LAMPIRAN
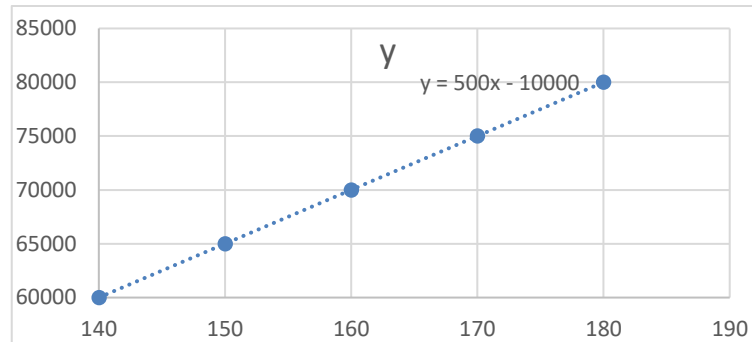
A. Perhitungan Konversi Tegangan

Pada grafik diatas diambil 2 titik yaitu :

(x1,y1) = (140,60000)

(x2,y2) = (150,65000)

Grafik diatas merupakan sistem persamaan garis lurus yang menggunakan rumus y=mx+c dimana y=sumbu y, m= gradien, x=sumbu x, c=konstanta.

Pehitungan :

$m = \dfrac{Y2-Y1}{X2-X1}$

$m = \dfrac{65000-60000}{150-140} = \dfrac{5000}{10} = 500$

ambil salah satu titik untuk dimasukkan kedalam peersamaan (diambil titik (x1,y1)).

y = mx+c

60000 = 500.140+c

70000+c = 60000

c = 60000-70000

c = -10000

maka ditemukan persamaan y=500x-10000.

