

## 8048 SERIES HAND PROGRAMMING FORM

ADDRESS	OPCODE(S)	LABEL	MNEMONIC	OPERAND(S)	COMMENTS
000	00	RESET	NOP		Patch
001	00		NOP		
002	27		CLR	A	Zero Acc
003	D5		SEL	RB1	
004	BD	80	MOV	R5'	MODE = 0 SECTION
006	BF	20	MOV	R7'	RESET DIGIT BUFFER
008	56	0C	JT1	NOPW	FCN DOWN ?
00A	54	5E	CALL	CHKPW	CHECK PASSWORD
00C	54	7A	NOPW	CALL	BEEP
00E	56	12	MAINLOOP	JTI	FUNCTION DOWN ?
010	04	99	JMP	FCN.	
012	54	39	NO FCN	CALL	SCAN KEYPAD
014	B6	0E	JF0	MAINLOOP	KEY PRESSED ?
016	FD		MOV	NOTNB R5'	GET FLAGS
017	32	4C	JB1	NOTNB	
019	53	03	ANL	03H	JUST SAVE MODE
01B	4E		ORL	R6'	HIGH NIBBLE = KEY
01C	AC		MOV	R4' A	
01D	EC	21	DJNZ	R4' J1	IF MODE = 1 + KEY = 0
01F	04	8A	JMP	DO2600	THEN OUTPUT 2600 Hz
021	1C	J1	INC	R4'	ELSE CONTINUE
022	FC		MOV	A R4'	
023	77		RR	A	
024	77		RR	A	
025	43	80	ORL	A 80H	011111110101
027	AC		MOV	R4' A	
028	FF		MOV	A R7	
029	A8		MOV	R0 A	
02A	A0		MOV	@R0 A	STORE DIGIT IN BUF.
02B	1F		INC	R7'	ADVANCE POINTER
02C	FF		MOV	A R7'	

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ADDRESS	OPCODE(S)	LABEL	MNEMONIC	OPERAND(S)	COMMENTS
02D	D3	40	XRL	40H	COMPARE TO 40H
02F	96	33	JNZ	J2	
03L	BF	20	MOV	R7' 20H	
033	FC	J2	MOV	RA R4'	GET FRAC2
034	E3		MOV P3		{
035	A8		MOV	R0 A	STORE IN R0'
036	1C		INC	R4'	
037	FC		MOV	A R4'	GET INT2
038	E3		MOV P3		}
039	A9		MOV	R1' A	STORE IN R1'
03A	1C		INC	R4'	
03B	FC		MOV	A R4'	OVER TO OTHER SIDE
03C	C5		SEL	RB0	
03D	AC		MOV	R4 A	GET FRAC1
03E	E3		MOV P3		S
03F	A8		MOV	R0 A	STORE IN R0
040	1C		INC	R4	
041	FC		MOV	A R4	GET INT1
042	E3		MOV P3		S
043	A9		MOV	R1 A	STORE IN R1
044	BD	00	MOV	R5 00H	ON FOR ~ 2 ms
046	BE	0D	MOV	R6 0D H	
048	54	09	CALL	DUALTONE	
04A	04	0E	JMP	MAINLOOP	
04C	12	97	NOTWB	JB0 MODE3	
04E	B8	A4	REDBOX	MOV R0 A4H	> 2200
050	B9	02	MOV	R1 02H	
052	FE		MOV	A R6	
053	47		SWAP	A	

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ADDRESS	OPCODE(S)	LABEL	MNEMONIC	OPERAND(S)	COMMENTS	
08A	C5	D02608	SEL	R8		
08B	B8	C5	MOV	R8	C5 H	
08D	B9	01	MOV	R1	01 H	
08F	BD	00	MOV	R5	00H	
091	BE	5C	MOV	R6	5C H	
093	54	27	CALL	TONE		
095	04	0E	JMP	MAINLOOP		
		MODE3				
097	24	00	MODE3	JMP	M3	
099	D5		FCN	SEL	R81	
09A	54	59	FCN	CALL	WAITKEY	
09C	D3	F0	XRL	F0H		
09E	53	30	ANL	30H		
0A0	96	FF	JNZ	NFCOL		
0A2	FD		MOV	A	R6'	
0A3	F2	FD	JB7	J3	JUMP OVER IF RESTRICTED	
0A5	FE		MOV	A	R6'	CHANGE MODE
0A6	D3	F0	XRL	F0		
0A8	E7		RL	A		
0A9	E7		RL	A		
0AA	00	04	ANL	03H		
0AC	D9		MOV	R5'	RA'	
0AD	04	0E	J3	JMP	MAINLOOP	
0AF	FE		NFCOL	MOV	RA'	R6'
0B0	D3	E0	XRL	E0H	A	
0B2	96	B8	JNZ	J4		
0B4	54	8D	CALL	EXEC		
0B6	04	0E	JMP	MAINLOOP		
0B8	FE		J4	MOV	A	R6'
0B9	D3	A0	XRL	A0H		
0BB	96	CB	JNZ	J5		

