The **ACEduino Ethernet/SD Shield** allows an ACEduino board to connect to the internet. The shield is based on a Microchip ENC28J60 chip that interfaces with Arduino and data conversion according to the ethernet protocol. It integrates the MAC controller, an 8 KB Transmit / Receive Packet Dual Port Buffer and a circular FIFO managed at the hardware level, allows the programming of data retransmission in case of collision.

There is also an onboard SD card slot, which can be used to store files for serving over the network. It is compatible with the Arduino Uno and Mega (using the Ethernet library). The onboard SD card reader is accessible through the SD Library. When working with this library, CS is tied with Digital I/O 4 by default.

Note that because the ENC28J60 and SD card share the SPI bus, only one can be active at a time.
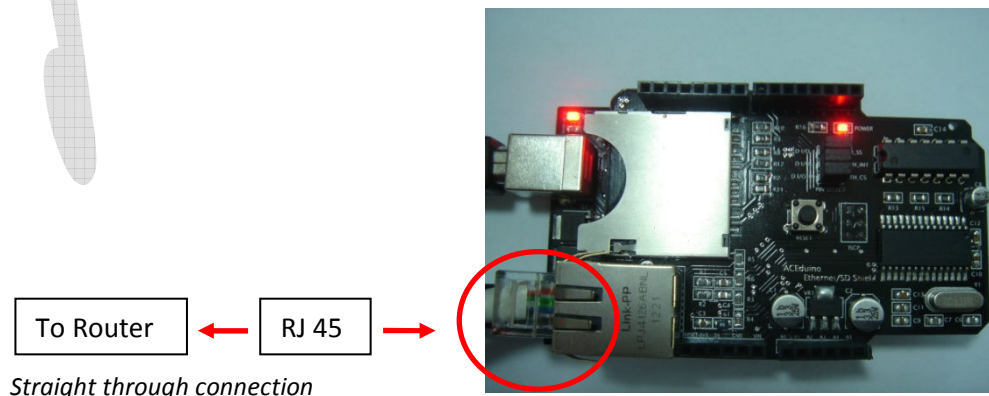
PINOUT:

	ACEduino 328	*ACEduino MEGA 2560*
Ethernet Interface (ENC28J60)		
SS	D I/O 10	D I/O 53
MISO	D I/O 12	D I/O 50
MOSI	D I/O 11	D I/O 51
SCK	D I/O 13	D I/O 52
INT	D I/O 2	D I/O 2
SD Interface		
SS	D I/O 10	D I/O 10
MISO	D I/O 12	D I/O 12
MOSI	D I/O 11	D I/O 11
SCK	D I/O 13	D I/O 13
Pushbutton (H)		
RESET	Resets ACEduino board	

FOR ETHERNET TESTING:

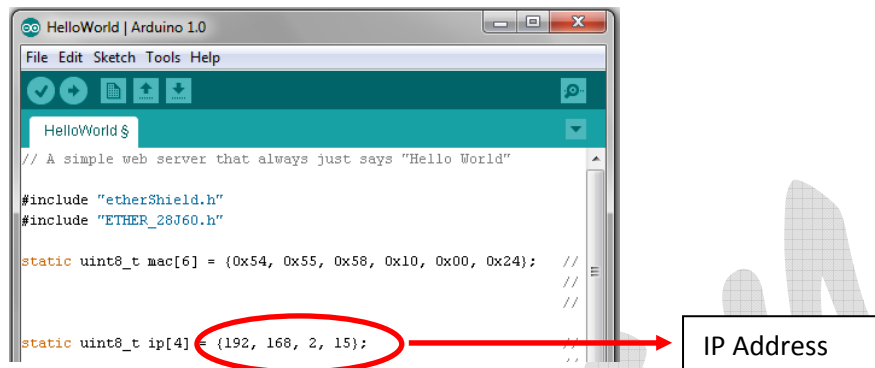1. Plug RJ45 connector to Ethernet Shield and router

Note: The green LED should be turned on while the orange LED should be blinking on the Magnetic Jack

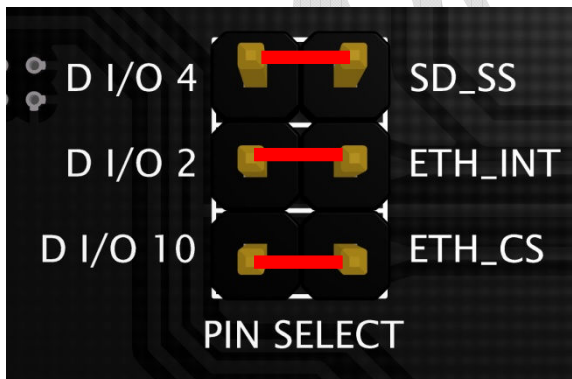| To Router | ← | RJ 45 | → |

Straight through connection

2. Open the firmware.

File > Example > ACEduinoEthernetShield > HelloWorld

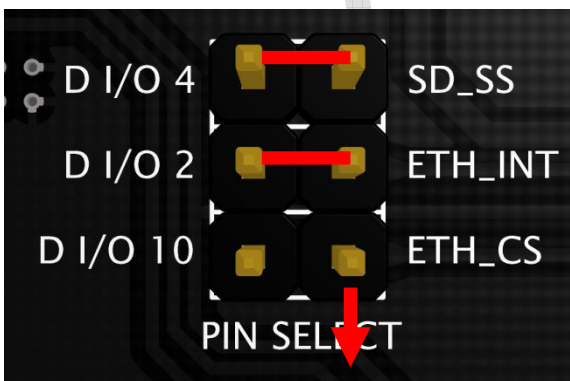3. Change the IP address depending on the network on the PC being used.

