

## LAMPIRAN

### Lampiran 1. Kode program mikrokontroler

```
#include <LiquidCrystal_I2C.h>#include <Keypad.h>
#include <EEPROM.h>#include <WiFi.h>#include <ESP32Servo.h>
#include <HX711.h>#include <HTTPClient.h>
#define DOUT 26 #define SCK 25
#define pinBuzzer 23 #define pinServo 27
#define ledmerah 33 LiquidCrystal_I2C lcd(0x27, 16, 2);
const byte ROWS = 4; const byte COLS = 4;
char keys[ROWS][COLS] = {{'1','2','3','A'},{'4','5','6','B'},{'7','8','9','C'},
{'*','0','#','D'}};
byte rowPins[ROWS] = {12, 13, 14, 15};
byte colPins[COLS] = {16, 17, 18, 19};
Keypad keypad = Keypad(makeKeymap(keys), rowPins, colPins, ROWS,
COLS);
const char * ssid = "vivo1919"; const char * password = "12345678";
Servo servo; HX711 scale;
String GOOGLE_SCRIPT_ID = "AKfycbz8cyAfjm_LyXGU89czDqK8y
12dDQjg8nMbQCR0opmdmhIwpvs"; WiFiClientSecure client;
float calibration_factor = 52100; byte xMenu = 0; byte pageMenu = 1;
byte xCursor = 0; int hargaPerKilo; int beratMaks = 2000; int home = 0;
void setup(){ lcd.begin(); EEPROM.begin(1000); scale.begin(DOUT, SCK);
pinMode(pinBuzzer, OUTPUT); pinMode(LED_BUILTIN, OUTPUT);
pinMode(ledmerah, OUTPUT); scale.set_scale(); scale.tare();
scale.set_scale(calibration_factor); WiFi.mode(WIFI_STA); tutupKatup();
sambungWifi();keypad.addEventListener(keypadEvent);
hargaPerKilo = EEPROM.readInt(0);}
void loop(){ tampilkanMenu(); cekPerintah(); cekStatusWifi();
servo.detach();}
```

## Lampiran 2. Kode program aplikasi Apps Script

```
function doGet(e) {Logger.log( JSON.stringify(e) );var result = 'Ok';
if (e.parameter == 'undefined') {result = 'No Parameters';}else {
var sheet_id = '1Kg2W__wWbLMTe61G8hNfw9AkbAmFayINSRpN4Qlbfjs';
var sheet = SpreadsheetApp.openById(sheet_id).getActiveSheet();
var newRow = sheet.getLastRow() + 1; var rowData = [];
var Curr_Date = new Date(); rowData[0] = Curr_Date;
var Curr_Time = Utilities.formatDate(Curr_Date, "Asia/Jakarta",
'HH:mm:ss');rowData[1] = Curr_Time;
for (var param in e.parameter) { Logger.log('In for loop, param=' + param);
var value = stripQuotes(e.parameter[param]);
Logger.log(param + ':' + e.parameter[param]);
switch (param) {case 'berat':rowData[2] = value;
result = 'Nilai Written on column C';break;case 'harga':rowData[3] = value;
result = 'Nilai Written on column D';break;case 'mode':rowData[4] = value;
result = 'Nilai Written on column E';break;}}
Logger.log(JSON.stringify(rowData));
var newRange = sheet.getRange(newRow, 1, 1, rowData.length);
newRange.setValues([rowData]);}return
ContentService.createTextOutput(result);}function stripQuotes( value ) {
return value.replace(/^["]|"$$/g, "");}
```

## Lampiran 3. Datasheet komponen

### 1. LCD (Liquid Crystal Display)

#### 1. Features

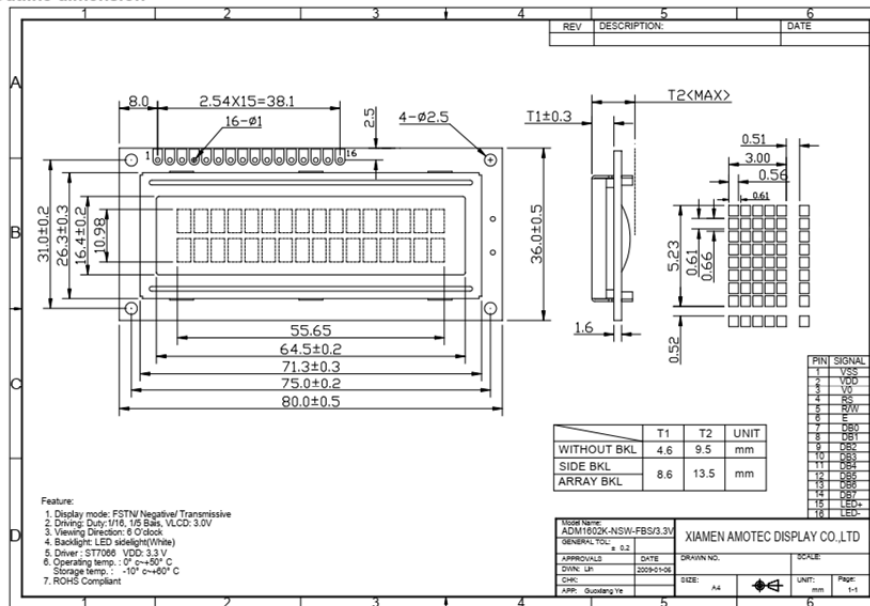
1. 5x8 dots with cursor
2. 16characters \*2lines display
3. 4-bit or 8-bit MPU interfaces
4. Built-in controller (ST7066 or equivalent)
5. Display Mode & Backlight Variations
6. ROHS Compliant

