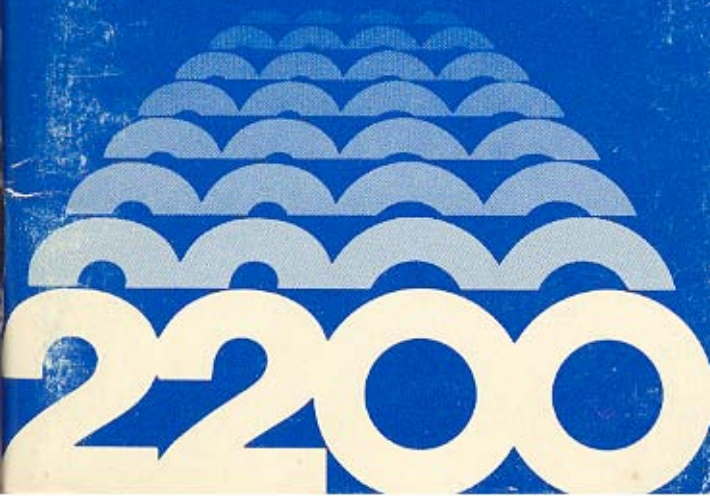
WANG

WANG BASIC-2 LANGUAGE

Pocket Guide



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HOW TO USE THIS POCKET GUIDE

This pocket guide contains the salient features of the BASIC-2 language available on Wang systems. For more information on BASIC-2, refer to the *Wang BASIC-2 Language Reference Manual* (700-4080D).

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alpha	=	alphanumeric
char	=	character
device-address	=	/taa, where t = device-type and aa = physical device-address
dim	=	dimension
elt	=	element
eof	=	end-of-file
exp	=	expression
fcn	=	function
file-number	=	#n, where n is an int or num-var with truncated val of 0-15
h	=	hexadecimal digit (0-9 or A-F)
hex	=	hexadecimal
int	=	integer
image-spec	=	[alpha-var containing image line-num of image statement lit specifying image]
literal	=	literal string
mat	=	matrix
num	=	numeric
O.S.	=	operating system
parm	=	parameter

GLOSSARY

print-elt	=	[expression alpha-variable literal string]
pd	=	packed decimal
ref	=	reference
spec	=	specification
str	=	string
val	=	value
var	=	variable

NUMERIC FUNCTIONS

#PART	Returns the partition number.
#PI	Returns 3.14159265359.
#TERM	Returns terminal number.
ABS(exp)	Finds the absolute val of exp.
ARCCOS(exp)	Finds arccosine of exp.
ARCSIN(exp)	Finds arcsine of exp.
ARCTAN(exp)	Finds arctangent of exp.
ATN(exp)	Finds arctangent of exp.
COS(exp)	Finds cosine of exp.
ERR	Returns error code of most recent error condition.
EXP(exp)	Finds e raised to power of exp (naturnal anti-log of exp).
FIX(exp)	Finds the int portion of exp.
INT(exp)	Finds the greatest int val of exp.
LGT(exp)	Finds common log (base 10) of exp.
LOG(exp)	Finds natural log (base e) of exp.
MAX(exp1,exp2,...expn)	Finds maximum val among exps or num arrays.
MIN(exp1,exp2,...expn)	Finds minimum val among exps or num arrays.
MOD(exp1,exp2)	Finds remainder of exp1/exp2.
RND(exp)	Produces random number between 0 and 1.
ROUND(exp1,exp2)	Finds the value of exp1 rounded to the exp2th decimal place if exp2 > 0, to nearest int if exp2=0, −(exp2)+1 to the left of decimal point if n < 0.

NUMERIC FUNCTIONS

SGN(exp)	Returns 1 if exp is positive, −1 if negative, 0 if zero.
SIN(exp)	Finds sine of exp.
SPACE	Returns amount of free space in user memory.
SPACEK	Returns total user memory size/1024.
SQR(exp)	Finds square root of exp.
TAN(exp)	Finds tangent of exp.

ALPHA FUNCTIONS AND LITERALS

ALL Function

alpha-var = [...] ALL (hh / alpha-var / literal) [...]

Defines a repeating str in which each char is as specified in the fcn.

BIN Function

alpha-var = [...] BIN(exp [,2]) [...]

Where:

0 < = val of exp < 256 if "2" omitted.
0 < = val of exp < 65536 if "2" included.

Converts int val of the exp to a one- or two-byte binary number.

HEX Literal

HEX(hh [hh...])

Permits the use of any eight-bit char code.

ALPHA FUNCTIONS AND LITERALS

LEN Function

LEN (alpha-var)

Determines the number of chars up to the first trailing space in the val of an alpha-var.

NUM Function

NUM (alpha-var)

Determines the number of sequential ASCII chars in the specified alpha-var which represent a legal BASIC number.

POS Function

$$\text{POS}\left(\left[-\right]\left\{\begin{matrix}\text{alpha-var}\\ \text{literal}\end{matrix}\right\}\left\{\begin{matrix}<\\ <=\\ =\\ >=\\ >\\ <>\end{matrix}\right\}\left\{\begin{matrix}\text{alpha-var}\\ \text{literal}\\ \text{hh}\end{matrix}\right\}\right)$$

Returns the position of the first (or last) char which satisfies specified relation.

