LAMPIRAN

Lampiran Program Arduino IDE

```
#include <WiFi.h>
#include <HTTPClient.h>
#include <WiFiClient.h>
#include <ArduinoJson.h>
#include <Wire.h>
#include <LiquidCrystal_I2C.h>
#include <Preferences.h>
#include <WebServer.h>
// ==========================================
// 1. DEFINISI PIN & KONFIGURASI
// ==========================================
#define RXD2 16
#define TXD2 17
#define PIN_SDA 21
#define PIN_SCL 22
#define PIN_RELAY_HIJAU 33
#define PIN_RELAY_MERAH 25
#define PIN_POMPA       26
#define PIN_BUZZER      27
#define PIN_FLOW        4
#define PIN_TRIG        32
#define PIN_ECHO        35
String server_domain = "isigalonku.alwaysdata.net";
#define RELAY_ON  LOW
#define RELAY_OFF HIGH

const int TARGET_JARAK = 2;
const int TOLERANSI    = 1;
const int WAKTU_STABIL = 2000;
float calibrationFactor = 7.41;
volatile unsigned long pulseCount  = 0;
volatile bool isProcessing         = false;
volatile bool setupMode            = false;
portMUX_TYPE mux = portMUX_INITIALIZER_UNLOCKED;
QueueHandle_t  queueTransaction;
SemaphoreHandle_t mutexUI;
LiquidCrystal_I2C lcd(0x27, 20, 4);
Preferences preferences;
WebServer   server(80);
struct Transaction {
  int    volume_ml;
  String token;
};

// ==========================================
// 2. INTERRUPT SERVICE ROUTINE (ISR)
// ==========================================
void IRAM_ATTR pulseCounter() {
```

```
  portENTER_CRITICAL_ISR(&mux);
  pulseCount++;
  portEXIT_CRITICAL_ISR(&mux);
}

// ==========================================
// 3. FUNGSI LCD — SEMUA AMAN DENGAN MUTEX
// ==========================================

/**
 * [PERBAIKAN AKTIF] Reinisialisasi LCD + I2C Recovery yang aman.
 * Dipanggil secara strategis setelah Relay Pompa ON/OFF untuk
 * menanggulangi I2C crash akibat lonjakan EMI (Inductive Kickback).
 */
void lcdSafeInit() {
  if (xSemaphoreTake(mutexUI, pdMS_TO_TICKS(500))) {
    Wire.end();
    vTaskDelay(pdMS_TO_TICKS(50));
    Wire.begin(PIN_SDA, PIN_SCL);
    vTaskDelay(pdMS_TO_TICKS(50));

    lcd.init();
    lcd.backlight();
    xSemaphoreGive(mutexUI);
  }
}
void lcdPrintRow(int row, String text) {
  while (text.length() < 20) text += ' ';
  if (text.length() > 20)    text  = text.substring(0, 20);
  if (xSemaphoreTake(mutexUI, pdMS_TO_TICKS(200))) {
    lcd.setCursor(0, row);
    lcd.print(text);
    xSemaphoreGive(mutexUI);
  }
}
void lcdClear() {
  if (xSemaphoreTake(mutexUI, pdMS_TO_TICKS(200))) {
    lcd.clear();
    xSemaphoreGive(mutexUI);
  }
}
void lcdPrintAll(String r0, String r1, String r2, String r3) {
  auto pad = [](String s) -> String {
    while (s.length() < 20) s += ' ';
    return s.substring(0, 20);
  };
  if (xSemaphoreTake(mutexUI, pdMS_TO_TICKS(200))) {
    lcd.setCursor(0, 0); lcd.print(pad(r0));
    lcd.setCursor(0, 1); lcd.print(pad(r1));
    lcd.setCursor(0, 2); lcd.print(pad(r2));
    lcd.setCursor(0, 3); lcd.print(pad(r3));
    xSemaphoreGive(mutexUI);
  }
```

```
}
// ==========================================
// 4. FUNGSI BANTUAN (HELPER)
// ==========================================
void beep(int times, int duration_ms = 100) {
  for (int i = 0; i < times; i++) {
    digitalWrite(PIN_BUZZER, HIGH);
    vTaskDelay(pdMS_TO_TICKS(duration_ms));
    digitalWrite(PIN_BUZZER, LOW);
    vTaskDelay(pdMS_TO_TICKS(duration_ms));
  }
}

int getDistance() {
  digitalWrite(PIN_TRIG, LOW);
  delayMicroseconds(2);
  digitalWrite(PIN_TRIG, HIGH);
  delayMicroseconds(10);
  digitalWrite(PIN_TRIG, LOW);
  long duration = pulseIn(PIN_ECHO, HIGH, 30000);
  if (duration == 0) return 999;
  return (int)(duration * 0.034 / 2);
}
// ==========================================
// 5. FUNGSI KOMUNIKASI API
// ==========================================
void updateTokenStatus(String qrCode) {
  if (WiFi.status() == WL_CONNECTED) {
    WiFiClient client;
    HTTPClient http;
    String url = "http://" + server_domain + "/api.php?token=" + qrCode + "&action=finish";
    if (http.begin(client, url)) {
      http.setUserAgent("Mozilla/5.0 (Windows NT 10.0; Win64; x64)");
      http.setFollowRedirects(HTTPC_STRICT_FOLLOW_REDIRECTS);
      http.GET();
      http.end();
    }
  }
}
int checkDatabase(String qrCode) {
  if (WiFi.status() == WL_CONNECTED) {
    WiFiClient client;
    HTTPClient http;
    String url = "http://" + server_domain + "/api.php?token=" + qrCode;
    if (http.begin(client, url)) {
      http.setUserAgent("Mozilla/5.0 (Windows NT 10.0; Win64; x64)");
      http.setFollowRedirects(HTTPC_STRICT_FOLLOW_REDIRECTS);
      int httpCode = http.GET();
      if (httpCode > 0) {
        String payload = http.getString();
        DynamicJsonDocument doc(1024);
        DeserializationError error = deserializeJson(doc, payload);
        if (!error) {
```

```
        String status = doc["status"];
        if (status == "valid") {
          int vol = doc["volume"];
          http.end();
          return vol;
        }
      }
    }
    http.end();
  }
 }
 return 0;
}
// ============================================
// 6. HALAMAN WEB SERVER (HTML LOKAL)
// ============================================
const char* htmlPage = R"rawliteral(
<!DOCTYPE html>
<html lang="id">
<head>
 <meta charset="UTF-8">
 <meta name="viewport" content="width=device-width, initial-scale=1.0">
 <title>WiFi Setup</title>
 <style>
  body { background-color: #0d1117; color: #c9d1d9; font-family: sans-serif; text-align:
center; padding-top: 50px; }
  h2 { color: #00f2ff; }
  form { background: #161b22; display: inline-block; padding: 30px; border-radius: 10px;
border: 1px solid #30363d; }
  input { padding: 12px; margin: 10px 0; width: 250px; border-radius: 5px; border: 1px solid
#30363d; background: #0d1117; color: white; }
  input[type="submit"] { background: #238636; color: white; font-weight: bold; cursor:
pointer; border: none; }
  input[type="submit"]:hover { background: #2ea043; }
 </style>
</head>
<body>
 <h2>PENGATURAN WIFI</h2>
 <form action="/save" method="POST">
  <input type="text" name="ssid" placeholder="Nama WiFi (SSID)" required><br>
  <input type="password" name="pass" placeholder="Password WiFi"><br>
  <input type="submit" value="SIMPAN & RESTART">
 </form>
</body>
</html>
)rawliteral";
void handleRoot() {
 server.send(200, "text/html", htmlPage);
}

void handleSave() {
 String newSSID = server.arg("ssid");
 String newPass = server.arg("pass");
```

```
  preferences.begin("wifi_config", false);
  preferences.putString("ssid", newSSID);
  preferences.putString("pass", newPass);
  preferences.end();
  String htmlResp = "<!DOCTYPE html><html><body
style='background:#0d1117;color:#00f2ff;"
                "text-align:center;margin-top:100px;font-family:sans-serif;'>"
                "<h2>Tersimpan!</h2><p>ESP32 sedang direstart. Silakan konek kembali ke
WiFi Anda.</p>"
                "</body></html>";
  server.send(200, "text/html", htmlResp);
  vTaskDelay(pdMS_TO_TICKS(2000));
  ESP.restart();
}
// ==========================================
// 7. TASK 1: NETWORK & WEB SERVER (Core 0)
// ==========================================
void taskNetwork(void *pvParameters) {
  preferences.begin("wifi_config", true);
  String savedSSID = preferences.getString("ssid", "");
  String savedPass = preferences.getString("pass", "");
  preferences.end();
  if (savedSSID != "") {
    lcdPrintRow(2, "WiFi: Connecting...");
    WiFi.begin(savedSSID.c_str(), savedPass.c_str());

    int attempts = 0;
    while (WiFi.status() != WL_CONNECTED && attempts < 20) {
      vTaskDelay(pdMS_TO_TICKS(500));
      attempts++;
    }
  }
  if (WiFi.status() != WL_CONNECTED) {
    setupMode = true;
    WiFi.mode(WIFI_AP);
    WiFi.softAP("WiFi_SETUP");
    lcdClear();
    lcdPrintAll(
      " KONEKSI WIFI GAGAL ",
      "Konek Hotspot HP ke:",
      "  WiFi: WiFi_SETUP  ",
      "Buka IP 192.168.4.1 "
    );
    server.on("/", handleRoot);
    server.on("/save", handleSave);
    server.begin();
    while (1) {
      server.handleClient();
      vTaskDelay(pdMS_TO_TICKS(10));
    }
  }
  lcdPrintRow(2, "WiFi: CONNECTED     ");
  lcdPrintRow(3, "IP:" + WiFi.localIP().toString());
```

```
  vTaskDelay(pdMS_TO_TICKS(2000));

  String qrBuffer = "";
  unsigned long lastScan = 0;
  while (1) {
    while (Serial2.available()) {
      char inChar = (char)Serial2.read();
      if (isProcessing) {
        qrBuffer = "";
        continue;
      }
      if (inChar == '\r' || inChar == '\n') {
        if (qrBuffer.length() > 0) {
          qrBuffer.trim();
          String cleanToken = "";
          for (int i = 0; i < (int)qrBuffer.length(); i++) {
            char c = qrBuffer.charAt(i);
            if ((c >= '0' && c <= '9') || (c >= 'A' && c <= 'Z') || (c >= 'a' && c <= 'z')) {
              if (c >= 'a' && c <= 'z') c -= 32;
              cleanToken += c;
            }
          }
          if (cleanToken.length() > 8) {
            cleanToken = cleanToken.substring(cleanToken.length() - 8);
          }
          if (millis() - lastScan > 3000) {
            lastScan = millis();
            lcdPrintRow(1, "VALIDASI TOKEN...   ");
            lcdPrintRow(2, "TK: " + cleanToken);
            beep(1, 50);

            int vol = checkDatabase(cleanToken);
            if (vol > 0) {
              isProcessing = true;
              Transaction trans = {vol, cleanToken};
              xQueueSend(queueTransaction, &trans, 0);
            } else {
              lcdPrintRow(1, "TOKEN INVALID!      ");
              beep(3, 100);
              vTaskDelay(pdMS_TO_TICKS(1500));
              lcdPrintRow(1, "MEMINDAI KODE QR... ");
              lcdPrintRow(2, "                    ");
            }
          }
          qrBuffer = "";
        }
      } else {
        qrBuffer += inChar;
      }
    }
    vTaskDelay(pdMS_TO_TICKS(10));
  }
}
```

```
// ==========================================
// 8. TASK 2: CONTROL & HARDWARE (Core 1)
// ==========================================
void taskControl(void *pvParameters) {
  Transaction currentTrans;

  while (1) {
    if (setupMode) {
      vTaskDelay(pdMS_TO_TICKS(1000));
      continue;
    }
    digitalWrite(PIN_RELAY_MERAH, RELAY_ON);
    digitalWrite(PIN_RELAY_HIJAU, RELAY_OFF);
    digitalWrite(PIN_POMPA,       RELAY_OFF);
    lcdPrintAll(
      " ISI GALON OTOMATIS ",
      "MEMINDAI KODE QR... ",
      "                    ",
      "SISTEM SIAP!        "
    );
    isProcessing = false;
    if (xQueueReceive(queueTransaction, &currentTrans, portMAX_DELAY) == pdPASS) {
      lcdPrintRow(1, "TOKEN KODE QR VALID!");
      lcdPrintRow(2, "VOLUME: " + String(currentTrans.volume_ml) + " mL     ");
      lcdPrintRow(3, "MENDETEKSI GALON... ");
      beep(1, 200);
      // --- Fase 1: Deteksi keberadaan galon ---
      unsigned long stabilityStart = 0;
      bool timeout = false;
      unsigned long waitStart = millis();
      while (true) {
        int dist = getDistance();
        if (dist >= (TARGET_JARAK - TOLERANSI) && dist <= (TARGET_JARAK +
TOLERANSI)) {
          if (stabilityStart == 0) stabilityStart = millis();
          lcdPrintRow(3, "JARAK:" + String(dist) + "cm OK...    ");
          if (millis() - stabilityStart > WAKTU_STABIL) break;
        } else {
          stabilityStart = 0;
          lcdPrintRow(3, "JARAK:" + String(dist) + " cm         ");
        }
        digitalWrite(PIN_RELAY_MERAH, !digitalRead(PIN_RELAY_MERAH));
        if (millis() - waitStart > 30000) {
          timeout = true;
          break;
        }
        vTaskDelay(pdMS_TO_TICKS(200));
      }
      if (timeout) {
        lcdPrintRow(2, "TIMEOUT!!!          ");
        lcdPrintRow(3, "TIDAK ADA GALON     ");
        beep(3, 200);
```

```
  vTaskDelay(pdMS_TO_TICKS(2000));
  isProcessing = false;
  continue;
}
// --- Fase 2: Mulai pengisian ---
digitalWrite(PIN_RELAY_MERAH, RELAY_OFF);
digitalWrite(PIN_RELAY_HIJAU, RELAY_ON);
portENTER_CRITICAL(&mux);
pulseCount = 0;
portEXIT_CRITICAL(&mux);
// NYALAKAN POMPA
digitalWrite(PIN_POMPA, RELAY_ON);

// [PERBAIKAN AKTIF]
// Berikan jeda waktu sebentar untuk membiarkan gelombang EMI (Noise) berlalu,
// lalu paksa reinisialisasi I2C dan LCD agar sembuh dari efek noise.
vTaskDelay(pdMS_TO_TICKS(250));
lcdSafeInit();
lcdClear();
lcdPrintAll(
  " ISI GALON OTOMATIS ",
  " MEMULAI  PENGISIAN ",
  "  JANGAN PINDAHKAN  ",
  "                    "
);
beep(1, 500);
unsigned long lastUpdate = 0;
float totalVolumeML = 0;
bool galonCabut = false;
// --- Loop monitoring pengisian ---
while (totalVolumeML < currentTrans.volume_ml) {
  unsigned long currentPulses;
  portENTER_CRITICAL(&mux);
  currentPulses = pulseCount;
  portEXIT_CRITICAL(&mux);
  totalVolumeML = (currentPulses / (calibrationFactor * 60.0)) * 1000.0;
  if (millis() - lastUpdate > 200) {
    String statusMsg = "ISI:" + String((int)totalVolumeML)
                     + "/" + String(currentTrans.volume_ml) + "mL";
    lcdPrintRow(3, statusMsg);
    lastUpdate = millis();
  }

  if (getDistance() > 20) {
    galonCabut = true;
    break;
  }
  vTaskDelay(pdMS_TO_TICKS(10));
}
// MATIKAN POMPA
digitalWrite(PIN_POMPA, RELAY_OFF);
// [PERBAIKAN AKTIF]
// Mematikan induktor juga menghasilkan flyback voltage (noise).
```

```
      // Lakukan pemulihan I2C/LCD sekali lagi di sini.
      vTaskDelay(pdMS_TO_TICKS(250));
      lcdSafeInit();
      if (galonCabut) {
        lcdPrintRow(2, "  TIDAK ADA GALON!  ");
        beep(5, 100);
        updateTokenStatus(currentTrans.token);
        vTaskDelay(pdMS_TO_TICKS(3000));
      } else {
        String finalMsg = "ISI:" + String(currentTrans.volume_ml)
                  + "/" + String(currentTrans.volume_ml) + "mL";
        lcdPrintRow(3, finalMsg);
        vTaskDelay(pdMS_TO_TICKS(1500));
        updateTokenStatus(currentTrans.token);
        lcdPrintAll(
          " ISI GALON OTOMATIS ",
          " PENGISIAN  SELESAI ",
          "    TERIMA KASIH    ",
          "                    "
        );
        beep(2, 200);
        vTaskDelay(pdMS_TO_TICKS(3000));
      }
      isProcessing = false;
    }
  }
}
// ============================================
// 9. SETUP (INISIALISASI AWAL)
// ============================================
void setup() {
  Serial.begin(115200);
  Serial2.begin(9600, SERIAL_8N1, RXD2, TXD2);
  Wire.begin(PIN_SDA, PIN_SCL);
  lcd.init();
  lcd.backlight();
  pinMode(PIN_RELAY_HIJAU, OUTPUT);
  pinMode(PIN_RELAY_MERAH, OUTPUT);
  pinMode(PIN_POMPA,       OUTPUT);
  pinMode(PIN_BUZZER,      OUTPUT);
  pinMode(PIN_TRIG,        OUTPUT);
  pinMode(PIN_ECHO,        INPUT);
  pinMode(PIN_FLOW, INPUT_PULLUP);
  attachInterrupt(digitalPinToInterrupt(PIN_FLOW), pulseCounter, FALLING);
  digitalWrite(PIN_RELAY_MERAH, RELAY_ON);
  digitalWrite(PIN_RELAY_HIJAU, RELAY_OFF);
  digitalWrite(PIN_POMPA,       RELAY_OFF);
  digitalWrite(PIN_BUZZER,      LOW);
  queueTransaction = xQueueCreate(1, sizeof(Transaction));
  mutexUI          = xSemaphoreCreateMutex();
  lcdPrintRow(0, " ISI GALON OTOMATIS ");
  lcdPrintRow(1, "MUHAMMAD RIZKY AKBAR");
  lcdPrintRow(2, "   40040621650039   ");
```

```
  lcdPrintRow(3, " YUNIARTO S.T., M.T.");
  delay(2500);
  xTaskCreatePinnedToCore(taskNetwork, "NetTask",  20000, NULL, 1, NULL, 0);
  xTaskCreatePinnedToCore(taskControl, "CtrlTask", 20000, NULL, 2, NULL, 1);
}
void loop() {
  vTaskDelete(NULL);
}
```

