

W5500 TCP/IP Ethernet Module



Technical Manual Rev 1r0



The e-Gizmo W5500 TCP/IP Ethernet Module is based on Wiznet iEthernet chip. A simple module that you can access to LAN or WLAN wired network using your favorite MCU Arduino/Gizduino with Modified Ethernet Library to make it compatible on mcu board. It is use SPI communication. Can be use as server on your home for wired or wireless connection to control your appliances or other devices.

FEATURES:

- Intercommunicate with both the W5500 & uSD card using SPI.
- Easy connect on the ethernet using RJ-45 standard connection just provides a network local address.
- Integrated TCP/IP protocol
- Compatible in all gizduino boards.

GENERAL SPECIFICATIONS:

- **PHY:** Wiznet iEthernet W5500
- **Hardwired:** TCP/IP: TCP, UDP, IPv4, ICMP, ARP, IGMP
- **Supply Input:** +5V DC
- **Cable:** Twisted pair
- **Category:** CAT5 Ethernet cable
- **Speed Connections:** 10 up-to 100Mbps (Network Connection)
- **micro-SD card socket**
- **Port for Wireless Module**

Update Ethernet Library

Download the Ethernet Library modified from e-Gizmo Website. Copy and paste the Ethernet folder <Go to My Documents> Arduino folder> libraries> and paste it. This library is important to add first it contains W5500.h library and compatibility to gizDuino boards.

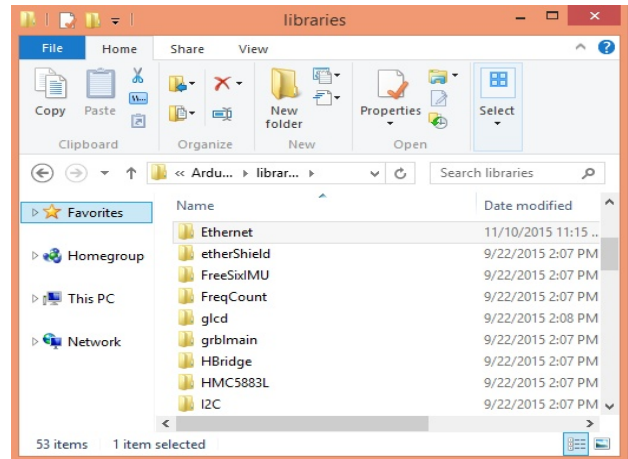


Figure 1. Ethernet Library location.

Update SD Library

Update also your SD library modified, especially if you are using the gizDuino plus and gizDuino X boards. Remapping of the CS pin using the SD.begin() library function.

Simply use (replace): `SD.begin(27);`
 Default pin for IOT-644.

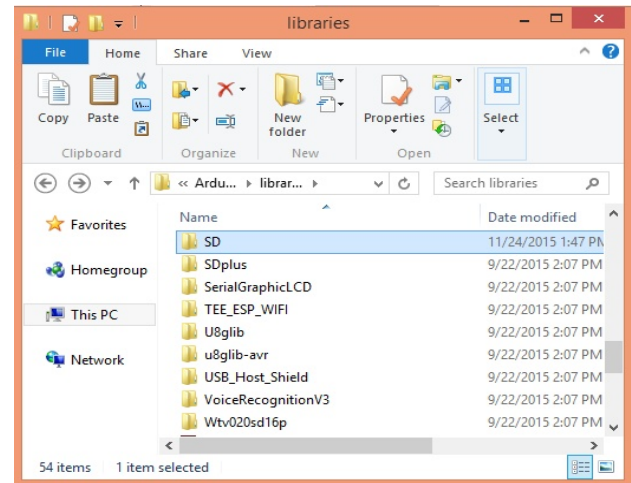


Figure 2. SD Library location.

Open Arduino IDE

Now, the library is modified. Open the sample program for Wiznet W5500 Module Test

Board Definition:
 Tools>Board>Gizduino+ w/ ATmega644

Select COM PORT number:
 Tools>Serial Port> COM#.

Once you selected the correct board and port number. Click Upload.

Note: Install the Prolific 2303 USB driver in your PC (you do this only on first install).

