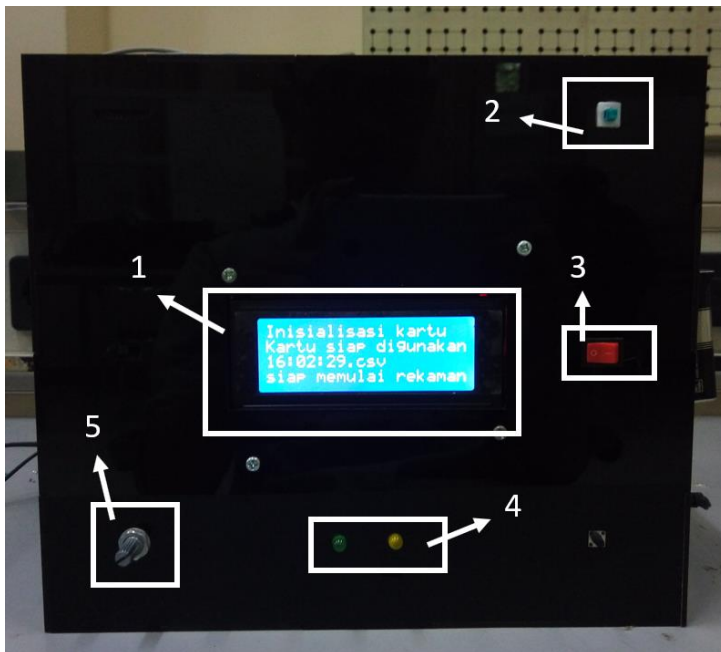


LAMPIRAN

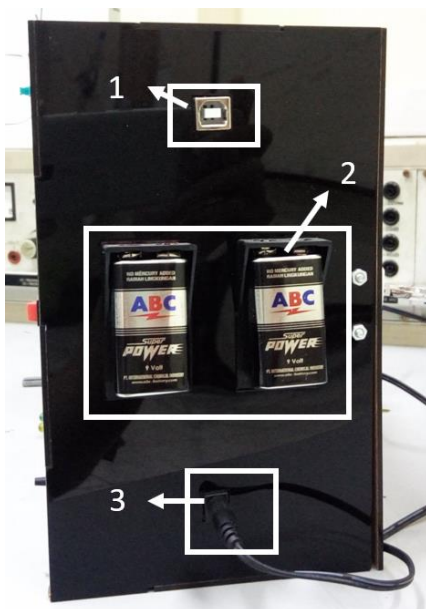
Lampiran 1. Foto Alat



Gambar 1 Foto alat tampak depan

Keterangan:

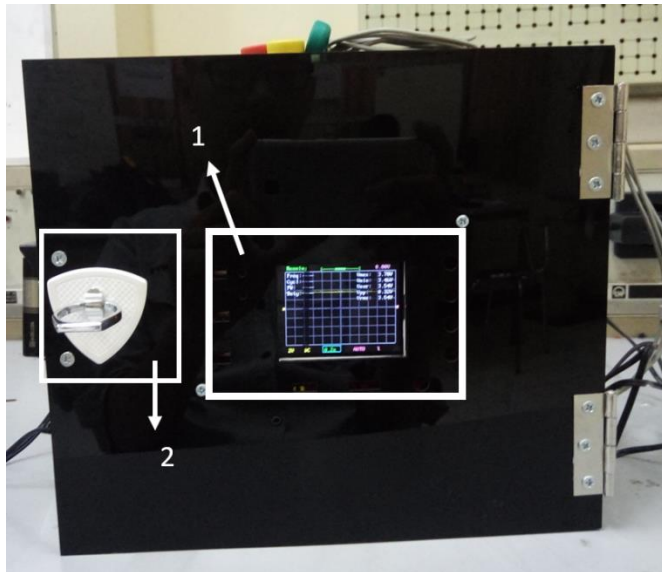
1. Layar LCD indikator
2. Tombol switch untuk mengaktifkan rangkaian deteksi puncak gelombang R
3. Tombol saklar untuk mengaktifkan sistem pengolahan data
4. LED indikator
5. Potensiometer untuk mengatur threshold puncak gelombang R rangkaian deteksi puncak gelombang R



Gambar 2 Foto alat tampak samping

Keterangan:

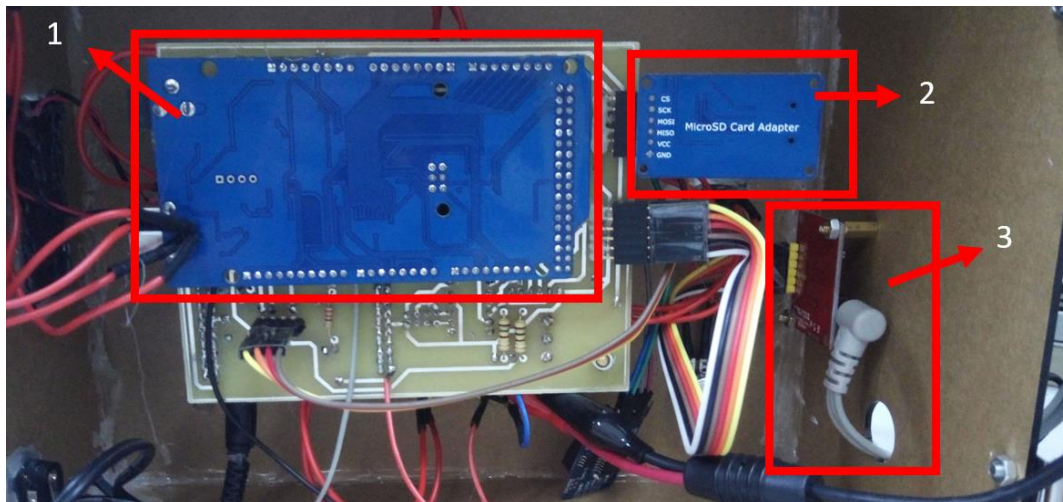
1. USB *type-B female* pada mikrokontroler Arduino
2. Baterai 9V untuk mencatu rangkaian deteksi puncak gelombang R
3. Konektor DC



Gambar 3 Foto alat tampak belakang

Keterangan:

