W5100 Ethernet Shield

Technical Manual Rev 1r0

The e-gizmo W5100 Ethernet Shield based on Wiznet iEthernet chip. Using this compatible ethernet shield it allows the Gizduino board to connect to the internet. The shield communicates with the Gizduino MCU through the use of SPI bus. Can be use as server on your home for wired or wireless connection to control your appliances or other devices. Wiznet Ethernet shield is compatible in all gizduino boards.

FEATURES:

- Intercommunicate with both the W5100 & Micro-SD card using SPI (ICSP header)
- With 4 functional Modes Counter
- Easy connect on the ethernet using RJ-45 standard connection just provides a network local address.
- Can be interface with Gizduino boards.

GENERAL SPECIFICATION:

IC: Wiznet iEthernet W5100 P7K00

Supply input: +5V DC

Cable: Twisted pair

Category: CAT5 Ethernet cable

Speed Connections: 10 up-to 100Mbps *(Network connection)*
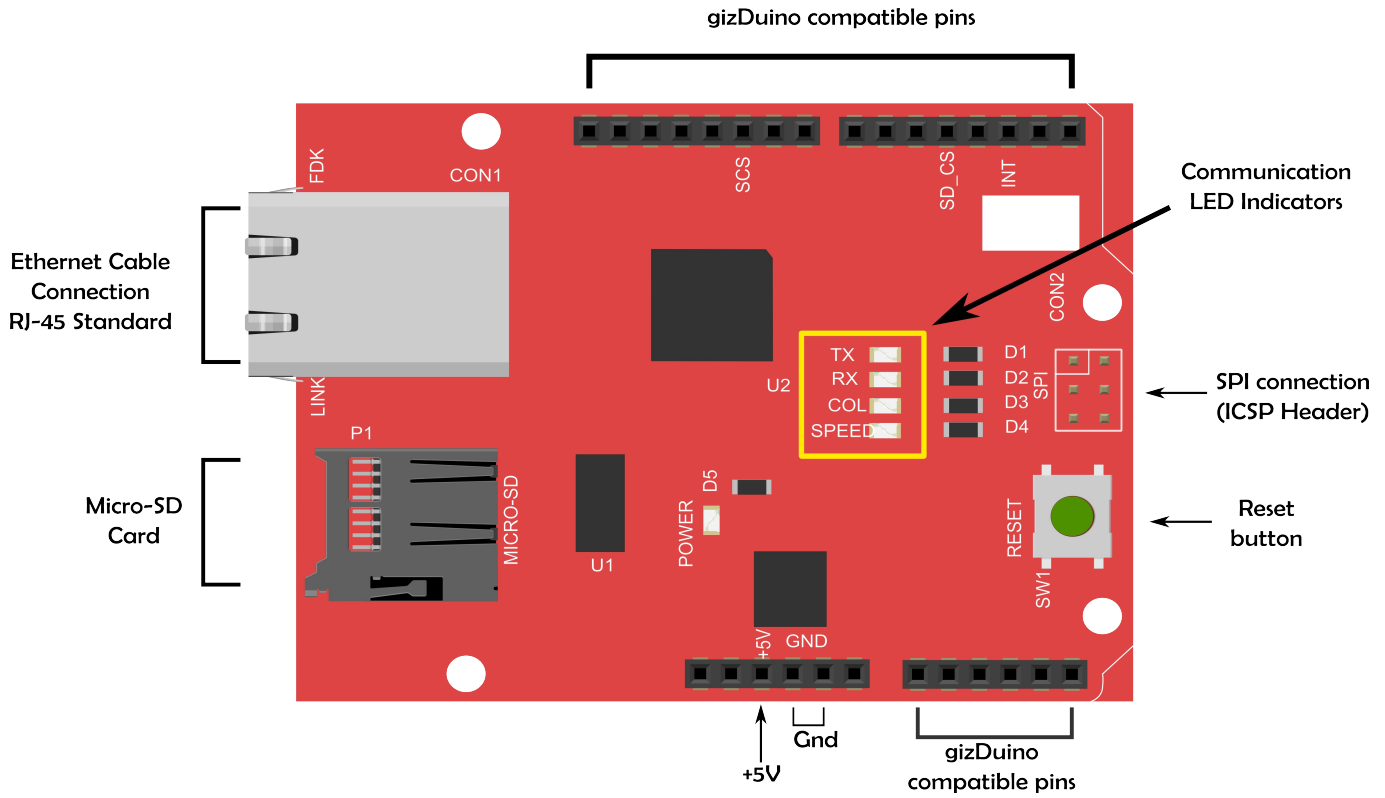
With **micro-SD card slot**.

