Ethernet Shield for Arduino W5200

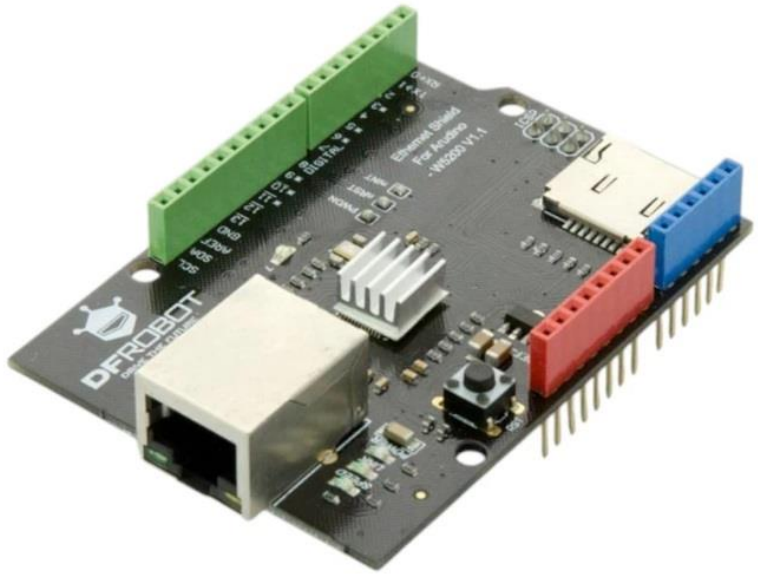
Overview

Connect your Arduino device to the Internet with this Ethernet Shield. This Ethernet Shield is based on the W5200 Ethernet Chip and provides an easy way of getting your Arduino Online. Just plug this shield onto your Arduino UNO or Mega board, connect it to your network with an RJ45 Ethernet Cable (not included) and follow few simple instructions, you will be able to explore the world with the Internet. Besides, the shield has a microSD card port for large capacity data storage like Webpage data when applied in complicated applications.

The W5200 chip is a Hardwired TCP/IP embedded Ethernet controller that enables easier internet connection for embedded systems using SPI (Serial Peripheral Interface). W5200 suits best for users who need Internet connectivity for the application that uses a single chip to implement TCP/IP Stack, 10/100 Ethernet MAC, and PHY.

The W5200 is composed of a fully hardwired market-proven TCP/IP stack and an integrated Ethernet MAC & PHY. Hardwired TCP/IP stack supports TCP, UDP, IPv4, ICMP, ARP, IGMP, and PPPoE, which has been proven in various applications for many years. W5200 uses a 32Kbytes internal buffer as its data communication memory. By using W5200, users can implement the Ethernet application they need by using a simple socket program instead of handling a complex Ethernet Controller.

SPI (Serial Peripheral Interface) is provided for easy integration with the external MCU. Using the only 4 pins of SPI to connect with MCU, it is possible to design for small form factor system with the MCU's I/O pin limit. In order to reduce the power consumption of the system, W5200 provides WOL (Wake on LAN) and power-down mode. To wake up during WOL, W5200 should be received a magic packet, which is the Raw Ethernet packet.



Order Code

Order Code	Brand	Description
E06011-001	DFRobot	Ethernet Shield for Arduino W5200

Ethernet Shield for Arduino W5200

Specification

- Support Hardwired TCP/IP Protocols: TCP, UDP, ICMP, IPv4 ARP, IGMP, PPPoE, Ethernet
- Supports 8 independent sockets simultaneously
- Support Power down mode
- Support Wake on LAN
- Support High Speed Serial Peripheral Interface (SPI MODE 0, 3)
- Internal 32Kbytes Memory for Tx/Rx Buffers
- 10BaseT/100BaseTX Ethernet PHY embedded
- Support Auto Negotiation (Full and half duplex, 10 and 100-based)
- Support Auto MDI/MDIX
- Support ADSL connection (with support PPPoE Protocol with PAP/CHAP Authentication mode)
- 3.3V operation with 5V I/O signal tolerance
- Multi-function LED outputs (Full/Half duplex, Link, Speed)

W5200 Ethernet Shield Instruction

This instruction shows you how to use DFRobot W5200 Ethernet Shield in Arduino IDE, taking UNO as an example.

