

## Lampiran 1

```
#include <LiquidCrystal.h>
#include "EmonLib.h"
#include <SoftwareSerial.h>
SoftwareSerial espSerial = SoftwareSerial(2,3);
LiquidCrystal lcd(8, 10, 4, 5, 6, 7);

String apiKey = "R93QVLJ1IS1XLG7G";
String ssid = "TPLINK";
String password = "FEBTI@UMPO";
boolean DEBUG=true;

EnergyMonitor emon1;
EnergyMonitor emon2;
EnergyMonitor emon3;

double Irms1;
double Irms2;
double Irms3;
int i=0;

int rede = 230.0;

int pin_sct1 = 0;
int pin_sct2 = 1;
int pin_sct3 = 2;

//===== SHOW RESPONSE
//=====

void showResponse(int waitTime){
long t=millis();
char c;
while (t+waitTime>millis()){
if(espSerial.available()){
c = espSerial.read();
if(DEBUG) Serial.print(c);
}
}
}

void Response(int waitTime){
long t=millis();
char c;
while (t+waitTime>millis()){
if(espSerial.available()){
c = espSerial.read();
```

```

if(DEBUG) lcd.print(c);
    }
}
}
//===== kirim data sensor to
thingspeak.com=====
boolean thingSpeakWrite(){
//long randomNumber1;
float I1 = Irms1;
float I2 = Irms2;
float I3 = Irms3;

int a=0;
char buf[16];
char bif[16];
char bef[16];

dtostrf(I1,3,2,buf);
dtostrf(I2,3,2,bif);
dtostrf(I3,3,2,bef);
//itoa(randomNumber,buf,10);
//dtostrf(buf,"%f",I1);

//itoa(Irms1,buf,48);
//itoa(Irms2,bif,10);
//itoa(Irms3,bef,10);

String cmd = "AT+CIPSTART=\\"TCP\\","\\";
cmd += "184.106.153.149"; // ip untuk thingspeak.com
cmd += "\",80";
espSerial.println(cmd);
showResponse(1000);

if(DEBUG)Serial.println(cmd);
if(espSerial.find("Error")){
if(DEBUG)Serial.println("AT+CIPSTART error");
return false;
}

//send data
String getStr = "GET /update?api_key=";
getStr += apiKey;
getStr += "&field1=";
getStr += buf;
getStr += "&field2=";
getStr += bif;
getStr += "&field3=";

```

```
getStr += bef;
getStr += "\r\n\r\n\r\n\r\n";
```

```
cmd = "AT+CIPSEND=";
cmd += String(getStr.length());
espSerial.println(cmd);
showResponse(1000);
espSerial.print(getStr);
if(DEBUG)Serial.print(getStr);
//if(DEBUG)Serial.println(cmd);
//delay(1000);
if(espSerial.find(">")){
  espSerial.print(getStr);
  if(DEBUG)Serial.print(getStr);
  }else{
  espSerial.println("AT+CIPCLOSE");
  if(DEBUG)Serial.println("AT+CIPCLOSE");
  return false;
  }
return true;
}
```

```
void setup() {
  // put your setup code here, to run once:
  DEBUG = true;
  lcd.begin(16,2);
  lcd.clear();
  Serial.begin(9600);
```

```
  espSerial.begin(115200);
  lcd.setCursor(0,0);
  lcd.print("Koneksi>>WiFi: ");
```

```
  pinMode(11, OUTPUT);
  pinMode(12, OUTPUT);
  pinMode(13, OUTPUT);
  pinMode(A3, OUTPUT);
  pinMode(A4, OUTPUT);
  pinMode(A5, OUTPUT);
```

```
  digitalWrite(11, HIGH);
  digitalWrite(12, HIGH);
  digitalWrite(13, HIGH);
  digitalWrite(A3, HIGH);
  digitalWrite(A4, HIGH);
  digitalWrite(A5, HIGH);
```

```

espSerial.println("AT");
showResponse(1000);

espSerial.println("AT+GMR");
showResponse(1000);

espSerial.println("AT+RST");
showResponse(1000);

//espSerial.println("AT+CIOBAUD=115200");
//showResponse(1000);

espSerial.println("AT+CWMODE=1");
showResponse(1000);

espSerial.println("AT+CWJAP=\""+ssid+"\",\""+password+"\"");
showResponse(1000);
if(espSerial.find("Error")){
Serial.println("AT+CWJAP error");
}
if(DEBUG)Serial.println("Setup completed");

espSerial.println("AT+CIPMUX=0");
Response(1000);
if(espSerial.find("Error")){
Serial.println("AT+CIPMUX error");
}
espSerial.println("AT+CIPMUX=0");
showResponse(1000);
if(espSerial.find("Error")){
Serial.println("AT+CIPMUX error");
}

Serial.println("3 phase voltage");
delay(1000);
lcd.clear();

emon1.current(pin_sct1, 29);
emon2.current(pin_sct2, 29);
emon3.current(pin_sct3, 29);
lcd.setCursor(0,0);
lcd.print("R:");
lcd.setCursor(0,1);
lcd.print("S:");
lcd.setCursor(8,0);
lcd.print("T:");
}

```

```

void tampil()
{
for(i=0;i<8;i++){
Irms1 = emon1.calcIrms(1480);
Serial.print("Corrente : ");
Serial.print(Irms1);
lcd.setCursor(3,0);
lcd.print(Irms1);
if(Irms1>=0.1){digitalWrite(13,LOW);digitalWrite(A3,HIGH);}
if(Irms1<=0.09){digitalWrite(13,HIGH);digitalWrite(A3,HIGH);}
if(Irms1>=0.5){digitalWrite(A3,LOW);digitalWrite(13,HIGH);}

Irms2 = emon2.calcIrms(1480);
Serial.print("Corrente :");
Serial.print(Irms2);
lcd.setCursor(3,1);
lcd.print(Irms2);
if(Irms2>=0.1){digitalWrite(12,LOW);digitalWrite(A4,HIGH);}
if(Irms2<=0.09){digitalWrite(12,HIGH);digitalWrite(A4,HIGH);}
if(Irms2>=0.5){digitalWrite(A4,LOW);digitalWrite(12,HIGH);}

Irms3 = emon3.calcIrms(1480);
Serial.print("Corrente :");
Serial.print(Irms3);
Serial.println();
lcd.setCursor(11,0);
lcd.print(Irms3);
if(Irms3>=0.1){digitalWrite(11,LOW);digitalWrite(A5,HIGH);}
if(Irms3<=0.09){digitalWrite(11,HIGH);digitalWrite(A5,HIGH);}
if(Irms3>=0.5){digitalWrite(A5,LOW);digitalWrite(11,HIGH);}

lcd.setCursor(10,1);
lcd.print("[Amp]");
delay(1000);
}
}

void loop() {
// put your main code here, to run repeatedly:
tampil();
thingSpeakWrite();
}

```