

LAMPIRAN

Lampiran 1. Data sheet sensor MAX9814



Lampiran 2. Perhitungan Nilai Error dan Akurasi pada alat kebisingan ruangan

No	Sumber Suara (Hz)	Data Sound Level Meter (dB)	Data Alat Kebisingan Ruangan (dB)	Error (%)	Akurasi (%)
1	100	79.6	78	2.01%	97.99%
2	200	81.4	79	2.95%	97.05%
3	300	84	80	4.76%	95.24%
4	400	85	83	2.35%	97.65%
5	500	86.4	84	2.78%	97.22%
6	600	87.8	84	4.33%	95.67%
7	700	88.2	87	1.36%	98.64%
8	800	88.8	88	0.90%	99.10%
9	900	99.8	88	12.83%	87.17%
10	1000	92.2	89	3.47%	96.53%
			Rata-rata (persen)	3.88 %	96.12%

Pengujian 1

$$\text{Error} = \left| \frac{79.6-78}{79.6} \right| \times 100 \%$$
$$= 2.01 \%$$

$$\text{Akurasi} = 100 \% - 2.01 \%$$
$$= 97.99 \%$$

Pengujian 2

$$\text{Error} = \left| \frac{81.4-79}{81.4} \right| \times 100 \%$$
$$= 2.95 \%$$

$$\text{Akurasi} = 100 \% - 2.95 \%$$
$$= 97.05 \%$$

Pengujian 3

$$\begin{aligned}\text{Error} &= \left| \frac{84-80}{80} \right| \times 100 \% \\ &= 4.76 \%\end{aligned}$$

$$\begin{aligned}\text{Akurasi} &= 100 \% - 4.76 \% \\ &= 95.24 \%\end{aligned}$$

Pengujian 4

$$\begin{aligned}\text{Error} &= \left| \frac{85-83}{85} \right| \times 100 \% \\ &= 2.35 \%\end{aligned}$$

$$\begin{aligned}\text{Akurasi} &= 100 \% - 2.35 \% \\ &= 97.65 \%\end{aligned}$$

Pengujian 5

$$\begin{aligned}\text{Error} &= \left| \frac{86.4-84}{86.4} \right| \times 100 \% \\ &= 2.78 \%\end{aligned}$$

$$\begin{aligned}\text{Akurasi} &= 100 \% - 2.78 \% \\ &= 97.22 \%\end{aligned}$$

Pengujian 6

$$\begin{aligned}\text{Error} &= \left| \frac{87.8-84}{87.8} \right| \times 100 \% \\ &= 4.33 \%\end{aligned}$$

$$\begin{aligned}\text{Akurasi} &= 100 \% - 4.33 \% \\ &= 95.67 \%\end{aligned}$$

Pengujian 7

$$\begin{aligned}\text{Error} &= \left| \frac{88.2-79}{88.2} \right| \times 100 \% \\ &= 1.36 \%\end{aligned}$$

$$\begin{aligned}\text{Akurasi} &= 100 \% - 1.36 \% \\ &= 98.64 \%\end{aligned}$$

Pengujian 8

$$\begin{aligned}\text{Error} &= \left| \frac{88.8-88}{88.8} \right| \times 100 \% \\ &= 0.90 \%\end{aligned}$$

$$\begin{aligned}\text{Akurasi} &= 100 \% - 0.90 \\ &= 99.10 \%\end{aligned}$$

Pengujian 9

$$\text{Error} = \left| \frac{99.8-87}{99.8} \right| \times 100 \%$$

$$= 12.83 \%$$

$$\text{Akurasi} = 100 \% - 12.83$$

$$= 87.17 \%$$

Pengujian 10

$$\text{Error} = \left| \frac{92.2-89}{92.2} \right| \times 100 \%$$

$$= 3.47 \%$$

$$\text{Akurasi} = 100 \% - 3.47 \%$$

$$= 96.53 \%$$

Lampiran 3. Perhitungan Presisi

$$1. \text{ Rata - rata } \bar{x} = \frac{80+81+80+79+78}{5} = 79.6$$

Simpangan Baku

$$Sd = \frac{(80 - 79.6)^2 + (81 - 79.6)^2 + (80 - 79.6)^2 + (79 - 79.6)^2 + (78 - 79.6)^2}{4}$$

$$Sd = 1.15$$

$$RSD = \left(\frac{1.15}{79.6} \right) \times 100\% = 1.44\%$$

$$\text{Presisi} = 100 \% - 1.44 \%$$

$$= 98.56 \%$$

$$2. \text{ Rata - rata } \bar{x} = \frac{82+82+81+81+82}{5} = 81.6$$

Simpangan Baku

$$Sd = \frac{(82 - 81.6)^2 + (82 - 81.6)^2 + (81 - 81.6)^2 + (81 - 81.6)^2 + (82 - 81.6)^2}{4}$$

$$Sd = 0.54$$

$$RSD = \left(\frac{0.54}{81.6} \right) \times 100\% = 0.68\%$$

$$\text{Presisi} = 100 \% - 0.68 \%$$

$$= 99.32 \%$$

$$3. \text{ Rata - rata } \bar{x} = \frac{83+82+83+81+82}{5} = 82.2$$

Simpangan Baku

$$Sd = \frac{(83 - 82.2)^2 + (82 - 82.2)^2 + (83 - 82.2)^2 + (81 - 82.2)^2 + (82 - 82.2)^2}{4}$$

$$Sd = 0.84$$

$$RSD = \left(\frac{0.84}{82.2} \right) \times 100\% = 1.02\%$$

$$\text{Presisi} = 100\% - 1.02$$

$$= 98.98\%$$

$$4. \text{ Rata - rata } \bar{x} = \frac{84+84+83+84+83}{5} = 83.6$$

Simpangan Baku

$$Sd = \frac{(84 - 83.6)^2 + (84 - 83.6)^2 + (83 - 83.6)^2 + (84 - 83.6)^2 + (83 - 83.6)^2}{4}$$

$$Sd = 0.55$$

$$RSD = \left(\frac{0.55}{83.6} \right) \times 100\% = 0.66\%$$

$$\text{Presisi} = 100\% - 0.66\%$$

$$= 99.34\%$$

$$5. \text{ Rata - rata } \bar{x} = \frac{84+84+84+83+83}{5} = 83.6$$

Simpangan Baku

$$Sd = \frac{(84 - 83.6)^2 + (84 - 83.6)^2 + (84 - 83.6)^2 + (83 - 83.6)^2 + (83 - 83.6)^2}{4}$$

$$Sd = 0.55$$

$$RSD = \left(\frac{0.55}{83.6} \right) \times 100\% = 0.66\%$$

$$\text{Presisi} = 100\% - 0.66\%$$

$$= 99.34\%$$

$$6. \text{ Rata - rata } \bar{x} = \frac{85+86+86+85+84}{5} = 85.2$$

Simpangan Baku

$$Sd = \frac{(85 - 85.2)^2 + (86 - 85.2)^2 + (86 - 85.2)^2 + (85 - 85.2)^2 + (84 - 85.2)^2}{4}$$

$$Sd = 0.84$$

$$RSD = \left(\frac{0.84}{85.2} \right) \times 100\% = 0.982\%$$

$$\text{Presisi} = 100\% - 0.982\%$$

$$= 99.018$$

$$7. \text{ Rata - rata } \bar{x} = \frac{86+85+85+84+86}{5} = 85.2$$

Simpangan Baku

$$Sd = \frac{(86 - 85.2)^2 + (85 - 85.2)^2 + (85 - 85.2)^2 + (84 - 85.2)^2 + (86 - 85.2)^2}{4}$$

$$Sd = 0.84$$

$$RSD = \left(\frac{0.84}{85.2} \right) \times 100\% = 0.982\%$$

$$\text{Presisi} = 100\% - 0.982\%$$

$$= 99.018\%$$

$$8. \text{ Rata - rata } \bar{x} = \frac{87+87+87+87+87}{5} = 87$$

Simpangan Baku

$$Sd = \frac{(87 - 87)^2 + (87 - 87)^2 + (87 - 87)^2 + (87 - 87)^2 + (87 - 87)^2}{4}$$

$$Sd = 0$$

$$RSD = \left(\frac{0}{87} \right) \times 100\% = 0\%$$

$$\text{Presisi} = 100\% - 0\%$$

$$= 100\%$$

$$9. \text{ Rata - rata } \bar{x} = \frac{87+88+87+87+87}{5} = 87.2$$

Simpangan Baku

$$Sd = \frac{(87 - 87.2)^2 + (88 - 87.2)^2 + (87 - 87.2)^2 + (87 - 87.2)^2 + (87 - 87.2)^2}{4}$$

$$Sd = 0.45$$

$$RSD = \left(\frac{0.45}{87.2} \right) \times 100\% = 0.52\%$$

$$\text{Presisi} = 100\% - 0.52\%$$

$$= 99.48$$

$$10. \text{ Rata - rata } \bar{x} = \frac{88+88+88+88+88}{5} = 88$$

Simpangan Baku

$$Sd = \frac{(88 - 88)^2 + (88 - 88)^2 + (88 - 88)^2 + (88 - 88)^2 + (88 - 88)^2}{4}$$

$$Sd = 0$$

$$RSD = \left(\frac{0}{88} \right) \times 100\% = 0\%$$

$$\text{Presisi} = 100\%$$

Lampiran 4. Data Uji Coba Ruangan Laboratorium

No	Waktu (Wib)	Alat Kebisingan Ruangan (dB)
1	10:16	68
2	10:17	68
3	10:18	68
4	10:19	68
5	10:20	68
6	10:21	70
7	10:22	70
8	10:23	70
9	10:24	70
10	10:25	70
11	10:26	77
12	10:27	77
13	10:28	76
14	10:29	78
15	10:30	78
16	10:31	78
17	10:32	78
18	10:33	79
19	10:34	80
20	10:35	79
21	10:36	77
22	10:37	76
23	10:38	78
24	10:39	79
25	10:40	78
26	10:41	79
27	10:42	79
28	10:43	80
29	10:44	80
30	10:45	80
31	10:46	82
32	10:47	83
33	10:48	84
34	10:49	85

35	10:50	85
36	10:51	85
37	10:52	86
38	10:53	86
39	10:54	86
40	10:55	88
41	10:56	88
42	10:57	89
43	10:58	89
44	10:59	89
45	11:01	90
46	11:02	89
47	11:03	89
48	11:04	89
49	11:05	86
50	11:06	88
51	11:07	85
52	11:08	86
53	11:09	87
54	11:10	88
55	11:11	85
56	11:12	78
57	11:13	78
58	11:14	78
59	11:15	78
60	11:16	78

Lampiran 5. Dokumentasi Kegiatan Penelitian



Proses perakitan alat



Pengujian Sistem



Visualisasi Pengambilan data



Implementasi Ruangan Laboratorium