

# CONSOLE SHORTCUTS		
F2	RUN	
F3	LIST	
F4	EDIT	
F10	AUTOSAVE	
F11	XMODEM RECEIVE	
F12	XMODEM SEND	
F1,F5-F9	User-programmable with OPTION	
FNKEY		
CTRL+C	Interrupt running program	

# EDITOR SHORTCUTS		
FUNCTION KEYS		
ESC	Exit editor (ask to save if modified)	
F1	Save and return to prompt	
F2	Save and run	
F3	Find text	
SHIFT+F3	Find next	
F4	Enter mark mode	
F5	Paste from clipboard	
MARK MODE KEYS		
ESC	Exit mark mode	
F4	Cut (copy + delete)	
F5	Copy	
DEL	Delete marked text	

# BASIC COMMANDS		
PROGRAMS, FILES AND DIRECTORIES		
A:	Switch to flash storage	
B:	Switch to SD-card storage	
NEW	Clear memory	
FILES	List files	
LOAD filename\$	Load program	
RUN or *	Start program	
END	End program and return to console	
LIST	Show program in memory	
EDIT	Open built-in editor	
SAVE «file.bas»	Save program to flash/SD	
KILL «file.bas»	Delete file	
MKDIR «name»	Create subdirectory	
CHDIR «name»	Change into directory	
RMDIR «name»	Remove directory	
OTHER		
/* */		
Comment (to the end of the line)		
Multiline comment (must be the first non-space characters at the start of a line and have a space or end-of-line after them)		
PRINT or ?	Write the following value to console	
INPUT [=str-], v1	Prompt user with optional string str, input is saved to variables v1, v2, etc.	
PAUSE t	Delay for t number of milliseconds	

# VARIABLES		
(Max var name length 32 characters)		
name	Float type (default)	
Name!	Double precision float type	
name%	64-bit signed integer type	
name\$	String type	
DIM name(s)=(...)	Global array with size s and content c	
AS STRING	Alternative way to set variable type or function return type	
WITH OPTION EXPLICIT		
DIM name	Global variable	
LOCAL name	Local variable (in sub/function)	
STATIC name	Like LOCAL but value persists between subroutine/function calls	
CONST name	Immutable variable	

# STRING SPECIAL CHARACTERS		
(Requires OPTION ESCAPE at start of program)		
Char	Hex	Description
\a	07	Alert (Beep, Bell)
\b	08	Backspace
\e	1B	Escape character
\f	0C	Formfeed Page Break
\n	0A	Newline (Line Feed)
\r	0D	Carriage Return
\q	22	Quote symbol
\t	09	Horizontal Tab
\v	0B	Vertical Tab
\\	5C	Backslash

# EXPRESSIONS AND OPERATORS	
ARITHMETIC OPERATORS	
^	Exponentiation (e.g. b^2)
*	Multiplication
/\ MOD	Division, integer division, modulus
+	Addition, subtraction
SHIFT OPERATORS	
x << y	Returns x shifted by y bits to the left
x >> y	Returns x shifted by y bits to the right
LOGICAL OPERATORS	
= <>	Equality, Inequality
< >	Less than, greater than
<= >=	Less than / greater than or equal to
AND OR	Conjunction, disjunction
XOR	Exclusive or
NOT	Invert logical value (e.g. NOT a = b)
INV	Bitwise inversion (e.g. a = INV b)

# CONTROL STRUCTURES		
IF expression THEN statement [ ELSE statement ]		
IF expression THEN		
<statements>		
[ELSEIF expression THEN		
<statements>]		
[ELSE		
<statements>]		
ENDIF		
DO		
<statements>		
[EXIT DO]		
LOOP		
DO WHILE expression		
<statements>		
LOOP		
DO		
<statements>		
LOOP UNTIL expression		

# SUBROUTINES AND FUNCTIONS		
Subroutines act like commands and can take arguments		
Functions act like subroutines but can also return values		
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SUB MYSUB arg1, arg2\$, arg3	<statements>	
END SUB		
' Call subroutine, empty arguments allowed		

MYSUB 23, , 55	
FUNCTION FunctionName(arg1) AS FLOAT	
' Return value by assigning to name	
of function	
FunctionName = arg1 + 0.5	
END FUNCTION	
' Call function	
a = FunctionName()	