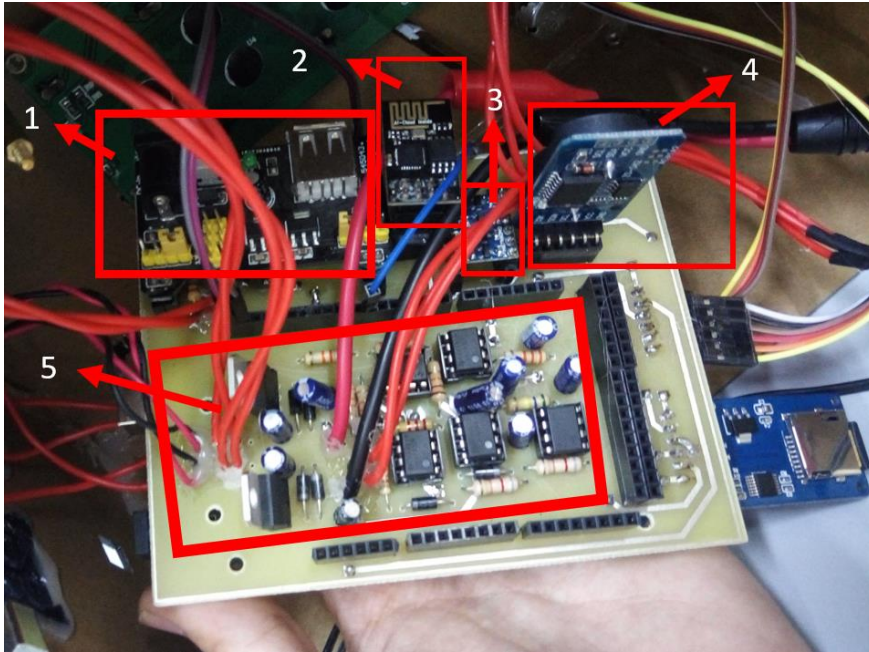
1. Penampil sinyal rekaman EKG menggunakan *oscilloscope DSO138 DIY kit*
2. Gagang untuk membuka alat



Gambar 4 Foto alat tampak dalam bagian belakang

Keterangan:

1. Mikrokontroler Arduino MEGA2560
2. Modul SD *card* dan *micro SD* 2GB
3. Sensor AD8232



Gambar 5 Foto alat tampak dalam bagian depan

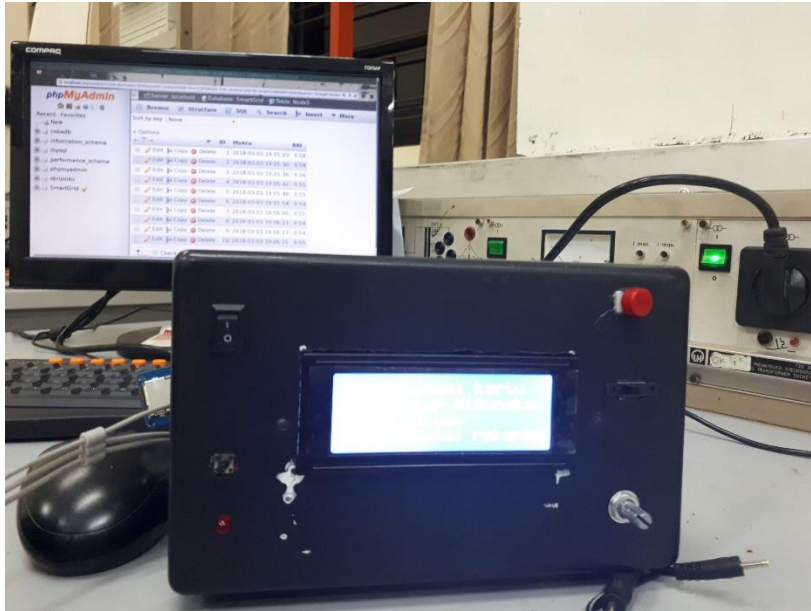
Keterangan:

1. *Power supply 5V dan 3,3V*
2. *Modul wifi ESP8266*
3. *Logic level shifter*
4. *Modul RTC*
5. *Rangkaian deteksi puncak gelombang R*

Lampiran 2. Dokumentasi Pengujian



Gambar 6 pengambilan data rekaman RRI



Gambar 7 proses pentransmisian data RRI

Tabel 1 Nilai interval RR (RRI)

ID	RRI		
		27	0.62
1	0.56	28	0.61
2	0.62	29	0.67
3	0.62	30	0.7
4	0.65	31	0.69
5	1.24	32	0.62
6	0.61	33	0.64
7	0.66	34	0.66
8	0.69	35	1.23
9	0.64	36	0.58
10	0.66	37	0.6
11	0.73	38	0.6
12	0.7	39	1
13	0.6	40	1.73
14	0.62	41	0.7
15	0.64	42	0.79
16	0.69	43	0.77
17	0.62	44	1.44
18	0.59	45	0.74
19	0.63	46	0.66
20	0.64	47	0.68
21	0.68	48	0.66
22	0.62	49	0.62
23	0.61	50	0.6
24	0.65	51	0.64
25	0.69	52	0.65
26	0.66	53	0.62

54	0.62	100	0.58
55	0.67	101	0.56
56	0.69	102	0.55
57	0.65	103	0.54
58	0.63	104	0.54
59	0.68	105	0.53
60	0.66	106	0.53
61	0.64	107	0.55
62	0.63	108	1.23
63	0.65	109	0.67
64	0.64	110	0.65
65	0.61	111	0.59
66	0.65	112	0.59
67	0.66	113	0.6
68	0.63	114	0.59
69	0.62	115	0.6
70	0.66	116	0.61
71	0.67	117	0.6
72	0.64	118	0.56
73	0.62	119	0.56
74	0.66	120	0.57
75	0.66	121	0.59
76	0.6	122	0.6
77	0.62	123	0.58
78	0.64	124	0.63
79	0.6	125	0.65
80	0.6	126	0.66
81	0.62	127	0.59
82	0.64	128	0.58
83	0.62	129	0.62
84	0.6	130	0.63
85	0.64	131	0.64
86	0.65	132	0.6
87	0.62	133	0.59
88	0.6	134	0.61
89	0.63	135	0.63
90	0.63	136	0.63
91	0.59	137	0.59
92	0.58	138	0.59
93	0.6	139	0.64
94	0.58	140	0.65
95	0.56	141	0.61
96	0.56	142	0.59
97	0.58	143	0.62
98	0.63	144	0.64
99	1.25	145	0.24

