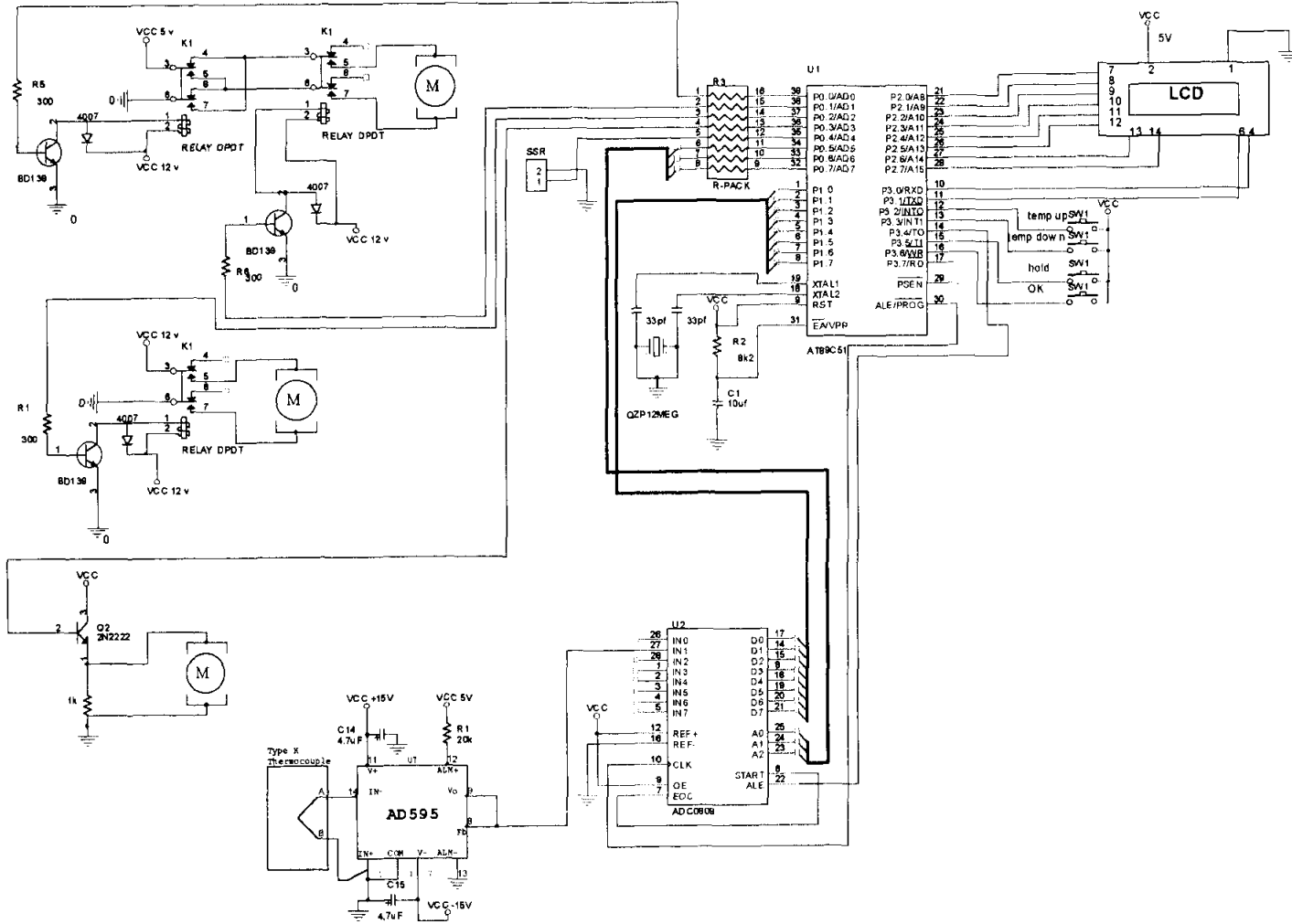


LAMPIRAN

RANGKAIAN LENGKAP



PROGRAM

```
$include (reg51.inc)
```

```
motor_keranjang_on      bit    p0.0
motor_keranjang_arah    bit    p0.1
motor_hopper            bit    p0.2
motor_bumbu             bit    p0.3
ssr                     bit    p0.4
sel_a                   bit    p0.5
sel_b                   bit    p0.6
sel_c                   bit    p0.7

data_adc                equ    p1

data_lcd                equ    p2

rs                       bit    p3.0
en                       bit    p3.1
up                       bit    p3.2
down                    bit    p3.3
hold                    bit    p3.4
ok                       bit    p3.7
ale_adc                 bit    p3.6
suhu_tujuan             equ    30h
level_suhu              equ    r0
```

```
org 00h
ajmp start
```

```
org 50h
```

```
; ---program utama---
```

```
start:
```

```
mov ie,#00h
mov sp,#50h
clr motor_keranjang_on
clr motor_keranjang_arah
clr motor_hopper
clr motor_bumbu
clr ssr
```

```
clr ale_adc
```

```
mov level_suhu, #04
```

```

    mov    suhu_tujuan, #30

    acall  inisialisasi

start_lg:
    acall  delay_50ms

    acall  tampilkan_temperatur
    acall  present_value

    jnb    hold,hold_dipencet

; hold ga dipencet
    jnb    up,up_dipencet
    jnb    down,down_dipencet

    jnb    ok,mulai_proses          ; Ok dipencet

    sjmp   start_lg                ; kalo ga dipencet semua

; ----- 0 -----

; ----- Prosedur HOLD DIPENCET -----

hold_dipencet:
    setb   ssr                      ;
pemanas nyala

loop1:
    jb     hold,hold_dimatikan      ; jika hold dimatikan kembali ke start
    acall  delay_50ms

    acall  present_value
    acall  ambil_adc

    clr    c
    subb   a,#150