4. Upload the sketch by pressing CTRL+U or pressing the upload button on the IDE.

5. Mount the Ethernet Shield v1.0 to the ACEduino 328 or ACEduino MEGA 2560board.

6. Make sure that all the jumper connectors are in place. See pictures below.
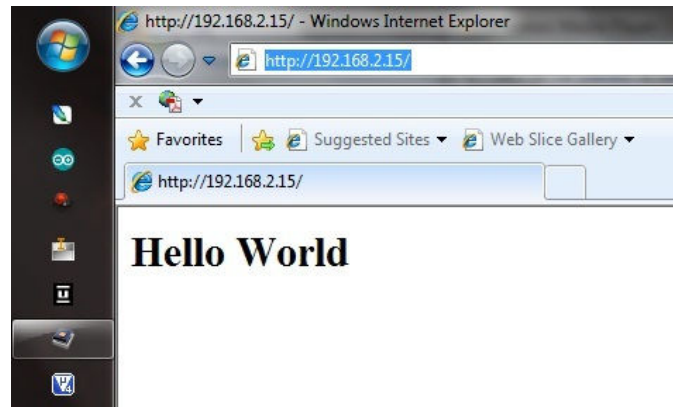
Jumper positions if using ACEduino 328:

Jumper positions if using ACEduino MEGA 2560:

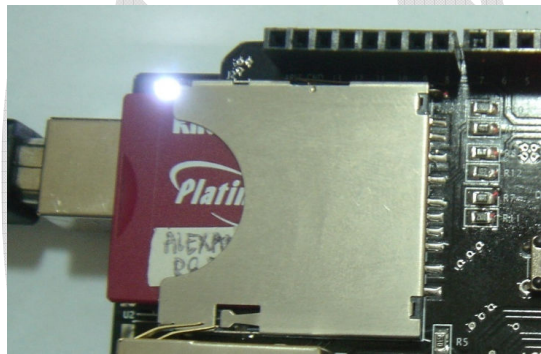To ACEduino MEGA 2560 pin 53

ETH_CS pin connected to Pin 53

7. Press the reset button.

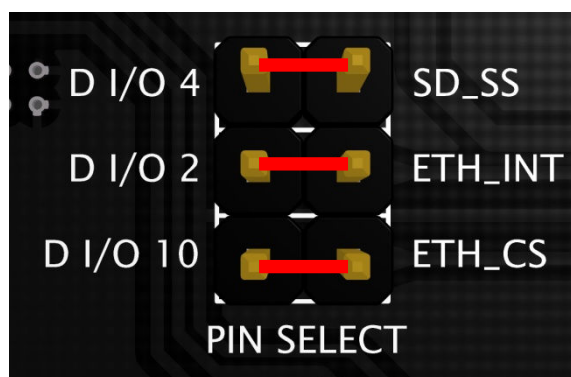8. Open Internet Explorer and type in "192.168.2.15". See picture below for the supposed output on the browser.

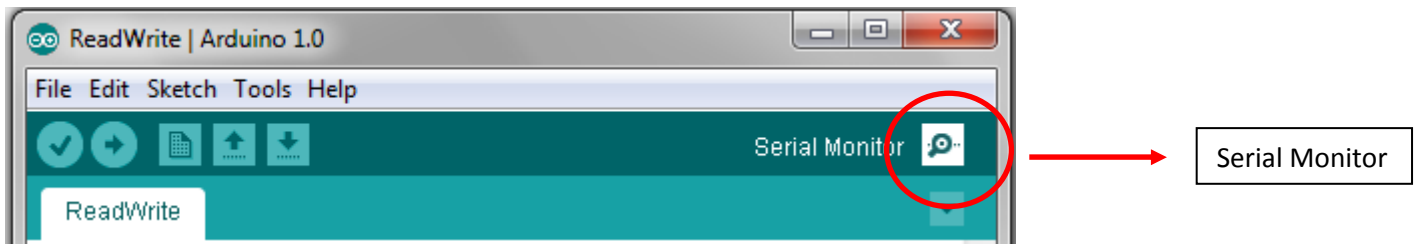

FOR SD Card TESTING:

1. Plug in SD Card.

2. Open firmware.**> *SD > ReadWrite***
3. Upload the sketch by pressing CTRL+U or pressing the upload button on the IDE.
4. A message at the bottom of the Arduino IDE will appear prompting that the file has been uploaded to the board.
5. Mount the Ethernet Shield v1.0 to the ACEduino 328 or ACEduino MEGA 2560board. Make sure all the designators are matched for both the Main board and the Shield.
6. Make sure that all the jumper connectors are in place. See picture below.

For SD Testing, jumper connections for both ACEduino 328 and ACEduino MEGA 2560 are the same:

7. Press the reset button.
8. Open the Serial Monitor

Serial Monitor

9. A window with the same message as below should appear:


```
8Initializing SD card...initialization done.
Writing to test.txt...done.
test.txt:
testing 1, 2, 3.
testing 1, 2, 3.
```

The folder includes libraries for both Ethernet and SD Card. Sample sketches are included in the libraries. To use the library, copy and paste it to:

Arduino 1.0 >
        libraries

After pasting the library to the destination, exit all the open Arduino IDEs first, and then reopen them to be able to use the library.