Hardware Preparation

- DFRduino UNO R3 (or similar) x 1
- Ethernet Shield for Arduino - W5200 x1
- USB Cable for Arduino UNO/Mega x1
- Ethernet Cable x1

W5200 Ethernet Shield Instruction

Hardware Connection

1.Plug W5200 shield onto Arduino UNO board.

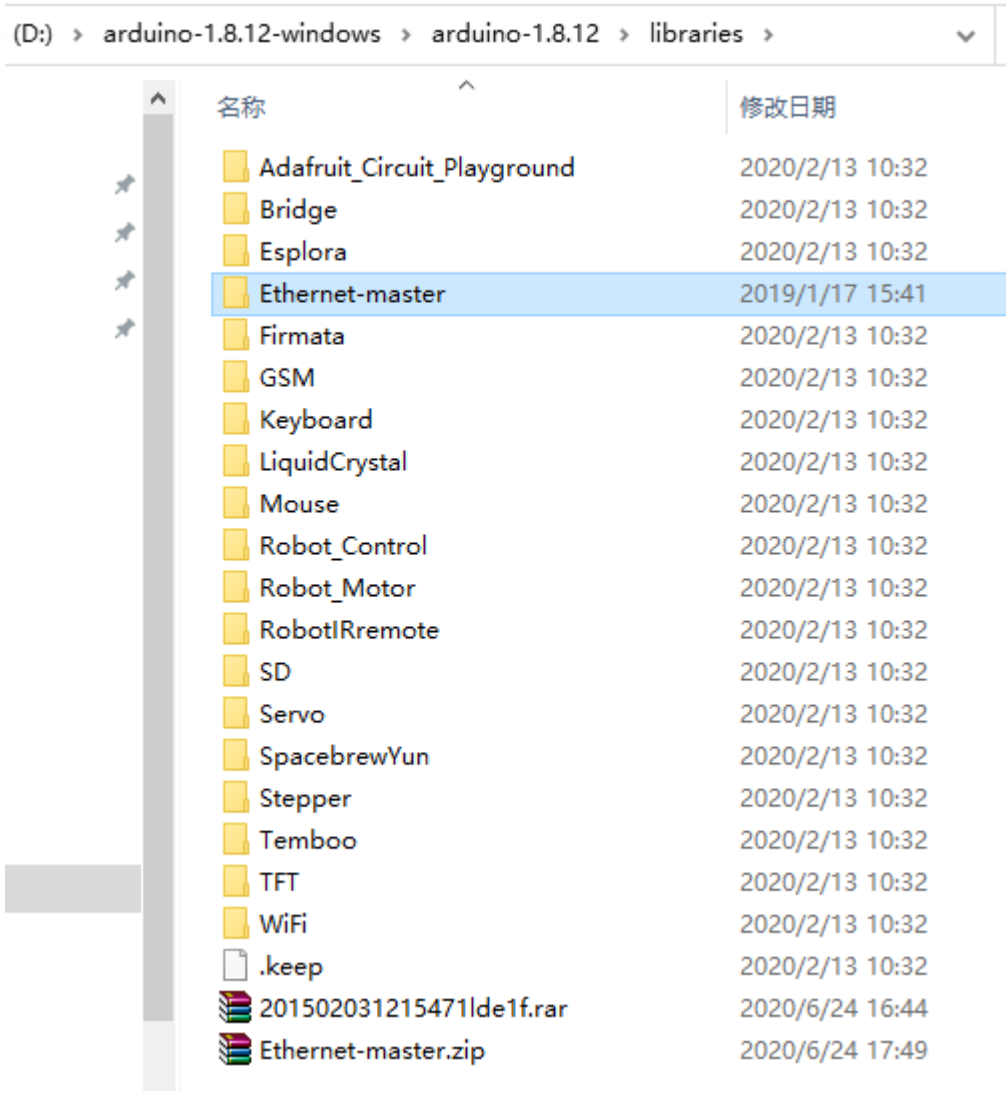
2.Use a Ethernet cable to connect W5200 Shield's RJ45 port to a computer's Ethernet interface or router's LAN port that is in same local network.

