

Arduino

Introduction

There are two examples on Arduino.

1) Beginner (SPI version)

A clean and simple example for beginners to start with NSP32, to demonstrate the basic usage of the API.

2) ConsoleDemo

A console program to demonstrate full functionalities of NSP32. Users can operate NSP32 by interactive console commands.

API Source File Location

The API source files are located under [/examples/Arduino/NanoLambdaNSP32/src/], along with ArduinoAdaptor.h and ArduinoAdaptor.cpp tailored for Arduino.

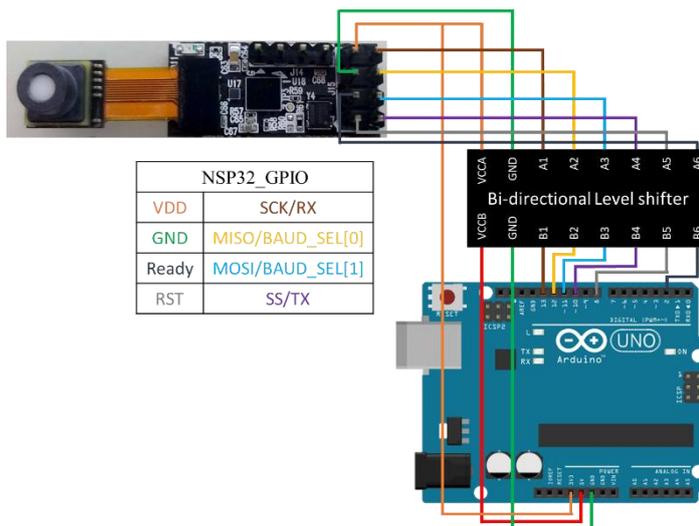
Hardware

1) Tested on

- Arduino nano
- Arduino Uno
- Arduino Mega

2) Setup

Arduino Uno Example: Hardware connection with SPI/UART through a level-shifter:



The following table shows the general pin connections between NSP32 module and the Arduino board.

Arduino

GPIO \ Hardware		NSP32 Pin	Arduino Uno Pin	Arduino Mega Pin	Arduino nano Pin	
Power	VDD	VDD3V3	3V3	3V3	3V3	
	GND	GND	GND	GND	GND	
Data channel	SPI Signal	Wakeup/Reset	RST	8	49	D8
		SPI SSEL	SS	10	53	D10
		SPI MOSI	MOSI	11/ICSP-4	51	D11
		SPI MISO	MISO	12/ICSP-1	50	D12
		SPI SCK	SCK	13/ICSP-3	52	D13
		Ready	Ready	2	21	D2
	UART Signal	Wakeup/Reset	RST	8	49	D8
		UART RX	TX	10	53	D10
		BAUD_SEL[0]	BAUD_SEL[0]	11/ICSP-4	51	D11
		BAUD_SEL[1]	BAUD_SEL[1]	12/ICSP-1	50	D12
		UART TX	RX	13/ICSP-3	52	D13
		Ready	Ready	2	21	D2

Note :

■ Power :

On Arduino, choose the GND closest to 3V3.

■ Data channel :

NSP32 voltage level is 3.3V. A level-shift circuit is recommended if your Arduino runs at 5V.

■ UART :

