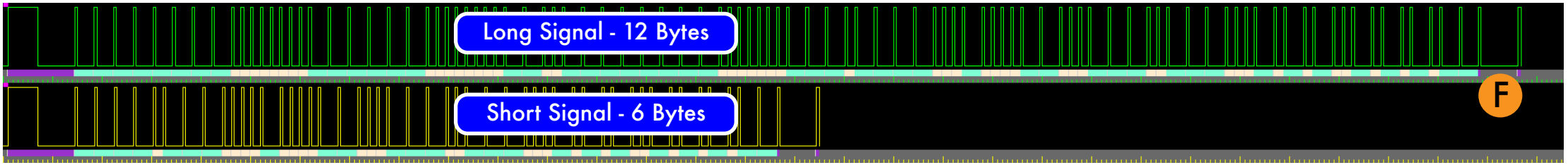
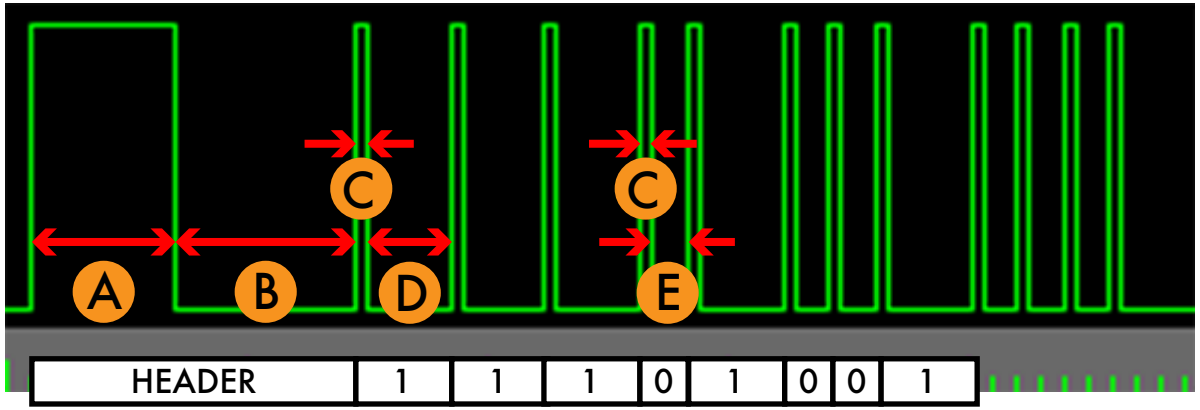
MITSUBISHI Heavy Industries RKS502A503 AC Remote controller
Reverse Engineering of the IR transmission

There are two different signals; A short version that transmits 6 Bytes and a long version that transmits 12 Bytes. The transmission starts with a header followed by the bytes of data and ends with a stop bit. The encoding is standard NEC IR protocol with the timing values below. The checksum is a little unusual - consecutive bytes always add up to the sum of 255 (0xFF) and the last two bytes always have the values 42 (0x2A) and 213 (0xD5).
The analysis was performed using the AnalysIR software (www.analysir.com). For the decoded information please see the tables on the following pages.





MITSUBISHI RKS502A503		
	Index	Timing µsec.
HEADER	A	6000
HEADER SPACE	B	7500
BIT MARK	C	500
ONE SPACE	D	1500
ZERO SPACE	E	3500
STOP BIT SPACE	F	7500

