

CMU/3 Single Board CMOS Memory Unit

Geniebus Replacement for VRC & LCS Controller & Memories

General Description

The CMU/3 CMOS memory unit is a complete hardware/software compatible replacement for both the Vermont Research 3016 drum and Honeywell Large Core Storage subsystem and the existing controller in the Honeywell computer (BREA1,BCFA1). This allows for faster bulk access, higher reliability, and lower maintenance costs.

The CMU/3 is also applicable to older Honeywell systems that have a standard Geniebus, such as the H4400. A special mode of operation accepts control words using the pointer word. This enables the CMU/3 to replace the Dual Bulk Controller and Drum as well as Coupler Card and Drum systems.

The CMU/3 is a single board (controller & memory) that mounts directly in the Geniebus in place of the original controller. This one board is a completely new bulk controller that emulates the operation of the original controller card and memory with a capacity of 2 million 24-bit words. Bulk access and data transfer rates are greatly increased by eliminating rotational delay and the serial data transmission from controller to VRC or LCS bulk.

The new controller accepts the same commands as the original card set. Unlike the BREA1/BCFA1 controller, all data transfers with the CMU/3 are 25 bit parallel, allowing operation at full Geniebus speed. In addition, there is an interface to CCI's DMA card for external access to bulk data, as well as an interface to an external controller for future use.

Features

- Hardware and software compatible with both LCS core and VRC drum.
- Programs and data load 3 times faster than original bulk.
- Zero latency further increases transfer rates for small data blocks.
- Increases bulk capacity to standard 2.1 million from 1.69 in LCS mode.
- Provides 2 serial or 1 parallel (GPIB) port for external access to bulk and main memory when used with optional DMA card.
- Reduces maintenance costs and increases MTBF.
- Eliminates need for LCN/Drum cabinet.
- Reduces overall power requirements by eliminating external bulk device.
- Retains memory on power loss for **1 to 2 months** or more.
- Standard TTL/CMOS chips.

ORGANIZATION

The CMU/3 memory unit consists of 1 control card with up to 2 million words of storage and optionally a second memory card. An external Gel-Cell type battery provides memory retention during power-down. System power is provided by the Geniebus as is cooling.

Unlike the LCS/VRC controller, all data transfers from the Geniebus to the controller and from the controller to the memory are full 25 bit parallel, NOT serial. Additionally, the bulk address provided from the bulk driver (track & sector) is converted to a word address, allowing for maximum throughput with no access latency due to searching for the proper sector. The old bulk and controller could only directly address a particular track.

The memory card contains sixteen 512K x 8 static RAM chips. The chips are addressed based upon the track and sector address from the bulk driver and the word address counter maintained on the CMU/3 control card. Data is stored as a 32 bit word, which includes 24 bits of data and a 1 parity bit.

The parity bit is used to detect data errors on each word. The parity is written for each word when a given "sector" is written by the requesting program. Parity is checked when read back. All parity errors will be flagged.

Data retention is provided by an external 12V Gel-Cell type battery connected through a rear paddle board. Battery backup is expected to last 1 to 2 months.

Stancard on the CMU/3 is a data port for external devices. This allows such boards as CCI's DMA card to read and write bulk data without Honeywell programming. Data may then be passed to other computer platforms for storage or analysis.

One such application may be bulk backup to a PC, thus eliminating troublesome tape drives. Another is CCI's Data Distribution System (DDS) that collects plant data and distributes it to operations personnel and engineers.

OPTIONS

The CMU/3 is built standard with an external port. The DMA card connects to this port for easy bulk access. It has dual serial ports or a single parallel port (GPIB) to allow connection to another computer. The 2 serial ports communicating at up to 115K baud each provide access to any portion of the CMU/3 memory or main memory. The DMA card is available starting at \$3,650.

WARRANTY

The CMU/3 by CCI is warranted to be free of defects and errors for two (2) years from date of shipment. Errors or defects reported to CCI will be corrected by returning the defective part for repair or replacement. A temporary replacement will be supplied, as appropriate.

ORDERING & PRICING INFORMATION

current price: **\$12,950**

Delivery estimated at 6-8 weeks ARO

Please contact Western Process Computers, Inc. at (800) 997-7245 for options, configurations, pricing and ordering information. For complete system solutions including application software for data distribution, contact Dick Dixon at (602) 840-1483 for more information.

OPERATIONAL DATA

Capacity	Up to 2.096 MB per memory board standard Up to 8 MB per memory board optional (requires software modification > 1.69M)
VRC Equivalents (or EM&M LCS)	40 Sectors per Track 512 Tracks standard, 1024 optional 1.3 Million Words standard
LCS Equivalents	64 Sectors per Track 480 Tracks standard 2.096 Million Words standard
Transfer Rate	330K words/sec Bulk Write 450K words/sec Bulk Read
Access Time	Zero Latency - no rotational delay
SRAM Memory Speed	120 nsec cycle time or less

COMPARISON DATA

Transfer Rate	161K for actual VRC or LCS
Access Time	100 us Avg. Latency for Ampex LCS 8.7 ms Avg. Latency for VRC drum

POWER

Primary Input	Geniebus loading equivalent to BREA1/BCFA1
Battery	12V DC Gell-Cell type 15AH typical

ENVIRONMENTAL

Operating Temperature	0° C to 70° C
Storage Temperature	-55° C to 85° C

PHYSICAL DATA

Mounting	1 Geniebus slot (1 of 2 from BCFA1/BREA1) 2nd Adjacent slot DMA card dual ported systems.
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