ALPHA FUNCTIONS AND LITERALS

$PSTAT Function

$PSTAT (exp)

Where:

1 < = val of exp < = number of partitions

Returns an alpha-str describing the current status of the partition specified by the exp.

STR Function

STR(alpha-var [,[starting position][,length]])

Defines a substr of an alpha-var.

VAL Function

$$\text{VAL}\left(\left\{\begin{matrix}\text{alpha-var}\\ \text{literal}\end{matrix}\right\}\ [,2]\right)$$

Converts the binary val of the first (or first two) byte(s) of alpha val to a num val.

ALPHA FUNCTIONS AND LITERALS

VER Function

VER ({ alpha-var, / literal, } fmt-spec)

Where:

fmt-spec = { alpha-var / literal made up of fmt-chars }

fmt-chars = { A = alphabetic (A-Z, a-z) / # = numeric (0-9) / N = alphanumeric (A-Z,a-z,0-9) / H = hexadecimal (0-9, A-F) / P = packed decimal / X = any character / other = only specified character }

Verifies that the val of an alpha-var or literal conforms to fmt.

ALPHA OPERATORS

The following alpha operators, plus &, are only allowed in the assignment statement, as shown.

[LET] alpha-var [alpha-var]...= alpha-exp

alpha-exp = { alpha-operand [& alpha-operand]... / [alpha-operand] [alpha-operator alpha-operand]... }

alpha-operand = { alpha-var / literal / STR function / BIN function / ALL function }

ALPHA OPERATORS

alpha-operator =

ADD	Adds the bin vals of two alpha-exps.
ADDC	Adds the bin vals of two alpha-exps with carry.
AND	Logically ANDs two alpha-exps.
BOOLh	Generalized logical operator.
DAC	Performs decimal addition.
DSC	Performs decimal subtraction.
OR	Logically ORs two alpha-exps.
SUB	Performs binary subtraction.
SUBC	Performs binary subtraction with carry.
XOR	Exclusive ORs two alpha-exps.

& Operator

[LET] alpha-var [alpha-var]... = alpha-exp & alpha-exp

Concatenation operator. Combines two strings into one, putting one after the other, without intervening characters. No other operators can be used in the same expression as &.

STATEMENTS AND COMMANDS

$BREAK

$BREAK [exp | !]

Where:

0 < = exp < 256, default = 1

Relinquishes specified number of units of CPU processing time. ! stops processing.

$CLOSE

$CLOSE [{file-number | device-address} [, {file-number | device-address}]...]

Releases the specified devices previously hogged via the $OPEN statement.

STATEMENTS AND COMMANDS

$FORMAT

$FORMAT alpha-var = field-spec [,field-spec]...

Where:

field-spec = { SKIPxxx (skip field) | Fxxx (ASCII free fmt) | Ixxx[.dd] (ASCII int fmt) | Dxxx[.dd] (IBM display fmt) | Uxxx[.dd] (IBM USASCII-8 fmt) | P+xxx[.dd] (IBM pd fmt) | Pxxx[.dd] (unsigned pd fmt) | Axxx (alpha fmt) }

xxx = field width (0 < xxx < 256)
dd = implied decimal position (0 < = dd < 16)

Provides a mnemonic means of creating a fmt-spec for field form of $PACK and $UNPACK statements.

STATEMENTS AND COMMANDS

$GIO

$GIO [comment] [device-address[,] | file-number,] (arg-1 [,arg-2]) [arg-3 [;arg-3...]]

Where:

comment = A char str, ignored by system, identifying the particular operation (e.g., WRITE, READ, CHECK READY). Only uppercase letters, digits, and spaces.

arg-1 = A customized microcommand sequence which defines the I/O operation:
a) Directly, by a hex lit, alpha lit, or a str of hexdigits, with each four-hexdigit code denoting one two-byte microcommand.
b) Indirectly, by an alpha-var containing the microcommand sequence.

arg-2 = alpha-var whose individual bytes ("registers") are used for storage of special chars and error/status information. Must have at least 10 bytes.

arg-3 = alpha-var used as the data buffer for multiple-char I/O operations. (Not required for single-char I/O operations.)

Used to perform I/O with non-standard devices.

STATEMENTS AND COMMANDS

$IF ON/OFF

$IF {ON / OFF} [device-address, / file-number,] line-number

Determines the ready/busy status of any given device attached to the CPU and branches when ready or busy, depending on the form of the statement.

$INIT

Program statement (pass configuration parms to the O.S.):

$INIT (alpha-1, alpha-2, alpha-3, alpha-4, alpha-5 [, alpha-6])

Immediate Mode statement (reconfigure system):

$INIT password

Where:

alpha = {lit-str / alpha-var}

password = system reconfiguration password, which must be a literal one to eight chars in length.

Passes the system configuration parms to the MVP O.S. to allow partition generation to occur.

STATEMENTS AND COMMANDS

$MSG

$MSG = alpha-exp

Used by Terminal 1 to define a broadcast message to be displayed on each terminal whenever the READY message is normally displayed.

$OPEN

$OPEN [line-number,] {file-number / device-address} [, {file-number / device-address}]...

Used to hog a peripheral for the current partition.

