

Lampiran 1

Data perhitungan hasil pengukuran dan proyeksi

S1 = 9.00 ± 0.06 cm

S2 = 344.0 ± 0.3 cm

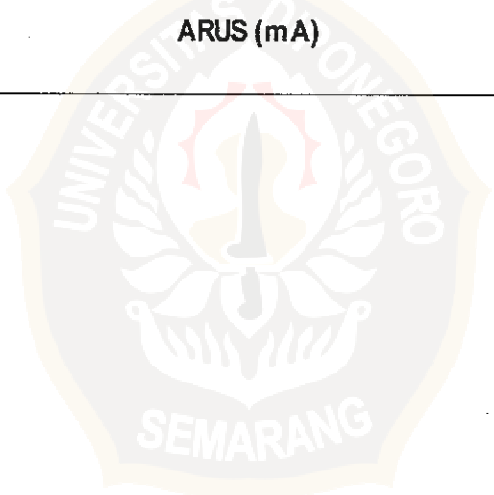
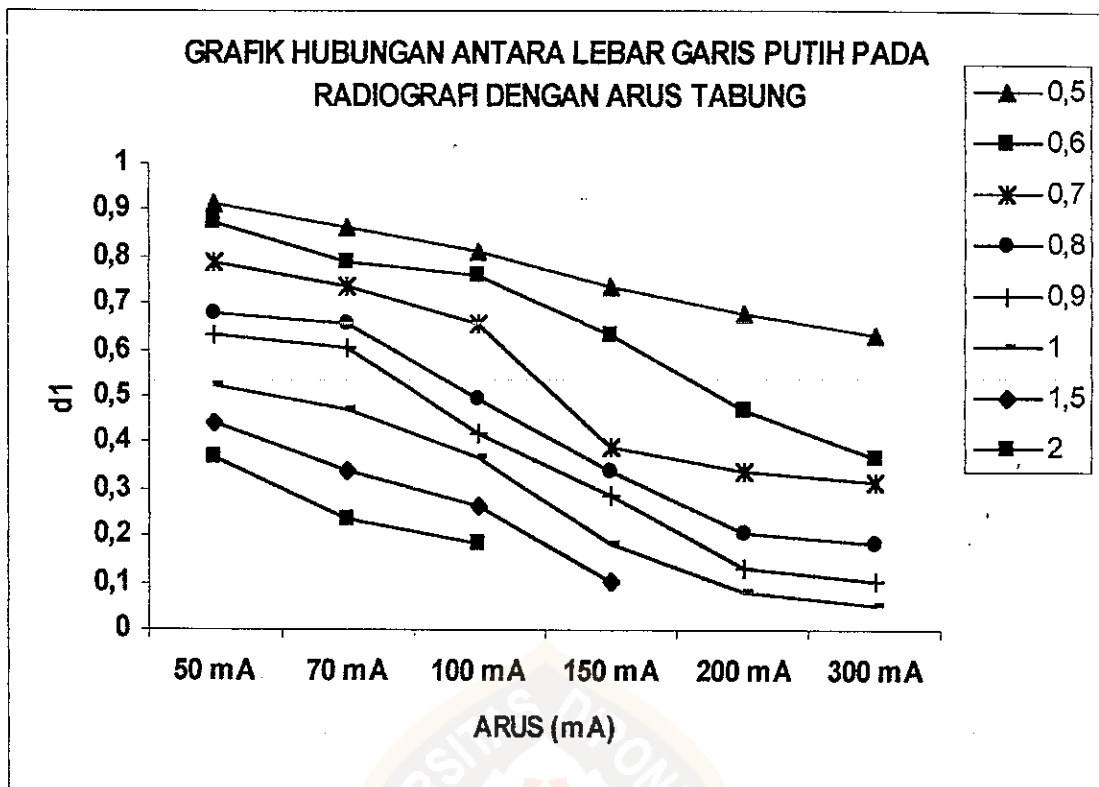
Tabel 1. Data hasil pengukuran dan hasil proyeksi

LP/mm	0,5	0,6	0,7	0,8	0,9	1	1,5	2
50 mA	d2 (cm) 3.80 ± 0.03	3.20 ± 0.05	3.00 ± 0.05	2.60 ± 0.45	2.30 ± 0.05	1.98 ± 0.04	1.7 ± 0.05	1.3 ± 0.05
	d1 (mm) 0.99 ± 0.01	0.84 ± 0.01	0.79 ± 0.01	0.68 ± 0.01	0.60 ± 0.01	0.52 ± 0.01	0.45 ± 0.01	0.34 ± 0.02
70 mA	d2 (cm) 3.60 ± 0.05	3.00 ± 0.03	2.80 ± 0.05	2.50 ± 0.01	2.00 ± 0.03	1.80 ± 0.03	1.30 ± 0.07	0.90 ± 0.05
	d1 (mm) 0.94 ± 0.01	0.79 ± 0.01	0.73 ± 0.01	0.65 ± 0.01	0.52 ± 0.01	0.47 ± 0.01	0.33 ± 0.02	0.23 ± 0.01
100 mA	d2 (cm) 3.40 ± 0.03	2.90 ± 0.05	2.50 ± 0.03	1.90 ± 0.00	1.60 ± 0.05	1.40 ± 0.03	1.00 ± 0.05	0.70 ± 0.03
	d1 (mm) 0.89 ± 0.01	0.76 ± 0.01	0.65 ± 0.01	0.50 ± 0.01	0.42 ± 0.01	0.37 ± 0.01	0.26 ± 0.01	0.18 ± 0.01
150 mA	d2 (cm) 2.90 ± 0.04	2.00 ± 0.05	1.70 ± 0.03	1.40 ± 0.03	1.10 ± 0.05	0.70 ± 0.03	0.40 ± 0.05	
	d1 (mm) 0.76 ± 0.01	0.52 ± 0.01	0.45 ± 0.01	0.37 ± 0.01	0.29 ± 0.01	0.18 ± 0.01	0.10 ± 0.01	
200 mA	d2 (cm) 2.60 ± 0.03	1.80 ± 0.03	1.30 ± 0.05	0.80 ± 0.03	0.50 ± 0.03	0.30 ± 0.03		
	d1 (mm) 0.68 ± 0.01	0.47 ± 0.01	0.34 ± 0.01	0.21 ± 0.01	0.13 ± 0.01	0.08 ± 0.01		
300 mA	d2 (cm) 2.40 ± 0.03	1.70 ± 0.03	1.20 ± 0.03	0.70 ± 0.03	0.40 ± 0.03	0.20 ± 0.00		
	d1 (mm) 0.63 ± 0.01	0.45 ± 0.01	0.31 ± 0.01	0.18 ± 0.01	0.10 ± 0.01	0.05 ± 0.00		

Tabel 2. Data untuk grafik hubungan d1 dengan LP/mm

LP/mm	0,5	0,6	0,7	0,8	0,9	1	1,5	2
50 mA	d1 (mm) 0.99 ± 0.01	0.84 ± 0.01	0.79 ± 0.01	0.68 ± 0.01	0.60 ± 0.01	0.52 ± 0.01	0.45 ± 0.01	0.34 ± 0.02
70 mA	d1 (mm) 0.94 ± 0.01	0.79 ± 0.01	0.73 ± 0.01	0.65 ± 0.01	0.52 ± 0.01	0.47 ± 0.01	0.33 ± 0.02	0.23 ± 0.01
100 mA	d1 (mm) 0.89 ± 0.01	0.76 ± 0.01	0.65 ± 0.01	0.50 ± 0.01	0.42 ± 0.01	0.37 ± 0.01	0.26 ± 0.01	0.18 ± 0.01
150 mA	d1 (mm) 0.76 ± 0.01	0.52 ± 0.01	0.45 ± 0.01	0.37 ± 0.01	0.29 ± 0.01	0.18 ± 0.01	0.10 ± 0.01	
200 mA	d1 (mm) 0.68 ± 0.01	0.47 ± 0.01	0.34 ± 0.01	0.21 ± 0.01	0.13 ± 0.01	0.08 ± 0.01		
300 mA	d1 (mm) 0.63 ± 0.01	0.45 ± 0.01	0.31 ± 0.01	0.18 ± 0.01	0.10 ± 0.01	0.05 ± 0.00		
standar	d1 (mm) 1	0,83	0,71	0,63	0,56	0,5	0,33	0,25

