

## LAMPIRAN A

(Spesifikasi Alat)

### A. Spesifikasi Panel Surya

<b>Spesifikasi</b>	<b>Keterangan</b>
Nama	Solar Panel Polycrystallin 100 WP SJ-SES
<i>Ratec Max Power</i>	100 Watt
<i>Power Telorance</i>	0-+5 W
<i>Max Power Voltage (Vmp)</i>	18,05 V
<i>Max Power Current (Imp)</i>	5.54 A
<i>Open Circuit Voltage (Voc)</i>	21.90 V
<i>Short Circuit Current (Isc)</i>	5.92 A
<i>Cell Efficiency</i>	17.2 %

### B. Spesifikasi Solar Charge Controller

<b>Spesifikasi</b>	<b>Keterangan</b>
Jenis	PWM
<i>Rated voltage</i>	12V / 24V
<i>Rated current</i>	20A
<i>Maximum PV voltage</i>	50V
<i>Maximum PV input power</i>	260W(12V) 520W(24V)

### C. Spesifikasi Baterai

<b>Spesifikasi</b>	<b>Keterangan</b>
Merek	KIJO
Berat	28,5 Kg
<i>Capacity</i>	100 Ah
<i>Voltage</i>	12 Volt
<i>Dimensions</i>	330 x 171 x 216 mm

### D. Spesifikasi Arduino Uno

<b>Spesifikasi</b>	<b>Keterangan</b>
Mikrokontroler	Atmega 32P
Tegangan operasional	5 Vdc
Tegangan input	7-12 Vdc

Pin Digital I/O	>14 Pin
Pin Analog Input	>6 Pin
Memori Flash	32 KB
SRAM	2 KB
EEPROM	1 KB

### E. Modul Modul Stepdown

<b>Spesifikasi</b>	<b>Keterangan</b>
<i>Resolusi Voltmeter</i>	0.1 V
<i>Display Range</i>	0V – 45V
<i>Input Voltage</i>	DC 4V – 45V
<i>Output Voltage</i>	1.3V – 37V
Keluaran arus	2A
Ukuran	65 x 35 mm

### F. Spesifikasi Dimmer DC

<b>Spesifikasi</b>	<b>Keterangan</b>
Arus	8 Ampere
Tegangan Input dan output	DC 12v atau 24v
Working Temperatur	-20~60 Celcius

### G. Spesifikasi Modul Relay

<b>Spesifikasi</b>	<b>Keterangan</b>
Tegangan input	5 V
<i>Driver current</i>	15-20 mA
<i>Relay contact maximum</i>	250V AC 10A / 30VDC 10A

### H. Spesifikasi Modul PZEM 015 DC Voltmeter

<b>Spesifikasi</b>	<b>Keterangan</b>
<i>Current</i>	0-300A
<i>Voltage</i>	0-200V
<i>Power</i>	0-60000W
<i>Energy consumption</i>	0-9999 kWh
<i>Impedance</i>	0-1000 ohm
<i>Capacity</i>	0-1000AH
<i>Internal resistance</i>	0-999 m ohm
<i>Runing time range</i>	0-999 hours

<i>Size</i>	89.6 x 49.6 x 24.25mm
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### I. Spesifikasi Sensor LDR

<b>Spesifikasi</b>	<b>Keterangan</b>
Tegangan operasi	3-5V DC
<i>Output</i>	Analog dan digital
Ukuran	33x15x5 mm
Sensitivitas	Menyesuaikan

### J. Spesifikasi Sensor Hujan

<b>Spesifikasi</b>	<b>Keterangan</b>
Tegangan	5 Volt
Tegangan keluaran	3-4.5 Volt
Ukuran	5x4 cm
Sensitivitas	Menyesuaikan

### K. Spesifikasi Lampu

<b>Spesifikasi</b>	<b>Keterangan</b>
Tipe	Bohlam LED DC & UV
<i>Voltase</i>	DC 12V
Daya	15 Watt
Faktor daya	>0.7
Fluks cahaya	900LM

### L. Spesifikasi MCB DC

<b>Spesifikasi</b>	<b>Keterangan</b>
Merk	Sean Ro
Rating Arus	6 Ampere
Tipe	SR-63 DC 1P
Tegangan Maksimal	600 Vdc
Lebar	1.75 cm
Tinggi	8 cm

