

# RICM

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Industrial PC

ISA Card PC,

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ISA card PC

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## DEC VAX 11/780

Digital Equipment VAX 11/780

During January 2002 Merle Pierce drove to Wisconsin to retrieve several machines including this VAX 11/780. The VAX 11/780 is the benchmark machine that defined what a MIP (Million Instructions per Second) was. This machine consists of a KA780 CPU, DW780 Unibus Adapter, MS780 Memory with 16 MB RAM, RH780 Massbus Adapter, and an Emulex SC780 SMD disk controller that emulates an RH780. The VAX has a TU81 6250/1600 BPI 9 track 1/2" tape drive and a cabinet containing four Emulex badged Fujitsu Eagle SMD disk drives. The system runs BSD 4.3 UNIX instead of the more usual VMS operating system. The cabinet at the right holds the Unibus expansion rack and a bank of modems.

The image below shows the 11/780 card cage. The 29 slots on the left are the KA780 CPU. The next 6 slots toward the right are the DW780 Unibus Adapter, the next 20 slots are the MS780 memory (16MB), the next 6 slots are the RH780 Massbus adapter for the TU81 tape drive, and the 4 slots on the far right are the Emulex SC780 SMD disk adapter for the Fujitsu Eagle SMD disk drives.

| KA780 CPU Card Cage |             |                                                            |
|---------------------|-------------|------------------------------------------------------------|
| Slot                | Part Number | Description                                                |
| 1                   | M8237       | TRS,TERMINATOR & SILO                                      |
| 2                   | M8218       | KA780,SBL,CPU SBI LOW BITS INTERFACE                       |
| 3                   | M8219       | KA780,SBH,SBI (SYNCHRONOUS BACK PLANE INTERFACE),HIGH BITS |
| 4                   | M8220       | KA780,CAM,CACHE ADDRESS MATRIX                             |
| 5                   | M8221       | KA780,CDM,CACHE DATA MATRIX                                |
| 6                   | M8222       | KA780,TBM,CPU TRANSLATION BUFFER MATRIX                    |
| 7                   | M8223       | KA780,IDP,CPU INSTRUCTION DATA PATH                        |
| 8                   | M8224       | KA780,IRC,CPU INSTRUCTION DECODE & CLOCKS                  |
| 9                   | M8225       | KA780,DBP,CPU DATA PATH                                    |
| 10                  | M8226       | KA780,DEP,CPU DATA PATH E                                  |
| 11                  | M8227       | KA780,DDP,CPU DATA PATH D                                  |
| 12                  | M8228       | KA780,DCP,CPU DATA PATH C                                  |
| 13                  | M8229       | KA780,DAP,CPU DATA PATH A                                  |
| 14                  | M8230       | KA780,CEH (CONDITION CODES,EXCEPTIONS,HIGH BITS)           |
| 15                  | M8231       | KA780,ICL (INTERRUPT CONTROL,LOW BITS)                     |
| 16                  | M8232       | KA780,CLK (CPU CLOCK)                                      |
| 17                  | Empty       |                                                            |
| 18                  | Filler      |                                                            |
| 19                  | Empty       |                                                            |
| 20                  | M8238       | KU780-A 2K WCS (WRITEABLE CONTROL STORE)                   |
| 21                  | Empty       |                                                            |
| 22                  | M8234       | KA780,PCS CPU PROM CONTROL STORE                           |
| 23                  | M8235       | KA780,USC,MICRO SEQUENCER CONTROL                          |
| 24                  | Filler      |                                                            |
| 25                  | Filler      |                                                            |
| 26                  | Filler      |                                                            |

Hover your mouse pointer over a section of the card cage below to see what it is.

|    |        |                                 |
|----|--------|---------------------------------|
| 27 | Filler |                                 |
| 28 | Filler |                                 |
| 29 | M8236  | KA780,CIB,CPU CONSOLE INTERFACE |