Lampiran program Index.Php

```
<!DOCTYPE html>
<html lang="id">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>RANCANG BANGUN PENGISIAN GALON OTOMATIS MENGGUNAKAN
SENSOR QRCODE, FLOWMETER, DAN WEBSITE BERBASIS ESP 32</title>
  <style>
    body {
      background-color: #0d1117;
      color: #c9d1d9;
      font-family: 'Courier New', monospace;
      text-align: center;
      padding: 50px;
    }
    h1 { color: #00f2ff; text-shadow: 0 0 10px #00f2ff; letter-spacing: 5px; margin-bottom:
5px; }
    p.subtitle { color: #8b949e; font-size: 0.9em; font-weight: 1000; letter-spacing: 5px;
margin-bottom: 20px; }

    .card-container { display: flex; justify-content: center; gap: 20px; flex-wrap: wrap; }
    .card {
      background: #161b22;
      border: 1px solid #30363d;
      border-radius: 10px;
      padding: 20px;
      width: 220px;
      transition: 0.3s;
      box-shadow: 0 0 5px rgba(0, 242, 255, 0.1);
      position: relative;
      overflow: hidden;
    }
    .card:hover { transform: translateY(-5px); border-color: #00f2ff; box-shadow: 0 0 20px
rgba(0, 242, 255, 0.3); }

    .vol-title { font-size: 1.8em; font-weight: bold; color: #fff; margin: 10px 0; }

    /* KOMENTAR: Style harga disembunyikan */
    /* .price { font-size: 1.4em; color: #00f2ff; margin-bottom: 20px; text-shadow: 0 0 5px
rgba(0, 242, 255, 0.5); } */

    .btn {
```

```
        background: #238636;
        color: white;
        border: none;
        padding: 12px;
        border-radius: 5px;
        cursor: pointer;
        font-weight: bold;
        width: 100%;
        font-family: inherit;
        letter-spacing: 1px;
        transition: 0.2s;
        margin-top: 15px; /* Tambahan sedikit margin karena price dihilangkan */
    }
    .btn:hover { background: #2ea043; box-shadow: 0 0 10px #2ea043; }

    .modal-overlay {
        display: none;
        position: fixed;
        z-index: 999;
        left: 0; top: 0;
        width: 100%; height: 100%;
        background-color: rgba(0,0,0,0.85);
        backdrop-filter: blur(5px);
    }

    .modal-box {
        background: #161b22;
        margin: 10% auto;
        padding: 30px;
        border: 2px solid #00f2ff;
        width: 350px;
        border-radius: 10px;
        box-shadow: 0 0 30px rgba(0, 242, 255, 0.4);
        text-align: center;
        animation: slideDown 0.3s ease-out;
    }

    @keyframes slideDown {
        from { transform: translateY(-50px); opacity: 0; }
        to { transform: translateY(0); opacity: 1; }
    }

    .modal-title { color: #fff; font-size: 1.5em; margin-bottom: 20px; border-bottom: 1px
solid #30363d; padding-bottom: 10px; }
    .modal-info { font-size: 1.2em; margin: 10px 0; color: #c9d1d9; }
```

```
        .highlight { color: #00f2ff; font-weight: bold; }

        .modal-actions { display: flex; gap: 10px; margin-top: 30px; }
        .btn-confirm { flex: 1; background: #00f2ff; color: #000; border: none; padding: 10px;
border-radius: 5px; font-weight: bold; cursor: pointer; }
        .btn-confirm:hover { background: #fff; box-shadow: 0 0 15px #fff; }
        .btn-cancel { flex: 1; background: transparent; color: #ff5555; border: 1px solid #ff5555;
padding: 10px; border-radius: 5px; font-weight: bold; cursor: pointer; }
        .btn-cancel:hover { background: #ff5555; color: #fff; box-shadow: 0 0 15px #ff5555; }

    </style>
</head>
<body>

    <h1>RANCANG BANGUN PENGISIAN GALON OTOMATIS MENGGUNAKAN
SENSOR QRCODE, FLOWMETER, DAN WEBSITE BERBASIS ESP 32</h1>
    <p class="subtitle">MUHAMMAD RIZKY AKBAR</p>
    <p class="subtitle">40040621650039</p>

    <div class="card-container">
        <div class="card">
            <div class="vol-title">2 Liter</div>
            <form action="process.php" method="POST">
                <input type="hidden" name="vol" value="2000">
                <button type="button" class="btn" onclick="askConfirm('2 Liter',
this)">BUY</button>
            </form>
        </div>

        <div class="card">
            <div class="vol-title">5 Liter</div>
            <form action="process.php" method="POST">
                <input type="hidden" name="vol" value="5000">
                <button type="button" class="btn" onclick="askConfirm('5 Liter',
this)">BUY</button>
            </form>
        </div>

        <div class="card">
            <div class="vol-title">15 Liter</div>
            <form action="process.php" method="POST">
                <input type="hidden" name="vol" value="15000">
                <button type="button" class="btn" onclick="askConfirm('15 Liter',
this)">BUY</button>
            </form>
```

```
        </div>
    </div>

    <div id="confirmModal" class="modal-overlay">
        <div class="modal-box">
            <div class="modal-title">APAKAH ANDA YAKIN?</div>
            <p class="modal-info">Volume: <span id="modal-vol"
class="highlight"></span></p>

            <br>
            <div class="modal-actions">
                <button onclick="closeModal()" class="btn-cancel">TIDAK</button>
                <button onclick="processTransaction()" class="btn-confirm">YA</button>
            </div>
        </div>
    </div>

    <script>
        let selectedForm = null;

        // KOMENTAR: Parameter 'price' dihapus dari fungsi
        // function askConfirm(volume, price, btnRef) {
        function askConfirm(volume, btnRef) {

            selectedForm = btnRef.closest('form');

            document.getElementById('modal-vol').innerText = volume;

            // KOMENTAR: Baris pengisian teks harga disembunyikan
            // document.getElementById('modal-price').innerText = price;

            document.getElementById('confirmModal').style.display = 'block';
        }

        function closeModal() {
            document.getElementById('confirmModal').style.display = 'none';
            selectedForm = null;
        }

        function processTransaction() {
            if (selectedForm) {
                selectedForm.submit();
            }
        }
```

```
        window.onclick = function(event) {
            var modal = document.getElementById('confirmModal');
            if (event.target == modal) {
                closeModal();
            }
        }
    </script>
</body>
</html>
```

Lampiran Program Process.Php

```
<?php
include 'db.php';

if ($  SERVER["REQUEST  METHOD"] == "POST") {
   $vol = $_POST['vol'];

   $token = strtoupper(substr(md5(time()), 0, 8));

   $waktu_sekarang = date('Y-m-d H:i:s');

   $sql = "INSERT INTO tokens (token  code, volume, status, purchase  date) VALUES
('$token', '$vol', 'active', '$waktu  sekarang')";

   if ($conn->query($sql) !== TRUE) {
      echo "Error: " . $conn->error;
      exit();
   }
} else {
   header("Location: index.php");
   exit();
}
?>

<!DOCTYPE html>
<html lang="id">
<head>
   <meta charset="UTF-8">
   <meta name="viewport" content="width=device-width, initial-scale=1.0">
   <title>Transaction Success</title>
   <script src="https://cdnjs.cloudflare.com/ajax/libs/qrious/4.0.2/qrious.min.js"></script>
   <style>
      body { background-color: #0d1117; color: #c9d1d9; font-family: monospace; text-align:
center; padding-top: 50px; }
      .container {
         background: #161b22;
         display: inline-block;
         padding: 40px;
         border-radius: 10px;
         border: 1px solid #00f2ff;
         box-shadow: 0 0 20px rgba(0, 242, 255, 0.2);
         max-width: 400px;
      }
      h2 { color: #00f2ff; text-shadow: 0 0 5px #00f2ff; margin-top: 0;}
```

```
      canvas { border: 10px solid #fff; margin: 20px 0; border-radius: 4px;}
      .token-text { font-size: 1.5em; letter-spacing: 5px; color: #ffff00; margin-bottom: 5px;
font-weight: bold;}
      .info-text { color: #8b949e; margin-bottom: 25px; font-size: 0.9em; }

      .btn-download {
        background: #00f2ff;
        color: #000;
        border: none;
        padding: 12px 25px;
        border-radius: 5px;
        cursor: pointer;
        font-weight: bold;
        font-family: monospace;
        font-size: 1em;
        text-transform: uppercase;
        box-shadow: 0 0 10px rgba(0, 242, 255, 0.4);
        transition: 0.3s;
        margin-bottom: 20px;
        display: inline-block;
      }
      .btn-download:hover { background: #fff; box-shadow: 0 0 20px #fff; }

      a.back-link { color: #8b949e; text-decoration: none; border-bottom: 1px dotted #8b949e;
font-size: 0.8em; }
      a.back-link:hover { color: #fff; border-bottom: 1px solid #fff; }
    </style>
</head>
<body>
    <div class="container">
      <h2>Pemilihan Berhasil</h2>
      <p>Silahkan scan QR</p>

      <canvas id="qr"></canvas>

      <div class="token-text"><?php echo $token; ?></div>
      <div class="info-text">Volume: <?php echo $vol/1000; ?> Liters</div>

      <button onclick="downloadQR()" class="btn-download">
        Download QR Image
      </button>
      <br>

      <a href="index.php" class="back-link"><< Back to Home</a>
    </div>
```

```
    <script>
        var qr = new QRious({
            element: document.getElementById('qr'),
            value: '<?php echo $token; ?>',
            size: 200,
            background: 'white',
            foreground: 'black',
            level: 'H'
        });

        function downloadQR() {
            var sourceCanvas = document.getElementById("qr");
            var borderSize = 20;

            var finalCanvas = document.createElement('canvas');
            var ctx = finalCanvas.getContext('2d');

            finalCanvas.width = sourceCanvas.width + (borderSize * 2);
            finalCanvas.height = sourceCanvas.height + (borderSize * 2);

            ctx.fillStyle = "#FFFFFF";
            ctx.fillRect(0, 0, finalCanvas.width, finalCanvas.height);

            ctx.drawImage(sourceCanvas, borderSize, borderSize);

            var image = finalCanvas.toDataURL("image/png");
            var link = document.createElement('a');
            link.download = 'HYDRIX-TOKEN-<?php echo $token; ?>.png';
            link.href = image;
            link.click();
        }
    </script>
</body>
</html>
```

