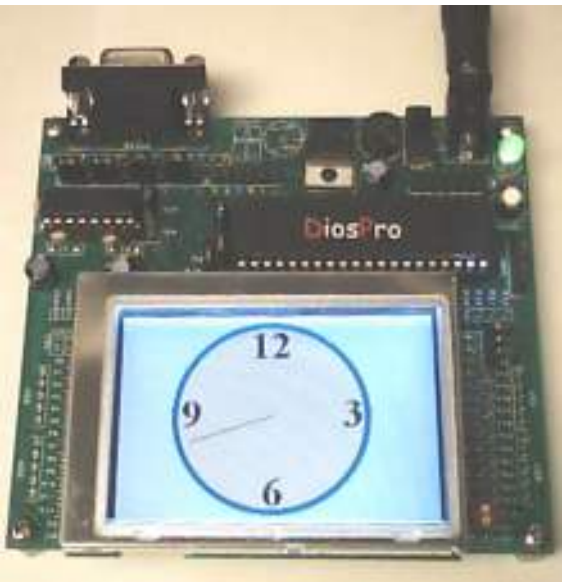

Interace to a ezLCD001 Color Graphic LCD

I recently got my hands on a very cool color graphic LCD called the ezLCD001. These are sold by a company called EarthLCD.com. They feature a 240x160 display. Each pixel can be set to 1 of 256 colors

These little gems can be interfaced a couple of ways and in this article I am going to show how to use the I2c interface.

I actutally have three libraries:

- Software serial library and interface
- Hardware UART serial library and interface
- I2c interface

I prefer the I2c interface because it is not subject to timing issues when using IRQ's with your Dios. You can use any ports and it keeps the UART free for other interfaces.

Hookup

All connections to the ezLCD001 is done vial the two connectors on the back of the display shown in Figure 1

We need to provide the ezLCD001 with 3-6.6V. The power is supplied via the smaller connector as shown in Figure 2.

Figure 1

I will show you how to connect the ezLCD001 to a DiosWorkboard a little later and we will be using this connector to supply the display with 5v.

Next we need to connect the Sda and Scl ports on the display to our Dios microcontroller. This is done using the larger connector shown in Figure 3.

You must use two 1K resistores to tie the ports to the 3.3v ref supplied on the connector.

