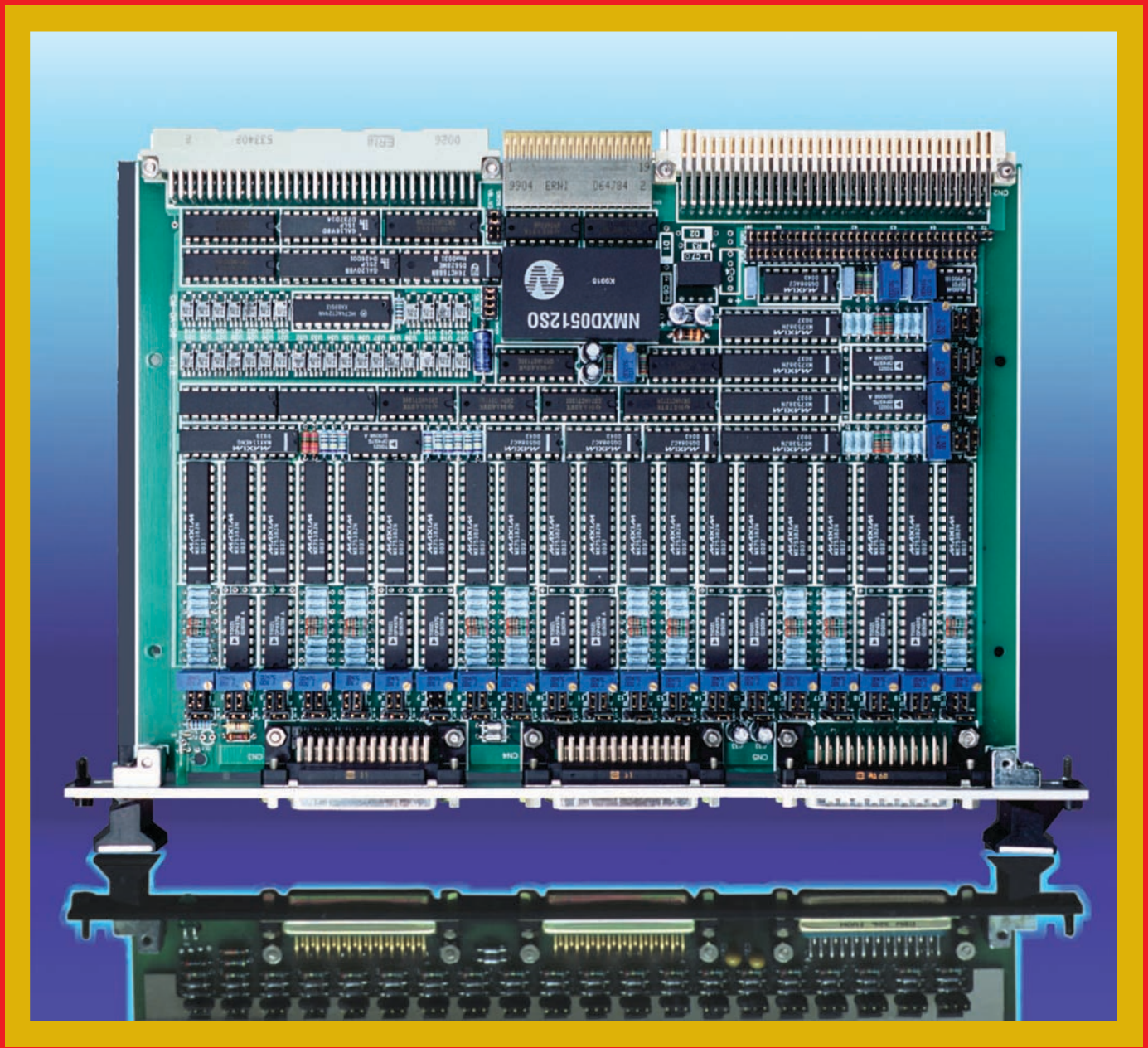
Computer

6U VMEbus Series

CM-DA-50



24 Channel Optoisolated D/A Module

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

DESCRIPTION

❑ The **CM-DA-50** is a general purpose Digital-to-Analog VMEbus board. This professional module offers an outstanding design which incorporates features most demanded in today´s first class military and industrial applications.

❑ This board implements industry-standard TTL chips with easily obtainable D/A converters supplied by several leading vendors in all temperature ranges. This insures availability of the module for long term aplications.