Lampiran Program Api.Php

```
<?php
header('Content-Type: application/json');
include 'db.php';

if (isset($_GET['token'])) {
    $token_input = $conn->real_escape_string($_GET['token']);
    $action = isset($_GET['action']) ? $_GET['action'] : '';
```

```
    if ($action === 'finish') {
        $sql = "UPDATE tokens SET status = 'used' WHERE token_code = '$token_input'";

        if ($conn->query($sql) === TRUE) {
            echo json_encode(["status" => "success"]);
        } else {
            echo json_encode(["status" => "error"]);
        }
    } else {
        $sql = "SELECT volume FROM tokens WHERE token_code = '$token_input' AND
status = 'active' LIMIT 1";
        $result = $conn->query($sql);

        if ($result && $result->num_rows > 0) {
            $row = $result->fetch_assoc();
            echo json_encode([
                "status" => "valid",
                "volume" => (int)$row['volume']
            ]);
        } else {
            echo json_encode(["status" => "invalid"]);
        }
    }
} else {
    echo json_encode(["status" => "error", "message" => "No token provided"]);
}

$conn->close();
?>
```

Lampiran Program db.Php

```
<?php
// db.php
$servername = "mysql-isigalonku.alwaysdata.net";
$username = "isigalonku";  // Default XAMPP
$password = "akbar1073";      // Default XAMPP biasanya kosong
$dbname = "isigalonku_db";

// Buat koneksi
$conn = new mysqli($servername, $username, $password, $dbname);

// Cek koneksi
if ($conn->connect  error) {
   die("Connection failed: " . $conn->connect_error);
}

$conn->query("SET time  zone = '+07:00'");
date_default_timezone_set('Asia/Jakarta');
?>
```

