MLT

FREEDOM-168
User's Guide

Table of Contents

# Chapter1. Overview and Main Features

1-1. Introduction

Arduino is an open-source electronics prototyping platform based on flexible, easy-to-use hardware and software. It's intended for artists, designers, hobbyists, and anyone interested in creating interactive objects or environments.

1-2. Board Features

- ATMEGA168 microcontroller.
- AVR ISP connector for programming with AVR ISP.
- USB interface (Virtual COM Port).
- Quartz crystal 16 MHz.
- Status LED.
- Reset Button.
- Power plug-in jack with diode bridge can be powered with AC or DC power supply.
- Powered via the USB connection or with an external power supply select by jumper.
- PCB grids 100 mils.
- PCB FR-4, 1.6mm. , red solder mask, white silkscreen component print.
- Dimensions 134.62 x 81.28 mm.

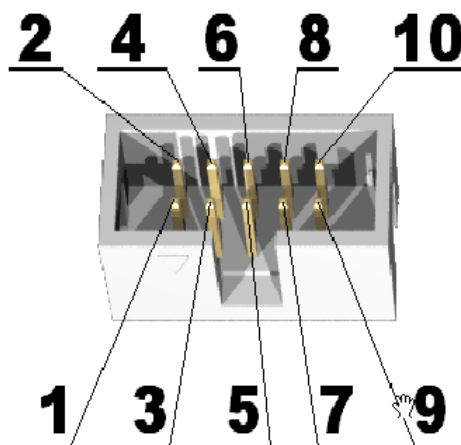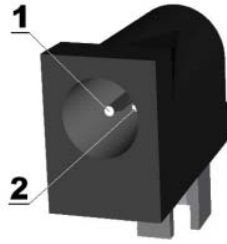# 1-3. Board Layout
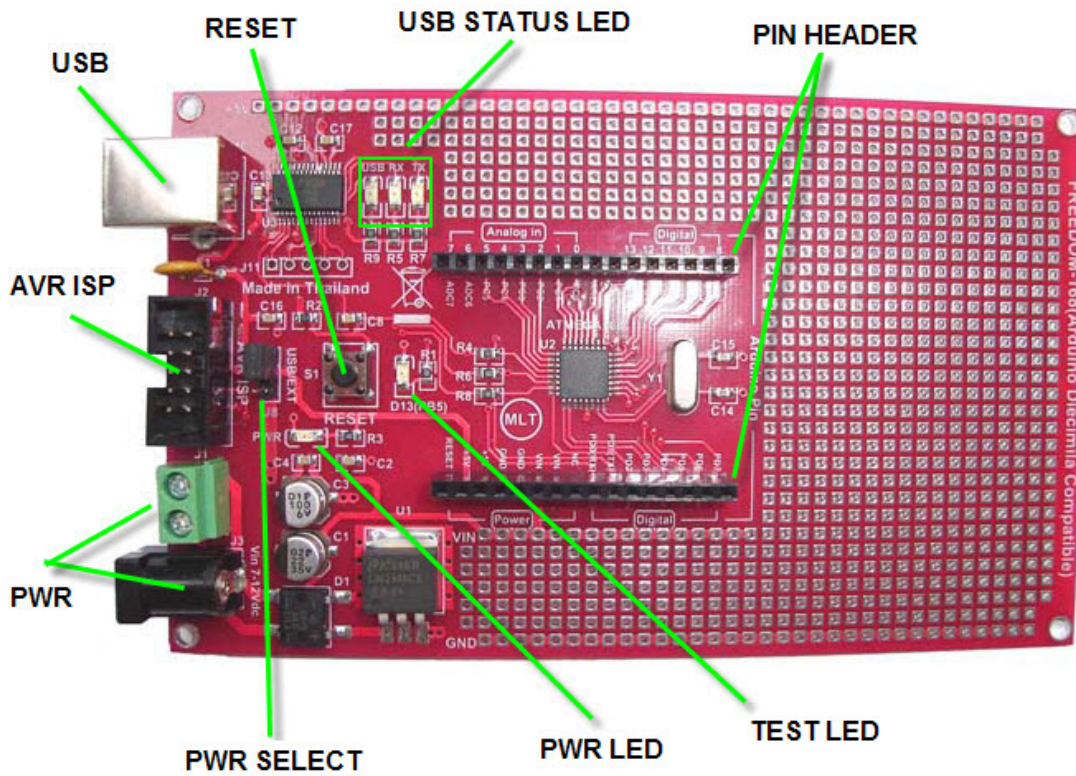
1-4. Connector Descriptions

1. AVR ISP

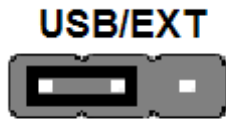| PIN #	Signal Name
1	MOSI
2	+5V
3	NC
4	GND
5	RESET
6	GND
7	SCK
8	GND
9	MISO
10	GND

2. PWR Connector

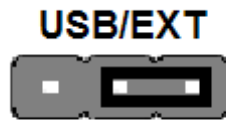| PIN #	Signal Name
1	7-12VDC
2	GND

1-5. Jumper Descriptions

1. Power Selection

⬛ Power from USB
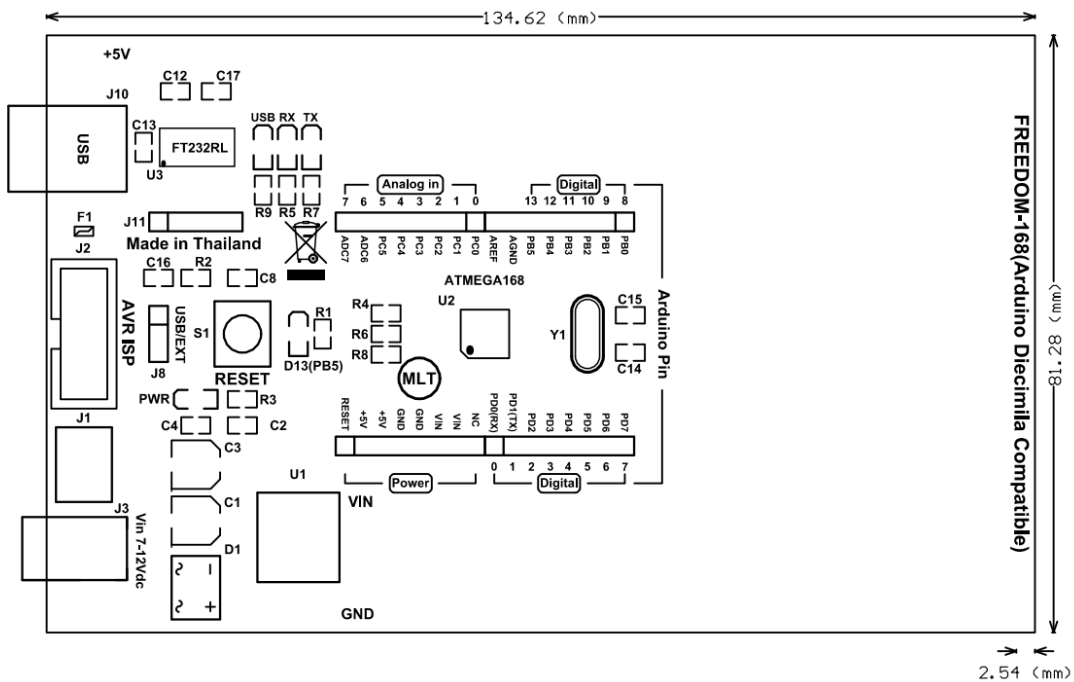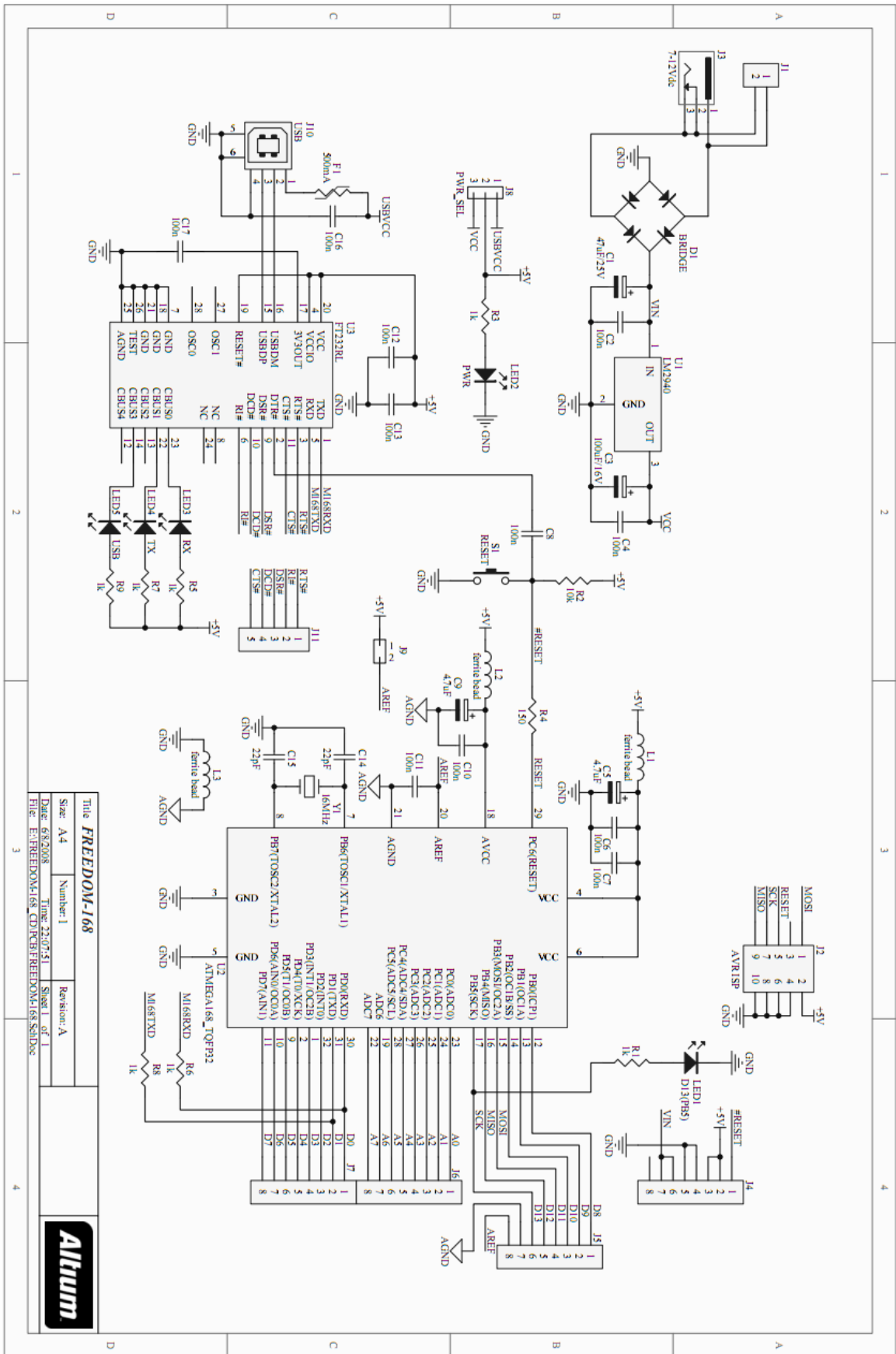
USB/EXT

⬛ Power from external supply

USB/EXT

1-6. Board Dimensions

1-7. Schematic

Chapter2. Getting Started

2-1. Safety Instructions

Observe the following safety guidelines when connection and using your FREEDOM-168 board:

- Place the FREEDOM-168 board on an insulation surface and treat it carefully. The FREEDOM-168 board can be damaged if dropped.
- Put your FREEDOM-168 board in a location with low humidity and a minimum of dust.
- Never use your FREEDOM-168 board if the power cable has been damaged. Do not allow anything to rest on the power cable, and keep the cable away from where people could trip over it.
- Never insert anything metallic into the FREEDOM-168 board. Doing so may create the danger of electric shock.
- To avoid electric shock, never touch the inside of the FREEDOM-168 board.
- The FREEDOM-168 board are provided for ventilation. To prevent overheating, these openings should not be blocked or covered. Also, avoid using the FREEDOM-168 board on a bed, sofa, rug, or other soft surface.
- Do not expose the FREEDOM-168 board to rain or use it near water. If the FREEDOM-168 board accidentally gets wet, unplug it and you can clean the exterior of the FREEDOM-168 board with a damp cloth when necessary, but be sure to unplug the FREEDOM-168 board first.

2-2. Install the USB driver to PC

1. Connect the USB port of FREEDOM-168 board to PC then the window will be found new hardware as follow.

Figure 1

2. Then information will be shown the found new hardware wizard then choose "No, not this time" and click "Next" as follow.
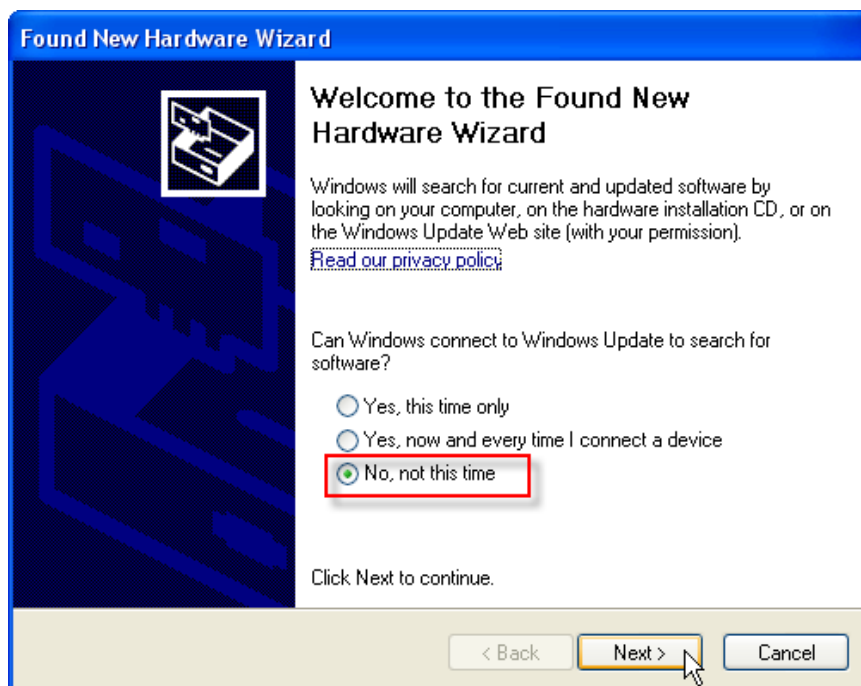

Figure 2

3. Choose "Install from a list or specific location (Advanced)" and click "Next" as follow.
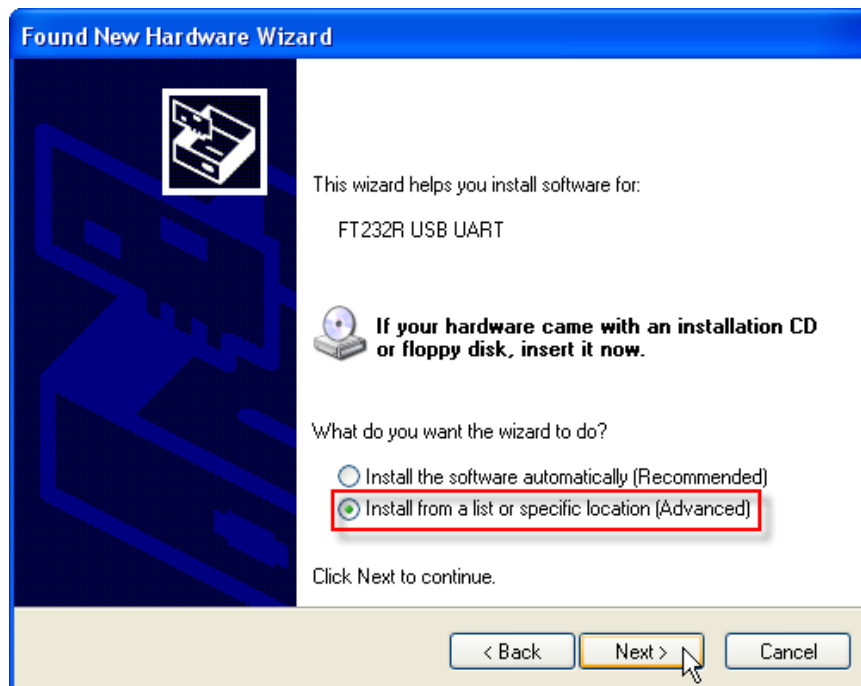

Figure 3

4. Choose "Search for the best driver in these locations" and choose "Include this location in the search" and click "Browse" as follow.
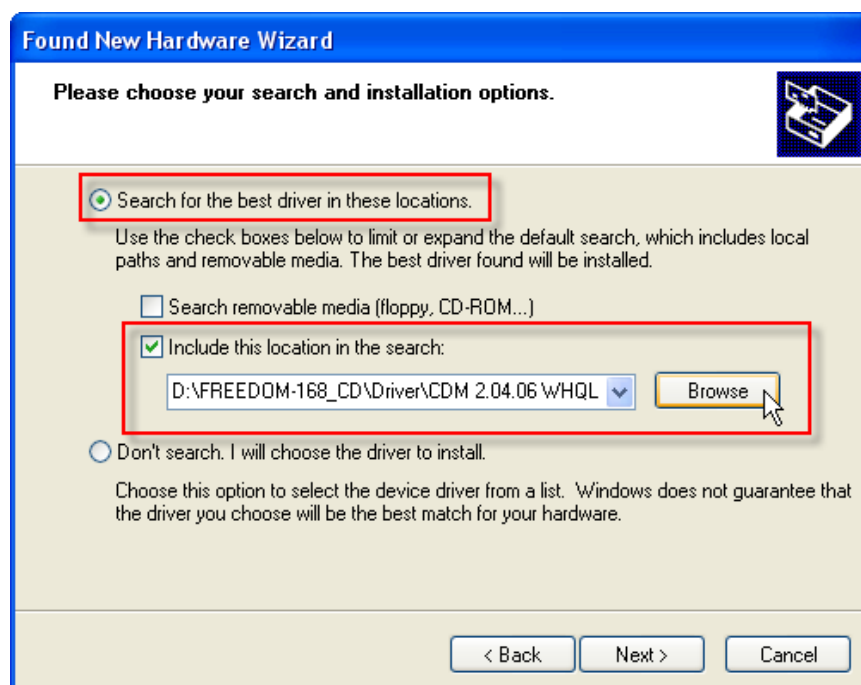

Figure 4

5. Choose the folder of USB driver from CD-ROM is "CDM 2.04.06 WHQL Certified" and click "OK" as follow.
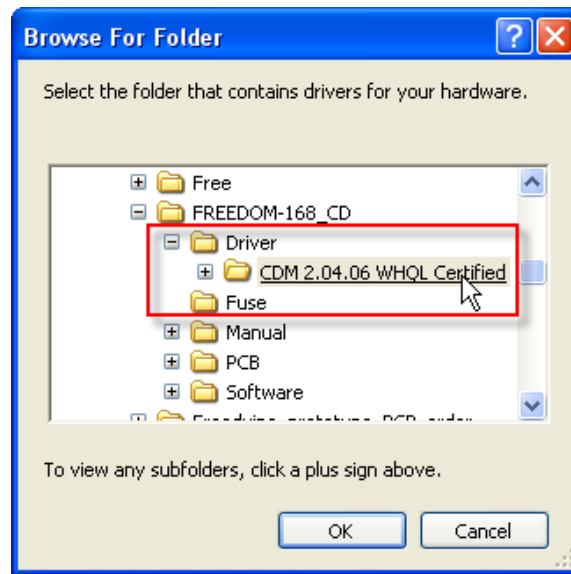

Figure 5

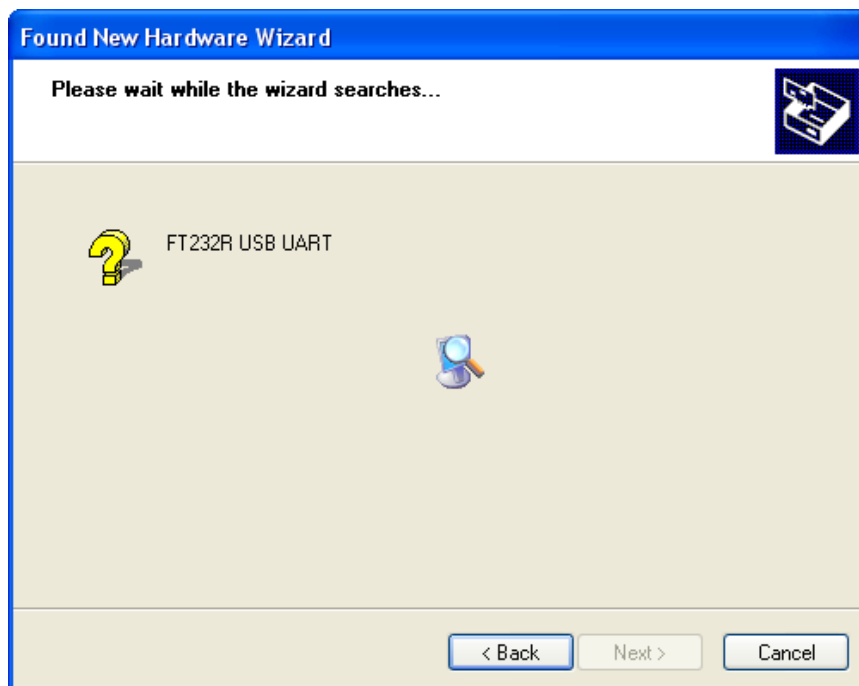6. Click "Next" to searches "USB Serial Converter" as follow.

Figure 6

7. Then information will be shown completing the found new hardware wizard and click "Finish" as follow.
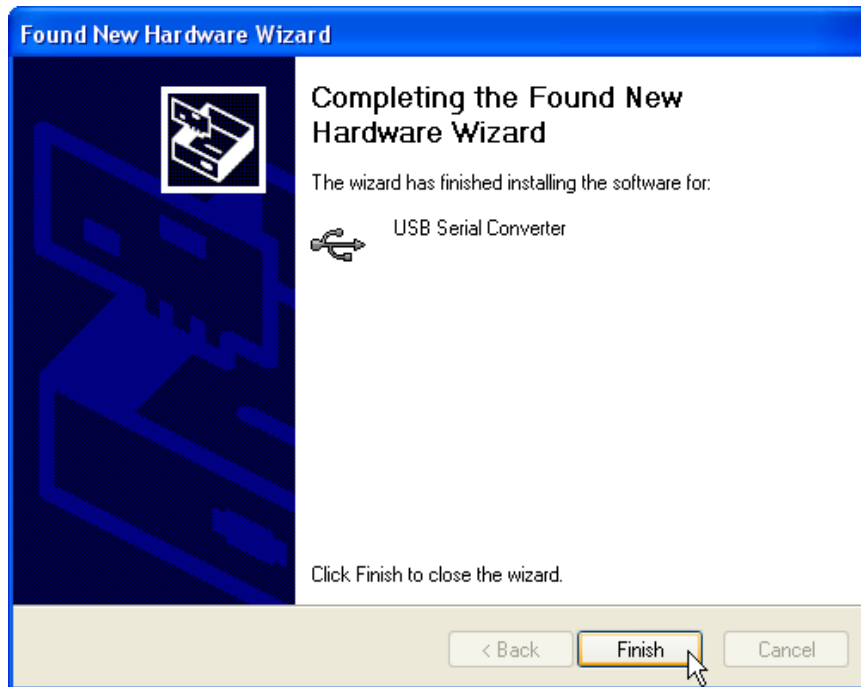

Figure 7

8. Then information will be shown the found new hardware wizard again then choose "No, not this time" and click "Next" as follow.
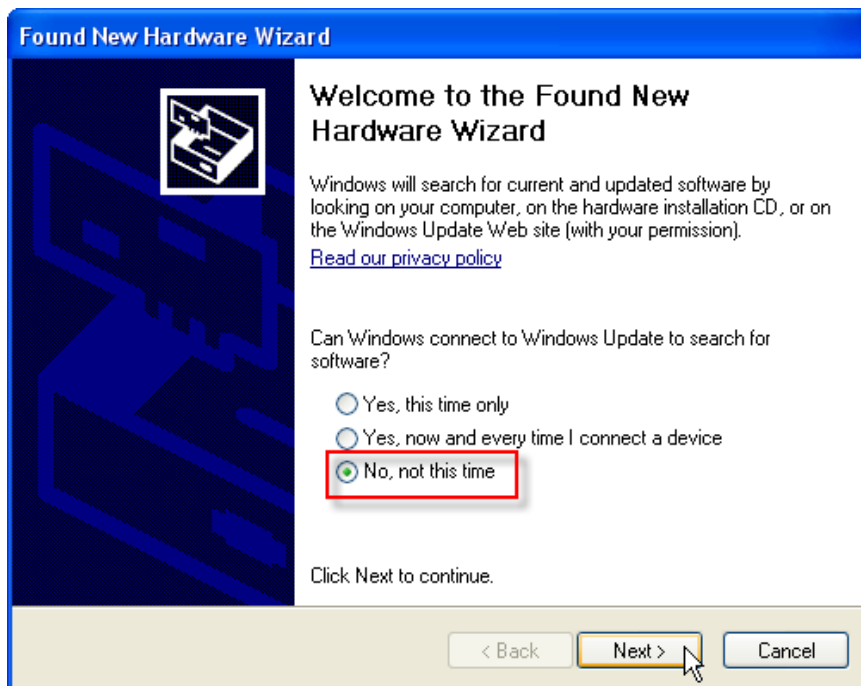

Figure 8

9. Choose "Install from a list or specific location (Advanced)" and click "Next" as follow.
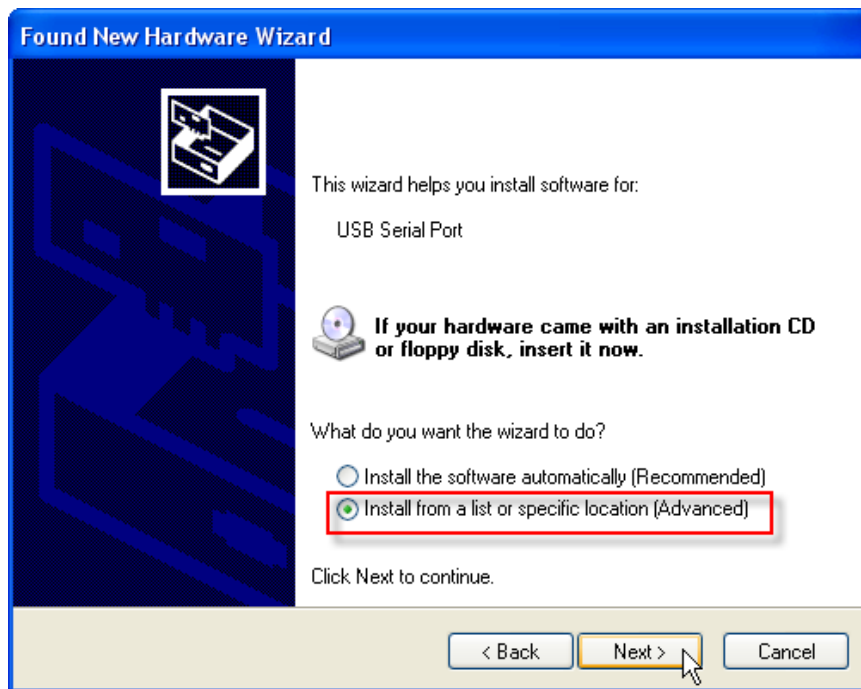

Figure 9

10. Choose "Search for the best driver in these locations" and choose "Include this location in the search" and click "Browse" as follow.
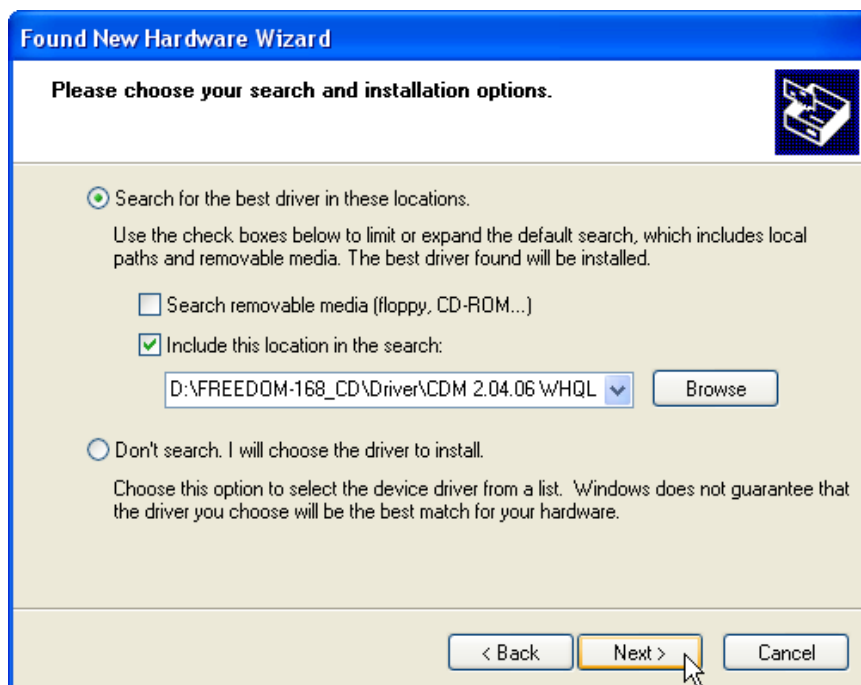

Figure 10

11. Choose the folder of USB driver from CD-ROM is "CDM 2.04.06 WHQL Certified" and click "OK".

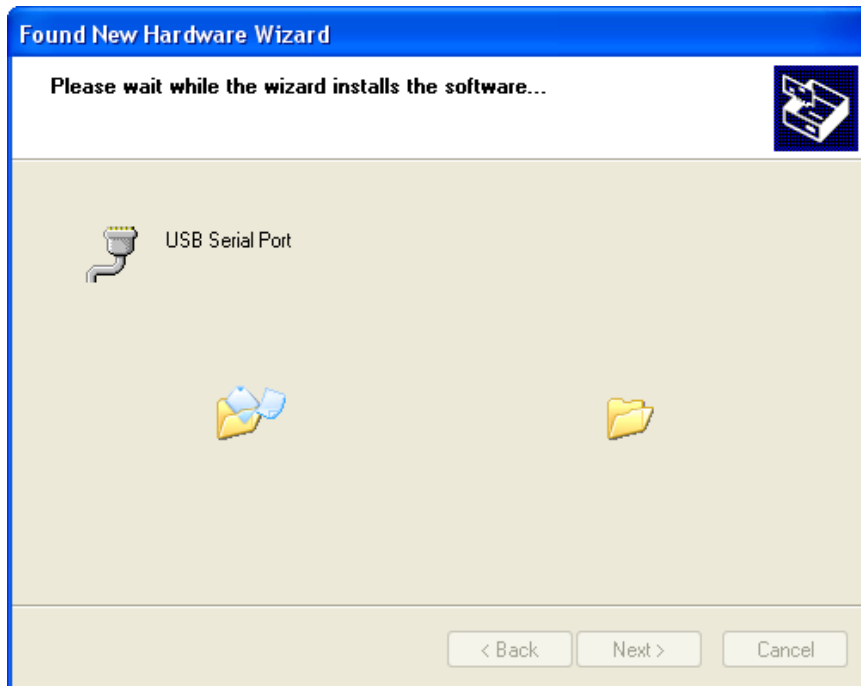12. Click "Next" to searches "USB Serial Port" as follow.

Figure 11

13. Then information will be shown completing the found new hardware wizard and click "Finish" as follow.
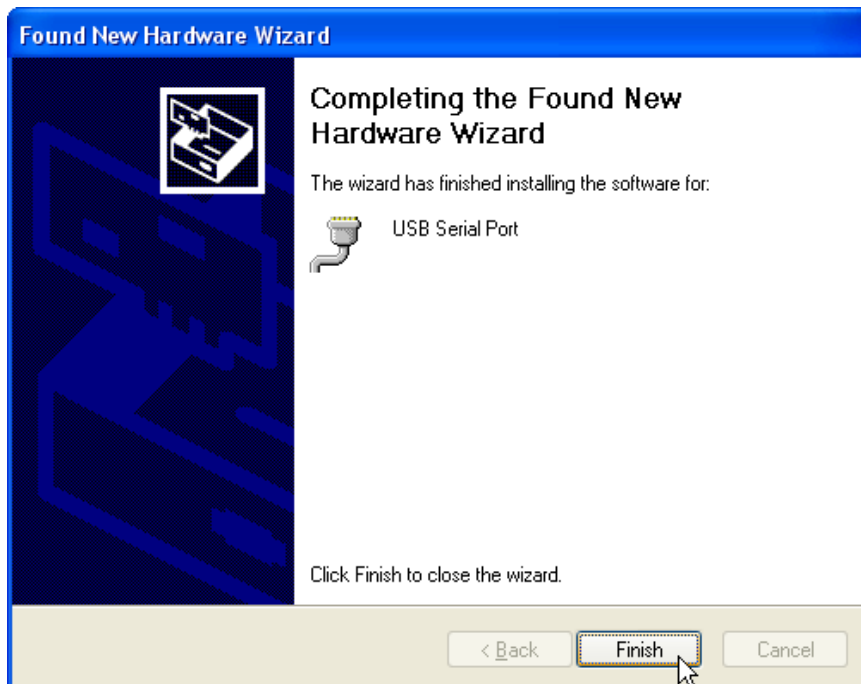

Figure 12

14. If completely installed the driver, The USB-LED of FREEDOM-168 board will be displayed green colour and if check "Device Manager" will be shown "USB Serial Port (COM4)" as follow. Here COM4 is just an example. Different PC may have different COM port.
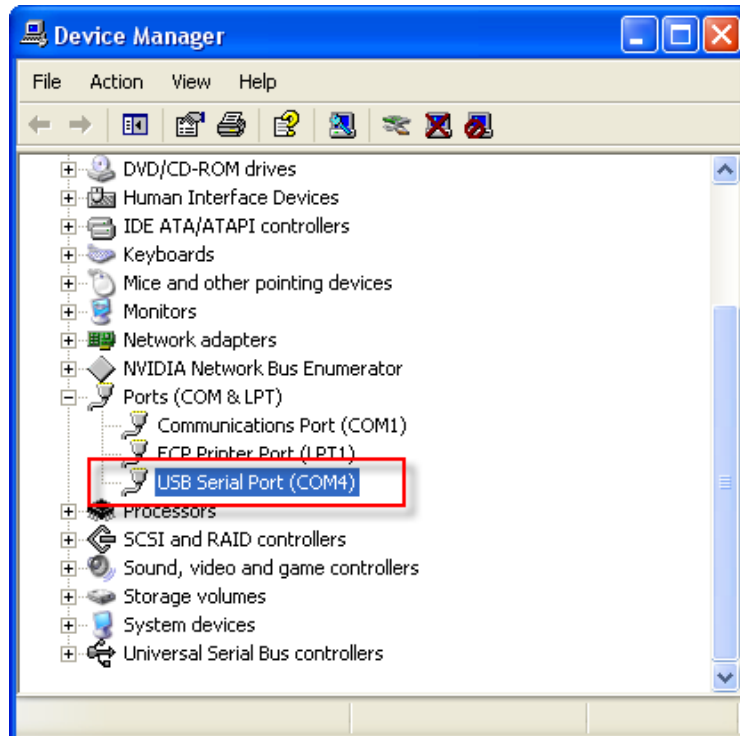

Figure 13

2-3. Starting FREEDOM-168 board

After already installed the USB driver to PC.

1. Copy the folder is "Arduino-0011" shown in the "Software" folder from CD-ROM to PC drive C:\Program Files.

2. Open drive C:\Program Files\Arduino-0011.

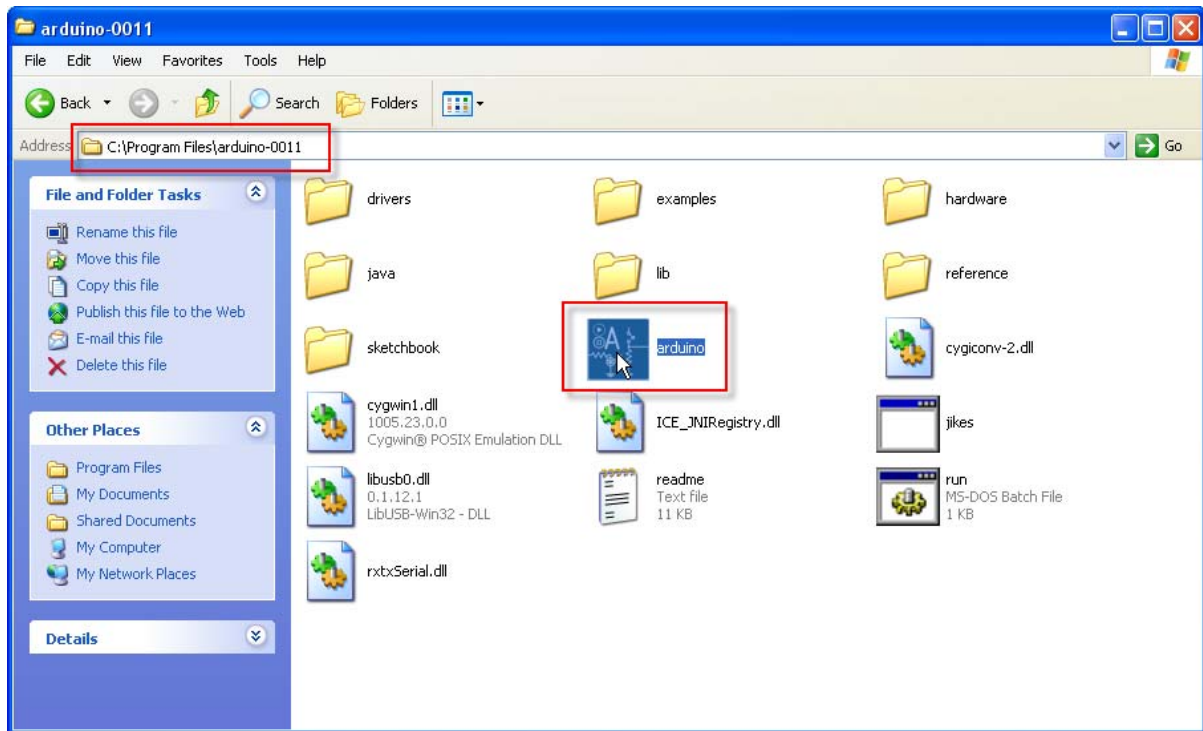3. Choose "Arduino" and double click "Arduino" as follow.

Figure 1

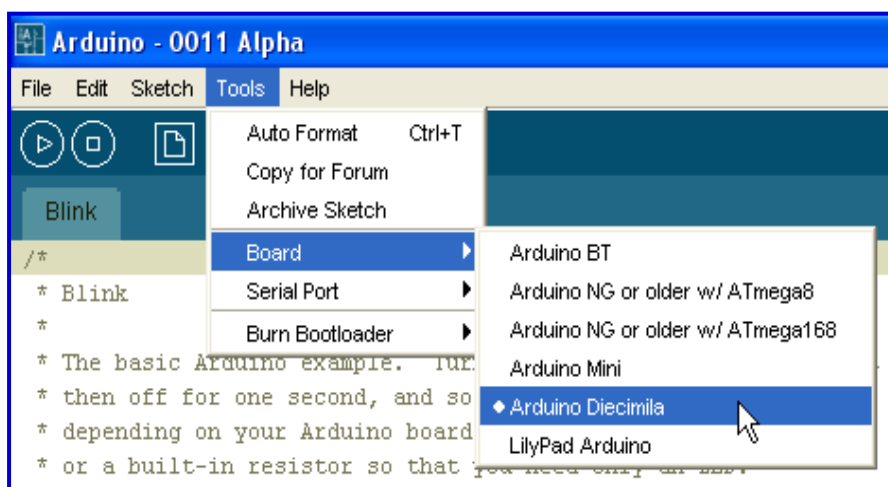4. Choose " Tools > Board > Arduino Diecimila " and click "Arduino Diecimila" as follow.

Figure 2

5. Choose " Tools > Serial Port > COM4 " and click "COM4" as follow. Here COM4 is just an example. Different PC may have different COM port.
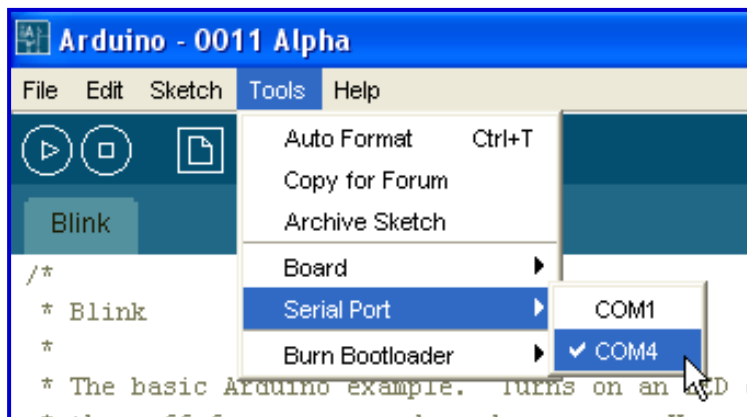

Figure 3

6. Choose " Sketchbook > Examples > Digital > Blink " and click " Blink " to test FREEDOM-168 board as follow.
Note: Here Blink is an example which LED (D13 port) of FREEDOM-168 board will be displayed blink with the rate is ON = 1 Sec. and OFF = 1 Sec.
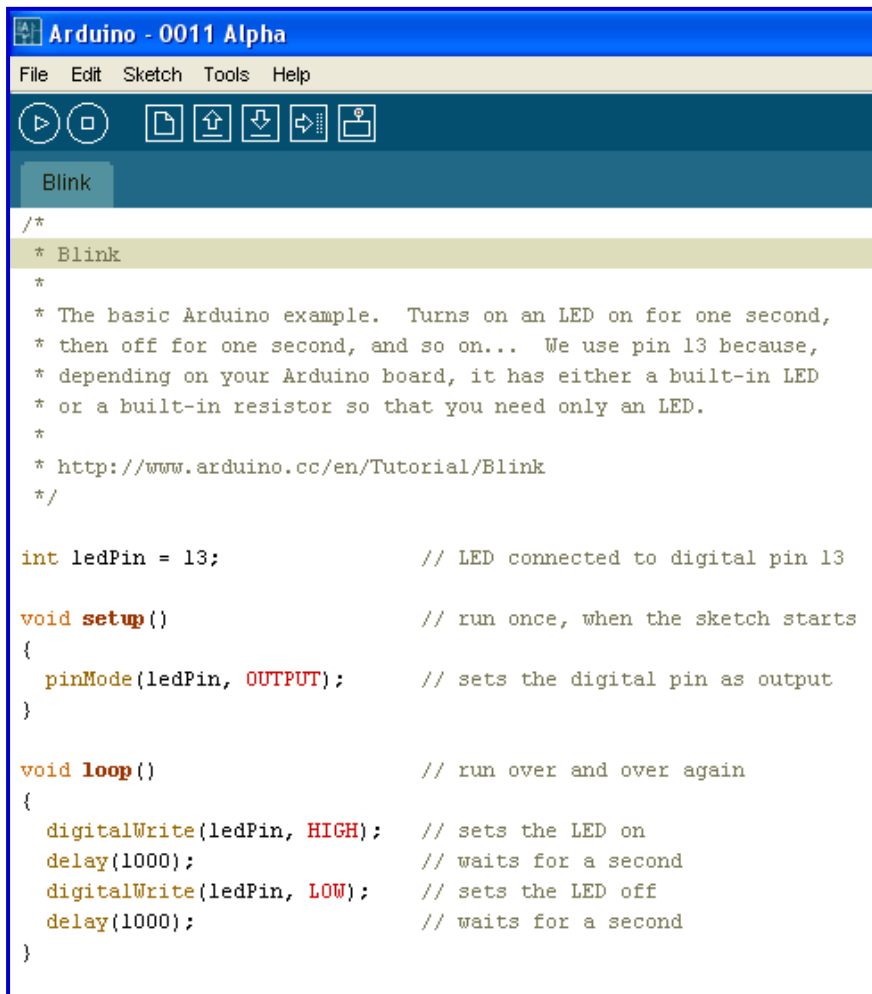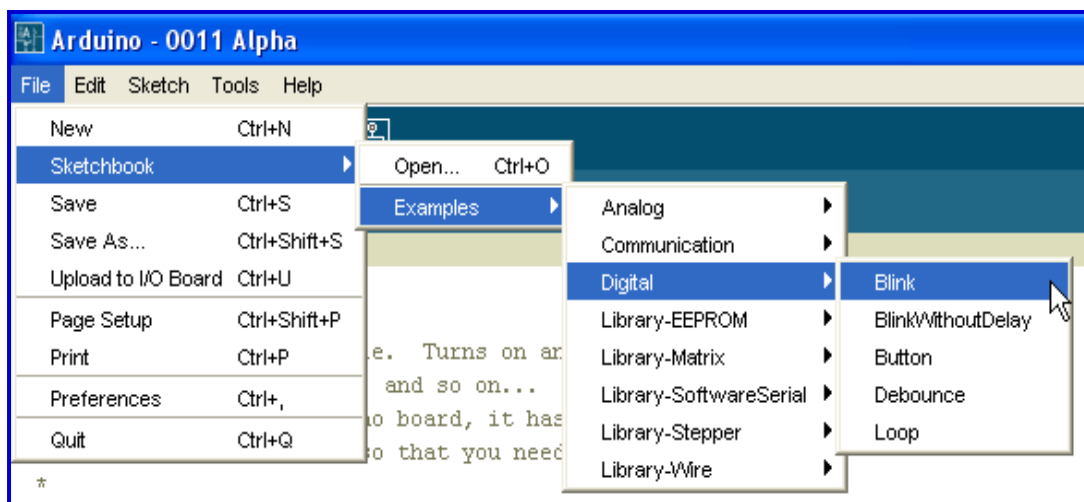

Figure 4

7. Then information will be shown the C language code as follow.

Figure 5

8. Choose " Sketch > Verify/Compile" and click "Verify/Compile" to verify and compile the C language code.
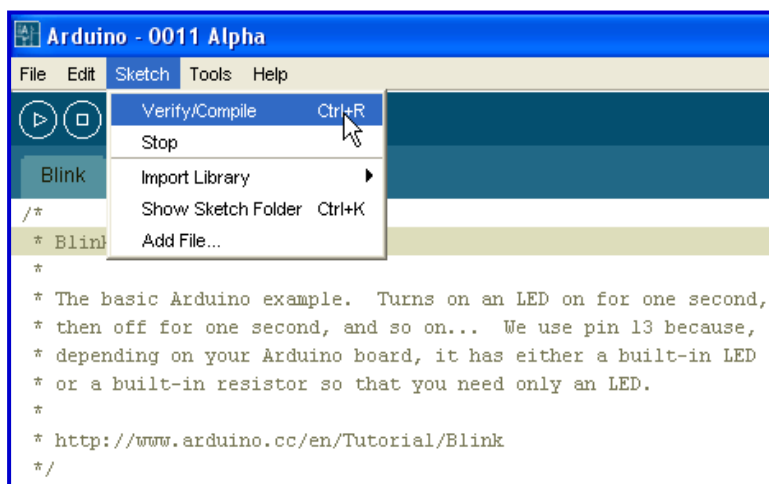

Figure 6

9. If the code is correct and not found data error then information will be shown "Done compiling" and "Binary sketch size" as follow.
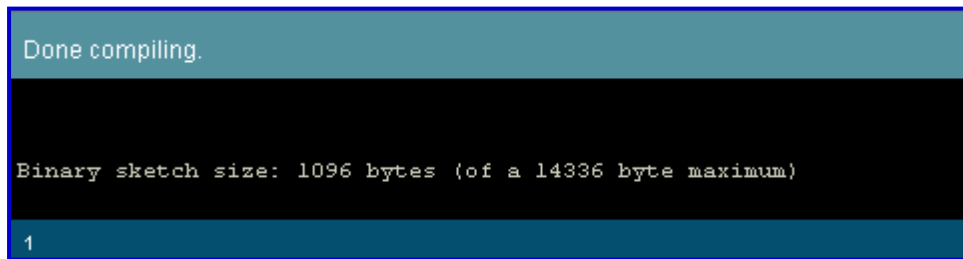

Figure 7

10. Choose "File > Upload to I/O Board" and click "Upload to I/O Board" to upload program into FREEDOM-168 board as follow.
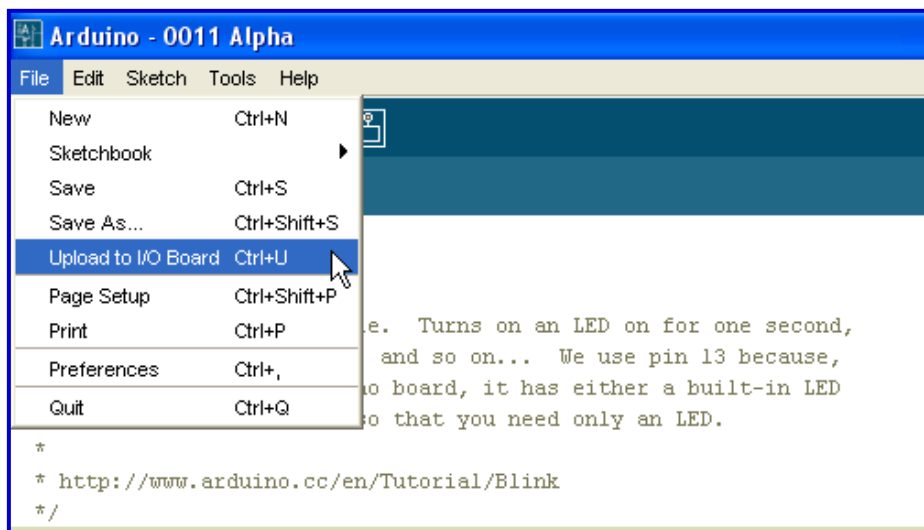

Figure 8

11. If completely uploaded program then information will be shown "Done uploading" and "Binary sketch size" as follow. And LED (D13 port) of FREEDOM-168 board will be displayed blink with the rate is ON = 1 Sec. and OFF = 1 Sec.
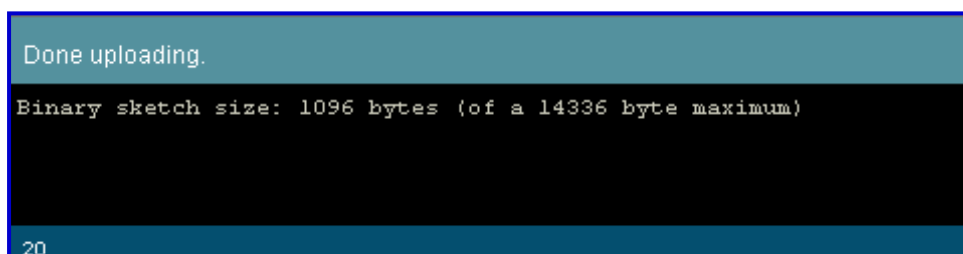

Figure 9

2-4. Troubleshooting Tips

1. No Power – The board's power indicator is off.
- Make sure the power selection (Jumper selection) is correct.
- Make sure the board power cable (USB cable) is fully inserted in the board's power port.

2. No Signal – The board's power indicator is on but there is no signal.
- Ensure that the signal cable (USB cable) is properly connected to the board.

Chapter3. Index

3.1. References
3.1.1. www.arduino.cc
3.1.2. www.atmel.com
3.1.3. www.ece.com.tw
3.1.4. www.wealthmetal.com
3.1.5. www.freeduino.org
3.1.6. www.gold-tek.com.tw
3.1.7. www.es.co.th
3.1.8. www.st.com
3.1.9. www.ligitek.com
3.1.10. www.mecquartz.com

3.2. Contact us
3.2.1. ML-Technology (MLT) sells products on Ebay.
    If you will buy our product via Ebay.
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3.2.2. ML-Technology (MLT) accepts Paypal payment.
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