

APENDIX A
SIMULATION CODE

\$regfile = "m16def.dat"

\$crystal = 4000000

\$hwstack = 40

\$swstack = 16

\$baud = 19200

\$framesize = 26

'-----

Dim D As Single

Dim M As Single

Dim C As Single

Dim L As String * 7

Dim Haz As Byte

Dim I As Byte

Dim Si As String * 7

Dim B As String * 7

Dim E As String * 7

Dim Di As Single

'-----

'speed

Dim L0 As Byte

Dim L1 As Byte

Dim L2 As Byte

Dim L3 As Byte

Dim Med0 As Byte

Dim Med1 As Byte

Dim Med2 As Byte

Dim Med3 As Byte

Dim Med4 As Byte

Dim Med5 As Byte

Dim V0 As Byte

Dim V1 As Byte

Dim V2 As Byte

Dim V3 As Byte

'-----

'distance

Dim Vs0 As Byte

Dim Vs1 As Byte

Dim Vs2 As Byte

Dim S0 As Byte

Dim S1 As Byte

Dim S2 As Byte

Dim Me0 As Byte

Dim Me1 As Byte

Dim Me2 As Byte

Dim Hi0 As Byte

Dim Hi1 As Byte

Dim Hi2 As Byte

'-----

Dim Z As Byte

Dim N As Byte

'-----

Config Lcd = 16 * 4

'-----

Config Lcdpin = Pin , Db4 = Portc.4 , Db5 = Portc.5 , Db6 = Portc.6 , Db7 =
Portc.7 , E = Portc.0 , Rs = Portc.1

'-----

Config Timer0 = Counter , Edge = Falling , Prescale = 1

Config Timer1 = Pwm , Pwm = 8 , Compare A Pwm = Clear Down , Compare B
Pwm = Clear Down , Prescale = 1024

'Config Timer1 = Pwm , Pwm = 8 , Compare B Pwm = Clear Down , Prescale =
1024

'-----

Config Portb = Input

Config Porta = Input

Config Portd = Output

'-----

Z = 10

'-----

'dis:

Vs0 = 0

Vs1 = 1

Vs2 = 2

S0 = 3

S1 = 4

S2 = 5

Me0 = 6

Me1 = 7

Hi0 = 8

Hi1 = 9

Hi2 = 10

'-----

'speed:

L0 = 0

L1 = 10

L2 = 20

L3 = 30

'--

Med0 = 40

Med1 = 60

Med2 = 70

Med3 = 80

Med4 = 90

'--

V0 = 100

V1 = 150

V2 = 200

V3 = 255

Programa:

C = Counter0

M = 1 / 1000

C = C * 1.08

C = C * M

C = C / 2

C = C * 340

Di = C * 100

If Pina.0 = 0 Then

Cls

Stop Counter0

Locate 1 , 1

Lcd " stop checking "

Locate 2 , 2

Lcd "num of pulse " ; Counter0 ;

Locate 3 , 3

Lcd "Distance"

Locate 4 , 4

Lcd Di

Counter0 = 0

Cursor Off

'-----

Elseif Pina.0 = 1 Then

Cls

Start Counter0

'Locate 1 , 1

'Lcd "start checking"

Locate 2 , 2

'Lcd "num of pulse " ; Counter0 ;

'Locate 3 , 3

Lcd "distance,pl=" ; Counter0;

Locate 3 , 3

Lcd Di

If Counter0 = 10 Then

Stop Counter0

End If

End If

Cursor Off

'-----
If Pina.4 = 0 Then

Pwm1a = 0

Pwm1b = 0

Portd.0 = 0

Portd.1 = 0

Portd.6 = 0

Portd.7 = 0

Else

Z = Pwm1a

Locate 4 , 4

Lcd "speed= " ; Pwm1a

End If

'-----
If Counter0 >= Vs0 And Counter0 <= Vs2 And Z >= L0 And Z <= L3 Then

Portd.0 = 0

Portd.1 = 1

Pwm1b = 30

Portd.6 = 1

Portd.7 = 0

Pwm1a = 60

'-----

Locate 1 , 1

Lcd "back, right "

'-----

Elseif Counter0 >= Vs0 And Counter0 <= Vs2 And Z >= Med0 And Z <= Med4
Then

Portd.0 = 0

Portd.1 = 1

Pwm1b = 30

Portd.6 = 1

Portd.7 = 0

Pwm1a = 60

'-----

Locate 1 , 1

Lcd "back, right "

'-----

Elseif Counter0 >= Vs0 And Counter0 <= Vs2 And Z >= V0 And Z <= V3 Then

Portd.0 = 0

Portd.1 = 0

Pwm1b = 40

Portd.6 = 0

Portd.7 = 0

Pwm1a = 40

'-----

Locate 1 , 1

Lcd "backward,right"

'-----

Elseif Counter0 >= S0 And Counter0 <= S2 And Z >= L0 And Z <= L3 Then

Portd.0 = 0

Portd.1 = 0

Pwm1b = 0

'-----

Portd.6 = 0

Portd.7 = 1

Pwm1a = 30

'-----

Locate 1 , 1

Lcd "forward, stop "

'-----

Elseif Counter0 >= S0 And Counter0 <= S2 And Z >= Med0 And Z <= Med4
Then

Portd.0 = 1

Portd.1 = 0

Pwm1b = 30

'-----

Portd.6 = 1

Portd.7 = 0

Pwm1a = 30

'-----

Locate 1 , 1

Lcd "backward,right"

'-----

Elseif Counter0 >= S0 And Counter0 <= S2 And Z >= V0 And Z <= V3 Then

Portd.0 = 1

Portd.1 = 0

Pwm1b = 40

'-----

Portd.6 = 1

Portd.7 = 0

Pwm1a = 40

'-----

Locate 1 , 1

Lcd " backward,right"

'-----

Elseif Counter0 >= Me0 And Counter0 <= Me1 And Z >= L0 And Z <= L3 Then

Portd.0 = 0

Portd.1 = 0

Pwm1b = 0

'-----

Portd.6 = 1

Portd.7 = 0

Pwm1a = 100

Locate 1 , 1

Lcd "forward, stop "

'-----

Elseif Counter0 >= Me0 And Counter0 <= Me1 And Z >= Med0 And Z <= Med4
Then

Portd.0 = 0

Portd.1 = 0

Pwm1b = 0

'-----

Portd.6 = 0

Portd.7 = 1

Pwm1a = 60

Locate 1 , 1

Lcd "forward, stop "

'-----

Elseif Counter0 >= Me0 And Counter0 <= Me1 And Z >= V0 And Z <= V3 Then

Portd.0 = 0

Portd.1 = 1

Pwm1b = 0

'-----

Portd.6 = 1

Portd.7 = 0

Pwm1a = 60

Locate 1 , 1

Lcd "backward,left "

'-----

Elseif Counter0 >= Hi0 And Counter0 <= Hi1 And Z >= L0 And Z <= L3 Then

Portd.0 = 0

Portd.1 = 0

Pwm1b = 0

'-----

Portd.6 = 1

Portd.7 = 0

Pwm1a = 200

Locate 1 , 1

Lcd "go fast, stop "

'-----

Elseif Counter0 >= Hi0 And Counter0 <= Hi1 And Z >= Med0 And Z <= Med4
Then

Portd.0 = 0

Portd.1 = 0

Pwm1b = 0

'-----

Portd.6 = 1

Portd.7 = 0

Pwm1a = 200

Locate 1 , 1

Lcd "gofast2, stop "

'-----

Elseif Counter0 >= Hi0 And Counter0 <= Hi1 And Z >= V0 And Z <= V3 Then

Portd.0 = 0

Portd.1 = 0

Pwm1b = 0

'-----

Portd.6 = 1

Portd.7 = 0

Pwm1a = 255

Locate 1 , 1

Lcd "gofast3, stop "

'-----

End If

Goto L

L:

Return

Goto Programa

End

'end program