BAUD_SEL[0] : UART baud rate select bit0

BAUD_SEL[1] : UART baud rate select bit1

Software Setup

1) Runs on

- Arduino IDE 1.8.5

2) Setup

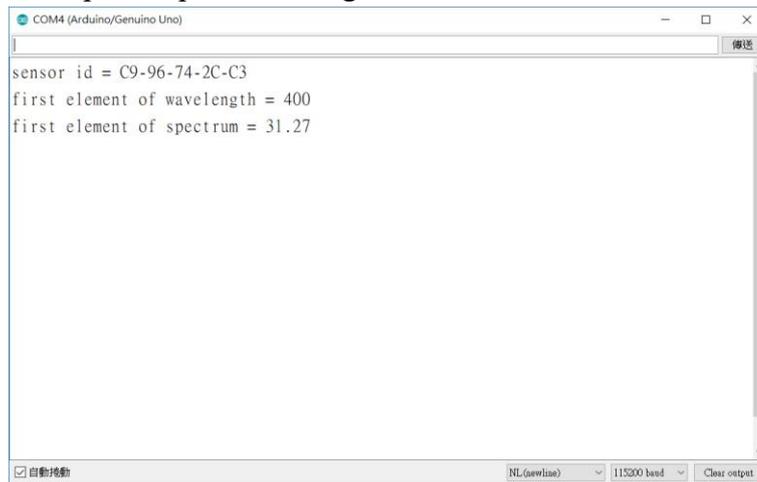
1. Install Arduino IDE.
2. Put the [/examples/Arduino/NanoLambdaNSP32] folder under [{sketchbook}/libraries/].
*This will add NanoLambdaNSP32 to Arduino's libraries. The {sketchbook} path could be found under Arduino IDE > File > Preferences > Sketchbook location.
3. Re-open Arduino IDE, the "Beginner" and "ConsoleDemo" examples should

appear at File > Examples > NanoLambdaNSP32.

Run the Example

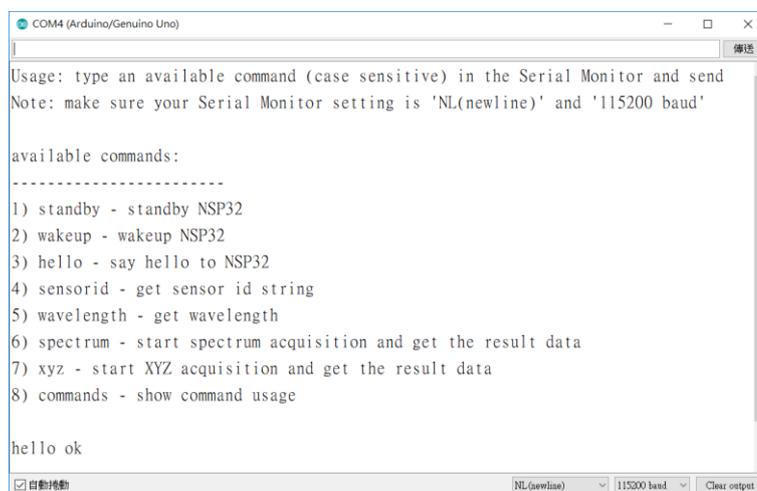
To run the examples, upload it to your Arduino board from Arduino IDE. Then open "Serial Monitor" in Arduino IDE (make sure the setting is "NL(newline)" and "115200 baud").

1) Example Snapshot of “Beginner”



```
COM4 (Arduino/Genuino Uno)
sensor id = C9-96-74-2C-C3
first element of wavelength = 400
first element of spectrum = 31.27
自動移動 NL(newline) 115200 baud Clear output
```

2) Example Snapshot of “ConsoleDemo”



```
COM4 (Arduino/Genuino Uno)
Usage: type an available command (case sensitive) in the Serial Monitor and send
Note: make sure your Serial Monitor setting is 'NL(newline)' and '115200 baud'
available commands:
-----
1) standby - standby NSP32
2) wakeup - wakeup NSP32
3) hello - say hello to NSP32
4) sensorid - get sensor id string
5) wavelength - get wavelength
6) spectrum - start spectrum acquisition and get the result data
7) xyz - start XYZ acquisition and get the result data
8) commands - show command usage
hello ok
自動移動 NL(newline) 115200 baud Clear output
```

Notes

- 1) According to your Arduino board type, you might need to modify the pin numbers in the example codes.
- 2) For your convenience, we have marked the code section with the title "modify this section to fit your need".
- 3) In most cases, you don't have to modify ArduinoAdaptor.h and ArduinoAdaptor.cpp, but you may modify them when needed.