commodore

The PET™ Personal Computer

Inventory Control

Black Jack

Moon Landing and Scientific Calculations

Teaching Trigonometry

Amortization Chart

Bar Graphs and Statistics

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software and documentation

The inclusion of 8K of extended BASIC in ROM means there are a large number of programs that can readily be used with the PET Commodore but is own Master Library which is being added to on a monthly basis. These are issued on cassettes and include Scientific, Financial, Business, Educational and Games packages. Personalised programming is not undertaken by Commodore but is available from many Authorised Dealers, software houses and freelance programmers. Commodore's BASIC is comprehensive and easily learnt for writing one's own programs. Over 200 programs are now available from Commodore and other software suppliers for the PET. Most popular program titles for PET include: Stock Control, Statistics, Payroll, Strathclyde Basic Course, Chess, Lunar Landing, Education packs. An introductory and a Users

Handbook are included as standard documentation. Also available are the highly praised hardware and Programming manuals on our own MOS Technology 6500 microprocessor — used at the heart of both the PET computer and our KIM microprocessor system. These will aid the more sophisticated users. Highly recommended is "The Strathclyde Basic Course" — an extremely comprehensive work book and instructional tapes.

to teach newcomers Basic programming.

The U.K. PET Users Club also produces regular newsletters covering such topics as applications, software hints and program information. The rapid acceptance and acclaim of PET by professionals means it has become an industry standard ensuring even further software availability from many external sources.

some application areas for PET

For the Commercial User

The Commodore PET offers the commercial user for the first time a really cost effective business computer for use in:

Statistics,
Stock Control,
Payroll,
Invoicing, etc.

For the Scientist and the Laboratory

The PET has a comprehensive set of scientific functions making it a far superior tool to the best

programmable calculators. The IEEE-488 interface (HP-IB) is directly compatible with hundreds of laboratory instruments such as DVM's, synthesisers, auto analysers, data loggers, etc. The PET also has a general purpose 8 bit plus 2 control bit I/O port for general interfacing. This last feature makes the PET an ideal industrial and commercial controller. Direct access to machine code allows special I/O routines to be easily written.

For the Educational World

The PET's applications in the educational field are numerous. The extensive BASIC language and the file by name cassette program storage facilities make the PET an ideal tool for teaching

computer programming. Programs can be written to "tutor" the user (pupil) in almost any discipline, including BASIC itself. And, of course, the PET can be used to take care of school records, exam results, attendance figures, etc.

In the Home

As well as being used for all the previous applications the PET computer is an extremely creative and instructive learning medium of the future for young and old alike. There are also large numbers of entertainment programs available including chess and space games.

Commodore's policy is one of continuous improvement and the right to change models, specifications and prices at anytime without notice is reserved.

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commodore basic

The fastest full floating-point BASIC implemented on a micro-computer. Allows communication directly from BASIC to IEEE-488 standard devices, cassettes, display, and keyboard built into PET. Accurately built-in clock is settable and readable from BASIC in decimal or string value. Full command set, including:

Basic Arithmetic Statements
$+ - * / \uparrow < > =$

Standard Dartmouth BASIC Statements
LET	READ	PRINT	DATA IF
THEN	FOR	NEXT	DIM END
GOTO			

Extended BASIC Statements
RESTORE	REM	GET	GOSUB	DEF
RETURN	STOP	STEP	INPUT	FN
ON GOTO		ON GOSUB		

Scientific Functions
SGN INT ABS SQR RND SIN
COS TAN ATN LOG EXP π

Logical Operators
AND OR NOT

Operation Commands
RUN NEW CLR LIST CONT FRE

Formating Functions
TAB POS SPC

Machine Level Statements
PEEK POKE
Allow the user to examine and store at specific memory locations.

USR SYS
Link BASIC to machine language subroutines with parameter passing or developemental subsystems.

WAIT
Monitors status of a memory location such as an I/O port until specified bits are set.

The screen writing rate is 1000 characters per second.

String Functions
LEFT$ RIGHT$ MID$
Returns substrings (of specified length and

position) of string acted upon.

CHR$ ASC
CHR$ returns a character, given a numeric code. ASC returns a numeric code corresponding to a character.

LEN
Returns the length of a string.

VAL STR$
Convert decimal values to numeric strings an vice-versa.

Extended I/O Statements
OPEN CLOSE
Control association of a logical file number to a physical device, and optionally, a file on the device.

SAVE LOAD VERIFY
Store and retrieve a program, with optional file name, on a physical device. Load allows for program overlay. VERIFY compares contents of memory to stored program.

PRINT# INPUT# GET#
Allow communication with logical device numbers other than keyboard or screen. GET# inputs one character.

CMD
Permits communication with multiple devices simultaneously.