$PACK

$PACK [({F / D} = {alpha-var / literal})] alpha-var FROM {lit / exp / var / array} [, {lit / exp / var / array}] ...

Used to store data in a buffer in specified fmt.

STATEMENTS AND COMMANDS

$PSTAT

$PSTAT = alpha-exp

Sets up user-defined portion of partition status (1st 8 bytes).

$RELEASE PART

$RELEASE PART

Causes a partition to be reassigned from the current controlling terminal to the null terminal (Terminal 0).

$RELEASE TERMINAL

$RELEASE TERMINAL [TO {exp / partition-name} [, STOP]]

Where:

partition-name = {lit-str / alpha-var} (1-8 bytes in length)

Detaches the terminal from the current partition.

STATEMENTS AND COMMANDS

$TRAN

$TRAN (arg-1, arg-2) [mask] [R]

Where:

arg-1 = alpha-var
arg-2 = alpha-var or lit
mask = two hex digits
R = indicates which method is used to translate.

Translates the characters in arg-1 according to the translation table in arg-2.

$UNPACK

$UNPACK [({F / D} = {alpha-var / literal})] alpha-var TO {var / array} [, {var / array}] ...

Extracts data from a buffer and stores the data in vars.

STATEMENTS AND COMMANDS

COM

COM com-elt [,com-elt]...

Where:

$$\text{com-elt} = \left\{\begin{array}{l}\text{num-var}\\ \text{num-array-name (dim1[,dim2])}\\ \text{alpha-array-name (dim1[,dim2])[length]}\\ \text{alpha-var [length]}\end{array}\right\}$$

Define vars which will be used in common by several modules.

COM CLEAR

$$\text{COM CLEAR}\left[\begin{array}{l}\text{var}\\ \text{array-designator}\end{array}\right]$$

Redefines which variables are common.

STATEMENTS AND COMMANDS

CONVERT

1. CONVERT alpha-var TO num-var
2. CONVERT exp TO alpha-var, (fmt)

Where:

$$\text{fmt} = \left\{\begin{array}{l}\left[\begin{array}{l}+\\ -\end{array}\right][\$][\#[,]]...[.][\#]...[\uparrow\uparrow\uparrow\uparrow]\left[\begin{array}{l}+\\ -\\ ++\\ --\end{array}\right]\\ \text{alpha-var containing fmt}\end{array}\right\}$$

Used to convert num val to ASCII alpha char str or vice versa.

DATA

$$\text{DATA}\ \left\{\begin{array}{l}\text{number}\\ \text{literal}\end{array}\right\}\left\{\left[\begin{array}{l},\text{number}\\ ,\text{literal}\end{array}\right]\ ...\right\}$$

Supplies vals to be used by a READ statement.

STATEMENTS AND COMMANDS

DEFFN

DEFFN a(num-var) = exp

Where:

a = identifies the fcn (digit or uppercase letter)

Defines a fcn of one var within a program.

DEFFN' Keyboard Text Entry Definition

DEFFN' int lit [;lit]...

Defines literal to be supplied for text entry when SF key is used.

DEFFN' Subroutine Entry Point

DEFFN' int [(var [,var]...)]

Marks a subroutine that can be called by an SF key or a GOSUB'.

STATEMENTS AND COMMANDS

DEFFN @PART

DEFFN @PART[alpha-var / literal] [FOR terminal# [, terminal#] ...]

Defines the current partition as "global," enabling the program text and global vars in the current partition to be shared with other partitions.

DIM

DIM dim-elt [,dim-elt]...

Where:

dim-elt = { num-var / num-array-name (dim1 [,dim2]) / alpha-array-name (dim1 [,dim2])[length] / alpha-var [length] }

Reserves space for noncommon vars.

END

END

Indicates the end of a BASIC program's job flow.

STATEMENTS AND COMMANDS

ERROR

ERROR statement [:statement]...

Allows the programmer to respond to recoverable errors.

FOR...TO

FOR num-var = exp-1 TO exp-2 [STEP exp]

Initiates a loop ending with a NEXT statement.

GOSUB

GOSUB line-number

Transfers program execution to a subroutine.

GOSUB'

GOSUB' int $\left[\left(\left\{\begin{matrix}\text{literal}\\ \text{alpha-var}\\ \text{num-exp}\end{matrix}\right\} \left[, \left\{\begin{matrix}\text{literal}\\ \text{alpha-var}\\ \text{num-exp}\end{matrix}\right\}\right] ...\right)\right]$

Transfers program execution to a marked subroutine and passes values.

STATEMENTS AND COMMANDS

GOTO

GOTO line-number

Transfers program execution to a designated line.

HEXPACK

HEXPACK alpha-var-1 FROM alpha-var-2

Converts an ASCII char str of hex digits into the binary equivalent.

HEXUNPACK

HEXUNPACK alpha-var-1 TO alpha-var-2

Converts the binary val of alpha-var-1 to a str of ASCII hex chars which represent that val.

STATEMENTS AND COMMANDS

IF...THEN

IF condition THEN { line-number / statement } [:ELSE statement]

Where:

condition = one or more relations separated by logical operators AND, OR, or XOR.

relation = operand { < / < = / = / > = / > / < > } operand

operand = { num-exp / alpha-var / literal }

Executes the statement or branches to the specified line if the condition is true; executes the ELSE statement or goes to the following statement with no action if the condition is false.

