

Таблица микрокоманд устройства микропрограммного управления для БЭВМ NG

Адр	МК	Метка	Действие
01	00A0009004	INFETCH	IP → BR, AR
02	0104009420		BR + 1 → IP; MEM(AR) → DR
03	0002009001		DR → CR
04	8109804002		if CR(15) = 1 then GOTO CHKBR @ 09
05	810C404002		if CR(14) = 1 then GOTO CHKABS @ 0C
06	810C204002		if CR(13) = 1 then GOTO CHKABS @ 0C
07	8078104002		if CR(12) = 0 then GOTO ADDRLESS @ 78
08	80C2101040		GOTO IO @ C2
09	800C404002	CHKBR	if CR(14) = 0 then GOTO CHKABS @ 0C
0A	800C204002		if CR(13) = 0 then GOTO CHKABS @ 0C
0B	8157104002		if CR(12) = 1 then GOTO BRANCHES @ 57
0C	8024084002	CHKABS	if CR(11) = 0 then GOTO OPFETCH @ 24
0D	0020011002	ADFETCH	extend sign CR(0..7) → BR
0E	811C044002		if CR(10) = 1 then GOTO T11XX @ 1C
0F	0080009024	T10XX	BR + IP → AR
10	0100000000		MEM(AR) → DR
11	8114024002		if CR(9) = 1 then GOTO T101X @ 14
12	81E0014002	T100X	if CR(8) = 1 then GOTO RESERVED @ E0
13	8024101040	T1000	GOTO OPFETCH @ 24
14	8119014002	T101X	if CR(8) = 1 then GOTO T1011 @ 19
15	0001009401	T1010	DR + 1 → DR
16	0200000000		DR → MEM(AR)
17	0001009201		~0 + DR → DR
18	8024101040		GOTO OPFETCH @ 24
19	0001009201	T1011	~0 + DR → DR
1A	0200000000		DR → MEM(AR)
1B	8024101040		GOTO OPFETCH @ 24
1C	8120024002	T11XX	if CR(9) = 1 then GOTO T111X @ 20
1D	81E0014002	T110X	if CR(8) = 1 then GOTO RESERVED @ E0
1E	0001009028	T1100	BR + SP → DR
1F	8024101040		GOTO OPFETCH @ 24
20	8023014002	T111X	if CR(8) = 0 then GOTO T1110 @ 23
21	0001009020	T1111	BR → DR
22	8028101040		GOTO EXEC @ 28
23	0001009024	T1110	BR + IP → DR
24	8026804002	OPFETCH	if CR(15) = 0 then GOTO RDVALUE @ 26
25	814A404002		if CR(14) = 1 then GOTO CMD11XX @ 4A
26	0080009001	RDVALUE	DR → AR
27	0100000000		MEM(AR) → DR
28	813C804002	EXEC	if CR(15) = 1 then GOTO CMD1XXX @ 3C
29	8130404002	CMD0XXX	if CR(14) = 1 then GOTO CMD01XX @ 30
2A	812D104002	CMD000X	if CR(12) = 1 then GOTO OR @ 2D
2B	0010C09811	AND	AC & DR → AC, N, Z, V
2C	80C4101040		GOTO INT @ C4
2D	0020009B11	OR	~AC & ~DR → BR
2E	0010C09220		~BR → AC, N, Z, V
2F	80C4101040		GOTO INT @ C4
30	8137204002	CMD01XX	if CR(13) = 1 then GOTO CMD011X @ 37
31	8134104002	CMD010X	if CR(12) = 1 then GOTO ADC @ 34
32	0010E09011	ADD	AC + DR → AC, N, Z, V, C
33	80C4101040		GOTO INT @ C4
34	8032011040	ADC	if PS(C) = 0 then GOTO ADD @ 32
35	0010E09411		AC + DR + 1 → AC, N, Z, V, C
36	80C4101040		GOTO INT @ C4
37	813A104002	CMD011X	if CR(12) = 1 then GOTO CMP @ 3A

