

Instruction set 8088 (single dump)

Mnemonics ©Intel, 1978

Betaversion

Annotations by Birger Wolter, 1998

DATA TRANSFER

MOV = Move

register/memory to/from register

100010 d w mod reg r/m

immediate to memory

1100011 w mod 000 r/m data (data if w 1)

immediate to register

1 0 1 1 w reg data (data if w 1)

ARITHMETIC

INC = Increment

memory/register(byte)

1111111 w mod 000 r/m

register(word)

01000 reg

DEC = Decrement

memory/register(byte)

1111111 w mod 001 r/m

register(word)

01001 reg

CMP = Compare

register/memory and register

001110 d w mod reg r/m

immediate with register/memory

1000000 w mod 111 r/m data (data if w 1)

CONTROL TRANSFER

CALL = Call

direct within segment

11101000 disp-low disp-high

JMP = Unconditional Jump

direct within segment

11101001 disp-low disp-high

RET = Return from CALL

within segment
11000011

JE/JZ = Jump on equal/zero

01110100 disp

LOOP = Loop CX times

11100010 disp

INT = Interrupt

type specified
11001101 type

Footnotes:

if d = 1 then "to" reg; if d = 0 then "from" reg; only valid for register/memory
d = 0; only valid for register/register

remark for MOV-instruction: "from" in reg, "to" in mod and r/m
if w = 1 then word instruction; if w = 0 then byte instruction

if mod = 11 then r/m is treated as a REG field

if mod = 00 then DISP = 0, disp-low and disp-high are absent

if mod = 10 then DISP consists of (and saved as) disp-low disp-high

if r/m = 000 then EA = (BX) + (SI) + DISP

if r/m = 001 then EA = (BX) + (DI) + DISP

if r/m = 010 then EA = (BP) + (SI) + DISP

if r/m = 011 then EA = (BP) + (DI) + DISP

if r/m = 100 then EA = (SI) + DISP

if r/m = 101 then EA = (DI) + DISP

if r/m = 110 then EA = (BP) + DISP

if r/m = 111 then EA = (BX) + DISP

Exception: if mod = 00 and r/m = 110 then EA = DISP

DISP follows second byte of instruction (before data if required)

REG is assigned according to the following table

16-Bit (w = 1)	8-Bit (w = 0)
000 AX	000 AL
001 CX	001 CL
010 DX	010 DL
011 BX	011 BL
100 SP	100 AH
101 BP	101 CH
110 SI	110 DH
111 DI	111 BH