STATEMENTS AND COMMANDS

IF END THEN

IF END THEN { line-number / statement } [:ELSE statement]

Tests for an eof record.

Image (%)

%[char str] [fmt-spec] ...

Where:

fmt-spec = [+ / −] [$] [#[,]...] [.] [#...] [↑↑↑↑] [+ / − / ++ / −−]

Used with PRINTUSING to provide a fmt-spec for output.

INPUT

INPUT [lit [,]] var [, var]...

Allows the operator to supply data during program execution.

STATEMENTS AND COMMANDS

KEYIN

1. KEYIN [device-address, / file-number,] alpha-var [,,line-number]
2. KEYIN [device-address, / file-number,] alpha-var,line-number,line-number

Where:

file-number = #n, where n = an int or num-var.

1. Waits to receive a single char from an input device.
2. Gets a character from an input device if one is available.

LET

[LET] num-var [,num-var...]= exp
or
[LET] alpha-var [,alpha-var...]= alpha-exp

Assigns the val of the right hand exp to the var(s) on the left.

LINPUT

LINPUT [literal [,]] [?] [-] alpha-var

Allows input and concurrect editing of an alpha-var directly from the keyboard.

STATEMENTS AND COMMANDS

MAT =

MAT c = a

Replaces each elt of c with the corresponding elt of a.

MAT*

MAT c = a * b

Multiplies mat a by mat b.

MAT( )*

MAT c = (exp) * a

Multiplies each elt of array a by the val of exp.

MAT –

MAT c = a – b

Subtracts array b from array a.

STATEMENTS AND COMMANDS

MAT CON

MAT c = CON [(dim1 [,dim2])]

Sets all elts of array equal to 1 and can redim the array.

MAT COPY

MAT COPY [-] source-alpha-var TO [-] output-alpha-var

Transfers an alpha val to an alpha-receiver one byte at a time.

MAT IDN

MAT c = IDN [(dim1,dim2)]

Causes the array to assume the form of the identity mat.

MAT INPUT

MAT INPUT array-name [(dim1[,dim2]) [length]] [,...]

Allows the user to supply vals for array during program execution.

STATEMENTS AND COMMANDS

MAT INV

MAT c = INV(a) [,[d][,n]]

Where:

d = a num-var with val of the determinant of a.
n = a num-var with val of the normalized determinant of a.

Causes mat c to be replaced by the inverse of mat a.

MAT MERGE

MAT MERGE merge-array[(x[,y])] TO control-var, work-var, loc-array

Where:

merge-array	=	2-dimensional alpha-array. x,y define a field within each elt of the merge-array: x = exp which specifies the starting position of field within each elt. y = exp which specifies length of field in bytes. If exp omitted, field assumed to occupy remainder of elt.
control-var	=	alpha-var used to store merge status information.
work-var	=	alpha-var used by the system as work space.
loc-array	=	locator-array, alpha-array with two-byte elts to store subscripts.

Merges two or more sorted input files into a single sorted output file.

STATEMENTS AND COMMANDS

MAT MOVE

MAT MOVE move-array [,locator-array] [,n] TO receiver-array

Where:

move-array = { move-alpha-array-desig [(x[,y])] | move-num-array-desig }

locator-array = { locator-array-desig | locator-array-elt }

receiver-array = { receiver-alpha-array-elt [(x[,y])] | receiver-num-array-elt | receiver-num-array-desig | receiver-alpha-array-desig [(x[,y])] }

n = a num-var with the maximum number of elts to be moved.

(x,y) = optional field-designators defining a field within each alpha-array-elt such that:

- x = exp specifying the starting position of the field.
- y = exp specifying the number of chars in the field (assumes remainder of elt if not specified).

Transfers data elt by elt from one array to another.

STATEMENTS AND COMMANDS

MAT PRINT

MAT PRINT array-name [{, | ;} array-name] ...[;]

Prints arrays in the order given.

MAT READ

MAT READ array-name [(dim1 [,dim2]) [length]] [,...]

Assigns vals contained in DATA statements to array-vars.

MAT REDIM

MAT REDIM array-name (dim1 [,dim2])[length] [,...]

Redims the specified arrays.

STATEMENTS AND COMMANDS

MAT SEARCH

MAT SEARCH {alpha-var / literal} { < / < = / = / > = / > / < > } {alpha-var / literal} TO pointer-var [STEP s]

Where:

s = num-exp 0 < = s < 65536

Searches first alpha value for strings of the same length as second alpha value which satisfy the given relation. Starting positions of substrings placed in the pointer-var.

STATEMENTS AND COMMANDS

MAT SORT

MAT SORT sort-array TO work-var, locator-array

Where:

sort-array	=	sort-array-desig[(x[,y])]
sort-array-desig	=	alpha-array-designator (e.g., A$()) with data for sorting.
(x,y)	=	optional field-designators which define a field within each elt of the sort-array; x and y are exps such that: 1. x specifies the starting position of the field. 2. y specifies the number of chars in the field (or remainder of elt if y not specified).
work-var	=	alpha-var for temporary storage area.
locator-array	=	alpha-array with elts of length 2 used to contain subscripts of elts in the sort-array in sorted sequence.