❑ Due to its individual external reference per channel, this module is well suited for applications requiring special voltage ranges or a wide variations in channel ranges to be supplied by a single board.

❑ The **CM-DA-50** offers a highly flexible I/O cabling solution using both the front panel and P2.

❑ Military versions, provided with conduction cooled thermal overlay, greatly improve 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 highly increasing component longevity and module MTBF.

❑ All **CM-DA-50** versions are 100% compatible at the functional and programming levels, allowing software development to proceed with low cost commercial versions.

FRONT PANEL

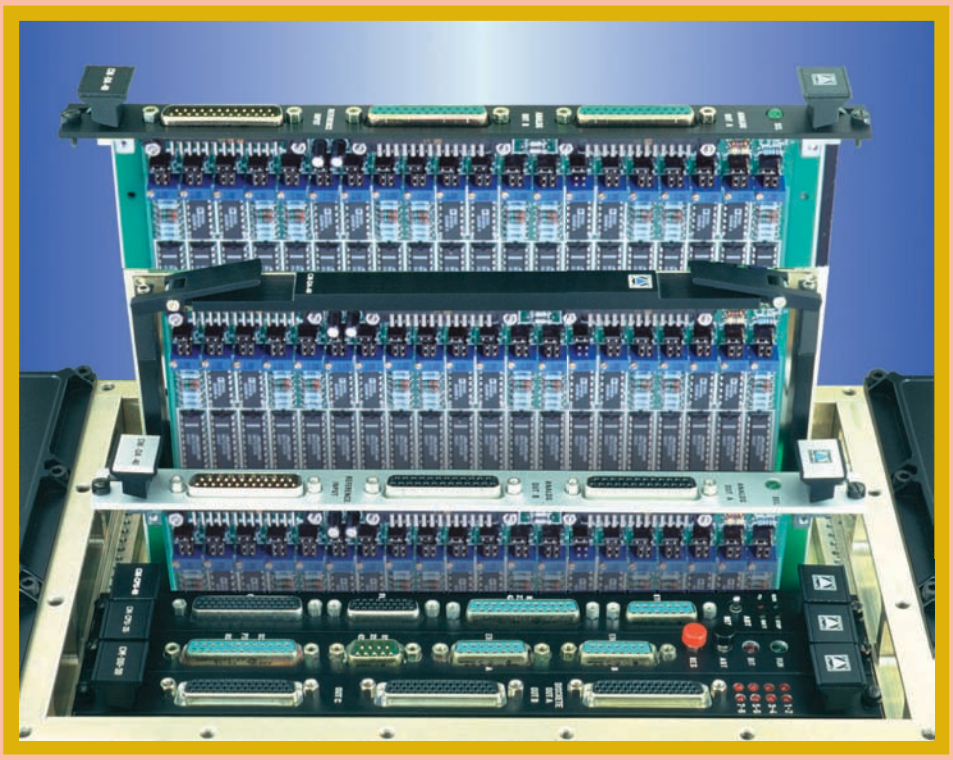
TECHNICAL SPECIFICATIONS

D/A converter:	14 bit multiplying AD-7545. On-chip 14 bit data latch.
Channel accuracy:	< 0.02 % typ. (1 mV in 0-5 VDC)
Accuracy derating:	Better than 2 ppm/ºC in all ranges.
Output impedance:	0.1 Ω for output loads < 5 mA.
Output protection:	All channel current is limited to 15 mA against output short circuits.
Galvanic isolation: (only on CM-DA-40/2)	Full galvanic isolation > 800 V on all analog I/O signals with respect the VMEbus power & TTL lines.
DC standard ranges:	0-5, 0-10, ±5 or ±10 VDC using the on-board voltage reference.
External references:	One common external voltage reference is applied to all channels. Jumper selectable individual external voltage reference per channel.
External reference range:	References can be any AC/DC voltage in the range of ±10 Volts.
External reference input protection:	Protection up to ±25 Volts on all external input references.

Power consumption:	
CM-DA-50/1 (3 Watts)	+5VDC @ 150 mA, +12VDC @ 90 mA, -12VDC @ 80 mA.
CM-DA-50/2 (4 Watts)	+5VDC @ 800 mA.
Weight:	
Military R+ & 883	790 grams.
Commercial & Industrial	600 grams.
Mechanical size:	Single slot 6U (233.4x160 mm).
Mechanical format:	
CM-DA-50/A	Classic IEC-297 mechanics for 19" racks with I/O on front panel.
CM-DA-50/B	Military IEEE P1101 wedgelocks mechanics for ATR enclosures.
Humidity:	Up to 95% RH non-condensing.
Altitude:	Sea level up to 15 Km (50,000 ft.).
VMEbus interface:	A24/D16 Standard slave interface.
VMEbus addressing:	Two jumper blocks provide 256 mapping options in the A24 range.

