

C+4/C16 ESCAPE Key Functions

ESCape +	Function	ESCape +	Function
A	Automatic Insert Mode	M	Disaple Scrolling
B	Set Bottom of Screen Window	N	Set Normal Screen display size
C	Cancel Automatic Insert Mode	O	Cancel Insert, Quote, and Reverse Modes
D	Delete line	P	Erase Begin
G	Enable Bell	Q	Erase End
H	Disable Bell	R	Set Reduced Screen display size
I	Insert a line	T	Set Top of Screen Window
J	Move Cursor to Start of Current line	V	Scroll Up
K	Move Cursor to End of Current line	W	Scroll Down
L	Enable Scrolling	X	Cancel Escape

COMMODORE +4: 3 + 1 Software Reference Guide

Word Processor

Special Keys:

INST/DEL	Insert/Delete character	CTRL 9	Set reverse video for formatting instructions
HOME	Move cursor to top line of text	CTRL 0	Turn off reverse video
CLR	Move cursor to bottom line of text	⌘ C	Enter command mode
RETURN	Delete rest of line and terminate a paragraph	F1 or ⌘ L	Move cursor to left margin of next line
SHIFT RETURN	Move cursor to left margin of next line	F2 or ⌘ R	Move cursor to column 41 of next line
SHIFT =	Tab Key	⌘ Q	Repeat previous keystroke
CTRL =	Set a tab	⌘ @	Replace line deleted by a RETURN

Commands: All commands are initiated with ⌘ C

CA	Display disk directory (CAalog)	DL	Delete a Line of text	PR	Saves current document to disk with name ".tw" then prints it
CB	Create a Block	EP	Erase a Pointer	RE	Search and Replace words or phrases
CM	Clear Memory	IB	Insert a Block created with CB	SF	Save File to disk
CP	Clear Pointers	ID	Initialize Disk	SP	Set a Pointer
CT	Clear Tabs	IL	Insert a Line of text	SR	Search for a word or phrase
DB	Delete Block	LF	Load a File from disk	*P	Print document
DF	Delete a disk File	MF	Merge a File from disk into text	TF	To the File Manager
		TC	To the Spreadsheet		

Formatting Instructions: (enter in lower case)

ASC c1;c2;...	Send ASCII character(s) "c1, c2, ..." to the printer	OTHER	Used for non-Commodore printers (standard ASCII)
CENTER	Center the text on the current line	PAGELENn;	Set the number of lines on a page to "n" times (default 60)
JUSTIFY	Right-justify text	PAGEPAUSE	Stops printing after each page
LINKFILE	Links documents at print time	PAGESIZEn;	Sets up paper size to "n" lines long (default 66)
LMARGn;	Set left margin to "n" (default 0)	PAUSE	Stops printing until RETURN is pressed
NEXTPAGE	Forces a new page	RMARGn;	Set the right margin to "n" (default 77)
NOJUSTIFY	Turns off right justification (default)	SET#PGn;	Sets page number to "n"
NOWRAP	Turns off word-wrap; used for spreadsheet tables	#PAGE	Prints page number at bottom of each page
NO#PAGE	Turns off page numbering	WRAPON	Turns word-wrap on (default)

Spreadsheet

Special Keys:

Cursor Down	moves the cursor down a cell	F1 or ⌘ L	moves the cursor left a cell	⌘ T	Enter text in current cell
Cursor Up	moves the cursor up a cell	⌘ C	enters command mode	⌘ F	Enter a formula in current cell
F2 or ⌘ R	moves the cursor right a cell	⌘ Q	repeats last command	⌘ N	Enter a number in current cell

Commands: (Command mode is entered with ⌘ C)