146	0.36	192	0.55
147	0.56	193	0.58
148	0.55	194	0.59
149	0.56	195	0.58
150	0.57	196	0.56
151	0.6	197	0.58
152	0.62	198	0.56
153	0.63	199	0.55
154	0.66	200	0.56
155	0.62	201	0.57
156	0.61	202	0.59
157	0.63	203	0.59
158	0.63	204	0.56
159	0.62	205	0.54
160	0.59	206	0.54
161	0.59	207	0.54
162	0.59	208	0.54
163	0.59	209	0.55
164	0.6	210	0.54
165	0.6	211	0.54
166	0.58	212	0.56
167	0.59	213	0.54
168	0.63	214	0.56
169	0.65	215	0.6
170	0.6	216	0.63
171	0.61	217	0.63
172	0.62	218	0.63
173	0.62	219	1.14
174	0.59	220	0.58
175	0.57	221	0.58
176	0.58	222	0.59
177	0.58	223	1.15
178	0.57	224	0.57
179	0.55	225	0.57
180	0.57	226	0.56
181	0.58	227	0.55
182	0.59	228	0.57
183	0.58	229	0.6
184	0.55	230	0.62
185	0.57	231	0.58
186	0.56	232	0.6
187	0.56	233	0.64
188	0.54	234	0.63
189	0.55	235	0.6
190	0.57	236	0.58
191	0.58	237	0.6

238	0.59	284	0.57
239	0.56	285	0.57
240	0.56	286	0.58
241	0.58	287	0.57
242	0.58	288	0.56
243	0.57	289	0.54
244	0.6	290	0.54
245	0.61	291	2.05
246	0.61	292	0.51
247	0.59	293	0.78
248	0.62	294	1.52
249	0.69	295	0.01
250	0.69	296	0.66
251	0.62	297	0.01
252	0.63	298	0.75
253	0.61	299	1.45
254	0.57	300	1.28
255	0.58	301	1.93
256	0.58	302	1.17
257	0.59	303	0.57
258	0.59	304	0.58
259	0.56	305	0.6
260	0.56	306	0.6
261	1.68	307	0.6
262	0.54	308	0.62
263	0.55	309	0.58
264	0.55	310	0.54
265	0.55	311	0.54
266	0.57	312	0.56
267	1.16	313	0.57
268	0.57	314	0.62
269	0.57	315	0.66
270	1.15	316	0.64
271	0.56	317	0.67
272	0.54	318	0.67
273	0.53	319	0.64
274	0.53	320	0.61
275	0.52	321	0.58
276	0.52	322	0.57
277	0.54	323	0.55
278	0.57	324	0.56
279	0.56	325	0.57
280	0.58	326	0.6
281	0.57	327	1.19
282	0.55	328	0.61
283	0.56	329	0.64

330	0.64	376	0.65
331	1.22	377	1.23
332	0.01	378	0.6
333	0.6	379	0.59
334	0.6	380	0.6
335	0.6	381	1.2
336	0.58	382	0.61
337	0.56	383	0.61
338	0.57	384	0.64
339	0.6	385	1.27
340	0.61	386	0.6
341	1.16	387	0.61
342	0.58	388	0.63
343	0.59	389	0.66
344	0.59	390	0.65
345	0.55	391	0.65
346	0.56	392	0.67
347	0.55	393	0.66
348	0.54	394	0.62
349	0.54	395	0.59
350	1.11	396	0.57
351	0.54	397	0.58
352	0.56	398	0.6
353	0.55	399	0.63
354	0.55	400	0.64
355	0.54	401	1.22
356	0.55	402	0.6
357	0.55	403	0.62
358	0.55	404	0.6
359	1.07	405	0.6
360	0.52	406	0.63
361	0.53	407	1.89
362	0.53	408	0.01
363	0.55	409	0.64
364	0.54	410	0.67
365	0.56	411	0.65
366	0.18	412	0.63
367	1	413	0.64
368	0.57	414	0.62
369	0.56	415	0.62
370	0.57	416	0.63
371	0.67	417	0.62
372	0.71	418	0.58
373	0.7	419	0.57
374	0.68	420	0.57
375	0.68	421	0.58

422	0.58	468	0.59
423	0.57	469	1.17
424	0.56	470	0.01
425	0.54	471	0.56
426	0.54	472	0.55
427	0.54	473	0.57
428	0.54	474	0.57
429	0.56	475	0.01
430	0.55	476	0.55
431	0.58	477	0.57
432	0.6	478	1.18
433	1.21	479	1.19
434	0.61	480	0.63
435	0.67	481	0.63
436	0.69	482	0.61
437	0.65	483	0.58
438	0.6	484	0.6
439	0.61	485	0.01
440	0.61	486	0.61
441	1.18	487	1.18
442	0.57	488	0.56
443	0.57	489	0.59
444	0.57	490	0.59
445	0.57	491	1.17
446	0.55	492	0.6
447	0.54	493	0.58
448	0.52	494	0.56
449	0.5	495	0.54
450	0.5	496	1.13
451	0.49	497	0.58
452	0.52	498	0.57
453	1.91	499	0.55
454	0.69	500	0.55
455	0.67	501	0.58
456	0.69	502	0.58
457	0.86	503	0.58
458	0.81	504	0.57
459	0.81	505	0.58
460	0.86	506	0.61
461	0.77	507	0.58
462	1.52	508	0.56
463	0.62	509	0.55
464	0.64	510	0.56
465	0.6	511	0.6
466	0.6	512	0.63
467	0.58	513	0.63

514	0.59	560	0.02
515	0.01	561	0.82
516	0.58	562	0.54
517	0.62	563	0.56
518	0.62	564	0.58
519	0.6	565	0.61
520	0.58	566	0.71
521	0.6	567	0.67
522	0.6	568	1.2
523	0.57	569	1.2
524	0.57	570	0.6
525	0.57	571	0.61
526	0.6	572	1.17
527	0.61	573	0.55
528	0.6	574	0.55
529	0.56	575	0.57
530	0.56	576	0.6
531	0.56	577	1.24
532	0.55	578	0.6
533	0.55	579	0.3
534	0.53	580	0.3
535	0.52	581	0.67
536	0.52	582	0.71
537	0.52	583	0.7
538	0.56	584	0.69
539	1.21	585	1.23
540	0.62	586	0.6
541	0.66	587	0.61
542	0.67	588	0.59
543	0.6	589	0.59
544	0.61	590	0.62
545	0.59	591	1.32
546	0.57	592	0.62
547	0.55	593	2.51
548	0.52	594	0.6
549	0.52	595	0.59
550	0.52	596	1.16
551	0.52	597	0.59
552	0.52	598	0.61
553	0.54	599	0.59
554	0.55	600	0.58
555	0.55	601	0.58
556	0.54	602	1.22
557	0.55	603	0.58
558	0.55	604	0.58
559	0.21	605	1.16