#	1	2	3	4	5	6	7	8	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
	AC is ON				AC is OFF				AC is ON												AC is OFF												AC is ON											
Key	MO-ON-DELTA	MO-ON-HUM	MO-ON-HEAT	MO-ON-COOL	MO-OFF-DELTA	MO-OFF-HUM	MO-OFF-HEAT	MO-OFF-COOL	T2-ON-12H	T2-ON-11H	T2-ON-10H	T2-ON-9H	T2-ON-8H	T2-ON-7H	T2-ON-6H	T2-ON-5H	T2-ON-4H	T2-ON-3H	T2-ON-2H	T2-ON-1H	T2-OFF-12H	T2-OFF-11H	T2-OFF-10H	T2-OFF-9H	T2-OFF-8H	T2-OFF-7H	T2-OFF-6H	T2-OFF-5H	T2-OFF-4H	T2-OFF-3H	T2-OFF-2H	T2-OFF-1H	T1-ON-12H	T1-ON-11H	T1-ON-10H	T1-ON-9H	T1-ON-8H	T1-ON-7H	T1-ON-6H	T1-ON-5H	T1-ON-4H	T1-ON-3H	T1-ON-2H	T1-ON-1H
# bits->	48	48	48	48	48	48	48	48	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96
Byte [HEX]																																												
0	EF	EF	EF	EF	EF	EF	EF	EF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	2F	6B	A7	E3	1F	5B	97	D3	0F	4B	87	C3
1	10	10	10	10	10	10	10	10	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	D0	94	58	1C	E0	A4	68	2C	F0	B4	78	3C
2	87	C5	C3	C6	8F	CD	CB	CE	FF	BF	7F	3F	FF	BF	7F	3F	FF	BF	7F	3F	FF	BF	7F	3F	FF	BF	7F	3F	FF	BF	7F	3F	FD	FD	FD	FD	FE	FE	FE	FE	FF	FF	FF	FF
3	78	3A	3C	39	70	32	34	31	00	40	80	C0	00	40	80	C0	00	40	80	C0	00	40	80	C0	00	40	80	C0	00	40	80	C0	02	02	02	02	01	01	01	01	00	00	00	00
4	2A	2A	2A	2A	2A	2A	2A	2A	D2	D6	DA	DE	E1	E5	E9	ED	F0	F4	F8	FC	D2	D6	DA	DE	E1	E5	E9	ED	F0	F4	F8	FC	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
5	D5	D5	D5	D5	D5	D5	D5	D5	2D	29	25	21	1E	1A	16	12	0F	0B	07	03	2D	29	25	21	1E	1A	16	12	0F	0B	07	03	00	00	00	00	00	00	00	00	00	00	00	00
6									EE	EE	EE	EE	EE	EE	EE	EE	EE	EE	EE	EE	EE	EE	EE	EE	EE	EE	EE	EE	EE	EE	EE	EE	ED	ED	ED	ED	ED	ED	ED	ED	ED	ED	ED	ED
7									11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	12	12	12	12	12	12	12	12	12	12	12	12
8									C6	C6	C6	C6	C6	C6	C6	C6	C6	C6	C6	C6	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	C6	C6	C6	C6	C6	C6	C6	C6	C6	C6	C6	C6
9									39	39	39	39	39	39	39	39	39	39	39	39	31	31	31	31	31	31	31	31	31	31	31	31	39	39	39	39	39	39	39	39	39	39	39	39
10									2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A
11									D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5

Func	Operation Mode Switching								"OFF TIMER" SETTINGS WHILE AC IS ON												"OFF TIMER" SETTINGS WHILE AC IS OFF												"ON TIMER" SETTINGS WHILE AC IS ON											
Byte [DEC]																																												
0	239								255												255												47	107	167	227	31	91	151	211	15	75	135	195
1	16								0												0												208	148	88	28	224	164	104	44	240	180	120	60
2	135	197	195	198	143	205	203	206	255	191	127	63	255	191	127	63	255	191	127	63	255	191	127	63	255	191	127	63	255	191	127	63	253	253	253	253	254	254	254	254	255	255	255	255
3	120	58	60	57	112	50	52	49	0	64	128	192	0	64	128	192	0	64	128	192	0	64	128	192	0	64	128	192	0	64	128	192	2	2	2	2	1	1	1	1	0	0	0	0
4	42	42	42	42	42	42	42	42	210	214	218	222	225	229	233	237	240	244	248	252	210	214	218	222	225	229	233	237	240	244	248	252	255											
5	213	213	213	213	213	213	213	213	45	41	37	33	30	26	22	18	15	11	7	3	45	41	37	33	30	26	22	18	15	11	7	3	0											
6									238												238												237											
7									17												17												18											
8									198												206												198											
9									57												49												57											
10									42												42												42											
11									213												213												213											

ChkSum	The last two byte of any command are always 42 (0x2A) and 213 (0xD5). The sum of every consecutive Byte pair (B0&B1, B2&B3, B4&B5...) is always 255 (0xFF).
Comments	

#	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81
	AC is OFF												AC is ON											AC is OFF													
Key	T1-OFF-12H	T1-OFF-11H	T1-OFF-10H	T1-OFF-9H	T1-OFF-8H	T1-OFF-7H	T1-OFF-6H	T1-OFF-5H	T1-OFF-4H	T1-OFF-3H	T1-OFF-2H	T1-OFF-1H	Econo OFF	Econo ON	HI PWR OFF	HI PWR ON	Fan AUTO	Fan LOW	Fan MED	Fan HI	AIR Auto	AIR Dynamic	AIR Static	OFF 18	OFF 19	OFF 20	OFF 21	OFF 22	OFF 23	OFF 24	OFF 25	OFF 26	OFF 27	OFF 28	OFF 29	OFF 30
# bits->	96	96	96	96	96	96	96	96	96	96	96	96	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48
Byte [HEX]																																				
0	2F	6B	A7	E3	1F	5B	97	D3	0F	4B	87	C3	EF	4F	EF	6F	EF	8F	AF	CF	EF	F7	FF	EF	EF	EF	EF	EF	EF	EF	EF	EF	EF	EF	EF	EF
1	D0	94	58	1C	E0	A4	68	2C	F0	B4	78	3C	10	B0	10	90	10	70	50	30	10	08	00	10	10	10	10	10	10	10	10	10	10	10	10	10
2	FD	FD	FD	FD	FE	FE	FE	FE	FF	FF	FF	FF	C6	C6	C6	C6	C6	C6	C6	C6	C6	C6	C6	EE	DE	CE	BE	AE	9E	8E	7E	6E	5E	4E	3E	2E
3	02	02	02	02	01	01	01	01	00	00	00	00	39	39	39	39	39	39	39	39	39	39	39	11	21	31	41	51	61	71	81	91	A1	B1	C1	D1
4	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A
5	00	00	00	00	00	00	00	00	00	00	00	00	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5
6	ED	ED	ED	ED	ED	ED	ED	ED	ED	ED	ED	ED																								
7	12	12	12	12	12	12	12	12	12	12	12	12																								
8	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE	CE																								
9	31	31	31	31	31	31	31	31	31	31	31	31																								
10	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A																								
11	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5																								

