
LAMPIRAN



Alat jadi AUBP Berbasis Arduino Uno

Kode Pemrograman sensor loadcell,sensor jarak dan plx-daq data logger dengan real time clock di excel.

```
int trig= 6; // membuat variabel trig yang di set ke-pin 3
int echo= 7; // membuat variabel echo yang di set ke-pin 2
long durasi, jarak; // membuat variabel durasi dan jarak

#include "HX711.h" //memasukan library HX711

#define DOUT 3 //mendefinisikan pin arduino yang terhubung dengan pin DT module HX711
#define CLK 2 //mendefinisikan pin arduino yang terhubung dengan pin SCK module HX711

HX711 scale(DOUT, CLK);

float calibration_factor = 4090; //nilai kalibrasi ( sesuaikan dari hasil nilai percobaan program sebelumnya

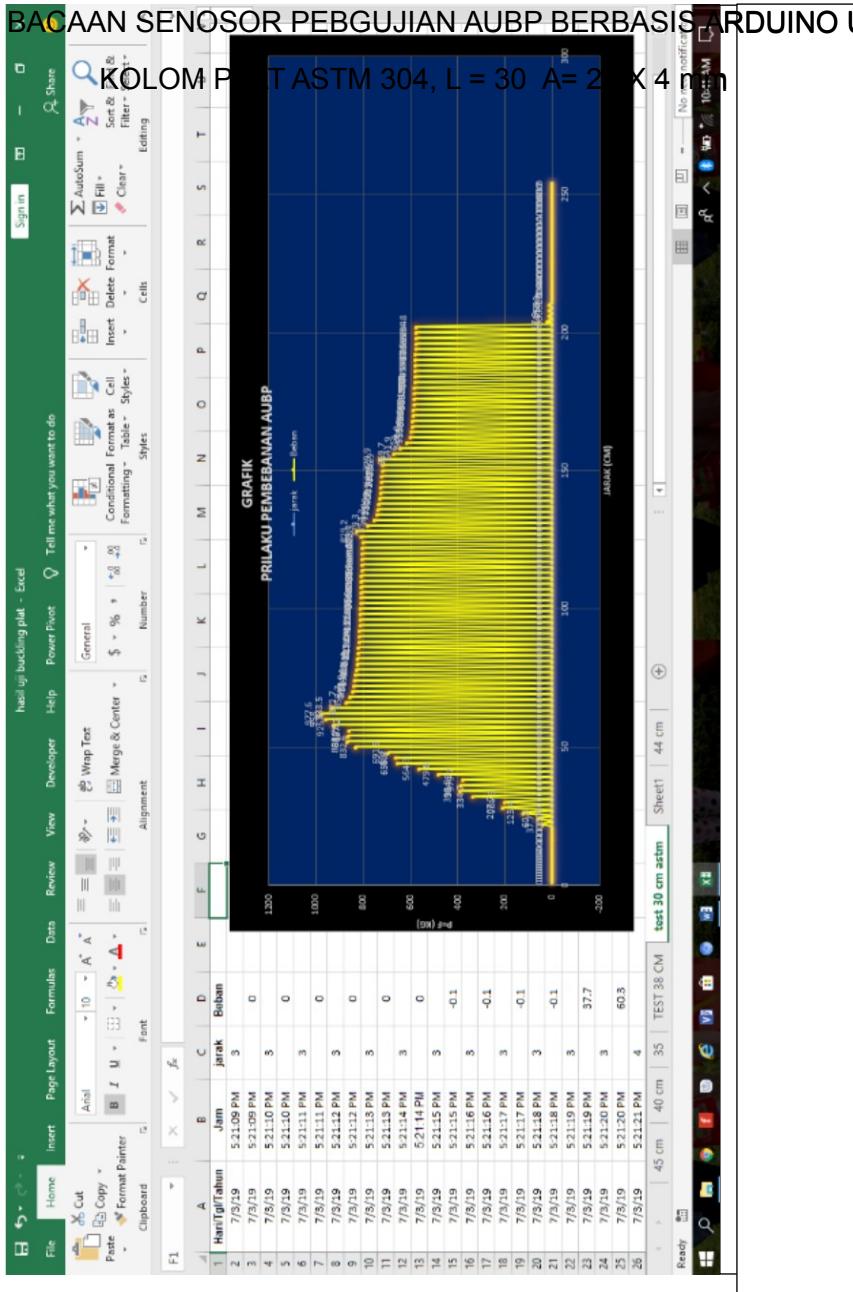
void setup() {
Serial.begin(9600);
Serial.println("Memulai program kalibrasi pada sensor berat");
Serial.println("ALAT UJI BUKLING PORTABLE");
scale.set_scale();
scale.tare(); // auto zero / mengenolkan pembacaan berat

long zero_factor = scale.read_average();
Serial.print("Zero factor: ");
Serial.println(zero_factor);

pinMode(trig, OUTPUT); // set pin trig menjadi OUTPUT
pinMode(echo, INPUT); // set pin echo menjadi INPUT
}
```

