LAMPIRAN

```
:PA0-7          ---> DATA ADC
:PC0            ---> SWITCH RIGHT
:PC1            ---> SWITCH LEFT
:PC2            ---> RESERVE
:PC3            ---> RESERVE
:PC4            ---> ADC SELECT CH / MOTOR DIRECTION
:PC5            ---> ADC ALE
:PC6            ---> RELAY OUTPUT SPEAKER
:PC7            ---> MOTOR DIRECTION


PA              EQU   0E000H
PB              EQU   0E001H
PC              EQU   0E002H
PCW             EQU   0E003H
CW              EQU   91H

ADC             EQU   08H
BATASMAX        EQU   09H
BATASMIN        EQU   0AH
SELECT          EQU   25H
FREE            EQU   0CH

                ORG   00h
                AJMP  START

                ORG   100h
;-----------------------
;       INIT PPI
;-----------------------
INITPPI         MOV   R6,#250
DEL             MOV   R7,#250
                DJNZ  R7,$
                DJNZ  R6,DEL
                MOV   DPTR,#PCW
                MOV   A,#CW
                MOVX          @DPTR,A
                RET
```

```
;--------------------------------
;         DELAY 4 mS
;--------------------------------
DELAY4M   MOV   R7,#10
DEL4M     MOV   R6,#250
          DJNZ  R6,$
          DJNZ  R7,DEL4M
          RET

;-----------------------------
;       ENABLE PULSE
;-----------------------------
ENABLE    ANL   A,#0FH
          MOV   P1,A
          ORL   A,#20H
          MOV   P1,A
          ANL   A,#0FH
          MOV   P1,A
          ACALL DELAY4M
          RET

;-----------------------------
;       CONTROL LCD
;-----------------------------
LCDCONTROL      MOV   FREE,A
                SWAP  A
                ACALL ENABLE
                MOV   A,FREE
                ACALL ENABLE
                RET

;--------------------------------
;    INISILISASI LCD 4 BIT
;--------------------------------
INITLCD   MOV   R5,#3
WAIT      MOV   A,#3H
          MOV   P1,A
          ORL   A,#20H
          MOV   P1,A
          ANL   A,#0FH
          MOV   P1,A
          ACALL DELAY4M
          DJNZ  R5,WAIT
```

```
WAITFUNCT       MOV    A,#2H        ;FUNCTION SET
                MOV  P1,A
                ORL    A,#20H
                MOV    P1,A
                ANL    A,#0FH
                MOV    P1,A
                ACALL  DELAY4M

            MOV    A,#2FH       ;FUNCTIONSET
            ACALL  LCDCONTROL
            MOV    A,#0CH       ;DISPLAY ON
            ACALL  LCDCONTROL
            MOV    A,#01H       ;DISPLAY CLEAR
            ACALL  LCDCONTROL
            MOV    A,#06H       ;ENTRY
            ACALL  LCDCONTROL
            RET

;-----------------------------
;       CETAK TO LCD
;-----------------------------
CETAK       ANL    A,#0FH
