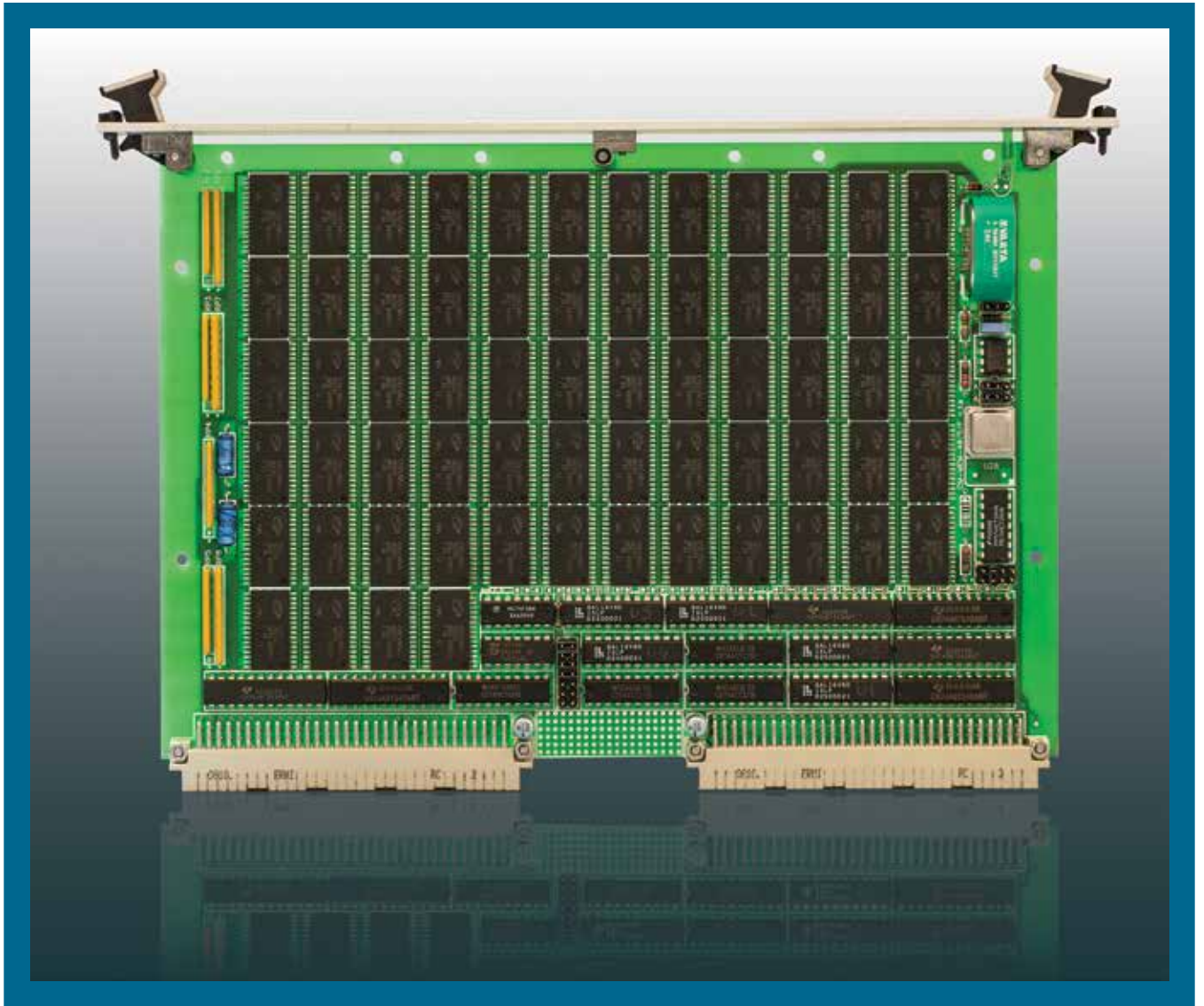




Computer

6U VMEbus Series

## CM-MEM-40

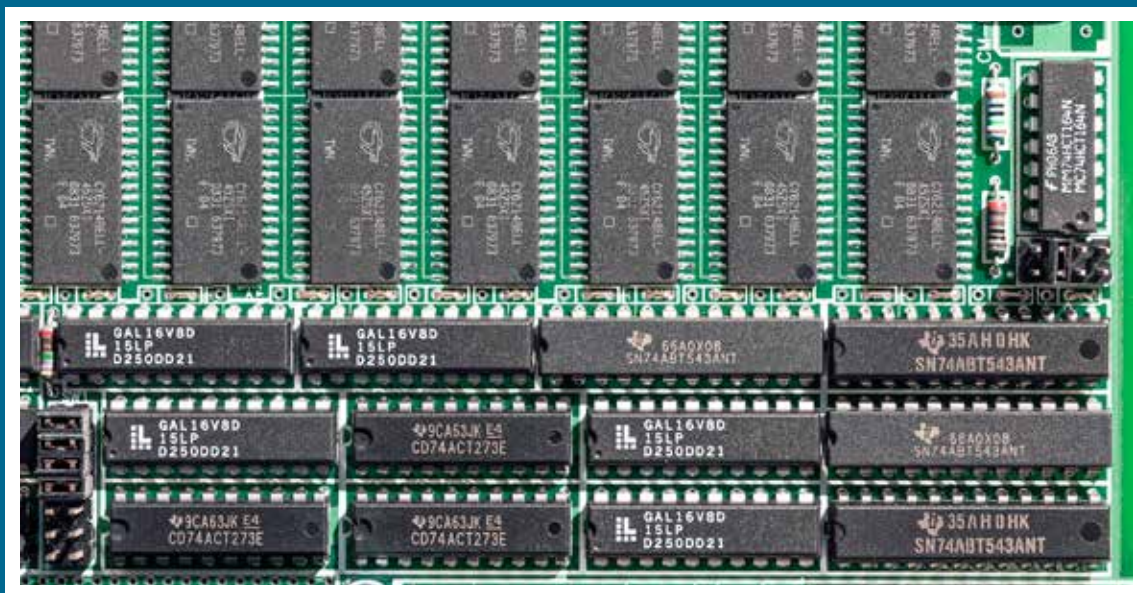


**32MB FLASH / SRAM / EPROM Expansion Module**

Commercial, Industrial, MIL-Rugged & MIL-STD-883 Versions

## FEATURES

- ❑ On-board memory capacity up to 32 MB.
- ❑ Flexible memory chip insertion; SRAM, EPROM or FLASH.
- ❑ 16 memory banks with four 32 pin JEDEC devices of 512KB capacity.
- ❑ Fast CMOS low heat design (3 Watts).
- ❑ On-board programming with +5VDC only.
- ❑ Extremely fast access time.
- ❑ Supports all standard JEDEC chips.
- ❑ Variable wait-state generator.
- ❑ Module mapping to any 128 memory blocks, 32 MB size.
- ❑ Watch-dog timer & Stand-by rechargeable battery incorporated.
- ❑ Module assert DTRACK\* in 100ns.
- ❑ Up to 64 chips in CM-MEM-40/F versions.
- ❑ EPROM type 27C400 supported.
- ❑ CM-MEM-40/S/F allows FLASH & SRAM combinations up to 16 MB.
- ❑ Commercial, Industrial, Rugged & 883 versions.
- ❑ IEC-297 mechanics with I/O via front panel and military P1101.2 wedge-lock mechanics.
- ❑ Conduction cooled PCB with thermal overlay in MIL-Rugged and 883 versions.
- ❑ Extensive software support.
- ❑ Excellent price/performance ratio.
- ❑ Low power CMOS design (3 Watts).
- ❑ Two year guarantee.



