EduCALC TECHNICAL NOTES
27953 CABOT ROAD LAGUNA NIGUEL, CA 92677

HP-41 GLOSSARY OF TERMS
HP-41 Terms Used in EduCALC Catalog

The HP-41 has been around for more than eight years. During this time, synthetic programming, MCODE programming, advanced applications, and peripherals have caused the introduction of a large number of terms that relate especially to the HP-41. Terms used to decribe HP-41 products in the EduCALC catalog are listed here (numbers in parenthesis refer to EduCALC Technical Notes where more information may be found).

AA Cell - Battery size used in the HP 82242 infrared printer (3).
AAA Cell - Battery size used in the HP-71 calculator.
AC Tunnel - The tunnel at the bottom right side (middle) of the HP-41. Originally intended for the never-made AC adapter, it is used for the 82120 NiCd battery connector, the Hyper-41 speed change switch, and the S.O.S. speed up magnet.
ASCII - American Standard Code for Information Interchange.

Bar Code - HP-41 Bar Code is unique and is able to code all 256 bytes. There are 16 possible types defined for the HP-41 and HP has used 12 of the possible types.
Burning EPROMs - A process of applying voltages to the pins of EPROMs using hardware called an EPROM burner. Most EPROM burners can copy an EPROM.
BYTE - The HP-41 RAM word length is 8 BITs—a standard byte.
Byte Grabber - A synthetically made key assignment function that allows the generation of synthetic instructions by grabbing the first byte of multiple byte instructions.

CAD - Computer Aided Design.
CCD - Computer Club of Deutchland.
CMOS - Complimentary Metal Oxide Semiconductor
CMT - Corvallis Micro Technology, a manufacturer of handheld products located in Corvallis, Oregon.
Core - Zengrange term to describe a 4K page of EPROM in a ZEPROM.

DMM - Digital Multimeter. An example is the CMT-300.
Dual Module - The physical combining of two standard HP modules into one package. Only certain combinations are workable due to physical and addressing considerations. (6)

EFM - Extended Functions Module from Hewlett-Packard—included in the HP-41CX.
EMM - Extended Memory Module, a 'Quad' module of 238 registers made by HP for off-line storage. (4)
EPROM - Eraseable Programmable Read Only Memory. HP-41 EPROMs from CMT, Zengrange, and VW include the interface in the module sized package. (10)
EPROM Box - Originally an HP-41 sized (or larger) box that used socketed EPROMs.

FET - Field Effect Transistor, a device design used in modern integrated circuits.

Halfnut - An HP code name for a major redesign of the HP-41 that was first shipped in September, 1985. The result was a great capacity to run faster (7).

Hook-uP - An IR pick-up device made by Rush Systems that loads IR printer information into an IBM PC or clone via the RS-232 com. port. HP-41 users need the 82242 module.

HP-IL - Hewlett-Packard Interface Loop, a method of connecting battery operated computing devices together to optimize speed and power consumption. HP stopped supporting HP-IL in October 1987.
HP-18C - The model number of the HP Business Consultant, a calculator that overlaps the HP-12C in functions but augments it in the marketplace.

27953 CABOT ROAD LAGUNA NIGUEL, CA 92677

HP-41 - The generic model used to represent all three models—the HP-41C, HP-41CV, and HP-41CX.

Infrared - IR is a term given to a band of light beyond the red color of the rainbow. The infrared is too long to be seen and the 'far' infrared is close to being long enough to be felt by the skin as heat.
I/O - Input/Output. The Hewlett-Packard Interface Loop is the most common I/O for HP handhelds and peripherals.
IR - See infrared, above.

KB - Kilo byte, 1,000 bytes (actually 1,024) per K.
K - Kilo, 1000.

LCD - Liquid Crystal Display, the flat glass display used for most calculators since the late '70's.

MCODE - Assembly language programming done on the HP-41. This level of programming requires special hardware and is done by about 0.05% of HP-41 users to get full power and speed from the HP-41. (13, 17)
M code - see MCODE, above.
MLDL - Machine Language Development Laboratory is the hardware and software used to program in MCODE.
M-CODE - see MCODE, above.
M-code - see MCODE, above.

