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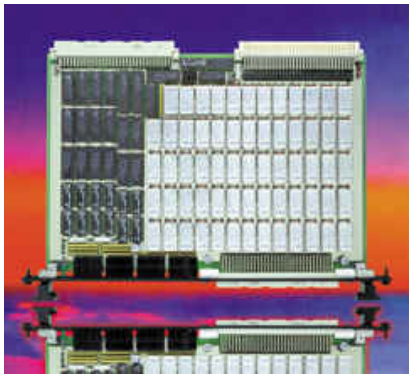
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Find the *CM Computer CM-DO-40/2/I/A* at our website: *Click HERE*

CM-DO-40

64 Channel Discrete Output Module

FEATURES



- 64 discrete output channels per board.
- AC/DC output levels up to 400 V @ 1 Amp.
- Supports 11 different output devices: Relays, Optocouplers, Photo-MOS, SSRs, Power MOSFET, Triacs, Thyristors, TTL, etc.
- Four output device versions are galvanically isolated.
- Discrete output signals via 160 pin VME64x connectors on front panel and P2.
- 64 LED indicators on front panel show all output channels ON-OFF status.
- Low power CMOS design.
- On-board Built-In-Test capability allows testing all the module TTL chips.
- Industrial, MIL-Rugged & MIL-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 MIL-883 versions.
- Extensive software support.
- Extremely simple programming.
- Excellent price/performance ratio.
- Two year guarantee.

DESCRIPTION

The **CM-DO-40** is a universal 64 channel discrete output VMEbus board. This professional module offers an outstanding design which incorporates features most demanded in today's first class military and industrial applications.

It incorporates specific Built-In-Test circuitry which allows testing all on board TTL chips by means of wraparound loops which read-back the channel status in order to verify correct module operation.

Its flexible output stage per channel can be factory fitted to support a choice of eleven different output device configurations.

Relay, Optocoupler, Photo-MOS and SSR versions offer galvanically isolated floating outputs (>1000V).

The **CM-DO-40** offers a highly flexible I/O cabling solution using VME64x connectors on both front panel and P2. Both connectors have identical pin-out.

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-DO-40** temperature and output device versions are 100% compatible at the functional level, allowing software development to proceed with low cost Industrial versions.

TECHNICAL SPECIFICATIONS

Relay version (isolated):

64 sealed relays. SPST & SPDT contacts up to 300 V @ 1 Amp.

Optocoupler version (isolated):

64 optocouplers with 50VDC @ 100 mA output phototransistors.

Photo-MOS version (isolated):

64 photo-MOS FETs. 400VDC/AC @ 150 mA bidirectional switch.

SSR version (isolated):

64 Solid State Relays. Outputs rated for 10-280 VAC @ 1 Amp.

Power MOSFET version (common source):

64 N-channel open drain power MOSFETs. 400 VDC @ 1Amp.

Triac version (common MT1):

64 general purpose Triacs rated for 400 VAC @ 1 Amp.

Thyristor version (common cathode):

64 P-gate SCRs rated for 400 VAC @ 1 Amp

TTL totem-pole version:

64 output gates. 60 mA sink. High speed FAST TTL compatible.

Open Collector version:

64 TTL gates with open collector transistors up to 30 VDC @ 50 mA.

Open Collector version (+5 or +12 VDC pull-up):

64 open collector transistors with 1 K (+5 V) or 2K2 (+12V) pull-ups.

Front panel LEDs:

64 LEDs. Illuminated when the associated channel is driven ON.

Channel Program Register:

Programs channel output status.

Channel Status Register:

Returns channel status and closes Built-In-Test wraparound loop.

Power consumption:

+5VDC @ 400 mA (channels OFF).

Weight (grams):

Military R+ & 883.- *800 gr. relays; 580 gr. other.*
Industrial.- *510 gr. relays; 430 gr. other.*

Mechanical format:

CM-DO-40/A.- *Classic IEC-297 mechanics for 19" racks with I/O on front panel.*
CM-DO-40/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.

MILITARY DESIGN

- -55 to +125 ºC ceramic military ICs.
- MIL-STD-883 TTL chips.
- MIL-C-55302 Class I Connectors.
- MIL-R-39016 Relays in MIL-883 version.
- 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

INDUSTRIAL (I):

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

MILITARY-RUGGED (R+):

Implements 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 military ceramic IC's (-55 to +125 ºC). MIL-R-39016 Relays. Class I military connectors MIL-C-55302 qualified. Continuous board operation range from -55 to +90 ºC. Storage from -55 to +125 ºC.

SOFTWARE SUPPORT

Wind River Systems VxWorks Tornado.

The **CM-DO-40** 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.

Microware Systems OS-9.

Low cost drivers for the real time OS-9 Operating System are available in C language. This driver is supplied with its descriptive user's manual and source code floppy-disk.

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-DO-40 MAP: User's manual.

Module hardware functional description oriented toward software development.

LEVEL 2, CM-DO-40 MMT: Maintenance manual.

Extended description intended for failure location in the module.

ORDERING INFORMATION

CM-DO-40 /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

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

1: 64 Relays with 32 SPDT plus 32 SPST contacs.

2: 64 Optocouplers with 50 VDC @ 100 mA open-collector phototransistors.

3: 64 Photo-MOSFETs up to 400 Volts AC/DC @ 150 mA.

4: 64 Solid State Relays (SSR) from 10 to 280 VAC @ 1 Amp.

5: 64 Open-Drain power MOSFETs up to 400 VDC @ 1 Amp.

6: 64 Triacs up to 400 VAC @ 1 Amp.

7: 64 Thyristor (SCR) up to 400 VAC @ 1 Amp.

8: 64 Totem-pole FAST TTL outputs (*).

9: 64 Open-Collector TTL gates up to 30 VDC @ 50 mA (*).

10: 64 Open-Collector TTL gates with on-board 1K pull-up resistors to +5 VDC (*).

11: 64 Open-Collector TTL gates with on-board 2K2 pull-up resistors to +12 VDC (*).

(*) Means available with Direct or Inverted output configuration.

Part Number Example:

CM-DO-40/1/R+/B

- 64 Relays with 32 SPDT plus 32 SPST contacts.
- Military Rugged+ range (-40 to +85 ºC operating).
- IEEE P1101.2 Military mechanics with wedge-locks.

CM COMPUTER

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