Lampiran 2



Lampiran 3

Perhitungan dari hasil pengukuran dan proyeksi

Pengukuran	Nilai Terukur (S_1)	Deviasi ($S_1 - \bar{S}_1$)	Kwadrat Deviasi ($(S_1 - \bar{S}_1)^2$)
1	9,1	0,1	0,01
2	9	0	0
3	8,9	-0,1	0,01
	$\bar{S}_1 = 9$		$\sum (S_1 - \bar{S}_1) = 0,02$

$$\delta_{\bar{S}_1} = \sqrt{\frac{\sum (S_1 - \bar{S}_1)^2}{3(3-1)}}$$

$$= 0,058 \text{ cm}$$

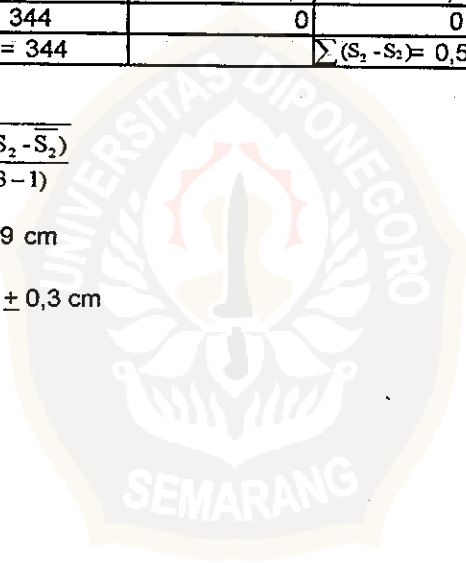
$$S_1 = 9,00 \pm 0,06 \text{ cm}$$

Pengukuran	Nilai Terukur (S_2)	Deviasi ($S_2 - \bar{S}_2$)	Kwadrat Deviasi ($(S_2 - \bar{S}_2)^2$)
1	344,5	0,5	0,25
2	343,5	-0,5	0,25
3	344	0	0
	$\bar{S}_2 = 344$		$\sum (S_2 - \bar{S}_2) = 0,5$

$$\delta_{\bar{S}_2} = \sqrt{\frac{\sum (S_2 - \bar{S}_2)^2}{3(3-1)}}$$

$$= 0,289 \text{ cm}$$

$$S_2 = 344,0 \pm 0,3 \text{ cm}$$



Dengan Menggunakan Arus 50 mA
Pada Skala 0,5

Pengukuran	Nilai Terukur (d_1)	Deviasi ($d_1 - \bar{d}_1$)	Kwadrat Deviasi ($(d_1 - \bar{d}_1)^2$)
1	3.8	0	0
2	3.8	0	0
3	3.9	0.1	0.01
4	3.7	-0.1	0.01
5	3.8	0	0
	$\bar{d}_1 = 3.8$		$\sum (d_1 - \bar{d}_1)^2 = 0.02$

$$\delta_{\bar{d}_1} = \sqrt{\frac{\sum (d_1 - \bar{d}_1)^2}{5(5-1)}}$$

$$= 0.0316$$

$$d_1 = 3.80 \pm 0.03 \text{ cm}$$

$$d_1 = 0.099 \pm 0.001 \text{ cm}$$

$$\bar{d}_2 = \frac{\bar{S}_1 \bar{d}_2}{S_2} = 0.099418605$$

$$\delta_{\bar{d}_2} = \sqrt{\left(\frac{\bar{d}_2}{S_2} \delta_{S_1}\right)^2 + \left(\frac{\bar{S}_1 \bar{d}_2}{S_2^2} \delta_{S_2}\right)^2 + \left(\frac{\bar{S}_1}{S_2} \delta_{\bar{d}_2}\right)^2}$$

$$= 0.00105$$

Dengan Menggunakan Arus 50 mA
Pada Skala 0,6

Pengukuran	Nilai Terukur (d_1)	Deviasi ($d_1 - \bar{d}_1$)	Kwadrat Deviasi ($(d_1 - \bar{d}_1)^2$)
1	3.2	0	0
2	3.3	0.1	0.01
3	3.3	0.1	0.01
4	3.1	-0.1	0.01
5	3.1	-0.1	0.01
	$\bar{d}_1 = 3.2$		$\sum (d_1 - \bar{d}_1)^2 = 0.04$

$$\delta_{\bar{d}_1} = \sqrt{\frac{\sum (d_1 - \bar{d}_1)^2}{5(5-1)}}$$

$$= 0.0447$$

$$d_1 = 3.20 \pm 0.05 \text{ cm}$$

$$d_1 = 0.084 \pm 0.001 \text{ cm}$$

$$\bar{d}_2 = \frac{\bar{S}_1 \bar{d}_2}{S_2} = 0.08372093$$

$$\delta_{\bar{d}_2} = \sqrt{\left(\frac{\bar{d}_2}{S_2} \delta_{S_1}\right)^2 + \left(\frac{\bar{S}_1 \bar{d}_2}{S_2^2} \delta_{S_2}\right)^2 + \left(\frac{\bar{S}_1}{S_2} \delta_{\bar{d}_2}\right)^2}$$

$$= 0.00129$$

Dengan Menggunakan Arus 50 mA
Pada Skala 0,7

Pengukuran	Nilai Terukur (d_1)	Deviasi ($d_1 - \bar{d}_1$)	Kwadrat Deviasi ($(d_1 - \bar{d}_1)^2$)
1	3.1	0.1	0.01
2	3	0	0
3	3.1	0.1	0.01
4	2.9	-0.1	0.01
5	2.9	-0.1	0.01
	$\bar{d}_1 = 3$		$\sum (d_1 - \bar{d}_1)^2 = 0.04$

$$\delta_{\bar{d}_1} = \sqrt{\frac{\sum (d_1 - \bar{d}_1)^2}{5(5-1)}}$$

$$= 0.0447$$

$$d_1 = 3.00 \pm 0.05 \text{ cm}$$

$$d_1 = 0.079 \pm 0.001 \text{ cm}$$

$$\bar{d}_2 = \frac{\bar{S}_1 \bar{d}_2}{S_2} = 0.078488372$$

$$\delta_{\bar{d}_2} = \sqrt{\left(\frac{\bar{d}_2}{S_2} \delta_{S_1}\right)^2 + \left(\frac{\bar{S}_1 \bar{d}_2}{S_2^2} \delta_{S_2}\right)^2 + \left(\frac{\bar{S}_1}{S_2} \delta_{\bar{d}_2}\right)^2}$$

$$= 0.001276$$

Dengan Menggunakan Arus 50 mA
Pada Skala 0,8

Pengukuran	Nilai Terukur (d_2)	Deviasi ($d_2 - \bar{d}_2$)	Kwadrat Deviasi ($(d_2 - \bar{d}_2)^2$)
1	2.6	0	0
2	2.5	-0.1	0.01
3	2.5	-0.1	0.01
4	2.7	0.1	0.01
5	2.7	0.1	0.01
	$\bar{d}_2 = 2.6$		$\sum (d_2 - \bar{d}_2) = 0.04$

$$\delta_{\bar{d}_2} = \sqrt{\frac{\sum (d_2 - \bar{d}_2)^2}{5(5-1)}}$$

$$= 0.0447$$

$$d_2 = 2.60 \pm 0.05 \text{ cm}$$

$$d_1 = 0.068 \pm 0.001 \text{ cm}$$

$$\bar{d}_1 = \frac{\bar{S}_1 \bar{d}_2}{S_2} = 0.068023256$$

$$\delta_{\bar{d}_1} = \sqrt{\left(\frac{\bar{d}_2}{S_2} \delta_{\bar{S}_1}\right)^2 + \left(\frac{\bar{S}_1 \bar{d}_2}{S_2^2} \delta_{\bar{S}_2}\right)^2 + \left(\frac{\bar{S}_1}{S_2} \delta_{\bar{d}_2}\right)^2}$$

$$= 0.001251$$

Dengan Menggunakan Arus 50 mA
Pada Skala 0,9

Pengukuran	Nilai Terukur (d_2)	Deviasi ($d_2 - \bar{d}_2$)	Kwadrat Deviasi ($(d_2 - \bar{d}_2)^2$)
1	2.4	0.1	0.01
2	2.2	-0.1	0.01
3	2.4	0.1	0.01
4	2.2	-0.1	0.01
5	2.3	0	0
	$\bar{d}_2 = 2.3$		$\sum (d_2 - \bar{d}_2) = 0.04$

$$\delta_{\bar{d}_2} = \sqrt{\frac{\sum (d_2 - \bar{d}_2)^2}{5(5-1)}}$$

$$= 0.0447$$

$$d_2 = 2.30 \pm 0.05 \text{ cm}$$

$$d_1 = 0.060 \pm 0.001$$

$$\bar{d}_1 = \frac{\bar{S}_1 \bar{d}_2}{S_2} = 0.060174419$$

$$\delta_{\bar{d}_1} = \sqrt{\left(\frac{\bar{d}_2}{S_2} \delta_{\bar{S}_1}\right)^2 + \left(\frac{\bar{S}_1 \bar{d}_2}{S_2^2} \delta_{\bar{S}_2}\right)^2 + \left(\frac{\bar{S}_1}{S_2} \delta_{\bar{d}_2}\right)^2}$$

