

[Mikro 2024 Percobaan 1 Modul](http://www.laboreldi.or.id/p/mikro-2023-percobaan-1-modul-1.html)

<br style="box-sizing: border-box;" />

[\[KEMBALI KE MENU SEBELUMNYA\]](https://rahmada212014.blogspot.com/p/mikro-2023-modul-1-kembali-ke-menu.html)

DAFTAR ISI
[1. Foto Hardware dan Diagram Blok](#F)
[2. Prosedur Percobaan](#P)
[3. Rangkaian Simulasi dan Prinsip Kerja](#R)
[4. Flowchart dan Listing Program](#FL)
[5. Kondisi](#K)

style="border: 0px; box-sizing: border-box; color: #597e00; margin: 0px; padding: 0px; text-decoration-line: none; transition: all 0.3s ease 0s;">6. Video Simulasi</div><div style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px; text-align: left;">7. Link Download</div><div style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px; text-align: left;"></div></div><h1 style="border: 0px; box-sizing: border-box; color: #757575; font-size: 21px; letter-spacing: 0px; line-height: 30px; margin: 0px 0px 7px; padding-bottom: 0px; padding-left: 0px; padding-right: 0px; padding-top: 4px !important; padding: 4px 0px 0px; position: relative; text-indent: -1px;"><b style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px; text-align: left;">Percobaan II</h1><div style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px;">PWM, ADC, dan Interrupt</div><h3 style="border: 0px; box-sizing: border-box; color: #757575; font-size: 19px; letter-spacing: 0px; line-height: 29px; margin: 0px 0px 7px; padding-bottom: 0px; padding-left: 0px; padding-right: 0px; padding-top: 4px !important; padding: 4px 0px 0px; position: relative; text-align: justify; text-indent: -1px;"><b style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px; text-align: left;">1. Foto Hardware dan Diagram Blok [Kembali]</h3><div style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px; text-align: justify;"><div class="separator" style="clear: both; color: #444444; font-size: 15px; text-align: left;"> 1. Arduino Uno
</div><div class="separator" style="clear: both; color: #444444; font-size: 15px; text-align: center;"></div><div class="separator" style="clear: both; color: #444444; font-size: 15px; text-align: center;">
</div><div class="separator" style="clear: both; color: #444444; font-size: 15px; text-align: left;"> 2. LDR
</div><div class="separator" style="clear: both; color: #444444; font-size: 15px; text-align: center;"><div class="separator"

style="clear: both; text-align: center;"></div>
</div><div class="separator" style="clear: both; color: #444444; font-size: 15px; text-align: center;">
</div><div class="separator" style="clear: both; color: #444444; font-size: 15px; text-align: left;"> 3. LCD
</div><div class="separator" style="clear: both; color: #444444; font-size: 15px; text-align: center;"></div>
<div class="separator" style="clear: both; color: #444444; font-size: 15px; text-align: center;">
</div><div class="separator" style="clear: both; color: #444444; font-size: 15px; text-align: center;">
</div><div class="separator" style="clear: both; color: #444444; font-size: 15px; text-align: left;"> 4. Resistor
</div><div class="separator" style="clear: both; color: #444444; font-size: 15px; text-align: center;"></div><div class="separator" style="clear: both; color: #444444; font-size: 15px; text-align: center;">
</div><div class="separator" style="clear: both; color: #444444; font-size: 15px; text-align: left;"> 5. Power Supply
</div><div

[illegible]

style="clear: both; text-align: center; "></div><div class="separator" style="clear: both; text-align: center; ">
</div><div class="separator" style="clear: both; text-align: left; "> 9. Driver Motor L293D</div>
</div><div class="separator" style="clear: both; text-align: center; "></div>

</div><div style="text-align: left; "> 10. Motor DC
</div><div style="text-align: center; "><div class="separator" style="clear: both; text-align: center; "></div>