# GRAPHICS		
CLS [color]	Clear the screen	
RGB(red, green, blue)	Generate 24 bit color number	
COLOR fore [, back]	Set foreground (and optionally background) color	
FONT number, scaling	Sets the active font number and scale (1-15)	
TEXT x, y, string\$	Display string starting at x,y (optional args alignment\$/ C/R + T/M/B), font, scale (1-15), c (color), bc (background color)	
PIXEL x, y [, color]	Draw pixel of color at x,y	
PIXEL(x, y)	Returns color of pixel at x,y	
LINE x1, y1, x2, y2, [lw], c	Draw line from x1,y1 to x2,y2 of color c, with lw line width (lw only for vertical/horizontal lines)	
BOX x, y, w, h, [lw], c, fill	Draw box starting at x,y with w,h dimensions, and lw line width of color c	
RBOX x, y, w, h, r, c, fill	Draw box with rounded corners of radius r	
CIRCLE x, y, r, lw, a, c, fill	Draw circle centered on x,y with radius r, line width lw, and aspect ratio a (float 0-1)	
ARC x, y, r1, [r2], a1, a2 [c]	Draw arc centered on x,y with inner and outer radii r1 and r2, and start and end angles a1 and a2, 0deg at 12 o'clock	
GUI BITMAP x,y,b,w,h,s,...	Draw bits in bitmap b (int or string) starting at x,y, with dimensions w,h (8x8 default), at scale s, with color c and background color bc	
POLYGON n, x%(0), y%(0),...	Draw n number of polygons with x,y pairs in arrays x%(0) and y%(0) with optional border color bc and fill color fc	

# FONTS		
In all fonts the back quote character (60 hex or 96 decimal) has been replaced with the degree symbol (°).		
Font #1 and #4 has extended graphics characters from CHR\$(32) to CHR\$(255) or 20 to FF in hex.		
Number	Size	Description
1	8x12	(Default) All 95 ASCII + 7F-FF hex
2	12x20	All 95 ASCII
3	16x24	All 95 ASCII
4	10x16	All 95 ASCII + 7F-FF hex
5	24x32	All 95 ASCII
6	32x50	0-9 + some symbols
7	6x8	All 95 ASCII
8	4x6	All 95 ASCII

# AUDIO		
Sound can be generated or played from files of the supported sound file types		
FLAC, MOD, and WAV.		
PLAY t, f\$, [, i]	Play an audio file with the file type t (WAV/FLAC/MOD/FILE), named f\$, and call subroutine i once finished playing	
PLAY TONE l, r, d, i	Generate sine waves with frequencies in Hz for left and right channels l and r, with duration d in milliseconds, and call subroutine i once finished playing	
PLAY PAUSE	Temporarily pause current playing file or tone	
PLAY RESUME	Resume playing file or tone that was paused	
PLAY NEXT	Play next WAV/FLAC file in directory	
PLAY PREVIOUS	Play previous WAV/FLAC file in directory	
PLAY STOP	Terminate playing file or tone	
PLAY volume l, r	Set volume (0-100) for left and right channels l and r	

# BUILT IN FUNCTIONS		
STRINGS AND CHARACTERS		
ASC(s\$)	Returns ASCII code for first letter in s\$	
EVAL(s\$)	Evaluates s\$ as a BASIC expression, and returns result	
INSTR([st,] s\$, p\$, size)	Returns position where p\$ occurs in s\$, from position st (first character is position 1), returns 0 if not found, p\$ is regex if size is specified	
LEN(s\$)	Returns number of characters	
LCASE\$(s\$)	Returns s\$ in lower case	
UCASE\$(s\$)	Returns s\$ in upper case	
LEFT\$(s\$, n)	Returns substring with n number of characters from beginning (left) of string s\$	
RIGHT\$(s\$, n)	Returns substring with n number of characters from end (right) of string s\$	
SPACE\$(n)	Returns string of n spaces	
STR\$(n)	Returns number n as string	
STRING\$(n, \$s)	Returns string n characters long of the first character of \$s, or \$s can be replaced with int ASCII character code	

ABS(n)	Returns absolute number n
CINT(n)	Returns n rounded to closest integer
FIX(n)	Returns n truncated to int
VAL(s\$)	Returns numerical value of s\$, invalid number returns 0
<b>OTHER</b>	
CHOICE(c, t, f)	If condition c is true do expression t, else if false to expression f
INKEY\$	Returns and removes first character from console input buffer, or empty string
TIMER	Returns ms since last reset