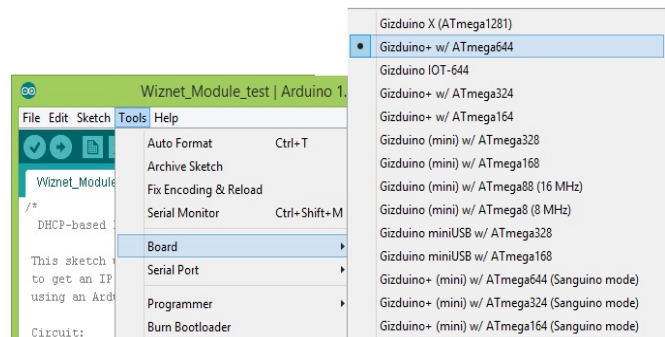


Figure 3. gizDuino boards list.

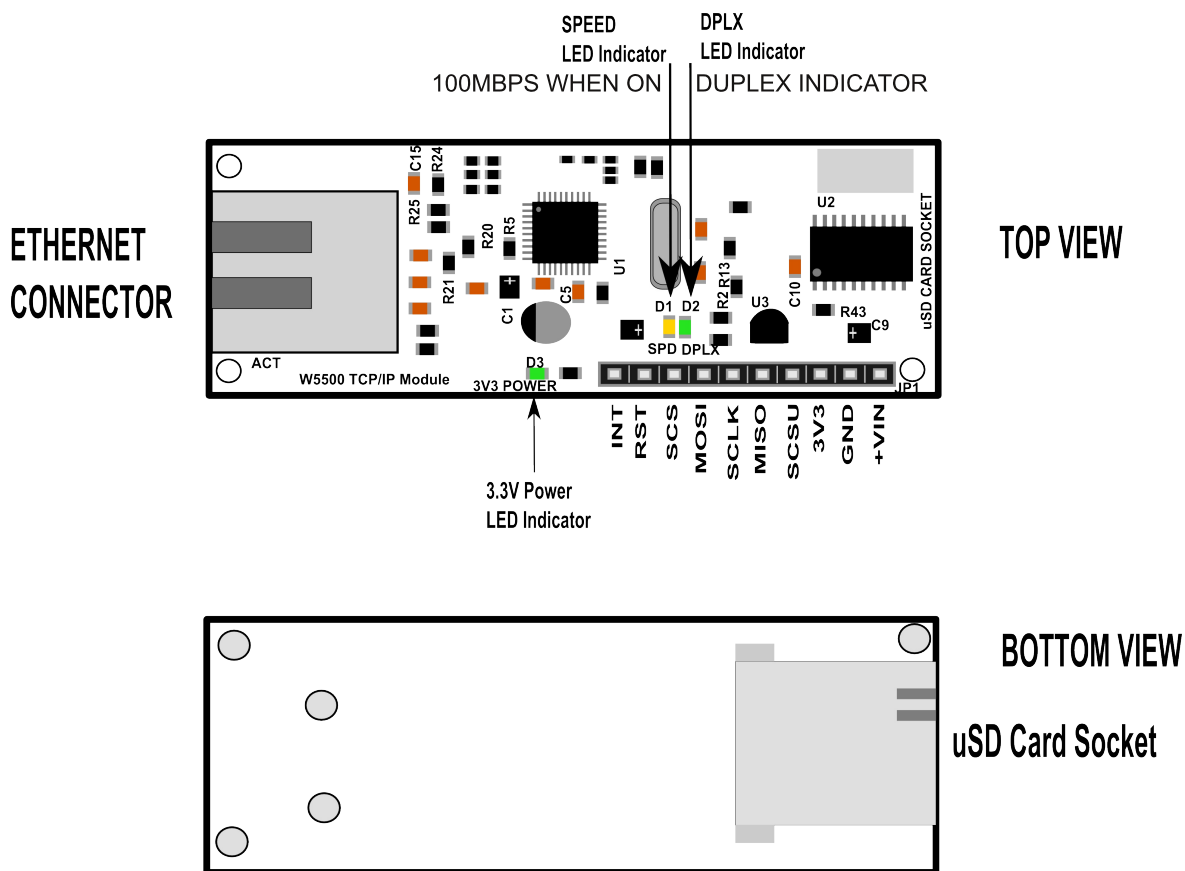


Figure 4. Major Parts of e-Gizmo W5500 Wiznet Module.

