CM-DI-40

64 Channel Optocoupled Input Module

FEATURES

- 64 optoisolated input channels per board.
- 3 to 300 VRMS AC/DC input range.
- Full galvanic isolation > 1000 V per channel.
- Overvoltage input protection per channel.
- 64 LED indicators on front panel show input channel ON-OFF status.
- Discrete input signals via 160 pin VME64x connectors on front panel and P2.
- Input Change Detector samples and compares all input channels and asserts interrupts on any change. I (1-7) VMEbus Interrupter.
- Low power CMOS design (3 Watts).
- On board Built-In-Test capability allows testing all 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 883 versions.
- Extensive software support.
- Extremely simple programming.
- Excellent price/performance ratio.
- Two year guarantee.

DESCRIPTION

The **CM-DI-40** is a general purpose 64 channel optocoupled input 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. Wraparound loops disconnect external application signals and connect internal test signals in order to verify correct module operation.

The board implements a complete input voltage stage per channel, featuring overvoltage protection, galvanic isolation, rectifier & filter and easy configuration to accept a wide range of AC/DC voltage levels.

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

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 greatly increasing component longevity and module MTBF.

All **CM-DI-40** versions are 100% compatible at the functional level, allowing software development to proceed with low cost Industrial versions.

TECHNICAL SPECIFICATIONS

Input channels:
64 independent floating channels each one fitted with optocoupler.

Input overvoltage:
Up to 30% nominal for extended periods. 300% for transitory peaks.

Galvanic isolation:
Full galvanic isolation > 1000V on all channels with respect to the VMEbus power & TTL lines.

Input voltage ranges:
Can be factory fitted for any range from 3 to 300 VAC/DC.

Input Change Detector:
Programmable input sampling rate from 122Hz to 62.5KHz.

Channel protection:
1 W resistor & 1 W zener diode.

Input current (ON):
3 to 5 mA per channel.

Control Register:
Manages BIT and enables IRQs.

Front panel LEDs:
64 LEDs. Illuminated when the associated channel is driven by nominal voltage (ON).

Optocoupler frequency:
DC to 10KHz.

Power consumption:
+5VDC @ 450mA.

Board Weight:
Military R+ & 883.- *565 grams.*
Industrial.- *430 grams.*

Mechanical size:
Single slot 6U (233.4x160 mm).

Mechanical format:
CM-DI-40/A.- *Classic IEC-297 mechanics for 19" racks with I/O on front panel.*
CM-DI-40/B.- *Military IEEE P1101 wedge-locks 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 Interrupter:
I(1-7). Asserts IRQs to the VME master on channel input changes.

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 & FPGAs.
- MIL-C-55302 Class I Connectors.
- MIL-R-39016 Built-In-Test relays.
- 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 +75 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 qualified military ceramic IC's (-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-DI-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.

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-DI-40 MAP: User's manual.

Module hardware functional description oriented toward software development.

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

Extended description intended for failure location in the module.

ORDERING INFORMATION

CM-DI-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 Channel optocoupled input board. Voltage range specified by the customer.

2: 64 channel optocoupled input board. Voltage range 0-5 VDC.

3: 64 channel optocoupled input board. Voltage range 0-12 VDC.

4: 64 channel optocoupled input board. Voltage range 0-28 VDC.

5: 64 channel optocoupled input board. Voltage range 0-48 VDC.

6: 64 channel optocoupled input board. Voltage range 0-115 VAC RMS @ 60 Hz sine.

7: 64 channel optocoupled input board. Voltage range 0-220 VAC RMS @ 50 Hz sine.

8: 64 channel optocoupled input board. Voltage range 0-26 VAC RMS @ 400 Hz sine.

9: 64 channel optocoupled input board. Voltage range 0-32 VAC RMS @ 60 Hz sine.

Part Number Example:

CM-DI-40/2/R+/B

- 64 Channel optocoupled input board. Voltage range 0-5 VDC.
- Military Rugged+ range (-40 to +85 ºC operating).
- IEEE P1101.2 Military mechanics with wedge-locks.

CM COMPUTER

Edificio Congresos, 3-14
C/ Alcalde Luis Uruñuela, s/n
41020 Sevilla
SPAIN

Tel: (34) 954 253116
Fax: (34) 954 253119
E-mail: cm@cmcomputer.com
http://www.cmcomputer.com