV TL1,#LOW(-120)
SETB TR1
JNB TF1,$
CLR TR1
CLR TF1
RET
;*****
,
BANG_MA_LED:
DB 11000000B;0
DB 11001111B
DB 01100100B
DB 01000110B
```

Nguyenvanbientbd47@gmail.com

DB 01001011B

DB 01010010B

DB 01010000B

DB 11000111B

DB 01000000B

DB 01000010B;9