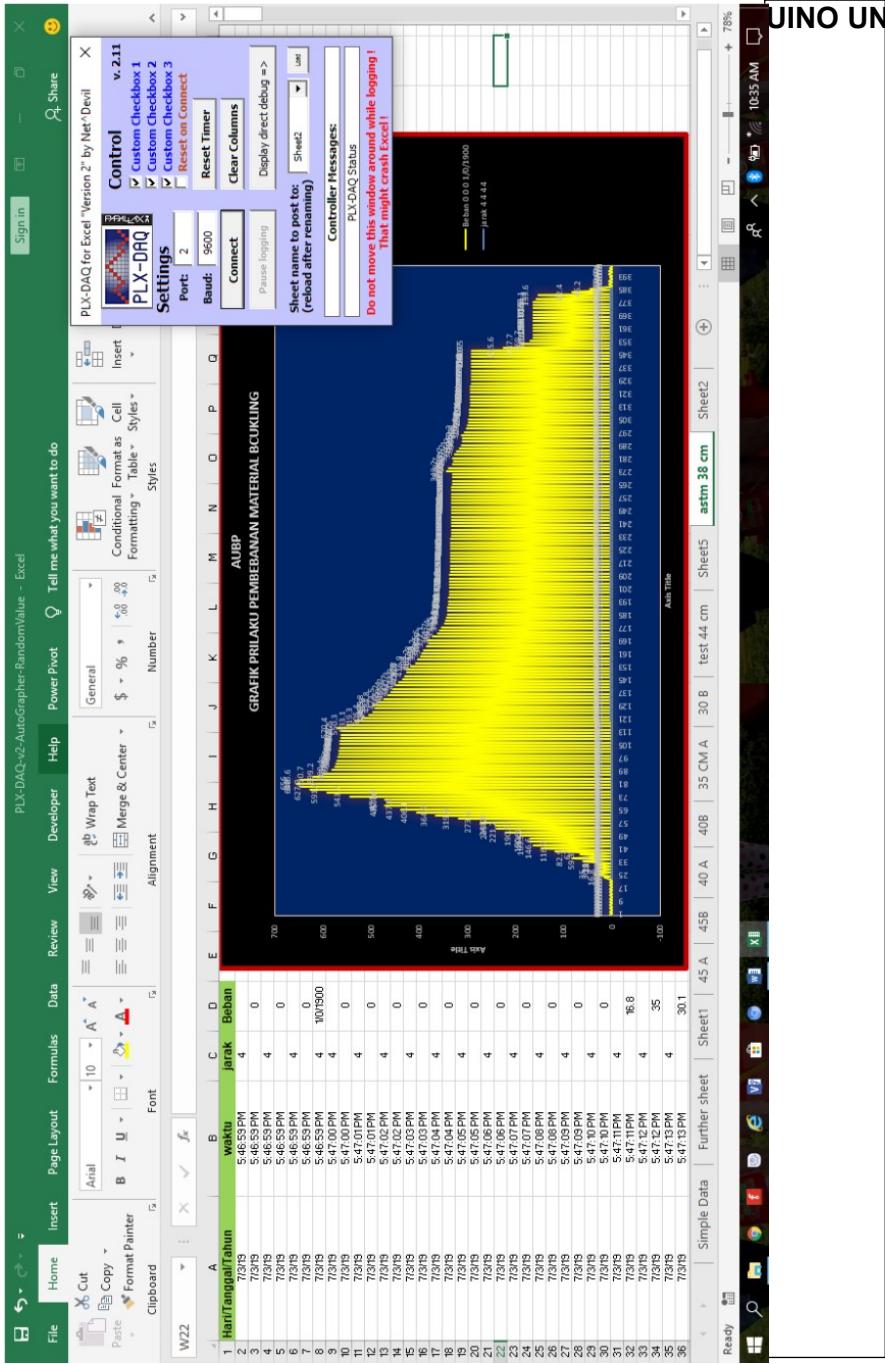
```
void loop() {  
Serial.print("DATA,DATE,TIME,");  
scale.set_scale(calibration_factor); //sesuaikan hasil  
pembacaan dengan nilai kalibrasi  
Serial.print(",");  
Serial.print(scale.get_units(), 1);  
Serial.println(",");  
delay(500);  
Serial.print("DATA,DATE,TIME,");  
digitalWrite(trig, LOW);  
delayMicroseconds(8);  
digitalWrite(trig, HIGH);  
delayMicroseconds(8);  
digitalWrite(trig, LOW);  
delayMicroseconds(8);  
durasi= pulseIn(echo, HIGH); // menerima suara ultrasonic  
jarak= (durasi/2) / 29.1; // mengubah durasi menjadi jarak (cm)  
Serial.println(jarak); // menampilkan jarak pada Serial Monitor  
delay(500);  
}
```

