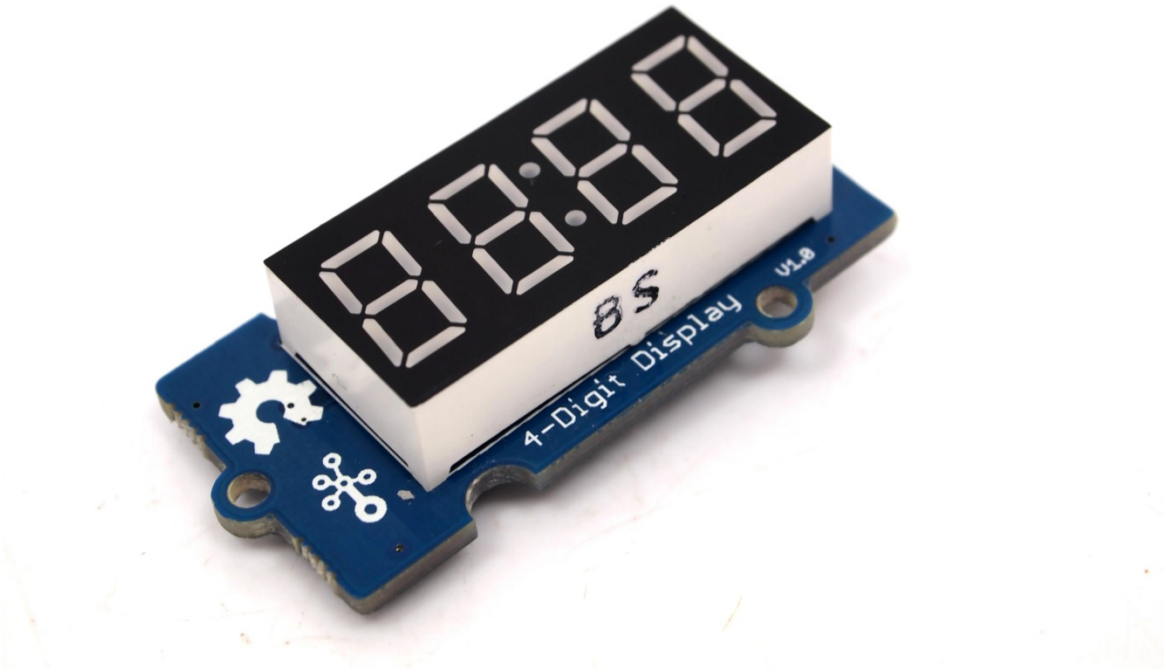
Grove - 4-Digit Display

Introduction

3.3V 5.0V Digital



Grove - 4-Digit Display module is a 12-pin module. In this module, we utilise a TM1637 to scale down the number of controlling pins to 2. That is to say, it controls both the content and the luminance via only 2 digital pins of Arduino or Seeeduino. For projects that require alpha-numeric display, this can be a nice choice.

Features

- 4 digit red alpha-numeric display
- Grove compatible interface (3.3V/5V)
- 8 adjustable luminance levels

Tip

More details about Grove modules please refer to Grove System

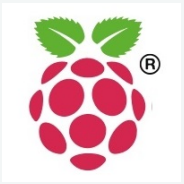
Application Ideas

- Time display
- Stopwatch
- Sensors' input display

Specifications

Item	Min	Typical	Max	Unit
Voltage	3.3	5.0	5.5	VDC
Current	0.2	27	80	mA
Dimensions	42x24x14			mm
Net Weight	7±1			g