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ADDRESS	OPCODE(S)	LABEL	MNEMONIC	OPERAND(S)	COMMENTS
0BD	FF		MOV	A R7'	
0BE	A8		MOV	R0' A	
0BF	B0	00	MOV	@R0 00H	
0C1	1F		INC	R7'	
0C2	FF		MOV	A R7'	
0C3	D3	40	XRL	40H C0H	
0C5	96	C9	JNZ	JZ2	
0C7	BF	20	MOV	R7' 20H	
0C9	04	DC	JMP	MAINLOOP	
0CB	FE		MOV	A R6'	CLEAR BUFFER
0CC	D3	60	XRL	60H	
0CE	96	D2	JNZ	J6	
0D0	BF	20	MOV	R7' 20H	
0D2	04	DC	JMP	MAINLOOP	
0P4	FF	18	FC	04 7A	
0D9	53	03	AD	54 7A 04 AD	
0E0					
RESERVE FOR ERRORS					

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ADDRESS	OPCODE(S)	LABEL	MNEMONIC	OPERAND(S)	COMMENTS
100	D5	M3	SEL	RB1	
101	FE		MOV	A	R6'Y
102	47		SWAP		
103	43	F0	ORL	A	F0H
105	00		NOP		LOAD FROM JUMP TABLE
106	B3		JMPP	@A	
107	D5	RING	SEL	RB1	
108	B8	87	MOV	R0'	87H
109	B9	00	MOV	R1'	00H
10C	C5	C5	SEL	RB0	
10D	B8	93	MOV	R0	93H
10F	B9	00	MOV	R1	00H
111	BE	68	MOV	R6	68H
113	54	09	CALL	DIALTONE	
115	27		CLR	A	
116	D5		SEL	RB1	
117	A8		MOV	R0	A
118	C5		SEL	RB0	
119	A8		MOV	R0	A
11A	BE	D1	MOV	R6	D1H
11C	54	09	CALL	DUALTONE	
11E	04	0E	JMP	MAINLOOP	
120	D5	15	DIALTONE	SEL	RB1
121	B8	6C	MOV	R0	6CH
123	B9	00	MOV	R1	00H
125	C5		SEL	RB0	
126	B8	87	MOV	R0	87H
128	B9	00	MOV	R1	00H
129	BE	68	MOV	R6	68H

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ADDRESS	OPCODE(S)	LABEL	MNEMONIC	OPERAND(S)	COMMENTS
12C	54	Ø9	CALL	DUALTONE	
12E	Ø4	ØE	JMP	MAINLOOP	
3Ø					
13Ø	Ø5	BUSY	SEL	RB1	
131	B8	93	MOV	RØ' 93H	
133	B9	ØØ	MOV	R1' ØØH	
135	C5		SEL	RBØ	
136	B8	BE	MOV	RØ BE H	
138	B9	ØØ	MOV	R1 ØØH	
13A	BE	1A	MOV	R6 1A H	
13C	54	Ø9	CALL	DUALTONE	
13E	BE	82	MOV	R6 82 H	
14Ø	54	ØØ	CALL	WAIT	
142	Ø4	ØE	JMP	MAINLOOP	
44					
144	C5	IC	SEL	RBØ	
145	B8	A8	MOV	RØ A8 H	
147	B1	ØØ	MOV	R1 ØØH	
149	BD	CA	MOV	R5 CA H	
148	BE	18	MOV	R6 18 H	
14D	54	27	CALL	TONE	
14F	B8	FD	MOV	RØ FD H	
151	BD	CA	MOV	R5 CA H	
153	BE	18	MOV	R6 18 H	
155	54	27	CALL	TONE	
157	B8	47	MOV	RØ 47 H	
159	B9	Ø1	MOV	R1 Ø1 H	
158	BD	FD	MOV	R5 FD H	
15D	BE	21	MOV	R6 21 H	
15F	54	27	CALL	TONE	
161	Ø4	ØE	JMP	MAINLOOP	