Lampiran Program Admin.Php

```
<?php
session_start();
include 'db.php';

// --- KONFIGURASI ADMIN ---
$admin_password = "tli21";

// --- LOGIC LOGIN / LOGOUT ---
if (isset($_GET['action']) && $_GET['action'] == 'logout') {
   session_destroy();
   header("Location: admin.php");
   exit();
}

if ($_SERVER['REQUEST_METHOD'] == 'POST' && isset($_POST['password'])) {
   if ($_POST['password'] === $admin_password) {
      $_SESSION['is_admin'] = true;
   } else {
      $error_msg = "Password Salah!";
   }
}

// Jika belum login, tampilkan Form Login
```

```
if (!isset($_SESSION['is_admin'])) {
?>
  <!DOCTYPE html>
  <html lang="id">
  <head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1">
    <title>Login Admin</title>
    <style>
      body { background: #0d1117; color: #c9d1d9; font-family: sans-serif; display: flex;
justify-content: center; align-items: center; height: 100vh; margin: 0; }
      .login-box { background: #161b22; padding: 40px; border: 1px solid #30363d; border-
radius: 10px; text-align: center; box-shadow: 0 0 20px rgba(0,0,0,0.5); }
      input { padding: 10px; border-radius: 5px; border: 1px solid #30363d; background:
#0d1117; color: white; margin-bottom: 10px; width: 200px; }
      button { background: #238636; color: white; border: none; padding: 10px 20px;
border-radius: 5px; cursor: pointer; width: 100%; font-weight: bold;}
      button:hover { background: #2ea043; }
      h2 { color: #00f2ff; margin-top: 0; }
      .error { color: #ff5555; margin-bottom: 10px; font-size: 0.9em; }
    </style>
  </head>
  <body>
    <div class="login-box">
      <h2>DASHBOARD ADMIN</h2>
      <?php if(isset($error  msg)) echo "<div class='error'>$error  msg</div>"; ?>
      <form method="POST">
        <input type="password" name="password" placeholder="Masukkan Password"
required><br>
        <button type="submit">LOGIN</button>
      </form>
    </div>
  </body>
  </html>
<?php
  exit();
}

// --- LOGIC DELETE DATA ---

if (isset($_GET['delete_id'])) {
  $id = intval($_GET['delete_id']);
  $conn->query("DELETE FROM tokens WHERE id=$id");
  header("Location: admin.php?msg=deleted");
  exit();
```

```
}

if ($_SERVER['REQUEST_METHOD'] == 'POST' && isset($_POST['bulk_delete'])) {
   if(!empty($  POST['ids'])) {
      $ids_to_delete = implode(",", $_POST['ids']);
      $conn->query("DELETE FROM tokens WHERE id IN ($ids_to_delete)");
      header("Location: admin.php?msg=bulk  deleted");
      exit();
   }
}


// --- LOGIC DASHBOARD & STATISTIK ---

$filter  date = isset($  GET['date']) ? $  GET['date'] : date('Y-m-d');

// Query Harian
$sql_daily = "SELECT SUM(volume) as bought_vol, COUNT(*) as bought_count,
SUM(CASE WHEN status = 'used' THEN volume ELSE 0 END) as used  vol, SUM(CASE
WHEN status = 'used' THEN 1 ELSE 0 END) as used  count FROM tokens WHERE
DATE(purchase_date) = '$filter_date'";
$res_daily = $conn->query($sql_daily)->fetch_assoc();
$d  bought  vol = $res  daily['bought  vol'] ? $res  daily['bought  vol'] / 1000 : 0;
$d_used_vol   = $res_daily['used_vol'] ? $res_daily['used_vol'] / 1000 : 0;
$d_bought_cnt = $res_daily['bought_count'];
$d_used_cnt   = $res_daily['used_count'];
$d  percent   = ($d  bought  vol > 0) ? ($d  used  vol / $d  bought  vol) * 100 : 0;

// Query All Time
$sql_all = "SELECT SUM(volume) as bought_vol, COUNT(*) as bought_count, SUM(CASE
WHEN status = 'used' THEN volume ELSE 0 END) as used_vol, SUM(CASE WHEN status
= 'used' THEN 1 ELSE 0 END) as used_count FROM tokens";
$res_all = $conn->query($sql_all)->fetch_assoc();
$a_bought_vol = $res_all['bought_vol'] ? $res_all['bought_vol'] / 1000 : 0;
$a_used_vol   = $res_all['used_vol'] ? $res_all['used_vol'] / 1000 : 0;
$a_bought_cnt = $res_all['bought_count'];
$a_used_cnt   = $res_all['used_count'];
$a_percent    = ($a_bought_vol > 0) ? ($a_used_vol / $a_bought_vol) * 100 : 0;

// Grafik Data
$sql_chart_daily = "SELECT volume, COUNT(*) as count FROM tokens WHERE
DATE(purchase_date) = '$filter_date' GROUP BY volume ORDER BY volume ASC";
$res_c_daily = $conn->query($sql_chart_daily);
$labels_daily = []; $data_daily = [];
// FIX 1: Cast (int) agar data dikirim sebagai angka, bukan string
```

```
while($row = $res_c_daily->fetch_assoc()) { $labels_daily[] = ($row['volume']/1000)." L";
$data_daily[] = (int)$row['count']; }

$sql  chart  all = "SELECT volume, COUNT(*) as count FROM tokens GROUP BY volume
ORDER BY volume ASC";
$res_c_all = $conn->query($sql_chart_all);
$labels  all = []; $data  all = [];
// FIX 1: Cast (int) disini juga
while($row = $res_c_all->fetch_assoc()) { $labels_all[] = ($row['volume']/1000)." L";
$data_all[] = (int)$row['count']; }

// Query Tabel
$sql_table = "SELECT * FROM tokens WHERE DATE(purchase_date) = '$filter_date'
ORDER BY id DESC";
$res  table = $conn->query($sql  table);
?>

<!DOCTYPE html>
<html lang="id">
<head>
   <meta charset="UTF-8">
   <meta name="viewport" content="width=device-width, initial-scale=1">
   <title>Dashboard Admin</title>
   <link href="https://cdn.jsdelivr.net/npm/bootstrap@5.3.0/dist/css/bootstrap.min.css"
rel="stylesheet">
   <link href="https://cdnjs.cloudflare.com/ajax/libs/font-awesome/6.0.0/css/all.min.css"
rel="stylesheet">

   <script src="https://cdn.jsdelivr.net/npm/chart.js"></script>
   <script src="https://cdn.jsdelivr.net/npm/chartjs-plugin-datalabels@2.0.0"></script>

   <style>
      body { background-color: #0d1117; color: #c9d1d9; font-family: 'Segoe UI', Tahoma,
Geneva, Verdana, sans-serif; }
      .card { background-color: #161b22; border: 1px solid #30363d; color: #fff; margin-
bottom: 20px; border-radius: 8px;}
      .card-header { border-bottom: 1px solid #30363d; background: #0d1117; color: #00f2ff;
font-weight: bold;}
      .table { color: #c9d1d9; border-color: #30363d; }
      .table thead th { border-bottom: 2px solid #30363d; color: #00f2ff; vertical-align:
middle; }
      .table td { border-color: #30363d; vertical-align: middle; }
      h1, h4 { color: #00f2ff; }

      .form-control { background: #0d1117; border: 1px solid #30363d; color: white; }
```

```
        ::-webkit-calendar-picker-indicator { filter: invert(1); cursor: pointer; }

        .btn-logout { background: #da3633; border: none; color: white; }
        .status-badge { padding: 3px 8px; border-radius: 4px; font-size: 0.8em; font-weight:
bold;}
        .st-active { background: #d29922; color: black; }
        .st-used { background: #238636; color: white; }
        .btn-toggle { border: 1px solid #30363d; color: #8b949e; background: #0d1117; font-
size: 0.8rem;}
        .btn-toggle.active { background: #238636; color: white; border-color: #238636; }
        .stat-value { font-size: 1.8em; font-weight: bold; color: white; }
        .stat-label { font-size: 0.8em; color: #8b949e; }
        .stat-divider { border-right: 1px solid #30363d; }
        .progress { height: 6px; background-color: #30363d; margin-top: 10px;}

        .form-check-input { background-color: #0d1117; border-color: #30363d; cursor: pointer;
}
        .form-check-input:checked { background-color: #238636; border-color: #238636; }

        .btn-trash { color: #da3633; background: transparent; border: none; transition: 0.2s; }
        .btn-trash:hover { color: #ff5555; transform: scale(1.1); }
    </style>
</head>
<body>

<div class="container py-4">
    <div class="d-flex justify-content-between align-items-center mb-4">
        <div><h2 class="fw-bold mb-0">DASHBOARD <span style="font-weight:300; font-
size:0.8em; color:#8b949e">ADMIN</span></h2></div>
        <a href="admin.php?action=logout" class="btn btn-logout btn-sm px-3">Logout</a>
    </div>

    <?php if(isset($_GET['msg'])): ?>
        <div class="alert alert-success alert-dismissible fade show bg-dark border-success text-
success" role="alert">
            <i class="fas fa-check-circle me-2"></i>
            <?php echo ($_GET['msg'] == 'deleted') ? 'Data berhasil dihapus!' : 'Beberapa data
berhasil dihapus sekaligus!'; ?>
            <button type="button" class="btn-close btn-close-white" data-bs-dismiss="alert" aria-
label="Close"></button>
        </div>
    <?php endif; ?>

    <div class="card p-3 mb-4">
        <form class="row g-3 align-items-center">
```

```
        <div class="col-auto"><label class="col-form-label fw-bold">📅 Lihat
Tanggal:</label></div>
        <div class="col-auto"><input type="date" name="date" class="form-control"
value="<?php echo $filter  date; ?>" onchange="this.form.submit()"></div>
      </form>
    </div>

    <div class="row">
      <div class="col-md-6">
        <div class="card h-100">
          <div class="card-header d-flex justify-content-between">
            <span>STATISTIK HARIAN (<?php echo date('d/m', strtotime($filter  date));
?>)</span>
            <span class="badge bg-success">Today</span>
          </div>
          <div class="card-body">
            <div class="row text-center">
              <div class="col-6 stat-divider">
                <div class="stat-value text-primary"><?php echo $d  bought  vol; ?>
L</div>
                <div class="stat-label">Air Dibeli<br>(<?php echo $d_bought_cnt; ?>
Transaksi)</div>
              </div>
              <div class="col-6">
                <div class="stat-value text-success"><?php echo $d_used_vol; ?> L</div>
                <div class="stat-label">Air Diambil<br>(<?php echo $d  used  cnt; ?>
Transaksi)</div>
              </div>
            </div>
            <div class="mt-3">
              <div class="d-flex justify-content-between small text-muted"><span>Realisasi