</div></div>
<br style="box-sizing: border-box; "></div><div style="border: 0px; box-sizing: border-box; color: #444444; font-size: 15px; margin: 0px; padding: 0px; text-align: justify; ">Diagram Blok:</div><div style="border: 0px; box-sizing:

border-box; color: #444444; font-size: 15px; margin: 0px; padding: 0px; text-align: justify;"><div class="separator" style="border: 0px; box-sizing: border-box; clear: both; margin: 0px; padding: 0px; text-align: center;"><br style="box-sizing: border-box;" /><div class="separator" style="clear: both; text-align: center;"><div class="separator" style="clear: both; text-align: center;"></div>
<div class="separator" style="clear: both; text-align: center;">
</div>
<div class="separator" style="clear: both; text-align: center;">
</div></div></div><div style="border: 0px; box-sizing: border-box; color: #444444; font-size: 15px; margin: 0px; padding: 0px;"><div class="separator" style="border: 0px; box-sizing: border-box; clear: both; margin: 0px; padding: 0px;"><br style="box-sizing: border-box;" /></div></div><div style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px;"><h3 style="border: 0px; box-sizing: border-box; color: #757575; font-size: 19px; letter-spacing: 0px; line-height: 29px; margin: 0px 0px 7px; padding-bottom: 0px; padding-left: 0px; padding-right: 0px; padding-top: 4px !important; padding: 4px 0px 0px; position: relative; text-align: justify; text-indent: -1px;"><b style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px; text-align: left;">2. Prosedur Percobaan [Kembali]</h3><div style="border: 0px; box-sizing: border-box; color: #444444; font-size: 15px; margin: 0px; padding: 0px;"><b style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px;">+ Rangkaian semua komponen </div><div style="border: 0px; box-sizing: border-box; color: #444444; font-size: 15px; margin: 0px; padding: 0px;">+ buat program di aplikasi arduino

IDE

>+ setelah selesai masukkan program ke

arduino

>+ jalankan program pada simulasi dan cobakan dengan modul

><b style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px;"><br style="box-sizing: border-box;" /></div><div style="border: 0px; box-sizing: border-box; color: #444444; font-size: 15px; margin: 0px; padding: 0px;"><b style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px;">3. Rangkaian Simulasi dan Prinsip Kerja<br style="box-sizing: border-box;" /></div><div class="separator" style="clear: both; text-align: center;">
</div>
<div class="separator" style="clear: both; color: #444444; font-size: 15px; font-weight: bold; text-align: center;">
</div><div style="border: 0px; box-sizing: border-box; color: #444444; font-size: 15px; font-weight: bold; margin: 0px; padding: 0px; text-align: justify;">Prinsip Kerja</div><div style="border: 0px; box-sizing: border-box; color: #444444; font-size: 15px; font-weight: bold; margin: 0px; padding: 0px; text-align: justify;">
</div><div style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px; text-align: justify;"><div class="separator" style="border: 0px; box-sizing: border-box; clear: both; margin: 0px; padding: 0px; text-align: left;"><div class="separator" style="border: 0px; box-sizing: border-box; clear: both; margin: 0px; padding: 0px; text-align: justify;">Pada rangkaian ini menggunakan komponen antara lain yaitu Arduino Uno, Sensor LDR, resistor, LCD, driver motor dan motor DC.</div><div class="separator" style="border: 0px; box-sizing: border-box; clear: both; margin: 0px; padding: 0px; text-align: justify;">
</div><div class="separator" style="border: 0px; box-sizing: border-box; clear: both; margin: 0px; padding: 0px; text-align: justify;">Pada percobaan ini kita menggunakan semua komponen dengan prosedur yang diinginkan dan dengan output yang diinginkan dimana nanti ada beberapa kondisi yang sesuai dengan perintah dari percobaan atau yang disuruh pada percobaan yang dipilih dimana,etika Ketika ADC > 500 dan 2 switch aktif, motor berputar ke kiri dan muncul karakter pada kolom 2 LCD mikrokontroler. Mikrokontroler kemudian mengaktifkan pin output untuk menyalakan LCD dan menuliskan "Motor Kekiri".</div><div class="separator" style="border: 0px; box-sizing: border-box; clear: both; margin: 0px; padding: 0px; text-align:

justify;"><br
</div><div class="separator" style="border: 0px; box-sizing: border-box;
clear: both; margin: 0px; padding: 0px; text-align: justify;">
</div></div><div
class="separator" style="border: 0px; box-sizing: border-box; clear: both; color: #444444;
font-size: 15px; font-weight: 400; margin: 0px; padding: 0px; text-align: center;"><br
</div><div class="separator" style="border: 0px; box-sizing: border-box; clear: both; color:
#444444; font-size: 15px; font-weight: 400; margin: 0px; padding: 0px; text-align:
center;"><br style="box-sizing: border-box;" /></div></div></div><div style="border:
0px; box-sizing: border-box; margin: 0px; padding: 0px;"><span style="border: 0px;
box-sizing: border-box; margin: 0px; padding: 0px;"><span style="border: 0px; box-sizing:
border-box; margin: 0px; padding: 0px;"><h3 style="border: 0px; box-sizing: border-box;
color: #757575; font-size: 19px; letter-spacing: 0px; line-height: 29px; margin: 0px 0px 7px;
padding-bottom: 0px; padding-left: 0px; padding-right: 0px; padding-top: 4px !important;
padding: 4px 0px 0px; position: relative; text-align: justify; text-indent: -1px;"><b
style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px; text-align: left;"><span
style="border: 0px; box-sizing: border-box; font-size: medium; margin: 0px; padding:
0px;"><a
name="FL" style="border: 0px; box-sizing: border-box; color: #597e00; margin: 0px;
padding: 0px; transition: all 0.3s ease 0s;">4. Flowchart dan Listing
Program <a href="#home" style="border: 0px; box-sizing: border-box;
color: #597e00; margin: 0px; padding: 0px; text-decoration-line: none; transition: all 0.3s
ease 0s;">[Kembali]</h3><div class="separator" style="clear: both; color:
#444444; font-size: 15px; text-align: center;"><a
href="https://blogger.googleusercontent.com/img/b/R29vZ2xl/AVvXsEhV_WrXUKR415vKlzc
bxglwVCD0NIRkRc3wsKz4ql8VbMUxm2wWXapTaxYbQ3YQeKe5yPRslmYTFj9iS9sk1kqtkd
RWTxzgwc0-tpsVvWTSqg-AmcES1daDft13CY3hjiFu9XotgCbY6KHwEdMQAcbgp3r-whk6H
FZ9MiRR7-TCjil7bujhiZbd0k9oOUFf/s625/Screenshot%202024-03-18%20143636.png"
style="font-family: "Times New Roman"; margin-left: 1em; margin-right:
1em;"></div><div style="border: 0px; box-sizing: border-box; color: #444444;
font-size: 15px; margin: 0px; padding: 0px;"><br style="box-sizing: border-box;" /><br
style="box-sizing: border-box;" /></div><div style="border: 0px; box-sizing: border-box;
margin: 0px; padding: 0px;"><span style="border: 0px; box-sizing: border-box; margin: 0px;
padding: 0px;"><div style="border: 0px; box-sizing: border-box; color: #444444; font-size:
15px; margin: 0px; padding: 0px;">Listing Program:</div><div style="border: 0px; box-sizing:
border-box; color: #444444; font-size: 15px; margin: 0px; padding: 0px;"><div
style="background-color: #1f272a; color: #dae3e3; font-family: Consolas, "Courier
New"; monospace; font-size: 14px; line-height: 19px; white-space: pre;"><div><span
style="color: #c586c0;">#include <span style="color:
#7fcbcd;"><LiquidCrystal.h></div>
<div>//
Inisialisasi pin</div><div>const <span
style="color: #0ca1a6;">int LDR_PIN = A0;</div><div><span style="color:
#0ca1a6;">const int MOTOR_EN_PIN =
A1;</div><div>const <span style="color:

```

#0ca1a6;">int</span> MOTOR_OUT1_PIN = A2;</div><div><span style="color:
#0ca1a6;">const</span> <span style="color: #0ca1a6;">int</span> MOTOR_OUT2_PIN =
A3;</div><div><span style="color: #0ca1a6;">const</span> <span style="color:
#0ca1a6;">int</span> DIPSW_PIN[] = {<span style="color: #7fcbcd;">2</span>, <span