Table 1. Pin Descriptions

PIN NAME	DESCRIPTIONS
+VIN	+5VDC Input Supply
GND	Ground
3V3	+3.3VDC
SCSU	ChipSelect uSD Card
MISO	Master In Slave Out
SCLK	Serial Clock
MOSI	Master Out Slave In
SCS	ChipSelect Wiznet
RST	Reset
INT	Interrupt INT pin

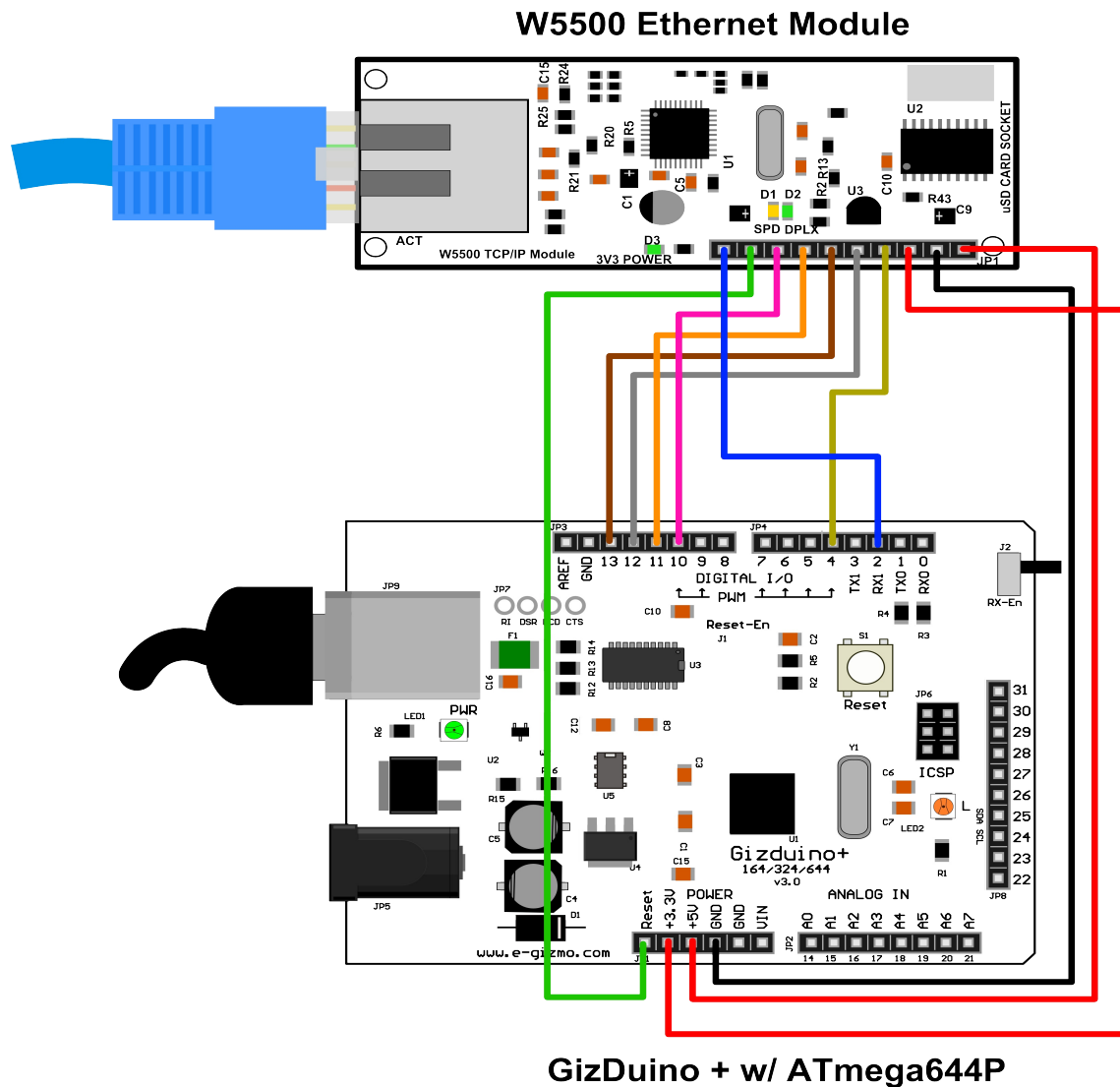


Figure 5. W5500 Ethernet module connected to a Gizduino + microcontroller

To connect the Wiznet module to the Gizduino microcontroller:

