Kode Program Yang Digunakan

#include <LiquidCrystal.h>
LiquidCrystal lcd(12, 11, 10, 9, 8, 7);
const int Trigger = 3;
const int Echo = 2;
long durasi = 0;
int tinggi;

void setup()
{
    Serial.begin(9600);
    pinMode(Trigger, OUTPUT);
    pinMode(Echo, INPUT);
    lcd.setCursor(0, 0); lcd.print("Gita Sinuhaji");
    lcd.setCursor(0, 1); lcd.print("142411064");
    delay(3000);
    lcd.clear(); delay(1000);
}

void loop()
{
    digitalWrite(Trigger, HIGH); delayMicroseconds(10);
    digitalWrite(Trigger, LOW);
    durasi = pulseIn(Echo, HIGH);
    Serial.print("Durasi"); Serial.print(durasi);
    Serial.print("Ketinggian Tubuh"); Serial.print(tinggi);
    Serial.println((durasi*0.034)/2);
    tinggi = 200 – tinggi;
    lcd.setCursor(0, 0); lcd.print("tinggi tubuh");
    lcd.setCursor(0, 1); lcd.print(tinggi);
    lcd.setCursor(5, 1); lcd.print("cm");
    delay(1000);
}
1. Pin Configurations

Figure 1-1. Pinout ATmega48P/88P/168P/328P
1.1 Pin Descriptions

1.1.1 VCC
Digital supply voltage.

1.1.2 GND
Ground.

1.1.3 Port B (PB0:7)
Port B is an 8-bit bi-directional I/O port with internal pull-up resistors (selected for each bit). The
Port B output buffers have symmetrical drive characteristics with both high sink and source
capabilities. As inputs, Port B pins that are externally pulled low will source current if the pull-up
resistors are activated. The Port B pins are tri-stated when a reset condition becomes active,
even if the clock is not running.
Depending on the clock selection fuse settings, PB6 can be used as input to the inverting Oscill-
ator amplifier and input to the internal clock operating circuit.
Depending on the clock selection fuse settings, PB7 can be used as output from the inverting
Oscillator amplifier.

If the Internal Clock or Oscillator is used as clock source, PB7 is used as TOSEL1 input for the
Asynchronous Timer/Counter if the ASB3 bit in ASSB is set.

The various special features of Port B are elaborated in “Alternate Functions of Port B” on page
85 and “System Clock and Clock Options” on page 27.

1.1.4 Port C (PC0:7)
Port C is a 7-bit bi-directional I/O port with internal pull-up resistors (selected for each bit). The
Port C output buffers have symmetrical drive characteristics with both high sink and source
capabilities. As inputs, Port C pins that are externally pulled low will source current if the pull-up
resistors are activated. The Port C pins are tri-stated when a reset condition becomes active,
even if the clock is not running.

1.1.5 Port D (PD0:7)
If the RSTDISB Fuse is programmed, PC1 is used as an I/O pin. Note that the electrical char-
acteristics of PC1 differ from those of the other pins of Port C.
If the RSTDISB Fuse is unprogrammed, PC1 is used as a Reset input. A low level on this pin
for longer than the minimum pulse length will generate a Reset, even if the clock is not running.
The minimum pulse width is given in Table 20-3 on page 36. Shorter pulses are not guaran-
teed to generate a Reset.
The various special features of Port C are elaborated in “Alternate Functions of Port D” on page
86.

1.1.6 Port D (PD0:7)
Port D is an 8-bit bi-directional I/O port with internal pull-up resistors (selected for each bit). The
Port D output buffers have symmetrical drive characteristics with both high sink and source
capabilities. As inputs, Port D pins that are externally pulled low will source current if the pull-up
resistors are activated. The Port D pins are tri-stated when a reset condition becomes active,
even if the clock is not running.
The various special features of Port D are elaborated in "Alternate Functions of Port D" on page 85.

1.17 AVCC

AVCC is the supply voltage pin for the A/D Converter, PC10, and ADC7:6. It should be externally connected to $V_{DD}$, even if the ADC is not used. If the ADC is used, it should be connected to $V_{DD}$ through a low-pass filter, note that PC10, A use digital supply voltage, $V_{DD}$.

1.18 AREF

AREF is the analog reference pin for the A/D Converter.

1.19 ADC7-6 (TQFP and QFN/MLF Package Only)

In the TQFP and QFN/MLF package, ADC7:6 serve as analog inputs to the A/D converter. These pins are powered from the analog supply and serve as 16 additional ADC channels.

