

Instruction Set summary

Nemonic	Opcode	Description	Total Bytes	Execution cycles	Flags Affected
<b>ALU Related</b>					
ADD	0010 0000	$A = A + B$	1	2	Z,P,C
SUB	0010 0001	$A = A - B$	1	2	Z,P,C
CLA	0010 0100	$A = 0$	1	2	Z,P,C
CLB	0010 0101	$B = 0$	1	2	Z,P,C
NOTA	0010 0110	$A = -A$	1	2	
NOTB	0010 0111	$B = -B$	1	2	
RAL	0010 1000	$A[7:1] = A[6:0]$ $A[0] = A[7]$	1	2	
RAR	0010 1001	$A[6:0] = A[7:1]$ $A[7] = A[0]$	1	2	
SAL	0010 1010	$A[7:1] = A[6:0]$ $A[0] = 0$	1	2	
SAR	0010 1011	$A[6:0] = A[7:1]$ $A[7] = 0$	1	2	
AND	0010 1100	$A = A * B$	1	2	
OR	0010 1101	$A = A + B$	1	2	
XOR	0010 1110	$A = A \oplus B$	1	2	
INC	0101 0000	$A = A + 1$	1	2	
DEC	0101 0001	$A = A - 1$	1	2	
TEST	0101 1000	$A = A - B$	1	2	
<b>Others</b>					
STC	0011 0000	carry flag = 1	1	2	
CLC	0011 0001	carry flag = 0	1	2	
STI	0100 0000	int mask = 1	1	2	
CLI	0100 0001	int mask = 0	1	2	
<b>LOAD/STORE</b>					
LDA, immed	0001 0000	$A = \text{immed}$	2	3	
LDAi, addx16	0001 0100	$A = [\text{addx16}]$	3	5	
STA, addx16	0001 0010	$[\text{addx16}] = A$	3	5	
MOV B,A	0001 1001	$B = A$	1	2	
MOB A,B	0001 1010	$A = B$	1	2	
<b>Branching</b>					
JMP, addx16	0000 0000	$PC = \text{addx16}$	3	4	
JZ, addx16	0000 1000	if Z flag = 1, $PC = \text{addx16}$ else $PC = PC + 2$	3	2/4	
JC, addx16	0000 1001	if C flag = 1, $PC = \text{addx16}$ else $PC = PC + 2$	3	2/4	
JP, addx16	0000 1010	if P flag = 1, $PC = \text{addx16}$ else $PC = PC + 2$	3	2/4	
JN, addx16	0000 1100	if P flag = 0, $PC = \text{addx16}$ else $PC = PC + 2$	3	2/4	
JMPi, addx16	0000 0100	$PC = [\text{addx16}]$	3	6	
JSR, addx16	0000 0001	$[\text{addx16}] = PC + 2;$ $PC = \text{addx16} + 2;$	3	6	
<b>Stack operations</b>					
PUSH A	0111 0000	$[SP] = A; SP = SP - 1$	1	3	
PUSH B	0111 0001	$[SP] = B; SP = SP - 1$	1	3	
PUSH F	0111 0010	$[SP] = \text{flag}; SP = SP - 1$	1	3	
POP A	1000 0000	$SP = SP + 1; A = [SP]$	1	3	
POP B	1000 0001	$SP = SP + 1; B = [SP]$	1	3	
POP F	1000 0010	$SP = SP + 1; F = [SP]$	1	3	
CALL, addx16	0000 0100	$SP = PC + 3; PC = \text{addx16}$	3	6	
RET	0000 0011	$SP = SP + 1; PC = SP$	1	4	