3.Connect UNO board with the computer via a USB cable.

Download W5200 Library

1.Download "W5200 library" provided by Wiznet.

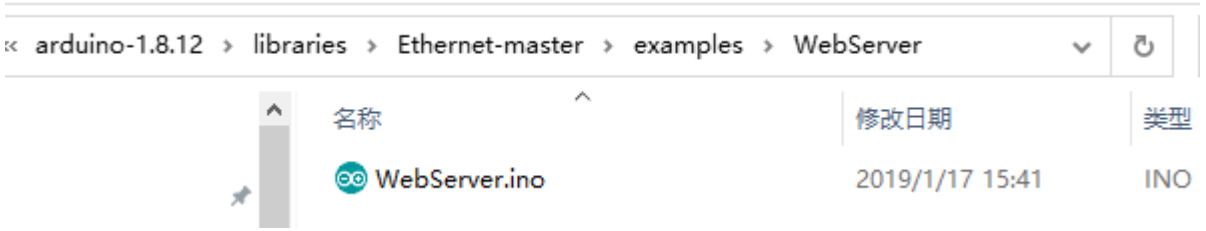
2.Unzip the downloaded file"Ethernet-mater.zip" to the libraries folder in Arduino installing catalogue. As shown below:



W5200 Ethernet Shield Instruction

WebServer Sample Revising

- Find and open the unzipped files sample program "WebServer.ino“

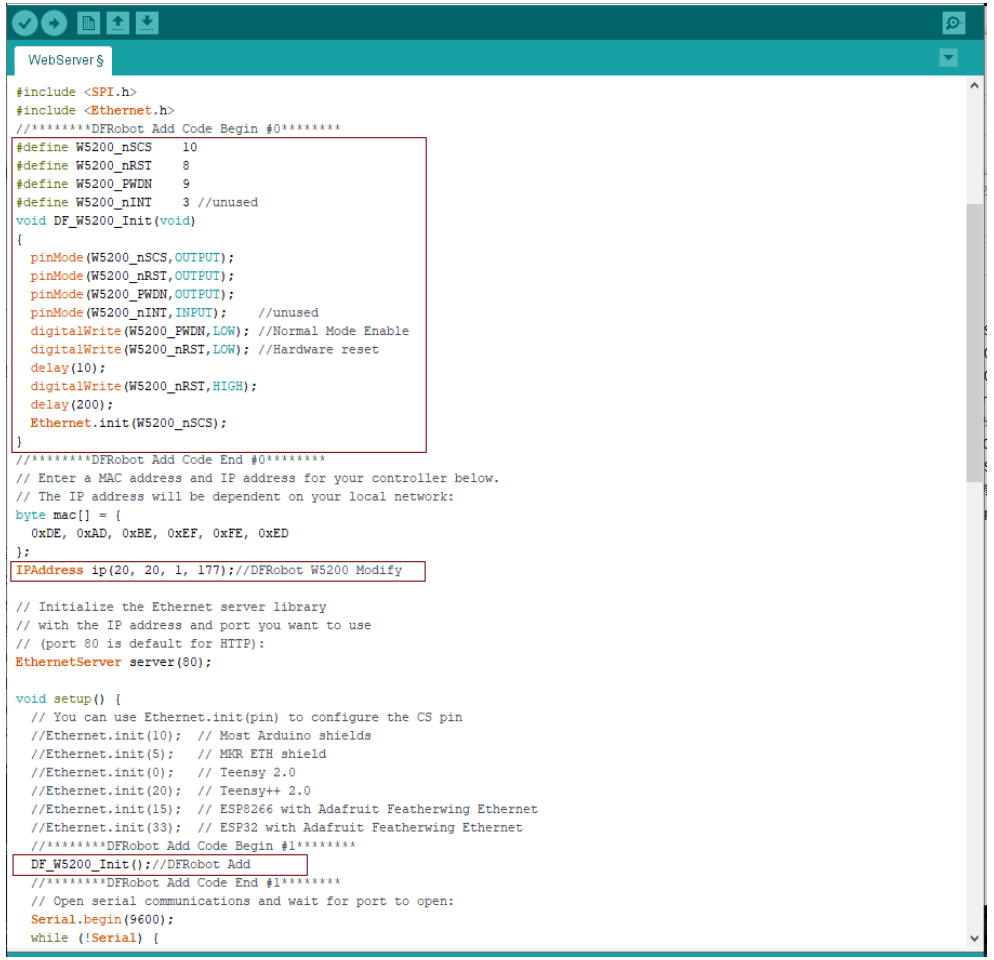


- Open "WebServer.ino" in Arduino IDE, and add code in the program to define the IO connection between W5200 shield and UNO (For other mainboards, please revise according to actual IO connection), create a W5200 shield init function "DF_W5200_Init" and place it in setup for calling.

```
#define W5200_nSCS    10
#define W5200_nRST    8
#define W5200_PWDN    9
#define W5200_nINT    3 //unused
void DF_W5200_Init(void)
{
  pinMode(W5200_nSCS,OUTPUT);
  pinMode(W5200_nRST,OUTPUT);
  pinMode(W5200_PWDN,OUTPUT);
  pinMode(W5200_nINT,INPUT);    //unused
  digitalWrite(W5200_PWDN,LOW); //Normal Mode Enable
  digitalWrite(W5200_nRST,LOW); //Hardware reset
  delay(10);
  digitalWrite(W5200_nRST,HIGH);
  delay(200);
  Ethernet.init(W5200_nSCS);
}
```