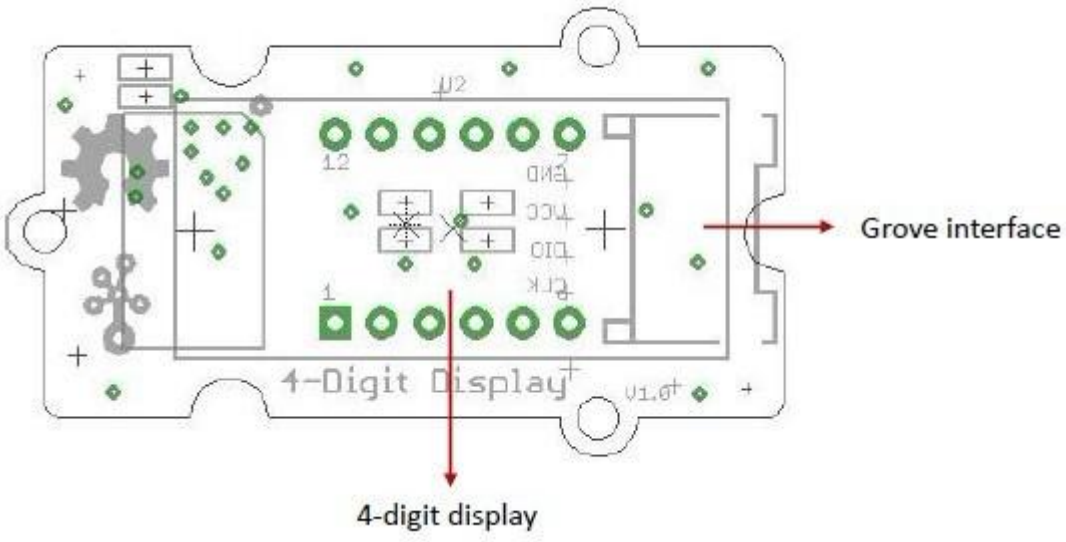
Platforms Supported

Arduino	Wio	BeagleBone	Raspberry Pi	LinkIt ONE
				

Caution

The platforms mentioned above as supported is/are an indication of the module's hardware or theoritical compatibility. We only provide software library or code examples for Arduino platform in most cases. It is not possible to provide software library / demo code for all possible MCU platforms. Hence, users have to write their own software library.

Hardware Overview



Grove interface - Can be connected to digital port on Grove - Base Shield.

4 - digit display - Common anode digital tube.