style="color: #7fcbcd;">3</span>, <span style="color: #7fcbcd;">4</span>, <span
style="color: #7fcbcd;">5</span>};</div><div><span style="color: #0ca1a6;">const</span>
<span style="color: #0ca1a6;">int</span> LCD_RS_PIN = <span style="color:
#7fcbcd;">13</span>;</div><div><span style="color: #0ca1a6;">const</span> <span
style="color: #0ca1a6;">int</span> LCD_EN_PIN = <span style="color:
#7fcbcd;">12</span>;</div><div><span style="color: #0ca1a6;">const</span> <span
style="color: #0ca1a6;">int</span> LCD_D4_PIN = <span style="color:
#7fcbcd;">11</span>;</div><div><span style="color: #0ca1a6;">const</span> <span
style="color: #0ca1a6;">int</span> LCD_D5_PIN = <span style="color:
#7fcbcd;">10</span>;</div><div><span style="color: #0ca1a6;">const</span> <span
style="color: #0ca1a6;">int</span> LCD_D6_PIN = <span style="color:
#7fcbcd;">9</span>;</div><div><span style="color: #0ca1a6;">const</span> <span
style="color: #0ca1a6;">int</span> LCD_D7_PIN = <span style="color:
#7fcbcd;">8</span>;</div><br /><div><span style="color: #7f8c8d;">// Konfigurasi
LCD</span></div><div>LiquidCrystal <span style="color:
#f39c12;">lcd</span>(LCD_RS_PIN, LCD_EN_PIN, LCD_D4_PIN, LCD_D5_PIN,
LCD_D6_PIN, LCD_D7_PIN);</div><br /><div><span style="color: #0ca1a6;">void</span>
<span style="color: #f39c12;">setup</span>() {</div><div><span style="color:
#7f8c8d;">&nbsp;</span> // Inisialisasi pin mode</span></div><div>&nbsp;<span style="color:
#f39c12;">pinMode</span>(LDR_PIN, INPUT);</div><div>&nbsp;<span style="color:
#f39c12;">pinMode</span>(MOTOR_EN_PIN, OUTPUT);</div><div>&nbsp;<span
style="color: #f39c12;">pinMode</span>(MOTOR_OUT1_PIN, OUTPUT);</div><div>&nbsp;<
span style="color: #f39c12;">pinMode</span>(MOTOR_OUT2_PIN,
OUTPUT);</div><div>&nbsp;<span style="color: #c586c0;">for</span> (<span style="color:
#0ca1a6;">int</span> i = <span style="color: #7fcbcd;">0</span>; i &lt; <span style="color:
#7fcbcd;">4</span>; i++) {</div><div>&nbsp;<span style="color:
#f39c12;">pinMode</span>(<span style="color: #f39c12;">DIPSW_PIN</span>[i],
INPUT_PULLUP);</div><div>&nbsp;<span style="color: #f39c12;">pinMode</span>(<span style="color:
#7f8c8d;">&nbsp;</span> // Inisialisasi LCD</span></div><div>&nbsp;<span style="color:
#f39c12;">lcd</span>.<span style="color: #f39c12;">begin</span>(<span style="color:
#7fcbcd;">16</span>, <span style="color: #7fcbcd;">2</span>);</div><div><br
/><div><span style="color: #0ca1a6;">void</span> <span style="color:
#f39c12;">loop</span>() {</div><div><span style="color: #7f8c8d;">&nbsp;</span> // Baca nilai
LDR</span></div><div>&nbsp;<span style="color: #0ca1a6;">int</span> ldrValue = <span
style="color: #f39c12;">analogRead</span>(LDR_PIN);</div><div>&nbsp;<
div><span style="color: #7f8c8d;">&nbsp;</span> // Cek kondisi ADC &gt; 500 dan 2 switch
aktif</span></div><div>&nbsp;<span style="color: #c586c0;">if</span> (ldrValue &gt;
<span style="color: #7fcbcd;">500</span> &amp;&amp; <span style="color:
#f39c12;">checkSwitches</span>()) {</div><div><span style="color: #7f8c8d;">&nbsp;</span>
&nbsp;<span style="color: #7f8c8d;">&nbsp;</span> // Aktifkan motor berputar ke kiri</span></div><div>&nbsp;<span
style="color: #f39c12;">digitalWrite</span>(MOTOR_EN_PIN, HIGH);</div><div>&nbsp;<
span style="color: #f39c12;">digitalWrite</span>(MOTOR_OUT1_PIN,
LOW);</div><div>&nbsp;<span style="color:
#f39c12;">digitalWrite</span>(MOTOR_OUT2_PIN, HIGH);</div><div>&nbsp;<span style="color:

```

```

</div><div><span style="color: #7f8c8d;">&nbsp; &nbsp; // Tampilkan karakter pada kolom 2
LCD</span></div><div>&nbsp; &nbsp; <span style="color: #f39c12;">lcd</span>.<span
style="color: #f39c12;">setCursor</span>(<span style="color: #7fcbcd;">0</span>, <span
style="color: #7fcbcd;">1</span>);</div><div>&nbsp; &nbsp; <span style="color:
#f39c12;">lcd</span>.<span style="color: #f39c12;">print</span>(<span style="color:
#7fcbcd;">"Motor kekiri"</span>);</div><div>&nbsp; &nbsp; } <span style="color:
#c586c0;">else</span> {</div><div><span style="color: #7f8c8d;">&nbsp; &nbsp; // Matikan
motor dan bersihkan LCD jika tidak memenuhi kondisi</span></div><div>&nbsp; &nbsp; <span style="color: #f39c12;">digitalWrite</span>(MOTOR_EN_PIN,
LOW);</div><div>&nbsp; &nbsp; <span style="color:
#f39c12;">digitalWrite</span>(MOTOR_OUT1_PIN, LOW);</div><div>&nbsp; &nbsp; <span
style="color: #f39c12;">digitalWrite</span>(MOTOR_OUT2_PIN, LOW);</div><div>&nbsp; &nbsp; <span style="color: #f39c12;">lcd</span>.<span style="color:
#f39c12;">clear</span>();</div><div>&nbsp; &nbsp; }</div><div>&nbsp; &nbsp; <span
style="color: #f39c12;">delay</span>(<span style="color: #7fcbcd;">100</span>);<span
style="color: #7f8c8d;"> // Delay untuk stabilitas</span></div><div><br /><div><span
style="color: #7f8c8d;"> // Fungsi untuk memeriksa apakah dua switch
aktif</span></div><div><span style="color: #0ca1a6;">bool</span> <span style="color:
#f39c12;">checkSwitches</span>() {</div><div>&nbsp; <span style="color:
#0ca1a6;">bool</span> switch1_active = <span style="color:
#f39c12;">digitalRead</span>(<span style="color: #f39c12;">DIPSW_PIN</span>[<span
style="color: #7fcbcd;">0</span>]) == LOW;</div><div>&nbsp; <span style="color:
#0ca1a6;">bool</span> switch2_active = <span style="color:
#f39c12;">digitalRead</span>(<span style="color: #f39c12;">DIPSW_PIN</span>[<span
style="color: #7fcbcd;">1</span>]) == LOW;</div><br /><div><span style="color:
#7f8c8d;">&nbsp; &nbsp; // Mengembalikan nilai true hanya jika kedua switch
diaktifkan</span></div><div>&nbsp; <span style="color: #c586c0;">return</span>
switch1_active & & switch2_active;</div><div><br
/></div></div></span></div><p style="border: 0px; box-sizing: border-box; color: #444444;
font-size: 15px; margin: 0px 0px 15px; padding: 0px; text-align: justify;"><b style="border:
0px; box-sizing: border-box; margin: 0px; padding: 0px; text-align: left;"><span style="border:
0px; box-sizing: border-box; font-size: medium; margin: 0px; padding: 0px;"><span
style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px;"><a name="K"
style="border: 0px; box-sizing: border-box; color: #597e00; margin: 0px; padding: 0px;
transition: all 0.3s ease 0s;">5. Kondisi</a></span>&nbsp;<a href="#home" style="border:
0px; box-sizing: border-box; color: #597e00; margin: 0px; padding: 0px; text-decoration-line:
none; transition: all 0.3s ease 0s;">[Kembali]</a></span></b></p><p style="border: 0px;
box-sizing: border-box; color: #444444; font-size: 15px; margin: 0px 0px 15px; padding: 0px;
text-align: justify;"><span style="border: 0px; box-sizing: border-box; margin: 0px; padding:
0px; text-align: left;">&nbsp; &nbsp; Percobaan 1 Kondisi 2 : "</span><span face="Arial,
sans-serif" style="background-color: transparent; font-size: 11pt; text-align: left;
white-space-collapse: preserve;">&nbsp; &nbsp; Ketika ADC &gt; 500 dan 2 switch aktif, motor
berputar ke kiri dan muncul karakter pada kolom 2 LCD</span><span style="text-align:
left;"></span></p><div style="border: 0px; box-sizing: border-box; color: #444444; font-size:
15px; margin: 0px; padding: 0px; text-align: -webkit-center;"><span style="border: 0px;
box-sizing: border-box; margin: 0px; padding: 0px; text-align: left;"><span style="border: 0px;
box-sizing: border-box; margin: 0px; padding: 0px;"><span style="border: 0px; box-sizing:
border-box; margin: 0px; padding: 0px;"><p style="border: 0px; box-sizing: border-box;