Адр	МК	Метка	Действие
38	0010E09511	SUB	AC + ~DR + 1 → AC, N, Z, V, C
39	80C4101040		GOTO INT @ C4
3A	0000E09511	CMP	AC + ~DR + 1 → N, Z, V, C
3B	80C4101040		GOTO INT @ C4
3C	8143204002	CMD1XXX	if CR(13) = 1 then GOTO CMD101X @ 43
3D	81E0104002	CMD100X	if CR(12) = 1 then GOTO RESERVED @ E0
3E	0001009201	LOOP	~0 + DR → DR
3F	0220009201		~0 + DR → BR; DR → MEM(AR)
40	80C4804020		if BR(15) = 0 then GOTO INT @ C4
41	0004009404		IP + 1 → IP
42	80C4101040		GOTO INT @ C4
43	8146104002	CMD101X	if CR(12) = 1 then GOTO SWAM @ 46
44	0010C09001	LD	DR → AC, N, Z, V
45	80C4101040		GOTO INT @ C4
46	0020009001	SWAM	DR → BR
47	0001009010		AC → DR
48	0210C09020		BR → AC, N, Z, V; DR → MEM(AR)
49	80C4101040		GOTO INT @ C4
4A	8153204002	CMD11XX	if CR(13) = 1 then GOTO ST @ 53
4B	814E104002	CMD110X	if CR(12) = 1 then GOTO CALL @ 4E
4C	0004009001	JUMP	DR → IP
4D	80C4101040		GOTO INT @ C4
4E	0020009001	CALL	DR → BR
4F	0001009004		IP → DR
50	0004009020		BR → IP
51	0088009208	PUSHVAL	~0 + SP → SP, AR
52	8055101040		GOTO STORE @ 55
53	0080009001	ST	DR → AR
54	0001009010		AC → DR
55	0200000000	STORE	DR → MEM(AR)
56	80C4101040		GOTO INT @ C4
57	8171084002	BRANCHES	if CR(11) = 1 then GOTO BR1XXX @ 71
58	8166044002	BR0XXX	if CR(10) = 1 then GOTO BR01XX @ 66
59	8161024002	BR00XX	if CR(9) = 1 then GOTO BR001X @ 61
5A	815F014002	BR000X	if CR(8) = 1 then GOTO BNE @ 5F
5B	80C4041040	BEQ	if PS(Z) = 0 then GOTO INT @ C4
5C	0020011002	BR	extend sign CR(0..7) → BR
5D	0004009024		BR + IP → IP
5E	80C4101040		GOTO INT @ C4
5F	805C041040	BNE	if PS(Z) = 0 then GOTO BR @ 5C
60	80C4101040		GOTO INT @ C4
61	8164014002	BR001X	if CR(8) = 1 then GOTO BPL @ 64
62	815C081040	BMI	if PS(N) = 1 then GOTO BR @ 5C
63	80C4101040		GOTO INT @ C4
64	805C081040	BPL	if PS(N) = 0 then GOTO BR @ 5C
65	80C4101040		GOTO INT @ C4
66	816C024002	BR01XX	if CR(9) = 1 then GOTO BR011X @ 6C
67	816A014002	BR010X	if CR(8) = 1 then GOTO BCC @ 6A
68	815C011040	BCS	if PS(C) = 1 then GOTO BR @ 5C
69	80C4101040		GOTO INT @ C4
6A	805C011040	BCC	if PS(C) = 0 then GOTO BR @ 5C
6B	80C4101040		GOTO INT @ C4
6C	816F014002	BR011X	if CR(8) = 1 then GOTO BVC @ 6F
6D	815C021040	BVS	if PS(V) = 1 then GOTO BR @ 5C
6E	80C4101040		GOTO INT @ C4

6F	805C021040	BVC	if PS(V) = 0 then GOTO BR @ 5C
70	80C4101040		GOTO INT @ C4
71	81E0044002	BR1XXX	if CR(10) = 1 then GOTO RESERVED @ E0
72	81E0024002	BR10XX	if CR(9) = 1 then GOTO RESERVED @ E0
73	8176014002	BR100X	if CR(8) = 1 then GOTO BGE @ 76
74	806D081040	BLT	if PS(N) = 0 then GOTO BVS @ 6D
75	806F101040		GOTO BVC @ 6F
76	806F081040	BGE	if PS(N) = 0 then GOTO BVC @ 6F
77	806D101040		GOTO BVS @ 6D
78	81A4084002	ADDRLESS	if CR(11) = 1 then GOTO AL1XXX @ A4
79	8189044002	AL0XXX	if CR(10) = 1 then GOTO AL01XX @ 89
7A	817D024002	AL00XX	if CR(9) = 1 then GOTO AL001X @ 7D
7B	80C4014002	AL000X	if CR(8) = 0 then GOTO INT @ C4
7C	80DE101040	HLT	GOTO STOP @ DE
7D	8183014002	AL001X	if CR(8) = 1 then GOTO AL0011 @ 83
7E	8181801002	AL0010	if CR(7) = 1 then GOTO NOT @ 81
7F	0010C00000	CLA	0 → AC, N, Z, V
80	80C4101040		GOTO INT @ C4
81	0010C09210	NOT	~AC → AC, N, Z, V
82	80C4101040		GOTO INT @ C4
83	8186801002	AL0011	if CR(7) = 1 then GOTO CMC @ 86
84	0000200000	CLC	0 → C
85	80C4101040		GOTO INT @ C4
86	8184011040	CMC	if PS(C) = 1 then GOTO CLC @ 84
87	0000208300		HTOH(~0 + ~0) → C
88	80C4101040		GOTO INT @ C4
89	8196024002	AL01XX	if CR(9) = 1 then GOTO AL011X @ 96
8A	8190014002	AL010X	if CR(8) = 1 then GOTO AL0101 @ 90
8B	818E801002	AL0100	if CR(7) = 1 then GOTO ROR @ 8E
8C	0010E60010	ROL	ROL(AC) → AC, N, Z, V, C
8D	80C4101040		GOTO INT @ C4
8E	0010F80010	ROR	ROR(AC) → AC, N, Z, V, C
8F	80C4101040		GOTO INT @ C4
90	8194801002	AL0101	if CR(7) = 1 then GOTO ASR @ 94
91	0001009010	ASL	AC → DR
92	0010E09011		AC + DR → AC, N, Z, V, C
93	80C4101040		GOTO INT @ C4
94	0010E80010	ASR	ASR(AC) → AC, N, Z, V, C
95	80C4101040		GOTO INT @ C4
96	819C014002	AL011X	if CR(8) = 1 then GOTO AL0111 @ 9C
97	819A801002	AL0110	if CR(7) = 1 then GOTO SWAB @ 9A
98	0010C11010	SXTB	extend sign AC(0..7) → AC, N, Z, V
99	80C4101040		GOTO INT @ C4
9A	0010C06010	SWAB	SWAB(AC) → AC, N, Z, V
9B	80C4101040		GOTO INT @ C4
9C	81A2801002	AL0111	if CR(7) = 1 then GOTO NEG @ A2
9D	81A0401002	AL01110	if CR(6) = 1 then GOTO DEC @ A0
9E	0010E09410	INC	AC + 1 → AC, N, Z, V, C
9F	80C4101040		GOTO INT @ C4
A0	0010E09110	DEC	AC + ~0 → AC, N, Z, V, C
A1	80C4101040		GOTO INT @ C4
A2	0010E09610	NEG	~AC + 1 → AC, N, Z, V, C
A3	80C4101040		GOTO INT @ C4
A4	81B5044002	AL1XXX	if CR(10) = 1 then GOTO AL11XX @ B5
A5	0080009008	AL10XX	SP → AR
A6	0100000000		MEM(AR) → DR
A7	81AE024002		if CR(9) = 1 then GOTO AL101X @ AE