Pengambilan</span><span><?php echo number_format($d_percent, 1); ?>%</span></div>
              <div class="progress"><div class="progress-bar bg-success"
role="progressbar" style="width: <?php echo $d_percent; ?>%"></div></div>
            </div>
          </div>
        </div>
      </div>
      <div class="col-md-6">
        <div class="card h-100" style="border-color: #1f6feb;">
          <div class="card-header d-flex justify-content-between" style="color: #58a6ff;">
            <span>STATISTIK ALL TIME</span>
            <span class="badge bg-primary">Total</span>
          </div>
          <div class="card-body">
```

```
                <div class="row text-center">
                  <div class="col-6 stat-divider">
                    <div class="stat-value text-primary"><?php echo $a_bought_vol; ?>
L</div>
                    <div class="stat-label">Total Dibeli<br>(<?php echo $a_bought_cnt; ?>
Transaksi)</div>
                  </div>
                  <div class="col-6">
                    <div class="stat-value text-success"><?php echo $a_used_vol; ?> L</div>
                    <div class="stat-label">Total Diambil<br>(<?php echo $a_used_cnt; ?>
Transaksi)</div>
                  </div>
                </div>
                <div class="mt-3">
                  <div class="d-flex justify-content-between small text-muted"><span>Realisasi
Pengambilan</span><span><?php echo number  format($a  percent, 1); ?>%</span></div>
                  <div class="progress"><div class="progress-bar bg-success"
role="progressbar" style="width: <?php echo $a  percent; ?>%"></div></div>
                </div>
              </div>
            </div>
          </div>
        </div>

        <div class="row mt-2">
          <div class="col-md-4">
            <div class="card h-100">
              <div class="card-header d-flex justify-content-between align-items-center">
                <span>📊 VARIAN TERLARIS</span>
                <div class="btn-group btn-group-sm">
                  <button type="button" class="btn btn-toggle active" id="btnChartDaily"
onclick="switchChart('daily')">Hari</button>
                  <button type="button" class="btn btn-toggle" id="btnChartAll"
onclick="switchChart('all')">Total</button>
                </div>
              </div>
              <div class="card-body d-flex justify-content-center align-items-center">
                <div style="height: 250px; width: 100%;"><canvas
id="variantChart"></canvas></div>
              </div>
            </div>
          </div>

          <div class="col-md-8">
            <div class="card h-100">
```

```
            <div class="card-header d-flex justify-content-between align-items-center">
              <span> LOG TRANSAKSI</span>
              <button id="btnBulkDelete" onclick="submitBulkDelete()" class="btn btn-
danger btn-sm d-none">
                <i class="fas fa-trash-alt me-1"></i> Hapus Terpilih
              </button>
            </div>
            <div class="card-body p-0">
              <form id="formBulkDelete" method="POST" action="">
                <input type="hidden" name="bulk_delete" value="1">

                <div class="table-responsive" style="max-height: 350px; overflow-y: auto;">
                  <table class="table table-hover table-dark mb-0 table-sm">
                    <thead style="position: sticky; top: 0; background: #161b22; z-index:
5;">
                      <tr>
                        <th width="40" class="text-center"><input type="checkbox"
id="selectAll" class="form-check-input" onclick="toggleSelectAll()"></th>
                        <th>Jam</th>
                        <th>Token</th>
                        <th>Vol</th>
                        <th>Status</th>
                        <th width="50" class="text-center">Aksi</th>
                      </tr>
                    </thead>
                    <tbody>
                      <?php if ($res_table->num_rows > 0): ?>
                        <?php while($row = $res_table->fetch_assoc()): ?>
                          <tr>
                            <td class="text-center"><input type="checkbox" name="ids[]"
value="<?php echo $row['id']; ?>" class="form-check-input row-checkbox"
onclick="checkBulkButton()"></td>
                            <td><?php echo date('H:i', strtotime($row['purchase_date']));
?></td>
                            <td style="font-family: monospace; color: #e3b341"><?php
echo $row['token_code']; ?></td>
                            <td><?php echo $row['volume'] / 1000; ?>L</td>
                            <td>
                              <?php
                                $st = $row['status'];
                                $cls = ($st == 'active') ? 'st-active' : (($st == 'used') ? 'st-
used' : 'st-paid');
                                echo "<span class='status-badge $cls'>" . strtoupper($st) .
"</span>";
                              ?>
```

```
                                    </td>
                                    <td class="text-center">
                                        <a href="#" onclick="confirmDelete(<?php echo $row['id']; 
?>)" class="btn-trash" title="Hapus"><i class="fas fa-trash"></i></a>
                                    </td>
                                </tr>
                            <?php endwhile; ?>
                        <?php else: ?>
                            <tr><td colspan="6" class="text-center text-muted py-4">Belum ada 
data di tanggal ini.</td></tr>
                        <?php endif; ?>
                    </tbody>
                </table>
            </div>
        </form>
    </div>
  </div>
</div>

<script>
  Chart.register(ChartDataLabels);

  const labelsDaily = <?php echo json_encode($labels_daily); ?>;
  const dataDaily = <?php echo json_encode($data_daily); ?>;
  const labelsAll = <?php echo json_encode($labels_all); ?>;
  const dataAll = <?php echo json_encode($data_all); ?>;

  const ctx = document.getElementById('variantChart');
  let myChart = new Chart(ctx, {
    type: 'doughnut',
    data: {
      labels: labelsDaily.length ? labelsDaily : ['No Data'],
      datasets: [{
        data: dataDaily.length ? dataDaily : [1],
        backgroundColor: dataDaily.length ? ['#238636', '#1f6feb', '#d29922', '#da3633'] : 
['#30363d'],
        borderWidth: 0
      }]
    },
    options: {
      responsive: true,
      maintainAspectRatio: false,
      plugins: {
```

```
            legend: { position: 'right', labels: { color: '#c9d1d9' } },
            datalabels: {
              color: '#ffffff',
              font: { weight: 'bold', size: 14 },
              formatter: (value, ctx) => {
                if(ctx.chart.data.labels[0] === 'No Data') return '';

                let sum = 0;
                let dataArr = ctx.chart.data.datasets[0].data;
                // FIX 2: Pastikan dikonversi ke Number agar tidak terjadi String
Concatenation
                dataArr.forEach(data => { sum += Number(data); });

                if (sum === 0) return "0%"; // Cegah pembagian nol

                let percentage = (value * 100 / sum).toFixed(1) + "%";
                return percentage;
              }
            }
          }
        }
      });

      function switchChart(mode) {
        const btnDaily = document.getElementById('btnChartDaily');
        const btnAll = document.getElementById('btnChartAll');
        if (mode === 'daily') {
          btnDaily.classList.add('active'); btnAll.classList.remove('active');
          myChart.data.labels = labelsDaily.length ? labelsDaily : ['No Data'];
          myChart.data.datasets[0].data = dataDaily.length ? dataDaily : [1];
          myChart.data.datasets[0].backgroundColor = dataDaily.length ? ['#238636', '#1f6feb',
'#d29922', '#da3633'] : ['#30363d'];
        } else {
          btnDaily.classList.remove('active'); btnAll.classList.add('active');
          myChart.data.labels = labelsAll.length ? labelsAll : ['No Data'];
          myChart.data.datasets[0].data = dataAll.length ? dataAll : [1];
          myChart.data.datasets[0].backgroundColor = dataAll.length ? ['#238636', '#1f6feb',
'#d29922', '#da3633'] : ['#30363d'];
        }
        myChart.update();
      }

      // --- DELETE FUNCTIONS ---
      function confirmDelete(id) {
        if(confirm("Apakah Anda yakin ingin menghapus data ini secara permanen?")) {
```

```
            window.location.href = "admin.php?delete_id=" + id;
        }
    }

    function toggleSelectAll() {
        const checkboxes = document.querySelectorAll('.row-checkbox');
        const master = document.getElementById('selectAll');
        checkboxes.forEach(cb => cb.checked = master.checked);
        checkBulkButton();
    }

    function checkBulkButton() {
        const checkboxes = document.querySelectorAll('.row-checkbox:checked');
        const btn = document.getElementById('btnBulkDelete');
        if (checkboxes.length > 0) {
            btn.classList.remove('d-none');
            btn.innerHTML = `<i class="fas fa-trash-alt me-1"></i> Hapus
(${checkboxes.length}) Data`;
        } else {
            btn.classList.add('d-none');
        }
    }

    function submitBulkDelete() {
        if(confirm("PERINGATAN! Anda akan menghapus banyak data sekaligus. Tindakan ini
tidak bisa dibatalkan. Lanjutkan?")) {
            document.getElementById('formBulkDelete').submit();
        }
    }
</script>

<script
src="https://cdn.jsdelivr.net/npm/bootstrap@5.3.0/dist/js/bootstrap.bundle.min.js"></script>

</body>
</html>
```