            ORL    A,#10H
            MOV    P1,A
            ORL    A,#20H
            MOV    P1,A
            ANL    A,#1FH
            MOV    P1,A
            MOV    R7,#50
            DJNZ   R7,$
            RET

;-----------------------------
;       DISPLAY LCD
;-----------------------------
LCD         MOV    FREE,A
            SWAP   A
            ACALL  CETAK
            MOV    A,FREE
            ACALL  CETAK
            RET
```

```
;------------------------
;       DELAY MOTOR
;------------------------
DELAY       MOV  R6,#10
DELA        MOV  R7,#250
            DJNZ R7,$
            DJNZ R6,DELA
            RET

;------------------------
;  MOTOR PUTAR KIRI
;------------------------
PUTARKIRI   MOV  DPTR,#PC
            MOVX       A,@DPTR
            ANL  A,#070H            ;MASK PC7
            ORL  A,#10H             ;PC4 ON
            MOVX       @DPTR,A
            ACALL      DELAY
            RET

;------------------------
;  MOTOR PUTAR KANAN
;------------------------
PUTARKANAN      MOV  DPTR,#PC
                MOVX       A,@DPTR
                NL   A,#0E0H            ;MASK PC4
                RL   A,#80H             ;PC7 ON
                OVX  @DPTR,A
                CALL DELAY
                ET

;------------------------
;       MOTOR STOP
;------------------------
STOP        MOV  DPTR,#PC
            MOVX       A,@DPTR
            ANL  A,#60H             ;MASK PC4 & PC7
            MOVX       @DPTR,A
            ACALL      DELAY
            RET
```

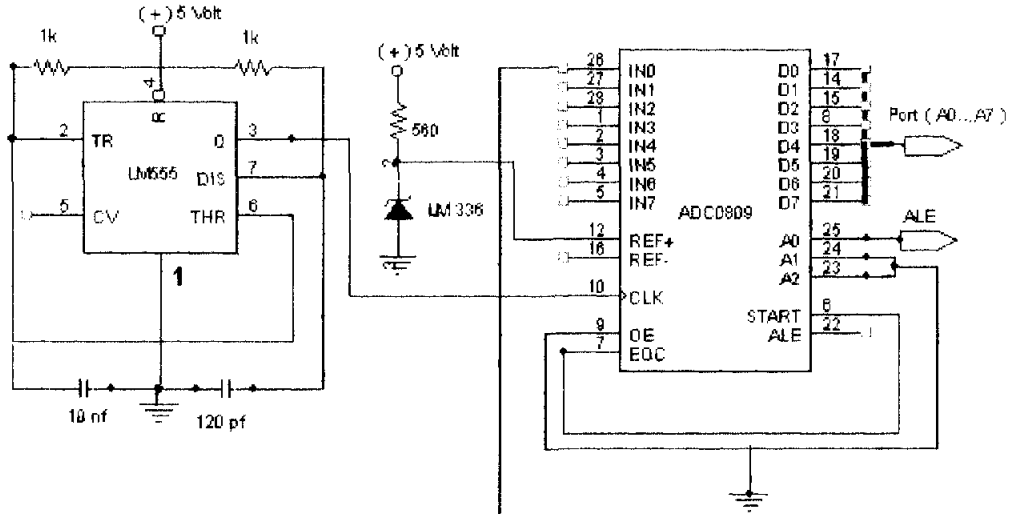
```
;------------------------
;       ADC CH0
;------------------------
CH0             MOV  DPTR,#PC
                MOVX        A,@DPTR
                ANL   A,#40H                :ALE LOW &  READ ADC CH0
                MOVX        @DPTR,A

                MOVX        A,@DPTR
                ORL   A,#20H                :ALE ACTIVE
                MOVX        @DPTR,A
                MOV  DPTR,#PA
                MOV  R7,#90         :POLLING CONV ADC
                DJNZ  R7,$
                MOVX        A,@DPTR
                RET

;------------------------
;       ADC CH1                     ---> KEDUDUKAN POTENTIOMETER
;------------------------
CH1             MOV  DPTR,#PC
                MOVX        A,@DPTR
                ANL   A,#0D0H               :ALE LOW
                ORL   A,#90H
                MOVX        @DPTR,A

                MOVX        A,@DPTR
                ORL   A,#0B0H               :ALE ACTIVE
                MOVX        @DPTR,A
                MOV  DPTR,#PA
                MOV  R7,#90         :POLLING CONV ADC
                DJNZ  R7,$
                MOVX        A,@DPTR