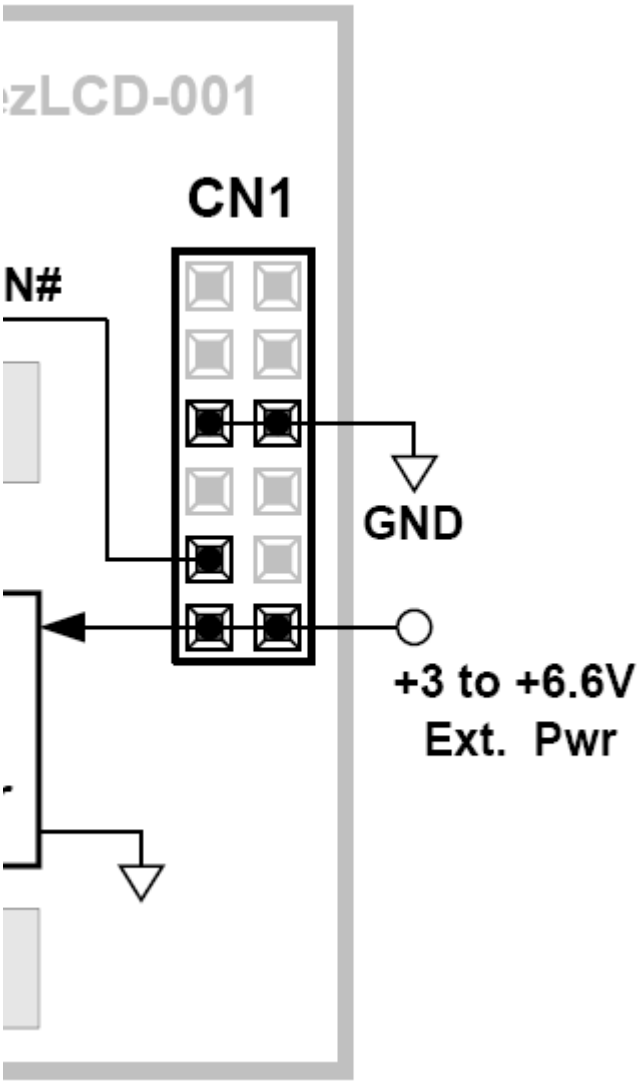

Figure 2

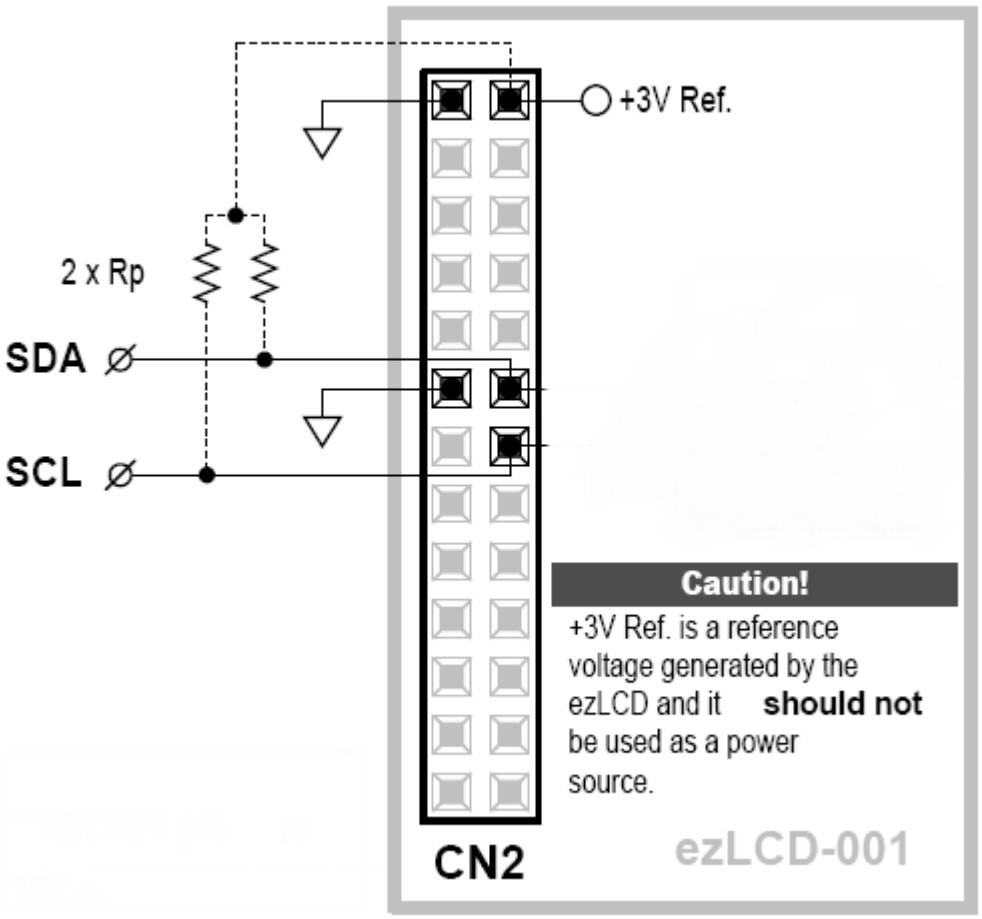

Figure 3

Construction

It is a simple matter to create a interface on the Dios Workboard. We will be using a DiosWorkboard Basic for the next couple of steps to show you how.

Step 1

Take a 6-pin header and attach it to the pads marked RC2-RH2 as shown in Figure 4.

Step 2

Take a 13-pin header and attach it to the pads marked XC4-XO4 as shown in Figure 5.

Step 3

Take a second 13-pin header and attach it to the pads marked YC1-YO1 as shown in Figure 5.