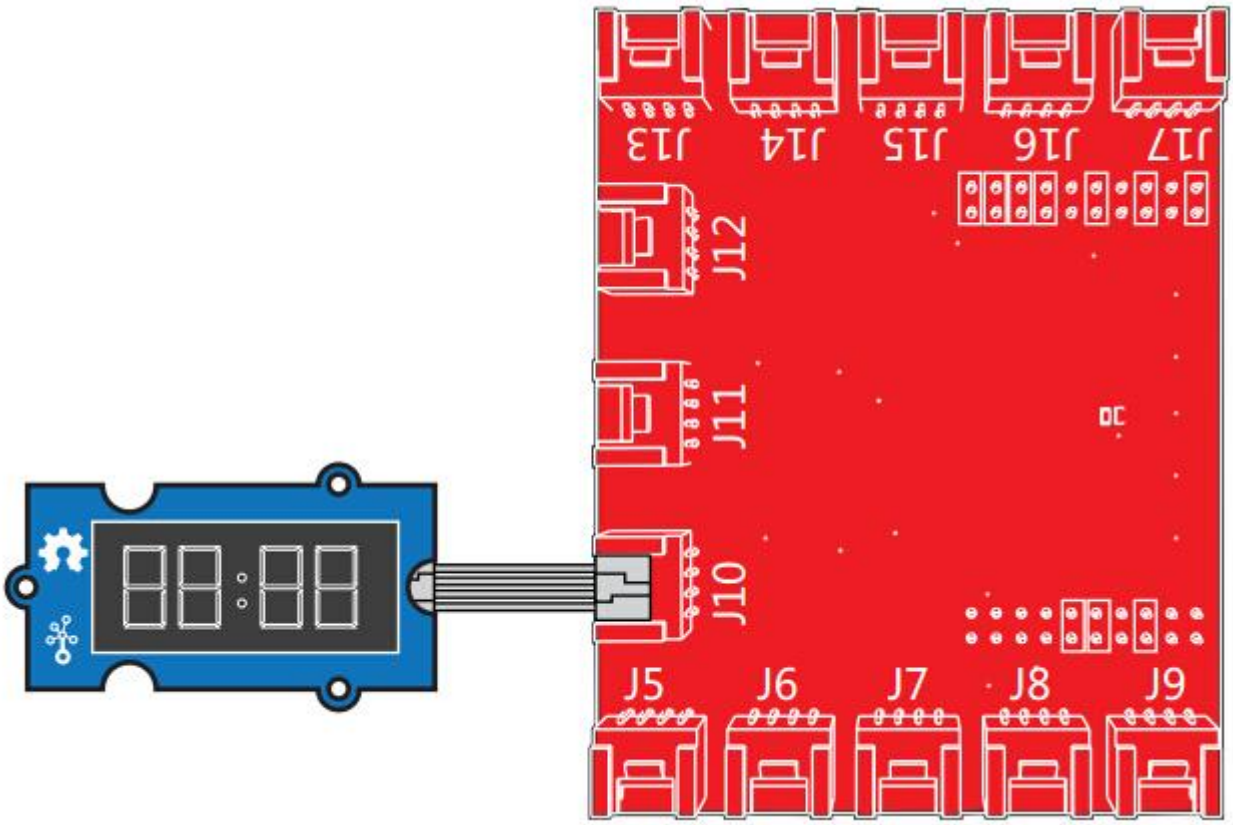
Pin definition: CLK DIO VCC GND

Getting Started

With TI LaunchPad

Displaying the Numbers (4-Digital-Display)

This example demonstrates how to display some digital numbers using a Grove-4-Digital Display.




```
/*
 * TM1637.cpp
 * A library for the 4 digit display
 */
#include "TM1637.h"
#define CLK 39 //pins definitions for TM1637 and can be changed to other ports
#define DIO 38
TM1637 tm1637(CLK,DIO);
void setup()
{
    tm1637.init();
    tm1637.set(BRIGHT_TYPICAL);//BRIGHT_TYPICAL = 2,BRIGHT_DARKEST = 0,BRIGHTEST = 7;
}
void loop()
{
    int8_t NumTab[] = {0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15};//0~9,A,b,C,d,E,F
```

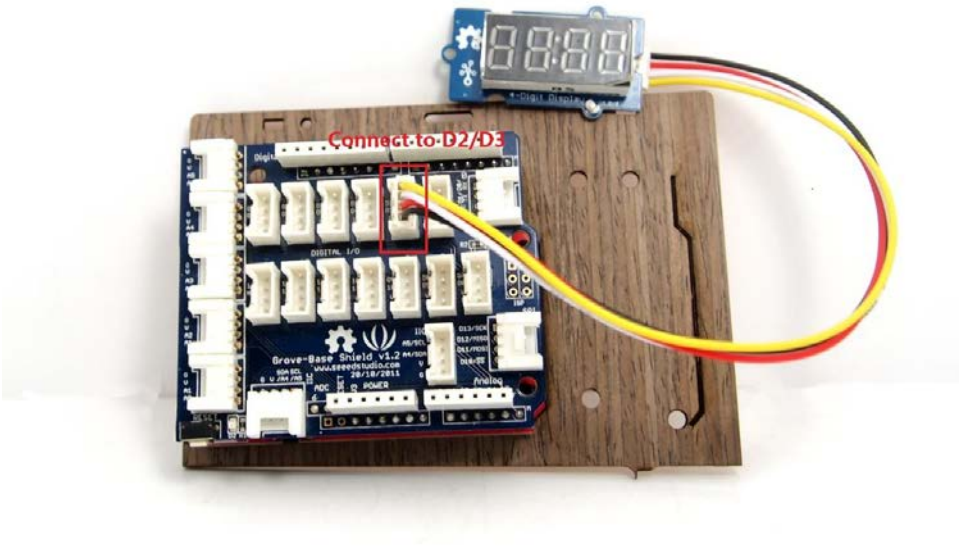
```
    int8_t ListDisp[4];
    unsigned char i = 0;
    unsigned char count = 0;
    delay(150);
    while(1)
    {
        i = count;
        count ++;
        if(count == sizeof(NumTab)) count = 0;
        for(unsigned char BitSelect = 0;BitSelect < 4;BitSelect ++)
        {
            ListDisp[BitSelect] = NumTab[i];
            i ++;
            if(i == sizeof(NumTab)) i = 0;
        }
        tm1637.display(0,ListDisp[0]);
        tm1637.display(1,ListDisp[1]);
        tm1637.display(2,ListDisp[2]);
        tm1637.display(3,ListDisp[3]);
        delay(300);
    }
}
```

