



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

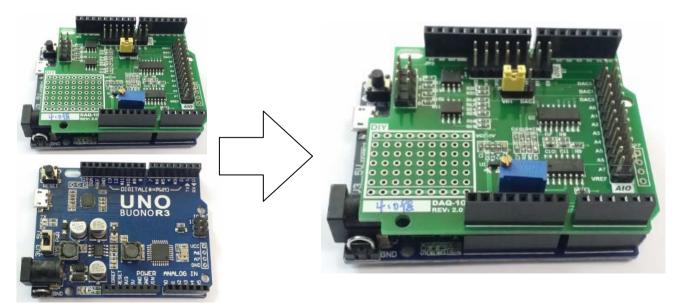
- BUONO UNO R3: <u>http://www.inhaos.com/product_info.php?products_id=66</u>
- DAQ-1000: <u>http://www.inhaos.com/product_info.php?products_id=114</u>

2.2 Software request

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

2.3 Hardware connection

Mounted DAQ-1000 to UNO R3





AN_16006 DAQ-1000 Step by Step Guide



 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:
 - 🔺 퉬 AN-DAQ-1000-001-V10-20151129
 - AN-DAQ-1000-001-V10-20151129
 - 🛯 퉬 AN-DAQ-1000-001-V10-20151129
 - 🔺 🃗 PC Software (.net Framework 4.0)
 - a 퉬 DAQ-1000 Release V1.5
 - Application Files
 - DAQ-1000_1_5_0_22
 - Source Code for BUONO UNO R3
 - DAQ_1000
 - PWM.zip

PC software , write by Visual Basic 2013 and need .net framework 4.0 support

- Arduino source code
- High resolution PWM lib, allow user creat PWM resolution higher than 8bit
- 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:

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nclude (EEPROM.	h>				-
nclude <pwm.h></pwm.h>					E
ADC READ PROCESS	VARIABLES				
		n count			
		DC_FILTER_COUNT_RL)			
efine ADC_SKIP_C	លោក 5				
efine EEPROMLEN	2				
DAC THITTALTZE					
	010 2 //91:+ DAC				
		r			
errie rin_pho_o	10 10 //10010 DA	-			
PORT INITIALIZE					
	//P0				
	//P1				
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Please notes , this sketch used a PWM lib , this lib allow user to create higher resolution in Arduino IDE , about the lib , please see : <u>http://forum.arduino.cc/index.php?topic=117425.0</u>

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:

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





Double clikc "Setup", the setup

应用程序安装 - 安全警告
无法验证发行者。 是否确实安装此应用程序?
名称: DAQ-1000 从(将鼠标县停在以下字符串上查看完整域):
ス(初期初始7年121)、 C:\Users\Momo\Desktop\Arduino\AN-DAQ-1000-001-V10-20151129\AN-DAQ-1000-001-V10 发行者: 未知的发行者
Click this button to accept install
虽然应用程序会有一定用处,但它们可能会对计算机造成危害。如果您不信任其来源,则不要安装此软件。更多信息

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

🛃 DAQ-1000 (Build V1.5.0).0)									- 10			X
AD				Index	ADO	AD1	AD2	AD3	AD4	AD5	AD6	AD7	
ADO	AD4												3
AD1	AD5												0
AD2	AD6		Start										v
AD3	AD7												
Interval (10ms)													
100 🚖 = 100	Oms			I									
PI	Рж				— А	D0 AD	01 AD	2 — AD:	3 — AD4	AD5	AD6	5 —— AD7	
	PO	IN	HIGH	4 +									
^ PI_0	P1	IN	HIGH	3.5									
PI_1	P2	IN	HIGH	3 -									
PI_2	P3	IN	HIGH	2.5									
- PI_3	P4	IN	HIGH	1									
Enable Threshold	P5	IN	LOW	2									
	P6	IN	LOW	1.5									
DAC				1									
СНО <				0.5									
				0 il									
		•							0				
CH2 <		•								Max D	lots Per S	creen 100	▲. ▼
Device Disconnected.													

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 : <u>support@inhaos.com</u>