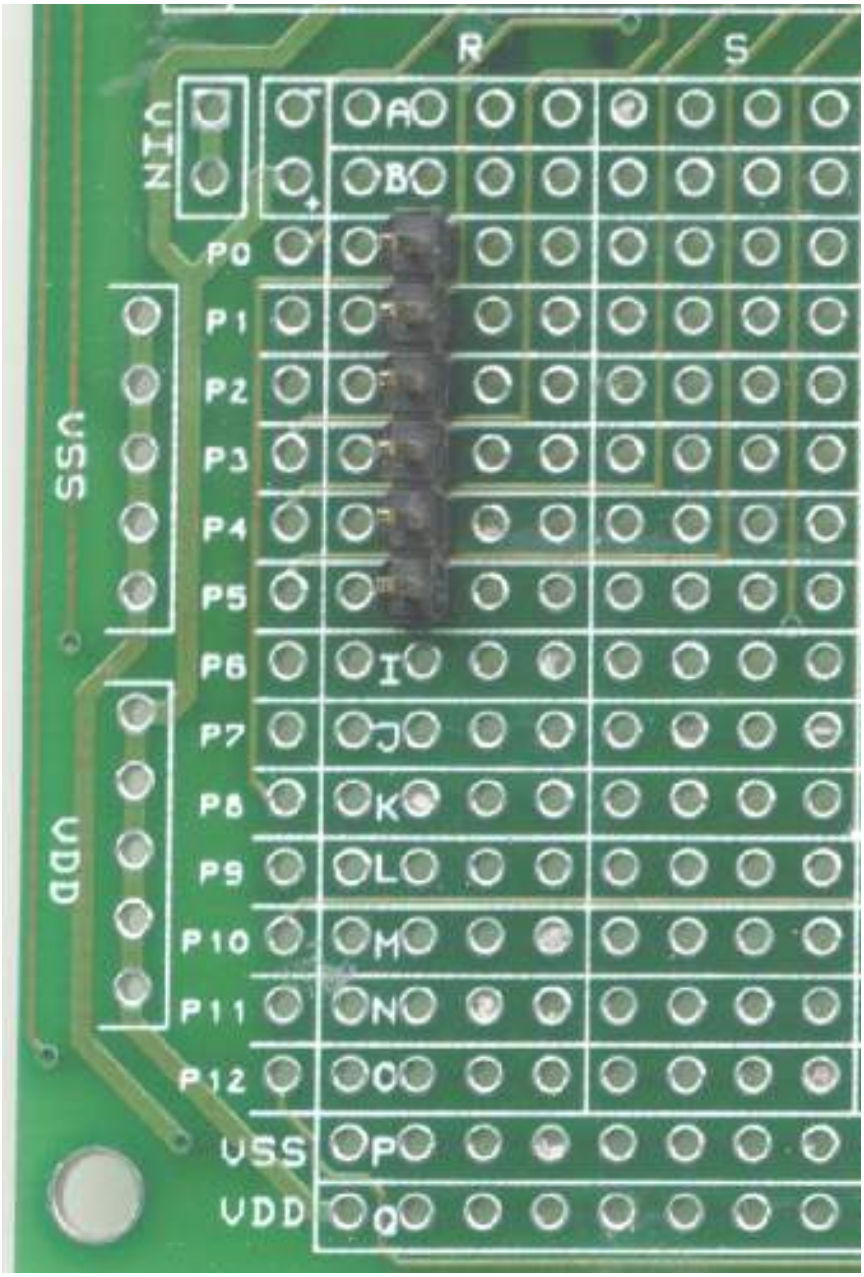
R
S
VIN
A
B
P0
P1
P2
P3
P4
P5
VSS
P6
I
P7
J
P8
K
P9
L
VDD
P10
M
P11
N
P12
O
VSS
P
VDD
Q