1.2 Disclaimer

Typical values contained in this datasheet are based on simulations and characterization of other AVR microcontrollers manufactured on the same process technology. Min and Max values will be available after the device is characterized.
DATASHEET LCD 16X2

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

<table>
<thead>
<tr>
<th>LCD type</th>
<th>□TN</th>
<th>□FSTN</th>
<th>□FSTN Negative</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>□STN Yellow Green</td>
<td>□STN Gray</td>
<td>□STN Blue Negative</td>
</tr>
<tr>
<td>View direction</td>
<td>90 O'clock</td>
<td>12 O'clock</td>
<td></td>
</tr>
<tr>
<td>Rear Polarizer</td>
<td>□Reflective</td>
<td>□Reflective</td>
<td>□Transmissive</td>
</tr>
<tr>
<td>Backlight Type</td>
<td>□LED</td>
<td>□EL</td>
<td>□Internal Power</td>
</tr>
<tr>
<td></td>
<td>□CCFL</td>
<td>□External Power</td>
<td>□5.0V Input</td>
</tr>
<tr>
<td>Backlight Color</td>
<td>□White</td>
<td>□Blue</td>
<td>□Amber</td>
</tr>
<tr>
<td></td>
<td>□Super Wide</td>
<td>□Yellow-Green</td>
<td></td>
</tr>
<tr>
<td>Temperature Range</td>
<td>□Normal</td>
<td>□Wide</td>
<td>□Super Wide</td>
</tr>
<tr>
<td>DC to DC circuit</td>
<td>□Build-in</td>
<td>□Build-in</td>
<td>□Not Build-in</td>
</tr>
<tr>
<td>Touch screen</td>
<td>□With</td>
<td>□Without</td>
<td></td>
</tr>
<tr>
<td>Font type</td>
<td>□English-Japanese</td>
<td>□English-European</td>
<td>□English-Russian</td>
</tr>
</tbody>
</table>

2. MECHANICAL SPECIFICATIONS

| Module size       | 30.0mm(L) x 36.0mm(W) x Max 13.5(H)mm |
| Viewing area      | 64.5mm(L) x 16.4mm(W)                  |
| Character size    | 3.00mm(L) x 5.23mm(W)                  |
| Character pitch   | 3.51mm(L) x 5.76mm(W)                  |
| Weight            | Approx.                                  |

3. Outline dimension

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4. Absolute maximum ratings

<table>
<thead>
<tr>
<th>Item</th>
<th>Symbol</th>
<th>Standard</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power voltage</td>
<td>$V_{cc}$</td>
<td>0</td>
<td>7.0</td>
</tr>
<tr>
<td>Input voltage</td>
<td>$V_{SS}$</td>
<td>-</td>
<td>$V_{DD}$</td>
</tr>
<tr>
<td>Operating temperature range</td>
<td>$V_{opr}$</td>
<td>-</td>
<td>$+50^\circ C$</td>
</tr>
<tr>
<td>Storage temperature range</td>
<td>$V_{SS}$</td>
<td>-16</td>
<td>$+60^\circ C$</td>
</tr>
</tbody>
</table>

5. Block diagram

6. Interface pin description

<table>
<thead>
<tr>
<th>Pin no.</th>
<th>Symbol</th>
<th>External connection</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$V_{SS}$</td>
<td>Power supply</td>
<td>Signal ground for LCM</td>
</tr>
<tr>
<td>2</td>
<td>$V_{cc}$</td>
<td>Power supply</td>
<td>Power supply for logic for LCM</td>
</tr>
<tr>
<td>3</td>
<td>$V_a$</td>
<td>Contrast adjust</td>
<td>Contrast adjust</td>
</tr>
<tr>
<td>4</td>
<td>RS</td>
<td>MPU</td>
<td>Register select signal</td>
</tr>
<tr>
<td>5</td>
<td>RW</td>
<td>MPU</td>
<td>Read/write select signal</td>
</tr>
<tr>
<td>6</td>
<td>E</td>
<td>MPU</td>
<td>Operation (data read/write) enable signal</td>
</tr>
<tr>
<td>7–10</td>
<td>DB0–DB3</td>
<td>MPU</td>
<td>Four lines order bi-directional three-state data bus lines. Used for data transfer between the MPU and the LCM. These four are not used during 4-bit operation.</td>
</tr>
<tr>
<td>11–14</td>
<td>DB4–DB7</td>
<td>MPU</td>
<td>Four high order bi-directional three-state data bus lines. Used for data transfer between the MPU</td>
</tr>
<tr>
<td>15</td>
<td>LED+</td>
<td>LED BKL power supply</td>
<td>Power supply for BKL</td>
</tr>
<tr>
<td>16</td>
<td>LED-</td>
<td></td>
<td>Power supply for BKL</td>
</tr>
</tbody>
</table>