Creates a locator-array containing subscripts arranged according to the ascending order of data vals in the sort-array.

MAT TRN

MAT c = TRN(a)

Causes mat c to be replaced by the transpose of a.

STATEMENTS AND COMMANDS

MAT ZER

MAT c = ZER [(dim1 [,dim2])]

Sets all elts of the array equal to zero with optional redim.

NEXT

NEXT counter-var [counter-var]

Where:

counter-var = num-var used as counter in companion FOR statement.

Marks the end of a loop initiated by FOR.

ON GOTO
ON GOSUB

ON {alpha-var / exp} {GOSUB / GOTO} [,[line-num]]...line-num [:ELSE statement]

Computed GOTO or GOSUB statement. Branches depending on the value of the exp or alpha-var.

STATEMENTS AND COMMANDS

ON/SELECT

ON {exp / alpha-var} SELECT select-list [; [select-list]]

Where:

select-list = select-par [,select-par...]

SELECT statement where select-par assignment(s) made depend on the val of an exp or alpha-var.

PACK

PACK (image) alpha-var FROM {num-array / exp}

Where:

image = [+ / −] [#]... [.] [#]... [↑↑↑↑] or alpha-var containing image

Packs num vals into an alpha-var or array.

STATEMENTS AND COMMANDS

PRINT

PRINT [print-elt]$\left[\left\{\begin{matrix},\\;\end{matrix}\right\}\right.$ [print-elt]$\left.\right]$...

Where:

print-elt = $\left\{\begin{matrix}\text{exp}\\\text{alpha-var}\\\text{literal}\\\text{AT()}\\\text{BOX()}\\\text{HEXOF()}\\\text{TAB()}\end{matrix}\right\}$

Sends output to the printer or CRT, as chosen by a SELECT statement.

PRINTUSING

PRINTUSING image-spec $\left[\left\{\begin{matrix},\\;\end{matrix}\right\}\right.$ print-elt$\left.\right]$ ...[;]

Sends formatted output to the printer or CRT.

STATEMENTS AND COMMANDS

PRINTUSING TO

PRINTUSING TO alpha-var, image-spec $\left[\left\{\begin{matrix},\\;\end{matrix}\right\}\right.$ print-elt$\left.\right]$ ...[;]

Stores formatted print output in alpha-var.

READ

READ var [,var]...

Assigns elts listed in DATA statement to vars.

REM

REM [%] [ ] text string

Where:

text string = any chars except colon

Denotes comment to be ignored by system.

STATEMENTS AND COMMANDS

RESTORE

RESTORE [LINE line-num [exp] / exp]

Where:

1 < = exp < 65536

Resets pointer in DATA statement back to specified data value to allow reuse by READ statement.

RETURN

RETURN

Indicates end of subroutine and causes execution to resume following last-executed GOSUB or GOSUB'.

RETURN CLEAR

RETURN CLEAR [ALL]

Used in subroutines to clear subroutine return address information from memory.
Execution continues with following statement.

STATEMENTS AND COMMANDS

ROTATE

ROTATE [C] (alpha-var, exp)

Where:

−8 < = exp < 9

Rotates the val of the alpha-var or of each char the specified number of bits.

SELECT

This statement contains a number of parts, described separately below.

SELECT {R / D / G}

Select radian, degree, or grad measure for trig functions.

SELECT ERROR [> error code]

Selects which math error causes program termination.

SELECT P [digit]

Select pause after console output.

STATEMENTS AND COMMANDS

SELECT LINE exp

Selects number of lines on the CRT.

SELECT { CI device-address
INPUT device-address
CO device-address [(width)]
PRINT device-address [(width)]
LIST device-address [(width)]
PLOT device-address
TAPE device-address
DISK device-address
file-number device-address }

Selects devices.

SELECT { ON [device-address [GOSUB line-number]]
ON CLEAR
OFF [device-address [GOSUB line-number]] }

Controls interrupts.

STATEMENTS AND COMMANDS

SELECT @PART

SELECT [...] @PART partition-name [...]

Where:

partition-name = { alpha-var / literal } (1-8 bytes in length)

Specifies a global partition whose text and/or global vars are to be referenced by the partition in which SELECT @PART is executed (the "calling" partition).

STOP

STOP [literal] [#]

Halts program execution until CONTINUE or HALT/STEP is keyed or a DEFFN' subroutine is invoked through an SF key being pressed.

UNPACK

UNPACK (image) alpha-var TO num-var [,num-var]...

Where:

image = [±] [#...] [.] [#...] [↑↑↑↑] or alpha-var containing image

Unpacks num data packed by a PACK statement.

COMMANDS AND KEYS

CLEAR

CLEAR [P [line-number] [,[line-number]] / V / N]

Clears all program text and vars. With P clears only program text. With V clears only vars. With N clears only non-com vars.

CONTINUE Key

CONTINUE

Continues program execution after a program has been halted by a STOP statement or by keying HALT/STEP.

HALT/STEP Key

HALT/STEP Key

HALTs program execution or a listing operation or STEPs through program execution statement by statement.

COMMANDS AND KEYS

LIST

LIST [S] [title] [D] [start line-number] [,[end line-number]]

Where:

title = { literal / alpha-var }

Lists the specified portion of a program.

LIST#

LIST [S] [title] # [line-number] [, [line-number]]

Where:

title = { literal / alpha-var }

Produces cross-ref listing of all refs to the specified line-numbers within the current program.

COMMANDS AND KEYS

LIST'

LIST [S] [title] ' [int]

Where:

title = { literal / alpha-var }

Creates a cross-ref listing for specified DEFFN' subroutines in the current program.

LIST DT

LIST [S] [title] DT

Where:

title = { literal / alpha-var }

Displays the contents of the Device Table in hex.

COMMANDS AND KEYS

LIST I

LIST [S] [title] I

Where:

title = { literal / alpha-var }

Lists the current contents of the Interrupt Table.

LIST T

LIST [S] [title] T { literal / alpha-var } [,literal / ,alpha-var] ...

Where:

title = { literal / alpha-var }

Generates a cross-ref listing of all program lines that contain a specified str.

COMMANDS AND KEYS

LIST V

LIST [S] [title] V [var-name] [,[var-name]]

Where:

var-name = { letter [digit] for num-scalars | letter [digit]$ for alpha-scalars | letter [digit](for num-arrays | letter [digit]$(for alpha-arrays }

title = { alpha-var | literal }

Produces cross-ref listing of the variables given for the current program.

RENUMBER

RENUMBER [L#1] [-L#2] [TO L#3] [STEP s]

Where:

L#1 = first line-number to be renumbered
L#2 = last line-number to be renumbered
L#3 = new starting line-number
s = STEP val

Renumbers a program in memory.

COMMANDS AND KEYS

RESET Key

RESET

Immediately stops program listing or execution, clears CRT screen, resets I/O devices, and returns control to the keyboard.

RUN

RUN [line-number [,statement-number]]

Resolves and initiates execution of the user's program.

Special Function Key

Special Function Key

Provides access from the keyboard to program subroutines or text entry definitions, and edit mode commands.

TRACE

TRACE [OFF]

Produces a trace of execution of a program.

DISK STATEMENTS AND COMMANDS

$FORMAT DISK

$FORMAT DISK platter { file # / disk-address }

Formats given disk platter.

COPY

COPY platter [file#, / addr,] [[(start,] end)] TO platter [file#, / addr,] [(sector)]

Where:

start = The address of the first sector to be copied.
end = The address of the last sector to be copied.
sector = The starting sector address on the destination platter.

Copies information from one platter to another.

DISK STATEMENTS AND COMMANDS

DATALOAD BA

DATALOAD BA platter [file#, / address,] (sector[,[var]])alpha-array

Where:

sector = Exp or alpha-var to specify the sector address of record to be read.
var = Return var which is set to the address of the next sequential sector.

Used to load one sector of unformatted data from the disk.

DATALOAD DA

DATALOAD DA platter [file#, / addr,] (sector[,[var]])arg-list

Where:

sector = Exp or alpha-var to specify starting sector address of record to be loaded.
var = Return var set to the address of the next available sector.

arg-list = { var / array } [, { var / array }] ...

Reads one or more logical records from disk.

DISK STATEMENTS AND COMMANDS

DATALOAD DC

DATALOAD DC [file#,] arg-list

Where:

arg-list = {var / array} [, { var / array }] ...

Reads records from a cataloged disk file and assigns vals read to arg-list.

DATALOAD DC OPEN

DATALOAD DC OPEN platter [file#] { file-name / TEMP[,]start, end }

Where:

TEMP = A temporary work file which is to be reopened.
start = Exp whose truncated val is the start sector address of TEMP.
end = Exp whose truncated val is the end sector address of TEMP.

Used to open previously cataloged files.

DISK STATEMENTS AND COMMANDS

DATASAVE BA

DATASAVE BA platter [$] [file#, / addr,] (sector[,[var]]) { lit / alpha-var }

Where:

sector = Exp or alpha var whose truncated val specifies the sector address at which the record is to be saved.
var = Return var set to the address of the next sequential sector.
$ = Perform verification test.

Used to save data onto disk with no control bytes.

DISK STATEMENTS AND COMMANDS

DATASAVE DA

DATASAVE DA platter [$] [file#, / addr,] (sector[,[var]]) {END / arg-list}

Where:

sector = Exp or alpha var to specify the starting sector address of the record to be saved.
var = Return var which is set to the address of the next available sector.
$ = Perform verification test.

arg-list = {var / lit / exp / array} , [{var / lit / exp / array}]...

Used to save data or trailer record (END) onto disk in Absolute Sector Addressing Mode.

DISK STATEMENTS AND COMMANDS

DATASAVE DC

DATASAVE DC [$] [file #,] {END / arg-list}

Where:

arg-list = {var / lit / exp / array} [, {var / lit / exp / array}]...

END = Write a data trailer (eof) record.
$ = Perform verification test.

Writes one logical record to disk.

DATASAVE DC CLOSE

DATASAVE DC CLOSE [file# / ALL]

Where:

ALL = Close all currently open files.

Closes cataloged data files.

DISK STATEMENTS AND COMMANDS

DATASAVE DC OPEN

DATASAVE DC OPEN platter [$][file#,] { (old-name) new-name / space / TEMP[,] start, end }

Where:

old	=	Name of existing scratched program or data file cataloged on disk platter.
space	=	Exp with number of sectors to be reserved for new file.
TEMP	=	A temporary work file to be established.
start	=	Exp whose truncated val is the starting sector address of TEMP.
end	=	Exp whose truncated val is the ending sector address of TEMP.
$	=	Perform verification test.