## MILITARY DESIGN

- ❑ -55 to +125 °C ceramic military ICs.
- ❑ MIL-STD-883 TTL chips.
- ❑ MIL-C-55302 Class I Connectors.
- ❑ High Stability MIL-STD-883 SRAMs.
- ❑ No signal PCB tracks in external layers.
- ❑ MIL-E-5400 for avionics equipment class 1B (Temperature and Altitude).
- ❑ MIL-STD-810 E Temperature (Methods 501.3 & 502.3).
- ❑ MIL-STD-810 E Shock and Vibration (Methods 516.4 & 514.4).
- ❑ MIL-STD-810 E Humidity & Salt Fog (Methods 507.3 & 509.3).
- ❑ Military Class V Printed Circuit Board.

## DESCRIPTION

- ❑ The **CM-MEM-40** is a 32 bit general purpose Memory Expansion Board that incorporates features demanded in military & industrial applications.
- ❑ Memory chips of SRAM, EPROM or FLASH may be installed in a flexible way. A versatile, high performance unit with low heat CMOS technology.
- ❑ Maximum on-board capacity is 32 MB, distributed in 16 banks, each one populated with four 32 pin JEDEC devices of 512KB of capacity.
- ❑ FLASH or EPROM versions (CM-MEM-40/F) can install up to 64 chips. These 512KB FLASH devices feature on-board programming with +5 VDC only.
- ❑ The 32 MB SRAM version (CM-MEM-40/S) incorporates a Watch-dog & stand-by rechargeable battery, allowing for use as a solid state hard disk (RAM disk).
- ❑ Jumpers allow mapping the board in any of the 128 memory blocks, 32 MB size, available in the Extended A32/D32 addressing range.
- ❑ Military versions are provided with conduction cooled thermal overlay, greatly improving capability to withstand shock and vibration.
- ❑ The metallic layer in the PCB also benefits heat dissipation and allows all components to work within homogeneous temperatures, thus greatly increasing component longevity and module MTBF.
- ❑ All **CM-MEM-40** versions are 100% compatible at the functional level, allowing software development to proceed with low cost Industrial versions.

### FRONT PANEL



## TECHNICAL SPECIFICATIONS

- |                          |  |                              |   |
|--------------------------|--|------------------------------|---|
| <b>Capacity:</b>         | Up to 32 MB in steps of 2MB. The board incorporates 16 independent memory banks of 2MB & 32 bit wide. A bank is composed by 4 JEDEC chips of 512 KB capacity.    | <b>Wait-state Generator:</b> | Adequates the VMEbus access time versus the speed of installed devices. A jumper allows 0, 1, 2 or 3 wait states for chips from 35 to 120 ns. |
| <b>SRAM Memory:</b>      | The <b>CM-MEM-40/S</b> allows up to 32 MB of SRAM. Accepted chips are rated from 35 to 12 ns of access time. The total amount of SRAM can operate in "stand-by". | <b>Back-up Battery:</b>      | A Ni/Cd rechargeable battery (100 mA/h) supplies the stand-by voltage.  |
| <b>Flash Memory:</b>     | Up to 32 MB. The board supports new generation Am-29F040 devices requiring only +5V for its on-board erase or programming.                                       | <b>Watch-dog:</b>            | A MAX-690 monitors the +5VDC and administrates the back-up battery.   |
| <b>EPROM Memory:</b>     | Up to 32 MB. To allow external programming the board offers 64 sockets for 27C4000 devices.  | <b>Front panel LED:</b>      | 1 LED that indicates when module is active.   |
| <b>VME Decoder:</b>      | Allows to map the board in the VME range in a flexible manner. There are 128 positions, 32 MB size each.   | <b>VME Addressing:</b>       | Two jumper blocks provide 256 mapping options in the A24 range.   |
| <b>VME Access Time:</b>  | The board responds to VMEbus data transfers in 100 ns (0 wait state).  | <b>Power consumption:</b>    | +5VDC @ 600 mA (3 Watts).   |
| <b>VMEbus Interface:</b> | According to the IEEE 1014 rev. C. The board responds to VMEbus Extended transfers type A32/D32/D16/D8(E0)   | <b>Weight:</b>               | 405 gr. C & I ver.; 510 gr. R+ & 883ver.  |
|                          |  | <b>Mechanical size:</b>      | Single slot 6U (233x160 mm).  |
|                          |  | <b>Mechanical format:</b>    |   |
|                          |  | <b>CM-MEM-40/A</b>           | Classic IEC-297 mechanics for 19 inch racks with I/O on front panel.  |
|                          |  | <b>CM-MEM-40/B</b>           | Military IEEE P1101.2 wedge-lock mechanics for ATR enclosures.  |
|                          |  | <b>Humidity:</b>             | Up to 95% RH non-condensing.  |
|                          |  | <b>Altitude:</b>             | Sea level up to 15 Km (50,000 ft.).   |