                RET

;------------------------
;       PERMULAAN
;------------------------
ORIGIN          ACALL       PUTARKIRI
                ACALL       CH1
                CJNE  A,#7,CEKCARY1
                AJMP  ORIGIN
CEKCARY1  JNC   ORIGIN
                RET
```

```
;-----------------------
;    SPEAKER ON
;-----------------------
SPEAKERON       MOV  DPTR,#PC
                MOVX       A,@DPTR
                ANL  A,#0B0H
                MOVX       @DPTR,A
                RET

;-----------------------
;       SPEAKER OFF
;-----------------------
SPEAKEROFF      MOV  DPTR,#PC
                MOVX       A,@DPTR
                ORL  A,#40H
                MOVX       @DPTR,A
                ET

;-----------------------
;       CONTROL MANUAL
;-----------------------
MANUAL    ACALL      PUTARKANAN
          ACALL      CH0
          CJNE  A,#BATASMAX,LEVELMAX  MAN
          ACALL      SPEAKEROFF
LEVELMAX  MAN  JC    NOACTION
          ACALL      SPEAKEROFF
NOACTION  RET

;-----------------------
;       DISPLAY
;-----------------------
DISPLAY   MOV  A,#80H                    ;BARIS 1
          ACALL      LCDCONTROL
          MOV  DPTR,#KALIMAT
          MOV  R5,#16
KALIMAT LAGI    MOV  A,#0
                MOVC       A,@A+DPTR
                PUSH DPL
                PUSH DPH
                ACALL      LCD
                POP  DPH
                POP  DPL
                INC  DPTR
                DJNZ  R5,KALIMAT  LAGI
```

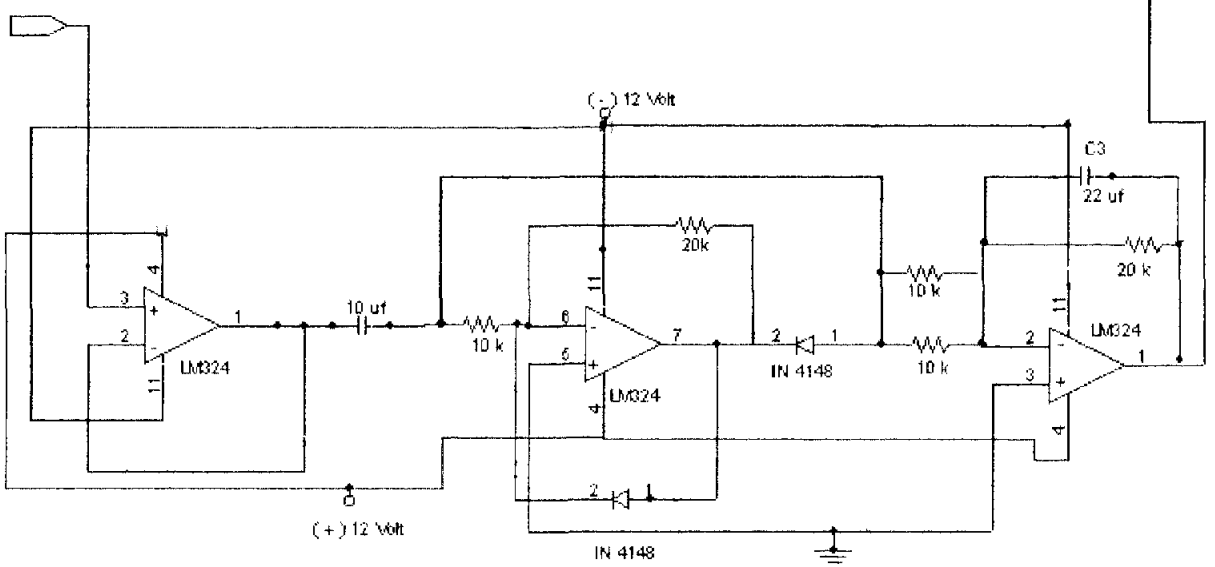
```
                MOV  A,#0C0H                ;BARIS 2
                ACALL       LCDCONTROL
                MOV  DPTR,#KATA
                MOV  A,SELECT
                MOV  B,#16
                MUL  AB
                ADD  A,DPL
                MOV  DPL,A
                MOV  A,#0
                ADDC A,DPH
                MOV  DPH,A
                MOV  R5,#16
KATA_LAGI       MOV  A,#0
                MOVC        A,@A+DPTR
                PUSH DPL
                PUSH DPH
                ACALL       LCD
                POP  DPH
                POP  DPL
                INC  DPTR
                DJNZ R5,KATA_LAGI
                RET

;-----------------------
;       MAIN PROGRAM
;-----------------------
START           MOV  SP,#40H
                MOV  BATASMAX,#40
                MOV  BATASMIN,#30
                MOV  SELECT,#0
                ACALL       INITPPI
                ACALL       SPEAKEROFF
                ACALL       INITLCD
                ACALL       DISPLAY

ULANG           MOV  DPTR,#PC
                MOVX        A,@DPTR
                ANL  A,#03H
                CJNE A,#03H,KEYPRES         ;KEYPRESSED ?