LCD type	<input type="checkbox"/> TN		
	<input type="checkbox"/> FSTN	<input checked="" type="checkbox"/> FSTN Negative	
View direction	<input checked="" type="checkbox"/> 6 O'clock	<input type="checkbox"/> 12 O'clock	
	<input type="checkbox"/> STN Yellow Green	<input type="checkbox"/> STN Gray	<input type="checkbox"/> STN Blue Negative
Rear Polarizer	<input type="checkbox"/> Reflective	<input type="checkbox"/> Transflective	<input checked="" type="checkbox"/> Transmissive
Backlight Type	<input checked="" type="checkbox"/> LED	<input type="checkbox"/> EL	<input type="checkbox"/> Internal Power
	<input type="checkbox"/> CCFL	<input checked="" type="checkbox"/> External Power	<input checked="" type="checkbox"/> 3.3V Input
Backlight Color	<input checked="" type="checkbox"/> White	<input type="checkbox"/> Blue	<input type="checkbox"/> Amber
	<input type="checkbox"/> Yellow-Green	<input type="checkbox"/> Super Wide	
Temperature Range	<input checked="" type="checkbox"/> Normal	<input type="checkbox"/> Wide	<input type="checkbox"/> Super Wide
DC to DC circuit	<input type="checkbox"/> Build-in	<input checked="" type="checkbox"/> Not Build-in	
Touch screen	<input type="checkbox"/> With	<input checked="" type="checkbox"/> Without	
Font type	<input checked="" type="checkbox"/> English-Japanese	<input type="checkbox"/> English-Europen	<input type="checkbox"/> English-Russian
	<input type="checkbox"/> Other		

#### 2. MECHANICAL SPECIFICATIONS

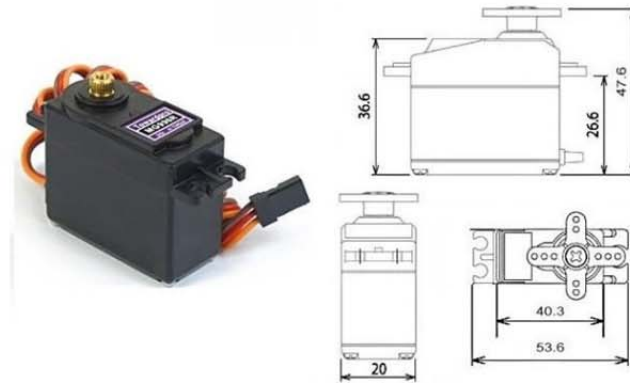
Module size	80.0mm(L)*36.0mm(W)* Max 13.5(H)mm
Viewing area	64.5mm(L)*16.4mm(W)
Character size	3.00mm(L)*5.23mm(W)
Character pitch	3.51mm(L)*5.75mm(W)
Weight	Approx.

#### 3. Outline dimension



## 2. Motor servo mg996r

### MG996R High Torque Metal Gear Dual Ball Bearing Servo



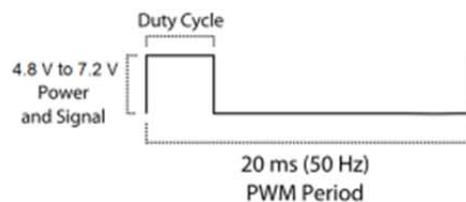
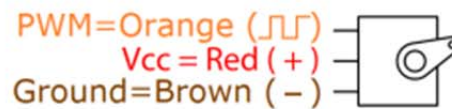
This High-Torque MG996R Digital Servo features metal gearing resulting in extra high 10kg stalling torque in a tiny package. The MG996R is essentially an upgraded version of the famous MG995 servo, and features upgraded shock-proofing and a redesigned PCB and IC control system that make it much more accurate than its predecessor. The gearing and motor have also been upgraded to improve dead bandwidth and centering. The unit comes complete with 30cm wire and 3 pin 'S' type female header connector that fits most receivers, including Futaba, JR, GWS, Cirrus, Blue Bird, Blue Arrow, Corona, Berg, Spektrum and Hitec.

