

Examples > WiFi Library

Connect With WPA

This example scans for 802.11b/g networks with the Arduino WiFi shield. Your Arduino's serial monitor will print out information about the board and the networks it can see. It will not connect to a network.

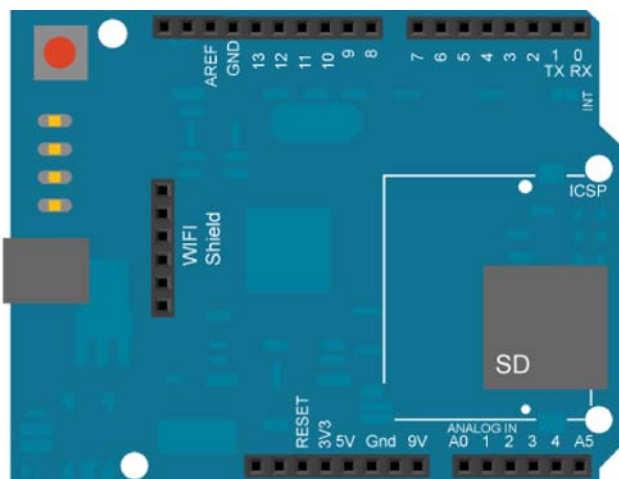
Hardware Required

- Arduino WiFi Shield
- Shield-compatible Arduino board

Circuit

The WiFi shield uses pins 10, 11, 12, and 13 for the SPI connection to the HDG104 module. Digital pin 4 is used to control the slave select pin on the SD card.

Open your serial monitor to view the networks the WiFi shield can see. The Arduino may not see as many networks as your computer.



(//www.arduino.cc/en/uploads/Tutorial/WiFiShield_bb.png)

image developed using Fritzing (<http://www.fritzing.org>). For more circuit examples, see the Fritzing project page (<http://fritzing.org/projects/>)

In the above image, the Arduino would be stacked below the WiFi shield.

Code:

```
/*
```

```
This example prints the Wifi shield's MAC address, and  
scans for available Wifi networks using the Wifi shield.  
Every ten seconds, it scans again. It doesn't actually  
connect to any network, so no encryption scheme is specified.
```

```
Circuit:
```

```

* WiFi shield attached

created 13 July 2010
by dlf (Metodo2 srl)
modified 21 Junn 2012
by Tom Igoe and Jaymes Dec
*/

#include <SPI.h>
#include <WiFi.h>

void setup() {
  //Initialize serial and wait for port to open:
  Serial.begin(9600);
  while (!Serial) {
    ; // wait for serial port to connect. Needed for native USB port only
  }

  // check for the presence of the shield:
  if (WiFi.status() == WL_NO_SHIELD) {
    Serial.println("WiFi shield not present");
    // don't continue:
    while (true);
  }

  String fv = WiFi.firmwareVersion();
  if (fv != "1.1.0") {
    Serial.println("Please upgrade the firmware");
  }

  // Print WiFi MAC address:
  printMacAddress();
}

void loop() {
  // scan for existing networks:
  Serial.println("Scanning available networks...");
  listNetworks();
  delay(10000);
}

void printMacAddress() {
  // the MAC address of your Wifi shield
  byte mac[6];

  // print your MAC address:
  WiFi.macAddress(mac);
  Serial.print("MAC: ");
  Serial.print(mac[5], HEX);
  Serial.print(":");
  Serial.print(mac[4], HEX);
  Serial.print(":");
  Serial.print(mac[3], HEX);
  Serial.print(":");
  Serial.print(mac[2], HEX);
  Serial.print(":");
  Serial.print(mac[1], HEX);
  Serial.print(":");
  Serial.println(mac[0], HEX);
}

void listNetworks() {
  // scan for nearby networks:
  Serial.println("*** Scan Networks ***");
  int numSsid = WiFi.scanNetworks();
  if (numSsid == -1) {
    Serial.println("Couldn't get a wifi connection");
    while (true);
  }

  // print the list of networks seen:
  Serial.print("number of available networks:");
  Serial.println(numSsid);

  // print the network number and name for each network found:

```

```

for (int thisNet = 0; thisNet < numSsid; thisNet++) {
  Serial.print(thisNet);
  Serial.print(" ");
  Serial.print(WiFi.SSID(thisNet));
  Serial.print("\tSignal: ");
  Serial.print(WiFi.RSSI(thisNet));
  Serial.print(" dBm");
  Serial.print("\tEncryption: ");
  printEncryptionType(WiFi.encryptionType(thisNet));
}
}

void printEncryptionType(int thisType) {
  // read the encryption type and print out the name:
  switch (thisType) {
    case ENC_TYPE_WEP:
      Serial.println("WEP");
      break;
    case ENC_TYPE_TKIP:
      Serial.println("WPA");
      break;
    case ENC_TYPE_CCMP:
      Serial.println("WPA2");
      break;
    case ENC_TYPE_NONE:
      Serial.println("None");
      break;
    case ENC_TYPE_AUTO:
      Serial.println("Auto");
      break;
  }
}

```

[Get Code] (<http://www.arduino.cc/en/Tutorial/ScanNetworks?action=sourceblock&num=1>)

See Also:

- [ConnectNoEncryption](http://www.arduino.cc/en/Tutorial/ConnectNoEncryption) (<http://www.arduino.cc/en/Tutorial/ConnectNoEncryption>) : Demonstrates how to connect to an open network
- [ConnectWithWEP](http://www.arduino.cc/en/Tutorial/ConnectWithWEP) (<http://www.arduino.cc/en/Tutorial/ConnectWithWEP>) : Demonstrates how to connect to a network that is encrypted with WEP
- [ConnectWithWPA](http://www.arduino.cc/en/Tutorial/ConnectWithWPA) (<http://www.arduino.cc/en/Tutorial/ConnectWithWPA>) : Demonstrates how to connect to a network that is encrypted with WPA2 Personal
- [ScanNetworks](http://www.arduino.cc/en/Tutorial/ScanNetworks) (<http://www.arduino.cc/en/Tutorial/ScanNetworks>) : Displays all WiFi networks in range
- [WiFiChatServer](http://www.arduino.cc/en/Tutorial/WiFiChatServer) (<http://www.arduino.cc/en/Tutorial/WiFiChatServer>) : Set up a simple chat server
- [WiFiWebClient](http://www.arduino.cc/en/Tutorial/WiFiWebClient) (<http://www.arduino.cc/en/Tutorial/WiFiWebClient>) : Connect to a remote webserver
- [WiFiWebClientRepeating](http://www.arduino.cc/en/Tutorial/WiFiWebClientRepeating) (<http://www.arduino.cc/en/Tutorial/WiFiWebClientRepeating>): Repeatedly make HTTP calls to a server
- [WiFiWebServer](http://www.arduino.cc/en/Tutorial/WiFiWebServer) (<http://www.arduino.cc/en/Tutorial/WiFiWebServer>) : Serve a webpage from the WiFi shield

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