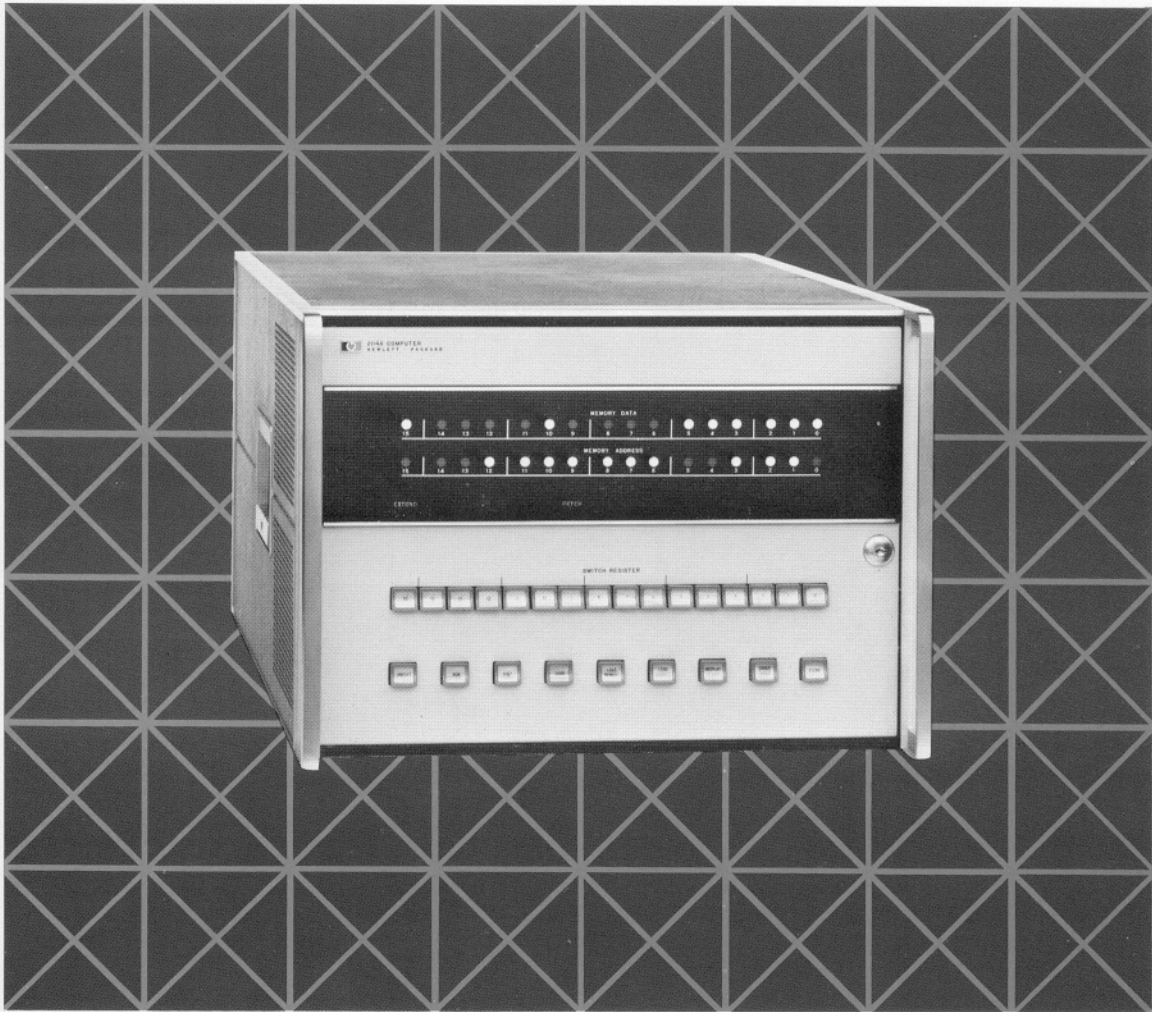




# 2114A COMPUTER



**high performance at a low price**



## FEATURES

## GENERAL

- Parallel logic
- Modular hardware expansion
- Modular, efficient software

## PROCESSOR

- Powerful instruction set – 70 basic instructions
- Up to 8 instructions may be microprogrammed into one word
- Two accumulators, both addressable to simplify programming
- Unlimited levels of indirect addressing allowed
- Memory address and memory data registers are displayed
- Registers and memory contents readily modified or displayed through console
- Rack-mountable
- Power Fail option preserves status, restarts automatically