gizDuino compatible pins

Ethernet Cable
Connection
RJ-45 Standard

Communication
LED Indicators

SPI connection
(ICSP Header)

Micro-SD
Card

Reset
button

Gnd

+5V

gizDuino
compatible pins

Figure 1. Major parts of W5100 Ethernet Shield (Front)

SPI connection
(ICSP Header)
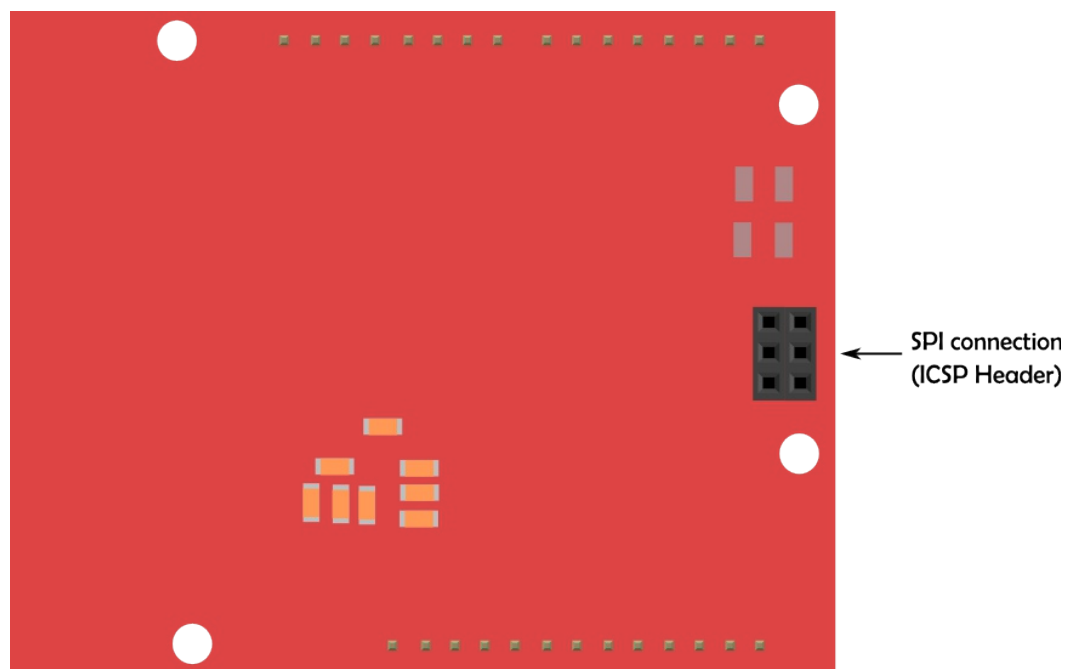
Figure 2. Major parts of W5100 Ethernet Shield (Back)

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W5100 Ethernet Shield

*Table 1. LED Indicators

I.D	LED	Description
TX	D1	Transmit activity LED Active low indicates the presence of transmitting activity.
RX	D2	Receive activity LED Active low indicates the presence of receiving activity
COL	D3	Collision LED Active low indicates the presence of collision activity.
SPEED	D4	Link speed LED Active low indicates the link speed is 100Mbps.

