

## DAFTAR ISI

|  |      |
|--|------|
| LEMBAR PENGESAHAN.....                                   | ii   |
| LEMBAR PERNYATAAN ORISINALITAS.....                      | iii  |
| ABSTRAK .....  | iv   |
| UCAPAN TERIMA KASIH.....                                 | v    |
| DAFTAR ISI.....  | vi   |
| DAFTAR GAMBAR.....                                       | viii |
| DAFTAR TABEL .....                                       | ix   |
| BAB 1 PENDAHULUAN .....                                  | 1    |
| 1.1 Latar Belakang .....                                 | 1    |
| 1.2 Rumusan Masalah.....                                 | 2    |
| 1.3 Tujuan.....  | 2    |
| 1.4 Batasan Masalah .....                                | 2    |
| 1.5 Metodologi Penelitian .....                          | 2    |
| 1.6 Sistematika Penulisan.....                           | 3    |
| BAB 2 DASAR TEORI .....                                  | 4    |
| 2.1 Semikonduktor.....                                   | 4    |
| 2.2 Resistor .....                                       | 6    |
| 2.3 Dioda .....  | 8    |
| 2.4 Mikrokontroler.....                                  | 9    |
| 2.5 Penguat Logaritmik (Log 112).....                    | 10   |
| 2.6 Digital to Analog Converter .....                    | 12   |
| 2.7 Rangkaian Penguat Tak Membalik .....                 | 14   |
| 2.8 Offset Nulling .....                                 | 14   |
| BAB 3 METODOLOGI PENELITIAN .....                        | 15   |
| 3.1. Metodologi Penelitian .....                         | 15   |
| 3.2. Perancangan Sistem Secara Umum.....                 | 16   |
| 3.3. Perancangan Sistem Sumber Tegangan Terkontrol ..... | 16   |
| 3.3.1 Catu Daya Bipolar.....                             | 17   |
| 3.3.2 Rangkaian Digital to Analog Converter .....        | 18   |

|              |  |           |
|--------------|--|-----------|
| 3.3.3        | Penguat Tegangan Terkontrol.....                           | 19        |
| 3.4.         | Perancangan Sistem Pembaca Arus .....                      | 20        |
| 3.4.1        | Logarithmic Amplifier (Log 112).....                       | 20        |
| 3.4.2        | Arduino Due (ARM Cortex M-3).....                          | 23        |
| 3.5.         | Kalibrasi.....   | 24        |
| <b>BAB 4</b> | <b>HASIL DAN ANALISIS .....</b>                            | <b>25</b> |
| 4.1          | Kalibrasi Tegangan Terkontrol.....                         | 25        |
| 4.1.1        | Kalibrasi Digital Analog Converter .....                   | 26        |
| 4.1.2        | Kalibrasi Digital Analog Converter + Non Inverting .....   | 27        |
| 4.2          | Kalibrasi Sistem Pembaca Arus .....                        | 29        |
| 4.2.1        | Karakterisasi dan Kalibrasi Pembaca Arus .....             | 29        |
| 4.2.2        | Hasil Pengukuran Pembaca Arus dengan Variasi Tegangan..... | 30        |
| <b>BAB 5</b> | <b>KESIMPULAN DAN SARAN .....</b>                          | <b>31</b> |
| 5.1          | Kesimpulan .....   | 31        |
| 5.2          | Saran.....   | 31        |
|              | <b>DAFTAR PUSTAKA .....</b>                                | <b>32</b> |
|              | <b>LAMPIRAN .....</b>                                      | <b>33</b> |