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LAMPIRAN

Lampiran 3. Tabel data hasil pengujian sensor HCSR-04

No	Meteran (cm)	Sensor HCSR-04 (cm)	Error (%)
1	2,00	2,08	4,00
2	5,00	5,02	0,40
3	10,00	10,38	3,80
4	15,00	15,18	1,20
5	20,00	20,09	0,45
6	25,00	25,28	1,12
7	30,00	30,02	0,07
8	35,00	35,27	0,77
9	40,00	40,45	1,13
10	45,00	45,07	0,16
11	50,00	50,09	0,18
12	55,00	54,96	0,07
13	60,00	60,17	0,28
14	65,00	65,08	0,12
15	70,00	70,14	0,20
16	75,00	75,01	0,01
17	80,00	80,02	0,02
18	85,00	85,08	0,09
19	90,00	89,8	0,22
20	95,00	94,98	0,02
21	100,00	100,07	0,07
22	105,00	105,16	0,15
23	110,00	110,02	0,02
24	115,00	115,37	0,32
25	120,00	120,2	0,17
26	125,00	125,14	0,11

27	130,00	129,7	0,23
28	135,00	135,16	0,12
29	140,00	140,13	0,09
30	145,00	145,22	0,15
31	150,00	150,06	0,04
32	155,00	155,32	0,21
33	160,00	160,11	0,07
34	165,00	165,31	0,19
35	170,00	170,09	0,05
36	175,00	175,17	0,10
37	180,00	180,09	0,05
38	185,00	185,03	0,02
39	190,00	190,15	0,08
40	195,00	194,99	0,01
41	200,00	200,01	0,00
Nilai Rata-rata Error			0,40
Nilai Akurasi			99,60

Lampiran 4. Tabel data hasil pengujian sensor Suhu DS18B20

No	Termometer	Sensor Suhu DS18B20	Error (%)
1	0,00	0,31	0,00
2	1,00	1,00	0,00
3	2,00	2,13	6,50
4	3,00	3,03	1,00
5	4,00	4,06	1,50
6	5,00	5,06	1,20
7	6,00	6,00	0,00
8	7,00	7,00	0,00
9	8,00	8,00	0,00
10	9,00	9,00	0,00

11	10,00	10,00	0,00
12	11,00	11,00	0,00
13	12,00	12,06	0,50
14	13,00	13,06	0,46
15	14,00	14,06	0,43
16	15,00	15,00	0,00
17	16,00	16,00	0,00
18	17,00	17,19	1,12
19	18,00	18,12	0,67
20	19,00	19,12	0,63
21	20,00	19,94	0,30
22	21,00	21,00	0,00
23	22,00	21,94	0,27
24	23,00	23,00	0,00
25	24,00	24,00	0,00
26	25,00	25,00	0,00
27	26,00	26,00	0,00
28	27,00	26,94	0,22
29	28,00	28,06	0,21
30	29,00	29,00	0,00
31	30,00	30,00	0,00
32	31,00	30,94	0,19
33	32,00	32,00	0,00
34	33,00	33,00	0,00
35	34,00	34,00	0,00
36	35,00	34,94	0,17
37	36,00	36,00	0,00
38	37,00	37,00	0,00
39	38,00	38,00	0,00
40	39,00	38,75	0,64

41	40,00	39,94	0,15
42	41,00	41,06	0,15
43	42,00	42,00	0,00
44	43,00	42,88	0,28
45	44,00	44,00	0,00
46	45,00	45,00	0,00
47	46,00	46,13	0,28
48	47,00	47,00	0,00
49	48,00	48,00	0,00
50	49,00	49,13	0,27
51	50,00	49,88	0,24
52	51,00	51,06	0,12
53	52,00	52,06	0,12
54	53,00	53,06	0,11
55	54,00	54,06	0,11
56	55,00	55,00	0,00
57	56,00	56,13	0,23
58	57,00	57,13	0,23
59	58,00	58,13	0,22
60	59,00	59,06	0,10
61	60,00	59,88	0,20
Rata-rata Nilai Error			0,31
Nilai Akurasi			99,69

Lampiran 3. Script program sensor untuk Arduino

```
#include <OneWire.h>
#include <DallasTemperature.h>
#define PIN_TRIG 13
#define PIN_ECHO 12
OneWire pin_DS18B20(4);
DallasTemperature DS18B20(&pin_DS18B20);
void setup() {
  //initialize Serial Monitor
  Serial.begin(115200);
  // Sensor Suhu
  DS18B20.begin();
  // Sensor Jarak
  pinMode (PIN_TRIG, OUTPUT);
  pinMode (PIN_ECHO, INPUT);
}
void loop() {
  // Sensor Suhu
  DS18B20.requestTemperatures();
  suhu = DS18B20.getTempCByIndex(0)-0.02;
  // Sensor Jarak
  digitalWrite(PIN_TRIG, HIGH);
  delayMicroseconds(2);
  digitalWrite(PIN_TRIG, LOW);
  double selang = pulseIn(PIN_ECHO, HIGH);
  double jarak = ((selang*0.0343)/2)-0.11;
}
if (millis()/1000>timer_print){
  Serial.print(suhu);
  Serial.print(",");
  Serial.print(jarak);
```

```
Serial.print(",");  
Serial.println();  
timer_print = millis()/1000;  
}
```