Reserves space for cataloged files in the Catalog Area (CA) or for temporary work files outside the CA, and enters system information in Catalog Index. Also used to reuse CA space occupied by scratched files.

DISK STATEMENTS AND COMMANDS

DBACKSPACE

DBACKSPACE [file#,] { BEG / expr[S] }

Where:

BEG	=	Go to beginning of file.
expr	=	Exp truncated to equal number of records or sectors to be backspaced.
S	=	Backspace absolute number of sectors.

Used to backspace over logical records or sectors.

DSKIP

DSKIP [file #,] { END / expr[S] }

Where:

END	=	Skip to current eof.
expr	=	Exp truncated to equal number of records or sectors to be skipped.
S	=	Absolute number of sectors to be skipped.

Used to skip over logical records or sectors.

LIMITS

Form 1: LIMITS platter [file#,] name, start, end, used [,status]
Form 2: LIMITS platter [file#,] start, end, current

Where:

name = File name.
start = Num var to receive the starting sector address.
end = Num var to receive the ending sector address.
used = Num var to receive the number of sectors used by the file.
current = Num var to receive the current sector address.
status = Num var to receive val indicating the status of the file.

Obtains the beginning, ending sector address, and current sector address or number of sectors used, and determines file status for a cataloged file (Form 1) or for a currently open file (Form 2).

LIST DC

LIST[S][title]DC platter [file# / addr]

Where:

S = Indicates the Disk Catalog Index is to be listed in steps.

title = {lit-str / alpha-var}

Displays or prints Catalog Index.

LOAD (Command)

LOAD [DC] platter [file#, / addr,] file name

Loads programs or program segments from disk.

DISK STATEMENTS AND COMMANDS

LOAD (Statement)

LOAD[DC]platter [file#, / addr] { file name / <exp>alpha-var } [line-1][,[line-2]][BEG begin]

Where:

exp = Number of files to be loaded from disk.
alpha = Names of the files to be loaded. Names are 8 chars (padded with trailing spaces if necessary), stored sequentially in the alpha-var. The alpha-var must be a common var.
line 1 = First line to be deleted from the program currently in memory.
line 2 = Last line to be deleted.
begin = Line number of the program where execution is to begin.

Loads a program or program segment from disk and executes it.

DISK STATEMENTS AND COMMANDS

LOAD DA (Command)

LOAD DA platter [file#, / addr,] (sector[,[var]])

Where:

sector = Exp or alpha-var which has address of the program header record and specifies the starting sector address of program to be loaded.
var = Return var set to the address of the next available sector.

Loads programs or program segments from disk in Absolute Sector Addressing mode.

DISK STATEMENTS AND COMMANDS

LOAD DA (Statement)

LOAD DA platter [file#, / addr,] (sector[,[var]])[line-1][,[line-2]][BEG begin]

Where:

sector = Exp or alpha-var which has the address of the program header record and specifies the starting sector address of the program to be loaded.
line-1 = First line to be deleted from program currently in memory before loading new program. After loading, execution continues automatically starting at this line-number unless a "begin" parm is specified. An error results if there is no line with this number in the new program (and "begin" is not specified).
line-2 = The number of the last text line to be deleted from the program currently in memory.
begin = The line-number of the program where execution is to begin.
var = Return var set to address of the next available sector. Must be common.

Loads a program from a specified location on disk.

DISK STATEMENTS AND COMMANDS

LOAD RUN (Command)

LOAD RUN [platter] [file#, / disk-addr,] [file-name]

Where:

F = The default platter.
name = Cataloged program file. The default is "START".

Loads a program from disk and executes it.

MOVE

Form 1:
MOVE platter [file#, / addr,] TO platter [file#, / addr,]

Copies all active files to specified platter.

Form 2:
MOVE platter [file#, / addr,] name TO platter [addr, / file#,] [([space / name])]

Where:

space = Extra sectors to be reserved.

Copies one file to specified platter.

DISK STATEMENTS AND COMMANDS

MOVE END

MOVE END platter [file# / disk-address] = exp

Used to increase or decrease the size of the Catalog Area on a platter.

SAVE

SAVE[DC] [<S> / <SR>] platter [$] [file#, / addr,] [([space / old])] [P / !] new [start][,[end]]

Where:

<S>	=	Unnecessary spaces will be deleted.
<SR>	=	Both spaces and remarks will be deleted.
space	=	Extra sectors to reserve.
old	=	The name of a currently scratched file to be overwritten.
!	=	Protect (scramble) the file.
P	=	Set the protection bit on the file.
new	=	The name of the program.
start	=	The first line of program text to be saved.
end	=	The last line of program text to be saved.
$	=	Performs verification test.

Causes a program or portion thereof to be stored on disk.

DISK STATEMENTS AND COMMANDS

SAVE DA

SAVE DA [<S> / <SR>] platter [$] [file#, / addr,][! / P] (sector[,[var]])[start][,[end]]

Where:

<S>	=	Delete unnecessary spaces.
<SR>	=	Delete spaces and REMs.
!	=	Protect (scramble).
P	=	Set the protection bit.
sector	=	Starting sector address of the program to be saved.
var	=	Return var which is set to the address of the next available sector.
start	=	The number of the first program line to be saved.
end	=	The number of the last program line to be saved.
$	=	Performs verification test.