Func	"ON TIMER" SETTINGS WHILE AC IS OFF												Econo		Hi POWER		FAN PWR ADJ.				Air Flow Gate Settings			COOLING TEMP ADJUSTMENT WHILE AC IS OFF													
Byte [DEC]																																				
0	47	107	167	227	31	91	151	211	15	75	135	195	239	79	239	111	239	143	175	207	239	247	255	239												
1	208	148	88	28	224	164	104	44	240	180	120	60	16	176	16	144	16	112	80	48	16	8	0	16												
2	253	253	253	253	254	254	254	254	255	255	255	255	198											238	222	206	190	174	158	142	126	110	94	78	62	46
3	2	2	2	2	1	1	1	1	0	0	0	0	57											17	33	49	65	81	97	113	129	145	161	177	193	209
4	255												42											42													
5	0												213											213													
6	237																																			
7	18																																			
8	206																																			
9	49																																			
10	42																																			
11	213																																			

ChkSum	The last two byte of any command are always 42 (0x2A) and 213 (0xD5). The sum of every consecutive Byte pair (B0&B1, B2&B3, B4&B5...) is always 255 (0xFF).
Comments	Switchin OFF Econo, Hi Power and switching the Fan and the air flow Gate to AUTO is the same command, in essence it's switching to NORMAL FULL AUTO Mode. Econo, Hi Power and the Fan Controls are mutually exclusive.

#	82	83	84	85	86	87	88	89	90	91	92	93	94	95	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114
	AC is ON														AC is ON														
Key	ON 30	ON 29	ON 28	ON 27	ON 26	ON 25	ON 24	ON 23	ON 22	ON 21	ON 20	ON 19	ON 18	ON Cont	HEAT temp to const	HEAT temp to 18deg	HEAT temp to 19deg	HEAT temp to 20deg	HEAT temp to 21deg	HEAT temp to 22deg	HEAT temp to 23deg	PWR ON @ HEAT24deg	HEAT temp to 25deg	HEAT temp to 26deg	HEAT temp to 27deg	HEAT temp to 28deg	HEAT temp to 29deg	HEAT temp to 30deg	PWR OFF @HEAT Const
# bits->	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48
Byte [HEX]																													
0	EF	EF	EF	EF	EF	EF	EF	EF	EF	EF	EF	EF	EF	EF	EF	EF	EF	EF	EF	EF	EF	EF	EF	EF	EF	EF	EF	EF	EF
1	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
2	26	36	46	56	66	76	86	96	A6	B6	C6	D6	E6	F6	F3	E3	D3	C3	B3	A3	93	83	73	63	53	43	33	23	FB
3	D9	C9	B9	A9	99	89	79	69	59	49	39	29	19	09	0C	1C	2C	3C	4C	5C	6C	7C	8C	9C	AC	BC	CC	DC	04
4	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A
5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5
6																													
7																													
8																													
9																													
10																													
11																													

Func	COOLING TEMP ADJUSTMENT WHILE WHILE AC IS ON														HEATING TEMP ADJUSTMENT WHILE AC IS ON														
Byte [DEC]																													
0	239														239														239
1	16														16														16
2	38	54	70	86	102	118	134	150	166	182	198	214	230	246	243	227	211	195	179	163	147	131	115	99	83	67	51	35	251
3	217	201	185	169	153	137	121	105	89	73	57	41	25	9	12	28	44	60	76	92	108	124	140	156	172	188	204	220	4
4	42														42														42
5	213														213														213
6																													
7																													
8																													
9																													
10																													
11																													

ChkSum	The last two byte of any command are always 42 (0x2A) and 213 (0xD5). The sum of every consecutive Byte pair (B0&B1, B2&B3, B4&B5...) is always 255 (0xFF).		
Comments			