- connect the red wire to **+VIN(5V) to the +5V** power from the microcontroller.
- connect the black wire to the **ground**.
- connect the red wire to **+VIN(3V3) to the +3.3V** power from the microcontroller.
- connect the dark green wire to **SCSU** of the ethernet module to the **D04** microcontroller.
- connect the gray wire to **MISO to the D12** from the microcontroller.
- connect the brown wire to **SCLK to the D13** from the microcontroller.
- connect the orange wire to **MOSI to the D11** from the microcontroller
- connect the magenta wire to **SCS to the D10** from the microcontroller
- connect the green wire to **RST to the Reset** from the microcontroller
- connect the blue wire to **INT to the D02** from the microcontroller

Table 2. LED Indicators

I.D	LED1	Descriptions
SPD	D1	Speed Indicator 100Mbps when ON
DPLX	D2	Duplex Indicator

Table 3. SPI communication

<i>gizDuino Boards</i>	<i>MOSI</i>	<i>MISO</i>	<i>SCK</i>	<i>SS</i>
168P or 328P	11	12	13	10
+(164P/324P/644P)	11	12	13	10
IOT-644P	11	12	13	27
X(1281)	11	12	13	10
Mega2560	51	50	52	53

Table 4. uSD Card pin assignment

I.D	PIN	Descriptions
SCSU	4	Chip Select for SD

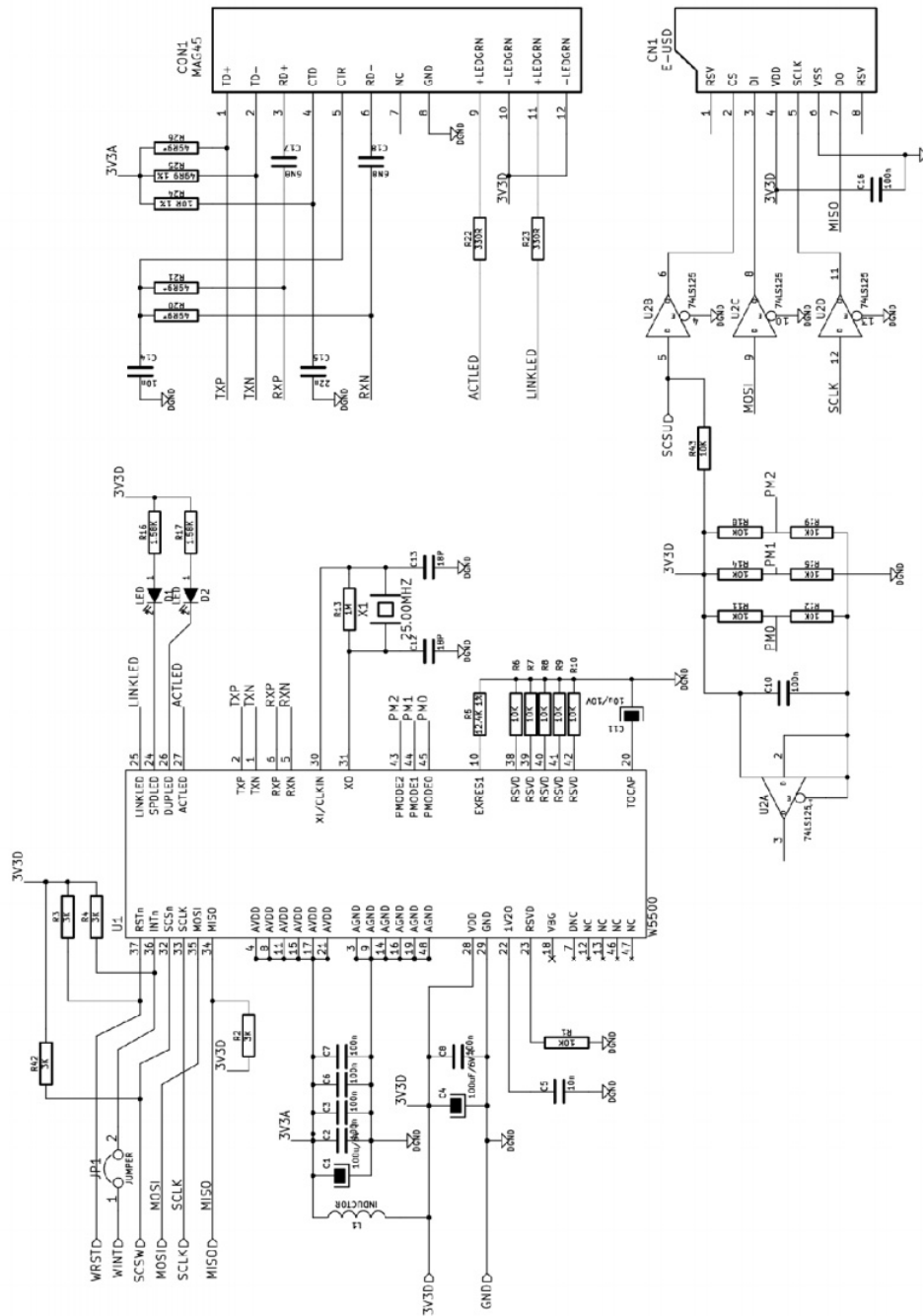


Figure 6. Schematic Diagram of e-Gizmo W5500 Ethernet Module.

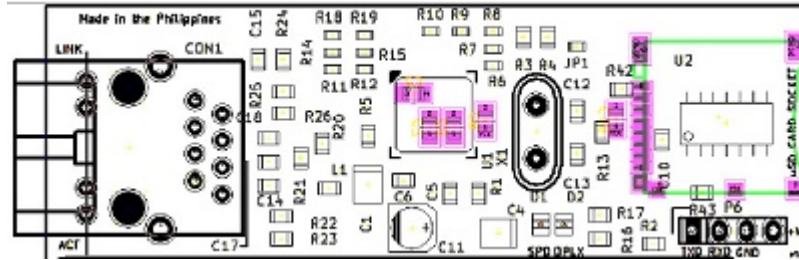


Figure 7. Silkscreen Guide

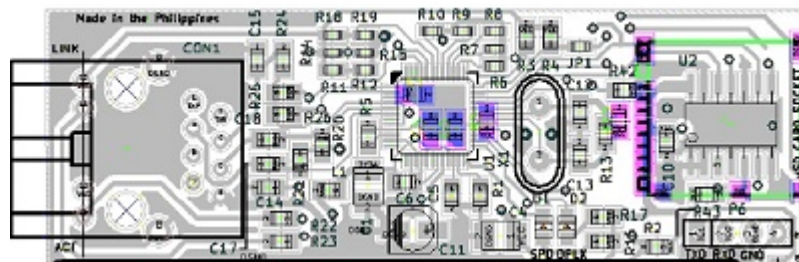


Figure 8. Top Copper Guide

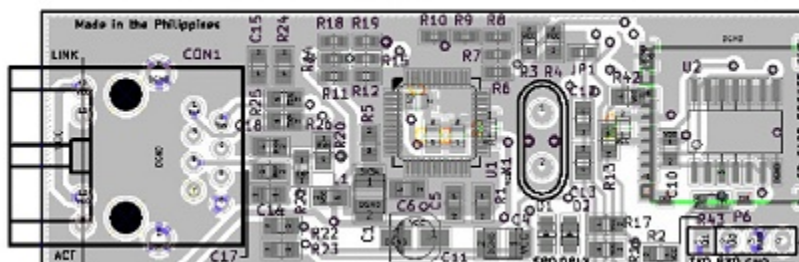


Figure 9. Bottom Copper Guide