$$= 0.001234$$

Dengan Menggunakan Arus 50 mA
Pada Skala 1

Pengukuran	Nilai Terukur (d_2)	Deviasi ($d_2 - \bar{d}_2$)	Kwadrat Deviasi ($(d_2 - \bar{d}_2)^2$)
1	2	0.02	0.0004
2	2	0.02	0.0004
3	1.9	-0.08	0.0064
4	1.9	-0.08	0.0064
5	2.1	0.12	0.0144
	$\bar{d}_2 = 1.98$		$\sum (d_2 - \bar{d}_2) = 0.028$

$$\delta_{\bar{d}_2} = \sqrt{\frac{\sum (d_2 - \bar{d}_2)^2}{5(5-1)}}$$

$$= 0.0374$$

$$d_2 = 1.98 \pm 0.04 \text{ cm}$$

$$d_1 = 0.052 \pm 0.001 \text{ cm}$$

$$\bar{d}_1 = \frac{\bar{S}_1 \bar{d}_2}{S_2} = 0.051802326$$

$$\delta_{\bar{d}_1} = \sqrt{\left(\frac{\bar{d}_2}{S_2} \delta_{\bar{S}_1}\right)^2 + \left(\frac{\bar{S}_1 \bar{d}_2}{S_2^2} \delta_{\bar{S}_2}\right)^2 + \left(\frac{\bar{S}_1}{S_2} \delta_{\bar{d}_2}\right)^2}$$

$$= 0.001035$$

Dengan Menggunakan Arus 50 mA
 Pada Skala 1,5

Pengukuran	Nilai Terukur (d_2)	Deviasi ($d_2 - \bar{d}_2$)	Kwadrat Deviasi ($(d_2 - \bar{d}_2)^2$)
1	1.8	0.1	0.01
2	1.7	0	0
3	1.8	0.1	0.01
4	1.6	-0.1	0.01
5	1.6	-0.1	0.01
	$\bar{d}_2 = 1.7$		$\sum (d_2 - \bar{d}_2) = 0.04$

$$\delta_{\bar{d}_2} = \sqrt{\frac{\sum (d_2 - \bar{d}_2)^2}{5(5-1)}}$$

$$= 0.0447$$

$$d_2 = 1.70 \pm 0.05 \text{ cm}$$

$$d_1 = 0.045 \pm 0.001 \text{ cm}$$

$$\bar{d}_1 = \frac{\bar{S}_1 \bar{d}_2}{\bar{S}_2} = 0.044476744$$

$$\delta_{\bar{d}_1} = \sqrt{\left(\frac{\bar{d}_2}{\bar{S}_2} \delta_{\bar{S}_1}\right)^2 + \left(\frac{\bar{S}_1 \bar{d}_2}{\bar{S}_2^2} \delta_{\bar{S}_2}\right)^2 + \left(\frac{\bar{S}_1}{\bar{S}_2} \delta_{\bar{d}_2}\right)^2}$$

$$= 0.001205$$

Dengan Menggunakan Arus 50 mA
 Pada Skala 2

Pengukuran	Nilai Terukur (d_2)	Deviasi ($d_2 - \bar{d}_2$)	Kwadrat Deviasi ($(d_2 - \bar{d}_2)^2$)
1	1.3	0	0
2	1.4	0.1	0.01
3	1.4	0.1	0.01
4	1.2	-0.1	0.01
5	1.2	-0.1	0.01
	$\bar{d}_2 = 1.3$		$\sum (d_2 - \bar{d}_2) = 0.04$

$$\delta_{\bar{d}_2} = \sqrt{\frac{\sum (d_2 - \bar{d}_2)^2}{5(5-1)}}$$

$$= 0.0447$$

$$d_2 = 1.30 \pm 0.05 \text{ cm}$$

$$d_1 = 0.034 \pm 0.001 \text{ cm}$$

$$\bar{d}_1 = \frac{\bar{S}_1 \bar{d}_2}{\bar{S}_2} = 0.034011628$$

$$\delta_{\bar{d}_1} = \sqrt{\left(\frac{\bar{d}_2}{\bar{S}_2} \delta_{\bar{S}_1}\right)^2 + \left(\frac{\bar{S}_1 \bar{d}_2}{\bar{S}_2^2} \delta_{\bar{S}_2}\right)^2 + \left(\frac{\bar{S}_1}{\bar{S}_2} \delta_{\bar{d}_2}\right)^2}$$

$$= 0.001191$$

Dengan Menggunakan Arus 70 mA
 Pada Skala 0,5

Pengukuran	Nilai Terukur (d_2)	Deviasi ($d_2 - \bar{d}_2$)	Kwadrat Deviasi ($(d_2 - \bar{d}_2)^2$)
1	3.6	0	0
2	3.5	-0.1	0.01
3	3.5	-0.1	0.01
4	3.7	0.1	0.01
5	3.7	0.1	0.01
	$\bar{d}_2 = 3.6$		$\sum (d_2 - \bar{d}_2) = 0.04$

$$\delta_{\bar{d}_2} = \sqrt{\frac{\sum (d_2 - \bar{d}_2)^2}{5(5-1)}}$$

$$= 0.0447$$

$$d_2 = 3.60 \pm 0.05 \text{ cm}$$

$$d_1 = 0.094 \pm 0.001 \text{ cm}$$

$$\bar{d}_1 = \frac{\bar{S}_1 \bar{d}_2}{\bar{S}_2} = 0.094186047$$

$$\delta_{\bar{d}_1} = \sqrt{\left(\frac{\bar{d}_2}{\bar{S}_2} \delta_{\bar{S}_1}\right)^2 + \left(\frac{\bar{S}_1 \bar{d}_2}{\bar{S}_2^2} \delta_{\bar{S}_2}\right)^2 + \left(\frac{\bar{S}_1}{\bar{S}_2} \delta_{\bar{d}_2}\right)^2}$$

$$= 0.00132$$

Dengan Menggunakan Arus 70 mA
 Pada Skala 0,6

Pengukuran	Nilai Terukur (d_2)	Deviasi ($d_2 - \bar{d}_2$)	Kwadrat Deviasi ($(d_2 - \bar{d}_2)^2$)
1	3	0	0
2	3	0	0
3	3	0	0
4	2.9	-0.1	0.01
5	3.1	0.1	0.01
	$\bar{d}_2 = 3$		$\sum (d_2 - \bar{d}_2) = 0.02$

$$\delta_{\bar{d}_2} = \sqrt{\frac{\sum (d_2 - \bar{d}_2)^2}{5(5-1)}}$$

$$= 0.0316$$

$$d_2 = 3.00 \pm 0.03 \text{ cm}$$

$$d_1 = 0.079 \pm 0.001 \text{ cm}$$

$$\bar{d}_1 = \frac{\bar{S}_1 \bar{d}_2}{\bar{S}_2} = 0.078488372$$

$$\delta_{\bar{d}_1} = \sqrt{\left(\frac{\bar{d}_2}{\bar{S}_2} \delta_{\bar{S}_1}\right)^2 + \left(\frac{\bar{S}_1 \bar{d}_2}{\bar{S}_2^2} \delta_{\bar{S}_2}\right)^2 + \left(\frac{\bar{S}_1}{\bar{S}_2} \delta_{\bar{d}_2}\right)^2}$$

$$= 0.000972$$

Dengan Menggunakan Arus 70 mA
 Pada Skala 0,7

Pengukuran	Nilai Terukur (d_2)	Deviasi ($d_2 - \bar{d}_2$)	Kwadrat Deviasi ($(d_2 - \bar{d}_2)^2$)
1	2.9	0.1	0.01
2	2.7	-0.1	0.01
3	2.9	0.1	0.01
4	2.7	-0.1	0.01
5	2.8	0	0
	$\bar{d}_2 = 2.8$		$\sum (d_2 - \bar{d}_2) = 0.04$

$$\delta_{\bar{d}_2} = \sqrt{\frac{\sum (d_2 - \bar{d}_2)^2}{5(5-1)}}$$

$$= 0.0447$$

$$d_2 = 2.80 \pm 0.05 \text{ cm}$$

$$d_1 = 0.073 \pm 0.001 \text{ cm}$$

$$\bar{d}_1 = \frac{\bar{S}_1 \bar{d}_2}{\bar{S}_2} = 0.073255814$$

$$\delta_{\bar{d}_1} = \sqrt{\left(\frac{\bar{d}_2}{\bar{S}_2} \delta_{\bar{S}_1}\right)^2 + \left(\frac{\bar{S}_1 \bar{d}_2}{\bar{S}_2^2} \delta_{\bar{S}_2}\right)^2 + \left(\frac{\bar{S}_1}{\bar{S}_2} \delta_{\bar{d}_2}\right)^2}$$