*Table 2. CONN2 SPI Connection

gizDuino Boards	MOSI	MISO	SCK	SS
168 or 328	ICSP(4) 11	ICSP(1) 12	ICSP(3) 13	10
+ 164/324/644	ICSP(4) 11	ICSP(1) 12	ICSP(3) 13	10
X 1281	ICSP(4) 11	ICSP(1) 12	ICSP(30) 13	10

*Reference
http://www.wiznet.co.kr/UpLoad_Files/ReferenceFiles/W5100_Datasheet_v1.2.2.pdf
http://arduino.cc/en/Reference/SPI
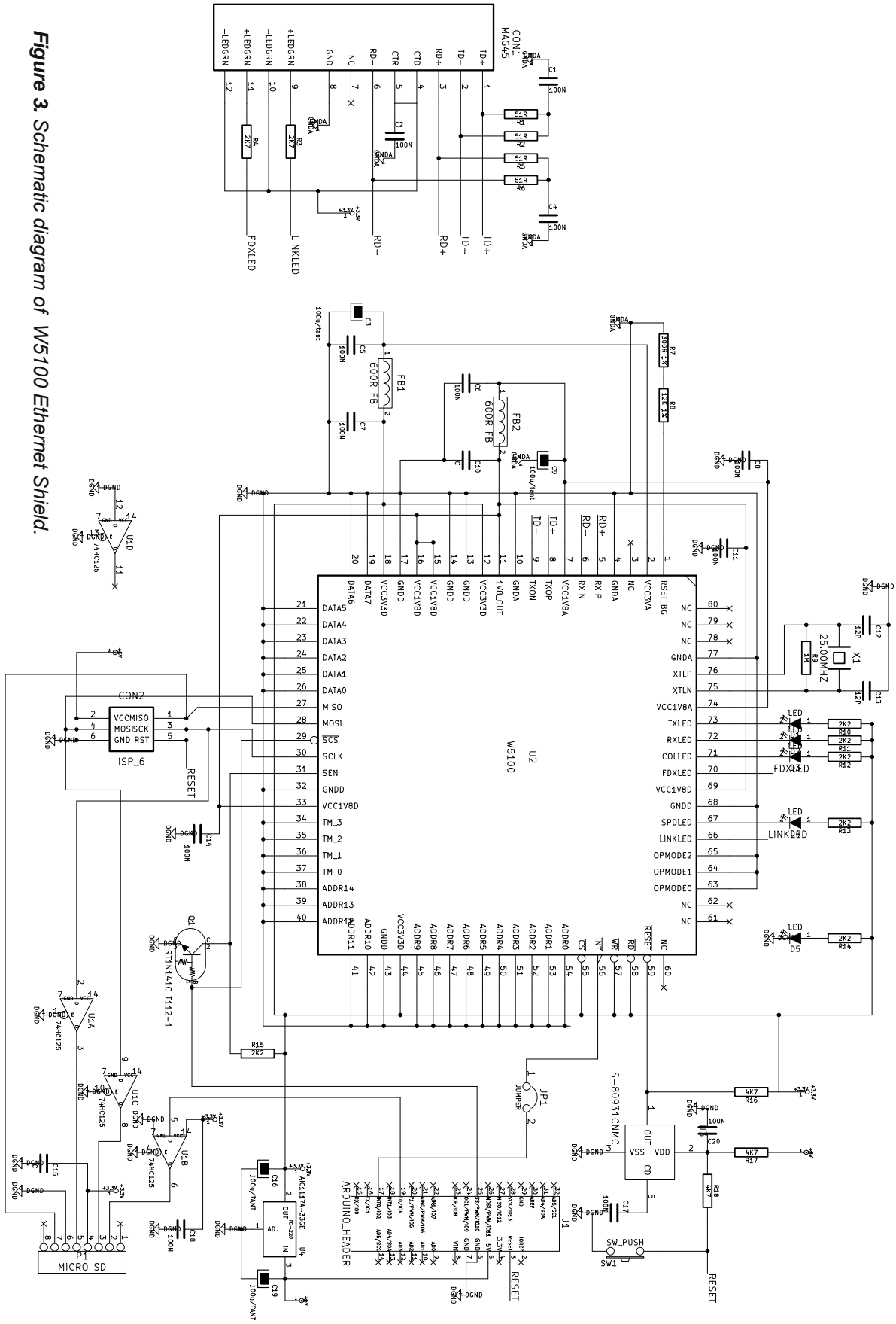
W5100 Ethernet Shield