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ADDRESS	OPCODE(S)	LABEL	MNEMONIC	OPERAND(S)	COMMENTS	
259	54 39	WAITKEY	CALL	SCANKEY		
25B	B6 59		JFØ	WAITKEY		
25D	93		RETR			
25E	D5	CHECKPW	SEL	R81		
25F	(BB) Ø6		MOV	R3	Ø6H	Six Digits
261	(BC) 1Ø		MOV	R4	1ØH	PW Table Starts @ 31ØH
263	54 59	CHKLOP	CALL	WAITKEY		
265	(FC)		MOV	A	R4	
266	E3		MONP3			
267	DE		XRL	A	R6	
268	96 78		JNZ	HANG		
26A	54 39	PW1	CALL	SCANKEY		WAIT UNTIL KEY
26C	B6 70		JFØ	NEXT		IS RELEASED,
26E	44 6A		JMP	PW1		
270	1C	NEXT	INC	R4		
271	(EB) 63		DJNZ	R3	CHKLOP	
273	BØ ØØ		MOV	R5	ØØH	ALL CLEAR, SEC OFF
275	54 7A		CALL	BEEP		
277	93		RETR			
278	44 78	HANG	JMP	HANG		
		EYPC				
27A	C5	BEEP:	SEL	R80		
27B	B8 1F		MOV	RØ	1FH	
27D	B9 Ø2		MOV	R1	Ø2H	
27F	BD ØØ		MOV	R5	ØØH	
281	BE ØA		MOV	R6	ØAH	
283	54 27		CALL	TONE		
285	BD ØØ		MOV	R5	ØØH	
287	BE 34		MOV	R6	34H	
289	54 ØØ		CALL	WAIT		
28B	(D5) 93	RLT	SEL R81 R	RETR	ØØH	

RESERVE  
FOR  
ERRORS

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ADDRESS	OPCODE(S)	LABEL	MNEMONIC	OPERAND(S)	COMMENTS
28D	05	EXEC:	SEL	RB1	
28E	FF		MOV	A - R7'	GET POINTER
28F	53	IF	ANL	\$1F	MASK OF TOP 3 BITS
291	C6	BD	JZ	EMPTY	JUMP OUT IF EMPTY
293	AC		MOV	R4' A	R4' HOLDS COUNT
294	BF	2Φ	MOV	R7' 20H	START AT BEGINNING
			MOV		
296	FF	EXECLOP	MOV	A R7'	
297	A8		MOV	RΦ' A	
298	FΦ		MOV	@RΦ @RΦ	GET DIGIT FROM BUFFER
299	C6	BF	JZ	POWAIT	JUMP OVER IF PAUSE
29B	AE		IMOV	R6' A	
29C	E3		MOV P3	R	
29D	A8		MOV	RΦ A	GET FRAC 2
29E	1E		INC	R6' A	GET INT 2
29F	FE		MOV P3	A R6'	
2AΦ	E3		MOV P3		
2A1	A9		MOV	R1 A	GET INT 2
2A2	1E		INC	R6'	
2A3	FE		MOV	A R6'	
2A4	C5		SEL	RBΦ	
2A5	AC		MOV	R4 A	
2A6	E3		MOV P3		
2A7	A8		MOV	RΦ A	GET FRAC 1
2A8	1C		INC	R4	
2A9	FC		MOV	A R4	
2AA	E3		MOV P3		
2AB	A9		MOV	R1 A	GET INT 1
2AC	BD	ΦΦ	MOV	R5 ΦΦ H	
2AE	BE	ΦΦ	MOV	R6 ΦΦ H	>
2B0	54	Φ9	CALL	DUALTONE	

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ADDRESS	OPCODE(S)	LABEL	MNEMONIC	OPERAND(S)	COMMENTS
2B2	C5	REXE	SEL	RB0	
2B3	BF		MOV	R5	00 H
2B5	BE	1B	MOV	R6	1B H
2B7	54		CALL	WAIT	
2B9	D5		SEL	RB1	
2BA	1F		INC	R7	
2BB	EC	96	DJNZ	R4	EXECLOP
2BD	00	93	EMPTY	NOP	RETR
2BF	54	59	DOWNAIT	CALL	WAITKEY
2C1	44	B2	JMP	REXE	
<u>(15) X 256) X</u>					
- FIN -					

- FIN -

150

DS 54 39 83

267

201