    jc     loop1                    ; ulangi terus sampe A >= 03f hex = 150 desimal

;    cjne  a, #03fh, loop1          ; ulangi terus sampe A = 03f hex = 150 desimal

    clr    ssr                      ; pemanas mati

```

```

loop2:
    jb          hold,hold_dimatikan      ; jika hold dimatikan kembali ke start
    acall delay_50ms

    acall present_value
    acall ambil_adc

    clr        c
    subb      a,#145
    jnc       loop2
;    cjne     a, #03ah, loop2          ; ulangi terus sampe A = 3A hex = 140 desimal

    sjmp     hold_dipencet          ; pigi ke atas lagi jika suhu = 140 C

hold_dimatikan:
    clr        ssr
    ajmp     start_lg
; ----- o -----

; -----
up_dipencet:
    inc       level_suhu
    cjne     level_suhu, #5, lanjut1

    mov      level_suhu, #01          ; kalo R0 = 5 maka kembali lagi ke 1

lanjut1:
    mov      r1,#110
    mov      a, #10
    mov      b, level_suhu
    mul      ab
    add      a, r1
    mov      suhu_tujuan, a

    sjmp     start_lg
; -----

```

```

; -----
down_dipencet:
    dec    level_suhu
    cjne   level_suhu, #0, lanjut2           ; ro < 0

    mov    level_suhu, #04

```

```

lanjut2:
    cjne   level_suhu, #0ffh, lanjut3
    mov    level_suhu, #04

```

```

lanjut3:
    mov    r1, #110
    mov    a, #10
    mov    b, level_suhu
    mul    ab
    add    a, r1
    mov    suhu_tujuan, a

    sjmp   start_lg

```

```

; -----

```

```

; -----

```

```

mulai_proses:
    setb   ssr

```

```

.*****
;
;tunggu suhu panas
.*****
;

```

```

nyala_lagi:
    acall  present_value
    acall  ambil_adc

    clr    c
    subb   a, suhu_tujuan
    jc     nyala_lagi
;    cjne  a, suhu_tujuan, nyala_lagi

```

```

.*****
;
;mulai menggoreng kentang
.*****
;

```

goreng_1:

setb motor_hopper

mov r2,#03

acall delay_r2_detik

clr motor_hopper

mov a, #10

subb a, level_suhu

; a = 10 - level_suhu

mov r3, a

jaga_suhu_r3_menit:

mov r2,#60

jaga_suhu_r2_detik:

acall present_value

acall ambil_adc

clr c

subb a, suhu_tujuan

jnc suhu_masih_panas

setb ssr

;suhu turun => ssr nyala

sjmp lompat

suhu_masih_panas:

clr ssr

;suhu masih panas => ssr mati

lompat:

acall delay_1dtk

djnz r2,jaga_suhu_r2_detik

djnz r3,jaga_suhu_r3_menit

.*****

;kentang sudah matang

.*****

setb motor_keranjang_on

;keranjang k atas minyak

clr motor_keranjang_arah

; mov r2, #05

; acall delay_r2_detik

acall delay_1dtk

acall delay_1dtk

acall delay_1dtk

acall delay_1dtk

clr motor_keranjang_on

;keranjang diam

clr motor_keranjang_arah

```

mov r2, #40                                ;timer 40dtk
acall delay_r2_detik

setb motor_keranjang_on                    ;keranjang tumpah
clr   motor_keranjang_arah

;      acall  delay_1dtk                    ;timer 4 dtk
;      acall  delay_1dtk
;      acall  delay_1dtk
; acalldelay_1dtk

; mov      r2, #06                          ;timer 6dtk
; acalldelay_r2_detik

      acall  delay_1dtk
      acall  delay_1dtk
      acall  delay_1dtk
      acall  delay_1dtk
      acall  delay_1dtk

clr   motor_keranjang_on                    ;keranjang-===kentang jatuh
clr   motor_keranjang_arah

acall delay_1dtk                            ;timer 4dtk
acall delay_1dtk
acall delay_1dtk
acall delay_1dtk

setb motor_keranjang_on                    ;keranjang balik awal
setb motor_keranjang_arah

mov r2, #08                                ;timer 7 detik
acall delay_r2_detik

clr   motor_keranjang_on                    ;kembalikan motor ke posisi semula
clr   motor_keranjang_arah

acall delay_1dtk                            ;timer 6 detik
acall delay_1dtk
acall delay_1dtk
      acall  delay_1dtk
      acall  delay_1dtk

```



```
setb motor_bumbu
mov r2, #09
acall delay_r2_detik
```

```
clr motor_bumbu
```

```
    acall delay_1dtk
    acall delay_1dtk
    acall delay_1dtk
acall delay_1dtk
acall delay_1dtk
    acall delay_1dtk
```

;timer 6 detik

```
ajmp mulai_proses
```

```
; -----
```

```
delay_50ms:
```

```
    push 07h
    push 06h
    push 05h
    mov r7,#1
```

```
loopdelay2:
```

```
    mov r6,#100
```

```
loopdelay1:
```

```
    mov r5,#100
    djnz r5,$
    djnz r6,loopdelay1
    djnz r7,loopdelay2
    pop 05h
    pop 06h
    pop 07h
```

```
;    mov tmod,#01h
```

```
;    mov th0,#03ch
```

```
;    mov tl0,#0afh
```

```
;    setb tr0
```

;aktifkan timer_0

```
;    jnb tf0, $
```

```
;    clr tr0
```

;matikan timer_0

```
;    clr tf0
```

```
ret
```

```
delay_1dtk:
    mov    r1, #00h
```

```
ulang_1dtk:
    inc    r1
    acall  delay_50ms
    cjne   r1, #20, ulang_1dtk
    ret
```

```
delay_r2_detik:
    acall  delay_1dtk
    acall  present_value
    djnz   r2, delay_r2_detik
    ret
```

```
delay_r3_menit:
    mov    r2, #60
    acall  delay_r2_detik           ; delay 1 menit
    djnz   r3, delay_r3_menit
    ret
```

```
; -----
```

```
ambil_adc:
    clr    sel_c
    clr    sel_b
    setb   sel_a                   ; selector input 1
    nop
    nop
    setb   ale_adc
    nop
    nop
    clr    ale_adc
;    acall  delay_50ms
;    acall  delay_50ms
    mov    r7, #255
    djnz   r7, $

    mov    a, data_adc
    mov    b, #4
    div    ab
    mov    b, #7
    mul    ab
    add    a, #25
```

```
; mov b,#05
; mul ab
```

```
; a = a * 5
;
```

```
Suhu(hex) = data_adc * 5
ret
```

```
; -----
delay_lcd:
    mov    r4,#1h
delay2:
    mov    r5,#0100
    djnz  r5,$
    djnz  r4,delay2
    ret
```

```
; -----LCD-----
```

```
 kirim_instruksi:
```

```
    clr    rs
    mov    data_lcd, a
    setb  en
    clr    en
    acall delay_lcd
    ret
```

```
 kirim_data:
```

```
    setb  rs
    mov    data_lcd, a
    setb  en
    clr    en
    acall delay_lcd
    ret
```

```
inisialisasi:
```

```
    mov    a, #38h
    acall  kirim_instruksi
```

```
; function set, 8 bit - 2 baris - 5x7
```

```
    mov    a, #38h
    acall  kirim_instruksi
```

```
    mov    a, #38h
    acall  kirim_instruksi
```

```
mov a, #38h
acall kirim_instruksi
```

```
mov a, #06h ;pindah ke kanan atau ke kiri
acall kirim_instruksi
```

```
mov a, #0ch ;display kontrol
acall kirim_instruksi
```

```
mov a, #01h ;clear display
acall kirim_instruksi
```

```
mov a, #80h ;kembali ke asal mula
acall kirim_instruksi
```

```
ret
```

tampilkan_temperatur:

```
mov a, #80h
acall kirim_instruksi
```

```
mov a, #'I'
acall kirim_data
mov a, #'N'
acall kirim_data
mov a, #'P'
acall kirim_data
mov a, #'U'
acall kirim_data
mov a, #'T'
acall kirim_data
mov a, #' '
acall kirim_data
mov a, #'S'
acall kirim_data
mov a, #'U'
acall kirim_data
mov a, #'H'
acall kirim_data
mov a, #'U'
acall kirim_data
mov a, #':'
acall kirim_data
```

```
mov a, level_suhu
```

```

    cjne    a,#1,bukan_level1

    mov     a, #'1'
    acall  kirim_data
    mov     a, #'2'
    acall  kirim_data
    mov     a, #'0'
    acall  kirim_data
    sjmp   tampilan_baris2
bukan_level1:
    cjne    a,#2,bukan_level2

    mov     a, #'1'
    acall  kirim_data
    mov     a, #'3'
    acall  kirim_data
    mov     a, #'0'
    acall  kirim_data
    sjmp   tampilan_baris2
bukan_level2:
    cjne    a,#3,bukan_level3

    mov     a, #'1'
    acall  kirim_data
    mov     a, #'4'
    acall  kirim_data
    mov     a, #'0'
    acall  kirim_data
    sjmp   tampilan_baris2
bukan_level3:
    cjne    a,#4,bukan_level4

    mov     a, #'1'
    acall  kirim_data
    mov     a, #'5'
    acall  kirim_data
    mov     a, #'0'
    acall  kirim_data
    sjmp   tampilan_baris2

bukan_level4:

tampilan_baris2:
    mov     a, #0c0h
    acall  kirim_instruksi

```

```

mov    a, #'T'
acall  kirim_data
mov    a, #'E'
acall  kirim_data
mov    a, #'M'
acall  kirim_data
mov    a, #'P'
acall  kirim_data
mov    a, #'E'
acall  kirim_data
mov    a, #'R'
acall  kirim_data
mov    a, #'A'
acall  kirim_data
mov    a, #'T'
acall  kirim_data
mov    a, #'U'
acall  kirim_data
mov    a, #'R'
acall  kirim_data
mov    a, # '.'
acall  kirim_data

mov    a, #0ceh
acall  kirim_instruksi

mov    a, #0dfh
acall  kirim_data

mov    a, #'C'
acall  kirim_data

ret

```

present_value:

```

mov    a, #0cdh
acall  kirim_instruksi

acall  ambil_adc

mov    b, #10
div    ab
mov    r6, a
mov    a, b
add    a, #30h
acall  kirim_data

```

; satuan

= X

```
mov a, #0cch
acall kirim_instruksi
```

```
mov a,r6
mov b,#10
div ab
mov r6, a
mov a,b
add a, #30h
acall kirim_data
```

```
; puluhan = X
```

```
mov a, #0cbh
acall kirim_instruksi
```

```
mov a,r6
add a, #30h
acall kirim_data
ret
```

```
; ratusan = X
```

END

BIODATA

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