### M. Spesifikasi Low Voltage Disconnect (LVD)

<b>Spesifikasi</b>	<b>Keterangan</b>
<i>Model</i>	XH-M609

<i>Battery Voltage</i>	12-36 VDC
<i>Output Voltage</i>	12-36 VDC
<i>Control Precision</i>	0.1 V
<i>Power Consumption</i>	<1.5 W

**LAMPIRAN B**  
(Kode Pemrograman)

```
#include <Wire.h>
#include <LiquidCrystal_I2C.h>
LiquidCrystal_I2C lcd(0x27,16,4);

//sensor LDR
const int ldr=A0;
int nilaildr;

//sensor hujan
const int hujan = A1

//sensor ultrasonik
const int trigPin = 5;
const int echoPin = 6;
long duration;
int distance;

//Buzzer
const int buzzer = 4;

void setup() {
//relay
relay1:pinMode(3,OUTPUT); //LAMPU
```

```
relay2:pinMode(2,OUTPUT); //MODUL NYAMUK
relay3:pinMode(7,OUTPUT); //POMPA 1&2
relay4:pinMode(8,OUTPUT);//POMPA 3
digitalWrite(7,HIGH);
digitalWrite(8,HIGH);

//sensor LDR
pinMode(A0,INPUT);

//LCD
Serial.begin(9600);
lcd.begin(16,2);
lcd.init();
lcd.backlight();

//sensor ultrasonik
pinMode(trigPin,OUTPUT);
pinMode(echoPin,INPUT);
digitalWrite(trigPin,HIGH);

//Buzzer
pinMode(buzzer,OUTPUT);

//sensor hujan
pinMode(hujan,INPUT);
}
```

```
void loop() {

float luas_alas = 803.8;
float tinggi_tong = 51;
float volume,volume2,tinggi_air,jarak_pantul;

digitalWrite(trigPin, HIGH);
delayMicroseconds(10);
digitalWrite(trigPin, LOW);
duration= pulseIn(echoPin,HIGH);

jarak_pantul = (0.034*(float)duration)/2;
tinggi_air = tinggi_tong - jarak_pantul;
volume = luas_alas*tinggi_air;
volume2 = volume*0.001;

Serial.print("Jarak Permukaan= ");
Serial.print(jarak_pantul);
Serial.println(" cm");
lcd.setCursor(0,0);
lcd.print("Jarak: ");
lcd.print(tinggi_air);
lcd.print("cm");
Serial.print("Tinggi Air: ");
Serial.print(tinggi_air);
```

```
Serial.print(" cm");
Serial.print("Volume= ");
Serial.print(volume);
Serial.print("cm3");
lcd.setCursor(0,1);
lcd.print("Volume: ");
lcd.print(volume2);
lcd.print("L");
Serial.print("Volume2= ");
Serial.print(volume2);
Serial.print("L");
```

```
//POMPA 1 & 2
```

```
if(tinggi_air < 5)
  {digitalWrite(7,HIGH);
  digitalWrite(8,LOW);
  delay(500);
}else if (tinggi_air > 40)
  {digitalWrite(7,LOW);
  digitalWrite(8,HIGH);
  delay(500);
}else
  {digitalWrite(7,LOW);
  digitalWrite(8,LOW);
  delay(500);
}
```



```
//Buzernyala
if(tinggi_air < 5)
  {digitalWrite(4,HIGH);
  delay(5000);
  digitalWrite(4,LOW);
  }else
  {digitalWrite(4,LOW);
  }

//LDR Lampu
nilaidr=analogRead(ldr);

if (nilaidr <=300)
  {
  digitalWrite(3,HIGH);
  digitalWrite(2,HIGH);
  Serial.println("PAGI HARI");
  }
else {
  digitalWrite(3,LOW);
  digitalWrite(2,LOW);
  Serial.println("MALAM HARI");
  }

//hujan
int nilai hujan = analogRead(hujan)
```

```
Serial.println(nilaihujan);  
delay(1000);
```

```
if (nilaihujan <=400)  
{  
digitalWrite(2,LOW);  
}  
Else  
{  
DigitalWrite(2,HIGH);  
}  
}
```

## LAMPIRAN C

(Foto kegiatan pembuatan tugas akhir)