W5200 Ethernet Shield Instruction

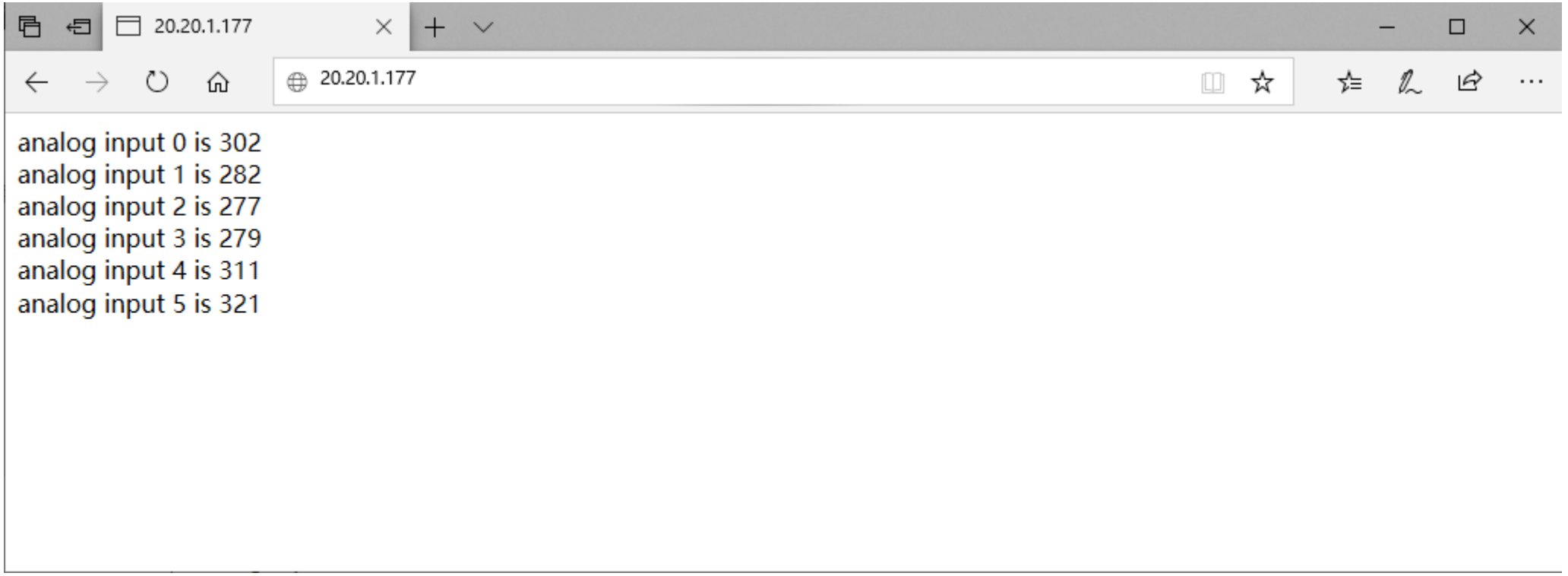
- Revise IP address (please make sure that the modified IP address is in the same network segment as the computer and is not occupied by other devices.). For example, set W5200 shield IP as: 20.20.1.177, then the codes should be revised as below:



```
WebServer §

#include <SPI.h>
#include <Ethernet.h>
//********DFRobot Add Code Begin #0********
#define W5200_nSCS    10
#define W5200_nRST    8
#define W5200_PWDN    9
#define W5200_nINT    3 //unused
void DF_W5200_Init(void)
{
  pinMode(W5200_nSCS,OUTPUT);
  pinMode(W5200_nRST,OUTPUT);
  pinMode(W5200_PWDN,OUTPUT);
  pinMode(W5200_nINT,INPUT);    //unused
  digitalWrite(W5200_PWDN,LOW); //Normal Mode Enable
  digitalWrite(W5200_nRST,LOW); //Hardware reset
  delay(10);
  digitalWrite(W5200_nRST,HIGH);
  delay(200);
  Ethernet.init(W5200_nSCS);
}
//********DFRobot Add Code End #0********
// Enter a MAC address and IP address for your controller below.
// The IP address will be dependent on your local network:
byte mac[] = {
  0xDE, 0xAD, 0xBE, 0xEF, 0xFE, 0xED
};