With Arduino

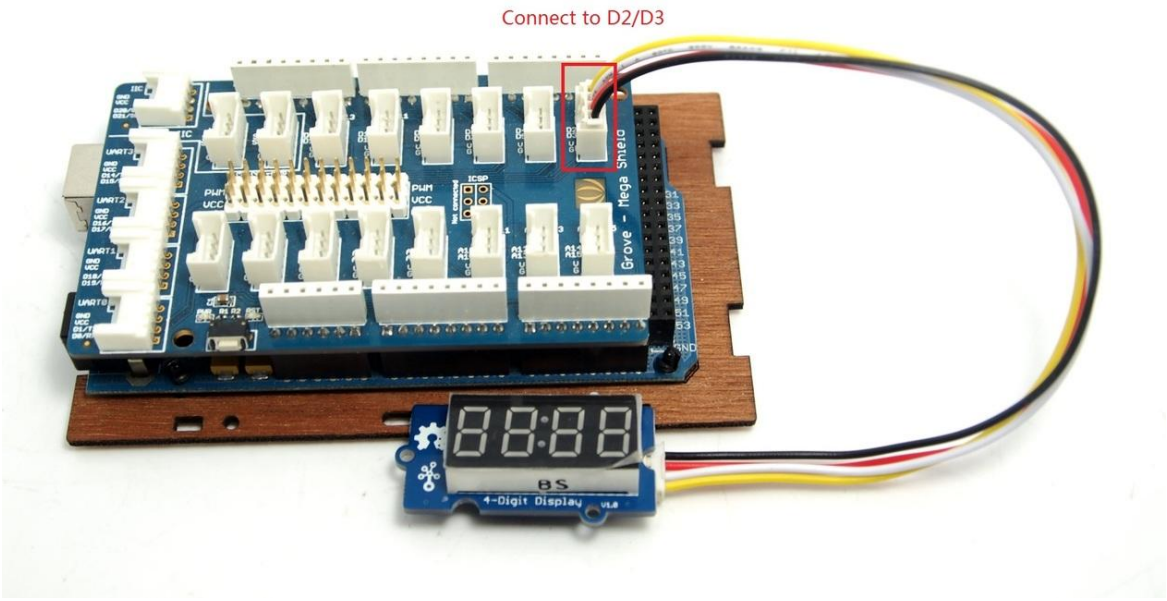
The module uses an LED drive chip - TM1637 to control the contents and change the luminance. Here we drive it to display time.

1. Connect the Grove socket marked “IN” on the LED Strip Driver and digital port 2 of the Grove - Base Shield with a Grove cable. You can change to the digital port as you like. But don’t forget to change the port number in the definition of the demo code at the same time.
2. Plug onto Arduino/Seeeduino or plug Grove - Mega Shield onto Arduino Mega.