HASIL BACAAN SENOSOR PEBGUJIAN AUBP BERBASIS ARDUINO UNO



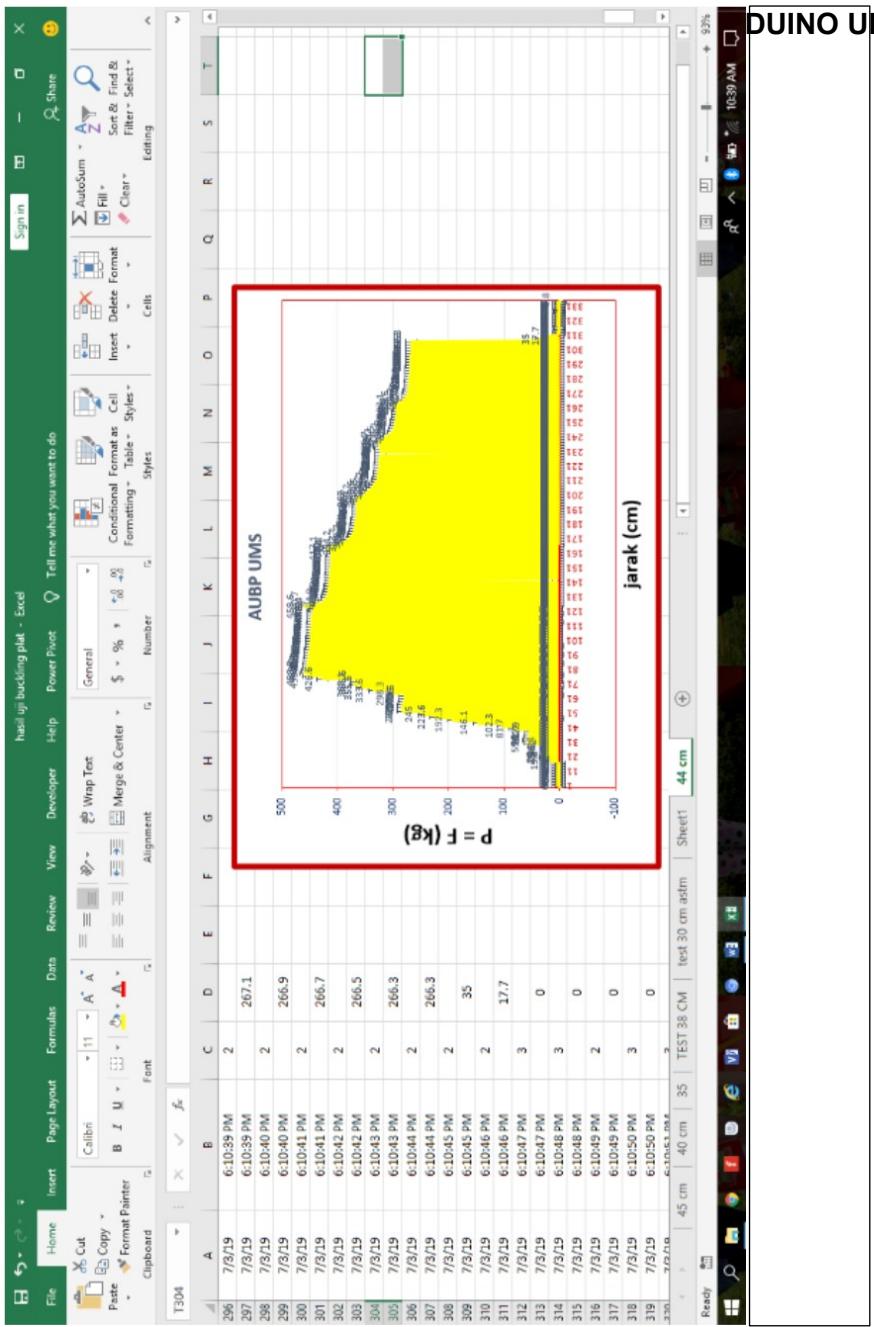
HASIL

UINO UNO



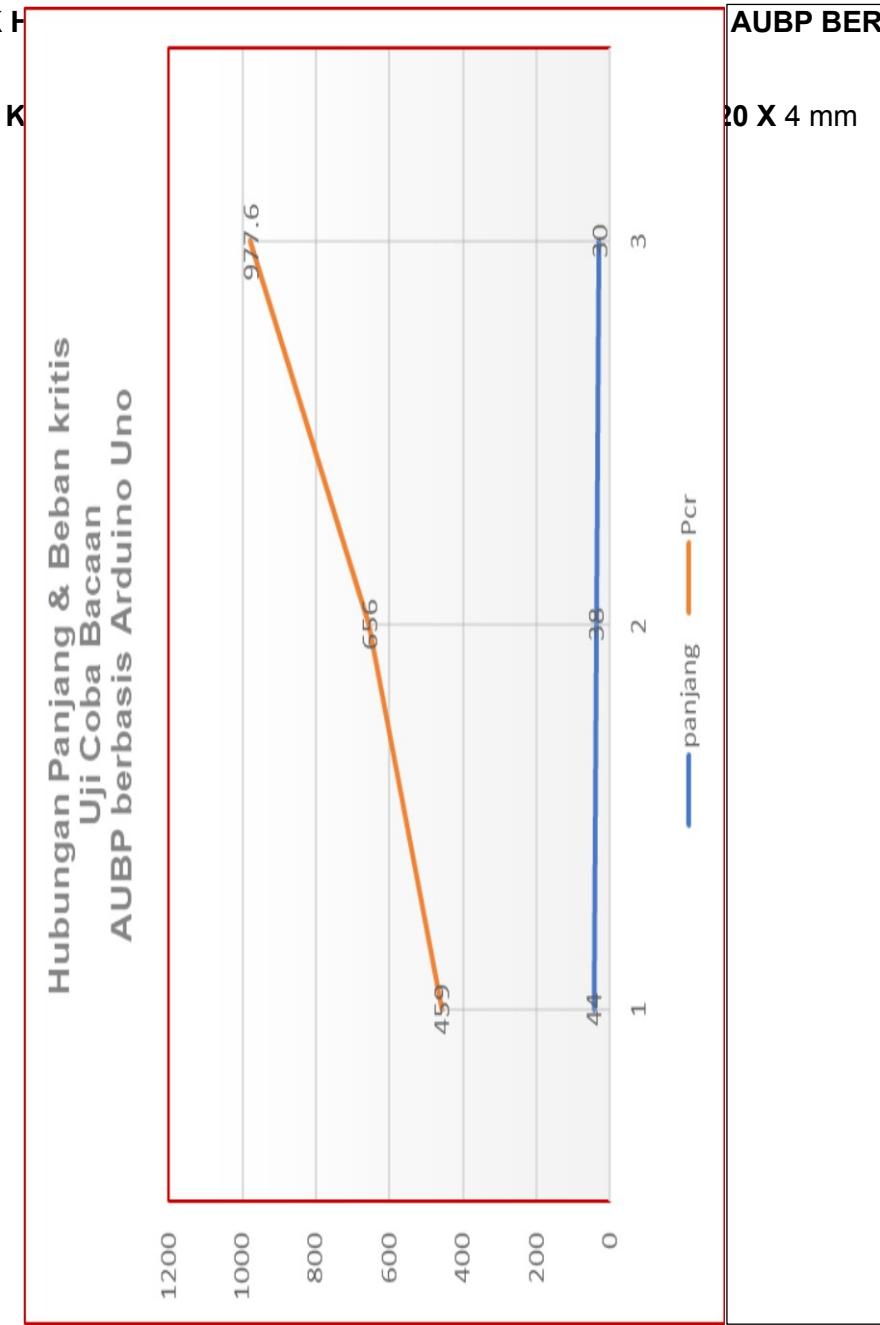
HASIL

DUINO UNO



GRAFIK H**AUBP BERBASIS**

Hubungan Panjang & Beban kritis
Uji Coba Bacaan
AUBP berbasis Arduino Uno



Serial Monitor

Monitor Tools

Connect Disconnect Configure Clear

```

DATA,DATE,TIME,, -0.0, 23:53:41.557 -> Memulai PROGRAM AUBP sensor LOADCELL DAN SENSOR JARAK
DATA,DATE,TIME,, -0.0, 23:53:41.644 -> ALAT UJI BUKLING PORTABLE UMS 2019
DATA,DATE,TIME,2 23:53:43.472 -> Zero factor: -13669
DATA,DATE,TIME,, -0.0, 23:53:43.519 -> DATA,DATE,TIME,, -0.0,
DATA,DATE,TIME,2 23:53:44.081 -> DATA,DATE,TIME,2
DATA,DATE,TIME,, -0.0, 23:53:44.550 -> DATA,DATE,TIME,, -0.0,
DATA,DATE,TIME,2 23:53:45.066 -> DATA,DATE,TIME,2
DATA,DATE,TIME,, -0.0, 23:53:45.581 -> DATA,DATE,TIME,, -0.0,
DATA,DATE,TIME,2 23:53:46.097 -> DATA,DATE,TIME,2