This high-torque standard servo can rotate approximately 120 degrees (60 in each direction). You can use any servo code, hardware or library to control these servos, so it's great for beginners who want to make stuff move without building a motor controller with feedback & gear box, especially since it will fit in small places. The MG996R Metal Gear Servo also comes with a selection of arms and hardware to get you set up nice and fast!

#### Specifications

- Weight: 55 g
- Dimension: 40.7 x 19.7 x 42.9 mm approx.
- Stall torque: 9.4 kgf-cm (4.8 V), 11 kgf-cm (6 V)
- Operating speed: 0.17 s/60° (4.8 V), 0.14 s/60° (6 V)

- Operating voltage: 4.8 V a 7.2 V
- Running Current 500 mA - 900 mA (6V)
- Stall Current 2.5 A (6V)
- Dead band width: 5  $\mu$ s
- Stable and shock proof double ball bearing design
- Temperature range: 0 °C - 55 °C



### 3. Load cell

## Datasheet

### 3134 - Micro Load Cell (0-20kg) - CZL635



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#### What do you have to know?

A load cell is a force sensing module - a carefully designed metal structure, with small elements called strain gauges mounted in precise locations on the structure. Load cells are designed to measure a specific force, and ignore other forces being applied. The electrical signal output by the load cell is very small and requires specialized amplification. Fortunately, **the 1046 PhidgetBridge will perform all the amplification and measurement of the electrical output.**

Load cells are designed to measure force in one direction. They will often measure force in other directions, but the sensor sensitivity will be different, since parts of the load cell operating under compression are now in tension, and vice versa.

#### How does it work - For curious people

Strain-gauge load cells convert the load acting on them into electrical signals. The measuring is done with very small resistor patterns called strain gauges - effectively small, flexible circuit boards. The gauges are bonded onto a beam or structural member that deforms when weight is applied, in turn deforming the strain-gauge. As the strain gauge is deformed, its electrical resistance changes in proportion to the load.

The changes to the circuit caused by force is much smaller than the changes caused by variation in temperature. Higher quality load cells cancel out the effects of temperature using two techniques. By matching the expansion rate of the strain gauge to the expansion rate of the metal it's mounted on, undue strain on the gauges can be avoided as the load cell warms up and cools down. The most important method of temperature compensation involves using multiple strain gauges, which all respond to the change in temperature with the same change in resistance. Some load cell designs use gauges which are never subjected to any force, but only serve to counterbalance the temperature effects on the gauges that measuring force. Most designs use 4 strain gauges, some in compression, some under tension, which maximizes the sensitivity of the load cell, and automatically cancels the effect of temperature.

#### Installation

This Single Point Load Cell is used in small jewelry scales and kitchen scales. It's mounted by bolting down the end of the load cell where the wires are attached, and applying force on the other end **in the direction of the arrow**. Where the force is applied is not critical, as this load cell measures a shearing effect on the beam, not the bending of the beam. If you mount a small platform on the load cell, as would be done in a small scale, this load cell provides accurate readings regardless of the position of the load on the platform.

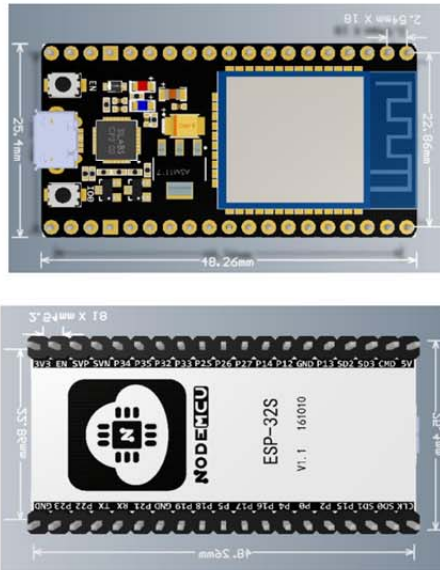


## 4. NodeMCU-ESP32



Nodemcu-32s WIFI MODULE V1

### Appearance size



### Features

- 802.11b/g/n (802.11n, speed up to 150Mbps)
- WIFI Frequency Range 2.4GHz ~ 2.5GHz
- Clock frequency adjustment range from 80 MHz to 240 MHz, support for RTOS
- Built-in 2-channel 12-bit high-precision ADC with up to 18 channels
- Support UART/GPIO/ADC/DAC/SDIO/SD card/PWM/I2C/I2S interface
- Support multiple sleep modes, ESP32 chip sleep current is less than 5  $\mu$ A