$$= 0.001263$$

Dengan Menggunakan Arus 70 mA
 Pada Skala 0,8

Pengukuran	Nilai Terukur (d_1)	Deviasi ($d_1 - \bar{d}_1$)	Kwadrat Deviasi ($(d_1 - \bar{d}_1)^2$)
1	2.5	0	0
2	2.5	0	0
3	2.4	-0.1	0.01
4	2.6	0.1	0.01
5	2.5	0	0
	$\bar{d}_2 = 2.5$		$\sum (d_2 - \bar{d}_2) = 0.02$

$$\delta_{\bar{d}_2} = \sqrt{\frac{\sum (d_2 - \bar{d}_2)^2}{5(5-1)}}$$

$$= 0.0316$$

$$d_2 = 2.50 \pm 0.03 \text{ cm}$$

$$d_1 = 0.065 \pm 0.001 \text{ cm}$$

$$\bar{d}_1 = \frac{\bar{S}_1 \bar{d}_2}{S_2} = 0.065406977$$

$$\delta_{\bar{d}_1} = \sqrt{\left(\frac{\bar{d}_2}{S_2} \delta_{S_1}\right)^2 + \left(\frac{\bar{S}_1 \bar{d}_2}{S_2^2} \delta_{S_2}\right)^2 + \left(\frac{\bar{S}_1}{S_2} \delta_{\bar{d}_2}\right)^2}$$

$$= 0.00093$$

Dengan Menggunakan Arus 70 mA
 Pada Skala 0,9

Pengukuran	Nilai Terukur (d_1)	Deviasi ($d_1 - \bar{d}_1$)	Kwadrat Deviasi ($(d_1 - \bar{d}_1)^2$)
1	2.1	0.1	0.01
2	2	0	0
3	2	0	0
4	2	0	0
5	1.9	-0.1	0.01
	$\bar{d}_2 = 2$		$\sum (d_2 - \bar{d}_2) = 0.02$

$$\delta_{\bar{d}_2} = \sqrt{\frac{\sum (d_2 - \bar{d}_2)^2}{5(5-1)}}$$

$$= 0.0316$$

$$d_2 = 2.00 \pm 0.03 \text{ cm}$$

$$d_1 = 0.052 \pm 0.001 \text{ cm}$$

$$\bar{d}_1 = \frac{\bar{S}_1 \bar{d}_2}{S_2} = 0.052325581$$

$$\delta_{\bar{d}_1} = \sqrt{\left(\frac{\bar{d}_2}{S_2} \delta_{S_1}\right)^2 + \left(\frac{\bar{S}_1 \bar{d}_2}{S_2^2} \delta_{S_2}\right)^2 + \left(\frac{\bar{S}_1}{S_2} \delta_{\bar{d}_2}\right)^2}$$

$$= 0.000895$$

Dengan Menggunakan Arus 70 mA
 Pada Skala 1

Pengukuran	Nilai Terukur (d_1)	Deviasi ($d_1 - \bar{d}_1$)	Kwadrat Deviasi ($(d_1 - \bar{d}_1)^2$)
1	1.8	0	0
2	1.8	0	0
3	1.8	0	0
4	1.9	0.1	0.01
5	1.7	-0.1	0.01
	$\bar{d}_2 = 1.8$		$\sum (d_2 - \bar{d}_2) = 0.02$

$$\delta_{\bar{d}_2} = \sqrt{\frac{\sum (d_2 - \bar{d}_2)^2}{5(5-1)}}$$

$$= 0.0316$$

$$d_2 = 1.80 \pm 0.03 \text{ cm}$$

$$d_1 = 0.047 \pm 0.001 \text{ cm}$$

$$\bar{d}_1 = \frac{\bar{S}_1 \bar{d}_2}{S_2} = 0.047093023$$

$$\delta_{\bar{d}_1} = \sqrt{\left(\frac{\bar{d}_2}{S_2} \delta_{S_1}\right)^2 + \left(\frac{\bar{S}_1 \bar{d}_2}{S_2^2} \delta_{S_2}\right)^2 + \left(\frac{\bar{S}_1}{S_2} \delta_{\bar{d}_2}\right)^2}$$

$$= 0.000882$$

Dengan Menggunakan Arus 70 mA
 Pada Skala 1,5

Pengukuran	Nilai Terukur (d_1)	Deviasi ($d_1 - \bar{d}_1$)	Kwadrat Deviasi ($(d_1 - \bar{d}_1)^2$)
1	1.3	0.04	0.0016
2	1.4	0.14	0.0196
3	1.4	0.14	0.0196
4	1.1	-0.16	0.0256
5	1.1	-0.16	0.0256
	$\bar{d}_1 = 1.26$		$\sum (d_1 - \bar{d}_1) = 0.092$

$$\delta_{\bar{d}_1} = \sqrt{\frac{\sum (d_1 - \bar{d}_1)^2}{5(5-1)}}$$

$$= 0.0678$$

$$d_1 = 1.26 \pm 0.07 \text{ cm}$$

$$d_1 = 0.033 \pm 0.001$$

$$\bar{d}_2 = \frac{\sum d_2}{S_2} = 0.032965116$$

$$\delta_{\bar{d}_2} = \sqrt{\left(\frac{\bar{d}_2}{S_2} \delta_{S_1}\right)^2 + \left(\frac{\bar{S}_1 \bar{d}_2}{S_2^2} \delta_{S_2}\right)^2 + \left(\frac{\bar{S}_1}{S_2} \delta_{d_2}\right)^2}$$

$$= 0.001787$$

Dengan Menggunakan Arus 70 mA
 Pada Skala 2

Pengukuran	Nilai Terukur (d_1)	Deviasi ($d_1 - \bar{d}_1$)	Kwadrat Deviasi ($(d_1 - \bar{d}_1)^2$)
1	1	0.1	0.01
2	0.9	0	0
3	0.8	-0.1	0.01
4	1	0.1	0.01
5	0.8	-0.1	0.01
	$\bar{d}_1 = 0.9$		$\sum (d_1 - \bar{d}_1) = 0.04$

$$\delta_{\bar{d}_1} = \sqrt{\frac{\sum (d_1 - \bar{d}_1)^2}{5(5-1)}}$$

$$= 0.0447$$

$$d_1 = 0.90 \pm 0.05 \text{ cm}$$

$$d_1 = 0.024 \pm 0.001 \text{ cm}$$

$$\bar{d}_2 = \frac{\sum d_2}{S_2} = 0.023546512$$

$$\delta_{\bar{d}_2} = \sqrt{\left(\frac{\bar{d}_2}{S_2} \delta_{S_1}\right)^2 + \left(\frac{\bar{S}_1 \bar{d}_2}{S_2^2} \delta_{S_2}\right)^2 + \left(\frac{\bar{S}_1}{S_2} \delta_{d_2}\right)^2}$$

$$= 0.00118$$

Dengan Menggunakan Arus 100 mA
 Pada Skala 0,5

Pengukuran	Nilai Terukur (d_2)	Deviasi ($d_2 - \bar{d}_2$)	Kwadrat Deviasi ($(d_2 - \bar{d}_2)^2$)
1	3.4	0	0
2	3.4	0	0
3	3.5	0.1	0.01
4	3.4	0	0
5	3.3	-0.1	0.01
	$\bar{d}_2 = 3.4$		$\sum (d_2 - \bar{d}_2) = 0.02$

$$\delta_{\bar{d}_2} = \sqrt{\frac{\sum (d_2 - \bar{d}_2)^2}{5(5-1)}}$$

$$= 0.0316$$

$$d_2 = 3.40 \pm 0.03 \text{ cm}$$

$$d_1 = 0.089 \pm 0.001 \text{ cm}$$

$$\bar{d}_1 = \frac{\bar{S}_1 \bar{d}_2}{S_2} = 0.088953488$$

$$\delta_{\bar{d}_1} = \sqrt{\left(\frac{\bar{d}_2}{S_2} \delta_{S_1}\right)^2 + \left(\frac{\bar{S}_1 \bar{d}_2}{S_2^2} \delta_{S_2}\right)^2 + \left(\frac{\bar{S}_1}{S_2} \delta_{\bar{d}_2}\right)^2}$$

$$= 0.001009$$

Dengan Menggunakan Arus 100 mA
 Pada Skala 0,6

Pengukuran	Nilai Terukur (d_2)	Deviasi ($d_2 - \bar{d}_2$)	Kwadrat Deviasi ($(d_2 - \bar{d}_2)^2$)
1	2.9	0	0
2	3	0.1	0.01
3	3	0.1	0.01
4	2.8	-0.1	0.01
5	2.8	-0.1	0.01
	$\bar{d}_2 = 2.9$		$\sum (d_2 - \bar{d}_2) = 0.04$