## MEMORY

- Magnetic core storage
- 16-bit word size – 17th bit accessible by plug-in Parity option
- Capacity of 4096 or (optional) 8192 words
- Memory cycle time of 2.0 microseconds
- Protected 64-word block for stored loader
- Large 1024-word page size
- Directly address two pages, indirectly address any page

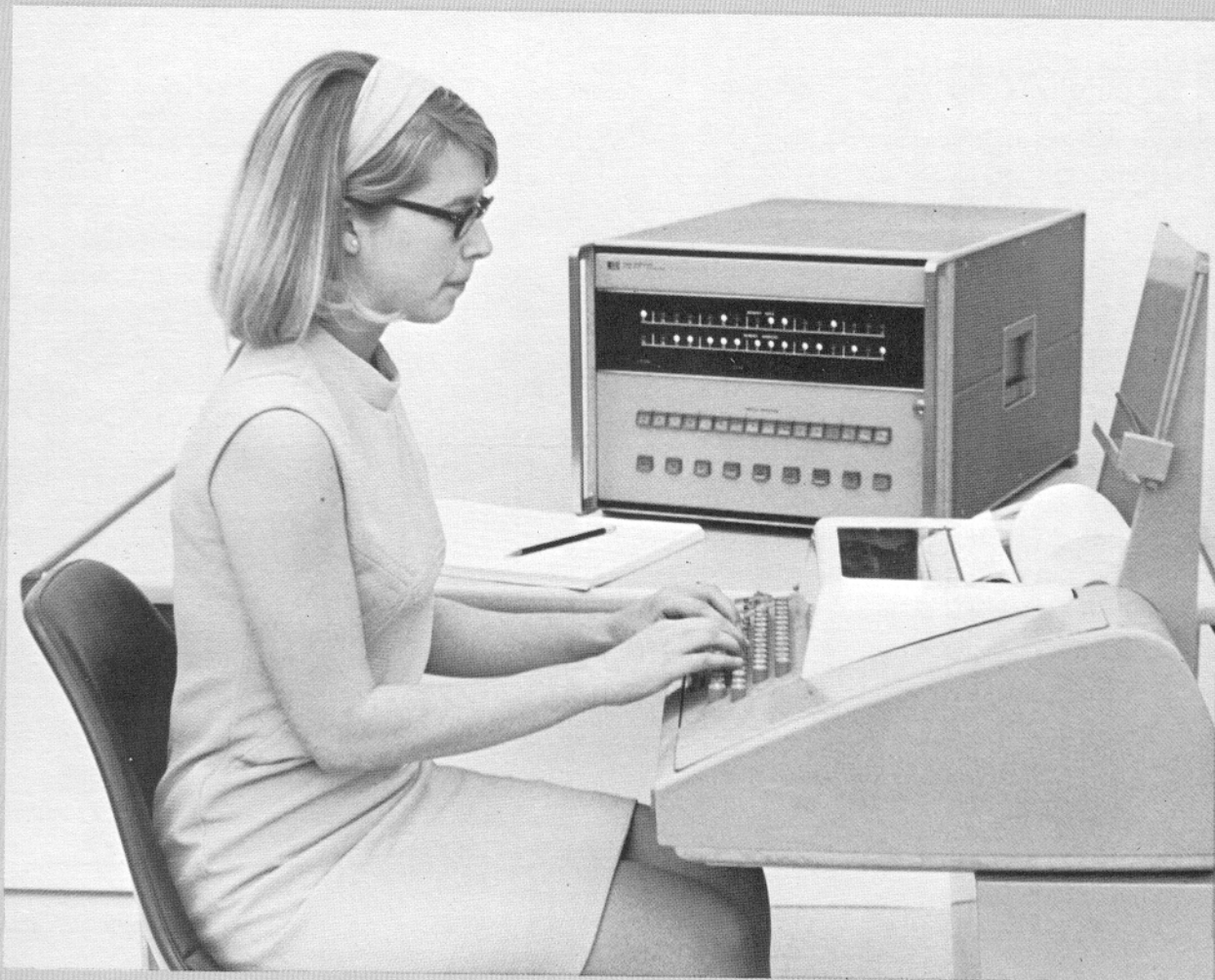
## INPUT/OUTPUT

- 8 I/O channels
- All channels buffered and bi-directional
- Multilevel priority interrupt for device servicing
- Peripherals interfaced simply with plug-in cards
- Interface cards for Hewlett-Packard digital instruments
- General Purpose interface cards for non-HP peripherals
- Optional multiplexed I/O system allows interfacing of up to 56 devices