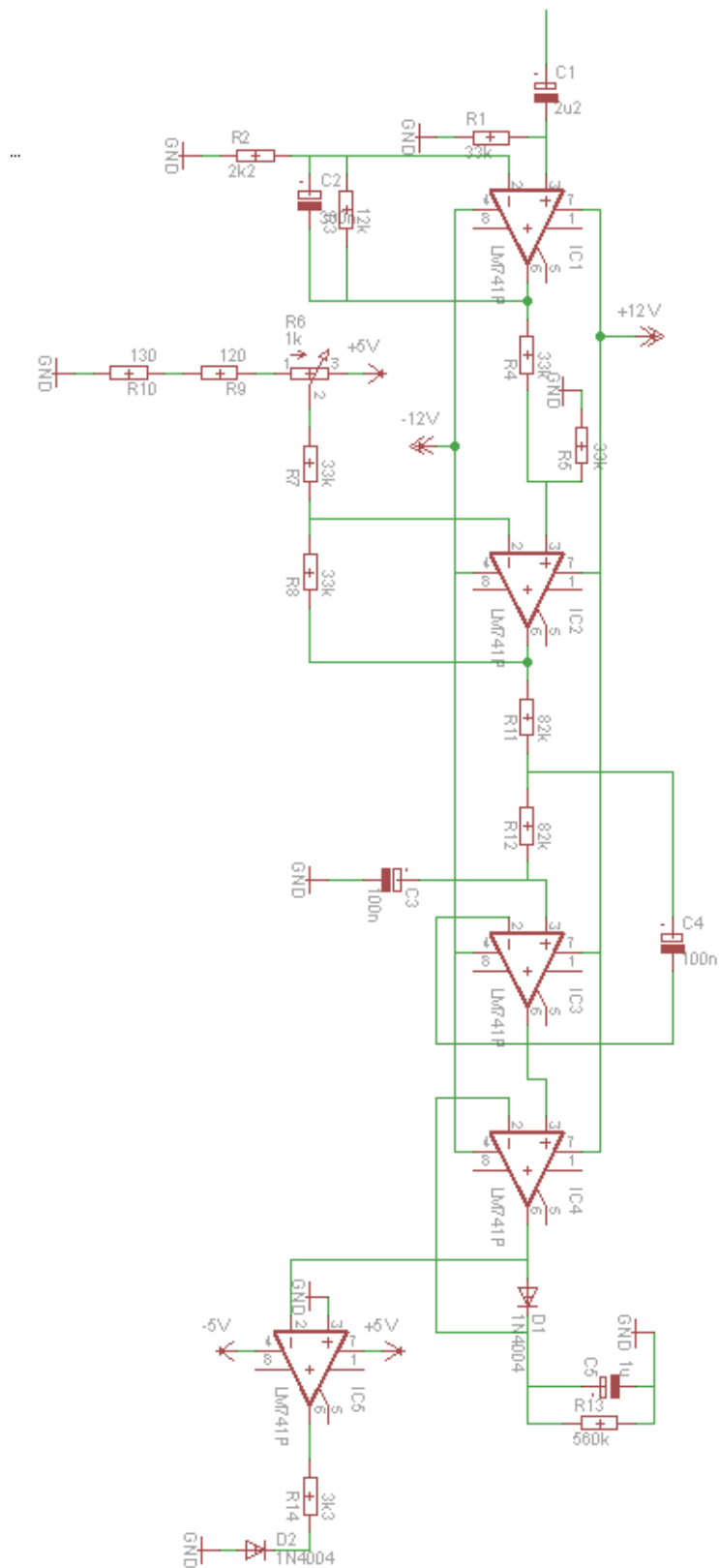
606	0.35	652	0.6
607	0.01	653	0.61
608	0.2	654	0.56
609	0.59	655	0.55
610	0.61	656	0.55
611	0.65	657	0.55
612	0.6	658	0.56
613	0.59	659	0.56
614	0.59	660	0.55
615	0.28	661	0.54
616	0.85	662	0.54
617	0.56	663	0.56
618	0.58	664	0.59
619	0.62	665	0.63
620	1.28	666	0.62
621	0.61	667	0.57
622	0.01	668	0.55
623	1.21	669	0.55
624	0.61	670	0.55
625	0.61	671	0.55
626	0.59	672	0.55
627	0.58	673	0.53
628	0.6	674	0.53
629	0.61	675	0.54
630	0.6	676	0.55
631	0.6	677	0.92
632	0.63	678	0.02
633	0.64	679	0.12
634	0.59	680	0.52
635	0.58	681	0.52
636	0.58	682	0.52
637	0.56	683	0.51
638	0.53	684	0.51
639	0.53	685	0.53
640	0.55	686	0.54
641	0.56	687	0.54
642	0.59	688	0.54
643	0.61	689	0.53
644	0.63	690	0.54
645	0.63	691	0.55
646	0.6	692	0.55
647	0.58	693	0.56
648	0.6	694	0.57
649	0.61	695	0.57
650	0.63	696	0.58
651	0.61	697	0.57