$$\delta_{\bar{d}_2} = \sqrt{\frac{\sum (d_2 - \bar{d}_2)^2}{5(5-1)}}$$

$$= 0.0447$$

$$d_2 = 2.90 \pm 0.045 \text{ cm}$$

$$d_1 = 0.076 \pm 0.001 \text{ cm}$$

$$\bar{d}_1 = \frac{\bar{S}_1 \bar{d}_2}{S_2} = 0.075872093$$

$$\delta_{\bar{d}_1} = \sqrt{\left(\frac{\bar{d}_2}{S_2} \delta_{S_1}\right)^2 + \left(\frac{\bar{S}_1 \bar{d}_2}{S_2^2} \delta_{S_2}\right)^2 + \left(\frac{\bar{S}_1}{S_2} \delta_{\bar{d}_2}\right)^2}$$

$$= 0.00127$$

Dengan Menggunakan Arus 100 mA
 Pada Skala 0,7

Pengukuran	Nilai Terukur (d_2)	Deviasi ($d_2 - \bar{d}_2$)	Kwadrat Deviasi ($(d_2 - \bar{d}_2)^2$)
1	2.6	0.1	0.01
2	2.5	0	0
3	2.5	0	0
4	2.5	0	0
5	2.4	-0.1	0.01
	$\bar{d}_2 = 2.5$		$\sum (d_2 - \bar{d}_2) = 0.02$

$$\delta_{\bar{d}_2} = \sqrt{\frac{\sum (d_2 - \bar{d}_2)^2}{5(5-1)}}$$

$$= 0.0316$$

$$d_2 = 2.50 \pm 0.03 \text{ cm}$$

$$d_1 = 0.065 \pm 0.001$$

$$\bar{d}_1 = \frac{\bar{S}_1 \bar{d}_2}{S_2} = 0.065406977$$

$$\delta_{\bar{d}_1} = \sqrt{\left(\frac{\bar{d}_2}{S_2} \delta_{S_1}\right)^2 + \left(\frac{\bar{S}_1 \bar{d}_2}{S_2^2} \delta_{S_2}\right)^2 + \left(\frac{\bar{S}_1}{S_2} \delta_{\bar{d}_2}\right)^2}$$

$$= 0.00093$$

Dengan Menggunakan Arus 100 mA
 Pada Skala 0,8

Pengukuran	Nilai Terukur (d_1)	Deviasi ($d_1 - \bar{d}_1$)	Kwadrat Deviasi ($(d_1 - \bar{d}_1)^2$)
1	1.9	0	0
2	1.9	0	0
3	1.9	0	0
4	1.9	0	0
5	1.9	0	0
	$\bar{d}_1 = 1.9$		$\sum (d_1 - \bar{d}_1) = 0$

$$\delta_{\bar{d}_1} = \sqrt{\frac{\sum (d_1 - \bar{d}_1)^2}{5(5-1)}}$$

$$= 0$$

$$d_1 = 1.90 \pm 0.00 \text{ cm}$$

$$d_2 = 0.045 \pm 0.00 \text{ cm}$$

$$\bar{d}_2 = \frac{\bar{S}_1 \bar{d}_2}{S_2} = 0.049709302$$

$$\delta_{\bar{d}_2} = \sqrt{\left(\frac{\bar{d}_2}{S_2} \delta_{S_1}\right)^2 + \left(\frac{\bar{S}_1 \bar{d}_2}{S_2^2} \delta_{S_2}\right)^2 + \left(\frac{\bar{S}_1}{S_2} \delta_{\bar{d}_2}\right)^2}$$

$$= 0.000323$$

Dengan Menggunakan Arus 100 mA
 Pada Skala 0,9

Pengukuran	Nilai Terukur (d_1)	Deviasi ($d_1 - \bar{d}_1$)	Kwadrat Deviasi ($(d_1 - \bar{d}_1)^2$)
1	1.6	0	0
2	1.7	0.1	0.01
3	1.7	0.1	0.01
4	1.5	-0.1	0.01
5	1.5	-0.1	0.01
	$\bar{d}_1 = 1.6$		$\sum (d_1 - \bar{d}_1) = 0.04$

$$\delta_{\bar{d}_1} = \sqrt{\frac{\sum (d_1 - \bar{d}_1)^2}{5(5-1)}}$$

$$= 0.0447$$

$$d_1 = 1.60 \pm 0.045 \text{ cm}$$

$$d_2 = 0.042 \pm 0.001 \text{ cm}$$

$$\bar{d}_2 = \frac{\bar{S}_1 \bar{d}_2}{S_2} = 0.041860465$$

$$\delta_{\bar{d}_2} = \sqrt{\left(\frac{\bar{d}_2}{S_2} \delta_{S_1}\right)^2 + \left(\frac{\bar{S}_1 \bar{d}_2}{S_2^2} \delta_{S_2}\right)^2 + \left(\frac{\bar{S}_1}{S_2} \delta_{\bar{d}_2}\right)^2}$$

$$= 0.001201$$

Dengan Menggunakan Arus 100 mA
 Pada Skala 1

Pengukuran	Nilai Terukur (d_1)	Deviasi ($d_1 - \bar{d}_1$)	Kwadrat Deviasi ($(d_1 - \bar{d}_1)^2$)
1	1.5	0.1	0.01
2	1.4	0	0
3	1.3	-0.1	0.01
4	1.4	0	0
5	1.4	0	0
	$\bar{d}_1 = 1.4$		$\sum (d_1 - \bar{d}_1) = 0.02$

$$\delta_{\bar{d}_1} = \sqrt{\frac{\sum (d_1 - \bar{d}_1)^2}{5(5-1)}}$$

$$= 0.0316$$

$$d_1 = 1.40 \pm 0.03 \text{ cm}$$

$$d_2 = 0.037 \pm 0.001 \text{ cm}$$

$$\bar{d}_2 = \frac{\bar{S}_1 \bar{d}_2}{S_2} = 0.036627907$$

$$\delta_{\bar{d}_2} = \sqrt{\left(\frac{\bar{d}_2}{S_2} \delta_{S_1}\right)^2 + \left(\frac{\bar{S}_1 \bar{d}_2}{S_2^2} \delta_{S_2}\right)^2 + \left(\frac{\bar{S}_1}{S_2} \delta_{\bar{d}_2}\right)^2}$$

$$= 0.000861$$

Dengan Menggunakan Arus 100 mA
 Pada Skala 1,5

Pengukuran	Nilai Terukur (d_1)	Deviasi ($d_1 - \bar{d}_1$)	Kwadrat Deviasi ($d_1 - \bar{d}_1$) ²
1	1	0	0
2	0.9	-0.1	0.01
3	1.1	0.1	0.01
4	0.9	-0.1	0.01
5	1.1	0.1	0.01
	$\bar{d}_1 = 1$		$\sum (d_1 - \bar{d}_1) = 0.04$

$$\delta_{\bar{d}_1} = \sqrt{\frac{\sum (d_1 - \bar{d}_1)^2}{5(5-1)}}$$

$$= 0.0447$$

$$d_1 = 1.00 \pm 0.045 \text{ cm}$$

$$\bar{d}_1 = 0.026 \pm 0.001 \text{ cm}$$

$$\bar{d}_2 = \frac{\bar{S}_1 \bar{d}_2}{\bar{S}_2} = 0.026162791$$

$$\delta_{\bar{d}_2} = \sqrt{\left(\frac{\bar{d}_2}{\bar{S}_2} \delta_{\bar{S}_1}\right)^2 + \left(\frac{\bar{S}_1 \bar{d}_2}{\bar{S}_2^2} \delta_{\bar{S}_2}\right)^2 + \left(\frac{\bar{S}_1}{\bar{S}_2} \delta_{\bar{d}_2}\right)^2}$$

$$= 0.001182$$

Dengan Menggunakan Arus 100 mA
 Pada Skala 2

Pengukuran	Nilai Terukur (d_1)	Deviasi ($d_1 - \bar{d}_1$)	Kwadrat Deviasi ($d_1 - \bar{d}_1$) ²
1	0.8	0.1	0.01
2	0.7	0	0
3	0.6	-0.1	0.01
4	0.7	0	0
5	0.7	0	0
	$\bar{d}_1 = 0.7$		$\sum (d_1 - \bar{d}_1) = 0.02$

$$\delta_{\bar{d}_1} = \sqrt{\frac{\sum (d_1 - \bar{d}_1)^2}{5(5-1)}}$$

$$= 0.0316$$

$$d_1 = 0.70 \pm 0.03 \text{ cm}$$

$$\bar{d}_1 = 0.018 \pm 0.001 \text{ cm}$$

$$\bar{d}_2 = \frac{\bar{S}_1 \bar{d}_2}{\bar{S}_2} = 0.018313953$$

$$\delta_{\bar{d}_2} = \sqrt{\left(\frac{\bar{d}_2}{\bar{S}_2} \delta_{\bar{S}_1}\right)^2 + \left(\frac{\bar{S}_1 \bar{d}_2}{\bar{S}_2^2} \delta_{\bar{S}_2}\right)^2 + \left(\frac{\bar{S}_1}{\bar{S}_2} \delta_{\bar{d}_2}\right)^2}$$