\$\$	Display number in current cell in dollar format (two decimal places)	GOTO r;c	Moves the cursor to cell "r;c"
AUTO	Turns on automatic calculation mode	HA	Half screen display mode — allows simultaneous display of Word Processor and Spreadsheet
BLKMAPr;c	Moves block of cells from cursor to "r;c" into the Word processor	HOME	Moves the cursor to cell 1;1
CA	Display disk directory	ID	Initialize Disk
CCO c;	Copies column "c" to the cursor's column	IN	Displays number in current cell in integer format
CDEL	Deletes the current column	LEFTJ	Left justifies number in current cell
CINS	Inserts a new column	LF	Load spreadsheet File from disk
CM	Clear memory; deletes current spreadsheet	MAN	Manual calculation mode (default)
COLOR n;	Changes the screen colour to colour "n" (default 0)	MAP	Maps cell contents into the Word Processor
COPY r;c	Copies cell "r;c" to the current cell	OFF	Turns off MAP mode (default)
DF	Delete a disk file	RCO r;	Copies row "r" to the current row
FIT r;c	Copies the formula in "r;c" to current cell and adjusts it to reflect the new cell position	RDEL	Deletes the current row
FL	Puts number in current cell in floating point format	RESET	System reset (same as pressing RESET button)
FORMAT	Format a disk	RIGHTJ	Right justifies number in current cell (default)
FRE	Freeze — locks a cell — cannot be modified until THAWed	RINS	Inserts a new row
FU	Full screen display mode (default)	SF	Saves current spreadsheet to disk
GR	Builds histogram (in MAP mode)	THAW	Unfreezes a frozen cell
		TF	To the File Manager
		TW	To the Word Processor
		@ 1	Moves the cursor to label "1"

Arithmetic Operators:			
#	Prefix for a numeric constant in formula	DIV r1;c1 TO r2;c2	Divides a series of numbers in a row or column
↑,+, -, *, /	Raise to power, Add, Subtract, Mult, Divide	MAX r1;c1 TO r2;c2	Gives the largest value of the specified row or column
<, >, =, NEQ	Relational operators (neq means ≠)	MIN r1;c1 TO r2;c2	Gives the smallest value of the specified row or column
EXP	Raises e (2.71828183) to a given power	MLT r1;c1 TO r2;c2	Multiplies all values in the given row or column
LOG	Calculates logarithm	SUB r1;c1 TO r2;c2	Subtracts all values in the given row or column
ABS	Absolute value	SUM r1;c1 TO r2;c2	Adds all values in the given row or column
ATN	Arctangent (result in radians)	r;c←v	Transfers the value "v" to the cell "r1;c1"
COS	Cosine	e IFTRUE t	Performs transfer "t" if conditional expression "e" is true
SIN	Sine (argument in radians)	e NOTIFTRUE t	Performs transfer "t" if conditional expression "e" is false
TAN	Tangent		

File Manager	
Commands: (≠ C enters command mode)	
CA	Display disk directory
DS f1;f2;f3	DiskSort — Sorts a disk file by specified fields (up to 3)
HIGHRC n;	Specifies max record for sorts, searches, reviews, selects, reports
NR	Next record — updates current record and display next record
RC n;	Displays record number "n"
RESETLIST	Sets upper record limit set by HIGHRC to maximum number of records in the file
RV n;	Reviews records in a file starting with record "n" (pause with S, stop with Q)
PI	Pick a range of records meeting certain criteria to create a subfile
SR	Search for a record
TC	Move to the Spreadsheet
TF	Display filename, number of records left, and the last record # entered
TW	To the Word Processor

Word Processor commands used with the File Manager			
TF::RC;	Indicates that the document is using File Manager data	FLD n;	Prints the contents of field number "n"
RC n;	Start printer output with record number "n"	#RC	Prints the record number
TTL n;	Prints the name of field number "n"	EOF?	If placed at the end of a document, caused output to continue for all records in the file