B. Listing Program Delphi

```delphi
unit Unit1;

interface

uses

  Windows, Messages,
    SysUtils, Variants,
    Classes, Graphics,
    Controls, Forms,

  Dialogs, StdCtrls, CPort;

type

  TForm1 = class(TForm)

    ComboBox1: TComboBox;

    ComboBox2: TComboBox;

    ComboBox3: TComboBox;

    Button2: TButton;

    Button3: TButton;

    Label1: TLabel;

    Label2: TLabel;

    Label3: TLabel;

    Button4: TButton;

    Button5: TButton;

    ComPort1: TComPort;

    Button1: TButton;

    Button6: TButton;

    Button7: TButton;

    Button9: TButton;

    Button8: TButton;

    Edit1: TEdit;

    Label4: TLabel;

    procedure
    Button5Click(Sender:
    TObject);

    procedure
    Button4Click(Sender:
    TObject);

    procedure
    Button3Click(Sender:
    TObject);

    procedure
    Button2Click(Sender:
    TObject);

    procedure
    FormCreate(Sender:
    TObject);

    procedure
    Button1Click(Sender:
    TObject);

    procedure
    Button6Click(Sender:
    TObject);

    procedure
    Button7Click(Sender:
    TObject);

    procedure
    Button9Click(Sender:
    TObject);

    procedure
    Button8Click(Sender:
    TObject);

  private

    { Private declarations
    }

  public

    { Public declarations }

  end;

var
```

```pascal
  Form1: TForm1;

  mA, mAs, hasil :single;

implementation

{$R *.dfm}

procedure
    TForm1.Button5Click(Sen
    der: TObject);

begin

comport1.ShowSetupDialog;

end;

procedure
    TForm1.Button4Click(Sen
    der: TObject);

begin

if
    button4.Caption='CONNEC
    T' then begin

comport1.Port:='COM5';

comport1.Open;

button4.Caption:='DISSCONEC
    T';

button6.Visible:= true;

end else

if
    button4.Caption='DISSCO
    NECT' then begin

comport1.Close; // serial
    komunukasi tertutup
    pada comport1

button4.Caption:='CONNECT';
    "

button6.Visible:= true;

end;

end;
```

```pascal
procedure
    TForm1.Button3Click(Sen
    der: TObject);

begin  //ready

button2.Visible:=true;

comport1.WriteStr('E');

end;

procedure
    TForm1.Button2Click(Sen
    der: TObject);

begin  //exposse

if (edit1.Text='0,02') then
    begin

comport1.WriteStr('L');

button2.Visible:= false;

end else

if (edit1.Text='0,04') then
    begin

comport1.WriteStr('M');

button2.Visible:= false;

end else

if (edit1.Text='0,08') then
    begin

comport1.WriteStr('N');

button2.Visible:= false;

end else

if (edit1.Text='0,01') then
    begin

comport1.WriteStr('Z');

button2.Visible:= false;

end else

if (edit1.Text='0,03') then
    begin
```

```pascal
comport1.WriteStr('O');

button2.Visible:= false;

end else

if (edit1.Text='0,07') then
    begin

comport1.WriteStr('C');

button2.Visible:= false;

end else

if (edit1.Text='5') then
    begin

comport1.WriteStr('q');

button2.Visible:= false;

end;

end;

procedure
    TForm1.FormCreate(Sende
    r: TObject);

begin

button1.Visible:= false;

button7.Visible:= false;

button2.Visible:= false;

button3.Visible:= false;

button6.Visible:= false;

combobox1.Items.Add('60');

combobox1.Items.Add('65');

combobox1.Items.Add('70');

combobox1.Items.Add('75');

combobox1.Items.Add('80');

combobox2.Items.Add('50');

combobox2.Items.Add('60');

end;

procedure
TForm1.Button1Click(Sender:
TObject);

begin

button7.Visible:=true;

if (combobox2.Text= '50')
    then begin

comport1.WriteStr('a');

edit1.Clear;

combobox3.Clear;

combobox3.Items.Add('1');

combobox3.Items.Add('2');

combobox3.Items.Add('4');

combobox3.Items.Add('250');

end else

if (combobox2.Text= '60')
    then begin

comport1.WriteStr('b');

edit1.Clear;

combobox3.Clear;

combobox3.Items.Add('1');

combobox3.Items.Add('2');

combobox3.Items.Add('4');

end;

end;

procedure
    TForm1.Button6Click(Sen
    der: TObject);

begin

button1.Visible:= true;
```

```pascal
if (combobox1.Text='60')
then begin

comport1.WriteStr('g');

end else

if (combobox1.Text='65')
    then begin

comport1.WriteStr('h');

end else

if (combobox1.Text='70')
    then begin

comport1.WriteStr('i');

end else

if (combobox1.Text='75')
    then begin

comport1.WriteStr('j');

end else

if (combobox1.Text='80')
    then begin

comport1.WriteStr('k');

end;

end;

procedure
TForm1.Button7Click(Sender:
TObject);

begin

button3.Visible:=true;

mA :=
StrToFloat(ComboBox2.Text);
mAs := StrToFloat
(ComboBox3.Text);   hasil :=
mAs/mA;   edit1.Text :=
FloatToStr(hasil);

edit1.Text :=
    formatfloat('0.##',hasi
    l);

end;

procedure
TForm1.Button9Click(Sender:
TObject);

begin

application.Terminate;

end;

procedure
    TForm1.Button8Click(Sen
    der: TObject);

begin

comport1.WriteStr('t');

combobox1.ClearSelection;

combobox2.ClearSelection;

combobox3.ClearSelection;

edit1.Clear;

button1.Visible:= false;

button7.Visible:= false;

button2.Visible:= false;

button3.Visible:= false;

end;

end.
```