$$= 0.000836$$

Dengan Menggunakan Arus 150 mA
Pada Skala 0,5

Pengukuran	Nilai Terukur (d_2)	Deviasi ($d_2 - \bar{d}_2$)	Kwadrat Deviasi ($(d_2 - \bar{d}_2)^2$)
1	2.9	-0.02	0.0004
2	2.8	-0.12	0.0144
3	2.9	-0.02	0.0004
4	3	0.08	0.0064
5	3	0.08	0.0064
	$\bar{d}_2 = 2.9$		$\sum (d_2 - \bar{d}_2) = 0.028$

$$\delta_{\bar{d}_2} = \sqrt{\frac{\sum (d_2 - \bar{d}_2)^2}{5(5-1)}}$$

$$= 0.0374$$

$$\bar{d}_1 = \frac{\bar{S}_1 \bar{d}_2}{S_2} = 0.076395349$$

$$\delta_{\bar{d}_1} = \sqrt{\left(\frac{\bar{d}_2}{S_2} \delta_{S_1}\right)^2 + \left(\frac{\bar{S}_1 \bar{d}_2}{S_2^2} \delta_{S_2}\right)^2 + \left(\frac{\bar{S}_1}{S_2} \delta_{\bar{d}_2}\right)^2}$$

$$= 0.001098$$

$$d_2 = 2.92 \pm 0.04 \text{ cm}$$

$$d_1 = 0.076 \pm 0.001 \text{ cm}$$

Dengan Menggunakan Arus 150 mA
Pada Skala 0,6

Pengukuran	Nilai Terukur (d_2)	Deviasi ($d_2 - \bar{d}_2$)	Kwadrat Deviasi ($(d_2 - \bar{d}_2)^2$)
1	2.1	0.1	0.01
2	2.1	0.1	0.01
3	2	0	0
4	1.9	-0.1	0.01
5	1.9	-0.1	0.01
	$\bar{d}_2 = 2$		$\sum (d_2 - \bar{d}_2) = 0.04$

$$\delta_{\bar{d}_2} = \sqrt{\frac{\sum (d_2 - \bar{d}_2)^2}{5(5-1)}}$$

$$= 0.0447$$

$$\bar{d}_1 = \frac{\bar{S}_1 \bar{d}_2}{S_2} = 0.052325581$$

$$\delta_{\bar{d}_1} = \sqrt{\left(\frac{\bar{d}_2}{S_2} \delta_{S_1}\right)^2 + \left(\frac{\bar{S}_1 \bar{d}_2}{S_2^2} \delta_{S_2}\right)^2 + \left(\frac{\bar{S}_1}{S_2} \delta_{\bar{d}_2}\right)^2}$$

$$= 0.001218$$

$$d_2 = 2.00 \pm 0.05 \text{ cm}$$

$$d_1 = 0.052 \pm 0.001 \text{ cm}$$

Dengan Menggunakan Arus 150 mA
Pada Skala 0,7

Pengukuran	Nilai Terukur (d_2)	Deviasi ($d_2 - \bar{d}_2$)	Kwadrat Deviasi ($(d_2 - \bar{d}_2)^2$)
1	1.6	-0.1	0.01
2	1.7	0	0
3	1.7	0	0
4	1.8	0.1	0.01
5	1.7	0	0
	$\bar{d}_2 = 1.7$		$\sum (d_2 - \bar{d}_2) = 0.02$

$$\delta_{\bar{d}_2} = \sqrt{\frac{\sum (d_2 - \bar{d}_2)^2}{5(5-1)}}$$

$$= 0.0316$$

$$\bar{d}_1 = \frac{\bar{S}_1 \bar{d}_2}{S_2} = 0.044476744$$

$$\delta_{\bar{d}_1} = \sqrt{\left(\frac{\bar{d}_2}{S_2} \delta_{S_1}\right)^2 + \left(\frac{\bar{S}_1 \bar{d}_2}{S_2^2} \delta_{S_2}\right)^2 + \left(\frac{\bar{S}_1}{S_2} \delta_{\bar{d}_2}\right)^2}$$

$$= 0.000876$$

$$d_2 = 1.70 \pm 0.03 \text{ cm}$$

$$d_1 = 0.045 \pm 0.001 \text{ cm}$$

Dengan Menggunakan Arus 150 mA
Pada Skala 0,8

Pengukuran	Nilai Terukur (d_2)	Deviasi ($d_i - \bar{d}_2$)	Kwadrat Deviasi ($(d_i - \bar{d}_2)^2$)
1	1.4	0	0
2	1.4	0	0
3	1.3	-0.1	0.01
4	1.5	0.1	0.01
5	1.4	0	0
	$\bar{d}_2 = 1.4$		$\sum (d_i - \bar{d}_2) = 0.02$

$$\delta_{\bar{d}_2} = \sqrt{\frac{\sum (d_2 - \bar{d}_2)}{5(5-1)}}$$

$$= 0.0316$$

$$d_2 = 1.40 \pm 0.03 \text{ cm}$$

$$d_1 = 0.037 \pm 0.001$$

$$\bar{d}_1 = \frac{\bar{S}_1 \bar{d}_2}{S_2} = 0.036627907$$

$$\delta_{\bar{d}_1} = \sqrt{\left(\frac{\bar{d}_2}{S_2} \delta_{S_1}\right)^2 + \left(\frac{\bar{S}_1 \bar{d}_2}{S_2^2} \delta_{S_2}\right)^2 + \left(\frac{\bar{S}_1}{S_2} \delta_{d_2}\right)^2}$$

$$= 0.000861$$

Dengan Menggunakan Arus 150 mA
Pada Skala 0,9

Pengukuran	Nilai Terukur (d_2)	Deviasi ($d_i - \bar{d}_2$)	Kwadrat Deviasi ($(d_i - \bar{d}_2)^2$)
1	1.1	0	0
2	1.2	0.1	0.01
3	1	-0.1	0.01
4	1	-0.1	0.01
5	1.2	0.1	0.01
	$\bar{d}_2 = 1.1$		$\sum (d_i - \bar{d}_2) = 0.04$

$$\delta_{\bar{d}_2} = \sqrt{\frac{\sum (d_2 - \bar{d}_2)}{5(5-1)}}$$

$$= 0.0447$$

$$d_2 = 1.10 \pm 0.05 \text{ cm}$$

$$d_1 = 0.029 \pm 0.001 \text{ cm}$$

$$\bar{d}_1 = \frac{\bar{S}_1 \bar{d}_2}{S_2} = 0.02877907$$

$$\delta_{\bar{d}_1} = \sqrt{\left(\frac{\bar{d}_2}{S_2} \delta_{S_1}\right)^2 + \left(\frac{\bar{S}_1 \bar{d}_2}{S_2^2} \delta_{S_2}\right)^2 + \left(\frac{\bar{S}_1}{S_2} \delta_{d_2}\right)^2}$$

$$= 0.001185$$

Dengan Menggunakan Arus 150 mA
Pada Skala 1

Pengukuran	Nilai Terukur (d_2)	Deviasi ($d_i - \bar{d}_2$)	Kwadrat Deviasi ($(d_i - \bar{d}_2)^2$)
1	0.8	0.1	0.01
2	0.7	0	0
3	0.7	0	0
4	0.6	-0.1	0.01
5	0.7	0	0
	$\bar{d}_2 = 0.7$		$\sum (d_i - \bar{d}_2) = 0.02$

$$\delta_{\bar{d}_2} = \sqrt{\frac{\sum (d_2 - \bar{d}_2)}{5(5-1)}}$$

$$= 0.0316$$

$$d_2 = 0.70 \pm 0.03 \text{ cm}$$

$$d_1 = 0.018 \pm 0.001 \text{ cm}$$

$$\bar{d}_1 = \frac{\bar{S}_1 \bar{d}_2}{S_2} = 0.018313953$$

$$\delta_{\bar{d}_1} = \sqrt{\left(\frac{\bar{d}_2}{S_2} \delta_{S_1}\right)^2 + \left(\frac{\bar{S}_1 \bar{d}_2}{S_2^2} \delta_{S_2}\right)^2 + \left(\frac{\bar{S}_1}{S_2} \delta_{d_2}\right)^2}$$

$$= 0.000836$$

Dengan Menggunakan Arus 150 mA
 Pada Skala 1,5

Pengukuran	Nilai Terukur (d_1)	Deviasi ($d_1 - \bar{d}_1$)	Kwadrat Deviasi ($(d_1 - \bar{d}_1)^2$)
1	0.5	0.1	0.01
2	0.5	0.1	0.01
3	0.3	-0.1	0.01
4	0.3	-0.1	0.01
5	0.4	0	0
	$\bar{d}_1 = 0.4$		$\sum (d_1 - \bar{d}_1)^2 = 0.04$