6502 Standard Op-Codes Chart

7 6 5 4 3 2 1 0 NV1BDIZC		Mode										1 Byte Cs Flags			3 Bytes 6 Cycles				
Byts	Cycs	Im	Z	Z,X	(,X)	(,Y)	A	A,X	A,Y										
CLC	18																		
CLD	D8																		
CLI	58																		
CLV	B8																		
DEX	CA																		
DEY	88																		
INX	E8																		
INY	C8																		
NOP	EA																		
SEC	38																		
SED	F8																		
SEI	78																		
TAX	AA																		
TAY	A8																		
TSX	BA																		
TXA	8A																		
TXS	9A																		
TYA	98																		
ADC	69																		
AND	29																		
CMP	C9																		
EOR	49																		
LDA	A9																		
ORA	09																		
SBC	E9																		
STA																			

Mode		Mode										1 Byte Cs Flags			3 Bytes 6 Cycles				
Byts	Cycs	Im	Z	Z,X	Z,Y	A	A,X	A,Y											
ASL	0A																		
DEC	C6																		
INC	E6																		
LSR	4A																		
ROL	2A																		
ROR	6A																		

Mode		Mode										2 Bytes 2** Cycles						
Byts	Cycs	Im	Z	Z,X	Z,Y	A	A,X	A,Y										
BIT																		
CPX	E0																	
CPY	C0																	
LDX	A2																	
LDY	A0																	
STX																		
STY																		

Mode		Mode										2 Bytes 2** Cycles						
Byts	Cycs	Im	Z	Z,X	Z,Y	A	A,X	A,Y										
BCC	90																	
BCS	B0																	
BEQ	F0																	
BMI	30																	
BNE	D0																	
BPL	10																	
BVC	50																	
BVS	70																	

* — add 1 for STA or for page boundary crossing

** — add 1 if branch, add 1 if to different page

NMOS 6502 Extra Op-Codes

Mode	Z	Z,X	(,X)	(,Y)	A	A,X	A,Y				
Bytes	2	2	2	2	3	3	3				
Cycles	5	6	8	8	6	7	7	N	V	Z	C
ASLORA, ASO, SLO	07	17	03	13	0F	1F	1B	x	x	x	
ROLAND, RLA, RAN	27	37	23	33	2F	3F	3B	x	x	x	
LSREOR, LSE, SRE	47	57	43	53	4F	5F	5B	x	x	x	
RORADC, RRA	67	77	63	73	6F	7F	7B	x	x	x	
DECCMP, DCM, DCP	C7	D7	C3	D3	CF	DF	DB	x	x	x	
INCSBC, ISC, ISB, INS	E7	F7	E3	F3	EF	FF	FB	x	x	x	
Cycles	3	4	6	5*	4	4*	4*				
STXSTA, AXS, SAX, AAX	87	97†	83		8F			x	x		
LDXLDA, LAX	A7	B7†	A3	B3	AF		BF	x	x		

† — Z,Y mode

Mode	Bs	Cs	NOP (SKB, SKW)
Ac	1	2	1A, 3A, 5A, 7A, DA, FA
Imm	2	2	80, 89, 82, C2, E2
Z	2	3	04, 44, 64
Z,X	2	4	14, 34, 54, 74, D4, F4
A	3	4	0C
A,X	3	4*	1C, 3C, 5C, 7C, DC, FC

Instruction	Mode	Bs	Cs		N	V	Z	C
HLT, JAM, KIL				02, 22, 42, 62 12, 32, 52, 72 92, B2, D2, F2				
SBC	Imm	2	2	EB	x	x	x	x
ANDLSR, ALR, ASR	Imm	2	2	4B	x	x	x	
ANDROR, ARR	Imm	2	2	6B	x	x	x	x
TXAAND, XAA, ANE	Imm	2	2	8B	x	x		
LXA, OAL, ATX, LAX	Imm	2	2	AB	x			
SBX, SAX, AXS	Imm	2	2	CB	x	x	x	
SHS, SAS, TAS	A,Y	3	5	9B				
SHY, SAY, SYA	A,X	3	5	9C				
SHX, XAS, SXA	A,Y	3	5	9E				
SHA, AXA, AHX	A,Y	3	5	9F				
	(,Y)	2	6	93				
ANC, AAC	Imm	2	2	0B, 2B	x	x		
LAS, LAR, LAE	A,Y	3	4*	BB	x	x		