## SOFTWARE

- Two-pass ASA Basic FORTRAN – extended
- Basic Control System for I/O flexibility
- Modular I/O drivers – for device-independent programming
- Linking/Relocating Loader – links programs at load time
- Two-pass Assembler – selectable absolute or relocatable output
- Extended Assembler supplied with 8K-memory systems
- Modular Debug package – for on-line program debugging
- FORTRAN library accessible at compiler or assembly level
- ALGOL and BASIC compilers for 8K systems
- Utility programs – Symbolic Editor, Prepare BCS, Diagnostics

packs a lot of performance in a small package



The HP 2114A is a stored-program, general purpose digital computer. Its extremely compact design allows the central processor, up to 8K of memory, 8 device interfaces and all power supplies to be housed in a single small cabinet. The software and interface engineering is complete, built into the 2114A package, so the 2114A is ready to go to work immediately on your application. Included in the low price of the 2114A are a 4K memory and all applicable software.

# computer family, the 2114A provides full 16-bit word for high performance

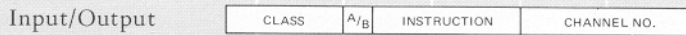
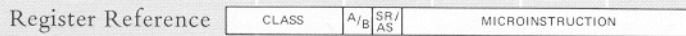
## DATA FORM

Punched Tape: 1-inch, 8-level ASCII code. Parity not used.

Magnetic Tape: 7-channel NRZI, IBM-compatible. 1/2 inch.

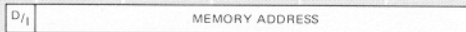
## WORD FORMATS \*

### INSTRUCTIONS

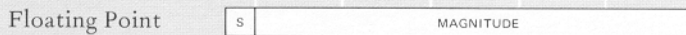
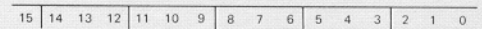


D/I = DIRECT/INDIRECT  
 Z/C = ZERO/CURRENT PAGE  
 SR/AS = SHIFT-ROTATE/ALTER-SKIP

### INDIRECT ADDRESS



### DATA



23 BITS

EXP. SIGN

\*HP 2114A has same word structure as HP 2116A and 2115A Computers, so programs are interchangeable.



# convenient console layout make the 2114A simple for

## CONSOLE CONTROLS

(Proximity-type sense switches illuminated when 'on')

**PRESET.** Presets the computer to Fetch phase, turns off interrupt system, resets parity error indication.

**RUN.** Starts operation at the current state of the registers.

**HALT.** Stops computer operation at end of current phase.

**LOAD.** Sets program counter to starting address of Absolute Binary Loader; enables and activates the protected Loader which then loads a program into memory; detects a computer halt after the program is loaded and protects the loader. An ultimate in ease of loading for a small computer.