Figure 4

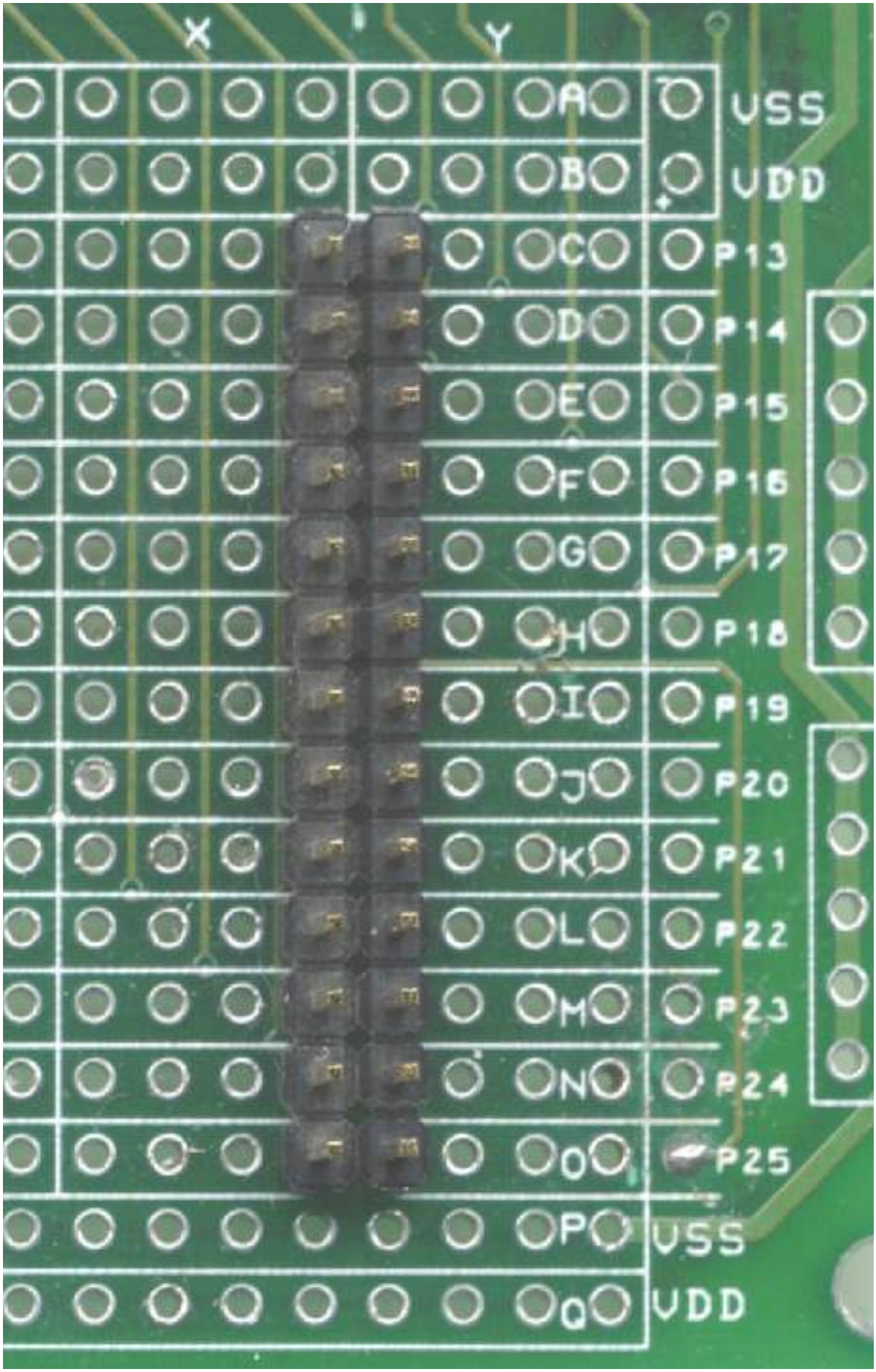
X
Y
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
VSS
VDD
P13
P14
P15
P16
P17
P18
P19
P20
P21
P22
P23
P24
P25
VSS
VDD

Figure 5

Step 4

Take a small jumper and connect the pad marked RE1 and attach it to the pad marked - as shown in Figure 6. Note this is the small green jumper.

Step 5

Attach a jumper between RH1 and one of the Vdd pads as shown in Figure 6. This is the white wire.

Step 6

Attach two 1K resistors to the pads shown in Figure 7. One connects between XC3 and XI3. The other connects to XC2 and XH2 as shown. Solder in place.

Step 7

Next you need to connect the the ezLCD001 I2c Sda port to Dios Port 11. The pad marked XH1 is the I2c Sda port. Connect it as shown in Figure 8.

Step 8

Now connect the ezLCD001 I2c Scl port to Dios Port 10. The pad marked XI1 is the I2c Scl port.

The board should look like the one shown in Figure 9.

Its a simple matter of plugging in the ezLCD001 display into the connectors. Load up program 1 and you should a display similar to the one shown in Figure1.

Note that all three libraries are included with the lateset version of the DiosCompiler and will be added to your source code when you use the exLCDinit functions as shown in the demo program.