A8	81AC014002	AL100X	if CR(8) = 1 then GOTO POPF @ AC
A9	0010C09001	POP	DR → AC, N, Z, V
AA	0008009408	INCSP	SP + 1 → SP
AB	80C4101040		GOTO INT @ C4
AC	0040009001	POPF	DR → PS
AD	80AA101040		GOTO INCSP @ AA
AE	81B1014002	AL101X	if CR(8) = 1 then GOTO IRET @ B1
AF	0004009001	RET	DR → IP
B0	80AA101040		GOTO INCSP @ AA
B1	0040009001	IRET	DR → PS
B2	0088009408		SP + 1 → SP, AR
B3	0100000000		MEM(AR) → DR
B4	80AF101040		GOTO RET @ AF
B5	81BB024002	AL11XX	if CR(9) = 1 then GOTO AL111X @ BB
B6	81B9014002	AL110X	if CR(8) = 1 then GOTO PUSHF @ B9
B7	0001009010	PUSH	AC → DR
B8	8051101040		GOTO PUSHVAL @ 51
B9	0001009040	PUSHF	PS → DR
BA	8051101040		GOTO PUSHVAL @ 51
BB	81E0014002	AL111X	if CR(8) = 1 then GOTO RESERVED @ E0
BC	0080009008	SWAP	SP → AR
BD	0100000000		MEM(AR) → DR
BE	0020009001		DR → BR
BF	0001009010		AC → DR
C0	0210C09020		BR → AC, N, Z, V; DR → MEM(AR)
C1	80C4101040		GOTO INT @ C4
C2	81C7084002	IO	if CR(11) = 1 then GOTO IRQ @ C7
C3	0400000000	DOIO	IO
C4	80DE801040	INT	if PS(W) = 0 then GOTO STOP @ DE
C5	8001401040		if PS(INT) = 0 then GOTO INFETCH @ 01
C6	0800000000		INTS
C7	0088009208	IRQ	~0 + SP → SP, AR
C8	0001009004		IP → DR
C9	0200000000		DR → MEM(AR)
CA	0088009208		~0 + SP → SP, AR
CB	0001009040		PS → DR
CC	0220001002		LTOL(CR) → BR; DR → MEM(AR)
CD	00A0020020		SHL(BR) → BR, AR
CE	0100000000		MEM(AR) → DR
CF	0004009001		DR → IP
D0	0080001420		LTOL(BR + 1) → AR
D1	0100000000		MEM(AR) → DR
D2	0040009001		DR → PS
D3	8001101040		GOTO INFETCH @ 01
D4	00BBE00000	START	0 → DR, CR, SP, AC, BR, AR, NZVC
D5	80C3101040		GOTO DOIO @ C3
D6	0080009004	READ	IP → AR
D7	0104009404		IP + 1 → IP; MEM(AR) → DR
D8	80DE101040		GOTO STOP @ DE
D9	0080009004	WRITE	IP → AR
DA	0001009080		IR → DR
DB	0204009404		IP + 1 → IP; DR → MEM(AR)
DC	80DE101040		GOTO STOP @ DE
DD	0004009080	SETIP	IR → IP
DE	4000000000	STOP	Halt
DF	8001101040		GOTO INFETCH @ 01