**BOARD RANGE**



**COMMERCIAL (C):**

Implements low cost commercial plastic IC's rated for 0 to +70 °C. Continuous board operation range from 0 to +60 °C. Class II industrial quality connectors.

**INDUSTRIAL (I):**

Manufactured with Industrial range plastic or ceramic IC's rated for -40 (-25) to +85 °C. Continuous module operation from -20 to +70 °C. Class II industrial quality connectors.



**MILITARY-RUGGED (R+):**

Implements ceramic IC's rated from -55 to +125 °C. Class I MIL-C-55302 connectors. Conduction cooled PCB. Board operation from -40 to +85 °C. Storage from -55 to +125 °C.

**MILITARY-STD-883 (883):**

Manufactured with conduction cooled PCB and MIL-STD-883 B/C qualified military ceramic parts (-55 to +125 °C). Class I MIL-C-55302 military connectors. MIL-R-39016 BIT Relays. Continuous board operation from -50 to +90 °C. Storage from -55 to +125 °C.



**SOFTWARE SUPPORT**



**Wind River Systems VxWorks Tornado**

The CM-MEM-40 is supported by VxWorks Tornado. This Operating System is ideal for developing real time software in UNIX environments. A complete "C" language driver in source code is available at low cost. Drivers include a floppy disk and user's manual.

**Microware Systems OS-9**

Drivers for the real time OS-9 Operating System are available in "C" language. This driver is supplied with user's manual & source code floppy-disk.

**Note:** Drivers for other leading operating systems can be optionally supplied upon request.



**DOCUMENTATION**

- LEVEL 1, CM-MEM-40 MAP:** User's manual. Module hardware functional description oriented toward software development.
- LEVEL 2, CM-MEM-40 MMT:** Maintenance manual with BIT scope, test point wave forms, logic analyzer diagrams, etc.
- LEVEL 3, CM-MEM-40 NAT:** Maintenance manual according to NATO forces. Includes the above manuals plus mechanical & electrical schematics, NATO list part number, extended functional description and maintenance & calibration procedures for in-service equipment.



**ORDERING INFORMATION**

CM-MEM-40 /V /T /M

- PCB Mechanical Version**
  - A: IEC-297 Standard mechanics with front panel. J2 and front panel I/O connectors
  - B: P1101.2 Military mechanics with dummy front panel & wedge-locks.
- Board Temperature Range**
  - C: Commercial range. Available only with fiberglass PCB.
  - I: Industrial range. Available only with fiberglass PCB.
  - R+: Military Rugged+ range. Available only with conduction cooled PCB.
  - 883: Military 883 range. Available only with conduction cooled PCB.
- Board Version**
  - S1: Memory expansion board with 8 MB SRAM. Battery and Watch-dog.
  - S2: Memory expansion board with 16 MB SRAM. Battery and Watch-dog.
  - S3: Memory expansion board with 32 MB SRAM. Battery and Watch-dog.
  - F1: Memory expansion board with 8 MB FLASH. Battery and Watch-dog.
  - F2: Memory expansion board with 16 MB FLASH. Battery and Watch-dog.
  - F3: Memory expansion board with 32 MB FLASH. Battery and Watch-dog.
  - SF1: Memory expansion board with 8 MB SRAM + 8 MB FLASH. Battery & Watch-dog.
  - SF2: Memory expansion board with 16 MB SRAM + 16 MB FLASH. Battery & Watch-dog.



**Computer**

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Your local representative: