



## Relevant Device

This application note applies to the following device:

BUONO UNO R3 , BUONO UNO R3 Lite , BUONO UNO LC , BUONO UNO LC LITE

MassDuino UNO LC , MassDuino UNO LC LITE

DAQ-1000

## 1 Summary

DAQ-1000 is an Arduino-based data acquisition board from INHAOS. It integrates ADC, DAC (PWM to DAC), general-purpose I / O functions, On-board precision 4.096V reference voltage source, two programmable reference comparator, give full play to the hardware resources of UNO. Use Arduino development environment, the user can very easily implement data acquisition tasks.

## 2 Step by Step guide

### 2.1 Hardware request

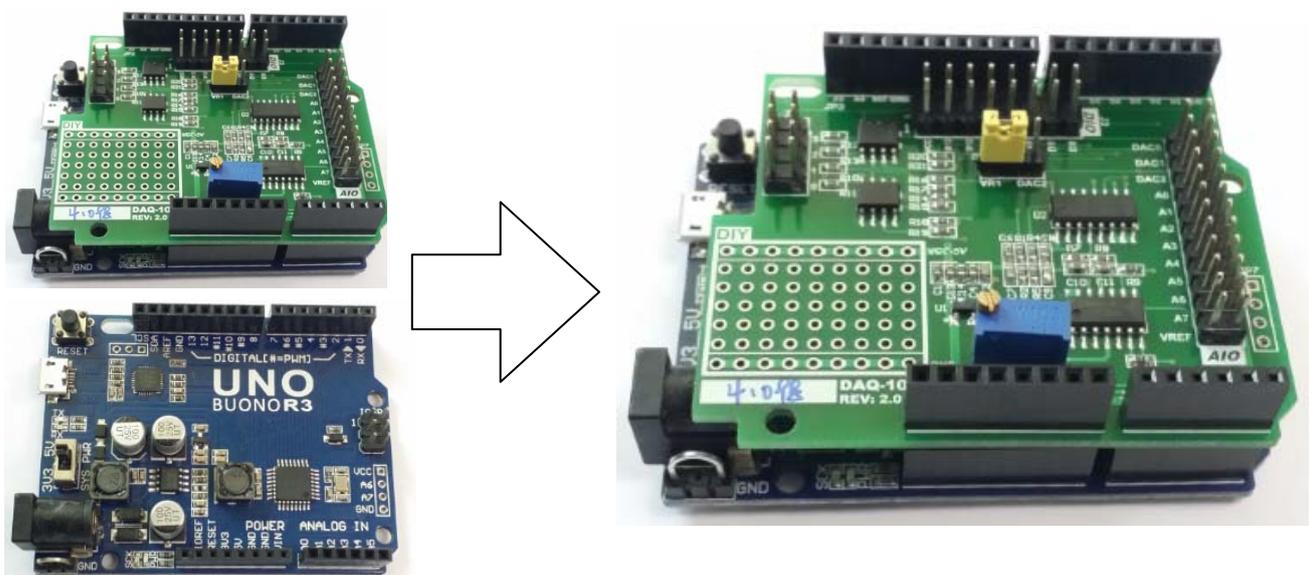
- BUONO UNO R3: [http://www.inhaos.com/product\\_info.php?products\\_id=66](http://www.inhaos.com/product_info.php?products_id=66)
- DAQ-1000: [http://www.inhaos.com/product\\_info.php?products\\_id=114](http://www.inhaos.com/product_info.php?products_id=114)

### 2.2 Software request

- Microsoft Windows 7 / 8 / 10
- Microsoft .net framework 4.0 (**This is very important**)
- Download DAQ-1000 software pack : [http://www.inhaos.com/downcount.php?download\\_id=195](http://www.inhaos.com/downcount.php?download_id=195)
- Arduino IDE (Remanded Arduino IDE 1.6.8) : [http://arduino.cc/download\\_handler.php?f=arduino-1.0.6-windows.zip](http://arduino.cc/download_handler.php?f=arduino-1.0.6-windows.zip)

### 2.3 Hardware connection

- Mounted DAQ-1000 to UNO R3





- Connected UNO R3 to PC via USB cable , you may need install USB to UART driver if you are first using the boards. The Driver is in Arduino folder , some UNO may need use the Old\_Arduino\_Drivers:  
For example: ...\\arduino1.6.5\\arduino-1.6.5-r2-windows\\arduino-1.6.5-r2\\drivers  
Or: ...\\arduino1.6.5\\arduino-1.6.5-r2-windows\\arduino-1.6.5-r2\\drivers\\Old\_Arduino\_Drivers

### 2.4 Software Setup

- Download Arduino IDE and make it work  
After Hardware connected and Arduino IDE ready, uploading a simple "Blink" sketch , to make sure the system is working , after uploaded the sketch , you will see the LED in D13 is blinking.

- Download "AN-DAQ-1000-001-V10-20151129.rar" from INHAOS website, unzip it , you will get below files:

▲ AN-DAQ-1000-001-V10-20151129  
 ▲ AN-DAQ-1000-001-V10-20151129  
 ▲ AN-DAQ-1000-001-V10-20151129  
 ▲ PC Software (.net Framework 4.0) **PC software , write by Visual Basic 2013 and need .net framework 4.0 support**  
 ▲ DAQ-1000 Release V1.5  
 ▲ Application Files  
 DAQ-1000\_1\_5\_0\_22  
 ▲ Source Code for BUONO UNO R3 **Arduino source code**  
 DAQ\_1000  
 ▲ lib **High resolution PWM lib, allow user creat PWM resolution higher than 8bit**  
 ▶ PWM.zip

- In "DAQ\_1000" folder , you will see 4 files shown as below:

DAQ_1000.ino	2015/11/20 10:49
Eeprom.ino	2015/11/7 17:19
GetADAVal.ino	2015/11/23 10:48
ReadingFuctions.ino	2015/11/7 17:50
SettingCommand.ino	2015/11/18 13:37
SettingFuctions.ino	2015/11/20 11:14

This is a Multi-files sketches , A sketch can contain multiple files (tabs). To manage them, click on the right-facing arrow just above the scroll bar near the top of the environment. Tabs have one of four extensions: no extension, .c, .cpp, or .h (if you provide any other extension, the period will be converted to an underscore). When your sketch is compiled, all tabs with no extension are concatenated together to form the "main sketch file". Tabs with .c or .cpp extensions are compiled separately. To use tabs with a .h extension, you need to #include it (using "double quotes" not <angle brackets>).

Double click "DAQ\_1000.ino" , the IDE will be open all source code , the windows shown as below:



```
1 #include <EEPROM.h>
2 #include <PWM.h>
3
4 //ADC READ PROCESS VARIABLES
5 #define ADC_CHN_COUNT 8 //ADC chn count
6 #define ADC_FILTER_COUNT_RL 6
7 #define ADC_FILTER_COUNT (1 << ADC_FILTER_COUNT_RL)
8 #define ADC_SKIP_COUNT 5
9
10 //SERIAL RECEIVE PKT LENTH
11 #define PKILEN 30
12 #define EEPROMLEN 2
13
14 //DAC INITIALIZE
15 #define PIN_DAC_CHN2 3 //8bit DAC
16 #define PIN_DAC_CHN1 9 //15bit DAC
17 #define PIN_DAC_CHN0 10 //15bit DAC
18
19 //PORI INITIALIZE
20 #define PIN_DO 0 //P0
21 #define PIN_D1 1 //P1
```

Arduino Mega or Mega 2560, ATmega2560 (Mega 2560) on COM14

Please notes , this sketch used a PWM lib , this lib allow user to create higher resolution in Arduino IDE , about the lib , please see : <http://forum.arduino.cc/index.php?topic=117425.0>

If everything smooth , you should be able to uploading sketch into the UNO R3.

## 2.5 PC Software using

In folder “DAQ-1000 Release V1.5” , you will see below files:

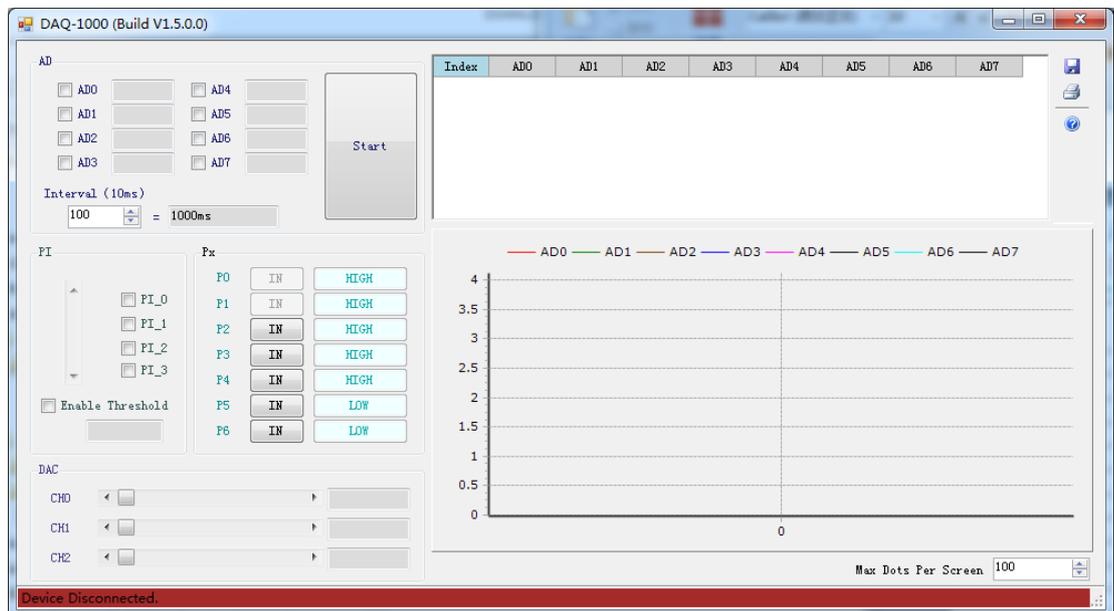
Application Files	2015/11/23 10:32
DAQ-1000.application	2015/11/23 10:32
setup.exe	2015/11/23 10:32



Double click "Setup", the setup



After Windows7 , press button to continues setup process. After completed setup , the main window will be appear as below:



The app will be auto to search the comport and open it , then the button red bar will become green after port open , if the bar still in green , please check the connection between PC and UNO.

More about the usage , please refer the document : "AN-DAQ-1000-001-V01-20151129.pdf"

**If you meet some question , please contact us : [support@inhaos.com](mailto:support@inhaos.com)**