

ARDUINO CURRENT SENSOR AC 100A

To measure AC current using an Arduino, you can use a current sensor like the **ACS712** or **SCT-013**. However, since you mentioned **100A AC**, you need a sensor capable of handling high currents. The **SCT-013-000** (100A) is a popular non-invasive current transformer (CT) sensor for this purpose.

Here's a step-by-step guide to measure AC current using the **SCT-013-000** sensor and an Arduino:

Components Needed

1. **Arduino** (Uno, Nano, etc.)
 2. **SCT-013-000** (100A) current sensor
 3. **Burden Resistor** (typically 62Ω for SCT-013-000)
 4. **Jumper Wires**
 5. **Breadboard** (optional)
-

Wiring Diagram

1. **SCT-013-000:**
 - Connect the **output** of the SCT-013-000 to the **A0** pin of the Arduino.
 - Connect one end of the **burden resistor** to the output wire of the SCT-013-000.
 - Connect the other end of the burden resistor to **GND**.
 - Connect the **GND** of the SCT-013-000 to the Arduino's **GND**.
 2. **Arduino:**
 - Connect the **A0** pin to the output of the SCT-013-000.
 - Power the Arduino via USB or an external power source.
-

Arduino Code

Below is an example code to measure AC current using the SCT-013-000 sensor:

ARDUINO CURRENT SENSOR AC 100A

```
cpp
Copy
const int sensorPin = A0; // Pin connected to the SCT-013 output
const float sensitivity = 0.05; // Sensitivity of SCT-013-000 (50mA per 1V output)
const float burdenResistor = 62.0; // Burden resistor value in ohms
const int numSamples = 200; // Number of samples for averaging

void setup() {
  Serial.begin(9600); // Initialize serial communication
}

void loop() {
  float current = getACCurrent();
  Serial.print("Current: ");
  Serial.print(current, 2); // Print current with 2 decimal places
  Serial.println(" A");
  delay(1000); // Wait for 1 second
}

float getACCurrent() {
  float sum = 0;
  for (int i = 0; i < numSamples; i++) {
    int rawValue = analogRead(sensorPin); // Read the analog value
    float voltage = (rawValue / 1023.0) * 5.0; // Convert to voltage (0-5V)
    float current = (voltage - 2.5) / sensitivity; // Calculate current
    sum += sq(current); // Sum the squares of the current
    delay(1); // Small delay between samples
  }
  float rmsCurrent = sqrt(sum / numSamples); // Calculate RMS current
  return rmsCurrent;
}
```

Explanation of the Code

1. **Sensitivity:** The SCT-013-000 outputs 50mA per 1V, so the sensitivity is 0.05.
2. **Burden Resistor:** The SCT-013-000 requires a burden resistor (62Ω) to convert current to voltage.
3. **RMS Calculation:** The code calculates the Root Mean Square (RMS) value of the AC current for accurate measurement.
4. **Analog Read:** The Arduino reads the voltage from the sensor and converts it to current.

ARDUINO CURRENT SENSOR AC 100A

Calibration

- Use a known load (e.g., a 100A load) to calibrate the sensor.
 - Adjust the sensitivity or burden resistor value if necessary.
-

Safety Precautions

1. **High Current:** Be careful when working with high currents. Ensure proper insulation and connections.
2. **Non-Invasive Sensor:** The SCT-013-000 is non-invasive, but always double-check wiring before powering up.