Example of I/O Operations
```
Tape-to-tape file copy
10 OPEN 5,1,0, "OLD FILE"
15 POKE 243, 58: POKE 244, 3
20 OPEN 6,2,1, "NEW FILE"
30 INPUT #5, A$
40 IF (ST) AND 64 GO TO 70
50 PRINT #6, A$
60 GO TO 30
70 CLOSE 5
80 CLOSE 6
```
Program locates "OLD FILE" on tape #1, writes file header for "NEW FILE" on tape #2, then copies tape #1 to #2 until it encounters an EOF on #1, and then writes an EOF on #2.

Variables
TYPES	Real	Integer (%) String ($)
NAMES		Variable names are uniquely given as a letter or a letter followed by a letter or a digit

Special variables
TI	TI$	Time of day
ST		Status word for I/O operations

The Self Contained PETS

The self contained PET models 2001-4 and 8 come complete with TV screen, keyboard and built-in cassette deck as well as the computer circuitry. They are simply plugged into any 13 amp mains and no special knowledge is needed for running standard programs — over 200 of which are available on cassettes (please see separate software bulletins)

Specifications:

Dimensions: 16½" wide by 18½" deep, 14" overall height.

Weight: 44lbs

MEMORY

Random Access Memory 4K or 8K as per model number Expandable to 32K bytes

Read Only Memory (operating system resident in the computer): 13K bytes
8K BASIC interpreter
4K — Operating system
1K — Diagnostic routine

VIDEO DISPLAY UNIT

9" enclosed, black and white, high-resolution CRT
1000 character display, arranged 40 columns by 25 lines
8 x 8 dot matrix for characters and continuous graphics
Automatic scrolling from bottom of screen
Winking cursor with full motion control
Reverse field on all characters (white on black or black on white

64 standard ASCII characters; 64 graphic characters. Lower case letters are available by use of a POKE command

KEYBOARD

9½" wide x 3" deep; 73 keys
All 64 ASCII characters available without shift. Calculator style numeric key pad
All 64 graphic and reverse field characters accessible from keyboard (with shift)
Screen Control: Clear and erase
Editing: Character insertion and deletion

CASSETTE STORAGE

Fast Commodore designed redundant-recording scheme, assuring reliable data recovery
Cassette drive modified by Commodore for much higher reliability of recording and record retention
High noise immunity, error detection, and correction
Uses standard audio cassette tapes
Tape files, named

OPERATING SYSTEM

Machine language accessibility
File management in operating system

Cursor control, reverse field, and graphics under simple BASIC control
Cassette file management from BASIC
Pseudo random number Generator

INPUT/OUTPUT

All other I/O supported through IEEE-488 instrument interface which allows for multiple intelligent peripherals
All I/O automatically managed by operating system software
Single character I/O with GET command
Easy screen line-edit capability
Flexible I/O structure allows for BASIC expansion with intelligent peripherals
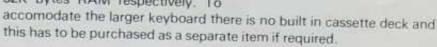
BASIC INTERPRETER

Expanded 8K BASIC; 20% faster than most other 8K BASICS
Upward expansion from current popular BASIC language
Strings, integers and multiple dimension arrays
10 significant digits; floating point numbers
Direct memory access through PEEK and POKE commands

The Big Memory PETS

The Big Memory PETS contain the the same main features as for the 2001-4 and 2001-8 models except that they incorporate a full typewriter size keyboard and have larger internal memory of 16K and 32K bytes RAM respectively. To accomodate the larger keyboard there is no built in cassette deck and this has to be purchased as a separate item if required.

External Cassette

The C2N Cassette is an economical data storage and retrieval device for use with the PET™ as a single unit for loading and saving programs. Twin cassettes enable file handling and updating. It uses standard audio cassette tapes available in stores everywhere. The C2N features a Double Save technique at different audio frequencies ensuring error correction. The verify command feature provides correct saving of programs. The C2N Cassette is the perfect low cost device for a variety of programming functions.

Specifications:

Fast Commodore designed redundant-recording scheme; assuring reliable data recovery;
Cassette drive modified by Commodore for much higher reliability of recording and record retention.
High noise immunity, error detection, and correction;
Tape files; named.

Commands:
LOAD	ie. LOAD "NAME", 2
SAVE	ie. SAVE "NAME", 1, 1
VERIFY	ie. VERIFY "NAME" 2
OPEN	ie. OPEN 1, 2, 0, "NAME"
CLOSE	ie. CLOSE 1

Connections to the Outside world

Available at the back and sides of the PET 2001 computer are four edge card connectors. These are to the built-in IEEE-488 interface (HP-IB), the 8 bit user port with two extra handshake lines, the second cassette interface and the memory expansion connection.

Professional Printers

2022 PRINTER

This Tractor Feed model is a high specification printer that can print onto paper (multiple copies) all the PET characters — letters (upper and lower case), numbers and graphics available in the PET. The tractor feed capability has the advantage of accepting mailing labels, using standard preprinted forms (customized), cheque printing for salaries, payables, etc. Again, the only connections required are an A/C lead and PET connecting leads. The PET is programmable, allowing the printer to format print for: width, decimal position, leading and trailing zeros, left margin justified, lines per page, etc. It accepts 8½" paper giving up to four copies. Programmable line spacing.