Lampiran 4. Hasil pengujian sistem pemantauan di lapangan

Waktu (Menit)	Tinggi Gelombang (cm)	Pasang Surut (cm)	Suhu (°C)
2023-09-30 09:00	10,72	61,9	29,47
2023-09-30 09:01	17,68	63,73	29,47
2023-09-30 09:02	18,38	61,88	29,49
2023-09-30 09:03	20,92	68,79	29,53
2023-09-30 09:04	26,87	80,07	29,59
2023-09-30 09:05	26,62	71,43	29,64
2023-09-30 09:06	12,98	68,18	29,74
2023-09-30 09:07	15,01	69,79	29,83
2023-09-30 09:08	15,01	65,73	29,87
2023-09-30 09:09	27,1	74,14	29,85
2023-09-30 09:10	14,75	66,57	29,85
2023-09-30 09:11	25,67	68,56	29,85
2023-09-30 09:12	18,76	67,26	29,85
2023-09-30 09:13	13,84	68,02	29,86
2023-09-30 09:14	19,69	66,82	29,87
2023-09-30 09:15	36,39	65,79	29,88
2023-09-30 09:16	10,66	62,55	29,91
2023-09-30 09:17	12,32	60,07	29,91
2023-09-30 09:18	15,59	60,29	29,92
2023-09-30 09:19	26,85	78,29	29,92
2023-09-30 09:20	15,44	61,88	29,96
2023-09-30 09:21	14,09	61,6	29,98
2023-09-30 09:22	20,86	74,64	30,01
2023-09-30 09:23	21,29	74,28	30,01
2023-09-30 09:26	15,91	73,68	30,03
2023-09-30 09:28	15,91	72,74	30,08
2023-09-30 09:29	11,68	73,06	30,09
2023-09-30 09:30	19,88	76,73	30,11
2023-09-30 09:31	13,57	79,93	30,16
2023-09-30 09:32	24,4	68,08	30,2
2023-09-30 09:33	27,44	60,95	30,18
2023-09-30 09:34	23,29	66,63	30,17
2023-09-30 09:35	20,12	63,48	30,22
2023-09-30 09:37	20,24	71,52	30,21
2023-09-30 09:40	20,26	84,92	30,2
2023-09-30 09:41	20,4	70,63	30,21
2023-09-30 09:42	19,17	66,52	30,23

2023-09-30 09:43	19,66	62,69	30,22
2023-09-30 09:44	20,63	62,1	30,23
2023-09-30 09:45	20,8	67,78	30,23
2023-09-30 09:46	20,92	67,29	30,23
2023-09-30 09:47	21,29	71,28	30,23
2023-09-30 09:48	23,84	75,68	30,23
2023-09-30 09:49	22,33	65,45	30,25
2023-09-30 09:50	22,21	80,58	30,28
2023-09-30 09:51	35,76	75,45	30,26
2023-09-30 09:52	23,72	66,45	30,3
2023-09-30 09:56	37,15	65,84	30,34
2023-09-30 09:57	36,99	75,07	30,39
2023-09-30 09:58	25,7	71,7	30,37
2023-09-30 09:59	24,4	66,98	30,4
2023-09-30 10:00	24,4	64,22	30,36
2023-09-30 11:25	26,37	66,57	31,4
2023-09-30 11:26	24,4	69,29	31,4
2023-09-30 11:27	24,4	68,18	31,43
2023-09-30 11:28	36,1	69,79	31,43
2023-09-30 11:29	26,38	65,73	31,39
2023-09-30 11:30	20,12	65,93	31,39
2023-09-30 11:31	25,03	68,92	31,47
2023-09-30 11:32	25,21	59,74	31,53
2023-09-30 11:33	23,34	61,45	31,5
2023-09-30 11:34	26,79	66,69	31,49
2023-09-30 11:35	35,65	63,28	31,49
2023-09-30 11:36	29,15	70,49	31,51
2023-09-30 11:37	30,39	73,41	31,5
2023-09-30 11:38	30,65	71,34	31,47
2023-09-30 11:39	29,29	78,31	31,37
2023-09-30 11:40	29,3	66,68	31,45
2023-09-30 11:41	29,3	63,48	31,47
2023-09-30 11:42	26,85	71,52	31,53
2023-09-30 11:43	21,58	84,92	31,57
2023-09-30 11:44	25,14	70,63	31,61
2023-09-30 11:45	28,54	66,52	31,66
2023-09-30 11:46	32,72	66,92	31,66
2023-09-30 11:47	32,99	69,98	31,68
2023-09-30 11:50	33,08	70,48	31,36
2023-09-30 11:51	33,2	67,99	31,38

2023-09-30 11:52	34,46	60,37	31,39
2023-09-30 11:53	24,4	68,08	31,43
2023-09-30 11:54	27,44	60,95	31,46
2023-09-30 11:55	23,29	66,63	31,45
2023-09-30 11:56	24,4	69,22	31,44
2023-09-30 11:57	27,44	62,41	31,45
2023-09-30 11:58	23,29	69,25	31,54
2023-09-30 11:59	35,81	77,38	31,57
2023-09-30 12:00	35,86	78,32	31,62
2023-09-30 12:01	23,57	64,9	31,66
2023-09-30 12:02	23,55	67,63	31,73
2023-09-30 12:03	32,98	63,3	31,76
2023-09-30 12:04	25,9	69,38	31,78
2023-09-30 12:05	23,15	66,12	31,79
2023-09-30 12:06	32,82	63,97	31,69
2023-09-30 12:07	36,6	77,96	31,6
2023-09-30 12:08	36,82	61,9	31,58
2023-09-30 12:09	36,99	91,29	31,61
2023-09-30 12:10	26,82	63,02	31,66
2023-09-30 12:11	20,83	62,25	31,6
2023-09-30 12:12	26	65,14	31,49
2023-09-30 12:13	23,79	62,14	31,44
2023-09-30 12:14	54,1	63,32	31,42
2023-09-30 12:15	36,23	72	31,41
2023-09-30 12:16	36,24	82,53	31,42
2023-09-30 12:17	36,25	87,18	31,42
2023-09-30 12:18	21,98	60,69	31,45
2023-09-30 12:19	25,67	65,81	31,53
2023-09-30 12:20	25,03	70,22	31,65
2023-09-30 12:21	20,67	65,59	31,74
2023-09-30 12:22	37,35	73,86	31,71
2023-09-30 12:23	37,39	84,38	31,68
2023-09-30 12:24	30,07	61,8	31,68
2023-09-30 12:25	27,73	60,37	31,69
2023-09-30 12:26	22,33	59,07	31,73
2023-09-30 12:27	24,23	64,71	31,73
2023-09-30 12:28	37,98	69,64	31,71
2023-09-30 12:29	38,14	70,44	31,78
2023-09-30 12:30	37,41	71,25	31,68
2023-09-30 12:31	37,42	61,21	31,44

2023-09-30 12:32	37,44	66,12	31,44
2023-09-30 12:33	36,61	74,3	31,49
2023-09-30 12:34	37,05	90,38	31,51
2023-09-30 12:35	38,76	77,17	31,4
2023-09-30 12:36	40,16	72,82	30,86
2023-09-30 12:37	48,43	74,37	30,88
2023-09-30 12:38	46,25	78,49	30,58
2023-09-30 12:39	26,16	78,4	30
2023-09-30 12:40	41,46	72,15	29,95
2023-09-30 12:41	37,98	69,64	30,38
2023-09-30 12:42	38,14	70,44	30,54
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2023-09-30 12:55	38,76	71,89	30,23
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2023-09-30 12:57	39,07	77,81	30,32
2023-09-30 12:59	39,24	77,86	30,43
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2023-09-30 13:05	40,04	74,61	30,71
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2023-09-30 13:18	23,84	72	30,87
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2023-09-30 14:36	58,13	69,12	30,04
2023-09-30 14:37	64,45	80,54	29,75
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2023-09-30 14:40	43,25	67,68	29,94
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2023-09-30 14:43	64,45	80,54	30,37
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2023-09-30 14:45	71,43	75,42	30,43
2023-09-30 14:46	31,62	64,55	30,48
2023-09-30 14:47	71,43	75,42	30,49
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2023-09-30 14:50	85,12	63,34	30,6

2023-09-30 14:51	64,45	80,54	30,57
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2023-09-30 14:53	36,23	66,64	30,49
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2023-09-30 15:15	41,46	71,15	30,5
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2023-09-30 15:19	64,45	80,54	30,54
2023-09-30 15:20	64,45	87	30,52
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2023-09-30 15:23	71,43	75,42	30,51
2023-09-30 15:24	64,45	80,54	30,53
2023-09-30 15:25	58,13	69,12	30,49

Lampiran 5. Dokumentasi pengambilan data di lapangan