**LOAD MEMORY.** Transfers switch register contents into the memory location specified by the M-Register.

**LOAD ADDRESS.** Transfers Switch Register contents into the Memory Address Register and Program Counter.

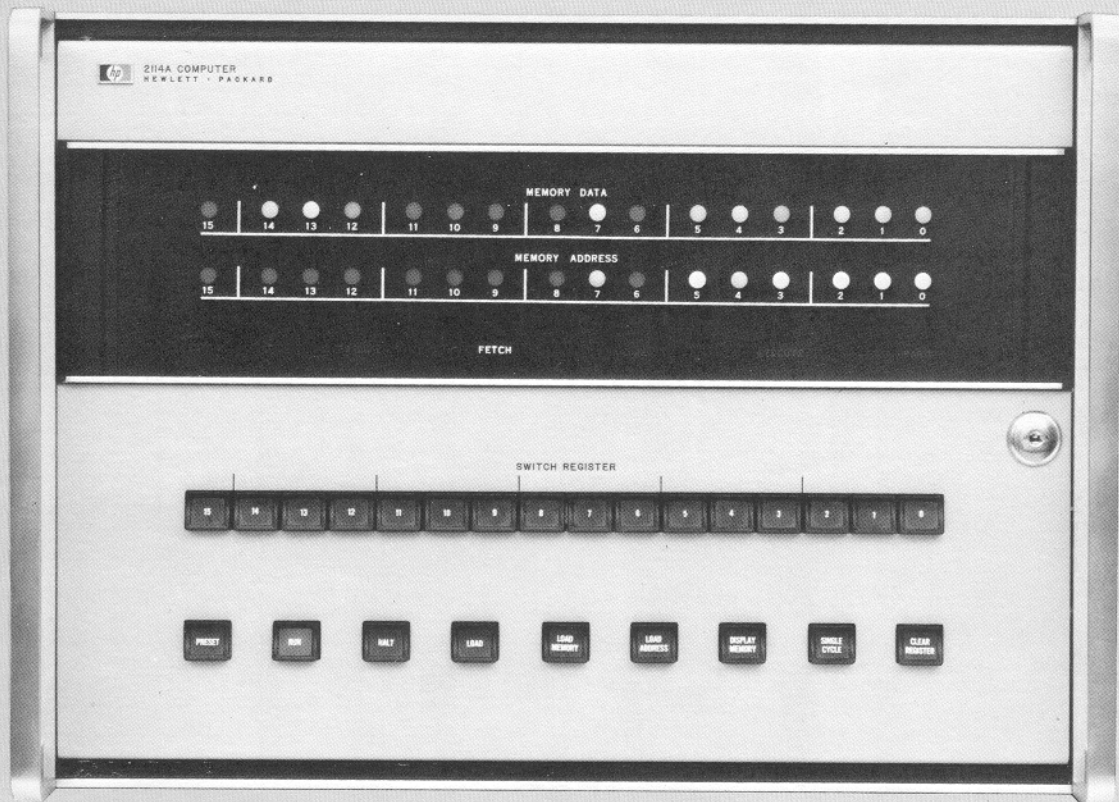
**DISPLAY MEMORY.** Displays in the Memory Data Register the contents of the address specified in the Memory Address Register.

**SINGLE CYCLE.** Steps program one machine cycle.

**CLEAR REGISTER.** Clears switch register to all zeros.

## PROTECTED CONTROLS

**POWER SWITCH, MANUAL LOADER ENABLE/DISABLE, LAMP TEST, CONSOLE SWITCHES ENABLE/DISABLE, and DIAGNOSTIC SWITCHES** are all located behind the lockable, hinged panel. Protects your programs when you're not around.



# The 2114A has an input/output system with system simply by moving plug-in cards.

## INPUT/OUTPUT SYSTEM

**CAPACITY.** The HP 2114A Computer input/output system provides 8 16-bit parallel channels.

**DEVICE SERVICING.** Multilevel priority interrupt capability is a standard hardware feature of the 2114A. Each channel has a specific interface card slot, having a specific interrupt priority. In response to multiple interrupt requests by the devices, the interrupt system acknowledges each request, and interrupts the program in progress to service the devices in order of priority. Additionally, all or specific devices may be deleted from the interrupt system and run under program control.

**FLEXIBILITY.** Most peripheral devices interface with a single card containing data buffering, flag, interrupt and priority circuit. You can add, delete, or interchange devices from one channel to another – simply by plugging the interface card into the desired slot. Identical pin assignments of the slots permit this flexibility. The modular software can be readily reconfigured to correspond to the hardware configuration. In addition to interfacing for specific devices, multi-purpose interfaces are available. These include: a General Purpose Register for bidirectional data transfer with user devices; a Relay Output Register for isolated control of electrical equipment; a Data-Phone Interface for data transfers over the telephone system; and “data source” interfaces for use with a variety of Hewlett-Packard digital instruments.

**THE KIT CONCEPT.** Input/output options are conveniently packaged as complete interface kits – including cards, cables, software drivers and diagnostic programs. Additionally, where practical, the peripheral is included as part of the kit. Interface kits furnished with the original purchase are fully installed, tested, and delivered as a complete system. A complete list of input/output options (with prices) is available from your Hewlett-Packard field office. Individual data sheets on most of the Interface Kits are also available.

**MULTIPLEXED I/O SYSTEM.** An optional interface card delivers all I/O addresses, I/O control and timing signals and data lines to the user. You can then construct your own interfaces to special devices, but still use the remaining I/O channels for standard plug-in interfaces to devices such as the teleprinter, tape reader, or magnetic tape unit. Depending on which slot you install the I/O multiplexer card, you have the capability of interfacing up to 56 addressable devices. All of these devices may be operated using the standard input/output instructions; data rates are identical to standard peripheral devices and all devices operate in the multilevel priority interrupt string.

multilevel priority interrupt. Expand or rearrange your

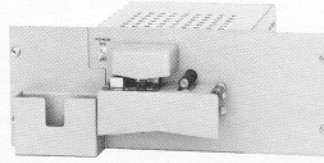


*Interface cards are installed or moved by top access.  
Device cable attaches directly to the interface card.*

The 2114A is available with a wide range  
cards and software drivers.

