

## CHIP-8 INSTRUCTION SET

Stored Code	Mnemonic	Description
0000	NOP	No Operation.
00E0	ERASE	Clear the Screen.
00EE	RETURN	Return from Subroutine.
1MMM	GOTO MMM	Jump to location MMM.
2MMM	DO MMM	Call Subroutine.
3XKK	SKF VX=KK	Skip next Instruction if VX=KK.
4XKK	SKF VX≠KK	Skip next Instruction if VX≠KK.
5XY0	SKF VX=VY	Skip next Instruction if VX=VY.
6XKK	VX=KK	Assign Hex value KK to Register VX.
7XKK	VX=VX+KK	Add KK to VX.
8XY0	VX=VY	Copy VY to VX.
8XY1	VX=VX   VY	Logical OR VX with VY.
8XY2	VX=VX.VY	Logical AND VX with VY.
8XY3	VX=VX XOR VY	Logical XOR VX with VY.
8XY4	VX=VX+VY	Add VY to VX.If result >FF, then VF=1.
8XY5	VX=VX-VY	Subtract VY. If VX<VY, then VF=0.
8XY6	VX=VY SHR 1	R.Shift VY. Result in VX. If LSB=1,VF=1.
8XY7	VX=VY-VX	Subtract VX.If VY<VX, then VF=0.
8XYE	VX=VX SHL 1	L.Shift VY. Result in VX. If MSB=1,VF=1.
9XY0	SKF VX≠VY	Skip next Instruction if VX≠VY.
AMMM	I=MMM	Set memory Index Pointer to MMM.
BMMM	GOTO MMM+V0	Jump to location MMM+V0.
CXKK	VX=RND.KK	Get random byte, then AND with KK.
DXYN	SHOW N@VX,VY	Display N-byte pattern at (VX,VY).
EX9E	SKF VX=KEY	Skip if key down =VX. No wait.
EXA1	SKF VX≠KEY	Skip if key down ≠VX. No wait.
F000	STOP	Jump to Monitor (CHIPOS).
FX07	VX=TIME	Get current timer value.
FX0A	VX=KEY	Input Hex key code. Wait for key down.
FX15	TIME=VX	Initialize Timer. 01=20 mS.
FX17	PITCH=VX	Set the Pitch of the Tone Generator to VX.
FX18	TONE=VX	Sound Tone for 20 timesVX milliseconds.
FX1E	I=I+VX	Add VX to Memory Pointer.
FX29	I=DSP,VX	Set Pointer to show VX (LS digit).
FX2A	I=DSP,VX	Set Pointer to show VX (ASCII character).
FX33	MI=DEQ,VX	Store 3 digit decimal equivalent of VX.

<b>Stored Code</b>	<b>Mnemonic</b>	<b>Description</b>
FX55	MI=VO:VX	Store V0 through VX at I. I=I+X+1.
FX65	V0:VX=MI	Load V0 through VX at I. I=I+X+1.
FX70	RS485=VX	Send data in VX to RS485 Port.
FX71	VX=RS485	Waits for received RS485 data. Place in VX.
FX72	BAUD=VX	Set RS485 Baud rate.