FEATURES

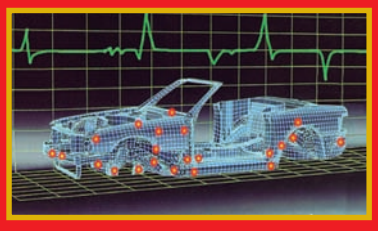
- ❑ 24 D/A output channels per board.
- ❑ 14 bit industry-standard converters.
- ❑ Full galvanic isolation.
- ❑ Analog I/O signals via three front panel cannon connectors or P2 connector.
- ❑ On-board precision voltage reference for standard unipolar & bipolar ranges.
- ❑ Selection of common or individual external input voltage reference per channel.
- ❑ Independent channel calibration.
- ❑ Low power CMOS design.
- ❑ Bult-In Test capability throughout.
- ❑ Commercial, Industrial, MIL-Rugged and MIL-STD-883 versions.
- ❑ Available in IEC-297 mechanics with I/O via front panel and military P1101.2 mechanics with wedge-locks.
- ❑ Conduction cooled PCB with thermal overlay in MIL-Rugged and 883 versions.
- ❑ High accuracy analog outputs..
- ❑ Extensive software support.
- ❑ Extremely simple programming.
- ❑ Excellent price/performance ratio.
- ❑ Two year guarantee.



MILITARY DESIGN

- ❑ -55 to +125 ºC ceramic military ICs.
- ❑ MIL-C-24308 & MIL-C-55302 Class I Connectors.
- ❑ Thin film 0.1% precision Resistors.
- ❑ No PCB tracks in external layers.
- ❑ MIL-E-5400 for avionics equipment class 1B (Temperature and Altitude).
- ❑ MIL-STD-810 D Temperature (Methods 501.2 & 502.2).
- ❑ MIL-STD-810 D Shock and Vibrations (Methods 514 & 516).
- ❑ MIL-STD-810 D Saline Fog and Dust (Methods 507 & 509).
- ❑ Military Class V Printed Circuit Board.

BOARD RANGE



COMMERCIAL (C):

Implements low cost, Commercial plastic IC's rated for 0 to +70 ºC. Continuous board operation temperature range from 0 to +60 ºC. Class II industrial quality connectors.

INDUSTRIAL (I):

Manufactured with Industrial range plastic or ceramic IC's rated for -40(-25) to +85. Continuous module operation from -20 to +75 ºC. Class II industrial quality connectors.

MILITARY-RUGGED (R+):

Implements 100% ceramic IC's rated from -55 to +125 ºC. Class I MIL-C-55302 connectors. Conduction cooled PCB. Board operation from -40 to +85 ºC. Storage from -55 to +125 ºC.

MILITARY-STD-883 (883):

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

SOFTWARE SUPPORT

Wind River Systems VxWorks Tornado

The CM-DA-50 is supported by VxWorks Tornado. This operating system is ideal for developing real time software under UNIX environments. A complete "C" language driver in source code is available at low cost. Drivers include a floppy-disk and user´s manual.

Microtec Research MCC-68K Drivers

A "C" language source code driver written for the popular MCC-68K cross-compiler from Microtec Research is also available. This low cost option is intended for using a PC as host.

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

DOCUMENTATION

LEVEL 1, CM-DA-50 MAP: User´s manual. Module hardware functional description oriented toward software development.
LEVEL 2, CM-DA-50 MMT: Maintenance manual. Extended description intended for failure location in the module.

ORDERING INFORMATION

CM-DA-50 /V /T /M

PCB Mechanical Version
- A: IEC-297 Standard mechanics with front panel I/O connectors.
- B: P1101.2 Military mechanics with dummy front panel & wedge-locks.

Board Temperature Range
- C: Commercial range. Only available with fiberglass PCB.
- I: Industrial range. Only available with fiberglass PCB.
- R+: Military Rugged+ range. Only available with conduction cooled PCB.
- 883: Military 883 range. Only available with conduction cooled PCB.

Board Version
- 1: 24 D/A channels, 14 bit, without galvanic isolation.
- 2: 24 D/A channels, 14 bit, full galvanic isolation > 800 Volts.

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