                AJMP NOKEYPRESS

KEYPRES         CJNE A,#01H,CEK_KANAN
                JB   PSW.1,AUTO
                SETB PSW.1
                INC  SELECT
```

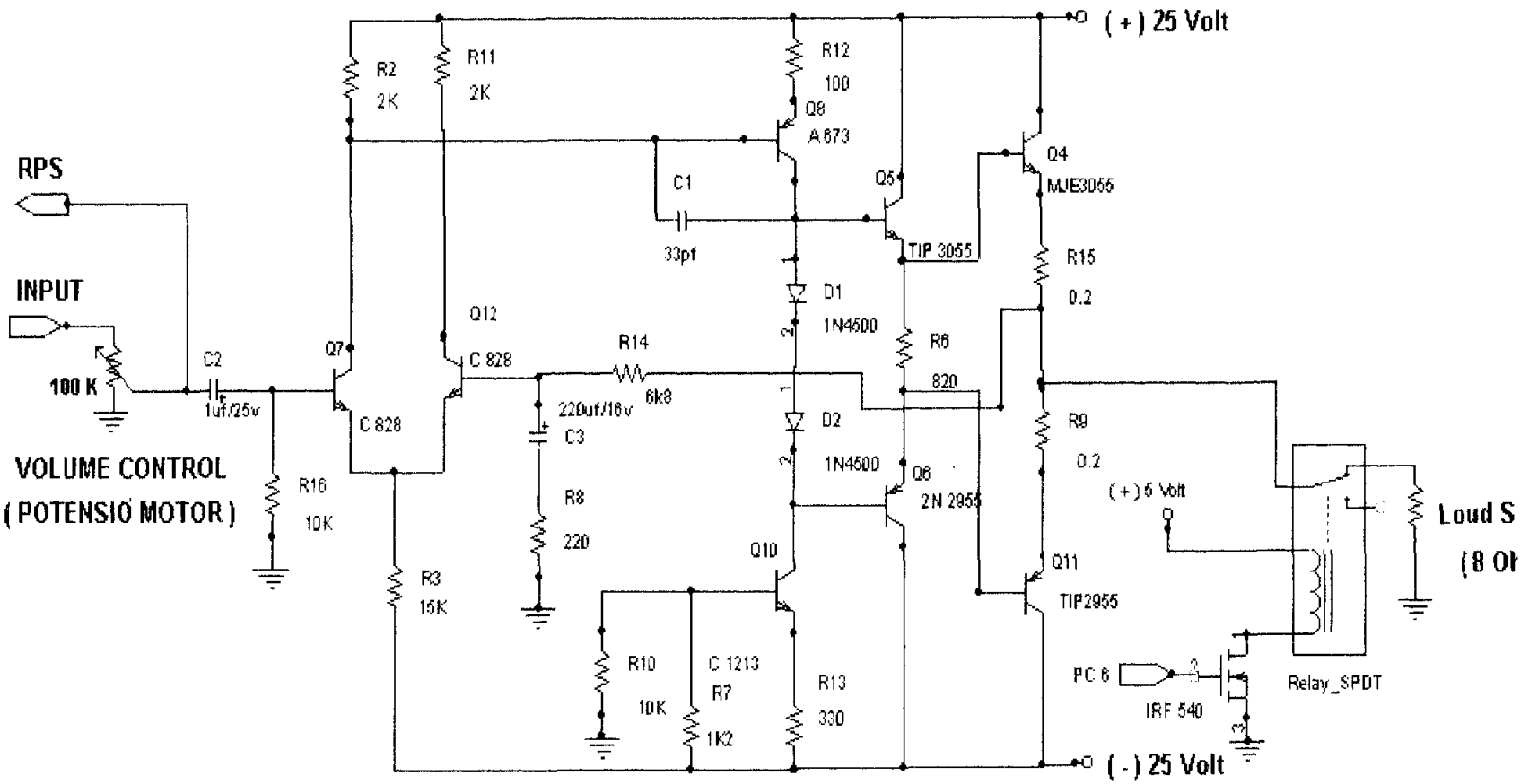
```
                MOV  A,SELECT
                CJNE A,#7,INCREMENT_OK
                MOV  SELECT,#6
INCREMENT_OK    ACALL       DISPLAY
                AJMP AUTO

CEK_KANAN       CJNE A,#02H,AUTO
                JB   PSW.1,AUTO
                SETB PSW.1
                DEC  SELECT
                MOV  A,SELECT
                CJNE A,#255,DECREMENT_OK
                MOV  SELECT,#0
DECREMENT       OK   ACALL       DISPLAY
                AJMP AUTO

NOKEYPRESS      CLR  PSW.1

AUTO            MOV  DPTR,#DATAMAX
                MOV  A,SELECT
                MOVC        A,@A+DPTR