698	0.57	744	0.53
699	0.57	745	0.52
700	0.57	746	0.51
701	0.54	747	0.51
702	0.54	748	0.51
703	0.54	749	0.51
704	0.57	750	0.51
705	0.59	751	0.52
706	0.6	752	0.55
707	0.59	753	1.11
708	0.55	754	0.58
709	0.55	755	0.62
710	0.56	756	1.17
711	0.56	757	0.01
712	0.56	758	0.56
713	0.56	759	0.6
714	0.54	760	0.62
715	0.53	761	1.19
716	0.53	762	0.62
717	0.53	763	1.2
718	0.54	764	0.01
719	0.57	765	0.58
720	0.59	766	0.01
721	0.6	767	0.6
722	0.01	768	0.58
723	0.62	769	0.56
724	0.63	770	0.58
725	0.6	771	0.6
726	0.59	772	1.19
727	0.62	773	0.58
728	0.6	774	0.58
729	0.57	775	0.56
730	0.57	776	0.55
731	0.58	777	0.55
732	0.56	778	0.56
733	0.57	779	0.57
734	0.57	780	0.54
735	0.56	781	0.54
736	0.57	782	0.56
737	0.58	783	0.58
738	0.56	784	0.58
739	0.55	785	0.56
740	0.55	786	0.58
741	0.55	787	0.01
742	0.55	788	0.61
743	0.53	789	0.58

790	0.58
791	1.14
792	0.01
793	0.55
794	0.55
795	0.56

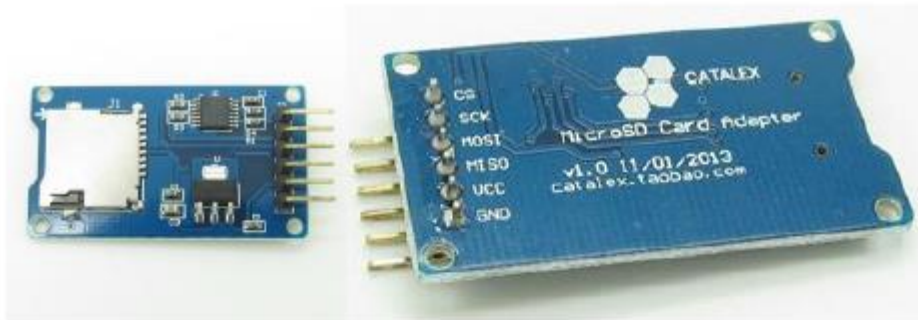
796	0.58
797	0.58
798	0.57
799	0.58
800	0.6

Lampiran 3. Schematic Rangkaian Deteksi Puncak Gelombang R



Lampiran 4. Datasheet

3.1 Modul SD Card



Description

- The module (MicroSD Card Adapter) is a Micro SD card reader module for reading and writing through the file system and the SPI interface driver, SCM system can be completed within a file MicroSD card
- Support Micro SD Card, Micro SDHC card (high speed card)
- Level conversion circuit board that can interface level is 5V or 3.3V
- Power supply is 4.5V ~ 5.5V, 3.3V voltage regulator circuit board
- Communications interface is a standard SPI interface
- 4 M2 screws positioning holes for easy installation
- Control Interface: A total of six pins (GND, VCC, MISO, MOSI, SCK, CS), GND to ground, VCC is the power supply, MISO, MOSI, SCK for SPI bus, CS is the chip select signal pin;
- 3.3V regulator circuit: LDO regulator output 3.3V for level conversion chip, Micro SD card supply;
- Level conversion circuit: Micro SD card to signal the direction of converts 3.3V, MicroSD card interface to control the direction of the MISO signal is also converted to 3.3V, general AVR microcontroller systems can read the signal;
- Micro SD card connector: self bomb deck, easy card insertion.
- Positioning holes: 4 M2 screws positioning holes with a diameter of 2.2mm, so the module is easy to install positioning, to achieve inter-module combination.

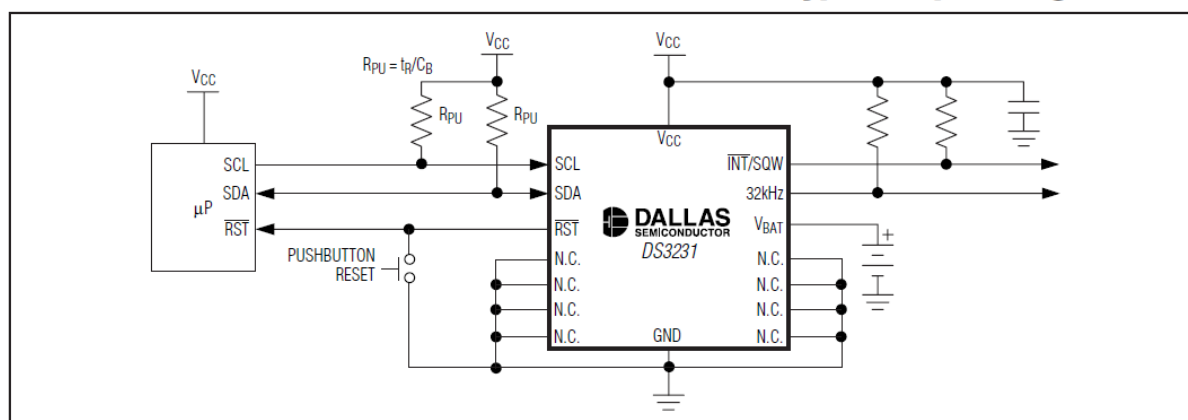
Interface Parameters:

Items	Min	Typical	Max	Unit
Power Voltage VCC	4.5	5	5.5	V
Current	0.2	80	200	mA
Interface Electrical Potential	3.3 or 5			V
Support Card Type	Micro SD Card(<=2G), Mirco SDHC Card(<=32G)			—
Size	42X24X12			mm
Weight	5			g

3.2 Datasheet modul RTC 3231

Pin Configuration appears at end of data sheet.