C. Listing Program Arduino

```
SoftwareSerial BT(12,13);

const int PIN_2=2;

const int PIN_3=3;

const int PIN_4=4;

const int PIN_5=5;

const int PIN_6=6;

const int PIN_7=7;

const int PIN_8=8;

const int PIN_9=9;

const int PIN_10=10;

const int PIN_11=11;

int br = 0;

void setup() {

  pinMode(PIN_2,OUTPUT);

  pinMode(PIN_3,OUTPUT);

  pinMode(PIN_4,OUTPUT);

  pinMode(PIN_5,OUTPUT);

  pinMode(PIN_6,OUTPUT);

  pinMode(PIN_7,OUTPUT);

  pinMode(PIN_8,OUTPUT);

  pinMode(PIN_9,OUTPUT);

  pinMode(PIN_10,OUTPUT);

  pinMode(PIN_11,OUTPUT);

  BT.begin(9600);

}

void loop() {

 while (BT.available())

   {
```

```
char ch=BT.read();

//pengaturan KV

if (ch=='g')

{
digitalWrite(PIN_2,HIGH
);
digitalWrite(PIN_3,LOW)
;
digitalWrite(PIN_4,LOW)
;
digitalWrite(PIN_5,LOW)
;
digitalWrite(PIN_6,LOW)
;

}

else if (ch=='h')

{
digitalWrite(PIN_2,LOW)
;
digitalWrite(PIN_3,HIGH
);
digitalWrite(PIN_4,LOW)
;
digitalWrite(PIN_5,LOW)
;
digitalWrite(PIN_6,LOW)
;

}else if (ch=='i')

{
digitalWrite(PIN_2,LOW)
;
digitalWrite(PIN_3,LOW)
;
digitalWrite(PIN_4,HIGH
);
digitalWrite(PIN_5,LOW)
;
digitalWrite(PIN_6,LOW)
;

}

else if (ch=='j')

{
```

```
    digitalWrite(PIN_2,LOW)
;
    digitalWrite(PIN_3,LOW)
;
    digitalWrite(PIN_4,LOW)
;
    digitalWrite(PIN_5,HIGH
);
    digitalWrite(PIN_6,LOW)
;

    }

    else if (ch=='k')

    {
    digitalWrite(PIN_2,LOW)
;
    digitalWrite(PIN_3,LOW)
;
    digitalWrite(PIN_4,LOW)
;
    digitalWrite(PIN_5,LOW)
;
    digitalWrite(PIN_6,HIGH
);

    }

    //pengaturan mA

    if (ch=='a')

    {
    digitalWrite(PIN_7,HIGH
);
    digitalWrite(PIN_8,LOW)
;

    }

    else if (ch=='b')

    {

    digitalWrite(PIN_7,LOW);
    digitalWrite(PIN_8,HIGH);

    }

    //ready

    if (ch=='E')

    {
    digitalWrite(PIN_9,HIGH
); delay(1500);
    digitalWrite(PIN_10,HIG
H);

    }

    //expose

    if (ch=='L')

    {

      br=
digitalRead(PIN_10);

      if (br == HIGH)

      {
    digitalWrite(PIN_11,HIG
H);
    digitalWrite(PIN_10,LOW
);

        delay(20);
    digitalWrite(PIN_11,LOW
);
    digitalWrite(PIN_9,LOW)
;
    digitalWrite(PIN_10,LOW
);

      }

    }

    else if (ch=='M')

    {

      br=
digitalRead(PIN_10);

      if (br == HIGH)

      {
    digitalWrite(PIN_11,HIG
H);
    digitalWrite(PIN_10,LOW
);

    delay(40);
```

```
digitalWrite(PIN_11,LOW
);
digitalWrite(PIN_9,LOW)
;
digitalWrite(PIN_10,LOW
);

      }

}

else if (ch=='N')

{

  br=
digitalRead(PIN_10);

   if (br == HIGH)

   {