### DW780 Unibus Adapter Card Cage

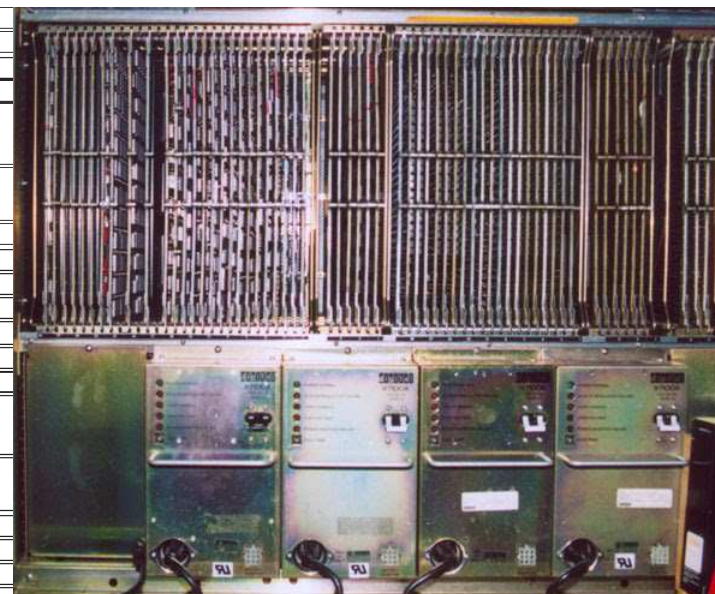
| Slot | Part Number | Description                                |
|------|-------------|--------------------------------------------|
| 1    | M8270       | DW780-A,USI,UNIBUS ADAPTER SBI INTERFACE   |
| 2    | M8271       | DW780-A,UCB,UNIBUS ADAPTER CONTROL         |
| 3    | M8272       | DW780-A,UMD,UNIBUS ADAPTER MAP & DATA PATH |
| 4    | M8273       | DW780-A,UAI,UNIBUS ADAPTER ADDRESS         |
| 5    | Empty       | Unibus Out                                 |
| 6    | Empty       | Unibus In                                  |

### MS780 Memory Card Cage, 16 MB

| Slot | Part Number | Description                        |
|------|-------------|------------------------------------|
| 1    | Empty       |                                    |
| 2    | M8373       | 256K X 39 BIT ARRAY, NEC 64K PARTS |
| 3    |             | MMI 303-0327 256K X 39 BIT ARRAY   |
| 4    |             | MMI 303-0327 256K X 39 BIT ARRAY   |
| 5    |             | MMI 303-0327 256K X 39 BIT ARRAY   |
| 6    |             | MMI 303-0327 256K X 39 BIT ARRAY   |
| 7    |             | MMI 303-0327 256K X 39 BIT ARRAY   |
| 8    |             | MMI 303-0327 256K X 39 BIT ARRAY   |
| 9    | M8373       | 256K X 39 BIT ARRAY, NEC 64K PARTS |
| 10   | M8375       | MEMORY CONTROL (Lower)             |
| 11   | M8376       | SBI INTERFACE                      |
| 12   | M8375       | MEMORY CONTROL (Upper)             |
| 13   | M8373       | 256K X 39 BIT ARRAY, NEC 64K PARTS |
| 14   |             | MMI 303-0327 256K X 39 BIT ARRAY   |
| 15   |             | MMI 303-0327 256K X 39 BIT ARRAY   |
| 16   |             | MMI 303-0327 256K X 39 BIT ARRAY   |
| 17   |             | MMI 303-0327 256K X 39 BIT ARRAY   |
| 18   |             | MMI 303-0327 256K X 39 BIT ARRAY   |
| 19   |             | MMI 303-0327 256K X 39 BIT ARRAY   |
| 20   | M8373       | 256K X 39 BIT ARRAY, NEC 64K PARTS |

### RH780 Massbus Controller Card Cage

| Slot | Part Number | Description                       |
|------|-------------|-----------------------------------|
| 1    | M8275       | MSI MASSBUS ADAPTER SBI INTERFACE |
| 2    | M8276       | MIR MASSBUS INTERNAL REGISTER     |
| 3    | M8277       | MDP MASSBUS DATA PATHS            |
| 4    | M8278       | MCP MASSBUS CONTROL PATHS         |
| 5    | Empty       |                                   |
| 6    | Empty       | Massbus                           |



| Emulex SC780 V-Master/780 Controller Card Cage |             |                             |
|------------------------------------------------|-------------|-----------------------------|
| Slot                                           | Part Number | Description                 |
| 1                                              | 7810401     | Emulex Bus Interface Board  |
| 2                                              | 7810402     | Emulex Bus Translator Board |
| 3                                              | 7810410     | Emulex SMD Disk Adapter     |
| 4                                              | Empty       |                             |



The Fujitsu Eagle SMD Disk Drives that are connected to the Emulex SC780 Controller.



The DEC TU78 Tape Drive that is connected to the RH78 Massbus Controller.

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