Typical Operating Circuit



RECOMMENDED OPERATING CONDITIONS

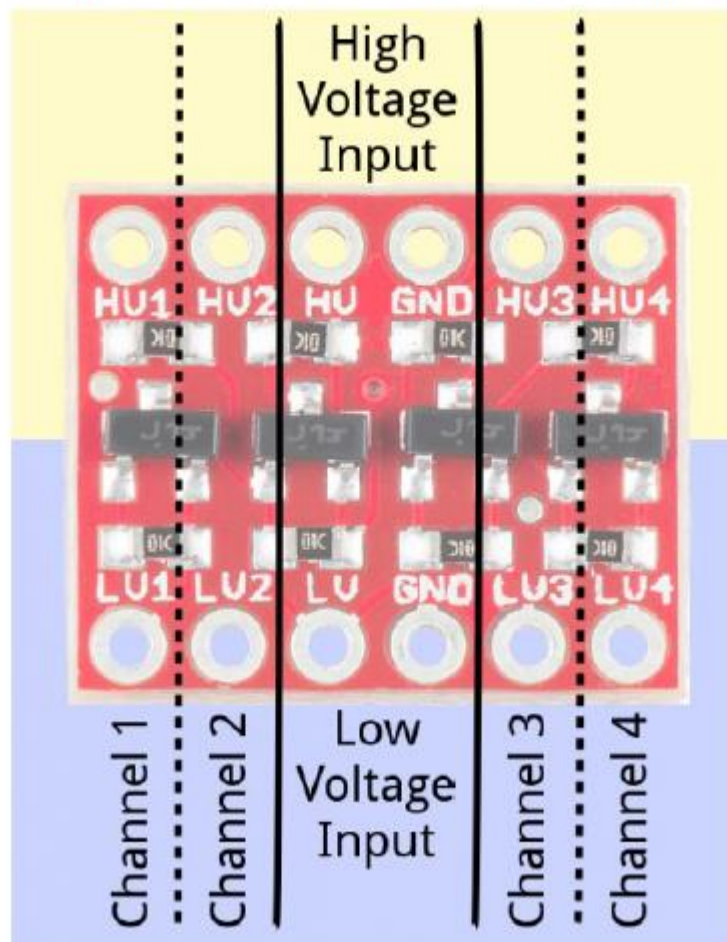
($T_A = T_{MIN}$ to T_{MAX} , unless otherwise noted.) (Notes 2, 3)

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Supply Voltage	V_{CC}		2.3	3.3	5.5	V
	V_{BAT}		2.3	3.0	5.5	V
Logic 1 Input SDA, SCL	V_{IH}		$0.7 \times V_{CC}$		$V_{CC} + 0.3$	V
Logic 0 Input SDA, SCL	V_{IL}		-0.3		$0.3 \times V_{CC}$	V

3.3 Datasheet Logic Level Shifter

The Pinout

There are 12 total pins on the BD-LLC – two parallel rows of six headers. One row contains all of the high voltage (e.g. 5V) inputs and outputs, the other row has all things low voltage (e.g. 3.3V).



3.4 Datasheet Modul ESP8266

1.1 Product Features

- The smallest 802.11b/g/n Wi-Fi SOC module
- Using low-power 32-bit CPU, can also serve as the application processor
- Clocked at up to 160MHz
- Built-in 10 bit high precision ADC
- Support UART/GPIO/IIC/PWM/ADC/HSPI and other interfaces
- Integrated Wi-Fi MAC/BB/RF/PA/LNA
- Supports multiple sleep modes, deep sleep current as low as 20uA
- Embedded Lwip protocol stack
- Support STA/AP/STA + AP work mode
- Supports Smart Config/AirKiss key distribution network
- Serial port rate up to 4Mbps
- General AT commands can be used quickly
- Support SDK secondary development
- Supports serial local upgrade and remote firmware upgrade (FOTA)