Lampiran Datasheet ESP 32 DEVKIT V1

For details please refer to ESP Product Selector.

1.1.3 Functional Description

The following figure and the table below describe the key components, interfaces and controls of the ESP32-DevKitC V4 board.

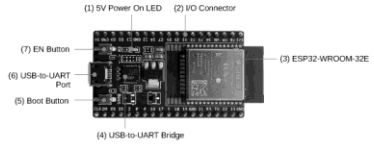


Fig. 1: ESP32-DevKitC V4 with ESP32-WROOM-32E module soldered

The key components of the board are described, starting from the 5V Power On LED, in a clockwise direction.

No.	Key Component	Description
1	5V Power On LED	Turns on when the USB or an external 5V power supply is connected to the board. For details see the schematics in *Related Documents*.
2	I/O Connector	Most of the pins on the ESP module are broken out to the pin headers on the board. You can program ESP32 to enable multiple functions such as PWM, ADC, DAC, I2C, I2S, SPI, etc.
3	ESP32-WROOM-32E	A module with ESP32 at its core. For more information, see ESP32-WROOM-32E Datasheet.
4	USB-to-UART Bridge	Single USB-to-UART bridge chip, providing transfer rates up to 3 Mbps.
5	Boot Button	Download button. Holding down **Boot** and then pressing **EN** initiates Firmware Download mode for downloading firmware through the serial port.
6	USB-to-UART Port	A Micro-USB port used for power supply to the board, as well as for communication between a computer and the ESP32-WROOM-32E module.
7	EN Button	Reset button.

1.1.4 Power Supply Options

There are three mutually exclusive ways to provide power to the board:

- Micro USB port, default power supply
- 5V and GND header pins
- 3V3 and GND header pins

Warning: The power supply must be provided using **one and only one of the options above**, otherwise the board and/or the power supply source can be damaged.

1.1.5 Header Block

The two tables below provide the **Name** and **Function** of I/O header pins on both sides of the board, as shown in *ESP32-DevKitC V4 with ESP32-WROOM-32E module soldered*.

J2

No.	Name	Type[1]	Function
1	3V3	P	3.3 V power supply
2	EN	I	CHIP_PU, Reset
3	VP	I	GPIO36, ADC1_CH0, S_VP
4	VN	I	GPIO39, ADC1_CH3, S_VN
5	IO34	I	GPIO34, ADC1_CH6, VDET_1
6	IO35	I	GPIO35, ADC1_CH7, VDET_2
7	IO32	I/O	GPIO32, ADC1_CH4, TOUCH_CH9, XTAL_32K_P
8	IO33	I/O	GPIO33, ADC1_CH5, TOUCH_CH8, XTAL_32K_N
9	IO25	I/O	GPIO25, ADC2_CH8, DAC_1
10	IO26	I/O	GPIO26, ADC2_CH9, DAC_2
11	IO27	I/O	GPIO27, ADC2_CH7, TOUCH_CH7
12	IO14	I/O	GPIO14, ADC2_CH6, TOUCH_CH6, MTMS
13	IO12	I/O	GPIO12, ADC2_CH5, TOUCH_CH5, MTDI
14	GND	G	Ground
15	IO13	I/O	GPIO13, ADC2_CH4, TOUCH_CH4, MTCK
16	D2	I/O	GPIO9, D2[2]
17	D3	I/O	GPIO10, D3[2]
18	CMD	I/O	GPIO11, CMD[2]
19	5V	P	5 V power supply

[1] P: Power supply; I: Input; O: Output.
[2] The pins D0, D1, D2, D3, CMD and CLK are used internally for communication between ESP32 and SPI flash memory. They are grouped on both sides near the USB connector. Avoid using these pins, as it may disrupt access to the SPI flash memory/SPI RAM.

Lampiran Datasheet LM2596

LM2596 SIMPLE SWITCHER® Power Converter 150 kHz 3A Step-Down Voltage Regulator

Check for Samples: LM2596

FEATURES

- **3.3V, 5V, 12V, and Adjustable Output Versions**
- **Adjustable Version Output Voltage Range, 1.2V to 37V ±4% Max Over Line and Load Conditions**
- **Available in TO-220 and TO-263 Packages**
- **Ensured 3A Output Load Current**
- **Input Voltage Range Up to 40V**
- **Requires Only 4 External Components**
- **Excellent Line and Load Regulation Specifications**
- **150 kHz Fixed Frequency Internal Oscillator**
- **TTL Shutdown Capability**
- **Low Power Standby Mode, I_Q Typically 80 µA**
- **High Efficiency**
- **Uses Readily Available Standard Inductors**
- **Thermal Shutdown and Current Limit Protection**

APPLICATIONS

- **Simple High-Efficiency Step-Down (Buck) Regulator**
- **On-Card Switching Regulators**
- **Positive to Negative Converter**

DESCRIPTION

The LM2596 series of regulators are monolithic integrated circuits that provide all the active functions for a step-down (buck) switching regulator, capable of driving a 3A load with excellent line and load regulation. These devices are available in fixed output voltages of 3.3V, 5V, 12V, and an adjustable output version.

Requiring a minimum number of external components, these regulators are simple to use and include internal frequency compensation , and a fixed-frequency oscillator.

The LM2596 series operates at a switching frequency of 150 kHz thus allowing smaller sized filter components than what would be needed with lower frequency switching regulators. Available in a standard 5-lead TO-220 package with several different lead bend options, and a 5-lead TO-263 surface mount package.