$$\delta_{\bar{d}_1} = \sqrt{\frac{\sum (d_1 - \bar{d}_1)^2}{5(5-1)}}$$

$$= 0.0447$$

$$d_1 = 0.40 \pm 0.05 \text{ cm}$$

$$d_2 = 0.011 \pm 0.001 \text{ cm}$$

$$\bar{d}_2 = \frac{\bar{S}_1 \bar{d}_2}{\bar{S}_2} = 0.010465116$$

$$\delta_{\bar{d}_2} = \sqrt{\left(\frac{\bar{d}_2}{\bar{S}_2} \delta_{S_1}\right)^2 + \left(\frac{\bar{S}_1 \bar{d}_2}{\bar{S}_2^2} \delta_{S_2}\right)^2 + \left(\frac{\bar{S}_1}{\bar{S}_2} \delta_{d_2}\right)^2}$$

$$= 0.001172$$



Dengan Menggunakan Arus 200 mA
 Pada Skala 0,5

Pengukuran	Nilai Terukur (d_2)	Deviasi ($d_2 - \bar{d}_2$)	Kwadrat Deviasi ($(d_2 - \bar{d}_2)^2$)
1	2.6	0	0
2	2.6	0	0
3	2.7	0.1	0.01
4	2.5	-0.1	0.01
5	2.6	0	0
	$\bar{d}_2 = 2.6$		$\sum (d_2 - \bar{d}_2) = 0.02$

$$\delta_{\bar{d}_2} = \sqrt{\frac{\sum (d_2 - \bar{d}_2)^2}{5(5-1)}}$$

$$= 0.0316$$

$$d_2 = 2.60 \pm 0.032 \text{ cm}$$

$$d_1 = 0.068 \pm 0.001 \text{ cm}$$

$$\bar{d}_1 = \frac{\bar{S}_1 \bar{d}_2}{\bar{S}_2} = 0.068023256$$

$$\delta_{\bar{d}_1} = \sqrt{\left(\frac{\bar{d}_2}{\bar{S}_2} \delta_{\bar{S}_1}\right)^2 + \left(\frac{\bar{S}_1 \bar{d}_2}{\bar{S}_2^2} \delta_{\bar{S}_2}\right)^2 + \left(\frac{\bar{S}_1}{\bar{S}_2} \delta_{\bar{d}_2}\right)^2}$$

$$= 0.000938$$

Dengan Menggunakan Arus 200 mA
 Pada Skala 0,6

Pengukuran	Nilai Terukur (d_2)	Deviasi ($d_2 - \bar{d}_2$)	Kwadrat Deviasi ($(d_2 - \bar{d}_2)^2$)
1	1.8	0	0
2	1.8	0	0
3	1.8	0	0
4	1.9	0.1	0.01
5	1.7	-0.1	0.01
	$\bar{d}_2 = 1.8$		$\sum (d_2 - \bar{d}_2) = 0.02$

$$\delta_{\bar{d}_2} = \sqrt{\frac{\sum (d_2 - \bar{d}_2)^2}{5(5-1)}}$$

$$= 0.0316$$

$$d_2 = 1.80 \pm 0.032 \text{ cm}$$

$$d_1 = 0.047 \pm 0.001 \text{ cm}$$

$$\bar{d}_1 = \frac{\bar{S}_1 \bar{d}_2}{\bar{S}_2} = 0.047093023$$

$$\delta_{\bar{d}_1} = \sqrt{\left(\frac{\bar{d}_2}{\bar{S}_2} \delta_{\bar{S}_1}\right)^2 + \left(\frac{\bar{S}_1 \bar{d}_2}{\bar{S}_2^2} \delta_{\bar{S}_2}\right)^2 + \left(\frac{\bar{S}_1}{\bar{S}_2} \delta_{\bar{d}_2}\right)^2}$$

$$= 0.000882$$

Dengan Menggunakan Arus 200 mA
 Pada Skala 0,7

Pengukuran	Nilai Terukur (d_2)	Deviasi ($d_2 - \bar{d}_2$)	Kwadrat Deviasi ($(d_2 - \bar{d}_2)^2$)
1	1.2	-0.1	0.01
2	1.2	-0.1	0.01
3	1.4	0.1	0.01
4	1.4	0.1	0.01
5	1.3	0	0
	$\bar{d}_2 = 1.3$		$\sum (d_2 - \bar{d}_2) = 0.04$

$$\delta_{\bar{d}_2} = \sqrt{\frac{\sum (d_2 - \bar{d}_2)^2}{5(5-1)}}$$

$$= 0.0447$$

$$d_2 = 1.30 \pm 0.05 \text{ cm}$$

$$d_1 = 0.034 \pm 0.01 \text{ cm}$$

$$\bar{d}_1 = \frac{\bar{S}_1 \bar{d}_2}{\bar{S}_2} = 0.034011628$$

$$\delta_{\bar{d}_1} = \sqrt{\left(\frac{\bar{d}_2}{\bar{S}_2} \delta_{\bar{S}_1}\right)^2 + \left(\frac{\bar{S}_1 \bar{d}_2}{\bar{S}_2^2} \delta_{\bar{S}_2}\right)^2 + \left(\frac{\bar{S}_1}{\bar{S}_2} \delta_{\bar{d}_2}\right)^2}$$

$$= 0.001191$$

Dengan Menggunakan Arus 200 mA
 Pada Skala 0,8

Pengukuran	Nilai Terukur (d_2)	Deviasi ($d_2 - \bar{d}_2$)	Kwadrat Deviasi ($d_2 - \bar{d}_2$) ²
1	0.8	0	0
2	0.8	0	0
3	0.7	-0.1	0.01
4	0.9	0.1	0.01
5	0.8	0	0
	$\bar{d}_2 = 0.8$		$\sum(d_2 - \bar{d}_2) = 0.02$

$$\delta_{\bar{d}_2} = \sqrt{\frac{\sum(d_2 - \bar{d}_2)}{5(5-1)}}$$

$$= 0.0316$$

$$d_2 = 0.80 \pm 0.03 \text{ cm}$$

$$d_1 = 0.021 \pm 0.001$$

$$\bar{d}_1 = \frac{\bar{S}_1 \bar{d}_2}{S_2} = 0.020930233$$

$$\delta_{\bar{d}_1} = \sqrt{\left(\frac{\bar{d}_2}{S_2} \delta_{S_1}\right)^2 + \left(\frac{\bar{S}_1 \bar{d}_2}{S_2^2} \delta_{S_2}\right)^2 + \left(\frac{\bar{S}_1}{S_2} \delta_{\bar{d}_2}\right)^2}$$

$$= 0.000838$$

Dengan Menggunakan Arus 200 mA
 Pada Skala 0,9

Pengukuran	Nilai Terukur (d_2)	Deviasi ($d_2 - \bar{d}_2$)	Kwadrat Deviasi ($d_2 - \bar{d}_2$) ²
1	0.5	0	0
2	0.5	0	0
3	0.4	-0.1	0.01
4	0.6	0.1	0.01
5	0.5	0	0
	$\bar{d}_2 = 0.5$		$\sum(d_2 - \bar{d}_2) = 0.02$

$$\delta_{\bar{d}_2} = \sqrt{\frac{\sum(d_2 - \bar{d}_2)}{5(5-1)}}$$

$$= 0.0316$$

$$d_2 = 0.50 \pm 0.03 \text{ cm}$$

$$d_1 = 0.013 \pm 0.001 \text{ cm}$$

$$\bar{d}_1 = \frac{\bar{S}_1 \bar{d}_2}{S_2} = 0.013081395$$

$$\delta_{\bar{d}_1} = \sqrt{\left(\frac{\bar{d}_2}{S_2} \delta_{S_1}\right)^2 + \left(\frac{\bar{S}_1 \bar{d}_2}{S_2^2} \delta_{S_2}\right)^2 + \left(\frac{\bar{S}_1}{S_2} \delta_{\bar{d}_2}\right)^2}$$

$$= 0.000832$$

Dengan Menggunakan Arus 200 mA
 Pada Skala 1

Pengukuran	Nilai Terukur (d_2)	Deviasi ($d_2 - \bar{d}_2$)	Kwadrat Deviasi ($d_2 - \bar{d}_2$) ²
1	0.3	0	0
2	0.2	-0.1	0.01
3	0.3	0	0
4	0.3	0	0
5	0.4	0.1	0.01
	$\bar{d}_2 = 0.3$		$\sum(d_2 - \bar{d}_2) = 0.02$

$$\delta_{\bar{d}_2} = \sqrt{\frac{\sum(d_2 - \bar{d}_2)}{5(5-1)}}$$

$$= 0.0316$$

$$d_2 = 0.30 \pm 0.03 \text{ cm}$$

$$d_1 = 0.008 \pm 0.001 \text{ cm}$$

$$\bar{d}_1 = \frac{\bar{S}_1 \bar{d}_2}{S_2} = 0.007848837$$

$$\delta_{\bar{d}_1} = \sqrt{\left(\frac{\bar{d}_2}{S_2} \delta_{S_1}\right)^2 + \left(\frac{\bar{S}_1 \bar{d}_2}{S_2^2} \delta_{S_2}\right)^2 + \left(\frac{\bar{S}_1}{S_2} \delta_{\bar{d}_2}\right)^2}$$