digitalWrite(PIN_11,HIG
H);
digitalWrite(PIN_10,LOW
); delay(80);
digitalWrite(PIN_11,LOW
);
digitalWrite(PIN_9,LOW)
;
digitalWrite(PIN_10,LOW
);

     }

}

 else if (ch=='O')

{

  br=
digitalRead(PIN_10);

   if (br == HIGH)

   {
digitalWrite(PIN_11,HIG
H);
digitalWrite(PIN_10,LOW
); delay(30);
digitalWrite(PIN_11,LOW
);
```

```
digitalWrite(PIN_9,LOW)
;
digitalWrite(PIN_10,LOW
);

      }

 }

 else if (ch=='C')

 {

   br=
digitalRead(PIN_10);

   if (br == HIGH)

    {
digitalWrite(PIN_11,HIG
H);
digitalWrite(PIN_10,LOW
);

     delay(70);

  digitalWrite(PIN_11,LOW);

  digitalWrite(PIN_9,LOW);
digitalWrite(PIN_10,LOW);

      }

  }

 else if (ch=='Z')

 { br=
digitalRead(PIN_10);

   if (br == HIGH)

   {
digitalWrite(PIN_11,HIG
H);
digitalWrite(PIN_10,LOW
);

 delay(10);

digitalWrite(PIN_11,LOW
);
```

```
          digitalWrite(PIN_9,LOW)                 if (ch=='t')
          ;
          digitalWrite(PIN_10,LOW                {
          );                                    digitalWrite(PIN_2,LOW)
                                                ;
             }                                  digitalWrite(PIN_3,LOW)
                                                ;
          }                                     digitalWrite(PIN_4,LOW)
                                                ;
          else if (ch=='q')                     digitalWrite(PIN_5,LOW)
                                                ;
          {                                     digitalWrite(PIN_6,LOW)
                                                ;
             br=                                digitalWrite(PIN_7,LOW)
          digitalRead(PIN_10);                  ;
             if (br == HIGH)                     digitalWrite(PIN_8,LOW)
                                                ;
             {                                  digitalWrite(PIN_9,LOW)
          digitalWrite(PIN_11,HIG               ;
          H);
          digitalWrite(PIN_10,LOW
          );delay(5000);                        digitalWrite(PIN_10,LOW
          digitalWrite(PIN_11,LOW               );
          );
          digitalWrite(PIN_9,LOW)               digitalWrite(PIN_11,LOW
          ;                                     );
          digitalWrite(PIN_10,LOW
          );                                      }

             }                             }

          }                          }
```
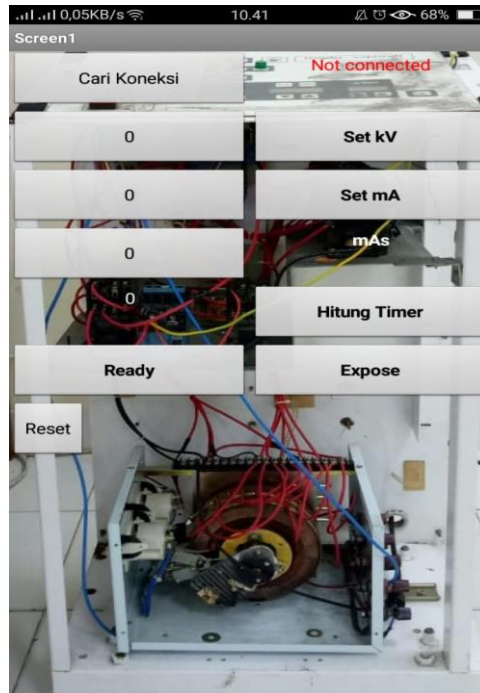
D. Tampilan pada android