Used to save programs on disk beginning at a specified location.

DISK STATEMENTS AND COMMANDS

SCRATCH

SCRATCH platter [file#, / addr,] name [,name]...

Where:

name = The file to be scratched from the catalog.

Sets status of named files to be scratched.

SCRATCH DISK

SCRATCH DISK platter [file#, / addr,] [LS=exp-1,] END=exp-2

Where:

LS = The number of sectors for the Catalog Index.
exp-1 = Exp from 1 to 255. If the "LS" parm is not included, default is 24 sectors.
END = The last (highest) sector address in the Catalog Area.
exp-2 = Exp whose truncated val must be less than or equal to the last (highest) sector address on the disk.

Initializes a disk platter, reserving space for the Catalog Index and Catalog Area.

DISK STATEMENTS AND COMMANDS

VERIFY

VERIFY platter [file#, / addr,] [(start, end)][num]

Where:

start = Address of the first sector to be verified.
end = Address of the last sector to be verified.
num = Num var which receives the address +1 of the first sector that did not verify (equal to zero if no errors).

Reads and checks all sectors.

BASIC-2 ERROR CODES (SUMMARY)

Miscellaneous Errors

A01 Memory Overflow (Text <—> Variable Table)
A02 Memory Overflow (Text <—> Value Stack)
A03 Memory Overflow (LISTDC, MOVE, COPY)
A04 Stack Overflow (Operator Stack)
A05 Program Line Too Long
A06 Program Protected
A07 Illegal Immediate Mode Statement
A08 Statement Not Legal Here
A09 Program Not Resolved

Syntax Errors

S10 Missing Left Parenthesis
S11 Missing Right Parenthesis
S12 Missing Equal Sign
S13 Missing Comma
S14 Missing Asterisk
S15 Missing ">" Character
S16 Missing Letter
S17 Missing Hex Digit

BASIC-2 ERROR CODES (SUMMARY)

S18 Missing Relational Operator
S19 Missing Required Word
S20 Expected End of Statement
S21 Missing Line-Number
S22 Illegal PLOT Argument
S23 Invalid Literal String
S24 Illegal Expression or Missing Variable
S25 Missing Numeric-Scalar-Variable
S26 Missing Array-Variable
S27 Missing Numeric-Array
S28 Missing Alpha-Array
S29 Missing Alpha-Variable

Program Errors

P32 Start > End
P33 Line-Number Conflict
P34 Illegal Value
P35 No Program in Memory
P36 Undefined Line-Number or CONTINUE Illegal
P37 Undefined Marked Subroutine
P38 Undefined FN Function

BASIC-2 ERROR CODES (SUMMARY)

P39 FN's Nested Too Deep
P40 No Corresponding FOR for NEXT Statement
P41 RETURN Without GOSUB
P42 Illegal Image
P43 Illegal Matrix Operand
P44 Matrix Not Square
P45 Operand Dimensions Not Compatible
P46 Illegal Microcommand
P47 Missing Buffer Variable
P48 Illegal Device Specification (Recoverable)
P49 Interrupt Table Full
P50 Illegal Array Dimensions or Variable Length
P51 Variable or Value Too Short
P52 Variable or Value Too Long
P53 Noncommon Variables Already Defined
P54 Common Variable Required
P55 Undefined Variable (Program Not Resolved)
P56 Illegal Subscripts
P57 Illegal STR Arguments
P58 Illegal Field/Delimiter Specification
P59 Illegal Redimension

RECOVERABLE ERRORS

Computational Errors

C60 Underflow
C61 Overflow
C62 Division by Zero
C63 Zero Divided by Zero or Zero ↑ Zero
C64 Zero Raised to Negative Power
C65 Negative Number Raised to Noninteger Power
C66 Square Root of Negative Value
C67 LOG of Zero
C68 LOG of Negative Value
C69 Argument Too Large

Execution Errors

X70 Insufficient Data
X71 Value Exceeds Format
X72 Singular Matrix
X73 Illegal INPUT Data
X74 Wrong Variable Type
X75 Illegal Number
X76 Buffer Exceeded
X77 Invalid Partition Reference

RECOVERABLE ERRORS

Disk Errors

D80 File Not Open
D81 File Full
D82 File Not in Catalog
D83 File Already Cataloged
D84 File Not Scratched
D85 Index Full
D86 Catalog End Error
D87 No End-of-File
D88 Wrong Record Type
D89 Sector Address Beyond End-of-File

I/O Errors

I90 Disk Hardware Error
I91 Disk Hardware Error
I92 Timeout Error
I93 Format Error
I94 Format Key Engaged
I95 Device Error
I96 Data Error
I97 Longitudinal Redundancy Check Error
I98 Illegal Sector Address or Platter Not Mounted
I99 Read-After-Write Error

NOTES

NOTES

WANG LABORATORIES, INC.
One Industrial Avenue, Lowell, Massachusetts 01851
Tel. (617) 459-5000, TWX 710-343-6769, Telex 94-7421

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