$$= 0.000829$$

Dengan Menggunakan Arus 300 mA
Pada Skala 0,5

Pengukuran	Nilai Terukur (d_1)	Deviasi ($d_1 - \bar{d}_1$)	Kwadrat Deviasi ($(d_1 - \bar{d}_1)^2$)
1	2.4	0	0
2	2.5	0.1	0.01
3	2.4	0	0
4	2.3	-0.1	0.01
5	2.4	0	0
	$\bar{d}_1 = 2.4$		$\sum(d_1 - \bar{d}_1)^2 = 0.02$

$$\delta_{\bar{d}_1} = \sqrt{\frac{\sum(d_1 - \bar{d}_1)^2}{5(5-1)}}$$

$$= 0.03162$$

$$\bar{d}_2 = \frac{\bar{S}_1 \bar{d}_1}{S_2} = 0.062790698$$

$$\delta_{\bar{d}_2} = \sqrt{\left(\frac{\bar{d}_1}{S_2} \delta_{S_1}\right)^2 + \left(\frac{\bar{S}_1 \bar{d}_1}{S_2^2} \delta_{S_2}\right)^2 + \left(\frac{\bar{S}_1}{S_2} \delta_{\bar{d}_1}\right)^2}$$

$$d_2 = 2.40 \pm 0.03 \text{ cm}$$

$$d_1 = 0.063 \pm 0.001 \text{ cm}$$

$$= 0.000923$$

Dengan Menggunakan Arus 300 mA
Pada Skala 0,6

Pengukuran	Nilai Terukur (d_1)	Deviasi ($d_1 - \bar{d}_1$)	Kwadrat Deviasi ($(d_1 - \bar{d}_1)^2$)
1	1.8	0.1	0.01
2	1.7	0	0
3	1.6	-0.1	0.01
4	1.7	0	0
5	1.7	0	0
	$\bar{d}_1 = 1.7$		$\sum(d_1 - \bar{d}_1)^2 = 0.02$

$$\delta_{\bar{d}_1} = \sqrt{\frac{\sum(d_1 - \bar{d}_1)^2}{5(5-1)}}$$

$$= 0.03162$$

$$\bar{d}_2 = \frac{\bar{S}_1 \bar{d}_1}{S_2} = 0.044476744$$

$$\delta_{\bar{d}_2} = \sqrt{\left(\frac{\bar{d}_1}{S_2} \delta_{S_1}\right)^2 + \left(\frac{\bar{S}_1 \bar{d}_1}{S_2^2} \delta_{S_2}\right)^2 + \left(\frac{\bar{S}_1}{S_2} \delta_{\bar{d}_1}\right)^2}$$

$$d_2 = 1.70 \pm 0.03 \text{ cm}$$

$$d_1 = 0.045 \pm 0.001 \text{ cm}$$

$$= 0.000876$$

Dengan Menggunakan Arus 300 mA
Pada Skala 0,7

Pengukuran	Nilai Terukur (d_1)	Deviasi ($d_1 - \bar{d}_1$)	Kwadrat Deviasi ($(d_1 - \bar{d}_1)^2$)
1	1.2	0	0
2	1.3	0.1	0.01
3	1.2	0	0
4	1.1	-0.1	0.01
5	1.2	0	0
	$\bar{d}_1 = 1.2$		$\sum(d_1 - \bar{d}_1)^2 = 0.02$

$$\delta_{\bar{d}_1} = \sqrt{\frac{\sum(d_1 - \bar{d}_1)^2}{5(5-1)}}$$

$$= 0.03162$$

$$\bar{d}_2 = \frac{\bar{S}_1 \bar{d}_1}{S_2} = 0.031395349$$

$$\delta_{\bar{d}_2} = \sqrt{\left(\frac{\bar{d}_1}{S_2} \delta_{S_1}\right)^2 + \left(\frac{\bar{S}_1 \bar{d}_1}{S_2^2} \delta_{S_2}\right)^2 + \left(\frac{\bar{S}_1}{S_2} \delta_{\bar{d}_1}\right)^2}$$

$$d_2 = 1.20 \pm 0.03 \text{ cm}$$

$$d_1 = 0.031 \pm 0.001 \text{ cm}$$

$$= 0.000852$$

Dengan Menggunakan Arus 300 mA
 Pada Skala 0,8

Pengukuran	Nilai Terukur (d_2)	Deviasi ($d_2 - \bar{d}_2$)	Kwadrat Deviasi ($(d_2 - \bar{d}_2)^2$)
1	0.7	0	0
2	0.7	0	0
3	0.8	0.1	0.01
4	0.6	-0.1	0.01
5	0.7	0	0
	$\bar{d}_2 = 0.7$		$\sum (d_2 - \bar{d}_2) = 0.02$

$$\delta_{\bar{d}_2} = \sqrt{\frac{\sum (d_2 - \bar{d}_2)^2}{5(5-1)}}$$

$$= 0.03162$$

$$d_2 = 0.70 \pm 0.03 \text{ cm}$$

$$d_1 = 0.018 \pm 0.001 \text{ cm}$$

$$\bar{d}_1 = \frac{\bar{S}_1 \bar{d}_2}{\bar{S}_2} = 0.018313953$$

$$\delta_{\bar{d}_1} = \sqrt{\left(\frac{\bar{d}_2}{\bar{S}_2} \delta_{\bar{S}_1}\right)^2 + \left(\frac{\bar{S}_1 \bar{d}_2}{\bar{S}_2^2} \delta_{\bar{S}_2}\right)^2 + \left(\frac{\bar{S}_1}{\bar{S}_2} \delta_{\bar{d}_2}\right)^2}$$

$$= 0.000836$$

Dengan Menggunakan Arus 300 mA
 Pada Skala 0,9

Pengukuran	Nilai Terukur (d_2)	Deviasi ($d_2 - \bar{d}_2$)	Kwadrat Deviasi ($(d_2 - \bar{d}_2)^2$)
1	0.4	0	0
2	0.4	0	0
3	0.3	-0.1	0.01
4	0.5	0.1	0.01
5	0.4	0	0
	$\bar{d}_2 = 0.4$		$\sum (d_2 - \bar{d}_2) = 0.02$

$$\delta_{\bar{d}_2} = \sqrt{\frac{\sum (d_2 - \bar{d}_2)^2}{5(5-1)}}$$

$$= 0.03162$$

$$d_2 = 0.40 \pm 0.03 \text{ cm}$$

$$d_1 = 0.010 \pm 0.001 \text{ cm}$$

$$\bar{d}_1 = \frac{\bar{S}_1 \bar{d}_2}{\bar{S}_2} = 0.010465116$$

$$\delta_{\bar{d}_1} = \sqrt{\left(\frac{\bar{d}_2}{\bar{S}_2} \delta_{\bar{S}_1}\right)^2 + \left(\frac{\bar{S}_1 \bar{d}_2}{\bar{S}_2^2} \delta_{\bar{S}_2}\right)^2 + \left(\frac{\bar{S}_1}{\bar{S}_2} \delta_{\bar{d}_2}\right)^2}$$

$$= 0.00083$$

Dengan Menggunakan Arus 300 mA
 Pada Skala 1

Pengukuran	Nilai Terukur (d_2)	Deviasi ($d_2 - \bar{d}_2$)	Kwadrat Deviasi ($(d_2 - \bar{d}_2)^2$)
1	0.2	0	0
2	0.2	0	0
3	0.2	0	0
4	0.2	0	0
5	0.2	0	0
	$\bar{d}_2 = 0.2$		$\sum (d_2 - \bar{d}_2) = 0$

$$\delta_{\bar{d}_2} = \sqrt{\frac{\sum (d_2 - \bar{d}_2)^2}{5(5-1)}}$$

$$= 0$$

$$d_2 = 2.00 \pm 0.00 \text{ cm}$$

$$d_1 = 0.005 \pm 0.000 \text{ cm}$$

$$\bar{d}_1 = \frac{\bar{S}_1 \bar{d}_2}{\bar{S}_2} = 0.005232558$$

$$\delta_{\bar{d}_1} = \sqrt{\left(\frac{\bar{d}_2}{\bar{S}_2} \delta_{\bar{S}_1}\right)^2 + \left(\frac{\bar{S}_1 \bar{d}_2}{\bar{S}_2^2} \delta_{\bar{S}_2}\right)^2 + \left(\frac{\bar{S}_1}{\bar{S}_2} \delta_{\bar{d}_2}\right)^2}$$