DATA,DATE,TIME,, -0.0, 23:53:46.566 -> DATA,DATE,TIME,, -0.0,
DATA,DATE,TIME,2 23:53:47.081 -> DATA,DATE,TIME,2
DATA,DATE,TIME,, -0.0, 23:53:47.597 -> DATA,DATE,TIME,, -0.0,
DATA,DATE,TIME,2 23:53:48.066 -> DATA,DATE,TIME,2
DATA,DATE,TIME,, -0.0, 23:53:48.581 -> DATA,DATE,TIME,, -0.0,
DATA,DATE,TIME,2 23:53:49.097 -> DATA,DATE,TIME,2
DATA,DATE,TIME,, -0.0, 23:53:49.566 -> DATA,DATE,TIME,, -0.0,
DATA,DATE,TIME,2 23:53:50.081 -> DATA,DATE,TIME,2
DATA,DATE,TIME,, -0.0, 23:53:50.597 -> DATA,DATE,TIME,, -0.0,
DATA,DATE,TIME,2 23:53:51.066 -> DATA,DATE,TIME,2
DATA,DATE,TIME,, -0.0, 23:53:51.581 -> DATA,DATE,TIME,, -0.0,
DATA,DATE,TIME,2 23:53:52.097 -> DATA,DATE,TIME,2
DATA,DATE,TIME,, -0.0, 23:53:52.566 -> DATA,DATE,TIME,, -0.0,
DATA,DATE,TIME,2 23:53:53.081 -> DATA,DATE,TIME,2
DATA,DATE,TIME,, -0.0, 23:53:53.597 -> DATA,DATE,TIME,, -0.0,
DATA,DATE,TIME,2 23:53:54.113 -> DATA,DATE,TIME,2
DATA,DATE,TIME,, -0.0, 23:53:54.581 -> DATA,DATE,TIME,, -0.0,