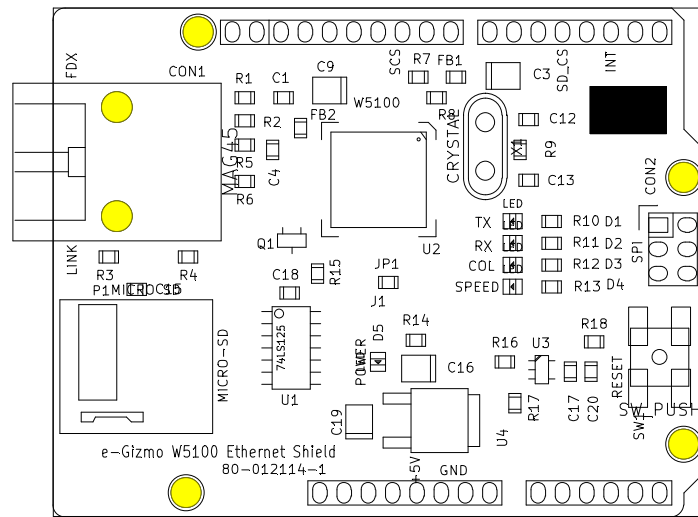**Figure 3.** *Schematic diagram of W5100 Ethernet Shield.*
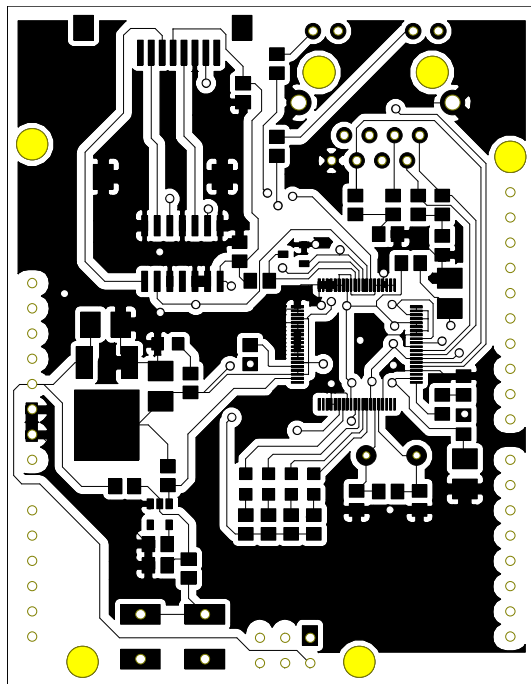
Figure 4. Parts Placement
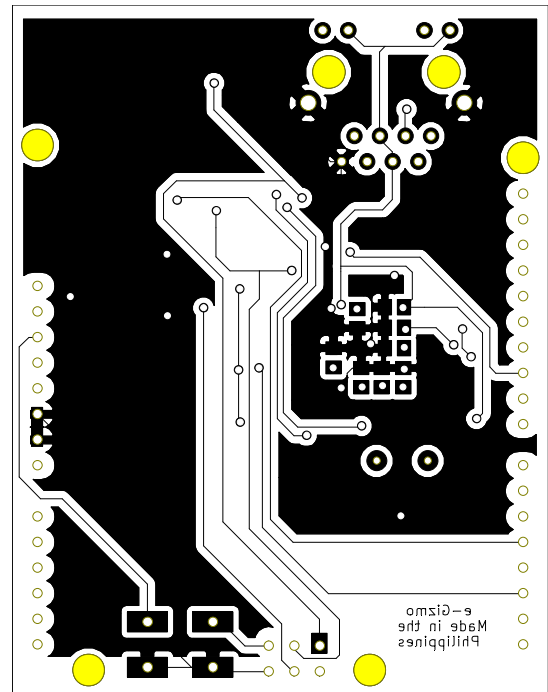

Figure 5. TOP PCB Layout

Figure 6. BACK PCB Layout

Sample Application/Code

Available in Arduino 1.0.5 > examples>Ethernet.
It is compatible in Arduino Ethernet Shield. Before you will use the Ethernet Library for the e-Gizmo W5100 Ethernet Shield (go to Ethernet Library Modification) read the instructions below.

