

Sheet1

Name	State	Register Transfer	Control Lines	Next State	
F1		0 [PC] → MAR	opc, imar	1	
				2 if MFC = 1 1 if MFC = 0	
		1 [[MAR]] → MDR	read, inhibit if not mfc		
		2 [MDR] → IR	omdr, iir	3	
		3 [PC] + 1 → Q	opc, ib, p1, iq	4	
F2				5	
				14 if ADD(X) or INC X	
		4 [Q] → PC	oq, ipc		
		5 [PC] → MAR	opc, imar	6	
				7 if MFC = 1 6 if MFC = 0	
S1				15 if JMP	
		6 [[MAR]] → MDR	read inhibit if not mfc		
		7 [PC] + 1 → Q	opc, ib, p1, iq	8	
		8 [Q] → PC	oq, ipc	9	
		9 [MDR] → MAR	omdr, imar	10	
E1				11 if MFC = 1 10 if MFC = 0	
		10 [[MAR]] → MDR	read, inhibit if not mfc	12	
				16 if INC addr	
		11 [MDR] → T1	omdr, it1		
		12 [T1] + [AC] → Q	oac, ia, ib, iq	13	
S2		13 [Q] → AC	oq, iac	0	
				10	
				16 if INC X	
		14 [X] → MAR	ox, imar		
		15 [MDR] → PC	omdr, ipc	0	
E3		16 [T1] + 1 → Q	ia, p1, iq	17	
			oq, imdr, write,	0 if MFC = 1	
		17 [Q] → [MDR]	Inhibit if not MFC	17 if MFC = 0	
	IPC	T4 + T8 + T15	Memory		Content
OPC	T0 + T3 + T5 + T7			0 b0100000100000000	
IMAR	T0 + T5 + T9 + T14			1 b0000000001000000	
IMDR	T17			2 b0010111100000000	
OMDR	T2 + T9 + T11 + T15			3 b00110001000100100	
Read	T1 + T6 + T10			4 b0000111000000000	
Write	T17			5 b0100000100000000	
Inhibit	T1 + T6 + T10 + T17			6 b0000000001000000	
IIR	T2			7 b00110001000100100	
IA	T12 + T16			8 b0000111000000000	
IB	T7			9 b0100011100000000	
P1	T3 + T7 + T16			10 b0000000001000000	
IT1	T11			11 b1100011100000000	
IQ	T3 + T7 + T12 + T16			12 b00110010000001100	
OQ	T4 + T8 + T13 + T17			13 b0001011000000000	
OX	T14			14 b0100001100000000	
IAC	T13			15 b0000111100000000	
OAC	T12			16 b00110000000101000	
				17 b1000011010000000	
Preset	T4 + T6 + T11 + T13 + T14 + T15 + T16				

Sheet1

D4	T11 + T14 AND INC X
D3	T4 + T6 + T14
D2	T4 + T6
D1	T4 + T6 + T14
D0	T6

	High Lvl Register Transfers	Name
INC addr	$[[PC]] \rightarrow IR$	F1
	$[PC] + 1 \rightarrow PC$	
	$[[PC]] \rightarrow MDR$	F2
	$[PC] + 1 \rightarrow PC$	
	$[[MDR]] \rightarrow T1$	S1
	$[T1] + 1 \rightarrow MDR$	E3
INC (X)	$[[PC]] \rightarrow IR$	F1
	$[PC] + 1 \rightarrow PC$	
	$[[MDR]] \rightarrow T1$	S1
	$[[X]] \rightarrow T1$	S2
	$[T1] + 1 \rightarrow Q$	E3
	$[Q] \rightarrow MDR$	