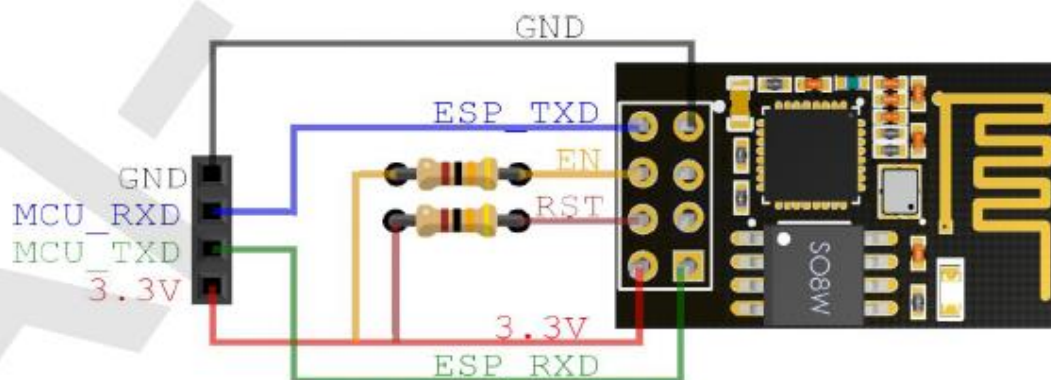


Figure 4.1 Typical application of ESP-01

3.5 Datasheet Mikorokontroler AVR

Table 14-1. Reset and Interrupt Vectors

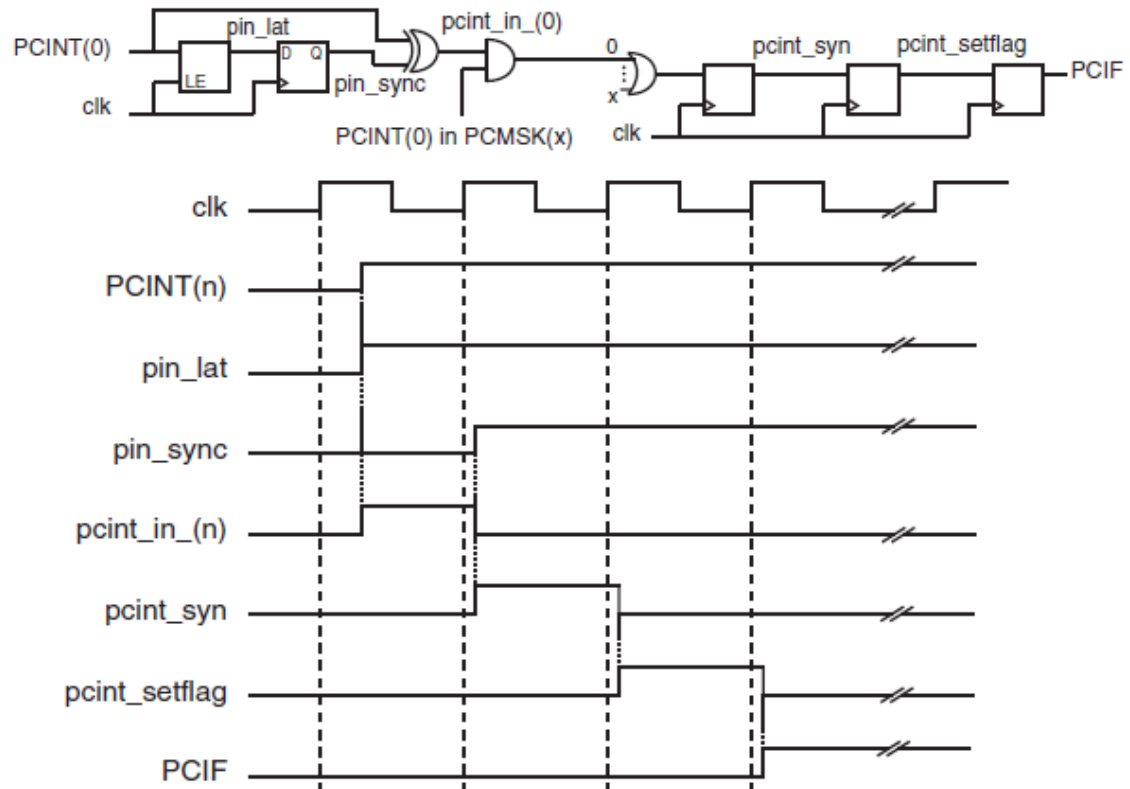
Vector No.	Program Address ⁽²⁾	Source	Interrupt Definition
1	\$0000 ⁽¹⁾	RESET	External Pin, Power-on Reset, Brown-out Reset, Watchdog Reset, and JTAG AVR Reset
2	\$0002	INT0	External Interrupt Request 0
3	\$0004	INT1	External Interrupt Request 1
4	\$0006	INT2	External Interrupt Request 2
5	\$0008	INT3	External Interrupt Request 3
6	\$000A	INT4	External Interrupt Request 4
7	\$000C	INT5	External Interrupt Request 5
8	\$000E	INT6	External Interrupt Request 6
9	\$0010	INT7	External Interrupt Request 7
10	\$0012	PCINT0	Pin Change Interrupt Request 0
11	\$0014	PCINT1	Pin Change Interrupt Request 1
12	\$0016 ⁽³⁾	PCINT2	Pin Change Interrupt Request 2
13	\$0018	WDT	Watchdog Time-out Interrupt
14	\$001A	TIMER2 COMPA	Timer/Counter2 Compare Match A
15	\$001C	TIMER2 COMPB	Timer/Counter2 Compare Match B
16	\$001E	TIMER2 OVF	Timer/Counter2 Overflow
17	\$0020	TIMER1 CAPT	Timer/Counter1 Capture Event
18	\$0022	TIMER1 COMPA	Timer/Counter1 Compare Match A
19	\$0024	TIMER1 COMPB	Timer/Counter1 Compare Match B
20	\$0026	TIMER1 COMPC	Timer/Counter1 Compare Match C
21	\$0028	TIMER1 OVF	Timer/Counter1 Overflow
22	\$002A	TIMER0 COMPA	Timer/Counter0 Compare Match A
23	\$002C	TIMER0 COMPB	Timer/Counter0 Compare match B
24	\$002E	TIMER0 OVF	Timer/Counter0 Overflow
25	\$0030	SPI, STC	SPI Serial Transfer Complete
26	\$0032	USART0 RX	USART0 Rx Complete
27	\$0034	USART0 UDRE	USART0 Data Register Empty
28	\$0036	USART0 TX	USART0 Tx Complete
29	\$0038	ANALOG COMP	Analog Comparator
30	\$003A	ADC	ADC Conversion Complete

Vector No.	Program Address ⁽²⁾	Source	Interrupt Definition
31	\$003C	EE READY	EEPROM Ready
32	\$003E	TIMER3 CAPT	Timer/Counter3 Capture Event
33	\$0040	TIMER3 COMPA	Timer/Counter3 Compare Match A
34	\$0042	TIMER3 COMPB	Timer/Counter3 Compare Match B
35	\$0044	TIMER3 COMPC	Timer/Counter3 Compare Match C
36	\$0046	TIMER3 OVF	Timer/Counter3 Overflow
37	\$0048	USART1 RX	USART1 Rx Complete
38	\$004A	USART1 UDRE	USART1 Data Register Empty
39	\$004C	USART1 TX	USART1 Tx Complete
40	\$004E	TWI	2-wire Serial Interface
41	\$0050	SPM READY	Store Program Memory Ready
42	\$0052 ⁽³⁾	TIMER4 CAPT	Timer/Counter4 Capture Event
43	\$0054	TIMER4 COMPA	Timer/Counter4 Compare Match A
44	\$0056	TIMER4 COMPB	Timer/Counter4 Compare Match B
45	\$0058	TIMER4 COMPC	Timer/Counter4 Compare Match C
46	\$005A	TIMER4 OVF	Timer/Counter4 Overflow
47	\$005C ⁽³⁾	TIMER5 CAPT	Timer/Counter5 Capture Event
48	\$005E	TIMER5 COMPA	Timer/Counter5 Compare Match A
49	\$0060	TIMER5 COMPB	Timer/Counter5 Compare Match B
50	\$0062	TIMER5 COMPC	Timer/Counter5 Compare Match C
51	\$0064	TIMER5 OVF	Timer/Counter5 Overflow
52	\$0066 ⁽³⁾	USART2 RX	USART2 Rx Complete
53	\$0068 ⁽³⁾	USART2 UDRE	USART2 Data Register Empty
54	\$006A ⁽³⁾	USART2 TX	USART2 Tx Complete
55	\$006C ⁽³⁾	USART3 RX	USART3 Rx Complete
56	\$006E ⁽³⁾	USART3 UDRE	USART3 Data Register Empty
57	\$0070 ⁽³⁾	USART3 TX	USART3 Tx Complete

Pin Change Interrupt Timing

An example of timing of a pin change interrupt is shown in [Figure 15-1](#).

Figure 15-1. Normal pin change interrupt.