Ethernet Library Modification

Download the **Ethernet Library** from e-gizmo CD List>W5100 Ethernet Shield>Ethernet.zip. Then copy and replace the modified "Ethernet" Library folder to:

Arduino>libraries>Ethernet

Ethernet Library:

https://www.dropbox.com/s/711s5ejs89hohup/Ethernet.zip

Arduino>libraries>Ethernet

Figure 7. Modify W5100.h

Gizduino Patchfiles
(For gizDuino + and gizduino X)

Download the latest **gizDuinoPatch-041414** from e-gizmoCD List>Gizduino (below)> gizDuinoPatch-041414.zip. Then copy and replace the "gizduino -" folder to:

Arduino>hardware>gizduino -

Restart your Arduino IDE, now you can use the W5100 Ethernet Shield in Gizduino + without any error.

gizDuinoPatch:

https://www.dropbox.com/s/dlt5hhm750b3iwo/gizDuinoPatch-041414%20latest.zip

Arduino>hardware>gizduino -

Figure 8. Update the gizDuino Patch "gizduino-"
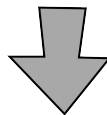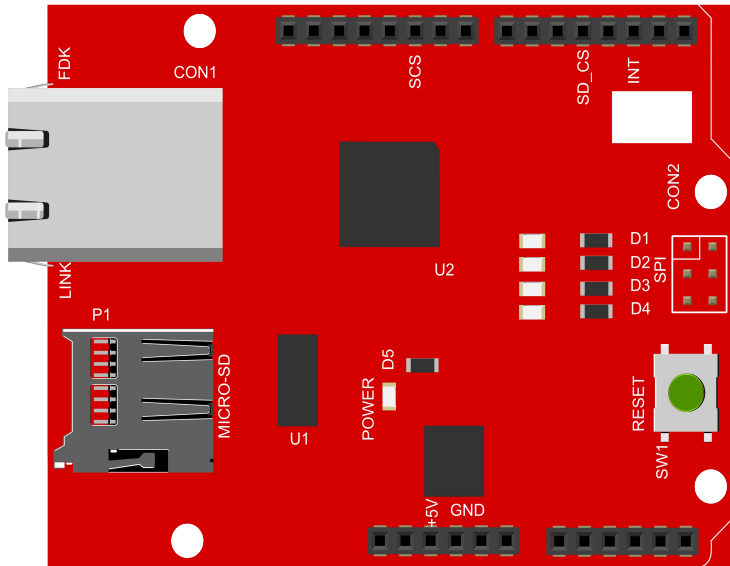
         W5100 Ethernet Shield
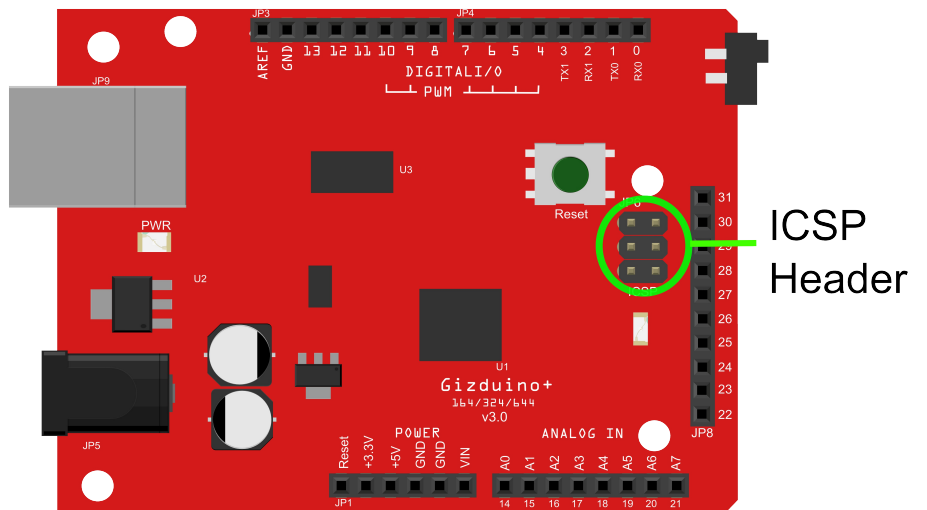
RJ-45 Standard Cable

In this figure, you need a RJ-45, a connector standard for telephone cables or type of modular connector for computer network (Ethernet cables).

Place also a 2x3 connector for the ICSP header connections to the Wiznet.

Attach the W5100 Ethernet Shield to Gizduno + 644 like on the Sample apllication.

