CONTROL GRAPHICS KEYBOARD

Programmed
Inquiry
Learning
Or
Teaching
with "Turtle" Graphics

Pocket Reference Card

ATARI® A Warner Communications Company
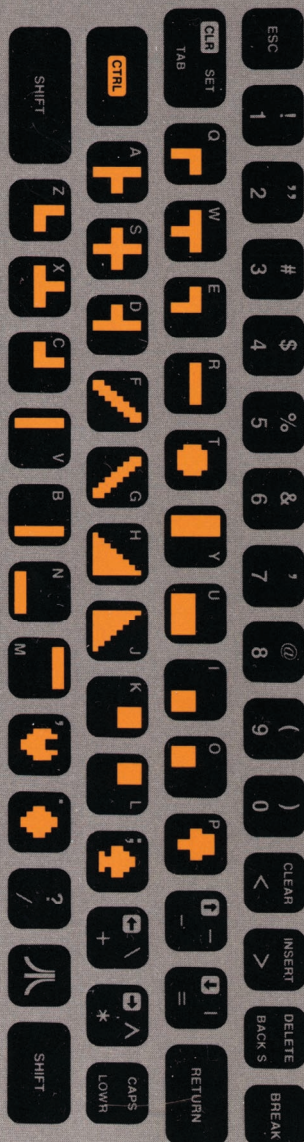
COMMANDS

Command	Function	Example	Result
T:	Type to screen	T:THIS IS SOME TEXT	Prints THIS IS SOME TEXT on the screen.
		T:#A or T:$NAME	Prints contents of numeric variable (#A) or string variable ($NAME) on the screen.
A:	Accept from keyboard	A:	Places keystrokes in the accept buffer.
		A:#B or A:$FOOD	Places keystrokes in the accept buffer and in the variable #B or $FOOD.
M:	Match command	M: YES, YUP, SURE	Checks each entry in the list against contents of accept buffer and sets Y and N flags. (See CONDITIONALS.)
R:	Remark	R: LOOP BEGINS HERE	Remark for user only—no effect on program.
J:	Jump command	J: *JUMPHERE	Jumps execution to the label *JUMPHERE.
E:	Ends program	E:	Terminates program execution.
C:	Compute command	C: #A = #A + #B	Performs computation shown to right of colon (add #B to #A and put the result in #A).
U:	Use module	U: *NEXTSET	Uses the module *NEXTSET and returns at the end of that module.
SO:	Sound command	SO: #A,#B,#C,#D	Generates up to four musical tones (tones increase by ½ step per number).
		SO: 13	Generates Middle C.
PA:	Pause command	PA: 5	Stops PILOT execution for 5/60 second.
JM:	Jump on match	JM: *HERE, *START, *END	Jumps to label corresponding to match field.
MS:	Match to make strings	MS: IS, ARE, WILL	Splits contents of buffer into $LEFT, $MATCH, and $RIGHT.
POS:	Position text cursor	POS: 12,15	Positions cursor at 12th column and 15th row.
VNEW:	Clears variables	VNEW:	Clears all variables.
		VNEW: # or VNEW: $	Clears all numeric or all string variables.
CALL:	Calls machine language program	CALL: 4096	PILOT jumps to execute machine language program at decimal location 4096.

CONDITIONALS

The execution of any PILOT command can be made conditional on the presence or absence of a string match or on the truth of a numeric relationship.

String Match Conditions

The conditional variables Y (YES) and N (NO) are set by the result of a match (M:) command.

Numeric Conditions

Relational operators are used to compare two numbers or variables. If the relation is true, the accompanying PILOT command will be executed.

Examples:

    TY: GOOD GUESS   (prints GOOD GUESS if result of preceding match command was true).

    JN: *RESTART   (jumps to *RESTART if result of preceding match command was false).

    E (#A < 7): (ends program execution if #A is less than 7).

GRAPHICS COMMANDS

Command	Function	Example	Result
CLEAR	Clear screen	GR: CLEAR	Clears text and graphics window.
QUIT	Return to text mode	GR: QUIT	Clears graphics window and returns to text-only mode.
PEN	Sets pen color to red, yellow, blue, or erase (background color) or lifts pen	GR: PEN RED	Sets pen color to red.
		GR: PEN UP	Lifts pen.
GOTO	Cursor move (absolute)	GR: GOTO 0,0	Moves cursor to 0,0 (center of screen).
DRAWTO	Draw line (absolute)	GR: DRAWTO 10,15	Draws line from previous cursor position to coordinate 10,15.
TURNTO	Turn cursor heading (absolute)	GR: TURNTO 0	Turns cursor to 0 degrees (straight up).
FILLTO	Fill (absolute)	GR: FILLTO -6,5	Draws line from previous cursor position to -6,5 and fills to the right with color.
GO	Cursor move (relative)	GR: GO 25	Moves cursor 25 units in present heading.
DRAW	Draws line (relative)	GR: DRAW 17	Draws 17 units in present heading.
TURN	Turns cursor (relative)	GR: TURN 48	Turns cursor heading by 48 degrees to the right.
FILL	Fill (relative)	GR: FILL 30	Draws line 30 units along present heading and fills to the right with color.

EXECUTIVE AND INPUT/OUTPUT COMMANDS

LIST	Lists program statements on screen.
RUN	Starts executing program at first statement.
SAVE	Saves program to cassette (SAVE C:) or to disk (SAVE D:filename). To list a program on a printer, type SAVE P:.
DOS	Enters the Disk Operating System command menu.
NEW	Erases all PILOT program statements in memory.
LOAD	Loads a program from cassette (LOAD C:) or disk (LOAD D:filename) without erasing resident program list.
AUTO	Enters auto numbering made for writing programs.
REN	Renumbers program lines.
TAPE: ON	Turns cassette motor on.
TAPE: OFF	Turns cassette motor off.
TSYNC:	Allows PILOT to synchronize specially prepared tapes.
READ	Reads data from attached device to the accept buffer (**Example:** READ: C, $DATA reads from cassette to buffer and variable $DATA).
WRITE	Writes data to an attached device (**Example:** WRITE: R1, HELLO THERE writes HELLO THERE to RS-232 port R1).
CLOSE	Closes device previously opened with READ or WRITE (**Example:** CLOSE:C).

VARIABLE TYPES

Numeric variables
#A to #Z

Integer variables can contain a number from -32768 to 32767.

String variables
$ followed by
alphanumeric name
(example: $FOOD)

String variables can contain literal strings of up to 255 characters.

Machine variables
% followed by one or
two characters
(example:%Y)

Machine variables contain the status of light pen, joystick, cursor location, and other machine parameters.

Pointer variables
@ followed by a
number or by B and a
number (example:
@B77)

Pointer variables refer to the contents of bytes (B) or words whose decimal address in memory is given by the numeric portion of the variable name.

ARITHMETIC OPERATORS

+ Addition

− Subtraction

* Multiplication

/ Division

\ Modulo operation (remainder after division)

? Random number generation (generates random number between -32768 and 32767).

RELATIONAL OPERATORS

= Equal

> Greater than

< Less than

>= Greater or equal

<= Less or equal

<> Not equal