Ni Cd Battery - Nickel Cadmium Battery, common rechargable battery type used for calculators. Do not overheat for long life of 5 years or 1,000 charge cycles. (9)
N Cell - The size of battery used for the HP-18C, HP-28C, and HP-41. (9)
NMOS - N-channel Metal Oxide Semiconductor, a more power hungry integrated circuit technology used in some calculators. The HP-41 uses CMOS.
N-Channel - A transistor design used in integrated circuits.

One at a Time - See ZVC
ONE-OFF - See ZVC
Operating System - The progam used to provide prompts and respond to inputs from the user. RAM boxes require an operating system—as does extended memory, which is called the Extended Functions Module.
OTP - One Time Progammable, an intermediate technology between an EPROM and a ROM for program modules. HP-41 OTP's are offered by CMT.

Port - The I/O connectors that are found on computing devices for the purpose of connecting modules and connectors. Most calculator ports are designed so the modules plugged into them do not change the package profile.

Quad Module - A module containing 256 registers designed for the HP-41C and built into the HP-41CV. Extended memory modules are 'quad modules' with 238 registers.
Quasi-ROM - An early term for RAM box which is intended for use in MCODE programming.

RAM Box - RAM memory that appears to the HP-41 as ROM. Programs may be run in the RAM box without downloading as is required by extended memory. An operating system is required to manage writing files to the RAM box. (5, 8)
Register - The memory increment used by the HP-41. Mainframe memory is 320 registers shared by program and data registers. If size is zero, program memory is 7 bytes per register or 2,240 bytes less 3 bytes for the permanent .END. The largest possible HP-41 program in mainframe memory is 2,237 bytes.
RPN - Reverse polish Notation, HP's system for solving technical problems on calculators. RPN doesn't use parenthesis or an equal key and is the most efficient method of problem solving for a large class of calculator problems.

27953 CABOT ROAD LAGUNA NIGUEL, CA 92677

Serial Number - Ten-digit number on the back of the machine under port four. The first two digits is the number of years since 1960; the second two is the week of the year. The letter is the country of manufacture: S = Singapore, A = USA. The last five digits is sequential (7).
Solution Books - A Hewlett-Packard book of programs, typically 10 per book, related to a specific application. Bar code is provided along with program listings and instructions. Solution books provide a low cost way to get HP-41 software.
SP - See Synthetic Programming.
Static - The collecting of charges due to low temperatures and dry air. Seeing sparks when reaching for door knobs indicates high static conditions that can cause crashes when using CMOS calculators.
Synthetic Programming - SP is the generation and use of functions not part of the normal HP-41 function set. SP is an extension of user code programming. Synthetic instructions requires special techniques to enter.

Technical Notes - Most common questions asked by EduCALC's customers discussed in a form that provides technical information related to EduCALC's products. TN0 is a list of TNs available.
Triple Module - A module that has been modified to have two other modules added to it in one package. Only certain combinations are possible.
Turbo - A term used to indicate increased performance, usually speed or capacity.

User's Library Catalog - A complete listing and cross referencing with abstracts of programs in HP's user's library. Individual programs may be purchased inexpensively.

Word - A basic computer instructin, usually 8 BITS. See BYTE. The HP-41 ROM word is 10 BITS. (5, 10)

XQ2 - Laitram Company's super efficient HP-41 Keyboard; requires module.
X-functions - Extended Functions Module. See also EFM.
X-memory - Extended Memory.

ZVC - ZEPROM Voltage Converter, a low cost advanced user product for burning ZEPROMS. Other terms used are ONE-OFF and One at a Time. Zengrange uses the term ZVC in their owner's manual beause it converts the HP-41 6 volts to 12 volts.
Zengrange - A company in England that specializes in handheld hardware and software for military applications.
ZPROM - An EPROM with interfacing electronics sold by Zengrange Ltd.