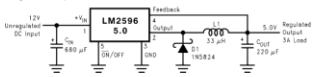
A standard series of inductors are available from several different manufacturers optimized for use with the LM2596 series. This feature greatly simplifies the design of switch-mode power supplies.

Other features include a ensured ±4% tolerance on output voltage under specified input voltage and output load conditions, and ±15% on the oscillator frequency. External shutdown is included, featuring typically 80 µA standby current. Self protection features include a two stage frequency reducing current limit for the output switch and an over temperature shutdown for complete protection under fault conditions. (1)

(1) † Patent Number 5,382,918.

Typical Application

(Fixed Output Voltage Versions)



Please be aware that an important notice concerning availability, standard warranty, and use in critical applications of Texas Instruments semiconductor products and disclaimers thereto appears at the end of this data sheet.

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All other trademarks are the property of their respective owners.

PRODUCTION DATA information is current as of publication date. Products conform to specifications per the terms of the Texas Instruments standard warranty. Production processing does not necessarily include testing of all parameters.

Connection Diagrams

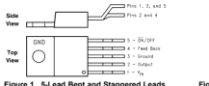


Figure 1. 5-Lead Bent and Staggered Leads, Through Hole TO-220 (T) Package See Package Number NDH0005D

Figure 2. 5-Lead DDPAK/TO-263 (S) Package See Package Number KTT0005B

These devices have limited built-in ESD protection. The leads should be shorted together or the device placed in conductive foam during storage or handling to prevent electrostatic damage to the MOS gates.

Absolute Maximum Ratings (1)(3)

Maximum Supply Voltage	45V
ON /OFF Pin Input Voltage	−0.3 ≤ V ≤ +25V
Feedback Pin Voltage	−0.3 ≤ V ≤+25V
Output Voltage to Ground (Steady State)	−1V
Power Dissipation	Internally limited
Storage Temperature Range	−65°C to +150°C
ESD Susceptibility	
Human Body Model (3)	2 kV
Lead Temperature	
DDPAK/TO-263 Package	
Vapor Phase (60 sec.)	+215°C
Infrared (10 sec.)	+245°C
TO-220 Package (Soldering, 10 sec.)	+260°C
Maximum Junction Temperature	+150°C

(1) Absolute Maximum Ratings indicate limits beyond which damage to the device may occur. Operating Ratings indicate conditions for which the device is intended to be functional, but do not ensure specific performance limits. For ensured specifications and test conditions, see the Electrical Characteristics.
(2) If Military/Aerospace specified devices are required, please contact the Texas Instruments Sales Office/ Distributors for availability and specifications.
(3) The human body model is a 100 pF capacitor discharged through a 1.5k resistor into each pin.

Operating Conditions

Temperature Range	−40°C ≤ T_J ≤ +125°C
Supply Voltage	4.5V to 40V

Lampiran Datasheet Sensor QR GM-67

GROW

1 Introduction of Module

1.1 Introduction

GM67 1D 2D barcode scanner, with high integration and compact size, can be easily integrated into various industrial equipment and application environments. It can not only read various 1d barcode easily, but also read 2d barcode at high speed.It has a very high scanning rate for linear bar codes.For barcode on paper and screen, can also be easily scanned.

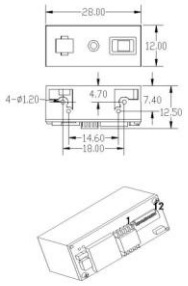
1.2 Technical Specification

Scanning Performance	Scan Mode		640*480 CMOS
	Lighting		White LED
	Collimate		Red LED
	Read Code Type	2D	QR Code, Data Matrix, PDF417,Artec,Micro QR,Micro PDF417
		1D	EAN,UPC,Code 39,Code 93,Code 128,UCC/EAN 128, Codabar,
			Interleaved 2 of 5, ITF-6,ITF-14,ISBN,ISSN, MSI-Plessey
			GS1 Databar ,Code 11,Industrial 25,
			Standard 25,Plessey, Matrix 2 of 5
	Accuracy of reading		≥5mil
	Depth of Field	EAN-13	60mm-220mm (13mil)
		Code 39	40mm-90mm (5mil 10 byte)
		QR Code	30mm-220mm (20mil 16 byte)
		Data Marix	40mm-110mm (10mil 20 byte)
		PDF417	30mm-130mm (6.67mil 7 byte)
	Contrast		≥25%
	Scanning angle		Intersection angle 360°,Elevation ± 55° Deflection angle ± 55°
	Viewing Angle		D:42° H:34° V:26°
Mechanical/	Interface		TTL-232 , USB (HID-KBW, Virtual serial port)

GROW

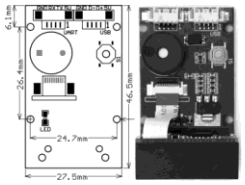
Electrical Parameters	Dimension	27.5(W)*46.5(D)*14(H)mm
	Operating Voltage	DC 5 V
	Operating Current	180mA
	Standby Current	USB:25mA; TTL:10mA
Environmental Parameters	Operating Temperature	-20℃~+50℃
	Storage Temperature	-40℃~+70℃
	Operating Humidity	5%~95%（Non-Condensing）
	Environmental Light	0~100000LUX

1.3 Dimension (mm)



GROW

Circuit Board Diagram:



1.4 Scan Head Definition

The cable is 12PIN directly connected with FPC flexible line, with an interval of 0.5mm

PIN	Input/Output	Definition	Introductions
PIN 1	Power	VCC	Input+3.3V
PIN 2	Power	VCC	Input+3.3V
PIN 3	Ground	GND	-
PIN 4	Input	RX	Serial port receiver signal
PIN 5	Output	TX	Serial port send signal
PIN 6	Input	D-	USB : D-singal
PIN 7	Output	D+	USB : D+singal
PIN 8	Ground	GND	-
PIN 9	Output	BEEPER	sfn output, low level when free
PIN10	Output	DLED	Decoding success light, low level when free
PIN11	-	NC	-
PIN12	Input	TRIG	Weak Pull-up, Low level trigger engine decoding

GROW

1.5 Circuit Board Communication Interface

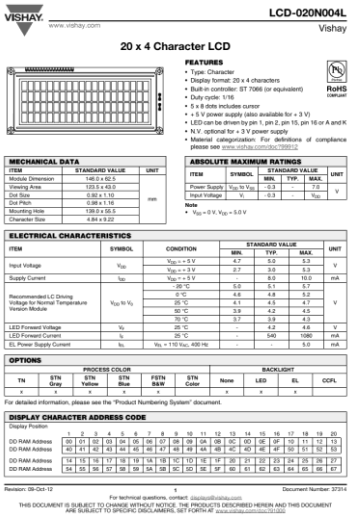
UART Communication interface definition:

Pin	Name	Definition	Description
1	5V	Power Input	Power input 5V
2	TX	Out	Data output. TTL logical level
3	RX	In	Data input. TTL logical level
4	GND	-	Signal ground

USB Communication interface definition:

Pin	Name	Definition	Description
1	5V	Power Input	Power input 5V
2	D+	Out	USB data output
3	D-	In	USB data input
4	GND	-	Signal ground

Lampiran Datasheet LCD I2C 20x4



LCD-020N004L
Vishay

20 x 4 Character LCD

FEATURES
- Type: Character
- Display format: 20 x 4 characters
- Built-in controller: ST 7066 (or equivalent)
- Duty cycle: 1/16
- 5 x 8 dots includes cursor
- + 5 V power supply (also available for + 3 V)
- LED can be driven by pin 1, pin 2, pin 15, pin 16 or A and K
- N.V. optional for + 3 V power supply
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912

RoHS COMPLIANT

MECHANICAL DATA

ITEM	STANDARD VALUE	UNIT
Module Dimension	146.0 x 62.5	mm
Viewing Area	123.5 x 43.0	
Dot Size	0.92 x 1.10	
Dot Pitch	0.96 x 1.16	
Mounting Hole	139.0 x 55.5	
Character Size	4.84 x 9.22	

ABSOLUTE MAXIMUM RATINGS

ITEM	SYMBOL	STANDARD VALUE			UNIT
		MIN.	TYP.	MAX.	
Power Supply	V_{DD} to V_{SS}	- 0.3	-	7.0	V
Input Voltage	V_I	- 0.3	-	V_{DD}	

Note
- V_{DD} = 0 V, V_{SS} = 5.0 V

ELECTRICAL CHARACTERISTICS

ITEM	SYMBOL	CONDITION	STANDARD VALUE			UNIT
			MIN.	TYP.	MAX.	
Input Voltage	V_{DD}	V_{DD} = + 5 V	4.7	5.0	5.3	V
		V_{DD} = + 3 V	2.7	3.0	5.3	
Supply Current	I_{DD}	V_{DD} = + 5 V	-	8.0	10.0	mA
Recommended LC Driving Voltage for Normal Temperature Version Module	V_{DD} to V_0	- 20 °C	5.0	5.1	5.7	V
		0 °C	4.6	4.8	5.2	
		25 °C	4.1	4.5	4.7	
		50 °C	3.9	4.2	4.5	
		70 °C	3.7	3.9	4.3	
LED Forward Voltage	V_F	25 °C	-	4.2	4.6	V
LED Forward Current	I_F	25 °C	-	540	1080	mA
EL Power Supply Current	I_{EL}	V_{EL} = 110 V_{AC}, 400 Hz	-	-	5.0	mA

OPTIONS

PROCESS COLOR						BACKLIGHT			
TN	STN Gray	STN Yellow	STN Blue	FSTN B&W	STN Color	None	LED	EL	CCFL
x	x	x	x	x	x	x	x	x	

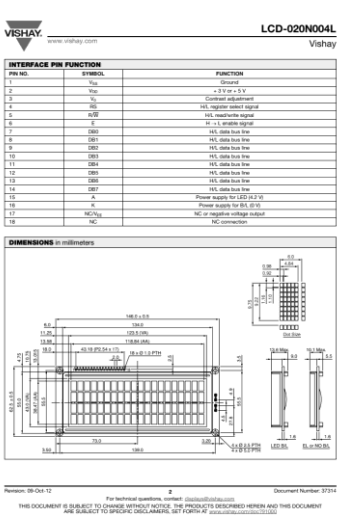
For detailed information, please see the "Product Numbering System" document.