```

margin: 0px 0px 15px; padding: 0px; text-align: justify;"><b style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px; text-align: left;">6. Video Simulasi [Kembali]</p><div class="separator" style="clear: both; text-align: center;">
</div>
<div class="separator" style="border: 0px; box-sizing: border-box; clear: both; margin: 0px; padding: 0px; text-align: center;">
<br style="box-sizing: border-box;" /></div><p style="border: 0px; box-sizing: border-box; margin: 0px 0px 15px; padding: 0px;"></p><div style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px;"><b style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px;"><div style="border: 0px; box-sizing: border-box; font-weight: 400; margin: 0px; padding: 0px; text-align: -webkit-center;"><p style="border: 0px; box-sizing: border-box; margin: 0px 0px 1px; padding: 0px; text-align: justify;"><b style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px; text-align: left;">7. Link Download [Kembali]</p></div></div><div class="separator" style="clear: both; text-align: center;"><object class="BLOG_video_class" contentid="f4186709a53ce1c8" height="266" id="BLOG_video-f4186709a53ce1c8" width="320"></object></div>
</div></div></div><p style="border: 0px; box-sizing: border-box; color: #444444; font-size: 15px; margin: 0px 0px 15px; padding: 0px; text-align: left;"><b style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px; text-align: justify;"><b style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px;">□ HTML→ klik disini<br style="box-sizing: border-box;" /><b style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px; text-align: justify;">□ Aplikasi→ klik disini<br style="box-sizing: border-box;" /><b style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px; text-align: justify;">□ Video Percobaan→ klik disini</p><p style="border: 0px; box-sizing: border-box;

[illegible]