Penelitian ini juga menggunakan android sebagai pengendali pada alat. Perancangan software menggunakan app invertor. Berikut adalah foto tampilan android :

Gambar tampilan pada android

Berikut adalah listing program pada android :

```
initialize global KV to    make a list  60          initialize global mA to    make a list  50
                                        65                                                  60
                                        70          initialize global mAs to   make a list  1
                                        75                                                  2
                                        80                                                  4
                                                                                            250

when  ListPicker1 ▾ .BeforePicking
do   set ListPicker1 ▾ . Elements ▾ to   get global kV ▾

when  ListPicker1 ▾ .AfterPicking
do   set ListPicker1 ▾ . Text ▾ to   ListPicker1 ▾ . Selection ▾

when  ListPicker2 ▾ .BeforePicking
do   set ListPicker2 ▾ . Elements ▾ to   get global mA ▾

when  ListPicker2 ▾ .AfterPicking
do   set ListPicker2 ▾ . Text ▾ to   ListPicker2 ▾ . Selection ▾

when  ListPicker3 ▾ .BeforePicking
do   set ListPicker3 ▾ . Elements ▾ to   get global mAs ▾

when  ListPicker3 ▾ .AfterPicking
do   set ListPicker3 ▾ . Text ▾ to   ListPicker3 ▾ . Selection ▾


when  Button1 ▾ .Click
do   if    compare texts  " 60 "  = ▾  ListPicker1 ▾ . Text ▾
     then  call BluetoothClient1 ▾ .SendText
                                   text  " g "

     if    compare texts  " 65 "  = ▾  ListPicker1 ▾ . Text ▾
     then  call BluetoothClient1 ▾ .SendText
                                   text  " h "

     if    compare texts  " 70 "  = ▾  ListPicker1 ▾ . Text ▾
     then  call BluetoothClient1 ▾ .SendText
                                   text  " i "

     if    compare texts  " 75 "  = ▾  ListPicker1 ▾ . Text ▾
     then  call BluetoothClient1 ▾ .SendText
                                   text  " j "

     if    compare texts  " 80 "  = ▾  ListPicker1 ▾ . Text ▾
     then  call BluetoothClient1 ▾ .SendText
                                   text  " k "
```

```
when Button2 .Click
do  if   compare texts ( " 50 " = ▾ ListPicker2 . Text ▾ )
    then  call BluetoothClient1 .SendText
                                text ( " a "

    if   compare texts ( " 60 " = ▾ ListPicker2 . Text ▾ )
    then  call BluetoothClient1 .SendText
                                text ( " b "

when Button3 .Click      initialize global Hasil to ( " □ "
do  set global Hasil ▾ to ( format as decimal number ( ListPicker3 . Text ▾ / ( ListPicker2 . Text ▾ )
                                           places ( 2
    set Label2 ▾ . Text ▾ to ( get global Hasil ▾

when Button4 .Click
do  call BluetoothClient1 .SendText
                          text ( " 9 "
```

Activate Wi

```
when Button5 .Click
do  if   compare texts ( " 0.02 " = ▾ Label2 . Text ▾ )
    then  call BluetoothClient1 .SendText
                                text ( " L "

    if   compare texts ( " 0.04 " = ▾ Label2 . Text ▾ )
    then  call BluetoothClient1 .SendText
                                text ( " M "

    if   compare texts ( " 0.08 " = ▾ Label2 . Text ▾ )
    then  call BluetoothClient1 .SendText
                                text ( " N "

    if   compare texts ( " 0.03 " = ▾ Label2 . Text ▾ )
    then  call BluetoothClient1 .SendText
                                text ( " O "

    if   compare texts ( " 0.07 " = ▾ Label2 . Text ▾ )
    then  call BluetoothClient1 .SendText
                                text ( " C "

    if   compare texts ( " 0.01 " = ▾ Label2 . Text ▾ )
    then  call BluetoothClient1 .SendText
                                text ( " Z "

    if   compare texts ( " 5.00 " = ▾ Label2 . Text ▾ )
    then  call BluetoothClient1 .SendText
                                text ( " q "
```

```
when  Button6 ▾  .Click
do    call  BluetoothClient1 ▾  .SendText
                                    text  " t "
      set  ListPicker1 ▾ . Text ▾  to  " 0 "
      set  ListPicker2 ▾ . Text ▾  to  " 0 "
      set  ListPicker3 ▾ . Text ▾  to  " 0 "
      set  Label2 ▾ . Text ▾  to  " 0 "
```