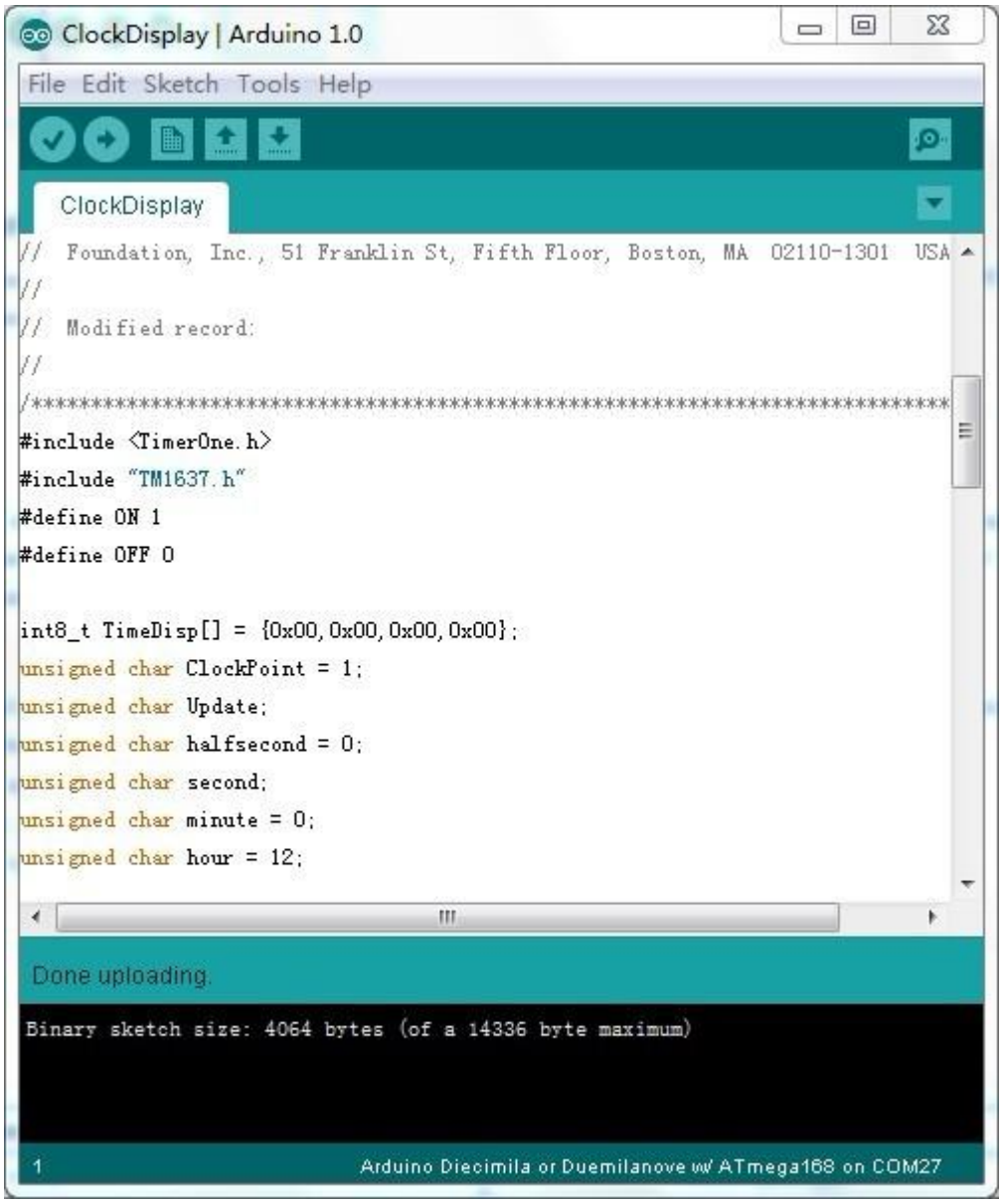
   Seeeduino and Grove - 4-digit display:



Arduino Mega and Grove - 4-digit display:

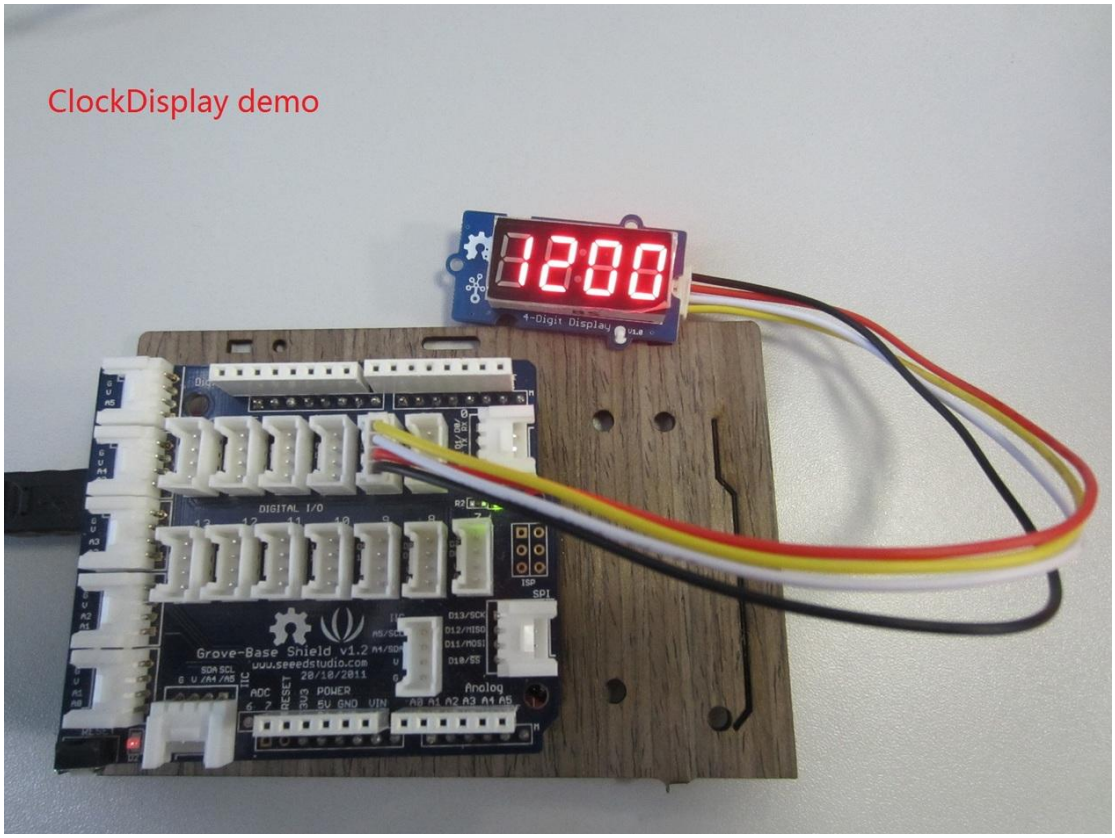


3. Connect Arduino/Seeeduino to PC via a USB cable.
4. Download the 4-Digit Display library and TimerOne library. Unzip and put them in the libraries file of Arduino IDE by the path: ..\arduino-1.0\libraries.
5. Restart the Arduino IDE, open one demo code you like, for example ClockDisplay directly by the path:File -> Example ->DigitalTube->ClockDisplay.



6. Upload the demo code and the clock will be ticking in a few seconds.

You can see this:



With Raspberry Pi

1.You should have got a raspberry pi and a grovepi or grovepi+.

2.You should have completed configuring the development enviroment, otherwise follow here.

3.Connection

- Plug the sensor to grovepi socket D5 by using a grove cable.

4.Navigate to the demos' directory:

```
cd yourpath/GrovePi/Software/Python/
```