W5100 Ethernet shield Compatible to gizDuino +

ICSP Header

Figure 9. Sample Application of e-Gizmo W5100 Ethernet Shield with Gizduino + 644

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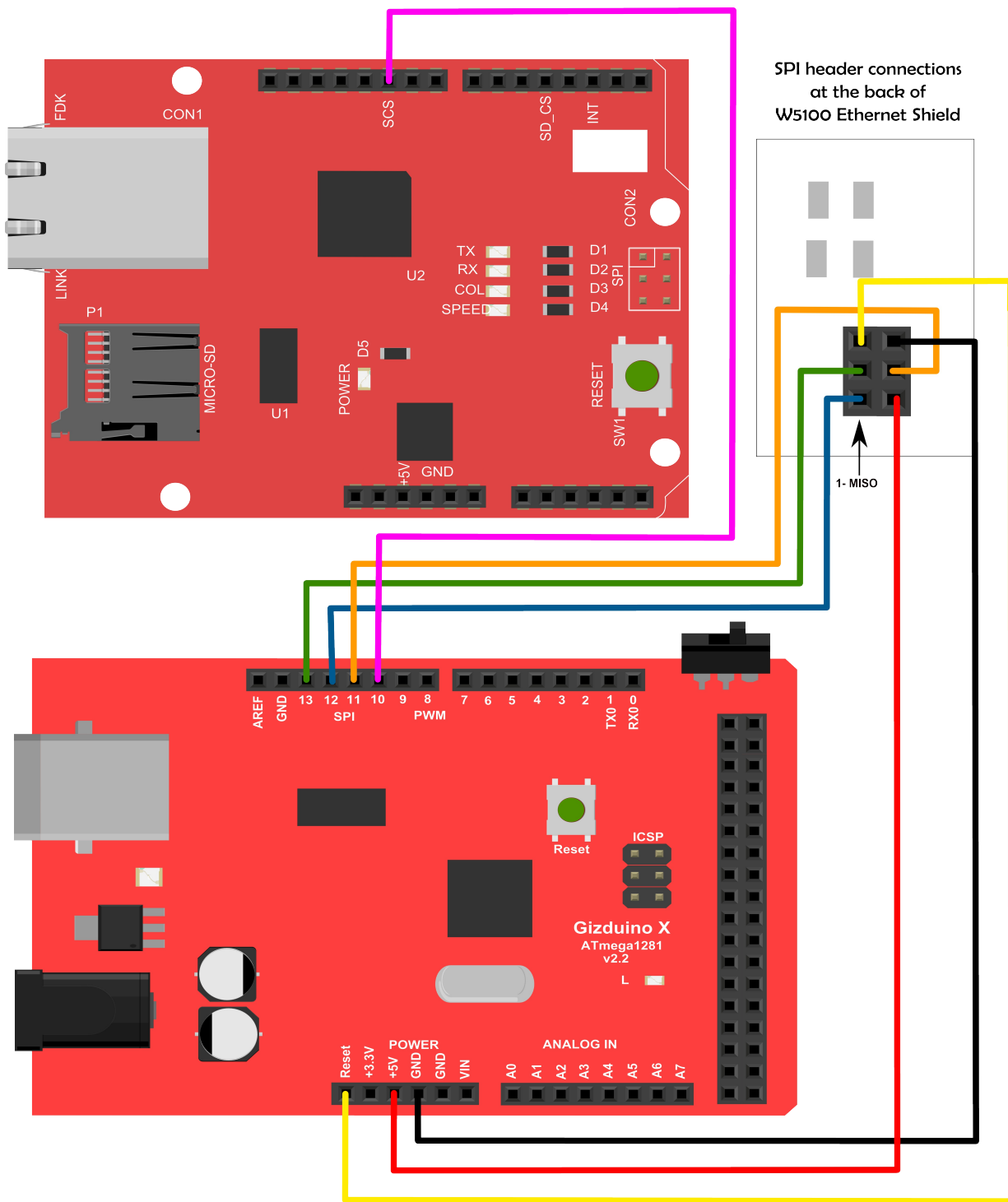Manually connections to GIZDUINO X

Figure 10. Sample Application for manually connections of
e-Gizmo W5100 Ethernet Shield to Gizduino X ATmega1281