DISPLAY CHARACTER ADDRESS CODE

Display Position	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
DD RAM Address	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F	10	11	12	13
DD RAM Address	40	41	42	43	44	45	46	47	48	49	4A	4B	4C	4D	4E	4F	50	51	52	53
DD RAM Address	14	15	16	17	18	19	1A	1B	1C	1D	1E	1F	20	21	22	23	24	25	26	27
DD RAM Address	54	55	56	57	58	59	5A	5B	5C	5D	5E	5F	60	61	62	63	64	65	66	67

Revision: 09-Oct-12 | 1 | Document Number: 37314

For technical questions, contact: displays@vishay.com



LCD-020N004L
Vishay

INTERFACE PIN FUNCTION

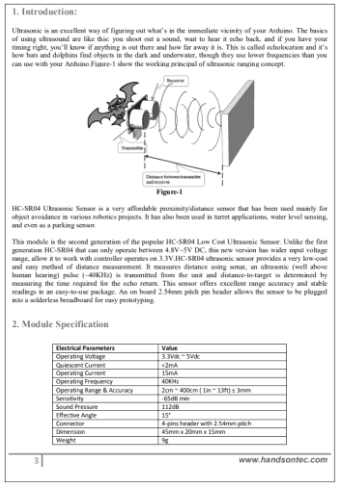
PIN NO.	SYMBOL	FUNCTION
1	V_{SS}	Ground
2	V_{DD}	+ 3 V or + 5 V
3	V_O	Contrast adjustment
4	RS	H/L register select signal
5	R/W	H/L read/write signal
6	E	H → L enable signal
7	DB0	H/L data bus line
8	DB1	H/L data bus line
9	DB2	H/L data bus line
10	DB3	H/L data bus line
11	DB4	H/L data bus line
12	DB5	H/L data bus line
13	DB6	H/L data bus line
14	DB7	H/L data bus line
15	A	Power supply for LED (4.2 V)
16	K	Power supply for EL (0 V)
17	NC/V_{EE}	NC or negative voltage output
18	NC	NC connection

DIMENSIONS in millimeters

Revision: 09-Oct-12 | 2 | Document Number: 37314

For technical questions, contact: displays@vishay.com

Lampiran Datasheet Sensor Ultrasonik HC-Sr04



1. Introduction:

Ultrasonic is an excellent way of figuring out what's in the immediate vicinity of your Arduino. The basics of using ultrasound are like this: you shout out a sound, wait to hear it echo back, and if you have your timing right, you'll know if anything is out there and how far away it is. This is called echolocation and it's how bats and dolphins find objects in the dark and underwater, though they use lower frequencies than you can use with your Arduino.Figure-1 show the working principal of ultrasonic ranging concept.

Figure-1

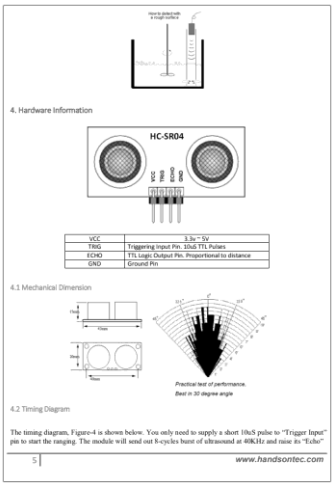
HC-SR04 Ultrasonic Sensor is a very affordable proximity/distance sensor that has been used mainly for object avoidance in various robotics projects. It has also been used in turret applications, water level sensing, and even as a parking sensor.

This module is the second generation of the popular HC-SR04 Low Cost Ultrasonic Sensor. Unlike the first generation HC-SR04 that can only operate between 4.8V~5V DC, this new version has wider input voltage range, allow it to work with controller operates on 3.3V.HC-SR04 ultrasonic sensor provides a very low-cost and easy method of distance measurement. It measures distance using sonar, an ultrasonic (well above human hearing) pulse (~40KHz) is transmitted from the unit and distance-to-target is determined by measuring the time required for the echo return. This sensor offers excellent range accuracy and stable readings in an easy-to-use package. An on board 2.54mm pitch pin header allows the sensor to be plugged into a solderless breadboard for easy prototyping.

2. Module Specification

Electrical Parameters	Value
Operating Voltage	3.3Vdc ~ 5Vdc
Quiescent Current	<2mA
Operating Current	15mA
Operating Frequency	40KHz
Operating Range & Accuracy	2cm ~ 400cm (1in ~ 13ft) ± 3mm
Sensitivity	-65dB min
Sound Pressure	112dB
Effective Angle	15°
Connector	4-pins header with 2.54mm pitch
Dimension	45mm x 20mm x 15mm
Weight	9g

3 | www.handsontec.com



4. Hardware Information

VCC	3.3v ~ 5V
TRIG	Triggering input Pin. 10uS TTL Pulses
ECHO	TTL Logic Output Pin. Proportional to distance
GND	Ground Pin

4.1 Mechanical Dimension

4.2 Timing Diagram

The timing diagram, Figure-4 is shown below. You only need to supply a short 10uS pulse to "Trigger Input" pin to start the ranging. The module will send out 8-cycles burst of ultrasound at 40KHz and raise its "Echo"

5 | www.handsontec.com

Lampiran Datasheet Sensor Flowmeter YF-S201

Product introduction: The

water flow sensor is mainly composed of plastic valve body, water flow rotor assembly and Hall sensor.
It is installed on the water inlet end of the water heater and is used to detect the water flow rate. When water passes through the water flow rotor assembly, the magnetic rotor rotates and the speed changes with the flow rate change. The Hall sensor outputs a corresponding pulse
signal and feeds it back to the controller. The device determines the size of the water flow and regulates it.

Cautions on use are

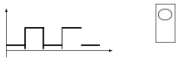
strictly prohibited.

Do not throw or bump. The installation direction diagram is

vertical installation, the inclination does not exceed 5 degrees. OUT

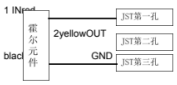
medium temperature should not exceed 120°C.

theThird,outputwaveform:



IN Duty Cy = 40% ~

four lead:



V. Technical

Foshan Shunde Zhongjiang Energy Saving Electronics Co., Ltd. www.fsdyvfa.com.cn Tel: 0757-22139057 26618522

	parameters:apply	to automatic gas water heater
grouthis parameter,	1 the minimum Rated working voltage	DC 5V-24V
	2. Maximum working current	15 mA (DC 5V)
	3. Operating voltage range	DC 5 to 18 V
	4. Load capacity	≤ 10 mA (DC 5V)
	5. Operating temperature range	≤ 80 ° C
	6. Use humidity range of	35% ~ 90% RH (or frost)
	7,allows pressure	or less1.75Mpa pressure
	8storage temperature	-25 ~ + 80 °C
	9, storage humidity	25% ~ 95% RH
technical requir	1, Output pulse high level	> DC 4.5 V (input voltage DC 5 V)
	2. Output pulse low level	<DC 0.5 V (input voltage DC 5 V)
	3. Accuracy (flow rate-pulse output)	1 ~ 30 L / min±Within5%
	4. Output pulse duty cycle	50 ± 10%
	5. Output rise time	0.04μS
	6. Output fall time	0.18μS
	7. Flow rate-pulse characteristic	level test pulse frequency (Hz) = [7.5 Q] ± 3% (Level test) (Q is the flow rate L / min)
	8. The impact-resistant	product is well packaged, and it drops freely from the height of 50cm in the X, Y, and Z directions to the concrete surface, and the accuracy changes within 5%.
	9, insulation resistance	Hall sensor and copper valve body insulation resistance above 100MΩ. (DC 500V)
	10, heat resistance	in the environment of 80 ± 3 °C for 48 hours, returned to normal temperature for 1-2 hours without abnormalities, and parts without cracks, slack, expansion, deformation and other phenomena, the accuracy change within 10%.

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ements	11. Cold resistance	: Put it in the environment of -20 ± 3 °C for 48h, return to normal temperature for 1-2h without abnormality, and the parts are free from cracks, slackness, swelling, deformation and other phenomena, and the accuracy changes within 10%.
	12. Moisture resistance	After leaving for 72 hours in an environment with 40 ± 2 °C and relative humidity 90% ～ 95% RH, the insulation resistance is above 1MΩ.
	13.strength:	PullingÂ 10N pulling force is applied to the lead-out wire for 1 minute, no loosening or breaking, and no change in performance.
	14. Durability	At normal temperature, 0.1 MPa water pressure is passed from the water inlet to turn on 1S and turn off 0.5S as a cycle. The test is 300,000 times without abnormality.