

Application note for sample code "Weather Application"

WBSACVLXY-XX

Mar-2016

Revision History

Version	Date	Description
1.0	2015/03/17	First official release

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1 Introduction

This Documentation is instructions for getting the weather data from [OpenWeatherMap.com](https://openweathermap.org/) by using the Arduino/Genuino UNO (referred to as Arduino) and Wireless LAN modules "WBSACVLXY-1" (referred to as WLAN module).

Internet-connected wireless access point and PC to connect Arduino for programming, monitoring, and setting are also required.

2 Preparation

2.1 Baud rate setting of WLAN module

Arduino UNO has only one UART (Hardware Serial), which is used to connect the PC. This is for debug and facilitates developer to modify program and to confirm operation. Connection to WLAN module uses GPIO of Arduino emulates as UART ("Software Serial"). Connect PC and WLAN module direct by USB.

Set the baud rate to 9600bps as Arduino cannot receive some data when the baud rate is 115200bps as default of WLAN module. (Setting the rate to maximum or 2,000,000bps will not cause a problem when using HW serial.)

Connect the WLAN board and the PC directly by USB, and then WLAN board is recognized as virtual COM port in Windows PC. (USB Serial Port (COMxx) xx is numeric value. Note this value). Download and install the driver from [FTDI's web site](#) if required. Connect to WLAN board from PC via USB by terminal software such as "Tera Term". The setting of Tera Term is following:

Table 1: Setting of Tera Term

[Setup] → [Terminal...]	[New-line], [Receive:]	"CR+LF"
	[New-line], [Transmit:]	"AUTO"
	[Local echo:]	checked
[Setup] → [Serial port...]	[Port]:	<<virtual COM number>>
	[Baud rate:]	115200
	[Flow control:]	"none"

Push the button (SW1) on WLAN module connection is successful, when the version information is displayed on the console screen.

Send the following command from console software

WSTC0101<CR><LF>

This command means baud rate of UART set to 9600bps.

The setting is finished when "ACK" is shown on the console. Baud rate of the UART is set to 9600bps after the reset.

For more information about this command, please refer to following sections in the Document "WLAN Embedded Software Spec."

- 3. Control Command Syntax
- 5.1 Common Commands, "STC"
- 5.3 Common value(STC, GTC), No.01 "UART baud rate (bps)"

2.2 Equipment Overview and Installation

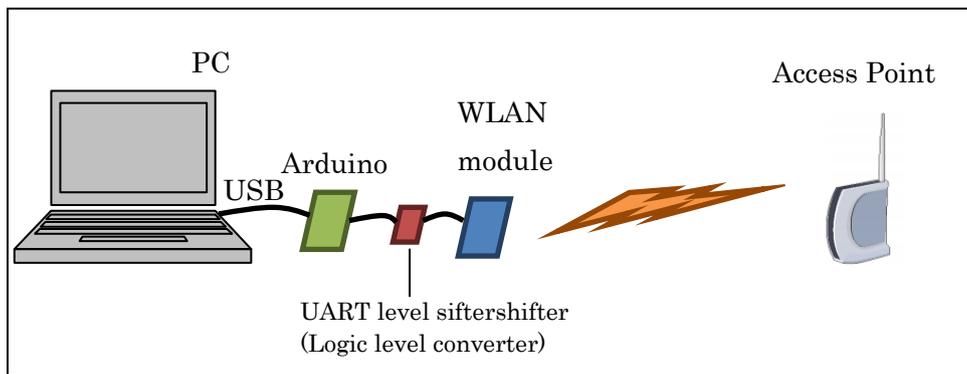


Figure 1: Equipment composition

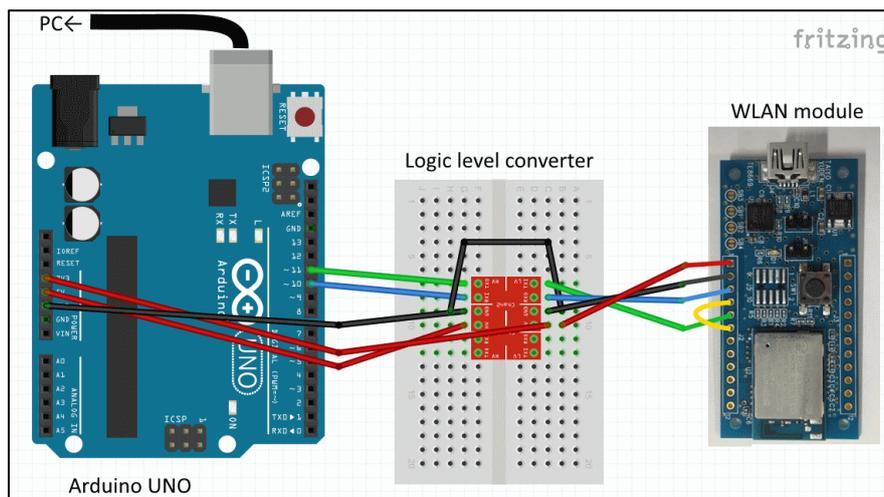


Figure 2: Wire connection between Arduino UNO and WLAN module

WLAN module works at 3.3V, but Arduino UNO works at 5V. So, voltage conversion is required between both UARTs. Module called as level shifter or logic level converter is used for the conversion. "[sparkfun Bi-Directional Logic Level Converter](#)" is used as UART level shifter in Figure 2.

D10, D11 pins of Arduino are used for RX, TX of software serial. The power supply of the WLAN board is supplied from 3.3V pin of Arduino. UART Flow control becomes invalid by short-circuits of UART1_CTSN and UART1_RTSN of WLAN board (Yellow line in above Figure 2).

* Please refer to the Evaluation board Manual for more information about the connection of the WLAN module and the various devices.

3 Sample code

*This document is written based on Arduino IDE Ver1.6.7 distributed by Arduino.cc.

Following 3 additional libraries are used in the sample code.

- Software Serial library (Standard additional library in Arduino IDE)
- FlexiTimer2 (<http://playground.arduino.cc/Main/FlexiTimer2>)
- Time library (<https://github.com/PaulStoffregen/Time>)

"Software Serial library" is included in standard additional libraries of Arduino IDE. Install these from [Sketch] → [Include Library]

Download and install "FlexiTimer2" from following URL.

<http://playground.arduino.cc/Main/FlexiTimer2>

Download and install "Time library" from following URL.

<https://github.com/PaulStoffregen/Time>

[Sketch] → [Include Library] → [Add .ZIP Liblary...]

Weather information can be obtained by OpenWeaherMap.com API.

<http://openweathermap.com/api>

OpenWeaherMap.com API requires obtaining APPID by registration

Beforehand, Obtain APPID and the city ID to get weather data from OpenWeatherMap.com. For instance, Tokyo (JP)'s city ID is 1850147.

Operating the sample code requires modifying as following:

- Wireless access point settings (at line 19-20)
SSID, Security Type, Password, IP Address type

For more information about this command, please refer to following sections in the Document "WLAN Embedded Software Spec."

- 3. Control Command Syntax
- 5.4 Infrastructure Control Commands , "STI"
- 5.6 Profile Table(STI, GTI, STU, GTU), No.01~08
- City ID and your APPID of OpenWeatherMap.com (at line 23-24)
- Time zone offset (at line 25)

After modified as above, write a program to the Arduino using the Arduino IDE.

Weather information will be displayed in serial monitor screen on Arduino IDE.

4 Note

*Arduino is open-source hardware. All other trademarks are the property of their respective owners.

This sample code is provided "as is" and is not supported by Taiyo Yuden.