                MOV  BATASMAX,A
                ACALL       CH0
                CJNE A,BATASMAX,LEVELMAX_AUTO
                AJMP KIRIAUTO

LEVELMAX_AUTO   JNC  KIRIAUTO
                ACALL       SPEAKERON
                AJMP ULANG

KIRIAUTO        ACALL       SPEAKEROFF
                ACALL       PUTARKIRI
                MOV  DPTR,#DATAMIN
                MOV  A,SELECT
                MOVC        A,@A+DPTR
                MOV  BATASMIN,A
                ACALL       CH0
                CJNE A,BATASMIN,LEVELMIN_AUTO
                AJMP KIRIAUTO

LEVELMIN_AUTO   JNC  KIRIAUTO
                ACALL       STOP
                ACALL       SPEAKERON
                AJMP ULANG
```

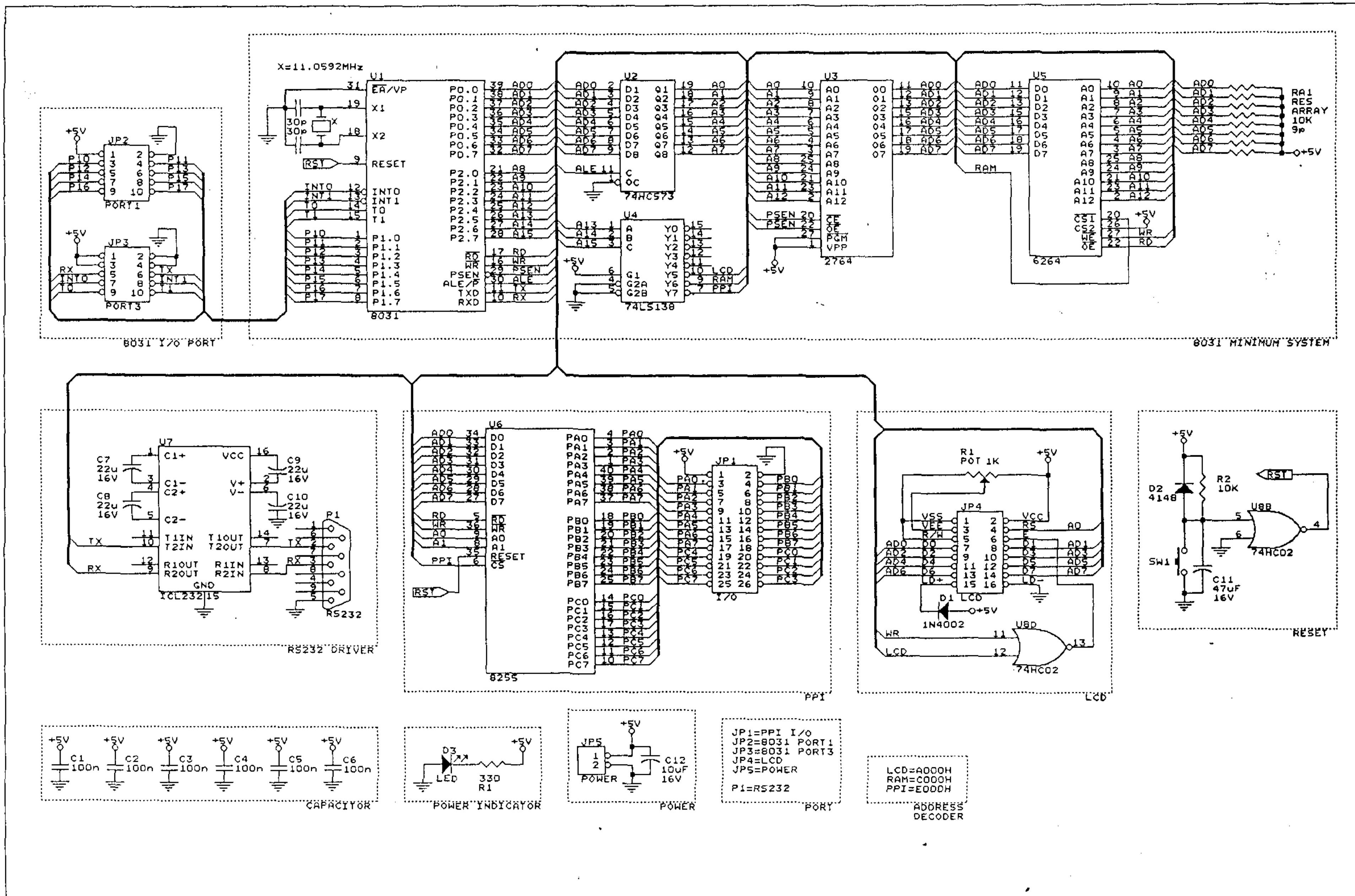
```
KATA        DB    'INPUTAN : 0,1 V'