Specifications:

Microcomputer System Devices
6504 Microprocessor
6522 I/O, interval timer (2)
6114 1K x 4 RAM (2)
6332 4K x 8 ROM

Printer Mechanism
Tractor feed
Epson DH-70 print head
Dot matrix — 7 x 6 — 80 columns per line
Impact print — original plus 3 copies
Print rate is 75 LPM (93 CPS)
Programmable line spacing
Forms: 8.5+ plus 5+ x 2 (sprocket margins)
Pin to pin distance   5+ Longitudinally
                          9.0+ Laterally
                          5/32+ Diameter

Packaging
18 gauge all steel cabinet
Dimensions: width — 17+, depth — 18+, height — 6+
Forms enter from rear or bottom of cabinet

Data Interface
IEEE-488
Standard 24-pin stacking connector
Device #4-7 by jumper option
Listener only
Recognizes secondary addressing

Character Set
Upper case ASCII
Lower case ASCII
PET™ graphics

Control Characters
- Enhance printing (doubles size)
- Enable automatic line count and paging
- Page eject
- Print reverse field
- Overprint a line
- Switch to graphics character set
- Switch to lower case character set
- Print programmable character

IEEE Secondary Address Commands
- Print data exactly as received
- Accept characters as a format
- Edit data to format
- Alter number of lines per page
- Enable diagnostic messages to print
- Accept data for programmable character

Data Formatting Capability
- Field width and decimal position specified
- Leading or trailing sign
- Fixed or floating dollar sign
- Forced leading zeroes
- Literal characters always printed
- Alpha fields left justified

Diagnostic Messages
- Can be turned on when desired
- Print on paper
- Describe problems with format and data

2023 Printer
This is a friction feed version of the above printer
(Please note that the 2020 Printer has been cancelled)

Dual Drive Floppy Disk

The Dual Drive Floppy Disk is the latest in Disk technology with extremely large storage capability and excellent file management. As the new Commodore disk is an "Intelligent" peripheral, it uses none of the RAM (user) memory of the PET. The Floppy Disk operating system used with the PET computer enables a program to read or write data in the background while simultaneously transferring data over the IEEE to the PET. The Floppy Disk is a reliable low cost unit, and is convenient for high speed data transfer. Due to the latest technological advances incorporated in this disk, a total of 360K bytes are available in the two standard 5¼" disks, without the problems of double tracking or double density. This is achieved by the use of two microprocessors and fifteen memory I.C.s built into the disk unit. Only two connections are necessary — an A/C lead and PET interface lead.

Specifications:

Microcomputer system devices
Controller
6504	microprocessor	
6530	I/O, RAM, and 1K ROM software	
6316	2K ROM for encoding & decoding disk data	
6522	I/O and interval timers	

File interface
6502	microprocessor	
(2) 6532	RAM, I/O, interval timers	
(2) 6332	4K ROM each (total 8K disk operating system)	

Shared RAM
(8) 6114   1K x 4 bit static RAM (total 4K bytes)

Disk drives
(2) Shugart Associates SA390 drives
standard minifloppy (5¼" disk)
activity LED's light when a file is open on that drive

Packaging
18 gauge all steel cabinet
Dimensions: width — 15", depth — 14.35", height — 6.5"
Cover hinges from base for servicing

Diskette organization
Formatting is by the drive itself — any mini-floppy diskette may be used
35 concentric tracks
constant density recording on each track
varying number of sectors per track — innermost 17 — outermost 21
179640 bytes on a single side
Track 18 used for directory
171520 bytes for user storage
Soft-sectoring
Diskettes for dual side recording may be used

Data interface
IEEE-488
Standard 24-pin stacking connector
Device #8-15 by jumper option
full listener — talker
recognizes secondary addressing

Floppy Disk Commands (summary)
LOAD	i.e. LOAD "0: BASIC BASIC", 8
SAVE	i.e. SAVE "0: BASIC BASIC", 8
OPEN COMMAND CHANNEL	i.e. OPEN 1, 8, 15
VERIFY	i.e. PRINT #1, "VER 0"
FORMAT	i.e. PRINT #1, "NEW 0: NAME"
OPEN A WRITE CHANNEL	i.e. OPEN 14, 8, 5 "0: FILE A, SEQ, WRITE"
CLOSE CHANNEL	i.e. CLOSE 14
PATTERN MATCHING	i.e. "N?M" matches "NEM" "NUM", "NAME", "NUMBER" i.e. "N*" matches all file names beginning with "N"

Pattern matching with file names may be used only when:
Loading directory ($)
Scratching files
Opening read channels
Loading programs

Default drive # may be used in most cases.
Using a ":" without a drive # indicates a default to the previously determined drive #. A file name with no drive # or ":" indicates that the file is to be looked up on both drives, beginning with the previously determined drive #. A ":" must separate commands from file names as described above.
Commands may be abbreviated to any form that retains the 1st char.