- To see the code

```
nano grove_4_digit_display.py    # "Ctrl+x" to exit #
```

```
import time
```

```
import grovepi
```

```
    # Connect the Grove 4 Digit Display to digital port D5
    # CLK,DIO,VCC,GND
    display = 5
    grovepi.pinMode(display,"OUTPUT")

    # If you have an analog sensor connect it to A0 so you can monitor it below
    sensor = 0
    grovepi.pinMode(sensor,"INPUT")

    time.sleep(.5)

    # 4 Digit Display methods
    # grovepi.fourDigit_init(pin)
    # grovepi.fourDigit_number(pin,value,leading_zero)
    # grovepi.fourDigit_brightness(pin,brightness)
    # grovepi.fourDigit_digit(pin,segment,value)
    # grovepi.fourDigit_segment(pin,segment,leds)
    # grovepi.fourDigit_score(pin,left,right)
    # grovepi.fourDigit_monitor(pin,analog,duration)
    # grovepi.fourDigit_on(pin)
    # grovepi.fourDigit_off(pin)

    while True:
        try:
            print "Test 1) Initialise"
            grovepi.fourDigit_init(display)
            time.sleep(.5)

            print "Test 2) Set brightness"
            for i in range(0,8):
                grovepi.fourDigit_brightness(display,i)
                time.sleep(.2)
            time.sleep(.3)
```

```
        # set to lowest brightness level
        grovepi.fourDigit_brightness(display,0)
        time.sleep(.5)

        print "Test 3) Set number without leading zeros"
        leading_zero = 0
        grovepi.fourDigit_number(display,1,leading_zero)
        time.sleep(.5)
        grovepi.fourDigit_number(display,12,leading_zero)
        time.sleep(.5)
        grovepi.fourDigit_number(display,123,leading_zero)
        time.sleep(.5)
        grovepi.fourDigit_number(display,1234,leading_zero)
        time.sleep(.5)

        print "Test 4) Set number with leading zeros"
        leading_zero = 1
        grovepi.fourDigit_number(display,5,leading_zero)
        time.sleep(.5)
        grovepi.fourDigit_number(display,56,leading_zero)
        time.sleep(.5)
        grovepi.fourDigit_number(display,567,leading_zero)
        time.sleep(.5)
        grovepi.fourDigit_number(display,5678,leading_zero)
        time.sleep(.5)

        print "Test 5) Set individual digit"
        grovepi.fourDigit_digit(display,0,2)
        grovepi.fourDigit_digit(display,1,6)
        grovepi.fourDigit_digit(display,2,9)
        grovepi.fourDigit_digit(display,3,15) # 15 = F
        time.sleep(.5)
```

```
        print "Test 6) Set individual segment"
        grovepi.fourDigit_segment(display,0,118) # 118 = H
        grovepi.fourDigit_segment(display,1,121) # 121 = E
        grovepi.fourDigit_segment(display,2,118) # 118 = H
        grovepi.fourDigit_segment(display,3,121) # 121 = E
        time.sleep(.5)

        grovepi.fourDigit_segment(display,0,57) # 57 = C
        grovepi.fourDigit_segment(display,1,63) # 63 = O
        grovepi.fourDigit_segment(display,2,63) # 63 = O
        grovepi.fourDigit_segment(display,3,56) # 56 = L
        time.sleep(.5)

        print "Test 7) Set score"
        grovepi.fourDigit_score(display,0,0)
        time.sleep(.2)
        grovepi.fourDigit_score(display,1,0)
        time.sleep(.2)
        grovepi.fourDigit_score(display,1,1)
        time.sleep(.2)
        grovepi.fourDigit_score(display,1,2)
        time.sleep(.2)
        grovepi.fourDigit_score(display,1,3)
        time.sleep(.2)
        grovepi.fourDigit_score(display,1,4)
        time.sleep(.2)
        grovepi.fourDigit_score(display,1,5)
        time.sleep(.5)

        print "Test 8) Set time"
        grovepi.fourDigit_score(display,12,59)
        time.sleep(.5)
```

```
            print "Test 9) Monitor analog pin"
            seconds = 10
            grovepi.fourDigit_monitor(display,sensor,seconds)
            time.sleep(.5)

            print "Test 10) Switch all on"
            grovepi.fourDigit_on(display)
            time.sleep(.5)

            print "Test 11) Switch all off"
            grovepi.fourDigit_off(display)
            time.sleep(.5)

        except KeyboardInterrupt:
            grovepi.fourDigit_off(display)
            break
        except IOError:
            print "Error"
```

5.Run the demo.

```
sudo python grove_4_digit_display.py
```

6.This demo may not work if your grovepi doesn’t have the newest firmware, update the firmware.

```
cd yourpath/GrovePi/Firmware
sudo ./firmware_update.sh
```