IPAddress ip(20, 20, 1, 177);//DFRobot W5200 Modify

// Initialize the Ethernet server library
// with the IP address and port you want to use
// (port 80 is default for HTTP):
EthernetServer server(80);

void setup() {
  // You can use Ethernet.init(pin) to configure the CS pin
  //Ethernet.init(10);  // Most Arduino shields
  //Ethernet.init(5);   // MKR ETH shield
  //Ethernet.init(0);   // Teensy 2.0
  //Ethernet.init(20);  // Teensy++ 2.0
  //Ethernet.init(15);  // ESP8266 with Adafruit Featherwing Ethernet
  //Ethernet.init(33);  // ESP32 with Adafruit Featherwing Ethernet
  //********DFRobot Add Code Begin #1********
  DF_W5200_Init();//DFRobot Add
  //********DFRobot Add Code End #1********
  // Open serial communications and wait for port to open:
  Serial.begin(9600);
  while (!Serial) {
```

W5200 Ethernet Shield Instruction

Burn the program to UNO.
Test and Check
Open a browser and enter the IP address set for w5200 in Arduino code.



W5200 Ethernet Shield Instruction

- W5200 Ethernet Library
- W5200 Datasheet.pdf

Revision History

Date	Revision	Change description
30/10/2025	1.0	Initial release