            DB    'INPUTAN : 0,2 V'
            DB    'INPUTAN : 0,3 V'
            DB    'INPUTAN : 0,4 V'
            DB    'INPUTAN : 0,5 V'
            DB    'INPUTAN : 0,6 V'
            DB    'INPUTAN : 0,63 V'
DATAMAX     DB    40,80,120,160,200,240,254
DATAMIN     DB    30,70,110,150,190,230,250

KALIMAT     DB    '95051 KUDU LULUS COOK'
```



VOLUME CONTROL




(+) 25 Volt
RPS
INPUT
100 K
C2
1uf/25v
VOLUME CONTROL
(POTENSIO MOTOR)
R16
10K
Q7
C 828
Q12
C 828
R2
2K
R11
2K
R14
6k8
220uf/16v
C3
R8
220
R3
15K
C1
33pf
R12
100
Q8
A 673
Q5
TIP 3055
D1
1N4600
D2
1N4600
R6
820
Q6
2N 2955
Q10
R10
10K
C 1213
R7
1K2
R13
330
Q4
MJE3055
R15
0.2
R9
0.2
(+) 5 Volt
Q11
TIP2955
PC 6
IRF 540
Relay_SPDT
Loud S
(8 Oh
(-) 25 Volt



EL-TECH ELECTRONICS ELKIT01

Title

8031 MINIMUM SYSTEM