Lampiran 5. Listing Program

5.1 Listing program Arduino

```

#include <LiquidCrystal_I2C.h>
#include <SPI.h>
#include <Wire.h>
#include <RTClib.h>
#include <SD.h>
#include <stdlib.h>

#define IP "192.168.43.105"
#define SSID "fajri" // "SSID-
WiFiname"
#define PASS "skripsiku" //
"password"
#define PASSCODE ""

#include <avr/interrupt.h>
#include <avr/io.h>

LiquidCrystal_I2C lcd(0x27, 20, 4);

RTC_DS3231 rtc;

int CS_PIN = 53;
char filename[] = "00:00:00.csv";
File file;
int state_kirim = 0, state_simpan = 0;

int error;

String msg = "GET
/data.php?code=&RR=";

unsigned int t = 0;
int n = 0, i, k = 1;
float RRI, data[15], nilai;

int saklar, button = 7, id = 1;

void setup() {
// put your setup code here, to run once:
Serial.begin(9600);

//mode fastpwm compare OCR2A
dengan prescale 8/timer

TCCR2A = 0x83;// memilih mode
timer 4 bit pertama
TCCR2B = 0x0A;
OCR2A = 0xFF;
TIMSK2 = 0x02;

//mode fastpwm compare OCR2A
dengan prescale 8

EICRA = 0x03;//INT1 bernilai 0 INTO
bernilai 1 mode rising edge

EIMSK = 0x01;//enable interupt
EIFR = 0x01;//enable flag

lcd.begin();
lcd.backlight();

rtc.begin();
Wire.begin();

```

```

Serial.println("Inisialisasi kartu");
lcd.print("Inisialisasi kartu");

// pinMode(ledPin, OUTPUT);
//Serial.begin(9600);
Serial1.begin(115200);

pinMode(CS_PIN, OUTPUT);
// pinMode(sensorPin, INPUT);
pinMode(button, INPUT);

Serial1.println("AT");
delay(5000);
if (Serial1.find("OK")) {

    connectWiFi();
}

if (!SD.begin(CS_PIN))
{
    Serial.println("Kartu tidak
terdeteksi");

    lcd.setCursor(0,1);lcd.print("Kartu
tidak terdeteksi");

    return;
}

Serial.println("Kartu siap digunakan");

lcd.setCursor(0,1);lcd.print("Kartu siap
digunakan ");

getFileName();

```

```

File file = SD.open(filename,
FILE_WRITE);
if (file)
{
    String header = "ID, RRI";
    file.println(header);
    Serial.println(header);
    file.close();
}
else
{
    Serial.println("Gagal menulis ke SD
Card");
}

void loop() {

if (state_kirim == 1)
{
    state_kirim = 0;

    String dataString = String (id) + ", " +
String (nilai);

    File file = SD.open(filename,
FILE_WRITE);
if (file)
{
    file.println(dataString);
    Serial.println(dataString);
    file.close();
}
}
}

```



```

else
{
  Serial.println("Gagal menulis ke SD
Card");
}
id++;

while (n >= 11)

{
  EIMSK = 0x00;//enable interrupt
  EIFR = 0x00;//enable flag

  for (int i = 1; i < 11; i++)
  {
    delay(5000);
    kirim(i);
  }
  cli();
}
}

//nama file berdasarkan waktu
void getFileName() {
  DateTime now = rtc.now();
  filename[0] = now.hour() / 10 + '0';
//To get 1st digit from hour()
  filename[1] = now.hour() % 10 + '0';
//To get 2nd digit from hour()

  filename[3] = now.minute() / 10 + '0';
//To get 1st digit from minute()
  filename[4] = now.minute() % 10 + '0';
//To get 2nd digit from minute()
  filename[6] = (now.second() / 10) % 10
+ '0'; //To get 1st digit from second()
  filename[7] = now.second() % 10 + '0';
//To get 2nd digit from second()

  Serial.println(filename);

  lcd.setCursor(0,2);lcd.print(filename);
  lcd.setCursor(0,3);lcd.print("siap
memulai rekaman");
  char nama_tabel = filename;
}

void kirim(int indeks) {
start:
  String cmd =
"AT+CIPSTART=\"TCP\", \"";
  cmd += IP; // ip adress server
  cmd += "\",80";
  Serial1.println(cmd);

  if (Serial1.find("Error")) {
    Serial.println("AT+CIPSTART
error");
    return;
  }
  cmd = msg;
  //cmd += PASSCODE;
  //cmd += "&RR=";
  cmd += data[indeks];
  cmd += "\r\n";

  Serial1.print("AT+CIPSEND="); //http://

```

```

127.0.0.1/Serial1/data.php?code=&l=29      }
&h=73&t=29                                }

Serial1.println(cmd.length());

if (Serial1.find(">")) {                    ISR(INT0_vect)
    Serial1.print(cmd);                     {
}                                           saklar = digitalRead(button);

else {                                       if (saklar == HIGH) {

    Serial1.println("AT+CIPCLOSE");        RRI = (t / 7812.5);
    //Resend...                            data[n] = RRI;
    goto start;                            nilai = data[n];
}                                           t = 0;
}                                           n++;

boolean connectWiFi() {                    // Serial.println( (String)
    Serial1.println("AT+CWMODE=1");        "DATA,DATE,TIME," + t + "," + RRI );

    delay(2000);

    String cmd = "AT+CWJAP=\"";

    cmd += SSID;

    cmd += "\",\"";

    cmd += PASS;                            state_kirim = 1;

    cmd += "\"";                            }

    Serial1.println(cmd);                  }

    delay(5000);

    if (Serial1.find("OK")) {              ISR(TIMER2_COMPA_vect)
        Serial.print("terhubung ke jaringan ");
        Serial.println(SSID);              {
        return true;                       t++;
    } else {                                }

        Serial.print("gagal terhubung ke
jaringan "); Serial.println(SSID);

        return false;

```

5.2 Listing program PHP

```

<?php
    // Get values.
    $password = $_GET['code'];
    $RRI = $_GET['RR'];

    // Set password. Must be consistent with PASSCODE in Arduino
code.
    $passcode = "";

    // Check if password is right.
    if(isset($password) && ($password == $passcode)){
        // If all three values are present, insert it into the
MySQL database.
        if(isset($RRI)&&isset($RRI)&&isset($RRI)){
            // Database credentials
            $servername = "localhost";
            $username = "fajri";
            $dbname = "intervall1";
            $password = "ikhwan09";

            // Create connection.
            $conn = mysqli_connect($servername, $username,
$password, $dbname);
            if (!$conn) {
                die("Connection failed: " . mysqli_connect_error());
            }

            // Insert values into table.
            $sql = "INSERT INTO interval1 SET RRI='$RRI'";
            if (mysqli_query($conn, $sql)) {
                echo "OK";
            } else {
                echo "Fail: " . $sql . "<br>" . mysqli_error($conn);
            }

            // Close connection.
            mysqli_close($conn);
        }
    }
?>

```

