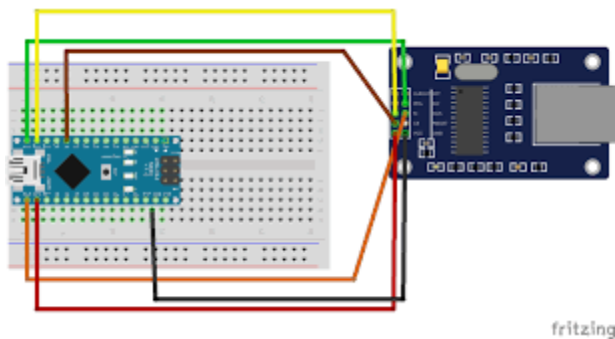




Using ENC28J60 Ethernet Shield with Arduino Nano

The ENC28J60 is a popular, low-cost Ethernet controller that can be used with Arduino Nano to add networking capabilities. Here's what you need to know:

Hardware Setup

1. Connections:

- Connect the ENC28J60 module to your Arduino Nano:
 - SCK → D13
 - SO → D12
 - SI → D11
 - CS → D10 (can be changed in software)
 - VCC → 3.3V (some modules work with 5V, but 3.3V is safer)
 - GND → GND

2. Power Considerations:

- The ENC28J60 is a 3.3V device
- Some modules have voltage regulators and can accept 5V
- If your module doesn't have a regulator, use a logic level converter



Required Libraries

You'll need the **EtherCard** library (alternative to the discontinued EtherShield library):

1. Install via Arduino IDE:

- Sketch → Include Library → Manage Libraries
- Search for "EtherCard" by Andrew Lindsay
- Install version 1.1.0 or newer

Basic Example Code

cpp

Copy

Download

```
#include <EtherCard.h>
```

```
// Ethernet interface MAC address (must be unique in your network)
```

```
static byte mymac[] = { 0x74,0x69,0x69,0x2D,0x30,0x31 };
```

```
// Ethernet buffer
```

```
byte Ethernet::buffer[500];
```

```
void setup () {
```

```
    Serial.begin(9600);
```

```
// Initialize Ethernet interface
```

```
if (ether.begin(sizeof Ethernet::buffer, mymac, 10) == 0) {
```

```
    Serial.println(F("Failed to access Ethernet controller"));
```

```
    while(1);
```

```
}
```



```
// DHCP request to get IP address

if (!ether.dhcpSetup()) {

    Serial.println(F("DHCP failed"));

    while(1);

}

// Print IP address

ether.printIp("IP: ", ether.myip);

ether.printIp("GW: ", ether.gwip);

ether.printIp("DNS: ", ether.dnsip);

}

void loop () {

    // Handle incoming packets

    ether.packetLoop(ether.packetReceive());

}
```

Common Issues and Solutions

1. **Module Not Detected:**

- Check power supply (3.3V vs 5V)
- Verify SPI connections
- Try different CS pins (update code accordingly)

2. **Poor Connection Quality:**

- Use short jumper wires
- Add a 25MHz crystal if your module doesn't have one
- Add proper decoupling capacitors near the module

3. Library Compatibility:

- The EtherCard library is actively maintained
- Avoid older libraries like EtherShield or UIPEthernet

Advanced Usage

For more complex projects, you can:

- Create a web server to control Arduino outputs
- Send sensor data to a remote server
- Implement MQTT client for IoT applications
- Use UDP for faster communication