DATA,DATE,TIME,2 23:53:55.097 -> DATA,DATE,TIME,2
DATA,DATE,TIME,, -0.0, 23:53:55.613 -> DATA,DATE,TIME,, -0.0,
DATA,DATE,TIME,2 23:53:56.081 -> DATA,DATE,TIME,2
DATA,DATE,TIME,, -0.0, 23:53:56.597 -> DATA,DATE,TIME,, -0.0,
DATA,DATE,TIME,2 23:53:57.113 -> DATA,DATE,TIME,2
DATA,DATE,TIME,, -0.0, 23:53:57.581 -> DATA,DATE,TIME,, -0.0,
DATA,DATE,TIME,2 23:53:58.097 -> DATA,DATE,TIME,2
DATA,DATE,TIME,, -0.0, 23:53:58.579 -> DATA,DATE,TIME,, -0.0,
DATA,DATE,TIME,2 23:53:59.095 -> DATA,DATE,TIME,2
DATA,DATE,TIME,, -0.0, 23:53:59.611 -> DATA,DATE,TIME,, -0.0,
DATA,DATE,TIME,2 23:54:00.126 -> DATA,DATE,TIME,2
DATA,DATE,TIME,, -0.0, 23:54:00.595 -> DATA,DATE,TIME,, -0.0,
DATA,DATE,TIME,2 23:54:01.111 -> DATA,DATE,TIME,2
DATA,DATE,TIME,, -0.0, 23:54:01.626 -> DATA,DATE,TIME,, -0.0,
DATA,DATE,TIME,2 23:54:02.141 -> DATA,DATE,TIME,2

```

Disconnected

Autoscroll Show timestamp

PENGKALIBRASIAN SENSOR LOADCELL DAN JARAK AUBP