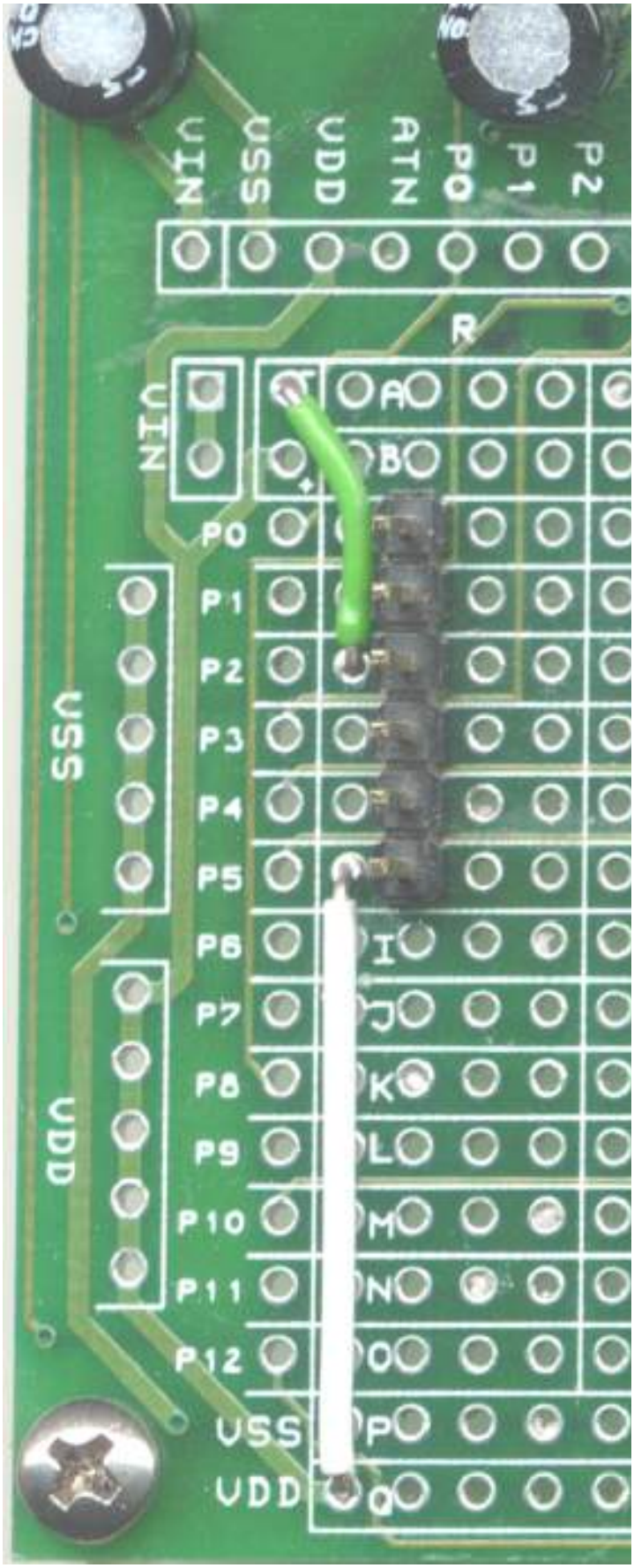
VIN
VSS
VDD
ATN
P0
P1
P2
R
VIN
A
B
P0
P1
P2
P3
P4
P5
P6
P7
P8
P9
P10
P11
P12
VSS
VDD
VSS
VDD
I
J
K
L
M
N
O
P
Q

Figure 6

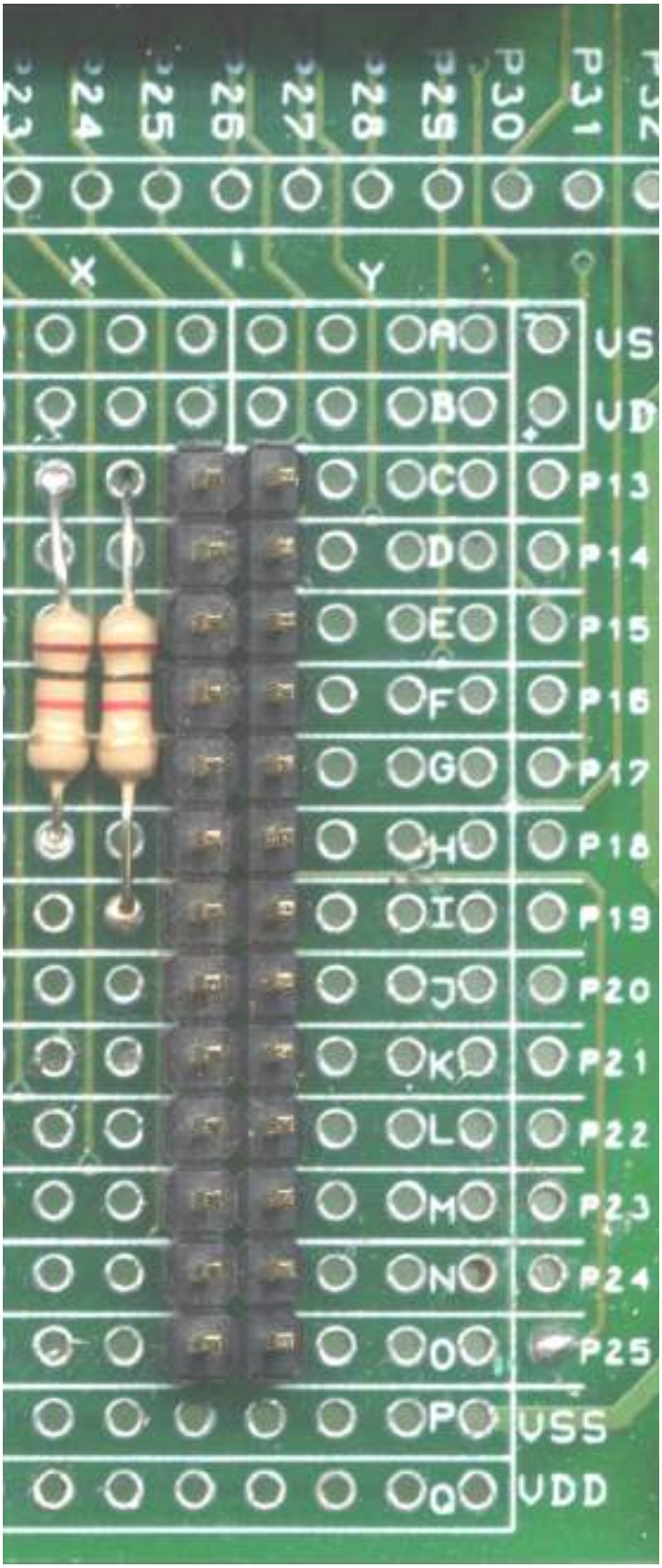
P23
P24
P25
P26
P27
P28
P29
P30
P31
X
Y
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
VS
VD
P13
P14
P15
P16
P17
P18
P19
P20
P21
P22
P23
P24
P25
VSS
VDD

Figure 7

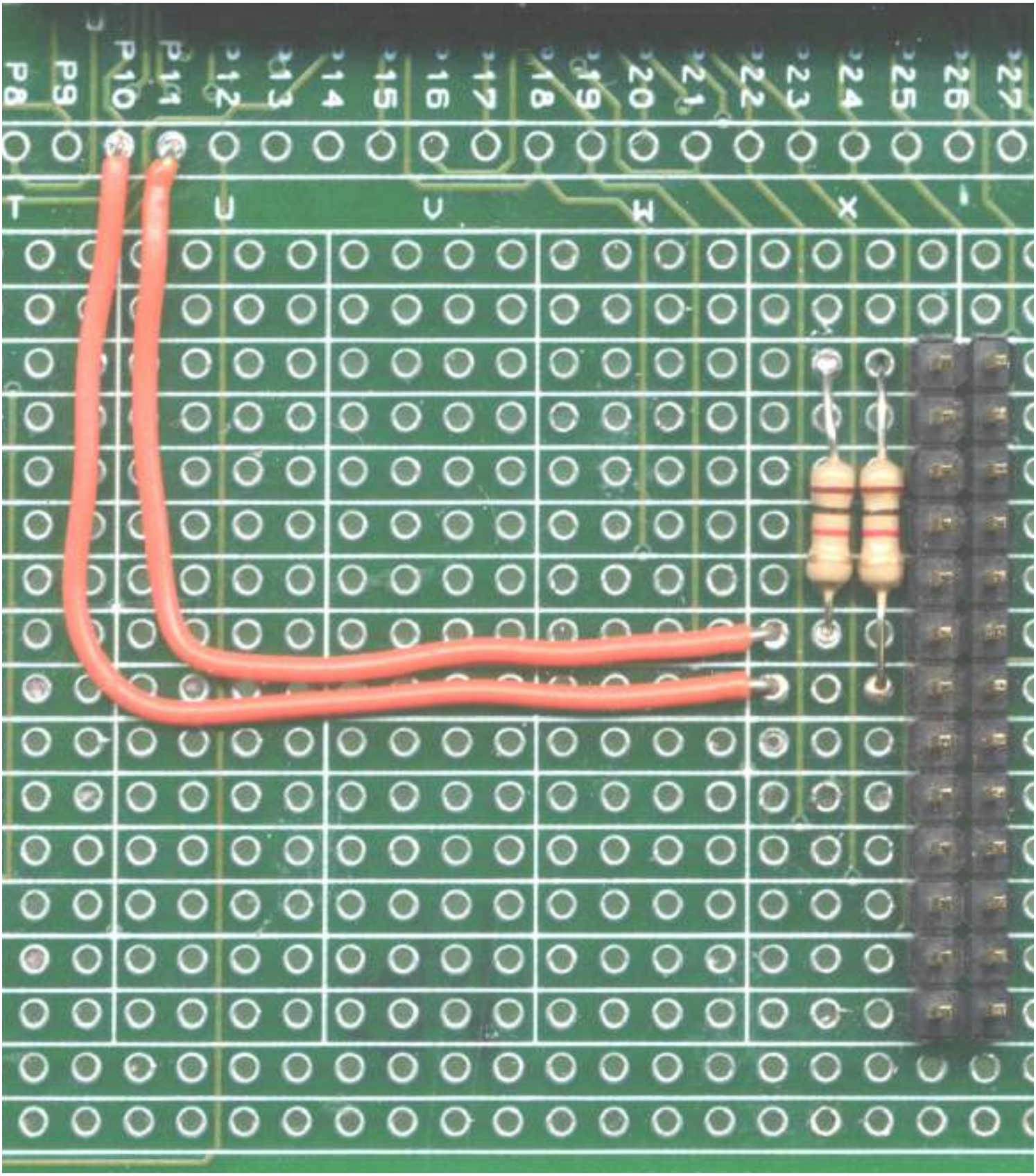

Figure 8

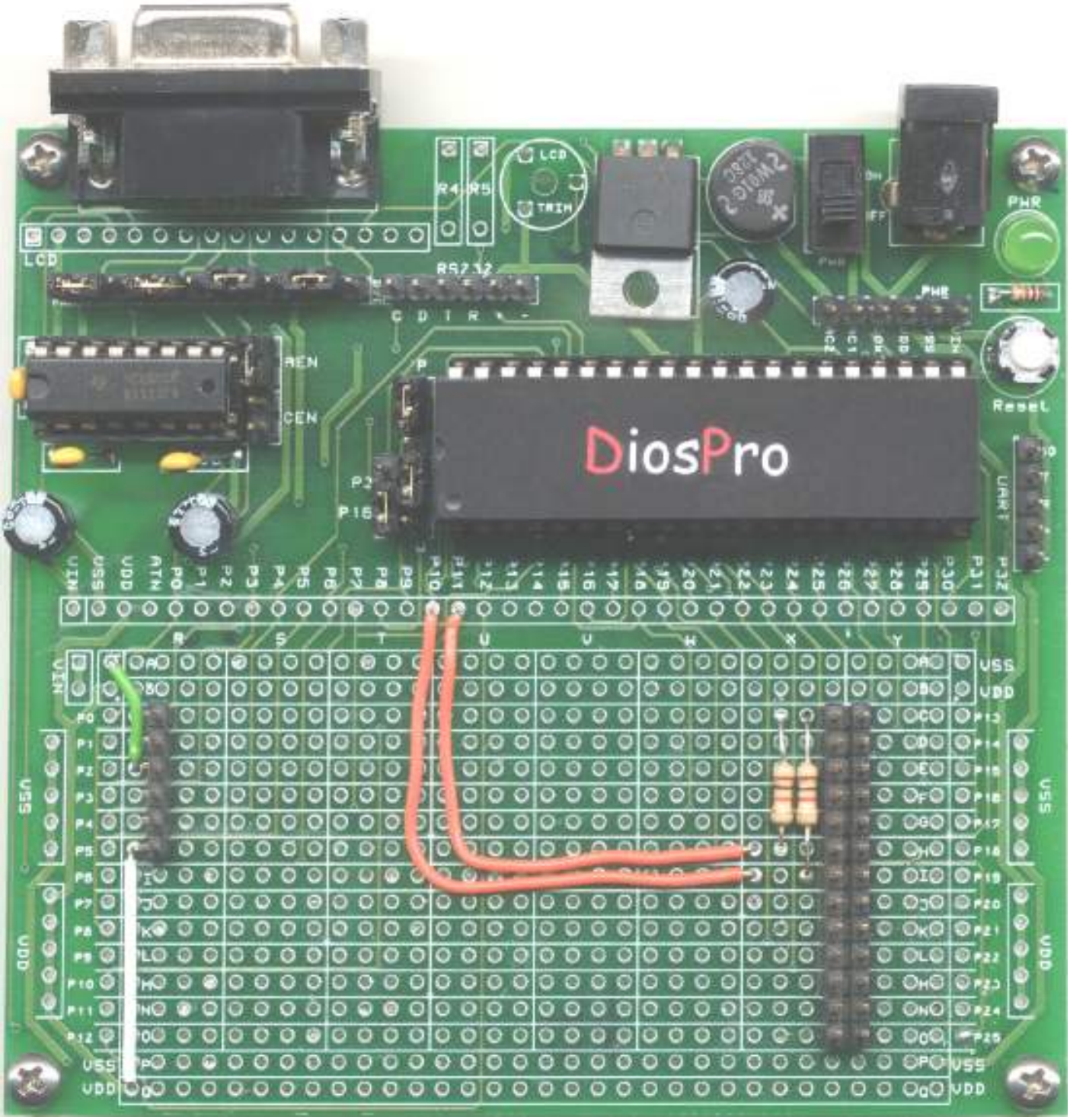
DiosPro
LCD
TRIM
R4
R5
RS232
REN
CEN
P2
P16
Reset
PWR
UART
VIN
VSS
VDD

Figure 9

```
DiosPro
'EZLCD001 I2c interface library'
func main()
  dim x as integer
  dim lastx as integer
  ezLCD1initI2c(11,10)

  ezLCDCLS(ezWHITE)
  ezLCDLIGHTON()
  ezLCDCIRCLEFILL(115,80,75,ezBLUE)
  ezLCDCIRCLEFILL(115,80,70,ezYELLOW)
  lastx = 0
  ezLCDFONT(3)
Loop:
  for x = 0 to 359 step 6
     plothand(115,80,65,lastx,ezYELLOW)
     plothand(115,80,65,x,ezBLACK)
     ezLCDPRINTXY(115-15,80-75,"12",ezBLACK)
     ezLCDPRINTXY(115-7,80+40,"6",ezBLACK)
     ezLCDPRINTXY(115+55,80-20,"3",ezBLACK)
     ezLCDPRINTXY(115-68,80-20,"9",ezBLACK)
     lastx = x
     pause 950
  next
  goto Loop

endfunc

'---------------------------------------------------------------------
func plothand(locx as integer, locy as integer, rad as integer,ang as integer,tcolor as integer)
  dim z as integer
  dim cx as float
  dim cy as float

  trunc

  if ang <90 then
    ang = 270 + ang
  else
    ang = ang - 90
  endif

  z = ang * 128 / 180

  cx = MATHIcos(z )*(rad /128) + locx
  cy = MATHIsin(z )*(rad /128) + locy

  int cx
  int cy
  ezLCDLINE(locx,locy,cx,cy,tcolor)

endfunc

include \lib\EZLCDI2c.lib
include \lib\DiosMath.lib
```

Program 1

Parts

Available from Kronos Robotics - www.kronosrobotics.com

• DiosPro Chip #16168
http://www.kronosrobotics.com/xcart/customer/product.php?productid=16428

• Dios Workboard Deluxe #16452
http://www.kronosrobotics.com/xcart/customer/product.php?productid=16452

• Dios Workboard Basic #16453
http://www.kronosrobotics.com/xcart/customer/product.php?productid=16453

• DiosCompiler Free Download from www.kronosrobotics.com
http://www.kronosrobotics.com/downloads/DiosSetup.exe