## PERIPHERALS

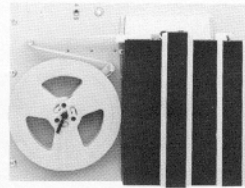
HP 2737A



### PUNCHED TAPE READER

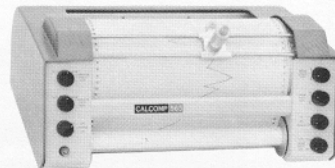
Reads 8-level code  
300 char/sec

HP 2753A



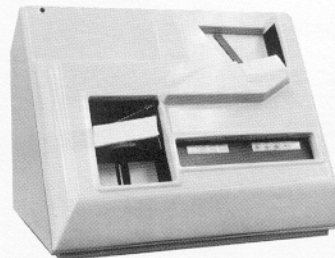
### TAPE PUNCH

Punches 8-level code  
120 char/sec



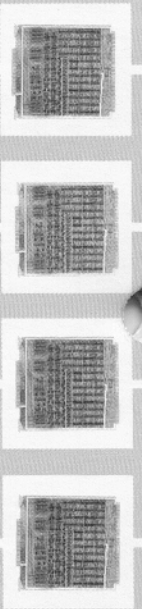
### PLOTTER

300 steps/sec  
Resolution .01 inch  
Plotting width 11 inches



### CARD READER

12-bit parallel column,  
80-column cards  
1000 cards/min

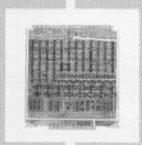
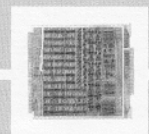
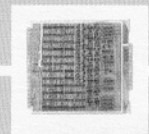




# of peripherals, interfaced simply with standard plug-in

HP 2402A  
 HP 2911B  
 HP 2911A

**DATA ACQUISITION**  
 200 channels  
 Measure dc/ac voltage,  
 resistance, frequency  
 Data acquisition 'Executive'  
 software available

**LINE PRINTER**  
 300 lines/min  
 72 to 132 characters/line  
 ASCII character set

**MAGNETIC TAPE**

Write only  
 400 char/sec  
 7-chan, 200 bpi

**KENNEDY 1406**

**HP 2020**

Read/write  
 6000 or 16,700 char/sec  
 7-chan, 200 or 556 bpi

**TELEPRINTER**  
 Keyboard, punch, read, print  
 10 char/sec  
 ASCII character set

**HP 2752A**

The 2114A is compact, easy to install, rugged

## PHYSICAL SPECIFICATIONS

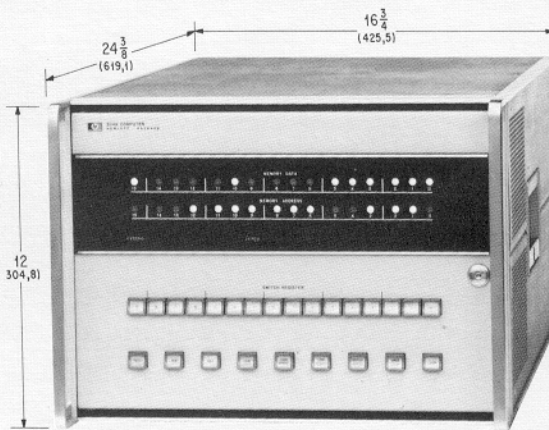
### VENTILATION

Intake at rear, exhaust at sides.

### INSTALLATION

May be used on table, or installed in standard 19-inch rack with furnished rack-mount adapters.

### DIMENSIONS



DIMENSIONS IN INCHES  
AND (MILLIMETERS)

### WEIGHT

2114A	net 95 lb (43,1 kg)	shipping 138 lb (62,7 kg)
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### POWER REQUIRED

Source: 115v  $\pm 10\%$ , 50 to 60 Hz  
(used with external transformer for 230v operation)

Consumption: 500W min to 800W max, depending on number of I/O interfaces installed.

### ENVIRONMENTAL CONDITIONS

From +10 to +40°C (+50 to +104°F)

Relative humidity to 80% at 40°C

### CABINETS

Single, dual and triple bay cabinets are available for rack-mounting the HP 2114A Computer and peripherals. Cabinets include: power strip, switch and indicator lamp, power cord, caster base, fan and filter, instrument mounting rails, and blank panels for unoccupied panel space. Optional drawers and fixed and slide-out shelves may also be included. Ask for System Accessories data sheet SA-7, for ordering information.